38th Asia-Pacific Academy of Ophthalmology Congress

APAO

KUALA LUMPUR, MALAYSIA

23-26 FEBRUARY 2023

Reconnect & Collaborate

ABSTRACT BOOK

The 38th Asia-Pacific Academy of Ophthalmology Congress
in conjunction with
The 13th Malaysian Society of Ophthalmology Annual Scientific Meeting

APAO 2023 Congress Website
https://2023.apaophth.org/

Host: Asia-Pacific Academy of Ophthalmology

Co-Host: Malaysian Society of Ophthalmology

Co-Sponsor: American Academy of Ophthalmology

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CONTENTS

INSTRUCTION COURSES

Cataract and Cataract Surgery

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOMS 302–303 (Level 3)

Optimizing Outcomes in Challenging Situations in Phacoemulsification

*Chief Instructor: Jeewan **TITIYAL***
*Instructor(s): Soon-Phaik **CHEE**, Manpreet **KAUR**, Abhay **VASAVADA**, Ronald **YEOH***

Objective: At the end of this course, the attendees would have gained practical tips to perform safe phacoemulsification in various challenging scenarios and optimize outcomes.

Synopsis: The video-assisted course will highlight practical tips and surgical pearls to optimize outcomes in challenging cataract cases, including posterior polar with pre-existing PC defect, small pupil, intumescent white cataract and subluxated lens. Utility of femtosecond lasers in these cases will be highlighted along with tips for complication prevention and timely management. Applicability of microscope integrated OCT in safeguarding posterior capsule will be demonstrated. Posterior capsular rent management will be discussed, with emphasis on IOL implantation in cases planned for premium IOL. Case-based discussion of postoperative challenges will include residual refractive errors, toric IOL misalignment and dysphotopsia after multifocal IOLs.

Course Outline: • Posterior Polar Cataract with pre-existing defect- Dr Abhay Vasavada; • Utility of intraoperative OCT in phacoemulsification - Dr Ronald Yeoh; • Phacoemulsification in incomplete/ torn anterior capsulorhexis in white cataract - Dr Chee Soon-Phaik; • Femtosecond lasers in subluxated lens - Dr Jeewan S Titiyal; • Premium IOL implantation in posterior capsular rent - Dr Jeewan S Titiyal; • Premium IOLs - Enhancing postoperative outcomes and problem solving - Dr Manpreet Kaur.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 405 (Level 4)

Intraocular Lens Implantation Options in the Absence of Capsular Support

*Chief Instructor: Wilson **WONG JUN JIE***
*Instructor(s): Kiet Phang **LING**, Haslina **MOHD ALI**, Wee Min **TEH**, Manoharan **SHUNMUGAN***

Objective: To equip the participant with the knowledge of IOL implantation options in the absence of capsular support.

Synopsis: There are many perioperative reasons that can lead to capsular support absence. It is important for ophthalmologists to be familiar with most of these techniques as more options equates to better outcomes for the variety of patients we all encounter in our daily practice.

Course Outline: This instruction course aims to summarize the various modern options available when it comes to choosing a secondary intraocular lens implant technique. The participant will be guided on the indications and surgical pearls of each technique.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 405 (Level 4)

IOL Fixation Techniques

*Chief Instructor: Mohan **RAJAN***
*Instructor(s): Soon-Phaik **CHEE**, Sujatha **MOHAN**, Nivean **MADHIVANAN**, Shin **YAMANE***

Objective: Attendees will adapt to different techniques of IOL implantation in the presence of weak capsular support.

Synopsis: Weak Capsular Support is not an uncommon complication during phaco. There is always a dilemma among the surgeons which IOL to implant in the presence of weak capsular support. This course will clear all the doubts regarding this particular intraoperative situation.

Course Outline: This video-based Master Class shows IOL fixation techniques when capsular support is lacking. Experts make these complex surgeries look simple when they are really not. In this interactive course, each step will be critically analyzed, questions asked and the logic behind each maneuvers clarified

so that correct surgical decisions are made. Attendees will learn a methodical way of planning for and performing IOL fixation surgery. The various options of IOL implantation in the absence of capsule support including glued IOL's and Retro Iris fixated IOL's will be discussed. We will also discuss and demonstrate with the help of videos the management of a dropped nucleus and dropped IOL.

Feb 26, 2023 (Sun)
08:30 – 10:30
Venue: MEETING ROOM 408 (Level 4)

Masterclass on Anterior Vitrectomy for Phaco Surgeons

*Chief Instructor: Kiet Phang **LING***
*Instructor(s): Wee Min **TEH**, Wilson **WONG***

Objective: To equip the phaco surgeon with the theoretical and practical knowledge on how to manage cases with unplanned anterior vitrectomy.

Synopsis: With the advancement of surgical techniques and phacoemulsification technology, surgical complications are rare. Despite this, we will all encounter posterior capsular rupture with vitreous loss. The rarity of this scenario can unnerve even the most experienced phaco surgeons. Knowing how to manage this rare intraoperative complication gives our patients the best possible chance of a good postoperative outcome.

Course Outline: This masterclass consists of didactic lectures on the various approaches for anterior vitrectomy. This is followed by a wetlab session with Kitaro Eye to consolidate the theoretical knowledge.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOM 405 (Level 4)

Worst Case Scenarios – A Video-Based Course in Cataract Surgery

*Chief Instructor: Mahipal **SACHDEV***
*Instructor(s): Ramamurthy **DANDAPANI**, Hemlata **GUPTA**, Gaurav **LUTHRA**, Shreyas **RAMAMURTHY**, Gitansha **SACHDEV***

Objective: To enlighten the attendee about various complications encountered during complicated cataract surgical cases, and provide a guiding light as to how to proceed during such cases.

Synopsis: This course aims at educating the audience about various complications encountered during phacoemulsification. Through a video-based bouquet, the audience will be educated on how to tackle complicated situations in cataract surgery.

Course Outline: This course highlights techniques for management of challenging cases & complications of cataract. Tackling small pupils, Hard cataracts & management of iris defects with innovative pupilloplasty techniques will be elaborated. Options for IOL implantation in deficient capsular support, Pars plana approach for managing capsular rents & Chandelier illumination for enhancing visualization will be demonstrated with descriptive videos.

Cornea, External Eye Diseases and Eye Banking

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOMS 302–303 (Level 3)

Comprehensive Guide to Managing Ocular Complications of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in Asians

*Chief Instructor: Kendrick **SHIH***
*Instructor(s): Vanissa **CHOW**, Koji **KITAZAWA**, Alex Lap Ki **NG**, Hon Shing **ONG***

Objective: - Select appropriate treatment for acute ocular surface inflammation to minimize long-term morbidity; - Offer comprehensive care for visual and ocular surface rehabilitation; - Select appropriate patients for surgical intervention.

Synopsis: The course is divided into 1) acute ocular care of patients with SJS/TEN, 2) long-term care of late ocular manifestations and complications, 3) surgical options for visual and ocular surface rehabilitation. The procedures discussed for this session will include autologous serum treatment, sclera contact lens fitting, amniotic membrane transplantation, ocular surface reconstruction, cicatrical entropion correction, simple limbal epithelial transplantation, keratoprosthetics and cataract surgery in the context of cicatrizing conjunctivitis. This instruction course is intended for general ophthalmologists who are keen to develop a systematic and effective approach in the management of severe inflammatory ocular surface disease.

Course Outline: This is a comprehensive course on management of early and late ocular complications of SJS and TEN: 1) Diagnosis and Classification: Prognostic Implications; 2) Management of Acute Ocular Surface Inflammation: Paradigm Shift towards Early Amniotic Membrane Transplantation; 3) Autologous serum use and Ocular Surface Reconstruction; 4) Use of Scleral Contact Lenses for Visual and Ocular Surface Rehabilitation; 5) Simple Limbal Epithelial Transplantation and Keratoprosthetics 6) Cataract Surgery in Cicatrizing Conjunctivitis.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 410 (Level 4)

Climb Every Mountain: Cornea Tomography Interpretation

*Chief Instructor: Vanitha **RATNALINGAM***
*Instructor(s): Hoon Hoon **KHAW**, John **MATHEN**, Sujaya **SINGH***

Objective: A tutorial on understanding corneal topography and the the role of Pentacam in clinical cases.

Synopsis: Imaging techniques for assessing the structure and function of the cornea and anterior segment are crucial for diagnosing and treating a wide variety of ocular diseases. The Pentacam system is one of the most commonly used, commercially available systems for this purpose. Through a rotating Scheimpflug camera, the system is capable of creating a three dimensional map of the cornea, which contains a great deal of information. This course includes basic principles of topography and tomography, interpreting Pentacam maps and clinical uses of the Pentacam.

Course Outline: 1) Topography vs Tomography; 2) Interpreting Pentacam maps; 3) Pentacam and Corneal Ectasia; 4) Pentacam and cataract surgery.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 405 (Level 4)

Management of Anterior Segment Injuries of the Eye: Current Trends and Controversies

*Chief Instructor: Tuhin **CHOWDHURY***
*Instructor(s): Mrinmoy Das **DAS**, On Heong **LIEW**, Aditya **PRADHAN***

Objective: Ocular injuries are quite common and in this course, presenters will describe indications, various surgical techniques and their experiences in different case scenarios through video film based demonstration.

Synopsis: Different types of ocular injuries may rapidly cause extensive damage to the entire globe, resulting in ocular disfigurement or permanent loss of vision. Even with proper medical and improved surgical management, the overall outcome is not encouraging in many cases. This course conducted by stalwarts in the field of cornea and anterior segment, aims to provide a comprehensive overview and treatment opportunities in early and late stages. At the conclusion of this course, the attendees will be quite learned enough to handle ocular trauma cases in a better and confident way.

Course Outline: 1. Ocular trauma classification and controversies- Dr Vanitha Ratnalingam; 2. Management of scleral and corneal lacerations - Dr Tuhin Chowdhury; 3. Management of iris injuries - Dr Paras Mehta; 4. Controversies in the management of lens injuries- Dr Mrinmoy Das.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Cataract Surgery in Presence of Corneal Problems

*Chief Instructor: Abhijeet **DESAI***
*Instructor(s): Gaurav **LUTHRA**, Quresh **MASKATI**, Somasheila **MURTHY**, Parul **SHARMA**, Rishi **SWARUP***

Objective: To make the attendees aware of the potential problems in pre-existing corneal disorders and how to tackle those effectively.

Synopsis: The course is designed to tackle complex scenarios related to cornea and ocular surface. Performing cataract surgery in post-corneal grafts, DSAEK, Keratoconus, post corneal trauma, microcornea, coloboma, among others, and any such problems will be elaborated by a team of experienced surgeons.

Course Outline: 1. Introduction; 2. Cataract surgery after Refractive surgery; 3. Phacoemulsification in small, scarred and Irregular corneas; 4. Manual small incision in complex cases; 5. Cataract surgery in Compromised Endothelium; 6. Cataract Surgery the setting of Corneal grafts; 7. Phacoemulsification in presence of ocular surface disorders; 8. Panel Discussion.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 410 (Level 4)

Peripheral Ulcerative Keratitis: A Diagnostic and Management Dilemma

*Chief Instructor: Somasheila **MURTHY***
*Instructor(s): Rajesh **FOGLA**, Quresh **MASKATI**, Kavita **RAO***

Objective: To discuss the etiology, clinical features, differential diagnosis, medical management including immunosuppression guidelines and surgical management of peripheral ulcerative keratitis.

Synopsis: In this instruction course, we will cover the topic of PUK which is a rare but devastating disease affecting the cornea with potential to cause permanent loss of vision. The clinical features which aid in diagnosis and the investigations need to rule out its mimickers will be discussed. Management guidelines for medical and surgical control of the disease and its complications will be discussed.

Course Outline: 1. Peripheral ulcerative keratitis: clinical features and differential diagnosis: Dr Kavita

Rao; 2. Mooren's ulcer: what is it, why is it and how to recognize it: Dr Queresh Maskati; 3. Guidelines in medical management: Dr Somasheila Murthy; 4. Surgical interventions: Dr Rajesh Fogla; 5. Discussion.

Evolving Academia, Research, Teaching and Education in Ophthalmology

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 405 (Level 4)

New Age Innovative Pedagogy for e-Ophthalmology / Come Experience it in 4D with Augmented Reality

*Chief Instructor: Prasanna **RAMESH***
*Instructor(s): John **AKKARA**, Anugraha **BALAMURUGAN**, Puja **MAITRA**, Shruthy Vaishali **RAMESH***

Objective: In this instruction course (IC), amalgamation of deep teaching tools are employed for pedagogical transformation in e-Ophthalmology, to reinvent approach to ophthalmic teaching through virtual platforms.

Synopsis: The course is constructed with pioneering ways of cult teaching, relevant in the pandemic era by a team of ophthalmic scientific orators, filmmakers, app makers, animators, green mat technology users and augmented reality inventors, in a novel, do it yourself template.

Course Outline: The participants attending can download the gameful learning application, free of cost and can experience learning in 4D, during the course. At the end of this session, the participants would benefit how to use these basic tools, in creating their own pedagogy for effective ophthalmic teaching and learning. The cherry on top of this IC, is the live demonstration of the augmented reality program recently innovated by us, to show different anatomic layers inside the eye, from multiple angles to simplify concept learning.

Glaucoma and Glaucoma Surgery

Feb 25, 2023 (Sat)
11:00 – 13:00
Venue: MEETING ROOM 408 (Level 4)

Gonioscopic Glaucoma Surgery

*Chief Instructor: Dave **PATEL***

Objective: The objective of this wet lab is to introduce practitioners to gonioscopic glaucoma surgery including iStent, ab internal canaloplasty, goinotomy with kahook dual blade, and trabectome.

Synopsis: Using cadaveric or synthetic eyes, the principles of each gonioscopic glaucoma surgery technique and principles can be demonstrated.

Course Outline: Minimally invasive glaucoma surgery is well established as a means of IOP reduction. Here we present to wet lab dedicated to best practice, indications and technique as demonstrated by Dr Patel

Intraocular Inflammation, Uveitis and Scleritis

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Endophthalmitis - Prophylaxis and Management

*Chief Instructor: Lalit **VERMA***
*Instructor(s): Avnindra **GUPTA**, Mallika **GOYAL**, Harbansh **LAL**, Rajesh **SINHA***

Objective: To make the attendees aware of possibility of reaction / infection after intraocular surgery and what should be the approach to manage such cases including measures to prevent postoperative infection.

Synopsis: Endophthalmitis is a disastrous complication after any intraocular surgery. Prophylactic measures required for prevention of endophthalmitis preoperatively, Intraoperatively and post operatively will be discussed. The infection should be distinguished from inflammation - since early diagnosis and prompt management is mandatory for successful anatomical and visual outcomes. The step-by-step approach shall be illustrated with clinical cases and videos including the surgical technique of vitrectomy foe cases not responding to intravitreal antibiotics.

Course Outline: Postoperative Reaction – Inflammation Vs Infection Diagnosis and Initial Approach

Vitrectomy in Endophthalmitis Preoperative and Intraoperative measures to minimize the occurrence of Endophthalmitis Role of intracameral antibiotics in prevention of endophthalmitis.

Neuro-Ophthalmology

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 410 (Level 4)

Diagnosing and Managing the Great Masquerade: Ocular Myasthenia

*Chief Instructor: Sameera **IRFAN***

Objective: IC is intended for all grades of general ophthalmologists, trainees & fellows. It would guide them when to suspect, how to diagnose, and manage the varied presentations of ocular myasthenia.

Synopsis: Ocular Myasthenia can affect any age group. It can present as Ptosis (unilateral or bilateral), ocular motility disorder, and can mimic any ocular motor nerve paresis. Since it is not an uncommon problem, suspecting it in a patient and then diagnosing it clinically can be life saving for that person. Since such a patient presents to a general ophthalmologist first, therefore all ophthalmologists must be aware of the varied clinical presentations of ocular myasthenia to avoid mismanagement and unnecessary surgery of this life-threatening condition.

Course Outline: The instructor will: 1. Show the varied clinical presentations of ocular myasthenia by PowerPoint; 2. The various clinical signs to arrive at a provisional diagnosis will be demonstrated by PowerPoint and videos. The physiological basis of clinical signs and diagnostic clinical tests will be explained; 3. Differential Diagnosis will be discussed; 4. Appropriate investigations will be discussed in detail; 5. Management protocol will be discussed highlighting the dosage of medications, and how to monitor the patients.

Ocular Imaging

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 405 (Level 4)

OCT and OCT Angiography in Macular Disorders

*Chief Instructor: Faruque **GHANCHI***

Objective: To provide practical information on application of OCT and OCT angiography in clinical management of patients with macular disorders.

Synopsis: This course will provide information on application of OCT and OCT angiography in macula clinics. The attendees will learn from practical examples of cases on use of OCT in diagnosis and management of macular disorders. The course will provide information to help understand application of OCT angiography from practical case examples. The delegates will be able to learn practical skills that can be applied in their own clinical practice (suitable for Basic and intermediate levels).

Course Outline: Suitable for Ophthalmologists in training, consultants as well as ophthalmology technicians, specialist nurses and Optometrist: 1. Introduction to OCT - principles and normal retinal anatomy; 2. OCT in macular pathology: identifying biomarkers of macular diseases; 3. Diagnostic Biomarkers for macular degeneration; 4. OCT for monitoring macular degeneration - including for treatment response, making decisions; 5. OCT angiography - principles and application in macular diseases; 6. Conclusions: The course will provide clinical examples to enhance learning and offer practical tips for clinical practice.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 405 (Level 4)

Retinal OCT Made Easy

*Chief Instructor: Hon Seng **WONG***
*Instructor(s): Hazlita **MOHD**. **ISA**, Manoharan **SHUNMUGAM**, Wilson **WONG***

Objective: A workshop on retinal OCT scans for beginners or ophthalmology trainees and a re-fresher course for general ophthalmologists.

Synopsis: A workshop on retinal OCT scans for beginners or ophthalmology trainees and a re-fresher course for general ophthalmologists on the basic principles of OCT scans including OCT-angiography, it's clinical usage, pearls and pitfalls in OCT scans interpretations.

Course Outline: This retinal workshop is focus on 4 topics: 1) Basic principles of OCT interpretation; 2) Case examples of OCT images of common retinal diseases; 3) Pearls and pitfalls in OCT interpretations; 4) OCT-angiography.

Ocular Oncology and Pathology

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 405 (Level 4)

Ocular Brachytherapy: Indications and Techniques

Chief Instructor: Arun ***SINGH***
Instructor(s): Tengku ***KAMALDEN****, Vishal* ***RAVAL****, Gavin* ***TAN***

Objective: The aim of this course is to introduce the indications and techniques of plaque brachytherapy for ocular tumors.

Synopsis: Plaque brachytherapy is used to deliver local radioactive treatment for tumors in the eye. It is an established and important globe-and vision-preserving mode of treatment in certain ocular tumors. However, this method of treatment is not yet commonly available in the South East Asia region. This course aims to discuss the advantages, indications, placement and managing plaque brachytherapy in various ocular tumors.

Course Outline: Brachytherapy is the process of placing a radioactive source next to or within a tumor. The dose characteristics of the isotopes used in brachytherapy are such that a very high dose of radiation is given within millimeters of the source and there is a steep dose drop-off outside of that range, thus protecting surrounding normal structures. Most commonly used isotopes are ruthenium-106 and iodine-125. Brachytherapy is mainly used for tumors such as choroidal metastasis, uveal melanoma, and retinoblastoma. Brachytherapy also has applications for the ocular surface tumors. In this instructional course various indications and techniques of brachytherapy will be presented.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Ocular Surface Tumors: Common and Uncommon Variants

Chief Instructor: Sujaya ***SINGH***
Instructor(s): Mohtar ***IBRAHIM****, Chandramalar* ***SANTHIRATHELAGAN****, Arun* ***SINGH****, Wan Haslina* ***WAN ABDUL HALIM***

Objective: To discuss the clinical features, approach to diagnosis and management of common and uncommon ocular surface tumors.

Synopsis: Ocular surface tumors may arise from either conjunctival epithelium or stromal tissues. This course discusses the diagnostic challenges, differences in clinical features and systematic multidisciplinary approach to the management of these treatable tumors.

Course Outline: Ocular surface tumors may arise from the conjunctival epithelium (CEP) of conjunctival stroma (CST). CEP tumors are the usual variants that may be benign or malignant in nature of melanocytic or non-melanocytic origin. CEP tumors can be managed by surgery, cryotherapy and topical chemotherapy. CST tumors arise from variety of tissues that comprise stroma representing neural, vascular, lymphatic, fibrous histiocytic, lymphoid origin. CST are uncommon variants that pose diagnostic challenges requiring detailed histopathology (+immunohistochemistry), systemic evaluation, and multidisciplinary approach. Ocular therapy may require radiation therapy In this instructional course, clinico-pathologic correlation highlighting management approach for conjunctival tumors will be presented.

Orbital and Oculoplastic Surgery

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 405 (Level 4)

Congenital Anomalies and Anophthalmic Socket: Management Algorithm

Chief Instructor: Syeed ***KADIR***
Instructor(s): Ben ***LIMBU****, Dongmei* ***LI****, Lakshmi* ***MAHESH****, Rajendra* ***MAURYA****, Yvette Marie* ***SANTIAGO***

Objective: To facilitate the most accurate diagnosis and appropriate management of these anomalies.

Synopsis: The management of the anopthalmic socket has long been a challenge for ophthalmologists. Congenital anomalies of the eyelid are a diverse group of disorders with a broad spectrum of clinical presentations. As with other microsurgical ophthalmic procedures, Fornix contracted socket surgery, enucleation, and eviscerations should be performed meticulously to attain the best functional and cosmetic results and to avoid deformities that may compound the patients' already challenging situation. The loss of an eye or absence of a part of the eyelid due to a congenital malformation, tumor, trauma, or end-stage ocular disease can be an exceptionally difficult situation for patients.

Course Outline: The instruction course will discuss the anophthalmic socket reconstruction strategies and management algorithm of congenital eyelid deformities in a standard lecture-oriented PowerPoint presentation including clinical photographs, and videos.

General ophthalmologists and Oculoplastic specialists both will be enriched with updated knowledge through this instruction course. We will highlight the updated information on these diseases.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Current Practice in Congenital Ptosis

*Chief Instructor: Ashok **GROVER***
*Instructor(s): Apjit **KAUR**, Ben **LIMBU**, Muhammad **MOIN**, Rwituja **THOMAS***

Objective: To update the oculoplastic surgeons on the finer points in the current management of congenital ptosis.

Synopsis: Congenital ptosis is a complex yet gratifying condition to manage. It has far reaching impact on the physical, aesthete and psychological well-being of a person This course aims to outline the strategy for appropriate choice of procedure based on meticulous evaluation and bringingout the finer points in the surgical correction. The surgical techniques of Fasanella-Servat procedure, Levator resection, frontals sling with Synthetic and autologous materials and frontalis muscle advancement techniques will be presented with the help of clinical images and video films. The strategy for management in associated ocular motility disorders, jaw winking and blepharophimosis syndrome will be discussed.

Course Outline: 1. Introduction: Role of evaluation in decision making: 8 min, Dr A.K Grover, India; 2. Strategies for mild ptosis: Fasanella Servat surgery and mullers muscle conjunctival resection: 8 min, Dr Rwituja Thomas, India; 3. Levator surgery including supramaximal resection, 10 min, Dr Mohammed Moin, Pakistan; 4. Frontalis Sling Surgery: Synthetic materials, 8 min, Dr Ben Limbu, Nepal; 5. Frontalis Sling Surgery: Fascia lata, 8 min, Dr Rwituja Thomas, India; 6. Marcus-Gunn ptosis/ Blepharophimosis syndrome, 10 min, Dr A.K Grover, India; 7. Frontalis Muscle advancement of newer procedures, 10 min, Dr Kasturi Bhattacharjee, India.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOMS 302–303 (Level 3)

All About the Socket!

*Chief Instructor: Sunny **SHEN***
*Instructor(s): Suriya **ABU WALED**, Blanche **LIM**, Audrey **LOOI**, Gangadhara **SUNDAR***

Objective: A comprehensive review on everything about the anophthalmic socket Target Audience: - Ocularists - General Ophthalmologists - Oculoplastic Surgeons

Synopsis: Socket management remains a challenging aspect of Oculoplastic practice to date. This is not surprising, given the gamut of presentations and issues involved. This SSOPRS course features experienced practitioners who will speak comprehensively on the foundations of socket work and the pearls that help garner success when dealing with difficult cases.

Course Outline: 1. Indications for Evisceration, Enucleation and Exenteration; 2. Vital Principles and Surgical Pearls for Success in Socket Surgery; 3. Dealing with the Exposed Implant and other Socket Complications; 4. Best Practice in managing Congenital Microphthalmia; 5. Home Run with your Friendly Ocularist!

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 405 (Level 4)

Eyelid Trauma and Deformities: Tips and Tricks to Manage Difficult Situations

*Chief Instructor: Golam **HAIDER***
*Instructor(s): Ashok **GROVER**, Mukti **MITRA**, Rohit **SAIJU**, Rwituja **THOMAS***

Objective: To present different surgical techniques for management of eyelid trauma and lid deformities in order to achieve a good surgical and cosmetic outcome.

Synopsis: Eyelid trauma is a common problem in the daily practice of an Ophthalmologist. Eyelid injury repair requires good anatomical knowledge and meticulous approach. Eyelid gives shape and beauty of the face. A good primary repair with proper alignment is necessary for best cosmetic outcome and to prevent post-operative complications like lid margin notching, lagopthalmos, cicatrical ectropion, tearing etc. This instruction course aims to familiarize the general ophthalmologist and sub specialists with the techniques for management of different type of primary trauma and traumatic eyelid deformities. Various scenarios for early repair and deformities are presented with clinical illustrations and video films.

Course Outline: 1. Primary eyelid repair - Dr Mukti Rani Mitra; 2. Update on the management of traumatic ptosis - Dr Golam Haider, Chief instructor; 3. Lagophthalmos – how to correct? - Dr Rwituja Thomas; 4. Lateral canthal deformity - challenge of prevention and management - Dr Rohit Saiju; 5. Current concepts in management of medial canthal injuries including canalicular lacerations and deformities - Dr Ashok Grover.

Pediatric Ophthalmology and Strabismus

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Managing Strabismus: Basics to Complex Cases

*Chief Instructor: Rohit **SAXENA***
*Instructor(s): Rebika **DHIMAN**, Asmita **MAHAJAN**, Swati **PHULJHELE**, Parag **TYAGI***

Objective: To discuss the management of various types of strabismus using a case based approach including surgical videos for explaining new management procedures.

Synopsis: Strabismus management is to restore normal ocular alignment and maximize the potential for sensory fusion between the two eyes. The results of surgery depend upon the meticulous clinical examination, accurate diagnosis and appropriate surgical planning. While the basic approach to surgical planning remains the same for all cases of strabismus; each case needs to be dealt individually and requires customized plan. This course aims to provide a comprehensive approach to management of strabismus as well as to discuss the tailored approach to individual cases of strabismus along with highlighting the fine nuances of surgery.

Course Outline: The course will deal with surgical approach to various common and difficult cases of strabismus. The approach to esotropia will include the role of non-surgical management and timing and surgical plan in infantile esotropia. Monocular elevation deficit requires customized planning and will have various surgical options to be discussed using a case-based approach. Duane syndrome is one of the most complex conditions in strabismus and needs an individualized management plan. A broad overview of planning and using that in each case will be demonstrated. The course will also provide a case-based approach to complicated paralytic cases like III nerve palsy and VI nerve palsy. Numerous innovations in their management like NTSLR and medial wall anchor for III nerve palsy and transposition procedures and muscle belly transfer for VI nerve palsy have recently been reported and relative advantages of each procedure and indications will be discussed.

Refractive Surgery

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 410 (Level 4)

SMILE/ Contoura LASIK/ PRK or Phakic Lens? What Should I Offer My Patient?

*Chief Instructor: Gaurav **LUTHRA***
*Instructor(s): Kumar **DOCTOR**, Rohit **PARKASH**, Kavita **RAO**, Rishi **SWARUP***

Objective: This course will help elucidate, the various deciding criteria for selecting the best refractive surgical procedure among the many available today for a given refractive surgery candidate.

Synopsis: Refractive surgery has been rapidly evolving in recent years with newer procedures making it confusing for practicing ophthalmologists, refractive surgeons and patients alike, which procedure, from among the many available, may be ideal for a given refractive surgery candidate. Experienced refractive surgeons, conversant with most of the currently available diagnostic and surgical techniques, will discuss at length, the pros & cons of each surgical procedure including SMILE, MK/Femto LASIK, CONTOURA Topo Guided LASIK, PRK/ PRK Xtra and Phakic Lenses. At the end of the course attendees will be able to better understand the deciding criteria for each procedure.

Course Outline: Choice of Refractive surgery procedures available today Why Surface Ablation is still around and popular after 30 years of LVC? Is there still room for Microkeratome Lasik in 2023? When to offer Contoura Lasik over other procedures? Phakic Lenses- Expanding Indications When to SMILE and when not to? Refractive Lens Exchange- Can we? Should we? When and how? Xtra procedures- When & How? - 6 Mins.

Retina (Medical)

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 410 (Level 4)

Evidence-Based Management of Postoperative Endophthalmitis

*Chief Instructor: Joveeta **JOSEPH***
*Instructor(s): Tat Keong **CHAN**, Taraprasad **DAS**, Vivek **DAVE**, Manoharan **SHUNMUGAN***

Objective: At the end of the course, the participants will learn to use evidence-based postoperative endophthalmitis care, differentiate from TASS, be exposed to a novel surgical technique, and molecular

microbiology techniques.

Synopsis: Endophthalmitis is a vision-threatening complication of intraocular surgery. Essential steps are differentiating from toxic anterior segment syndrome, instituting appropriate empiric intervention, ordering laboratory work-up, and revising interventions based on the patient response and laboratory results. This course will provide a step-by-step, evidence-based approach to postoperative endophthalmitis. Some of the novel features of the course include endophthalmitis after cataract and intravitreal injections, features of toxic anterior segment syndrome, fungal endophthalmitis, which is not so rare in Asia, application of a new surgical technique (endoscopic vitrectomy) in severe infections, and role of Next Generation Sequencing in culture-negative endophthalmitis.

Course Outline: In this course, we focus on evidence-based management of bacterial and fungal endophthalmitis, and the microorganisms most commonly implicated in these intraocular infections. The laboratory results may be negative even in presence of severe inflammation within the eye. This course will explain step-by-step management of toxic anterior segment syndrome (TASS), culture negative endophthalmitis, surgery in severely infected eyes not responding to standard practices, and use of newer molecular techniques and inflammatory biomarkers in more specific diagnosis. The topics outlined are: 1. Post-cataract versus Post intravitreal endophthalmitis; 2. Bacterial versus Fungal endophthalmitis; 3. Endoscopic vitrectomy in endophthalmitis management; 4. Increased Inflammation Following Intraocular Surgery: Is It Really Endophthalmitis?; 5. Culture-negative endophthalmitis: A New Entity The course will end with a question-answer session.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 410 (Level 4)

Data-Driven Management of Diabetic Retinopathy for the Comprehensive Ophthalmologist

*Chief Instructor: Michael **STEWART***

Objective: To provide a comprehensive data-driven strategy for the treatment of all grades of diabetic retinopathy that can be used by the comprehensive ophthalmologist to manage most patients.

Synopsis: This course will provide a detailed framework for the management of diabetic retinopathy (DR) that is tailored specifically for the comprehensive ophthalmologist. This course will give the comprehensive ophthalmologist a solid understanding of the pathophysiology of DR, which will be followed by an evidence-based treatment algorithm that can be used to effectively manage most patients with DR, including diabetic macular edema, severe DR, and proliferative DR. Treatment techniques for laser photocoagulation, and intravitreal injections of anti-VEGFs and corticosteroids will be detailed. Clinical cases will be used to reinforce the treatment recommendations.

Course Outline: 1. Introduction: a. Epidemiology; 2. Management of systemic diseases: a. Diabetes Mellitus; b. Co-morbidities: i. Systemic arterial hypertension, ii. Hyperlipidemia; 3. Assessment of diabetic retinopathy: a. Diagnostic tools; 4. Management of diabetic retinopathy: a. Center threatening DME; b. Center involving DME: i. Good VA, ii. Decreased VA (20/32 or worse); c. Moderate-severe diabetic retinopathy; d. Proliferative diabetic retinopathy; 5. Treatment techniques: a. Laser photocoagulation: i. Macular laser, ii. Pan-retinal photocoagulation; b. Intravitreal injections: i. Techniques, ii. Drugs: (1) Anti-VEGs, (2) Corticosteroids; c. Vitrectomy surgery; 6. Illustrative Cases: a. Patient with DME (20/50) in one eye and epiretinal membrane in the other; b. Patient with traction/rhegmatogenous RD in one eye develops DME (20/60) in good eye; c. Advancing DR during pregnancy; d. Non-responsive DME (to q8wk bevacizumab) in patient with 20/100 VA; e. Non-responsive DME despite monthly anti-VEGF; f. Good response to monthly therapy – now what? g. Macular threatening TRD.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 406–407 (Level 4)

Subthreshold Laser for Macula Diseases

*Chief Instructor: Kenneth **FONG***
*Instructor(s): Marten **BRELEN**, Alejandro **FILLOY RIUS**, Anand **RAJENDRAN**, Lihteh **WU***

Objective: To educate ophthalmologists on how to use subthreshold laser for macula diseases.

Synopsis: Subthreshold laser is a new modality of retinal laser treatment. This course aims to educate ophthalmologists on the basic principles of subthreshold laser and how to use it for treating various macula diseases like diabetic macula edema (DME) and central serous chorioretinopathy (CSCR).

Course Outline: 1. Introduction to the basics of Subthreshold laser (15 min); 2. Subthreshold laser for DME (15 min); 3. Subthereshold laser for CSCR (15 min); 4. Case studies of subthreshold laser (15 min); 5. Discussion (30 min).

Retina (Surgical)

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 405 (Level 4)

Management of Retinal Detachment Complicated by Corneal Opacity

*Chief Instructor: Jocelyn **SY***
*Instructor(s): Jose Maria **MARTINEZ**, Lawrence **PE**, Kristine **PORMIDA**, Camille Elaine **ZABALA***

Objective: To discuss in detail the tools and techniques available to improve posterior segment surgery outcomes complicated by a cloudy cornea.

Synopsis: This Instruction Course will discuss in detail the tools and techniques available to improve posterior segment surgery outcomes complicated by a cloudy cornea, focusing on optimizing corneal clarity before and during vitrectomy, how to perform endoscopy-assisted vitrectomy, and the use of temporary keratoprosthesis in vitrectomy. Surgical videos will be presented to augment the learning of attendees.

Course Outline: Optimizing Corneal Clarity During Vitrectomy, Jocelyn L. Sy, MD; Tips and Tricks in Using Temporary Keratoprosthesis During Vitrectomy, Lawrence Marlon H. Pe, MD; Techniques in Performing Vitrectomy via Temporary Keratoprosthesis, Kristine G. Pormida, MD; Endoscopy in Posterior Segment Surgery, Camille Elaine L. Zabala, MD; and Management of High IOP to Improve Corneal Clarity, Jose Ma. D. Martinez, MD.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 405 (Level 4)

Surgical Management for the Vitreoretinal Complications of Pathological Myopia: Approaches and Considerations

*Chief Instructor: Shu-Yen **LEE***
*Instructor(s): Ning (danny) **CHEUNG**, Gavin **TAN**, Doric **WONG**, Edmund **WONG***

Objective: To review the management of complication of pathological myopia and understand the indication and prognosis for surgical intervention and the techniques required to achieve surgical success and avoid complications.

Synopsis: Pathological myopia results in structural and mechanical changes that leads to diseases such as myopic tractional maculopathy, foveoschisis, myopic macular hole with or without detachment and rhegmatogenous retinal detachment. This course will cover the complications of pathological myopia requiring surgical intervention with particular focus on the diagnosis and indication for surgery. The general considerations for retinal surgery in a highly myopic eye will be discussed as well as the use of intraoperative OCT and other surgical tools to improve outcomes. The surgical management of specific myopic complication such as macular schisis, macular holes and retinal detachments will be discussed.

Course Outline: 1. Complications of Pathological Myopia: Diagnosis and indications for surgery; 2. Vitrectomy in a highly myopic eye: Surgical consideration and use of intraoperative OCT; 3. Management of Myopic macular schisis; 4. Management of Myopic macular holes with and without detachment; 5. Management of retinal detachment in high myopes.

Feb 25, 2023 (Sat)
08:30 – 10:30
Venue: MEETING ROOM 408 (Level 4)

Visualization Systems and Basics of Pars Plana Vitrectomy

*Chief Instructor: Vivek **DAVE***
*Instructor(s): Hung Da **CHOU**, Carlo **NASOL**, Vaibhav **SETHI***

Objective: To appraise the audience with various visualization systems and the basic steps of pars plana vitrectomy.

Synopsis: Vitreoretinal surgery is a rapidly changing field. Today we have multiple options in terms of visualization inside the eye, instrumentation for surgical manipulation and various surgical steps performed. It is imperative for a beginner surgeon to be abreast with the various visualization systems available, common instruments and the basic steps in a vitreoretinal surgery procedure.

Course Outline: The current course will be a wet lab course. It will be in combination of didactic lectures, video demonstration and hands-on experience in recognizing, setting up and using various visualization systems and common instruments for vitreoretinal surgeries. The instructors consist of 3 eminent VR surgeons from the Asia-Pacific region known widely for their flair and acumen in vitreoretinal surgery and their interest in teaching the same. the course will cover aspects of optics and set up of BIOM, wide angle contact lens, self-retaining lenses and irrigating contact lenses. This will be followed by description of common instruments, eye preparation and entry port set up for vitrectomy. This will be finally followed by demonstration of various common steps utilized across any vitreoretinal procedure. At the end of this course, the audience shall be able to recognize, understand and use common VR instruments and be confident in basic vitrectomy steps.

Feb 26, 2023 (Sun)
11:00 – 13:00
Venue: MEETING ROOM 408 (Level 4)

Posterior Vitrectomy Wet Lab Instruction Course

*Chief Instructor: Hussain **KHAQAN***
*Instructor(s): Gitalisa **ADRIONO**, Tatyana **AVANESOVA**, Kiet Phang **LING**, Sengul **OZDEK**, Ahmed **SALLAM***

Objective: To teach the basic principles of posterior vitrectomy.

Synopsis: A wet-lab instruction course for Vito retina fellows, to give them brief knowledge about microscopes, viewing systems, vitrectomy machines, instruments used during retinal surgery, steps during surgery and tips, tricks for successful posterior vitrectomy.

Course Outline: Total time :120 minutes Instructors:06 Wet Lab Stations :06 Participants:30 Hands on Training :80 minutes Lectures:40 minutes Lecture Topics: 1-Microscopes 5 minutes 2-Viewing Systems 5 minutes 3-Vitrectomy Machines 05 minutes 4-Instruments: 10 minutes 5- Insertion of tracars 5 minutes 6-Steps in posterior vitrectomy:10 minutes.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 302–303 (Level 3)

Vitreoretinal Surgeon's Nightmares!

*Chief Instructor: Bhuvan **CHANANA***
*Instructor(s): Andrew **CHANG**, Shih Jen **CHEN**, Gavin **TAN***

Objective: In this course, the audience will learn, to detect many vision threatening complications during vitreoretinal surgery at the earliest, and also how to act swiftly to manage them successfully.

Synopsis: In this symposium, we will discuss some of the gravest complications which may occur during vitreoretinal surgery like sub-macular hemorrhage, excessive bleeding during diabetic vitrectomy etc. These complications can lead to poor visual outcome and give nightmares to the surgeon. Appropriate and timely intervention may salvage vision in most of the eyes. The course will be especially beneficial for young retinal surgeons, who are in the early phase of their career. They will become more confident in dealing with such situations.

Course Outline: 1. Sub-macular hemorrhage during vitrectomy for retinal detachment: How to proceed; 2. My infusion Cannula is not in position: Subretinal or Suprachoroidal displacement of infusion cannula; 3. Slippage of Giant Retinal Tear flap: What to do next?; 4. Uncontrolled bleeding during Diabetic Vitrectomy.

FREE PAPERS

Applying Big Data, Artificial Intelligence and Telemedicine in Ophthalmology

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

A Deep Learning System Can Discriminate Between Papilledema and Optic Disc Drusen on Fundus Photographs

*First Author: Kanchalika **SATHIANVICHITR***
*Co-Author(s): Valerie **BIOUSSE**, Steffen **HAMANN**, Dan **MILEA**, Raymond **NAJJAR**, Zhiqun **TANG***

Purpose: We aimed to evaluate the performance of a deep learning system (DLS) to automatically distinguish between true papilledema and ODD on standard retinal fundus images, in a large international multiethnic population.

Methods: We have developed, trained, and tested a DLS, using a total of 4,508 fundus images obtained in 2,146 patients, in 30 centers, from 20 countries. The reference ophthalmic and neurologic diagnosis was established by the expert neuro-ophthalmologists and neurologists from the providing centers, using state-of-the-art diagnostic methods. The DLS performance was evaluated using its sensitivity, specificity, area under the receiver operating curve (AUC) and accuracy, following a binary classification papilledema vs drusen.

Results: The DLS was trained, validated, and internally tested, using 3,230 papilledema images and 857 ODD images. Subsequent external testing was performed in 221 patients from 7 centers (including 214 papilledema images and 207 ODD images - 96 visible ODD and 111 buried 0DD). In the external testing dataset, the AUC to discriminate papilledema from ODD was 0.97 (0.96-0.98), accuracy 90.5 (88.5-92.6), sensitivity 86.0 (82.6-89.4), and specificity 94.9 (92.7-97.1). In discriminating between mild-to-moderate papilledema and buried ODD, the most difficult subgroup to classify, the AUC slightly decreased to 0.93 (0.89-0.97).

Conclusions: Deep learning-based image identification on conventional retinal fundus images has the ability to distinguish with high accuracy between life- or vision-threatening papilledema, caused by high intracranial pressure, and benign ODD, which require no further work-up. The implementation of such a DLS into a neurological environment could in the future improve diagnosis and management of patients with suspected papilledema.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

A Multi-Modal Explainable Artificial Intelligence System to Personalize Diabetic Retinopathy Screening

*First Author: Feihui **ZHENG***
*Co-Author(s): Gilbert **LIM**, Mingxuan **LIU**, Nan **LIU**, Gavin **TAN**, Daniel **TING***

Purpose: To develop explainable artificial intelligence (XAI) predictive tools (DR-PREDICT) for predicting the incidence of referable diabetic retinopathy (DR) within 3 years and 5 years, respectively, in order to stratify and personalize patients' screening intervals.

Methods: Patient data and color fundus photos were collected retrospectively from a 10-year population-based DR screening cohort. A total of 135,230 eyes from 67,695 diabetic patients with no or mild DR at their first visits were included. Firstly, we generated the predictive image score based on baseline fundus photographs using deep learning (DL). Secondly, we combined the image-based predictive score and risk factors at baseline as inputs for the XAI models to generate the auto-scores for predicting individual risk profiles. The models were trained, validated, and tested on 70%, 10%, and 20% of the dataset.

Results: The XAI models combining the DL image predictive score with HbA1c at baseline gave the AUC of 0.86 (95% CI 0.82-0.89) and 0.82 (95% CI 0.77-0.88), for predicting referable DR incidence within 3 years and 5 years, respectively. When adding the DR grading of fundus photos at baseline, the AUC of XAI models improved to 0.87 (95% CI 0.84-0.90) and 0.85 (95% CI 0.81-0.89), respectively. Survival analysis based on XAI auto-score cut-offs showed that the rate of progressing to referable DR was significantly higher in the high-risk group than in the low-risk group ($p < 0.0001$).

Conclusions: The multi-modal XAI system was able to identify individuals at risk of developing referable DR for as long as 5 years, which would be helpful for optimizing DR risk stratification and personalizing screening intervals.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

A Non-invasive Method to Analyze Spontaneous Blink Using a Commercially Available Camera and Machine Learning Approach

*First Author: Pimkwan **JARU-AMPORNPAN***
*Co-Author(s): Thanapon **NORASET**, Watsaporn **PORNWATANACHAROEN**, Manachaya **PRUKAJORN**, Akara **SUPRATAK***

Purpose: To develop a non-invasive, affordable tool for spontaneous blink analysis using a commercially available video camera and newly developed machine learning software.

Methods: Seventy-nine healthy volunteers were enrolled. Spontaneous blink was recorded at 240 frames per second using a high-speed video camera with non-distortion lens. An ophthalmologist-trained deep learning algorithm was developed and used to analyze the blink parameters. Cronbach›s alpha was used to assess the reliability of the number of blink counts between the software and the observer. T-test and one-way ANOVA were used to determine the difference in blink rate between sex and age.

Results: The blink rate varies significantly among 79 subjects, averaging 18 ± 8.8 times/min, without significant difference between age and sex. Number of blinks detected by the software were excellently correlated with the observer measurement (r=0.984; 95% CI 0.975-0.989). The mean blink amplitude was 8.37 mm. The mean blink interval was 3.6 s. Mean duration of eyelid-closing phase, early-opening phase, and late-opening phase were 102, 204, and 27 ms, respectively. The peak velocity of closing and opening phase were 250 and 191 mm/s, respectively.

Conclusions: This deep learning software is relatively accurate in providing the number of blinks count with additional dynamic parameters. It can be considered for analysis of spontaneous blink in clinical settings and in future studies.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

AI-based Clinical Assessment of Optic Nerve Head Robustness Superseding Biomechanical Testing

*First Author: Fabian **BRAEU***
*Co-Author(s): Tin **AUNG**, George **BARBASTATHIS**, Thanadet **CHUANGSUWANICH**, Michael **GIRARD***

Purpose: To use artificial intelligence (AI) to: (1) exploit biomechanical knowledge of the optic nerve head (ONH) from a relatively large population; (2) assess ONH robustness [i.e. sensitivity of the ONH to changes in intraocular pressure (IOP)] from a single optical coherence tomography (OCT) scan of the ONH; (3) identify what critical three-dimensional (3D) structural features dictate ONH robustness.

Methods: A total of 316 subjects had their ONHs imaged with OCT before and after acute IOP elevation through ophthalmo-dynamometry. IOP-induced lamina-cribrosa (LC) deformations were then mapped in 3D and used to classify ONHs. Learning from these data, we compared three AI algorithms to predict ONH robustness strictly from a baseline (undeformed) OCT volume: (1) a random forest classifier; (2) an autoencoder; and (3) a dynamic graph CNN (DGCNN). The latter algorithm also allowed us to identify what critical 3D structural features make a given ONH robust.

Results: The DGCNN (area under the receiver operating curve [AUC]: 0.76 ± 0.08) outperformed the autoencoder (AUC: 0.70 ± 0.07) and the random forest classifier (AUC: 0.69 ± 0.05). Interestingly, to assess ONH robustness, the DGCNN mainly used information from the scleral canal and the LC insertion sites.

Conclusions: We propose an AI-driven approach that can assess the robustness of a given ONH solely from a single OCT scan of the ONH, and without the need to perform biomechanical testing. Longitudinal studies should establish whether ONH robustness could help us identify fast visual field loss progressors.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Application of Artificial Intelligence-Based Dual-Modality Analysis Combining Fundus Photography and Optical Coherence Tomography in Diabetic Retinopathy Screening in Community Hospitals

*First Author: Qingchen **LI***
*Co-Author(s): Rui **LIU***

Purpose: To assess the feasibility and clinical utility of artificial intelligence (AI)-based screening for diabetic retinopathy (DR) and macular edema (ME) by combining fundus photos and optical coherence tomography (OCT) images in community hospitals.

Methods: Fundus photos and OCT images were taken for 600 diabetic patients. Ophthalmologists graded these fundus photos according to the ICDR Severity Scale as the ground truth. Two existing trained AI models were used to classify the fundus images into DR grades, and to detect concomitant ME from OCT images. The criteria for referral were DR grades 2–4 and/or the presence of ME. The sensitivity and specificity of AI grading were evaluated. The number of referable DR cases confirmed by ophthalmologists and

AI was calculated.

Results: DR was detected in 81 (13.5%) participants by ophthalmologists and in 94 (15.6%) by AI, and 45 (7.5%) and 53 (8.8%) participants were diagnosed with referable DR by ophthalmologists and by AI, respectively. Those of AI for detecting DR were 91.67%, 96.92% and 0.944. For detecting referable DR, the values of AI were 97.78%, 98.38% and 0.981. ME was detected from OCT images in 49 (8.2%) participants by ophthalmologists and in 57 (9.5%) by AI, and the sensitivity, specificity and AUC of AI were 91.30%, 97.46% and 0.944. When combining fundus photos and OCT images, the number of referrals identified by ophthalmologists increased from 45 to 75 and from 53 to 85 by AI.

Conclusions: AI-based DR screening has high sensitivity and specificity and may feasibly improve the referral rate of community DR.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Automated Classification of Angle Closure Mechanisms Based on Anterior Segment Optical Coherence Tomography Images via Deep Learning

*First Author: Ye **ZHANG***
*Co-Author(s): Shuning **LI**, Ningli **WANG**, Qing **ZHANG***

Purpose: To develop and validate deep learning algorithms that identify and classify angle closure (AC) mechanisms based on anterior segment optical coherence tomography (ASOCT) images.

Methods: Cross-sectional study. Participants of the Handan Eye Study (HES) aged ≥ 35 with AC on gonioscopy and/or on ASOCT images were included. ASOCT images were manually labeled as pupillary block (PB), plateau iris configuration (PIC), or thick peripheral iris roll (TPIR) to indicate the predominant AC mechanism (ground truth). Deep learning architecture named comprehensive mechanism decision net (CMD-Net) was developed to simulate the identification of image-level AC mechanisms by human experts. Cross-validation was performed to optimize and evaluate the model, and human-machine comparison was conducted on both a held-out test set and a separate test set to establish generalizability.

Results: A total of 11,035 ASOCT images from 2,833 AC eyes of 1,455 participants were included. 8,828 images were used as the cross-validation test set and 2,207 images as the held-out test set. 228 images from 35 patients of our eye center with AC on gonioscopy formed the separate test set. For classifying AC mechanisms, our algorithm achieved a mean area under the receiver operating characteristic curve (AUC) of 0.980 on the cross-validation set, 0.977 on the held-out test set, and 0.988 on the separate test set. The best performing ophthalmologist reached an AUC of 0.903 on the held-out test set and 0.891 on the separate test set.

Conclusions: Our study demonstrates the effective classification of AC mechanisms from single ASOCT images using a deep learning algorithm.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Comparison of Retinal, Slit-Lamp and Anterior Diffuse Photograph-Based Deep Learning Models in Detecting Visually Significant Cataract

*First Author: Yih-Chung **THAM***
*Co-Author(s): Ching-Yu **CHENG**, Jocelyn **GOH**, Xiaofeng **LEI**, Xinxing **XU**, Liu **YONG***

Purpose: To compare the performances of deep learning (DL) algorithms across retinal, slit lamp, and anterior diffuse photos for detection of visually significant cataract.

Methods: Using approximately 25,000 ocular photographs, we developed three single-modality DL models (retinal photo-, slit-lamp photo-, and anterior diffuse photo-based DL models) and an Ensemble model (combining the three single modality models). Visually significant cataract was defined as cataract (based on the Wisconsin cataract grading system) with best-corrected visual acuity of <20/60. The Singapore Malay Eye Study was used as training (N=3762, 7093 eyes) and internal test set (N=888, 1649 eyes). The Singapore Indian Eye Study (N=2931, 5579 eyes) and the Singapore Chinese eye study (N=2974, 5658 eyes) were used as external test sets.

Results: In the internal test set, the area under the curve (AUC) for the retinal photo-based DL model was 96.8% (95% CI, 95.4-98.1), higher than the slit photo-based model (AUC= 93.4%; 95% CI, 90.1-96.7; p = 0.01) and anterior photo-based model (AUC=94.4; 95% CI, 92.3-96.4; p = 0.04). There was no significant difference in AUC between retinal photo-based model and the Ensemble model (AUC=96.5%, p = 0.57). This trend was consistently observed across the two external test sets.

Conclusions: When detecting visually significant cataract, retinal photo-based DL performs better than slit photo- and anterior photo-based models, and comparably to the Ensemble model. This suggests that DL using retinal photographs as single input is potentially a more suitable community screening tool for cataract.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Deep Learning-Based Glaucoma Progression Prediction Guided by Generative Algorithms

*First Author: Shaista **HUSSAIN***
*Co-Author(s): Justin **LO**, Damon **WONG***

Purpose: To assess if synthesized follow-up optical coherence tomography (OCT) images, representative of glaucoma induced degradation, can help to boost the accuracy of predicting glaucoma progression.

Methods: This work is based on a longitudinal study of 105 glaucomatous eyes of 100 patients who underwent trabeculectomy and were examined before trabeculectomy (baseline) and for 4 follow-up visits over one-year (3, 6, 9 and 12 months) with multimodal data recorded for each patient, including OCT images, visual field mean deviation (VF MD) and the intraocular pressure (IOP) values. A deep learning framework was proposed to predict changes in VF MD at M12 based on multimodal inputs from earlier patient visits combined with synthesized M12 OCT images. For this purpose, firstly, a generative adversarial network (GAN) was used to simulate OCT images at M12, followed by a multimodal model - convolutional neural network (CNN) to learn OCT image features with long short-term memory (LSTM) to learn sequences, used to predict the progression/changes at M12.

Results: The mean area under the curve (AUC) for predicting VF changes at M12 was 0.7725, 0.7862 and 0.8069 using multimodal inputs until M3, M6 and M9 respectively. Moreover, when M12 OCT images synthesized by GAN were included, the corresponding mean AUC values were 0.7706, 0.8082 and 0.8131.

Conclusions: Multimodal longitudinal data can be used to predict the changes in VF MD of glaucoma patients 3 months in advance. When synthesized future OCT images are included, similar prediction performance can be achieved 6 months in advance, thereby allowing early intervention and treatment.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Evaluating the Accuracy of Conditional Class Generation of Synthetic Diabetic Retinopathy Fundus Images Using Style-Based Generative Network

*First Author: Gilbert **LIM***
*Co-Author(s): Melissa **DU**, Kabilan **ELANGOVAN***

Purpose: This study experimented the use of state-of-the-art style-based generative technique to synthesize class specific Diabetic Retinopathy (DR) images via conditional-class generation and further evaluated the accuracy of class-based generation using SELENA+, a multi-class DR classification model.

Methods: StyleGAN2-ADA was used as the generative technique to synthesize class-specific diseased retinopathy fundus images using publicly available EyePACS dataset. The dataset consists of 5 classes (No DR - 0, Mild DR - 1, Moderate DR - 2, Severe DR - 3 and Proliferative DR - 4). StyleGAN2-ADA was trained with EyePACS dataset to synthesize class specific DR images using conditional class generation. The generative model was then used to synthesize 5,000 images from classes (1 - 4). The generated images were then classified by the SELENA+ (DR classification algorithm) to evaluate the accuracy of class-conditional generation of StyleGAN2-ADA.

Results: The training of the StyleGAN2-ADA model converged to a Frechet Inception Distance (FID) of 3.465. For DR classification, images generated for classes 1, 2, 3 and 4 had SELENA+ scores of 0.4754 ± 0.3994, 0.5740 ± 0.4891, 0.8311 ± 0.6076 and 1.3071 ± 0.8589 respectively. This suggests that the model was able to generate images with increasing severity of DR presence, according to the desired class. However, these score distributions remain shifted from held-out EyePACS test data (0.7341 ± 0.5898, 1.4352 ± 0.8533, 2.3117 ± 0.7139, 2.2999 ± 1.0332 respectively)

Conclusions: Conditional generation of retinal images through StyleGAN2-ADA holds potential for the augmentation of rarer DR classes. However, more work may need to be done to better reconcile the distribution of generated images, with real data.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Explainable Deep Learning System for Automatic Diagnosis of Thyroid Associated Orbitopathy Using Facial Images

*First Author: Hoi Ching **CHEUNG***
*Co-Author(s): Fatema Mohamed Ali Abdulla **ALJUFAIRI**, Hin Yin **CHAN**, Chun Hei **FU**, Chong **LUNG**, Kwan Yiu **SIU***

Purpose: Thyroid-associated orbitopathy (TAO) is the most common orbital disease in adults which causes visual disability, orbital deformity, eye discomfort and diminished quality of life. The objective of this study is to develop an explainable deep learning system that automatically diagnoses TAO by analyzing facial images.

Methods: The deep learning system consists of the periocular landmarks localization network (PLN) that predicts multiple periocular landmarks on the facial images, and the TAO diagnosis network (TDN) that treats the task as a binary classification problem on facial images and differentiates TAO patients from non-TAO patients. Dataset consisting of 302 and 289

facial images of newly referred TAO patients and non-TAO subjects were annotated and applied to train the artificial intelligence model. The generalization ability of the system was evaluated using the 3-fold cross-validation strategy. The predictive performance of our deep learning system was measured using the sensitivity, specificity, and the area under the receiver operating characteristic curve (AUC). The critical periorbital regions for classification were demonstrated by the heat maps.

Results: The model achieved an overall AUC of 99.7%. The sensitivity and specificity were 99.7% and 94.5% respectively. The heatmaps revealed that both upper and lower eyelids were identified as the critical regions.

Conclusions: This deep learning system can detect TAO patients using facial images with excellent accuracy and high reliability. The applicability of this system should be further explored in larger TAO and GD cohorts. This may be deployed to support early detection and triage progressive TAO cases to specialist evaluation for better treatment outcomes.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Risk of Autoimmune Diseases Following Optic Neuritis: A Nationwide Population-Based Cohort Study

*First Author: Chee Ming **LEE***

Purpose: Optic neuritis is (ON) is an immune-mediated disease; however, the association between ON and autoimmune diseases (AD) remains unclear. This study aimed to identify the incidence rate and adjusted hazard ratio (aHR) of AD in patients with ON.

Methods: This nationwide, population-based, retrospective cohort study collected patients' data between 1999 and 2013 from the National Health Insurance Research Database in Taiwan. A total of 9,235 patients were included. Using 1:4 propensity scoring, 1,847 patients were enrolled in the ON group and 7,388 in the non-ON group. Follow-up started from index date and endpoint was diagnosis of new-onset AD including, myasthenia gravis, psoriatic arthritis, systemic lupus erythematosus, rheumatoid arthritis, and ankylosing spondylitis.

Results: Kaplan-Meier curves depicted that patient with ON had higher cumulative incidence of AD than patients without ON. Cox proportional hazard regression showed that patients with ON were at a high risk of AD (aHR: 1.40; 95% C.I., 1.05–1.87), including MG (aHR: 4.16, 95% C.I.: 1.33–12.94), SLE (aHR: 3.33, 95% C.I.: 1.24–8.97), and AS (aHR: 2.86, 95% C.I.: 1.54–5.31). Subgroup analysis provided that patients with ON aged below 65 years (aHR: 1.42, 95% C.I.: 1.03–1.96) or who were females (aHR: 1.59, 95% C.I.: 1.11–2.27) had a significantly increased risk of AD compared to respective controls. The use of corticosteroids reduced the risk of AD in patients with ON (aHR for corticosteroids non-users: 1.46, 95% C.I.: 1.03–2.07).

Conclusions: Patients with ON presented with a high risk of AD, especially those who were young or females. Corticosteroids attenuated the link between ON and AD.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Smartphone-Acquired Anterior Segment Images for Deep Learning Prediction of Anterior Chamber Depth: A Proof-of-Concept Study

*First Author: Chaoxu **QIAN***
*Co-Author(s): Ching-Yu **CHENG**, Yixing **JIANG**, Zhi Da **SOH**, Hua **ZHONG***

Purpose: To develop a deep learning (DL) algorithm for predicting anterior chamber depth (ACD) from smartphone-acquired anterior segment photographs.

Methods: For algorithm development, we included 4,157 eyes from 2,084 primary school students (aged 11–15 years). All participants had with ACD measurement measured with Lenstar and anterior segment photographs acquired from a smartphone, which was mounted on slit lamp and under diffuses lighting. The anterior segment photographs were randomly selected by person into training (80%) and testing (20%) dataset. A convolutional neural network was developed to predict ACD based on these photographs. The mean absolute error (MAE), coefficient of determination (R2) and Bland Altman plot were evaluated.

Results: In the test set of 831 eyes, the mean measured ACD was 3.06 ± 0.25 mm, and the mean DL-predicted ACD was 3.10 ± 0.20 mm. The MAE was 0.16 ± 0.13 mm, and R2 was 0.40 between the predicted and measured ACD. The overall mean difference was −0.04 ± 0.20mm, with 95% limits of agreement ranging between −0.43 and 0.34 mm. The generated saliency maps showed that the algorithm mainly utilized central corneal region (i.e., the site where ACD is clinically measured typically) in making its prediction, providing further plausibility to the algorithm's prediction.

Conclusions: We developed a DL algorithm to estimate ACD-based on smartphone-acquired anterior segment photographs. Upon further validation, our algorithm may be further refined for use as an ACD screening tool in rural localities where means of assessing ocular biometry are not readily available.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

The Philippine Peso Bill as an Alternative Near Visual Acuity Chart in Filipino Eyes: A Pilot Study

First Author: Lee Jerome Iii ***BRIONES***
Co-Author(s): James Paul ***GOMEZ****, Ed* ***LEUENBERGER***

Purpose: This study aimed to determine if near visual acuity measurements using a Philippine peso bill are comparable to a standard Jaeger chart.

Methods: This is a cross-sectional study comparing the near visual acuity measurements of a Philippine peso bill and a Jaeger chart among 60 subjects. LogMAR scores from the two methods were analyzed using Wilcoxon Mann-Whitney test. The relationship of the logMAR scores between these methods was determined using Spearman rank order correlation. The Bland-Altman plot was used to determine the comparability between quantitative measurements for near visual acuity using the standard Jaeger chart (reference) and the Philippine peso bill.

Results: There were no significant differences in the proportion of Jaeger scores and mean logMAR equivalents between the two methods ($p > 0.05$). The scatter plot diagram shows a positive upward trend with a very strong and significant correlation between logMAR scores of Jaeger chart and Philippine peso bill methods ($r = 0.9258$, $p < 0.0001$). With a concordance correlation coefficient of 0.9505, there is a high agreement between these two measures. The Philippine peso bill overestimates the Jaeger chart visual acuity by 0.04 logMAR units. We suspect that the contrast between the background color and the serial numbers of the peso bill may have brought about this outcome.

Conclusions: The Philippine peso bill may be used as an alternative measuring tool for near visual acuity. However, there is a tendency to overestimate the scores obtained using the Philippine peso bill. Future studies are recommended to validate the results in a tele-ophthalmology setting.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Automatic Identifying Morphological Patterns of Diabetic Macular Edema on Optical Coherence Tomography Images Using Deep Learning

First Author: Xin ***YE***

Purpose: To engineer deep learning (DL) models that can identify morphological patterns in patients with diabetic macular edema (DME) using optical coherence tomography (OCT) images.

Methods: An artificial intelligence (AI) system was developed by using 1,346 qualified OCT macular images from 128 patients with DME. We adopted a Split Subspace Attention Network (SSA-Net) architecture to train seven independent models to identify the following seven morphological patterns: intraretinal fluid (IRF), subretinal fluid (SRF), pigment epithelial detachment (PED), hyperreflective retinal foci (HRF), Müller cell cone disruption (MCCD), subretinal hyperreflective material (SHRM), and intra-cystic hyperreflective (ICHRM). The performance was quantified using the area under the receiver operating characteristic (AUC), sensitivity, specificity, and confusion matrix. The «Asia Pacific Ophthalmology Society Big Data Competition» public dataset was used to train and test our DL models individually, which consists of 33,853 OCT images of 2,185 patients.

Results: For the identification of DME, the AUCs for the detection of seven DME morphological patterns were as following: 0.980 for IRF, 0.995 for SRF, 0.999 for PED, 0.990 for SHRM, 0.908 for MCCD, 0.887 for HRF, and 0.972 for ICHRM. The identification of these patterns was also interpretable through the visual explanations provided by heatmaps. The accuracy for the detection of three DME morphological patterns (i.e., IRF, SRF, PED) in the public dataset was 0.928, 0.936, and 0.975, respectively.

Conclusions: We developed a convolutional neural network (CNN)-based DL AI system for the identification of morphological patterns in patients with DME and achieved high accuracy and visualization.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Detection of Alzheimer's Disease and Mild Cognitive Impairment Using Different Machine Learning Classifiers

First Author: Chi ***LI***
Co-Author(s): Christopher Li-Hsian ***CHEN****, Jacqueline* ***CHUA****, Damon* ***WONG***

Purpose: To develop different machine learning (ML) classifiers to detect mild cognitive impairment (MCI) and Alzheimer's disease (AD) using a combination of multimodal retinal and demographic data.

Methods: This cross-sectional study contains 83 eyes from 56 AD, 145 from 104 MCI, and 89 from 62 cognitively normal control participants. Circumpapillary retinal nerve fiber layer (cpRNFL) thickness, ganglion cell complex (GCC) thickness, ocular anatomical parameters (optic disc [ratio, orientation, and area], fovea [angle and distance], and retinal vessel density), and refractive error data were extracted.

Five machine learning models were developed and compared, namely logistic regression, support vector machine, random forest classifier, naïve bayes, extreme gradient boosted tree classifiers. Their corresponding areas under the receiver operating characteristic curves (AUCs) were compared between the different classifiers.

Results: The cpRNFL thickness (AUC=0.52; reference), GCC thickness (AUC=0.69; p = 0.06) and ocular anatomical factors (AUC=0.65; p = 0.47) provided comparable diagnostic performance for the discrimination of AD/MCI cases from controls. The ML algorithm with the greatest AUC for predicting AD/MCI (AUC=0.86) was extreme gradient boosted tree classifier. The improvement in AUC from extreme gradient boosted tree was statistically significant when compared to using cpRNFL (p = 0.008), GCC (p = 0.18), and ocular anatomical factors (p = 0.01), alone.

Conclusions: ML model improved the detection of AD and MCI based on optical coherence tomography (OCT) retinal features which can be used as a potential biomarker for screening of high-risk individuals with early cognitive impairment.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Federated Machine Learning in Healthcare: A Systematic Review on Clinical Applications and Technical Architecture

*First Author: Zhen Ling **TEO***
*Co-Author(s): Daniel **TING**, Ting Fang **TAN***

Purpose: Federated learning (FL) is a distributed machine learning framework gaining traction due to increasing health data privacy protection needs.

Methods: We conducted a systematic review of FL applications in healthcare. We identified relevant articles published in PubMed, Web of Science, Scopus, Embase, Institute of Electrical and Electronics Engineers Xplore, ArXiv, Springerlink, CINAHL and Google Scholar, up to June 13, 2022, in English. Critical review of these articles included data and imaging modalities, technical architecture, number of participating sites, application settings and intellectual property regulation.

Results: A total of 13,726 articles were evaluated with 283 articles included in the final analysis. The majority of articles were proof-of-concept research and only 9.2% had real-life application of FL. Among those with real-life application, the number of participating sites ranged from 2 to 314 and FL was most used in radiology. FL was robust to a variety of data types with medical images being the most common at 32.8% followed by clinical data and electronic medical records (23.9%) and Internet of Things (11.9%). The majority of studies used neural network models (73.9%), horizontal data partitioning (90.0%) and a centralized communication architecture (88.8%). 25.4% of studies included further privacy mechanisms including blockchain (8.6%). 15.3% of studies found FL to have comparable results with their centralized learning counterparts. Despite secure collaboration being key in FL, details on inventorship contribution and intellectual property distribution were scarce.

Conclusions: We provide a comprehensive systematic review of FL in healthcare and highlight the need to address the barriers to clinical translation.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Retinoblastoma and Social Media Discussions: A Machine Learning Approach

*First Author: Wai Chak **CHOY***
*Co-Author(s): Li Jia **CHEN**, Wai Kit **CHU**, Esther Wai Chi **TANG**, Suhan Emily **WONG**, Jason **YAM***

Purpose: Despite treatment advancement and high curability with early presentation, retinoblastoma outcome disparities were evident globally. Social media are used for patient education and support in other cancers. We hence aim to characterize their applications for retinoblastoma and discussions across regions, and thereby identify reasons for management delay.

Methods: Posts on retinoblastoma were extracted from Twitter and Weibo from 01/01/2011 to 01/04/2022. We trained a BERT Model to identify relevance and conducted sentiment analysis with snowNLP. Hierarchical Dirichlet Process was trained to identify topics. Network analysis was conducted to identify key drivers for discussions. Retinoblastoma outcomes were obtained from our prior systemic review and meta-analysis, which covered articles published between Jan 1, 1981 and Oct 8, 2021.

Results: A total of 2,299,828 and 6,037 posts were extracted from Twitter and Weibo. BERT model for Twitter and Weibo attained AUC score of 96.11% and 98.83% respectively. Posts for retinoblastoma campaign (55.35%) and patient support (74.36%) were the most prevalent on Twitter and Weibo respectively. 49.80% of posts requesting support were unattended. Regions with more reluctance towards enucleation were associated with poorer survival. (beta=0.217, p = 0.0217). Network analysis for discussions from regions with poorer survival and higher reluctance revealed infrequent participation by healthcare professionals, media outlets and patient support groups.

Conclusions: There were extensive applications of social media for retinoblastoma education and support. Targeted information dissemination by trained personnel may improve acceptance in vulnerable zones and hence outcomes. Timely support should be

enhanced for patients who expressed their needs to promote early management.

Cataract and Cataract Surgery

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

A Prospective Study Comparing Anterior Segment Parameters and IOL Calculations Between an Optical Biometer and a Combined Machine

*First Author: Patricia Kaye **SY***
*Co-Author(s): Lawrence **PE***

Purpose: This study aims to compare a combined corneal topography/tomography/biometry machine (Galilei G6TM) and a stand-alone optical biometer (IOL Master 500 TM) in the clinical setting by comparing their differences in anterior segment parameters and subsequent IOL power calculations in eyes diagnosed with cataract.

Methods: A prospective observational study was performed. A total of 96 eyes of 52 patients were examined preoperatively using the IOL Master 500 and the Galilei G6. Informed consent was obtained from all patients. The following indices were compared for statistical differences: axial length (AXL), anterior chamber depth (ACD), keratometry values (K), and subsequent IOL calculations targeting emmetropia using the SRK/T and Haigis formulae.

Results: Using a combination of paired T-test and Wilcoxon signed-rank test, it was found that the intraclass correlation coefficient was high for all measures with a minimum of 0.877 for ACD and up to 0.998 (almost perfect reliability) for AXL. Out of all the parameters, only the IOL calculation using SRK/T was statistically significant with a p-value of 0.017. The other parameters had a p-value of > 0.05, meaning there was no statistical difference between the two machines. There were 26 eyes and 24 eyes with failed measurement using the Galilei G6 and IOL Master 500, respectively. There was substantial agreement (k = 0.72) between the two machines in terms of success and failure rates.

Conclusions: The combined corneal machine Galilei G6 provides comparable results with the stand-alone optical biometer IOLMaster 500 in determining anterior segment parameters. There was good repeatability and agreement between the two machines with similar rates of success/failure.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Clinical Outcomes in Six Months With Bilateral Mix-and-Match Implantation of Extended Depth of Focus and Trifocal Intraocular Lens

*First Author: Jae Yong **KIM***
*Co-Author(s): Hyerin **AHN**, Hun **LEE**, Ko Eun **LEE**, Sanghyu **NAM**, Hungwon **TCHAH***

Purpose: To evaluate the clinical outcomes at 6 months after mix-and-match cataract surgery using an Extended Depth of Focus (EDOF) and a trifocal intraocular lens (IOL)

Methods: All patients underwent bilateral cataract surgery who had met all inclusion and exclusion criteria. Symfony or Symfony Toric EDOF IOL (J&J Inc.) was implanted in the dominant eye, and PanOptix or PanOptix Toric trifocal IOL (Alcon Inc.) in the non-dominant eye. Uncorrected distance visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA), uncorrected near visual acuity(UNVA), corrected distance visual acuity(CDVA), defocus curve, contrast sensitivity, and satisfaction questionnaire were evaluated at 1 month and 6 months after surgery.

Results: A total of 68 eyes of 34 patients enrolled. 6 months after surgery, mean UDVA was 0.07 ± 0.11 logMAR in EDOF IOL-implanted eyes, 0.09 ± 0.11 logMAR in trifocal IOL-implanted eyes, and 0.00 ± 0.01 logMAR in both eyes. Mean UIVA was 0.09 ± 0.08 logMAR in EDOF IOL-implanted eyes, 0.11 ± 0.14 logMAR in trifocal IOL-implanted eyes, and 0.03 ± 0.04 logMAR in both eyes. Mean UNVA was 0.46 ± 0.22 logMAR in EDOF IOL-implanted eyes, 0.24 ± 0.20 logMAR in trifocal IOL-implanted eyes, and 0.18 ± 0.15 logMAR in both eyes. 86.2% of patients satisfied at 6 months.

Conclusions: Mix-and-match cataract surgery with EDOF and Trifocal IOL implantation shows a good visual outcome for distance, intermediate, and near vision over 6 months. Most of patients satisfied with their visual quality, but patients dissatisfied with dry eye symptoms and poor near vision than photopic symptoms like glare or halos.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Effects of Ionizing Radiation Exposure on Cataract Among Radiation Workers of Interventional Cardiology in Indonesia

*First Author: Wida **SETIAWATI***
*Co-Author(s): Gitalisa **ADRIONO**, Joedo **PRIHARTONO**, Siska **SURIDANDA DANNY**, Syska **WIDYAWATI**, Benny **ZULKARNAIEN***

Purpose: To determine the prevalence of radiation-induced cataract and correlate with radiation exposure dose and radiation protection equipment usage among radiation workers of interventional cardiology.

Methods: A cross-sectional and retrospective case-control study. One hundred and eighty subjects were included. Prevalence of radiation-induced cataract was assessed using Scheimpflug analysis on the Pentacam-Oculus device. Individual cumulative radiation exposure dose and radiation protection equipment usage of subjects were identified from questionnaire and personal dosimeter.

Results: The prevalence of radiation induced cataract was 16.7%. Median cumulative radiation dose was 0.8 (0.1-35.6) Gy. A positive correlation was found between cumulative radiation dose and lens density (R Spearman = 0.64). This study showed 83.9% subjects used ceiling-suspended shield in 71-100% of their working period, however the majority of subjects (40.6%) did not wear protective eyewear. Statistically significant increasing risk of radiation-induced cataract was found along with unresponsive use of radiation protection equipment. The subjects using ceiling-suspended shield in 31-50% of their working period were increasing their cataract risk by 10.80 times (95% CI 1.05-111.49, p = 0.044). Meanwhile, the subjects using protective eyewear in 51-70% of their working period were increasing their cataract risk by 8.64 times (p = 0.001). Subjects who did not wear protective eyewear had an OR 164.3 (95% CI 19.81-1363) compared to those who wore protective eyewear.

Conclusions: Radiation-induced cataract among radiation workers of interventional cardiology were dependent on the radiation exposure dose and the use of radiation protection equipment. Therefore, there was urgent need to improve their compliance to follow the radiation safety recommendation.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Evaluation of Optical Aspects of Ophthalmic Viscosurgical Device During Femtosecond Laser-Assisted Cataract Surgery

*First Author: Ho Seok **CHUNG***
*Co-Author(s): Jae Yong **KIM**, Hun **LEE**, Hungwon **TCHAH***

Purpose: In femtosecond laser-assisted cataract surgery, capsulorhexis can be performed with an ophthalmic viscosurgical device (OVD) filled in the anterior chamber. We investigated changes in laser properties in various optical aspects such as focal shifting, reflection, and absorption associated with OVD.

Methods: We simulated by calculating the amount of laser power attenuation due to reflection and spot size change using Gullstrand eye model. Additionally, we calculated the absorption coefficient by measuring the laser power passing through the OVD with a laser meter and evaluated the effect of absorption due to the OVD.

Results: In our simulation, power attenuation due to reflection was a maximum of 0.07%, and the power attenuation was 0.08% even when considering the change according to the incident angle. The power attenuation due to the change of the spot size at the focus was 0.005%. Due to the absorption of the OVD, a power increase of up to 13.5% was required to obtain the same effect as through the aqueous humor.

Conclusions: The main laser power attenuation associated with OVD is due to laser absorption through the OVD rather than reflections or changes in spot size and can also be caused by laser cavitation bubbles.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Long-term Assessment of Posterior Capsule-IOL Optic Adherence and Its Impact on Nd:YAG Capsulotomy Rate After Implantation of Hydrophobic Acrylic IOL With Ozone Surface Modification

*First Author: Jeewan **TITIYAL***
*Co-Author(s): Manpreet **KAUR**, Sridevi **NAIR***

Purpose: To assess PC-IOL optic adherence in surface modified IOL and impact on Nd:YAG capsulotomy rate and visual quality.

Methods: Prospective interventional study of 93 eyes implanted with UV/ozone surface modified hydrophobic acrylic IOL. Primary outcome was PC-optic adhesion on ASOCT and Nd:YAG capsulotomy rate. Secondary outcome was visual quality. Follow up

performed on POD 1, 1 and 2 years.

Results: On POD 1, complete PC-optic adhesion was seen in 2.9% cases. Complete PC-optic adhesion was seen in 67.6% cases at 1 year and 73.5% at 2 years. Strehl ratio (p = 0.01) and modulation transfer function (p = 0.03) were significantly better with complete PC-optic adhesion. Residual PC-optic distance positively correlated with total HOA (Pearson coeff=0.4, p = 0.02). At 2 years, PCO developed in 7.5%; of these, 85.7% had persistent PC-optic non-adhesion (p = 0.001). Nd:YAG capsulotomy was needed in 3.2%; all these cases had persistent PC-optic non-adhesion.

Conclusions: Complete PC-optic adhesion is associated with significantly less Nd:YAG capsulotomy rate and correlates with superior visual quality.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Management of Higher Order Aberrations (HOA) in Irregular Corneas Using the IC-8 Small Aperture IOL

*First Author: Christopher **GO***
*Co-Author(s): Colin **KONG**, Chameen **SAMARAWICKRAMA**, Ilan **SEBBAN***

Purpose: To investigate the effectiveness and outcomes of the IC-8 small aperture intraocular lens (IOL) in eyes with significant corneal irregularities and reduced visual acuity, contrast sensitivity and higher mean RMS values.

Methods: A 3-year, two-surgeon, multicenter, non-randomized, retrospective case series of consecutive eyes undergoing IC-8 (AcuFocus Inc, Irvine, CA) small aperture IOL insertion following cataract extraction for management of visually significant corneal irregularities. Fifty-two eyes from 39 patients were included in the study and data including pre and post operative visual acuity, and higher order aberration (HOA) using mean RMS values from Pentacam (OCULUS, Germany) and corneal wavefront analyzer were collected.

Results: Pre-operative BCVA ranged from 20/16 to 20/640 (median VA=20/40, Q1=20/30, Q3=20/60) and this improved post-operatively to 20/16 to 20/80 (median=20/20, Q1=20/20, Q3=20/30). This represents a 2-line improvement in 48% of patients (n=24). The most common aetiologies of corneal irregularities were ectasia (n=13) of which keratoconus was the most common(n=10); and prior refractive laser (n=13). Other aetiologies include corneal scars from previous herpetic infections, ocular trauma, and lipid keratopathy. The HOA RMS ranged from 0.187 to 3.152µm (M=0.557µm, IQR=0.411). Interestingly, 43% of patients (n=15) with post-operative refraction had refractive surprise (>1D) following their surgery.

Conclusions: The IC-8 IOL is a safe and valuable option to improve patients' visual acuity in eyes with corneal irregularities. However, refractive outcome predictability remains a challenge, mainly due to variability in biometric measurements, and further studies are required to optimize formula adaptation for these patients.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

One-Year Evaluation of Visual Performance of Small-Aperture IOL Implantation in Post-corneal Refractive Surgery Cataractous Eyes

*First Author: Jimmy Jarvis Gene **LO***
*Co-Author(s): Robert **ANG***

Purpose: To evaluate visual performance of cataractous eyes treated contralaterally with a small aperture IOL with a previous history of laser refractive surgery.

Methods: This is a prospective, single site study. Fifteen cataract patients with a history of LASIK (N = 13) or RK (N = 2) were treated with contralateral implantation of an IC-8 IOL in one eye and a monofocal IOL in their fellow eye. The refractive target for IC-8 IOL eyes was -0.75 D and plano for the fellow monofocal IOL eyes. Manifest Refractive Spherical Equivalent (MRSE), Uncorrected (UDVA, UIVA, UNVA) monocular and binocular visual acuity for near, intermediate and distance vision in the IC-8 eye were assessed at Month 12. Visual acuity results presented in logMAR ± standard deviation.

Results: At Month 12, patients achieved monocular UCVA of 20/25 or better in 93% for UDVA, 79% for UIVA and 71% for UNVA in the IC-8 eye. The mean monocular UDVA, UIVA, and UNVA in the IC-8 eye was 0.04 logMAR ± 0.06, 0.03 logMAR ± 0.13, and 0.08 logMAR ± 0.13. Binocularly, vision of 20/25 or better was achieved 100% for UDVA, 93% for UIVA, and 79% for UNVA. Patients achieved mean binocular UDVA, UIVA, and UNVA of 0.01 logMAR ± 0.04, 0.01 logMAR ± 0.11, and 0.07 logMAR ± 0.11. The mean MRSE for the IC-8 eyes was -0.54 D ± 0.73 and -0.09 D ± 0.66.

Conclusions: One year results show the IC-8 IOL provides good distance, intermediate and near monocular uncorrected visual acuity for eyes with a history of prior refractive surgery.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Postoperative Capsular Bag Distension Syndrome and Outcome of Treatment: A Retrospective Study

*First Author: Shim Ni **LIM***
*Co-Author(s): Michael **NGU***

Purpose: To profile the patient characteristics, clinical presentation for capsular bag distension syndrome (CBDS) and outcome of the treatment with Neodymium:Yttrium-Aluminum-Garnet (Nd:YAG) laser capsulotomy.

Methods: A total of ten cases postoperative CBDS were identified between July 2020 and July 2022 and were retrospectively reviewed. Demographic data, axial length (AXL) and model of intraocular lens implanted were recorded. Visual acuity and spherical refractive status were measured pre and post Nd:YAG laser capsulotomy.

Results: There were four male and six female patients with mean age of 65.5 years being diagnosed to have CBDS. The AXL of eyes diagnosed with CBDS ranges from 21.51mm to 24.54mm with mean of 23.11mm. Eight cases of CBDS were diagnosed within one month postoperatively with two cases diagnosed six months postoperatively. There were eight cases of type 1 CBDS and one case each for type 2 and type 3 CBDS. All ten cases were found to have the same model of intraocular lens implanted. Postoperative CBDS induced myopic shift seen in all ten eyes with mean of -2.32 Diopter. All cases were treated with Nd:YAG laser capsulotomy; four were anterior capsulotomy and six were posterior capsulotomy. Visual acuity post Nd:YAG laser capsulotomy improved in all CBDS cases except one case due to vitreous hemorrhage secondary to proliferative diabetic retinopathy.

Conclusions: Postoperative CBDS causing reduced visual acuity with myopic shift can be improved with Nd:YAG laser capsulotomy.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Presbyopia Correction With Different Modern Intraocular Lenses

*First Author: Mike **HOLZER***
*Co-Author(s): Evelyn **KNOBLOCH**, Tanja **RABSILBER***

Purpose: Presbyopia correction and spectacle independency following cataract surgery is a field with increasing importance. Several intraocular lenses with different distances for focal points are currently available.

Methods: Cataract surgery and refractive lens exchange outcomes following implantation of trifocal (Alcon AcrySof IQ PanOptix and Zeiss AT LISA tri) and lenses with increased depth of focus (Alcon AcrySof IQ Vivity, Johnson & Johnson TECNIS Symfony and TECNIS Eyehance) were analyzed. Visual outcomes, achieved refraction, defocus curve and patient satisfaction were analyzed for 166 eyes and compared to outcomes published in peer-reviewed articles.

Results: All surgeries were uneventful. Median monocular and binocular uncorrected visual acuities increased in all IOL groups analyzed. Median distance corrected visual acuity scores were in the trifocal PanOptix group: CDVA -0.00, DCIVA -0.04 and DCNVA 0.00 and in the trifocal AT LISA group: CDVA -0.08, DCIVA 0.00 and DCNVA 0.03. Intermediate and near visual acuities were lowest in the Eyehance group (DCIVA 0.09) whereas the Vivity and Symfony group showed a comparable intermediate distance visual acuity (DCIVA 0.04 and -0.06, respectively) to the trifocal lenses (DCIVA 0.00 and -0.04).

Conclusions: All presbyopia correcting IOLs provided good distance and - depending on the optical principle - also good intermediate and near visual acuities. Optical side effects like halos and glare perception were higher in lenses with good visual acuities at all distances. Patient and IOL selection and adjustment to individual needs is crucial.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Prevalence of Corneal Astigmatism in Pre-operative Cataract Surgery Patients in Indonesia Hospital

*First Author: Titiek **ERNAWATI***
*Co-Author(s): Maharani Kartika **ANGGRAENI**, Wilson **KHUDRATI**, Rofiqi **ROFIQ**, Okky Imanuel **SAMATHA***

Purpose: The study aimed was to analyze the prevalence of corneal astigmatism in preoperative cataract surgery patients to provide the best option for intraocular lens (IOL).

Methods: This is a cross-sectional retrospective study collected data from preoperative keratometry (K) measurements for all consecutive patients who underwent cataract surgery in Indonesia over three years. The Kolmogorov-Smirnov test was used to check the normal distribution of variables. Differences between age groups were analyzed using an analysis of variance for normally distributed and the Kruskal-Wallis test for non-normally distributed variables.

Results: A total of 1,425 eyes were enrolled in this study. There were 664 (46.6%) males and 761 (53.4%) females. The mean corneal astigmatism of 1,425 eyes was 0.91 ± 0.87. There was a significant difference

in corneal astigmatism and steep keratometry (K2) between the group of age (Kruskal-Wallis, p < 0.01).

Conclusions: In conclusion, to the best of our knowledge, this is the first study to report the prevalence of corneal astigmatism before cataract surgery in Indonesia. A number of our cases (38.5%) exhibited corneal astigmatism of 1.00 D or more, which could be effectively corrected with toric IOLs.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Swept-Source Optical Biometry IOL Master 700: Relationship of Chang-Waring Chord Measurement With Foveal Fixation in East Coast Cataract Patients

First Author: Nur Syifa Athirah Qistina ***ALIAS***
Co-Author(s): Muhd Syafi ***ABD BARI****, Aidila Jesmin* ***JABBARI****, Khairidzan* ***MOHD KAMAL***

Purpose: To evaluate the relationship of Chang-Waring chord (CW-Chord) measurement with foveal fixation using IOL Master 700 in cataract patients.

Methods: This is a retrospective cross-sectional study design whereby 278 eyes were recruited during pre-operative cataract assessment from January until September 2020. All patients were examined using IOL Master 700 and fixation images were observed using the foveal imaging portrayed. CW-Chord and other optical biometry data obtained were then compared with the foveal fixation in each patient.

Results: The study comprised 278 eyes which were equally divided with a ratio of 1:1 between each gender. Preoperatively, foveal fixation loss was seen in 45 eyes (16.2%) compared to no foveal fixation loss in 233 eyes (83.7%). The total mean value of CW-Chord was 0.28 mm (95% CI: 0.246, 0.314) (p < 0.001). The mean value of CW-Chord with foveal fixation was 0.263 mm (95% CI: 0.226, 0.300) (p < 0.001) and without foveal fixation 0.371 mm (95% CI: 0.284, 0.458) (p < 0.001). CW-Chord with foveal fixation demonstrated a statistically significantly lower mean value of 0.263 mm (SD 0.285) compared to without foveal fixation (0.371 mm [SD 0.29], t [276] = -2.327, p = 0.021).

Conclusions: CW-Chord measurement produced by the IOL Master 700 can be a diagnostic tool to countercheck the foveal fixation in all patients. CW-Chord measurement with foveal fixation was found to have a smaller value when compared to the non-foveal fixation group. This study proved that CW-Chord reading with foveal fixation using IOL master 700 was able to give more accurate results with better confidence as compared to without foveal fixation.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Thinking Out of Box (Bag) Reverse Optic Capture for Rotational Stability in Toric Intraocular Lens in High Myopes

First Author: Pavitra ***PATEL***
Co-Author(s): Nikhil ***BALAKRISHNAN***

Purpose: To highlight the outcomes of a novel technique of reverse optic capture (ROC) for improved rotational stability of toric intraocular lens (IOL).

Methods: This was a prospective interventional study of 25 eyes with axial length >25 mm undergoing cataract surgery with toric IOL implantation. To overcome the challenges of rotational stability in such cases despite implantation of a capsular tension ring (CTR); we propose a reverse optic capture. After successful implantation of the toric IOL, the optics are brought out of the bag while haptics still in the bag. Rotational stability was checked clinically on the slit lamp after pharmacological mydriasis as well as on the version image guided system.

Results: Twenty-four of the 25 eyes showed rotation of less than 3 degrees at 1 month postoperative (p < 0.05). The mean CDVA was 6/6 in all 25 eyes (p < 0.00).

Conclusions: ROC can be successfully used for patients with axial lengths more than 25mm with immaculate rotational stability.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Visual Outcomes Following Bilateral Implantation of a Monofocal Intraocular Lens Designed for Enhanced Monovision

First Author: Mun Wai ***LEE***

Purpose: To evaluate the visual outcomes following implantation of the Rayone EMV, a non-diffractive enhanced monofocal intraocular lens (IOL) which utilizes controlled positive spherical aberration over the central optical zone to extend the range of vision.

Methods: Prospective interventional case series of patients with bilateral significant cataracts undergoing phacoemulsification cataract surgery and implantation of the Rayone EMV IOL. Dominant eyes were targeted at emmetropia and non-dominant eyes at -1D. Primary endpoints were binocular uncorrected distance (UDVA), intermediate (UIVA at 66 cm) and near (UNVA at 40 cm) acuities at 1 month. Secondary outcomes were best corrected distance (BDVA), distance corrected intermediate (DCIVA) and distance corrected near (DCNVA) acuities as well as refractive predictability, binocular defocus curve and VF-14 questionnaire

scores.

Results: Sample size of 50 eyes (25 patients) has been targeted and the results of the first 42 eyes (21 patients) are reported. All visual acuities were converted to logarithm of minimum angle of resolution (logMAR) for analysis. The median UDVA, UIVA and UNVA at 1 month were 0.10, 0.10 and 0.30 respectively. The median BDVA, DCIVA and DCNVA were 0, 0.2 and 0.45 respectively. The median refractive spherical equivalent (MRSE) was -0.31 ± 0.31 and median absolute error (MAE) was 0.32 ± 0.22 with all eyes within 0.5D of target. The median VF-14 scores were 96.43.

Conclusions: The visual outcomes from bilateral implantation of the Rayone EMV IOL are promising as there is excellent refractive predictability and good binocular unaided visual acuities at all distances with good functional vision.

Feb 24, 2023 (Fri)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

"Baseball Bat" Sign: Predicting Prevalence of Intraoperative Floppy Iris Syndrome in Patients on Tamsulosin

*First Author: Nikhil **BALAKRISHNAN***

Purpose: To study the prevalence of intraoperative floppy iris syndrome (IFIS) in patients on Tamsulosin using the "Baseball Bat" sign using anterior segment OCT (AS-OCT).

Methods: This retrospective study was carried out at a single center over a period of 3 years. Fifty-four patients on Tamsulosin, scheduled for cataract surgery underwent preoperative AS-OCT. Iris pattern of these patients were studies and clinically correlated it with the occurrence of IFIS

Results: Significant thinning of the dilatory muscle region (DMR) of the iris was noted, giving it a resemblance akin to a "Baseball Bat." Based on the study, 85.18% (46 of 54)of these patients demonstrated a positive sign, while 95.65% (44 of 46) of patients with a positive sign showed signs of IFIS, denoting a strong correlation($p < 0.05\%$). None of the 8 patients with negative sign showed characteristics of IFIS.

Conclusions: «Baseball Bat" sign can be effectively used as a marker to predict IFIS in patients on Tamsulosin and intraoperative measures can be taken to prevent the same.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Comparison of Intraoperative Efficiencies and Surgical Outcomes Between Two Operating Systems: Torsional (Ozil Technology) Versus Transversal (EllipsFx Technology) Ultrasound Systems

*First Author: Naren **SHETTY***

Purpose: To compare the safety and effectiveness of the surgical phacoemulsification technology between two operating platforms: torsional (Ozil technology) and transversal (Ellips FX technology) in a prospective comparative study.

Methods: A total of 200 eyes of 200 patients were randomized into 2 groups, patients underwent preoperative assessment consisting ocular examination, OCT Macula, Specular microscopy and Pachymetry. Two senior surgeons performed phacoemulsification using either torsional or tranversal technologies as per randomization. Pre- and postoperative evaluation for above-mentioned parameters was done. Intraoperative parameters such as power, vacuum, aspiration flow rate, among others, were recorded. Operative outcome measures such as ultrasound time, mean case time was noted.

Results: Interim data (100/200 eyes) was analyzed. Both groups showed no significant difference between preoperative and postoperative pachymetry &specular microscopy counts ($p > 0.05$). No significant difference was seen in preop and post UCVA & BCVA. The median ultrasound time for Group 2 was 115.65 seconds as against 44.3 seconds in group 1. The median case time for group 2 was 534 seconds, while group 1 was 405.5 seconds (95% confidence intervals).

Conclusions: Interim results show ultrasound time & mean case time using torsional (Ozil technology) was lesser than that using tranversal (EllipxFx technology) Other parameters were found to be comparable between two groups.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Discovery of Novel Non-invasive Tear Metabolic Markers to Identify Type of Infection in Postoperative Endophthalmitis

*First Author: Naren **SHETTY***
*Co-Author(s): Pooja **KHAMAR**, Rohit **SHETTY***

Purpose: To investigate change in expression of metabolites in tears in different type of infections and correlate with clinical parameters in endophthalmitis.

Methods: Postoperative bacterial, viral or fungal

endophthalmitis (n=21), mixed endophthalmitis(n=4), postoperative inflammation(n=5) and controls(n=18) were included in this study. We performed non-targeted metabolomic analysis of aqueous/vitreous humor/tear samples using UPLC coupled to mass spectrometer. KEGG and Metaboanalyst were used for pathway and functional annotations.

Results: Metabolomic profiles illustrated distinct metabolite profiles across types of clinical samples and underlying etiology. Despite significant overlap of biological pathways, we found unique metabolites depending on infection type.

Conclusions: This study identified metabolic biomarkers and pathways that differentiate between different pathogen induced endophthalmitis and facilitate improved understanding of pathogenesis and druggable targets.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Dropless Cataract Surgery: Making It Simple, Safe yet Effective

*First Author: Abhijit **HANDIQUE***

Purpose: Traditionally all cataract surgery procedures are followed by long course of topical medications. Issues like low patient compliance, toxicity, cost and erratic outcome led to evolution of Dropless Cataract Surgery achieved by various techniques. Intravitreal deposition of long-acting corticosteroid and antibiotic mixture is the most effective way and the transzonular route is observed to be most popular in this regard. Transzonular technique is difficult to learn and seems to have certain risks over and above inaccurate dose administration. We used Pars Plana route to administer the intended dose of Antibiotic and Corticosteroid at the end of surgery and observed its efficacy, complications, and related issues.

Methods: A total of 52 cases of uncomplicated senile cataract were included for this study where 0.025 mL of 40mg/mL preservative free Triamcinolone acetonide (TCA) combined with 0.05 mL of 0.5% preservative free Moxifloxacin was injected through pars plana route at the end of surgery. The cases were followed methodically till one month. (Supported video demonstration included).

Results: No case had Intraoperative complications. No patients reported unusual symptoms. Grade 2 anterior chamber flare was observed in 4 cases which resolved on its own by 7th day. Moderately high IOP was observed in 3 cases which was managed effectively by short course of topical anti glaucoma medications. By 15th post operative day 85% cases achieved corrected visual acuity of 6/9 or better.

Conclusions: The Dropless Cataract Surgery achieved by pars plana injection of antibiotic and TCA appeared to be simple, safe yet an effective procedure as evident in this phase 1 trial.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Outcome of CTR Implantation on Refractive Stability and Capsular-Related Complications After Cataract Surgery for Long Axial Myopia

*First Author: Hong **YAN***
*Co-Author(s): Jiaojiao **LIANG**, Laiqiang **QU**, Xue **XIE**, Yaping **ZHANG***

Purpose: To investigate the effect of combined capsular tension ring (CTR) implantation during cataract surgery on postoperative refractive stability and accuracy of seven IOL calculation formulas, and capsular-related complications in cataract patients with high myopia.

Methods: A prospective case-control study. The 90 eyes of 64 patients with axial length (AL)≥ 27.00mm, underwent phacoemulsification extraction combined with IOL implantation, were enrolled with CTR implantation and without CTR. The BCVA, incidence of ACO and diameter of anterior capsulorhexis were measured. Grading of PCO was further evaluated based on POCO system and AI-assisted PCO Grading System developed in our Lab. Selected IOL power and predicted diopter were calculated with Barrett Universal II (BU II) formula and re-evaluated by seven updated formulas.

Results: There were no significant differences in the incidence and grade of PCO between the two groups at each time point after surgery. The changes in the horizontal and vertical diameters of the anterior capsulorhexis in CTR group 1 month and 3 months after the operation were smaller than that of the control group ($p < 0.05$). The proportion of absolute refractive error in ± 0.5D from high to low distribution: Kane > EVO > Hill-RBF 2.0 > BU II > SRK/T > Haigis > Holladay II (CTR group).

Conclusions: CTR implantation can reduce the incidence and severity of postoperative ACO and inhibit the contraction of the capsular bag. CTR implantation tends to have early stable diopter. Kane and EVO formulas have more accuracy predication in patients with high myopia.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Visual Outcomes Following Implantation of Acrysof IQ Vivity Toric Extended Vision IOL

*First Author: Mun Wai **LEE***

Purpose: To evaluate the clinical outcomes following

bilateral implantation of the Acrysof IQ Vivity Toric intraocular lens (VTIOL) which utilizes non-diffractive transition elements in the central optical zone to extend the range of vision.

Methods: Prospective interventional case series of patients with bilateral significant cataracts and pre-existing corneal astigmatism undergoing cataract surgery and implantation of VTIOL. Primary endpoints were binocular uncorrected distance (UDVA), intermediate (UIVA at 66cm) and near (UNVA at 40cm) acuities at 3 months. Secondary outcomes were best corrected distance (BDVA), distance corrected intermediate (DCIVA) and distance corrected near (DCNVA) acuities as well as refractive predictability, rotational stability, binocular defocus curve, contrast sensitivity and VF-14 questionnaire scores.

Results: Sample size of 60 eyes (30 patients) has been targeted and the 1-month postoperative results of the first 26 eyes (13 patients) are reported. The complete cohort will be presented at the annual meeting. Visual acuities were converted to logarithm of minimum angle of resolution (logMAR) for analysis. The mean UDVA, UIVA and UNVA at 1 month were 0.05+0.08, 0.13 ± 0.08 and 0.29 ± 0.09 respectively. The mean BDVA, DCIVA and DCNVA were 0.01 ± 0.07, 0.15 ± 0.16 and 0.41 ± 0.11 respectively. The mean refractive spherical equivalent (MRSE) was -0.16 ± 0.30 and mean absolute error (MAE) was 0.25 ± 0.22 with 88.5% of eyes within 0.5D of target. Mean IOL rotation was 3.04º ± 4.99º.

Conclusions: The clinical outcomes following bilateral implantation of the Acrysof IQ Vivity Toric IOL are promising as there was very good binocular unaided visual acuities at all distances with excellent refractive predictability and rotational stability at 1 month postoperatively.

Cornea, External Eye Diseases and Eye Banking

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

A Next Generation Crosslinking Calculator for Titrating Ultraviolet Energy (NXT-UVA) With Collagen Imaging in Thin Keratoconic Corneas

*First Author: Sailie **SHIRODKAR***
*Co-Author(s): Pooja **KHAMAR**, Abhijit **SINHA ROY***

Purpose: To evaluate the performance of NXT UV-A calculator in customizing fluence to corneal thickness for crosslinking (CXL) thinner corneas and to assess stability post-crosslinking using polarization-sensitive optical coherence tomography (PS-OCT)

Methods: A total of 84 eyes of 84 patients with progressive keratoconus and mean thinnest corneal thickness (TCT) <420µm underwent corneal tomography, epithelial mapping and specular microscopy. PS-OCT scans were captured for 30 eyes, and corneal fibril distribution images generated using phase retardation (PR) maps. Mean TCT after de-epithelialization was entered into the custom-built web-based calculator (https://jscalc.io/calc/VmanUJD6yQ13VQQ6) for customized fluence time based on UV power of 9 and 3 mW/cm2. Post-operative assessments were performed at 1, 3, 6 and 12 months.

Results: Estimation of safety determined that there was no postoperative loss of lines/visual acuity (VA) and no significant haze on densitometry. Efficacy determinants demonstrated significant flattening of K1 (52.6 ± 4.95 to 51.37 ± 5.55, $p < 0.0001$), K2 (57.68 ± 5.28 to 56.76 ± 6.15, $p = 0.0002$) and stable Kmax (63.99 ± 8.6, $p = 0.2$) at 6 months and no change in cell density on specular microscopy (2707.7 ± 270.9 to 2641.33 ± 374.9, $p = 0.2$). 64% had a demarcation line at 3 months at a depth of 295 ± 71µm. PR maps showed stability in birefringence till 12 months following CXL. All patients were fitted with contact lenses at 3 months with VA 20/30 or better.

Conclusions: The NXT calculator provides an easy, quick, user-friendly approach of CXL in thin corneas, with no additional tools or corneal scarring and demonstrable strengthening of collagen structure.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Alcohol Delamination – Dealing With Recurrent Corneal Erosions Sans Scarring and Refractive Error

*First Author: Devyani **GADRE***
*Co-Author(s): Ramya **RAVINDRAN***

Purpose: To evaluate the results of alcohol delamination for cases of recurrent corneal erosions.

Methods: Fifteen patients diagnosed with RCE participated in this study which adhered to tenets of the declaration of Helenski. All of them had at least 5 episodes of RCE in the last year. They underwent alcohol delamination with 20% alcohol for 40 seconds, of an area larger in diameter that the area of negative staining previously identified. Then eye was copiously washed with balanced salt solution for 2 minutes and the grey loose epithelium removed. A bandage contact lens was placed in the eye at the end. The patient was placed on topical antibiotic, steroids and artificial tears for 2 weeks

Results: There were 8 female and 7 male patients in this study. Ages ranged from 21 years to 59 years. The cause of the RCE was trauma in 14 out of 15

patients.13 out of 15 patients had no further episodes of RCE after the procedure. 2 patients had a recurrence post procedure. No patient developed any post op haze or scarring. In 13 patients, the procedure was a success Two patients had a partial success with decrease in the frequency and intensity of attacks. Refraction and vision remained unchanged.

Conclusions: Alcohol delamination is a simple procedure that requires no expensive equipment and gives a great result for recurrent corneal erosions. It provides an alternate treatment option rather than PTK which is more equipment dependent, and it does not cause any post op haze or refractive change.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Assessment of Corneal Biomechanics in Anisometropia Using Scheimpflug Technology

*First Author: Jinjin **YU***
*Co-Author(s): Rongrong **GAO**, Jinhai **HUANG**, Yuecheng **REN***

Purpose: To investigate the relationship between corneal biomechanical and ocular biometric parameters, and to explore biomechanical asymmetry between anisometropic eyes using the corneal visualization Scheimpflug technology device (Corvis ST).

Methods: A total of180 anisometropic participants were included. Participants were divided into low (1.00≤|Spherical equivalent (SE)|2.00D), moderate (2.00D≤|SE|3.00D) and high (|SE|≥3.00D) anisometropic groups. Axial length (AL), keratometry and corneal biomechanical parameters were assessed using the OA-2000 biometer, Pentacam HR and Corvis ST.

Results: The mean age was 16.09 ± 5.64 years. Stress-Strain Index (SSI) was positively correlated with SE ($r = 0.501$, $p < 0.001$) and negatively correlated with AL ($r = -0.436$, $p < 0.001$). Some other Corvis ST parameters had weak correlation with SE or AL. Time of first applanation (A1T), velocity of first applanation (A1V), time of second applanation (A2T), length of second applanation (A2L), velocity of second applanation (A2V), corneal curvature radius at highest concavity (HCR), peak distance (PD), deformation amplitude (DA), deformation amplitude ratio max (2mm) (DAR), first applanation stiffness parameter (SP-A1), integrated radius (IR), and SSI showed significant differences between fellow eyes ($p < 0.05$). There was no significant difference in asymmetry of corneal biomechanics among the three groups ($p > 0.05$). Asymmetry of corneal biomechanical parameters was not correlated with asymmetry of SE or AL ($p > 0.05$).

Conclusions: More myopic eyes had weaker biomechanical properties than the contralateral eye in anisometropia. However, a certain linear relationship between anisometropia and biomechanical asymmetry was not found.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Clinical Outcomes of Stromal Additive Procedure in Corneal Ectasia

*First Author: Vandhana **SUNDARAM***

Purpose: To evaluate the efficacy of donor cornea intrastromal implant in disease stabilization in patients with pellucid marginal degeneration (PMD) and keratoconus (KC) over a two year follow up period.

Methods: In this study 10 eyes with PMD and 4 eyes with KC underwent intrastromal implant with donor cornea under topical anesthesia. In PMD patients the intrastromal pocket was created with crescent blade after marking of inferior ectatic cornea. Accordingly, a donor corneal stroma of 300 microns thickness was trimmed and inserted into the intrastromal pocket. In patients with KC the intrastromal pocket was created at a depth of 200 microns using femtosecond laser and donor cornea was cut using a microkeratome to about 300 microns thickness. The donor cornea was then manual inserted into the intrastromal pocket. Post operatively patients were started on low dose topical steroids which were tapered over one month. Parameters such as visual acuity, refraction, anterior segment optical coherence tomography and pentacam were assessed at 1,3,6 months, 1 year and 2 years post-surgery.

Results: There was significant improvement in visual acuity, reduction in subjective and topographical astigmatism at 1- and 3-month post-surgery which was maintained over a period of 2 years follow up. This procedure offers advantage of no endothelial rejection, no suture related astigmatism or wound gaping, hence it could be a good option for disease stabilization in PMD and KC.

Conclusions: Intrastromal implant using donor cornea is a good treatment option in disease stabilization in PMD and KC.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Comparison of the Efficacy of Topical Natamycin 5% and Fluconazole 0.3% Eye Drop Therapy Versus Topical Natamycin 5% Alone in Deep Fungal Keratitis

*First Author: Prateek **KOUL***
*Co-Author(s): Himani **JAILKHANI***

Purpose: The study aims to compare the efficacy of topical natamycin 5% and fluconazole 0.3% eye drop therapy versus topical natamycin 5% alone in deep fungal keratitis.

Methods: This study included two groups of 50 patients each. 50 patients in Group 1 were randomly started on combined therapy of natamycin 5% and fluconazole 0.3% and another 50 patients in Group 2 were randomly started on just natamycin 5% drops. Response to the therapy was recorded after a minimum of 10–14 days on the parameters of healing, efficacious, or inefficacious, and the results were compared.

Results: In the group receiving combined therapy of natamycin 5% and fluconazole 0.3%, that is, Group 1: 21 of 50 patients were healed (42%), 20 of 50 patients showed treatment efficacy (40%), and 9 of 50 patients showed inefficacious results to the therapy (18%), whereas in the group receiving monotherapy with natamycin 5% alone, that is, Group 2: 3 patients of 50 were healed (6%), 14 of 50 patients showed treatment efficacy (28%), and 33 of 50 patients had inefficacious results (66%). Overall, efficacy rate when compared of both the groups had $p < 0.0001$, indicating significant results of Group 1, that is, patients receiving combined therapy.

Conclusions: The patients started on combined therapy of topical natamycin 5% and fluconazole 0.3% showed better response to therapy ($p < 0.0001$) as compared to the patients started on natamycin 5% alone therapy.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Conjunctival Limbal Autograft Versus Punched Conjunctival Limbal Autograft As Novel Technique With Autologous Serum in Pterygium Surgery – A Prospective Study

*First Author: Jeyaprakash **BALASUBRAMANIAN***
*Co-Author(s): Vinodini **RAJENDRAN**, Singaravelu **SINDHUJADEVI**, Lavanya **SIVANANDAM***

Purpose: 1. To compare the outcomes of conjunctival limbal autograft with autologous serum (CLAG) with the novel surgical technique of punched conjunctival limbal autograft with autologous serum (PCG). 2. To study the efficacy and safety of "punched conjunctival graft" a novel technique to improve the outcome of the graft following conjunctival limbal autograft with autologous blood fixation in pterygium surgery.

Methods: Study design: Hospital based Prospective comparative study. Duration: 12 months. Sample size: A total of 125 patients were included in the study. They were divided into two groups. Group A - Contains 60 patients who underwent punched conjunctival limbal autograft with autologous serum. Group B - Contains 65 patients subjected to conjunctival limbal autograft with autologous serum. Post operative visits were scheduled on days 1st, 7th, 14th, 30th, 90th, 180th. The following outcomes were studied between the two groups. Graft edema Graft retraction Graft displacement Graft loss Recurrence of pterygium.

Results: The newer technique PCG has advantage over CLAG by reducing graft oedema, graft displacement and graft loss.

Conclusions: Punched conjunctival limbal autograft with autologous serum is a novel, safe, low-cost and effective technique of pterygium surgery. Fenestrated graft creates a large surface area and provides better adhesion. The fenestrations also provide a pathway for the fluid to ooze out, thus reducing graft edema.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Conjunctivomullerectomy for Superior Limbic Keratoconjunctivitis With Ptosis

*First Author: Jin Hyoung **PARK***

Purpose: To introduce the application of conjunctivomullerectomy in the management of superior limbic keratoconjunctivitis (SLK) with blepharoptosis.

Methods: This study is a noncomparative, interventional case series. Ten eyes from 8 patients that underwent conjunctivomullerectomy for superior limbic keratoconjunctivitis (SLK) with blepharoptosis were included in the study. All patients were followed up for at least 6 months after the treatment. All patients who showed positive results in a phenylephrine test were subjected. Conjunctivomullerectomy was performed using 6-0 prolene and 6 to 8mm of tarsal conjunctival resection. Patients were examined prior to treatment, 1 month, and 6 months after treatment. The ophthalmologic exam included Ocular Surface Disease Index (OSDI) Score, slit lamp microscopic examination, margin to reflex distance (MRD), and keratoconjunctival stain with fluorescein examination.

Results: OSDI scores, MRD, keratoconjunctival stain significantly improved with treatment in all eyes.

which was maintained during the follow-up period. No serious adverse events occurred during follow-up.

Conclusions: This study demonstrated that conjunctivomullerectomy is a one of the safe and effective treatment option for SLK patients with blepharoptosis who showed positive results in a phenylephrine test.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Corneal Densitometry After Collagen Crosslinking in Keratoconus Using Pentacam Scheimpflug Analysis and Its Relation to Subjective Haze

*First Author: Nikita **BHATT***
*Co-Author(s): Uday **BHATT**, Amanpreet **KAUR**, Therese **MALKOUN**, Alina **SAYER***

Purpose: To analyze corneal densitometry changes after corneal collagen crosslinking (CXL) for progressive keratoconus (KCN) and its relation to preoperative central corneal thickness (CCT), subjective haze and corrected distance visual acuity (CDVA).

Methods: In this observational retrospective study, corneal densitometry was measured using Pentacam Scheimpflug imaging in 154 eyes at baseline and at approximately 1 and 3 months after CXL. Densitometry was performed in a fixed area of 7 mm around the central cornea. Subjective haze was documented on a scale of 1-10 (minimum-maximum) as described by the patient. Analysis was done for any correlation of densitometry measurements to CCT, subjective haze and CDVA.

Results: At baseline densitometry values in KCN group were 15.46 ± 1.82. but significantly lower at 11.63 ± 1.31 in the control group (both post hoc p values < 0.001). Postoperatively, the values were 23.28 ± 4.24 at 1 month and and 18.84 ± 2.62 at month 3 in the study group. Patients reported increase in subjective haze in the first 4 weeks and then progressive reduction to almost baseline at 3 months. This was correlated to densitometry at 4 weeks (p = 0.04) but not at 3 months. Higher densitometry was significantly correlated with lower preoperative CCT (p = 0.028) but it was not related to CDVA (p = 0.48).

Conclusions: After CXL in KCN, subjective haze correlates with densitometry but returns to almost normal levels at 3 months. Thinner corneas produce higher densitometry measurements and therefore patients with thinner corneas should be advised of higher risk of subjective haze.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Effect of Anti-allergic Therapy on Sleep Quality of Children With Allergic Conjunctivitis and Their Parents

*First Author: Boyu **YANG***
*Co-Author(s): Lingyi **LIANG***

Purpose: To assess the effect of anti-allergic therapy on the sleep quality of children with allergic conjunctivitis (AC) and their parents.

Methods: This prospective single-arm intervention study included 54 AC and 50 age-matched healthy control child-parent dyads. Standardized anti-allergic therapy was prescribed to the AC children. Chinese versions of the Children's Sleep Habits Questionnaire (CSHQ) and Pittsburgh Sleep Quality Index (PSQI) were used to assess the sleep quality of children and their parents, respectively. All the AC symptoms, signs, and sleep quality measures were evaluated before and after treatment.

Results: After 8.93 ± 5.07 weeks of treatment, CSHQ and PSQI total scores were significantly decreased (both p < 0.001), with fewer AC children (74.1% vs. 94.4%, p = 0.003) and parents (9.3% vs. 31.5%, p = 0.002) reporting poor sleep quality. The CSHQ subscales of bedtime resistance (p = 0.072), sleep duration (p = 0.174), and daytime sleepiness (p = 0.078) in the AC group were improved to the normal levels. For parents, all the PSQI subscale scores were comparable to those of the control group, except the sleep disturbances (p < 0.001). Greater improvements of sleep quality in both children (β=0.291, p = 0.011) and parents (β=0.167, p = 0.002) were associated with longer treatment duration and with higher baseline total score on the CSHQ (β=0.556, p < 0.001) and PSQI (β=0.630, p < 0.001), respectively.

Conclusions: Successful management of AC improves sleep quality for both children and their parents, especially for those with longer treatment and worse baseline sleep quality. The findings highlight the importance of treatment for AC for the sleep health of children and parents.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Effect of Topical Betamethasone Eye Drops on Postoperative Haze Among Patients Undergoing Corneal Collagen Cross-Linking: A Randomized, Double Blind Placebo Controlled Study

*First Author: Kourosh **SHEIBANI***
*Co-Author(s): Nariman **NASSIRI**, Saman **NASSIRI**, Nader **NASSIRI**, Kavousnezhad **SARA***

Purpose: To evaluate the effect of betamethasone eye drops on postoperative haze in patients undergoing corneal collagen crosslinking (CXL).

Methods: Patients with mild to moderate keratoconus who were a candidate for CXL treatment entered the study. One eye of each patient randomly received betamethasone and topical antibiotics after CXL, and the other eye received topical antibiotics and placebo. The eyes were compared regarding BCVA, UCVA, refraction, keratometric and pachymetric findings, as well as corneal haze by confocal microscopy.

Results: There was no difference in BCVA, UCVA, refraction, keratometric and pachymetric findings between the two groups before and six months after surgery. Based on confocal findings, the difference in light reflectance intensity between the case and control groups was statistically significant in anterior ($p = 0.001$) mid ($p = 0.002$) and posterior ($p = 0.002$) stroma six months postoperatively indicating higher haze in the placebo group.

Conclusions: Betamethasone significantly reduced corneal haze but had no effect on visual acuity, refraction, keratometric and pachymetric findings six months post CXL.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Evaluation of Corneal Biomechanical Parameters in Normal and Subclinical Keratoconus Eyes Using Dynamic Scheimpflug Technology

*First Author: Ali **FOROUHARI***
*Co-Author(s): Alireza **PEYMAN**, Mohsen **POURAZIZI**, Fatemeh **SEPAHVAND***

Purpose: The diagnosis of keratoconus, as the most prevalent corneal ectatic disorder, at the subclinical stage gained great attention due to the increased acceptance of refractive surgeries. This study aimed to assess the pattern of the corneal biomechanics properties derived from Corneal Visualization Scheimpflug Technology (Corvis ST) and evaluate the diagnostic value of these parameters in distinguishing subclinical keratoconus (SKC) from normal eyes.

Methods: This prospective observational study was conducted on 73 subclinical keratoconus (SKC) eyes and 69 normal corneas, based on inclusion and exclusion criteria. Subclinical keratoconus eyes were defined as corneas with no clinical evidence of keratoconus and suspicious tomographic and tomographic features. Following complete ophthalmic examination, topographic and tomographic corneal assessment via Pentacam HR, and corneal biomechanical evaluation utilizing Corvis ST were done.

Results: Subclinical keratoconus eyes presented significantly higher Deformation Amplitude (DA) ratio, Tomographic Biomechanical Index (TBI), and Corvis Biomechanical Index (CBI) rates than the control group. Conversely, Ambrósio Relational Thickness to the Horizontal profile (ARTh), and Stiffness Parameter at the first Applanation (SPA1) showed significantly lower rates in SKC eyes. However, after adjusting parameters for CCT and IOP, SKC and control eyes showed no significantly different SPA1 rates. In diagnosing SKC from normal eyes, TBI (AUROC: 0.858, Cut-off value: > 0.33, Youden index: 0.55), ARTh (AUROC: 0.813, Cut-off value: ≤ 488.1, Youden index: 0.58), and CBI (AUROC: 0.804, Cut-off value: > 0.47, Youden index: 0.49) appeared as good indicators.

Conclusions: Integrated Corvis ST parameters could be valuable in distinguishing SKC eyes from normal ones.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Evaluation of Tectonic Stability After Tenon's Patch Graft for Corneal Perforation in Infective Keratitis

*First Author: Aniruddh **HEROOR***
*Co-Author(s): Somasheila **MURTHY***

Purpose: To report the results of tenon's patch graft in corneal perforation in infectious keratitis. Microbial keratitis can progress to severe corneal thinning or perforation. Modalities such as tissue adhesives are limited to small perforations while amniotic membrane grafts and corneal transplants are subject to availability. Tenons patch graft is an emerging technique used to seal perforations and has rarely been reported as a modality in active infectious keratitis.

Methods: We conducted a retrospective analysis of 8 cases of corneal perforation in active infectious keratitis managed with Tenons patch graft. Primary outcome measure was tectonic stability at the one-month post-operative visit.

Results: The etiology was fungal keratitis in 2 eyes, 1 case of herpetic necrotizing stromal keratitis ,1 case of herpes zoster ophthalmicus and 4 eyes were presumed

bacterial. The perforation varied from 2 to 4.5mm in size. At one month, 7/8 eyes (87.5%) achieved tectonic stability with a well-formed anterior chamber and only one eye had leak from the graft edge which stabilized after augmentation with tissue adhesive. None of the eyes had worsening of infection.

Conclusions: Corneal perforation warrants immediate treatment in order to preserve the anatomical integrity of the cornea. The results of our study show that Tenons patch grafting offers good tectonic stability to the corneal surface in cases of medium sized corneal perforation in active infectious keratitis thus making it a viable option for use in resource limited settings where amniotic membrane grafts or donor corneal tissues are not readily available.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Hitch Suture Assisted Tuck-In Tenon's Patch Graft for Management of Corneal Perforations

*First Author: Amogh **KITTUR***
*Co-Author(s): Rahul Kumar **BAFNA**, Aishwarya **RATHOD***

Purpose: To describe a novel modification of tuck-in Tenon›s patch graft (TPG) using temporary horizontal mattress sutures and fibrin glue to hitch the graft in the management of corneal perforations.

Methods: Modified technique of autologous TPG was used to seal corneal perforations measuring 3–5 mm, using horizontal mattress sutures to hitch the graft in a lamellar pocket, followed by fibrin glue application. The horizontal mattress sutures were removed after the reformation of the anterior chamber. The primary outcome measure was a well-formed anterior chamber in the post-operative period and the secondary outcome was epithelization time.

Results: The surgery was performed in 22 eyes. The mean age was 43.86 ± 16.02 (26–66) years, with 14 males and eight females. The etiologies of corneal perforation included dry eye (n = 10), neurotrophic keratitis (n = 6), trauma (n = 2), chemical injury (n = 2) and exposure (n = 2). The mean size of the perforation with the thinned-out area was 4.3 mm (range 3–5 mm). The mean duration of epithelialization was 14.31 ± 2.63 days (7–21 days). No intraoperative complications were observed. All eyes had a well-formed anterior chamber in the immediate postoperative period. Postoperatively, two eyes had graft pseudoectasia due to a thick graft and supra tenon hemorrhage each; one eye each had graft thinning with the formation of pseudopterygium and graft melting.

Conclusions: Tenon›s patch graft, along with the use of temporary horizontal mattress sutures and fibrin glue, is an effective modification of the technique for managing corneal perforations measuring 3–5 mm.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Introduction of a Novel Asymmetric Trephine for DMEK Tissue Preparation – The #7 DMEK Trephine

*First Author: Chameen **SAMARAWICKRAMA***

Purpose: To investigate the effectiveness and outcomes of a novel asymmetric trephine for the preparation of corneal graft tissue for DMEK surgery. Using the principles from the continuous curvilinear capsulorhexis, the design of the trephine incorporates curved surfaces to distribute forces applied on the graft and prevent graft tears, thus simplifying and easing successful graft preparation without impacting the manipulation techniques used within the eye or surgical times.

Methods: A prospective, non-randomized case series of consecutive DMEK operations will be reported. Thirty patients with endothelial failure either had the standard method of donor graft preparation (n=15) or used the novel asymmetric trephine for graft preparation (n=15). The graft was unrolled, orientated and centered using standard techniques and air was used to tamponade the graft in position. Patient and donor characteristics, tissue preparation time, surgical complications and time, postoperative BCVA and endothelial cell counts (ECC) at 3 months post-surgery are reported.

Results: Ten patients have completed the surgery, with all surgeries scheduled to allow 3-month follow-up data by January 2023. Initial results show that the novel asymmetric trephine results in faster graft preparation (5 mins vs 9 mins, p = 0.04) and similar surgical times (32 mins vs 37 mins, p = 0.06). There were no preparation or surgical complications and all cases attached without the need for rebubbling.

Conclusions: The novel asymmetric trephine for DMEK surgery allows faster graft preparation without impacting tissue manipulation and surgical times. We expect to report good visual outcomes and preserved ECC, suggesting that this technique maybe an advancement in DMEK tissue preparation.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Low Vitamin D Receptor Linked to Reduced Endogenous Collagen Crosslinking in Keratoconus

*First Author: Ritica **MUKHERJI***
*Co-Author(s): Swaminathan **SETHU***

Purpose: Keratoconus (KC) is associated with reduced corneal collagen crosslinking (CXL), inflammation and oxidative stress. Vitamin D receptor (VDR) is critical in mediating cellular homeostasis and dampening inflammation. This study aims to determine relationship between VDR and CXL in KC.

Methods: After institutional ethics committee approval and informed consent, corneal epithelium from 30 KC patients (Amsler Krumeich (grades 1-3) undergoing topography-guided photorefractive keratectomy (T-PRK) or CXL and 10 controls undergoing PRK, was obtained. Epithelium from KC patients was demarcated as ectatic and non-ectatic zones. Expression of VDR, lysyl oxidase (LOX), an endogenous crosslinking agent, MMP-9 and collagens in corneal epithelium, was determined using western blot and/or qPCR. Effects of vitamin D on VDR, LOX, MMP-9 and collagen in human corneal epithelial cells (HCE) were studied in vitro.

Results: Expression of VDR, LOX and collagen in KC epithelium was significantly ($p < 0.05$) lower and MMP-9 higher compared to control. Expression of VDR and LOX in ectatic epithelium of KC was lower compared to matched epithelium from non-ectatic zone. HCE cells exposed to oxidative stress, in vitro, showed significant reduction in expression of VDR and LOX, with elevated levels of MMP-9 compared to controls. Vitamin D treatment to HCE cells, in vitro, improved expression of VDR and LOX, and reduced MMP-9.

Conclusions: The findings indicate vitamin D receptor-mediated effects in KC epithelium, emphasizing critical role of vitamin D–VDR axis in regulating endogenous CXL. It suggests that VDR activation through vitamin D supplementation could be a novel strategy in management of KC.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Mask-Associated Dry Eye: A Systematic Review

*First Author: Ka Wai **KAM***
*Co-Author(s): Victor T.t. **CHAN**, Alvin **YOUNG***

Purpose: The global pandemic of SARS-CoV-2 has led to a rise in utilization of face mask, and a corresponding increase in mask-associated dry eye (MADE) among individuals who regularly wear face masks.

Methods: We conducted a systematic review to evaluate the association between mask utilization and dry eye parameters among both healthy and subjects with pre-existing dry eye disease (DED). A search was performed in PubMed and EMBASE with "(Dry eye) OR (Keratoconjunctivitis Sicca)" and "(Mask)" up to July 10, 2022. Clinical studies reporting MADE were eligible.

Results: Seventeen cross-sectional studies, 2 prospective studies and 2 case reports were identified, including 11,669 healthy individuals, 2,391 healthcare workers, and 164 subjects with pre-existing DED. With mask-wearing, the pooled OSDI score increased from 11.2 ± 3.6 to 19.6 ± 19.6 among healthy individuals, from 9.6 ± 7.0 to 23.5 ± 15.3 among healthcare workers, and from 18.8 ± 2.1 to 22.4 ± 5.7 among subjects with pre-existing DED (all $p < 0.0001$). The pooled tear-film breakup time was shorter after mask-wearing in healthy individuals (11.7 ± 2.3 vs 10.4 ± 2.5 seconds), healthcare workers (11.6 ± 4.3 vs 7.5 ± 2.8 seconds) and subjects with pre-existing DED (4.1 ± 1.5 vs 3.8 ± 1.1 seconds; all $p < 0.0001$). Two studies demonstrated improved dry eye parameters with taping the upper edge of the mask.

Conclusions: The use of face mask is associated with increased dry eye symptoms and tear-film instability. Ophthalmologists should take the lead in educating the importance of proper mask wearing in preventing MADE.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Ocular Findings in Stevens–Johnson Syndrome Patients After Etanercept Treatment: A Retrospective Study of a Randomized Clinical Trial

*First Author: Li-Yen **PAN***
*Co-Author(s): David **MA***

Purpose: To compare the ocular findings in SJS/TEN patients treated with systemic etanercept or corticosteroids and correlate the disease severity and therapeutic effects with serum biomarkers.

Methods: We conducted a retrospective study using data from a randomized controlled trial cohort. Patients with acute SJS/TEN were randomly assigned to either systemic etanercept or corticosteroids group. Patients who received an ophthalmic examination in the acute and chronic stage were included. We then reviewed the electric medical records, serum granulysin and Treg levels. The severity in acute stage was classified using Sotozono's acute grading score, and ocular surface grading score (OSGS) was used to grade the chronic ocular complications.

Results: A total of 116 eyes were included in the study (58 in each group), with the baseline characteristics

showing no significant difference. Etanercept group exhibited significantly lower OSGS and better BCVA and Schirmer test values. The acute- and recovery-stage serum granulysin levels were positively correlated with the acute-stage Sotozono's score; negative correlation was found between the initial Treg level and OSGS. Moreover, increased in Treg levels was positively correlated with the OSGS after treatment in group etanercept.

Conclusions: Patients treated with etanercept had less severe chronic ocular manifestations, higher tear secretion, better BCVA, and no noticeable complications. The serum granulysin level may be an indicator of the severity of acute ocular involvement. Etanercept treatment upregulated Treg levels, and the increase in Tregs was proportional to the severity of chronic ocular sequelae. Our findings advocate etanercept treatment for acute SJS/TEN patients, especially those with more severe ocular involvement.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Old Versus Zaman Innovative Techniques of Bowman Layer Transplantation Type I and II

*First Author: Zaman **SHAH***

Purpose: To assess the outcome of BLT in advanced keratoconus in patients not suitable for ultraviolet cross-linking or intra stromal corneal ring segments, complications and results of old versus zaman innovative techniques of BLT type I and II.

Methods: In old technique of BLT, mid corneal stromal dissection followed by implantation of manually isolated bowman layer from a donor into the recipient stromal pocket was performed in ophthalmology department, Khyber Teaching Hospital Peshawar. In Zaman Technique of BLT type I, manually harvested BL was placed after debridement of surface epithelium close to natural anatomical location. In Zaman Technique of BLT type II, manually harvested BL was placed in 150um depth recipient cornea pocket created with femtosecond laser.

Results: In old technique, eleven eyes of 11 patients, within the age range of 7–28 years with progressive keratoconus went under BLT. Anterior SimK decreased by 5.2D, thinnest location difference was 23um and Kmax reduced by 7.3D. In Zaman technique of BL type I, anterior K value difference was 1.34 D, Kmax reduced by 0.33 D and thinnest location difference was 38um. In Zaman technique of BLT type II, anterior K value difference was 6.5D, thinnest location difference was 96um and Kmax reduced by 15.4D.

Conclusions: Old technique has steep learning curve and 10% chances of perforation, conversion to PK, Descemet detachment and chances of acute hydrops. In Zaman technique of BLT type I and II, there is a significant improvement in the BCVA and chances of complications are extremely negligible.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Ophthalmic Cyclosporine A Gel in Treatment of Dry Eye Disease: A Multicenter, Randomized, Double-Masked, Phase III study

*First Author: Wenyan **PENG***
*Co-Author(s): Xiaofeng **LI**, Xiaoyi **LI**, Shiyou **ZHOU**, Lei **ZHU***

Purpose: To confirm the efficacy and safety of a novel ophthalmic cyclosporine A gel (CyclAGel, 0.05% CsA) in the treatment of moderate-to-severe dry eye disease (DED).

Methods: Eligible patients were randomized 1:1 to receive CyclAGel 0.05% or vehicle eye drops once nightly (QN). The primary endpoint was the proportion of subjects with at least a 1-point improvement in ICSS at day 84(D84).

Results: There were 315 and 312 participants enrolled in the CyclAGel and vehicle groups, respectively. The proportion of subjects with ≥1-point and ≥ 2 points improvement in ICSS at D14, D42, and D84 was significantly higher in the CyclAGel group than vehicle group (all p≤0.005). The keratoconjunctival staining as measured by Oxford scale scores also showed significant improvement at D14, D42, and D84 than vehicle group. The Schirmer II test was significantly higher in the CyclAGel group than vehicle group at D14 and D84 (all $p < 0.05$). No significant difference between groups about the change of tear film break up time and dry eye symptoms. The CyclAGel 0.05% was well tolerated, and the TEAEs were mostly mild. No serious treatment related TEAEs were reported.

Conclusions: Statistically significant improvements in ICSS, tear production, and symptoms were observed in CyclAGel 0.05% group. CyclAGel 0.05% QN is a promising treatment for DED with additional benefits of convenience and better compliance and comparable safety profile.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Optical Coherence Tomography Findings in Recurrent Corneal Erosion Syndrome

*First Author: Rishi **SWARUP***
*Co-Author(s): Divya **JAIN**, Samip **MEHTA***

Purpose: To report the findings of optical coherence tomography (OCT) in the corneas of patients with recurrent corneal erosion syndrome (RCES). Etiology of RCES and the effectiveness of trans-epithelial-

phototherapeutic keratectomy (Trans-PTK) procedure in treating the disease were also studied.

Methods: A cross-sectional observational study was conducted of patients diagnosed and treated as RCES at a tertiary eye care center. 46 eyes of 34 patients with RCES were included in the study group. All eyes were scanned with the anterior segment 17-line raster acquisition protocol of Optovue (RT-VUE) spectral domain OCT platform. The etiology of RCES was investigated and standard treatment protocol was followed. Scans were obtained at various stages of the pathology and studied for changes in different layers of the cornea.

Results: Eight (17%) eyes diagnosed with RCES had underlying epithelial basement membrane dystrophy (EBMD). The findings on OCT were as follows: anterior stromal hyper-reflectivity (71%), epithelial edema (58%), and irregular breaks in the epithelium (40%). Undetected epithelial basement membrane (53%), intraepithelial basement membrane (24%), and intraepithelial inclusions (53%) were also noted. Changes in the epithelial basement membrane-Bowman›s membrane junction such as thickening (71%), hyper-reflectivity (88%) and slit-like spaces (54%) were also noticed. 11 (23%) eyes underwent Trans-PTK following which 10 of the 11 eyes had complete resolution of OCT changes noted previously.

Conclusions: Corneal OCT is useful to study the pathophysiology of RCES and its evolution through various stages of the disease. It also helps in planning its management, especially when deciding the depth and size of ablation during Trans-PTK procedure.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Peripheral Macular Endothelial Dystrophy: Clinical, Histopathologic and Genetic Characterization

*First Author: Anthony **ALDAVE***
*Co-Author(s): Doug **CHUNG**, Thi Thuy Hang **DO**, Nguyen Viet Huong **DUONG**, Passara **JONGKHAJORNPONG**, Wenlin **ZHANG***

Purpose: To report a corneal endothelial dystrophy that shares clinical and genetic features with macular corneal dystrophy (MCD).

Methods: Slit lamp examination and CHST6 sequencing was performed in seven families (six Vietnamese and one Thai) with members demonstrating peripheral posterior corneal macular opacities, endothelial guttae and corneal edema.

Results: CHST6 sequencing demonstrated a promoter region mutation (c.-690G>C) in the homozygous state in three families and in the heterozygous state in the other four families, each of which also demonstrated one of three different heterozygous coding region mutations (p.Arg211Gln; p.Tyr268Cys; and p.Pro280Leu). While p.Arg211Gln and p.Tyr268Cys have been previously associated with MCD, p.Pro280Leu is a novel variant. The c.-690G>C promoter region mutation (MAF = 0.000064), has not been previously associated with MCD. Whole exome sequencing did not identify variants in other genes that segregated with the affected phenotype in three of the families. In silico analysis predicted c.-690G>C, located at the RNA polymerase II binding site, to likely be a regulatory variant (score = 1.00). Lectin and Alcian blue stains of the Descemet membrane and corneal endothelium from the Thai family proband were positive, and serum keratan sulfate levels in affected members of three Vietnamese families was reduced compared with unaffected family members and controls.

Conclusions: Promoter and coding region CHST6 mutations are associated with a dystrophy characterized by peripheral posterior corneal macular opacities and endothelial dysfunction in the absence of stromal opacities. We suggest the name peripheral macular endothelial dystrophy to describe this dystrophy that may be considered a variant of MCD.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Peroxisome Proliferator-Activated Receptor Alpha Agonist Enhances Corneal Nerve Regeneration in Patients with Type II Diabetes Mellitus

*First Author: Calesta Hui Yi **TEO***
*Co-Author(s): Isabelle Xin Yu **LEE**, Molly Tzu-Yu **LIN**, Yu-Chi **LIU**, Hong Chang **TAN**, Lei **ZHOU***

Purpose: To investigate the effects of peroxisome proliferator-activated receptor alpha ((PPAR-α)) agonist, fenofibrate, on diabetic corneal neuropathy (DCN).

Methods: Thirty patients (80.8% Chinese and male; aged 60.8 ± 9.31 years) with type II diabetes mellitus received 100 mg/day or 300 mg/day oral fenofibrate for 30 days. Detailed ocular surface assessment, in-vivo confocal microscopy (IVCM) of cornea nerve and epithelial cells, tear neuromediators were analyzed before and after treatment. The therapeutic effects were investigated with comprehensive tear proteomic and gene set enrichment analysis. 20 age-matched controls were included.

Results: After treatment, corneal nerve fiber density (CNFD) ($p = 0.01$), corneal nerve fiber width ($p < 0.01$), and corneal epithelial cells circularity ($p < 0.05$) significantly improved. Tear substance p (SP) concentration significantly increased ($p = 0.03$), demonstrating an amelioration of ocular surface neuroinflammation. The change in tear SP

concentration was significantly associated with the improvement in CNFD (r = 0.41; p = 0.03). Tear break-up time significantly increased, and a significant reduction of corneal and conjunctival punctate keratopathy (all p < 0.01) were observed. Fenofibrate significantly up-regulated Beta-galactoside alpha-2,6-sialytransferase 1 (log2FC=1.42), tetratricopeptide repeat protein (9A) (log2FC=0.75), and ras-related protein (log2FC=0.63), involved in nervous function regulation. Significant upregulation of suppressor of mothers against decapentaplegic homolog 1 (log2FC = 1.72), important for the maintenance of neural cells, were observed post-treatment. After treatment, neurotrophin signaling pathway (p = 0.01), linolenic acid (p = 0.01), cholesterol (p = 0.004) and fat metabolism (p = 0.006) were significantly modulated and upregulated. Ocular surface complement cascades (p = 0.001), neutrophil reactions (p = 0.001), and platelet activation (p = 0.01) were significantly suppressed.

Conclusions: Fenofibrate exerts its therapeutic effects primarily through neuronal pathway, lipid modulation, anti-inflammation and anti-coagulation; and may potentially be a novel treatment for DCN.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Polarization Sensitive Optical Coherence Tomography (PS-OCT) – A New Screening Tool in Refractive Surgery

First Author: Sailie ***SHIRODKAR***
Co-Author(s): Pooja ***KHAMAR****, Abhijit* ***SINHA ROY***

Purpose: To determine preferential alignment of collagen fibers in healthy and keratoconus (KC) corneas and correlate with early disease-related collagen-fiber changes in suspect corneas.

Methods: Fifty healthy, 50 KC, 50 suspect and 35 asymmetric fellow corneas of KC patients imaged using ultra-high-resolution polarization-sensitive (PS-OCT). Phase retardation (PR) enface maps generated from posterior corneal surface. Zonal analysis performed on enface maps in annular zones from center to periphery.

Results: PR maps of normal eyes showed preferential arrangement of collagen fibrils, with least retardation in apex, increasing gradually towards periphery. Suspect corneas showed visibly different alignment. Zonal analysis showed significantly higher PR in suspects compared to normal eyes (p < 0.05).

Conclusions: Changes in PR indirectly indicate changes in collagen fiber preferential alignment, outlining differences between normal and suspicious corneas, possibly indicating weaker biomechanics. PSOCT can be used in clinical settings for early diagnosis of KC in normal/suspicious topography and in screening for refractive procedures.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Randomized Clinical Trial of Topical Insulin Versus Artificial Tears for Healing Corneal Epithelial Defects Induced During Vitreoretinal Surgery in Diabetics

First Author: Aina ***DASRILSYAH***
Co-Author(s): Mae-Lynn catherine ***BASTION***

Purpose: To compare the effect of topical insulin (0.5units, 4 times/day) versus artificial tears (sodium hyaluronate 0.18%, 4 times/day) for the healing of corneal epithelial defects induced during vitreoretinal surgery in diabetics.

Methods: In this double blinded randomized controlled study involving diabetic patients with post-operative corneal epithelial defects following vitreoretinal surgery, they were randomized into two groups, received either 0.5 units of topical insulin (DTI) or artificial tears (sodium hyaluronate 0.18%) (DAT). Primary outcome measured was the rate of corneal epithelial wound healing (mm2 per hour) over a pre-set interval and time from baseline to minimum size of epithelial defect on fluorescein-stained anterior segment photography. Secondary outcome measured was the safety of medications used. Patients were followed up until three months post-operation.

Results: A total of 38 eyes (38 patients) undergoing intra-operative corneal debridement during vitreoretinal surgery with resultant epithelial defects (19 eyes per group) were analyzed. DTI was observed to have a significantly higher healing rate compared to the DAT group at rates over 36 hours (p = 0.010), 48 hours (p = 0.009) and 144 hours (p = 0.009). The rate from baseline to closure was observed to be significantly higher in the DTI group (1.20 ± 0.29) (mm2/hour) compared to the DAT group (0.78 ± 0.20) (mm2 /hour) as well (p < 0.001). No adverse effect was reported.

Conclusions: Topical insulin (0.5 units, 4 times/day) is more effective compared to artificial tears (sodium hyaluronate 0.18%, 4 times/day) for the healing of postoperative corneal epithelial defects induced during vitreoretinal surgery in diabetic patients, without any adverse events.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Randomized Controlled Trial of Effects of Topical Insulin Compared to Standard Artificial Tears and Normal Saline on Tear Inflammatory Mediator Levels and Surface Parameters in Diabetics with Dry Eye Disease

*First Author: Atikah **ASINI***
*Co-Author(s): Norshamsiah Md **DIN**, Suzana **MAKPOL**, Mushawiahti **MUSTAPHA**, Wan Haslina **WAN ABDUL HALIM***

Purpose: To assess the effects of topical insulin (TI) on the tear inflammatory mediators, interleukin 1 alpha (IL-1 alpha), interleukin 6 (IL-6) and matrix metalloproteinase 9 (MMP-9) in diabetics with dry eye disease.

Methods: Diabetic patients with dry eye disease (DED) aged 18 to 50 years randomly assigned to four weeks treatment of either topical insulin (TI) 0.5 unit/drop, topical Systane ultra (Alcon laboratories) as standard artificial tears (SAT) and topical normal saline (NS). Baseline ELISA tear sample analysis and clinical parameters of dry eye (OSDI, TBUT, Oxford score and Schirmer's test) were compared and evaluated four weeks after treatment. Objective clinical parameters were evaluated by two blinded investigators.

Results: A total of 73 participants (involving n=146 eyes) received either TI (n=40), SAT (n=60) or NS (n=46). After four weeks of treatment, a significant difference was observed in all the inflammatory biomarkers. While comparing the magnitude of the decrease, it was found that patients who received TI showed the biggest decrease in all the outcomes including IL-1 alpha [difference (95% CI): $p < 0.001$] and IL-6 [difference (95% CI): $p < 0.001$], and MMP-9 [difference (95% CI): $p < 0.001$], followed by SAT and NS. The TI group also showed a significant improvement in clinical parameters namely, OSDI ($p < 0.001$), TBUT ($p < 0.001$) Oxford score ($p < 0.001$) and Schirmer's test ($p < 0.001$) as compared to the SAT and NS groups.

Conclusions: There is a significant reduction in inflammatory biomarkers as well as an improvement in the clinical measures of dry eye for TI 0.5 unit/drop four times daily in treating diabetics with DED.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Results of Simultaneous Limited Topo Guided Customized Ablation With Collagen Cross Linking for Keratoconus in Indian Patients

*First Author: Parmeshwar **KAHALEKAR***

Purpose: This retrospective analytical study is done to study outcomes of the procedure in various parameters like correction in BCVA, reduction in refractive error and stabilization of progression of keratoconus.

Methods: Eighty-four patients having keratoconus with pachymetry of more than 450 microns underwent simultaneous limited customized topo guided ablation of less than 50 microns with CXL. A residual refractive error of -1.5 D spherical with -1.5 D cylinder was left to compensate for long term reduction/improvement in refractive error secondary to CXL. Patient's parameters like preoperative and post operative K readings, refraction, uncorrected visual acuity, best corrected visual acuity, pachymetry were noted. Postoperative records noted every three months to note any change in refractive error.

Results: Most patients showed improvement in two lines in UCVA and BCVA on Snellen's chart, with improvement in final refractive errors after the intervention. Also, K values showed improvement. Keratoconus progression stopped based on subtraction analysis. The first case had a follow-up of four years. Two patients developed early corneal scarring which had initial poor vision, but final BCVA improved over the next 6-12 months. Two cases developed late onset corneal haze without impact on UCVA or BCVA. No other complications were seen.

Conclusions: Simultaneous limited topo guided customized ablation with collagen cross linking for keratoconus in Indian patients is a safe procedure and give a better visual rehabilitation and improvement.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Simple and Novel Technique of Using Lampblack Soot as a Corneal Tattoo for Disfiguring Corneal Opacities

*First Author: Arjun **SRIRAMPUR***

Purpose: To report a series of corneal tattooing in nine eyes of nine patients with disfiguring corneal scar and no visual potential, who underwent the procedure using the lampblack prepared in the operating room, and to describe the novel technique of lampblack preparation for the surgery.

Methods: The depth of corneal opacity was carefully

assessed on slit lamp. In six eyes with deeper and dense opacities, a superficial lamellar pocket was made by lamellar separation using corneal dissectors, following which the prepared lampblack soot using materials available in the OR was deposited in the pocket. In three eyes with superficial opacities, anterior stromal puncture with a bent 26 G needle was made and the soot was applied over the rough surface.

Results: At a mean follow-up of 2 years, all the nine eyes had a stable corneal surface with an acceptable cosmetic outcome.

Conclusions: Corneal tattoo using lampblack gives a satisfactory cosmetic result with good patient satisfaction and improved quality of life in the eyes with disfiguring corneal scar. This black soot stays in place for a significant period of time irrespective of the depth of placement of the soot. Both the surgical techniques used for deeper and superficial opacities, give a good cosmetic outcome.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Simultaneous Topo-Guided Photorefractive Keratectomy (TPRK) With Collagen Crosslinking in Keratoconus: 10-Year Outcomes

First Author: Akash ***JAIN***
Co-Author(s): Gairik ***KUNDU***

Purpose: Laser-based crosslinking (CXL) can help regularize the surface of cornea, improving spectacle acceptance and contact lens fitting. Topography-guided Custom Ablation Treatment (T-CAT) helps regularize the surface of ectatic corneas. We aim to evaluate the long term (>10 years) effectiveness of TCAT among KC eyes.

Methods: Based on their corneal tomography, corneal thickness and ablation profile, 600 eyes underwent T-CAT. This was followed by accelerated corneal collagen cross-linking (9mW/cm2 for 10 minutes for “epithelium-off” mode) in both groups. The patients were reviewed at 1, 3, 5 and 10 years post-operatively, and their UCVA, BCVA, keratometry and aberrations at each visit were studied.

Results: Improvement in UCVA (0.6 + 0.41 to 0.48 + 0.25, logMAR $p < 0.0001$) and BCVA (0.1 + 0.09 to 0.11 + 0.1, logMAR $p = 0.65$) in T-CAT was observed. Decrease in keratometry (47 + 0.5 to 44.85 + 0.35, logMAR $p < 0.0001$) was observed, and reduction in RMS, coma, spherical aberration ($p < 0.0001$) was statistically significant.

Conclusions: T-CAT resulted in improved visual acuity, significant reduction in keratometry values and significant decrease in aberrations in KC eyes at 10-year follow-up.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 410 (Level 4)

Topography-Guided Removal of Epithelium in Keratoconus With Accelerated Crosslinking: 5-Year Outcomes

First Author: Akash ***JAIN***
Co-Author(s): Abhijit ***SINHA ROY***

Purpose: To analyze long-term safety and efficacy of topography-guided removal of epithelium in keratoconus (TREK) followed by collagen crosslinking (CXL).

Methods: A total of 78 eyes with minimum corneal thickness <420mm but >400mm, underwent TREK. A decentered ablation of 70mm was done at steepest anterior curvature followed by CXL. Post-operative uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), corneal topography and aberration profile were analyzed at 5 years after the surgery. Collagen orientation was studied pre- and post-operatively by polarization-sensitive optical coherence tomography (PS-OCT).

Results: At 5 years post-operatively, there was a significant increase in UCVA (0.73 ± 0.32 to 0.59 ± 0.33 logMAR, $p = 0.0006$) and BCVA (0.18 ± 0.13 to 0.12 ± 0.12 logMAR, $p = 0.0034$). There was a significant decrease in mean keratometry from 49.64 ± 0.45D to 47.63 ± 0.46D ($p < 0.001$). The PSOCT maps showed strengthening of collagen fibrils post-operatively.

Conclusions: TREK, being a tissue saving procedure, is a safe and effective alternative to topography guided PRK with CXL in the long term.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

A Case Report of Sphingomonas Paucimobilis Keratitis in a Philippine Tertiary Hospital

First Author: Patricia Kaye ***SY***
Co-Author(s): Lawrence ***PE***

Purpose: This report aims to present the history, physical examination and subsequent management of a case of Sphingomonas paucimobilis keratitis.

Methods: A case report is presented.

Results: Sphingomonas paucimobilis ocular infection is rare and its risk factors include community-acquired infection, diabetes mellitus, and chronic alcoholism. Agarwal et al performed a literature review and have found only 12 documented cases worldwide. Its presentation is varied from simple keratitis to outright panophthalmitis. Outcomes have also varied from complete resolution to phthisis bulbi or subsequent evisceration. It has been showed to be found post

cataract surgery, post or peripartum, related to contact lens use, in association to trauma, or even spontaneous in onset. This is a case report of a case of Sphingomonas paucimobilis ocular infection presenting as a long-standing corneal opacity. The patient was a 61-year-old male who has diabetic and a previous alcohol with a left corneal opacity and questionable history of trauma. He had poor health seeking behavior and was constantly lost to follow up. Due to the severity and poor prognosis of this case, he was advised the possibility of enucleation.

Conclusions: Sphingomonas paucimobilis is a rarely isolated cause of ocular infection. It is a low-virulence gram-negative bacillus that has been documented to cause keratitis, endophthalmitis, and panophthalmitis in both immunocompromised and immunocompetent individuals.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

A Pilot Study to Compare Accelerated Corneal Collagen Crosslinking Under Normal and Increased Oxygen Concentrations

*First Author: Rajesh **SINHA***

Purpose: To evaluate the role of oxygen supplementation in accelerated corneal crosslinking (A-CXL) in progressive keratoconus.

Methods: Forty eyes with progressive keratoconus undergoing epithelium-off A-CXL (9 mw/cm2x 10 minutes) were randomized into two groups of 20 eyes each. The case arm, during ultraviolet-A irradiation, was locally supplemented with oxygen using corneal oxygen goggle apparatus.

Results: The maximum keratometry reduced from 56.12 ± 6.9D at baseline to 54.19 ± 6.44D at 6 months ($p = 0.001$) in cases and from 56.74 ± 5.57D to 56.07 ± 5.67D ($p = 0.04$) in controls. UCVA improved by 0.11 logMAR units in cases and by 0.03logMAR units in controls at 6months. Stability of cone was achieved in 80% and 75% in cases and controls respectively, and stress-strain index and aberrometry profiles remained comparable.

Conclusions: Oxygen supplementation may provide some additional reduction of keratometric profiles and improvement in UCVA in patients undergoing accelerated corneal crosslinking.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Addressing Inequity in Access to Post-crosslinking Care and Visual Rehabilitation for Māori and Pacific Peoples With Keratoconus in Auckland District Health Board – Preliminary Results

*First Author: Akilesh **GOKUL***
*Co-Author(s): Lize **ANGELO**, Misty **EDMONDS**, Charles **MCGHEE**, Jason **TURUWHENUA**, Mo **ZIAEI***

Purpose: To determine if ophthalmic care following corneal crosslinking (CXL), to monitor treatment efficacy and the provision of visual correction, can be provided more equitably in a community optometry setting with ophthalmologist oversight for patients with keratoconus in Auckland.

Methods: Standard post-CXL model; first specialist assessment, CXL procedure, 1-month follow-up, 3-month follow-up including referral to separate service for visual correction. Community clinic, patients that reside <10Km from the optometry practice transferred to clinic; 3-month follow-up (including assessment of visual needs and correction). Data compared between services; age, gender, ethnicity, proportion of appointments attended, worse-eye; habitual VA (WHVA) and best-potential VA (WBPVA) at 3-month follow-up.

Results: Demographics were similar between the tertiary (n=69) and community clinic (n=27); age, 24.4 ± 7.2years and 24.4 ± 5.9years, ethnicity, Pacific Peoples (47% and 56%), Māori (16% and 19%), European (20.7% and 11%), Asian (15% and 15%), gender, female (38% and 52%). Attendance was significantly higher in the community clinic 81% vs. 60% ($p < 0.001$). WHVA was similar between the ADHB and community clinic 0.71 ± 0.41(6/31) vs. LogMAR0.74 ± 0.41(6/33). WBPVA (LogMAR0.4 ± 0.3(6/14)) was significantly better than WHVA in the community clinic group ($p < 0.001$). Assessment of WBPVA still did not occur in the ADHB group at 6-month follow-up.

Conclusions: Māori and Pacific Peoples are over-represented in both the tertiary and community clinics; however, appointment attendance was significantly higher in the community and patients had their visual potential determined promptly. With appropriate training, equipment and ophthalmology support, a community optometry-based service has the potential to provide more equitable post-crosslinking care.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Addressing Use of Different Topographic and Tomographic Devices for Keratoconus Management in Primary Care Optometry and Secondary Care Ophthalmology Practices, a Comparison of Medmont-E300, Revo-NX and Pentacam-AXL

*First Author: Lize **ANGELO***
*Co-Author(s): Akilesh **GOKUL**, Charles **MCGHEE**, Himanshu **WADHWA**, Mo **ZIAEI***

Purpose: To evaluate different topographic and tomographic devices in primary care to triage and monitor keratoconus, by testing repeatability and agreement of a Placido disc-based videokeratoscope (Medmont-E300 topographer) used in primary care with spectral-domain optical coherence tomography (Revo-NX), and Scheimpflug corneal tomography (Pentacam-AXL) used in secondary care.

Methods: This prospective, single-center study enrolled keratoconic subjects. One eye was randomized to have central and thinnest corneal thickness (CCT, TCT) and maximum, mean, steep and flat keratometry (Kmax, Kmean, Ksteep and Kflat), measured with all three devices. Three measurements were completed per device to assess intra-observer repeatability. Bland-Altman method assessed the agreement between devices.

Results: A total of 110 eyes from 110 subjects were analyzed. Repeatability was best with the Pentacam for CCT, Kmax, Kmean, Ksteep and Kflat parameters (pr ecision=9.21,0.8,0.38,0.52,0.58). The Medmont had better repeatability than the Revo with Kmax, Kmean, Ksteep and Kflat (precision=1.41,1.35,1.43,1.59). Revo had the best repeatability with TCT (precision=3.81). The intraclass correlation coefficient was >0.94 for all parameters in all devices. Agreement was poor between devices. However, agreement existed between the Pentacam and Medmont Kflat measurements (p>0.05).

Conclusions: Repeatability of keratometry parameters with the Pentacam and Medmont were greater than the Revo, suggesting a lower threshold for change with anterior corneal progression. However, the Medmont cannot measure pachymetric parameters. The Revo had greatest repeatability for TCT, suggesting a lower threshold for assessing thinning in disease progression and corneal-crosslinking safety. The Pentacam constitutes the best compromise between keratometry and pachymetry repeatability. There was poor agreement between devices, if changing devices, a new baseline must be established.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Benefits and Risks of Orthokeratology Treatment – A Systematic Review and Meta-analysis

*First Author: Lauren **SARTOR***
*Co-Author(s): Damien S. **HUNTER**, Chameen **SAMARAWICKRAMA**, Mai Linh **VO***

Purpose: This meta-analysis reviews the evidence for the risks and benefits associated with orthokeratology (OK) treatment compared with other methods of myopia control in children and adults.

Methods: A systematic search of Cochrane Central Register of Controlled Trials, Pubmed, Embase and Ovid was conducted from database inception to August 22, 2021. Studies that reported on risks, visual and ocular biometric effects of OK in patients >5 years of age with myopia (-0.75 to -6.00D) were included. Main outcomes are change in axial length, any adverse event. A calculation of incidence of microbial keratitis was made from contact lens prescribing data and hospital audits.

Results: Fifty-one papers were included, quality of data was variable and of moderate certainty, and selection bias likely skewed the results towards a relative benefit for OK. The rate of axial elongation was lower for OK treatment compared to other treatments at one year (MD -0.16 mm, 95% CI -0.25 to -0.07). Rate of change in axial length rebounded after OK discontinuation compared to participants who continued treatment (MD 0.10 mm, 95% CI 0.06 to 0.14). Adults and children wearing OK were up to 3.79 times more likely to experience an adverse event when compared with conventional contact lenses (OR 3.79, 95% CI 1.24 to ll.), though this evidence base is underdeveloped and requires further well-designed studies for substantial conclusions to be drawn.

Conclusions: OK arrests myopia progression while in use, however, there remain unanswered questions about the optimal duration of treatment, discontinuation effects and long-term risk for adverse events.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Combination of Tenon and Corneal Patch Graft to Manage Corneal Perforation in Pediatric Case

*First Author: Afifa **GITTA***
*Co-Author(s): Herwindo **PUTRANTO**, Lely **WULANDARI***

Purpose: Corneal ulcer is one of the common causes

of a visual-threatening disease in children, which can cause visual loss and amblyopia. Prolonged untreated exposure keratopathy is one of it predisposing factor, and corneal perforation is the worst complication. In this case, we report an excellent result of combination tenon and corneal patch graft as treatment of corneal perforation in pediatric patient with corneal perforation due to neglected exposure keratopathy.

Methods: Diagnosis was made based on history taking, physical examination, and anterior segment examination of eye and surgical decisions made based on disease progression.

Results: An 8-years-old child with hydrocephalus was admitted due to white opacities in both eyes and central bulging on left eye since a week. The patient was born with lagophthalmos on both eyes. Ocular examination showed microperforation on right eye and iris prolapse on left eye. Surgical procedure of tenon patch graft were performed on both eyes due to unavailability of corneal donor. Globe integrity was maintained with a well-placed tenon patch on right eye. However, additional corneal patch graft was needed on left eye and attached graft well maintained until 5 months follow up.

Conclusions: In the limited availability of corneal donor, management of corneal perforation is challenging. A combination of tenon and corneal patch graft may reduce inflammation and maintain the integrity of eyeball in perforated corneal ulcer in pediatric case.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Combined Surgical Technique of PK/DALK With Simultaneous Implantation of Complete Full-Ring or Incomplete Intrastromal Ring Segments Into the Graft

*First Author: Yury **KALINNIKOV***
*Co-Author(s): Thi Hoang Anh **DINH**, Svetlana **KALINNIKOVA***

Purpose: To present a new surgical technique that allows to prevent astigmatism intraoperatively during PK, DALK/ALK.

Methods: Twenty patients were divided into 2 groups equally. The first group was operated on according to the first technique: PK and DALK with simultaneous implantation of an incomplete corneal ring segment into the corneal transplant. Femtosecond laser was used to create a circular tunnel for the ring with an inner diameter of 4.5 mm in the donor›s cornea. An incomplete corneal ring segment was placed in the graft. The second group was operated on according to the technique of DALK with simultaneous implantation of complete full ring into the transplant. The donor's cornea is dissected from the periphery using a femtosecond laser, leaving the central zone of 3-4 mm untouched. The graft is excised and later dissected. Complete full ring segment is placed in the transplant.

Results: After 1 year post op results: in the first group showed postoperative astigmatism following PK+ incomplete ring segment decreased from 6.10 ± 3.27 D to 2.3 ± 2.24 D ($p < 0,05$); astigmatism following DALK + incomplete ring segment decreased from 2.87 ± 0.92 D to 0.7 ± 0.97 ($p < 0,05$). In the second group, astigmatism following DALK + complete ring segment decreased from 4,75D to 0,12D.

Conclusions: Surgical technique of combined PK and DALK with simultaneous implantation of complete full ring or incomplete intrastromal ring segments into the graft, with femtosecond laser assistance, is a simple and effective way of intraoperative prevention of corneal astigmatism in the postoperative period.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Combined Topography-Guided Photorefractive Keratectomy and Corneal Collagen Crosslinking: A New Paradigm in Keratoconus Management

*First Author: Kiran **KUMAR***
*Co-Author(s): Suresh Babu **GANGASAGARA**, Vandana **MAGANTY**, Spurti **NATARAJ***

Purpose: To report the long-term results of combined topography-guided photorefractive keratectomy (PRK) and corneal collagen crosslinking for keratoconus.

Methods: A prospective interventional study that enrolled 55 patients with keratoconus (55 eyes). Patients with Stage 1 and 2 keratoconus according to modified Amsler- Krumiech classification were included. They underwent customized topography-guided photorefractive keratectomy followed by corneal collagen cross-linking. Uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), keratometry readings and complications were evaluated at 1,3, 6, 12 and 24 months postoperatively.

Results: A total of 55 patients (55 eyes) were included in the study. All study parameters showed a statistically significant improvement postoperatively over baseline values. At 24 months, the mean UDVA improved from 0.8 ± 0.180 logMAR (logarithm of minimum angle of resolution) to 0.38 ± 0.118 logMAR (p value<0.001) and CDVA improved from 0.467 ± 0.142 logMAR to 0.227 ± 0.078 logMAR (p value< 0.001). The mean flat, steep and maximum keratometry values were significantly reduced by 2.133, 3 and 4.54 diopters respectively, at the last follow up examination (p value<0.001).

Conclusions: The combined topography-guided photorefractive keratectomy and corneal collagen crosslinking procedure seems to be a promising

treatment alternative and is capable of offering patients functional vision and stabilization of ectasia. However, further studies with larger study population and longer follow up periods are required to draw final conclusions about the benefits of this procedure in keratoconus.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Corneal Nerve Changes in Herpes Zoster Ophthalmicus: A Prospective Longitudinal In Vivo Confocal Microscopy Study

*First Author: Eugenie **MOK***
*Co-Author(s): Ka Wai **KAM**, Alvin **YOUNG***

Purpose: To study the changes in corneal nerves & corneal sensitivity over a 6-month period in patients with herpes zoster ophthalmicus (HZO) compared with healthy subjects.

Methods: This was a prospective longitudinal study on patients with newly diagnosed HZO. In vivo confocal microscopy (IVCM) corneal nerve parameters and corneal sensitivity by Cochet Bonnet esthesiometer were measured and compared between eyes with HZO, contralateral eyes and eyes of healthy controls at the time of diagnosis, 2 and 6 months after diagnosis.

Results: A total of 15 subjects with HZO and 15 healthy age and sex matched controls were recruited. HZO eyes revealed a reduction in corneal nerve branch density (CNBD) from baseline to 2 months (9.65 ± 5.75 vs 5.90 ± 6.87/mm2, p = 0.018), and decreased corneal nerve fiber density (CNFD) at 2 months when compared with control (p = 0.025). However, these differences were not present at 6 months. Fellow eyes of HZO patients demonstrated an increased corneal nerve fiber area (CNFA), corneal nerve fiber width (CNFW) and corneal nerve fractal dimension (CNFrD) at 2 months compared with baseline (p = 0.025, 0.031, 0.009). There was no change in the corneal sensitivity for both HZO affected and HZO fellow eyes.

Conclusions: Corneal denervation was present at 2 months in HZO eyes, with an observed recovery by 6 months. Fellow eyes of HZO demonstrated corneal nerve regeneration at 2 months. IVCM is useful in monitoring corneal nerve changes and would be more sensitive in detecting nerve alterations than esthesiometry.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

DMEK in Management of Late, Spontaneous Detachment of Descemet's Membrane After Penetrating Keratoplasty

*First Author: Theofilos **TOURTAS***
*Co-Author(s): Friedrich **KRUSE**, Julia **WELLER***

Purpose: To describe the feasibility of Descemet membrane endothelial keratoplasty (DMEK) as a treatment option in the management of late, spontaneous detachment of Descemet's membrane (DMD) after penetrating keratoplasty (PK) for keratoconus.

Methods: We describe the clinical characteristics and the surgical approach in 7 eyes of 6 patients with DMD. Clinical outcomes, anterior segment imaging, and histological findings are presented.

Results: Median interval between PK and occurrence of DM detachment was 33 years (range: 29-45 years). Air injections into the anterior chamber were initially attempted to re-attach DM in 5 out 7 eyes, which was successful in one case. In 4 out of 5 eyes several air injections had no long-lasting effect. DMEK was performed successfully in 4 eyes leading to increase of visual acuity and resolution of corneal edema. Repeat PK was necessary in 2 eyes because of stromal scars after long-standing edema. There were no signs of retrocorneal membrane formation or fibrosis in light microscopy and transmission electron microscopy.

Conclusions: This is the first report of DMEK for eyes with spontaneous DM detachment after PK. Our results provide evidence that DMEK is a viable option for the management of this condition with good clinical outcome.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Do Keratoconic Eyes Follow the Rundles Curve??

*First Author: Srujana **SAHEBJADA***
*Co-Author(s): Paul **BAIRD**, Gabriella **BULLOCH**, Elsie **CHAN**, Mark **DANIELL**, Sara **VOGRIN***

Purpose: Rundle's curve describes the natural course of Graves' ophthalmopathy, which gradually worsens and peaks before stabilizing. The natural course of Keratoconus (KC) is not well understood, with recent reports suggesting the condition being more aggressive in children than in adults. This study sought to investigate whether Rundle's curve was applicable in KC to improve our knowledge on the natural history of the condition.

Methods: We investigated natural course of KC retrospectively in 1,155 eyes that were followed up at various timepoints, ranging from a few months to several years. We also tried to identify the factors that may affect KC natural history that include age, gender, and corneal tomographic parameters. All analysis was performed using Stata 16.1.

Results: In mild (Km ≤47 D), KC, Latent Profile Analysis determined four classes (groups of subjects with similar progression patterns). All classes remained relatively stable except for class 2 (4.7%) which progressed by 6.8D, over 5 years follow up period. In moderate (Km 47-52 D)/severe KC (Km ≥52 D), five classes were identified with class 1 (55.2%) remaining stable, and classes 2, 3 and 4 (6.4%, 8.4% and 24.8%, respectively) having more erratic changes from baseline over 5 years being 3.43D, 0.35D and 2.75D, respectively. Older age was significantly associated with spontaneous improvement in multiple parameters ($p < 0.001$).

Conclusions: This study discovered that KC did not follow Rundle's curve expect for those in the older eyes. Therefore, KC subjects need regular follow ups to assess the progression and management options should be recommended to avoid corneal transplantation.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Drug-Repository Contact Lens Hasten to Heal and Minimize Antimicrobial Loading Doses in Bacterial Keratitis: A Randomized Controlled Trial Results

First Author: Lional Raj ***DANIEL PONNIAH***

Purpose: To compare the efficacy of novel therapeutic contact lens that increases the overall contact time of corneal antimicrobial drug (serving as a drug reservoir) with conventional antibiotic-alone treatment regimen in subjects with bacterial keratitis (BK).

Methods: A randomized open-label clinical trial. BK was randomized into Gr-1, treated with antimicrobial alone, in Gr-2, a drug reservoir contact lens with characteristic dual base curves resulting in a central reservoir along with fenestrations to enable capture of topical antimicrobial. In both groups, moxifloxacin 0.5% in a standard 4-Hrly for two days, 6-Hrly for next 12 days was instituted. Bacterial Keratitis Severity Scores (BKSS), AC reactions, corneal haze were studied. Followed-up on 12-HRs, Days-1,3,5 & 14. Pain was evaluated on a 10pt scale. A separate Drug-Retention Study was analyzed over time curve.

Results: Forty cases were randomized. The pain was 7.88 ± 0.70 in Gr-1, 7.67 ± 0.78 in Gr-2, reduced by 4.77 points in Gr-2 and 1.88 points in Gr-1 at Day-1, by 6.13 points in Gr-2 by Day-3 ($p < 0.001$). BKSS in Gr-1 was 2.62 ± 0.82 mm, in Gr-2 was 2.66 ± 0.39 ($p = 0.92$). Resolved by 12-Hrs in Gr-2 by 0.28 mm, in Gr-1 by 0.04, by Day-1, 0.94 mm in Gr-2, 0.18 in Gr-1, by Day-3, 1.9 in Gr-2 Vs 0.93 in Gr-1 ($p < 0.0001$), healed in Gr-2 within 5 days and in Gr-1 between 5 and 14 days. AC-reaction resolved in Gr-2 faster. The drug in the central reservoir was evidenced up to 4 hours.

Conclusions: Drug-depository contact lens is effective in prolonging antimicrobial availability over the lesion that healing hastens in Bacterial Keratitis, overcoming the loading dose concept.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Effects of Donor-Recipient Age and Sex Compatibility in Outcomes of Deep Anterior Lamellar Keratoplasties

First Author: Hon Shing ***ONG***
Co-Author(s): Anshu ***ARUNDHATI****, Nathalie* ***CHIAM****, Hla Myint* ***HTOON****, Jodhbir* ***MEHTA***

Purpose: This study evaluated the effects of donor-recipient age- and sex-matching on the outcomes of eyes that had undergone deep anterior lamellar keratoplasty (DALK) surgeries.

Methods: DALK surgeries performed in an ophthalmic hospital over an 11-year period were identified (graft registry data). To analyze the effects of sex-matching, transplants were classified as 'presumed H-Y incompatible' (male donor to female recipient) or 'presumed H-Y compatible' (all other donor-recipient sex combinations). For age-matching, differences in donor and recipient ages were calculated. Cox proportional hazards regressions were used to assess the influence of sex- and age-matching on graft failure and rejection.

Results: A total of 401 eyes were included. 271 (67.6%) grafts were presumed H-Y compatible. 18 (6.6%) grafts failed and 6 (2.2%) rejected. There were trends of lower hazard ratios (HRs) in graft failure and rejection in the presumed H-Y compatible group (0.59[95% CI 0.20-1.77] and 0.93[95% CI 0.22-3.89], respectively). Median difference in age between recipients and donors was 15.0 years (IQR 2.8-34.3). HRs of graft failure and rejection were not influenced by donor-recipient age (HRs per 1-year increase in age difference: 0.995 [95% CI 0.98-1.02] and 1.01[95% CI 0.99-1.03], respectively).

Conclusions: In eyes that had undergone DALK surgeries, no significant influence of donor-recipient sex- or age-matching on graft rejection and failure was observed. Without strong evidence and the limitations of obtaining sample sizes required for an adequately powered study, the benefits of routine sex- and age-matching of donors and recipients during graft allocation for DALK surgeries thus cannot be

recommended.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Epidemiology, Clinical Profile and Prognostic Factors Predicting Final Visual Outcome of Pediatric Ocular Trauma in a Tertiary Eye Care Center in South India

*First Author: Nasrin **DR***
*Co-Author(s): Ravi **CHANDRA K**, Sowmya **PERI***

Purpose: To study the incidence, demographics and clinical profile of ocular trauma in pediatric patients and to predict prognostic factors influencing final visual outcome.

Methods: Retrospective study of 150 eyes of 150 patients presented with open and closed globe injuries was conducted. Demographic factors including age up to 16 years, gender, and clinical data such as cause of injury, presenting visual acuity (VA), site and type of injury, lens status, presence of intraocular foreign body, required surgeries and final visual acuity were recorded. Wound location was classified into three zones. Chi-square test was used to compare presented data.

Results: A total of150 eyes were evaluated for ocular trauma with mean age being 9.5 years ± 3.6 years. Male patients were predominantly affected (p = 0.004). Play-related trauma was common in males (p = 0.004), while fall-related trauma was common in females (p = 0.00001). Time period of presentation between injury and treatment was also statistically significant (p = 0.004). Open globe injuries outnumbered blunt injuries (p = 0.004). Penetrating injuries accounted for 75.76% cases of open globe injuries. Zone III injuries had poor prognosis compared to other zones. Poor VA at first visit (p = 0.00001), ruptured globe with large corneal tears (p = 0.004), scleral or corneoscleral tears (p = 0.026), retinal detachment (p = 0.0001), vitreous hemorrhage(p = 0.044), and dislocation of crystalline lens (p = 0.0003) were found to be poor prognostic factors.

Conclusions: Poor initial VA, size of tear and posterior segment involvement adversely affected the visual outcome. Early medical treatment and globe repair should be done in all eyes suffering from trauma.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

FS-PDEK Plus: Femtosecond Laser-Assisted Pre-Descemet's Endothelial Keratoplasty With Residual Stroma

*First Author: Thi Hoang Anh **DINH***
*Co-Author(s): Yury **KALINNIKOV**, Svetlana **KALINNIKOVA**, Andrey **ZOLOTAREVSKIY***

Purpose: To present a new technology of posterior lamellar keratoplasty: ‹›FS-PDEK plus›› in order to increase the quality of harvested corneal disc and improve clinical and functional results of endothelial keratoplasty.

Methods: A 30-year-old patient presented with gradual decrease in visual acuity (VA) of OD.5 years ago OD was implanted with phakic IOL. VA OD 0,01. Biomicroscopy: corneal edema, presence of several bullae on the epithelium. Pachymetry: 787 µm. Patient was diagnosed with bullous keratopathy, high degree of myopia (axl = 31 mm). Patient underwent removal of phakic IOL, implantation of IOL and FS-PDEK plus. Femtosecond laser created an intrastromal lamellar cut from the endothelial side of the donor's cornea at the depth of 80 µm with a diameter of 8.0 mm.; inside the lamellar cut we performed pneumo-dissection according to our method, a FS-PDEK plus graft was created consisting of minimal additional stroma, Dua's layer, DM and endothelium.

Results: Two months postoperatively: VA OD = 0.5 sph -1.0 cyl -0.5 ax 90 = 0.8; ECD: 2,465 cells/mm2. The cornea is transparent, without signs of stromal edema. Pachymetry-570 µm. The graft is completely adjacent to posterior layers of the cornea. Graft thickness: 54 µm.

Conclusions: FS-PDEK plus allows to obtain ultrathin transplants of 40-50 µm, with graft size up to 9 mm, and to high visual functions, rapid adaptation of the graft, ease of manipulation in the AC, and also reduces the risk of refraction shift towards hypermetropia as with DSAEK. It also minimizes bubble rupture during pneumodissection, and as a result decreases the risk of loss of donor's tissue.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Intracameral Levofloxacin Versus Intracameral Cefuroxime Effect on Corneal Endothelial Cell Count and Morphology in Uneventful Phacoemulsification Surgery

*First Author: Wan Haslina **WAN ABDUL HALIM***
*Co-Author(s): Prema **CHENDRAN**, Safinaz **MOHD KHIALDIN**, Meng Hsien **YONG**, Seng Fai **TANG***

Purpose: Intracameral cefuroxime is used as prophylaxis for post-operative endophthalmitis, but there were concerns regarding its safety. Intracameral levofloxacin 0.5% was compared as it is commercially available, with broad spectrum microbial activity and not requiring reconstitution. This study compared cornea endothelial cell count and morphology between intracameral levofloxacin (0.5%) and intracameral cefuroxime (1mg /0.1mL) in uneventful phacoemulsification surgery.

Methods: This was a randomized double-blinded prospective clinical trial. Eyes undergoing phacoemulsification surgery were randomized via block sampling method. Cornea parameters included in this study were central cornea thickness, cell count, polymegathism and pleomorphism.

Results: A total of 139 eyes (75 from levofloxacin (0.5%) and 64 cefuroxime (1mg/0.1ml) were compared postoperative 1-month. No adverse effect observed in both study groups. There was no statistical difference in terms of cornea parameters at 1-month postoperatively in both groups of antibiotics. The mean endothelial cell count for cefuroxime and levofloxacin group was 2328.31. ± 532.05cells/mm2 and 2306.99 ± 559.93 cells/mm2 (p = 0.70). The mean central corneal thickness for cefuroxime and levofloxacin group was 525.56 ± 37.23. µm and 526.69 ± 35.10 µm (p = 0.55). The coefficient variability for cefuroxime and levofloxacin group was 36.40 ± 5.42% and 34.34 ± 6.48% respectively (p = 0.59). Hexagonality for cefuroxime group was 42.15 ± 15.40% while 45.39 ± 14.80% for levofloxacin group (p = 0.56). The anterior chamber cells showed no significant difference with p = 0.13.

Conclusions: In conclusion, intracameral levofloxacin 0.5% is safe and a potential alternative of intraoperative antibiotic to cefuroxime in preventing acute post-operative endophthalmitis.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Meibomian Gland Dysfunction Determines Tear Film Instability in Thyroid Associated Orbitopathy

*First Author: Xulin **LIAO***
*Co-Author(s): Fatema Mohamed Ali Abdulla **ALJUFAIRI**, Kenneth **LAI**, Calvin **PANG**, Clement **THAM***

Purpose: To investigate the association of MGD, ocular surface exposure with tear film instability in thyroid associated orbitopathy (TAO).

Methods: A cross-sectional study of TAO patients from January to March 2022. Ocular surface parameters included ocular surface disease index (OSDI), tear meniscus height (TMH), non-invasive tear break up time (NIKBUT) by keratography; partial blinking rate, lipid layer thickness (LLT) by interferometry, meibomian gland dropout (meiboscore) on infrared meibography, Schirmer's test, and slit-lamp evaluation of punctate epithelial erosions(PEE). 7-item clinical activity score (CAS), intraocular pressure (IOP) at primary and upgaze, ocular surface exposure by margin reflex distance of the upper and lower eyelid (MRD1 and MRD2), lateral flare, lagophthalmos, exophthalmometry were evaluated by a single orbital surgeon.

Results: A total of 320 eyes from 80 TAO patients (59 females) and 80 healthy control (HC, 51 females) were examined. The mean (SD) age of TAO patients was 45.50(12.22) years while HC was 45.48(18.57). TAO eyes had higher OSDI, TMH, LLT, more severe partial blinking, PEE, shorter NIKBUT and worse meiboscore than HC eyes (all $p < 0.05$). Multivariate analysis identified that meiboscore, but not MRD1, lagophthalmos or exophthalmos, was associated with short NIKBUT in TAO eyes (β=-1.31; 95% CI: -2.51, -0.11), especially the lower eyelid meiboscore (β=-1.42; 95% CI: -2.76, -0.08) and eyes with severe MGD (β=-4.83; 95% CI: -7.33, -2.33) (all $p < 0.05$).

Conclusions: Worse meiboscore due to meibomian gland dropout, especially in the lower eyelid was more crucial than mechanical exposure in determining tear film instability in these TAO patients.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Modified Deep Anterior Lamellar Keratoplasty – A Versatile Technique for Extreme Corneal Ectasias

*First Author: Aarti **HEDA***
*Co-Author(s): Shilpa **JOSHI***

Purpose: To report experience of modified deep

anterior lamellar keratoplasty (DALK), in terms of anatomical & visual outcome in advanced keratoconus, keratoglobus, Pellucid marginal degeneration and variants of ectasias

Methods: Retrospective case series of 8 patients, out of which, 4 advanced Keratoconus, 1 PMD, 1 keratoglobus, 1 keratoglobus with PMD. A Modified DALK, with central 7.0 mm big bubble DALK and peripheral lamellar keratoplasty was done, with peripheral graft size ranging from 2 to 3.5 mm.

Results: The mean follow-up ranged from 6.5 months to two years 7 months, with average 10.5 months. Preoperative mean central keratometry (K) was 60.8 ± 4.8D & K max 73.7 D ± 12.6 D which improved to Central K 46.21 ± 2.3 D & K max 52.6 D ± 5.8 D. Preoperative average astigmatism of 9.4 ± 6.4D improved to 3.7D ± 1.5 D. Preoperative Average best corrected visual acuity was 6/60 (range CF 3 meters to 6/24) which improved to BCVA of 6/12 (range from 6/18 to 6/9), except one patient of PMD who had dense amblyopia. Intraoperatively, no patient had DM perforation. All corneal grafts had grade 4 clarity and none of the patients had complications like double anterior chamber, rejection, or postoperative glaucoma.

Conclusions: Conventional Penetrating Keratoplasty would have required large graft sizes, 9mm or more, with higher possibility of graft rejection. A standard DALK, may not have been possible due to very steep corneal curvatures, with possibilities of intraoperative DM perforation and conversion to penetrating keratoplasty. This modified technique of central DALK and peripheral LK has shown good & consistent outcomes in our patients with various corneal ectasia.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Modified Tenonplasty, the Last Hope of Management in Severe Ocular Burns

*First Author: Tuhin **CHOWDHURY***

Purpose: Modification of classical tenonplasty technique is required in cases where the sclera is severely necrosed and thinned out and where one can't suture the stretched tenon at the limbus to restore limbal perfusion.

Methods: Three cases with severe ocular burn (grade 5-6 as per Dua›s classification) injuries were managed by modified tenonplasty. In classical tenonplasty, the Tenon's pedicle graft is sutured at the limbus to restore the ocular perfusion. So here we have to cover the necrosed scleral bed by human amniotic membrane (hAM) transplantation and then suture the stretched Tenon's pedicle graft over the hAM and then put another piece of hAM over sutured tenon. Post operatively, patients were getting topical antibiotics, lubricants and tapering doses of steroids.

Results: All patients were male, 2 had thermal and one had lime burn. One patient had corneal melt and needed tectonic keratoplasty. 2 patients had persistent corneal epithelial defects and needed autologous serum eye drops. In all cases visual acuity improved from perception of light to 20/60 after a follow up of 9 months. In all the cases, globe integrity was restored with stable ocular surface.

Conclusions: Modified tenonplasty is a novel approach to help and accelerate re- epithelialization of the cornea and conjunctiva through limbal perfusion. In this small prospective series, our patients are having quite gratifying outcome.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Novel Diagnostic and Treatment Algorithm for Pythium Keratitis- Redefining Management Guidelines

*First Author: Bharat **GURNANI***
*Co-Author(s): Josephine Christy **SUSAI***

Purpose: To study demographics, clinical diagnostic features, microbiology, challenges in management, and treatment outcomes and define a novel management protocol for culture-proven Pythium keratitis in a tertiary eye care hospital in South India.

Methods: Retrospective analysis of microbiologically proven Pythium keratitis patients was performed at a tertiary eye center from October 2017 to March 2020. Demographic details, risk factors, microbiological investigations, clinical course, and visual outcomes were analyzed.

Results: Thirty patients were analyzed. The mean age was 43.1 ± 17.2 years. The most common risk factors were a history of injury in 80% and exposure to dirty water in 23.3%. Visual acuity at baseline was 20/30 to the perception of light (PL). The most common clinical presentation was stromal infiltrate and hypopyon in 14 (46.6%) patients each. The microbiological confirmation was based on culture on blood agar and vesicles with zoospores formation with incubated leaf carnation method. Seven (23.3%) patients improved with topical 0.2% Linezolid and topical 1% Azithromycin, 19 (63.3%) patients underwent Therapeutic keratoplasty (TPK), and 4 were lost to follow-up. Seven (23.3%) patients had graft reinfection, and 3 (10%) developed endophthalmitis. The final visual acuity was 20/20-20/200 in 6 (20%) patients, 20/240-20/1200 in 5 (16.6%) patients, hand movement to a positive perception of light in 16 patients, and no perception of light (Phthisis Bulbi) in 3 (10%) patients.

Conclusions: Prompt diagnosis, clinical awareness, and specific treatment options are needed for PK. This

novel diagnostic and treatment protocol will serve as a practical diagnostic guide for clinicians in the future.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Novel Synthetic Corneal Endothelial Substitute in Chronic Corneal Edema: Interim Trial Reports

First Author: Lional Raj ***DANIEL PONNIAH***

Purpose: To evaluate safety of implanting synthetic corneal endothelial substitute in cases of chronic endothelial dysfunction.

Methods: A prospective open-label clinical safety evaluation. Cases of chronic endo.dysfn. were subjected to synthetic implant after a central 7.0mm descemetorhexis and attached under gas similar to endo.keratoplasty. Pre & post-op CCT, vision (ETDRS characters), pain scores were analyzed in addition to re-bubbling rates & toxic reactions

Results: Twelve cases were enrolled. Vision at baseline was 9.75 ± 1.7 ETDRS characters, which improved to 41.75 ± 8.7, and retained after 4 months at 50.59 ± 7.1. CCT reduced from 715mic, to 504 and maintained at 472.5 by Mon-4. Pain, out of a scale of 1 -100, at presentation was 90.5 ± 2.3 and 68.25 ± 4.03 at 1 month, further improved by 3 months. No immunologic reactions were noticed in any cases. Three cases needed rebubbling (D7, D7, D21).

Conclusions: This novel synthetic endothelial layer improved vision, reduced chronic corneal edema due to endothelial dysfunction and were not associated with toxicities. Further evaluation of long-term safety and efficacy data is under process to understand if they can be a complete alternative to endothelial keratoplasties, negating the need for human corneas and rejection reactions.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Ocular Surface Safety of Topical Levofloxacin Versus Topical Moxifloxacin

First Author: Solehah ***JEFFREY***
Co-Author(s): Norshamsiah Md ***DIN****, Wan Haslina* ***WAN ABDUL HALIM***

Purpose: This is a prospective single blinded clinical trial comparing clinical safety of Levofloxacin 1.5% against Moxifloxacin 0.5% on corneal surface after topical administration in patients who received routine intravitreal injections.

Methods: Study subjects were randomized into 2 groups; topical Levofloxacin 1.5% or topical Moxifloxacin 0.5% for 4 hourly for 2 weeks, followed by 6 hourly for the following 2 weeks. Parameters studied are 1) tear break up time (TBUT), 2) Cornea and conjunctival surface sign (CCSS) 3) Schirmer's test, 4) average non-invasive tear break up time (NITBUT), 5) bulbar redness, and 6) tear meniscus height (TMH) at baseline and 4 weeks.

Results: A total of 116 subjects were analyzed. 58 received Levofloxacin 1.5% while 58 received Moxifloxacin 0.5%. There was no difference between both group for CCSS, TBUT, NITBUT and TMH at baseline and at follow up, and there was no within group difference after application of either eyedrops. Schirmer's test shows improvement after application of topical Levofloxacin 1.5%. There was no significant difference in both group at baseline between Levofloxacin group and Moxifloxacin group for redness analysis. There was significant reduction in the redness score after application of topical levofloxacin group as well as in the topical moxifloxacin group.

Conclusions: This study demonstrates there is no difference of topical Levofloxacin 1.5% compared to topical Moxifloxacin 0.5% on the ocular surface safety. Levofloxacin 1.5% showed improved Schirmer test at follow up, and both antibiotics shows improvement in conjunctival hyperemia post application. Otherwise, other corneal surface parameters are comparable.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Outcomes of 2 courses of topical recombinant human nerve growth factor in treatment of neurotrophic keratopathy

First Author: Piseth Dalin ***CHEA***

Purpose: To describe the outcomes of two courses of topical recombinant human nerve growth factor (rhNGF, cenegermin-bkbj, Oxervate 0.002%, Dompé U.S. Inc) in patients with neurotrophic keratopathy (NK).

Methods: This is a retrospective case series. Patients who received two 8-week courses of topical cenegermin were included. Other inclusion criteria were over 18 years of age, diagnosis with stage 2 and 3 neurotrophic keratopathies at the time of second course of cenegermin. Primary outcome was success in complete corneal epithelial wound healing.

Results: Ten eyes of ten patients were included in this study. Mean age was 70.8 ± 17 years, 9 patients were ≥60 years old (ranged 61-88), and 7 were female. In this series, ocular conditions associated with NK were drug toxicity (n=3), exposure keratopathy (n=2), limbal stem cell deficiency (n=2), herpes zoster ophthalmicus (n=2), and facial nerve palsy (n=1). Mean interval between the first and second courses of cenegermin was 7.95 months (range: 0.5 - 21 months). Complete

epithelium healing occurred in 7 of the 10 eyes (70%) after the second course. Corrected distance visual acuity (CDVA) improved from 1.24 ± 0.56 logMAR at initial presentation to 0.91 ± 0.77 at final follow-up. Four patients reported side effects of cenegermin as stinging, burning, irritation, light sensitivity, lid edema and tearing.

Conclusions: In this case series, we report improvement in corneal epithelium healing with two courses of cenegermin. This additional treatment course showed beneficial effect on refractory NK patients, who still experienced non-healing or recurrent corneal epithelial breakdown after the first course of cenegermin.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Prevalence of Sjogren's Syndrome in Patients With Dry Eye Disease in a Tertiary Hospital in Nepal

*First Author: Meenu **CHAUDHARY***
*Co-Author(s): Saket **JHA**, Anil Dev **PANT**, Sanjeeta **SITAULA***

Purpose: Dry eye syndrome is a multi-factorial disease affecting significant proportion of the population. Well-known association of systemic diseases with dry eye syndrome are Sjögren's syndrome (SS), rheumatoid arthritis, scleroderma, polymyositis, lymphoma, sarcoidosis, and SLE. However, screening for SS by ophthalmologists caring for patients with dry eye is not a common practice, partly because serious ocular complications secondary to SS are not widely recognized.

Methods: A total of 42 patients with dry eye symptoms were evaluated for 6 months. Investigations included unanaesthetized Schirmer's test, NIBUT, ocular staining of cornea, conjunctiva with Fluorescein stain, Lissamine green dye. Blood investigations - ENA profile and minor salivary gland labial biopsy done for further confirmation of SS if ENA profile was negative. Data was entered in SPSS 20 and statistical analysis done.

Results: To note, 42 patients with dry eyes were included, with 31 (73.80%) females and 11 (26.19%) males. Primary Sjogren's syndrome was seen in 8 (19.04%) with 6 (14.28%) females and 2 (4.76%) males. Primary SS was more common in 60-70 years› age group in females. Patients with purely DED was 62%. Prevalence of Primary SS was 19% and secondary SS 19%. ENA profile was positive in 8 cases and only one case had positive histopathology finding on Labial salivary gland biopsy to confirm Primary SS. Statistically significant correlation was found between duration of DED and duration of systemic disease.

Conclusions: Primary SS appears to be under diagnosed in dry eye patients and should be the focus of diagnostic evaluations. A minor salivary gland biopsy is required for a definitive diagnosis in a significant proportion of the patients with SS.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Safety and Efficacy of Contact Lenses in Eyes Post Limbal Stem Cell Transplantation

*First Author: Simmy **CHAUDHARY***
*Co-Author(s): Sayan **BASU**, Kiranmayi **CHAPPIDI**, Anahita **KATE**, Swapna **SHANBHAG***

Purpose: To evaluate the safety and efficacy of contact lenses (CL) in eyes post limbal stem cell transplantation (LSCT) for limbal stem cell deficiency (LSCD).

Methods: This retrospective study included 61 eyes with partial or total LSCD which underwent LSCT and were fitted for corneal or scleral rigid gas permeable (RGP) contact lenses. The primary outcome was best-corrected visual acuity (BCVA) with contact lenses.

Results: The median age at the time of presentation was 22 years [Interquartile range (IQR): 14-28]. The most common cause of LSCD was chemical injury [40 eyes (65.6%)] followed by Stevens-Johnson syndrome [8/61 (13.1%)]. Twenty-seven eyes (44.26%) were fitted with corneal RGP lenses, while 34 eyes (55.73%) were prescribed scleral lenses. The median duration of interval between LSCT and contact lens trial was 10 months (IQR: 4-17). BCVA (in logMAR) improved from 1.8 (IQR: 1.4 – 2.8) to 1 (IQR: 0.7 – 1.5) [$p < 0.001$] after LSCT and improved further to 0.5 (IQR: 0.3 – 1) [$p < 0.001$] with contact lenses. There was no epithelial defect or failure of LSCT noted at the last follow-up visit.

Conclusions: Contact lenses, both corneal and scleral lenses provide significant improvement in BCVA in eyes with LSCT and can be safely prescribed in such eyes without any adverse effect on limbal explants or risk of failure of LSCT. This option can be considered prior to performing a keratoplasty if the visual improvement is significant.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

Symblepharon Release for Optimal Scleral Lens Fitting

*First Author: Simmy **CHAUDHARY***
*Co-Author(s): Sayan **BASU**, Swapna **SHANBHAG***

Purpose: To describe outcomes of symblepharon release post-simple limbal stem cell transplantation (SLET) in eyes with limbal stem cell deficiency (LSCD) to enable optimal scleral contact lens (CL) fitting.

Methods: This retrospective study included 23 eyes of

(21) patients with partial/total LSCD who underwent SLET and had residual/recurrent symblepharon. Since CL fitting was not possible without symblepharon release, symblepharon release was planned with conjunctival autograft (CAG) or amniotic membrane graft (AMG) or mucous membrane graft (MMG) as tissue replacement. These eyes were fitted with corneal or scleral rigid gas permeable (RGP) contact lenses after symblepharon release. The primary outcome measure was successful scleral lens fit after symblepharon release.

Results: The median age at the time of presentation was 19 years [Interquartile range (IQR):9.5-31]. Most common cause of LSCD was chemical injury [10 eyes(43.5%)] followed by Stevens-Johnson syndrome[7/23(30.4%)]. All eyes underwent autologous/allogeneic SLET. Symblepharon involved limbus in 100% eyes. The superior quadrant was involved in 15/23 eyes (65.2%). To note, 47.8% of eyes underwent AMG, 34.8% of eyes underwent CAG while 17.4% of eyes underwent MMG. The median duration of the interval between symblepharon release and contact lens trial was 16 weeks (IQR: 8-22). Eighteen eyes (78.3%) were fitted with scleral lenses. The mean scleral lens diameter prescribed after symblepharon release was 15.67mm (S.D: 1.029). Mean BCVA (logMAR) improved from 1.3 ± 0.55 to 0.9 ± 0.64; p = 0.000001) with scleral lenses.

Conclusions: For eyes post SLET, limbus involving symblepharon can preclude CL fitting, which should be addressed surgically for optimal fit of scleral contact lens.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOM 409 (Level 4)

To Prevent and to Protect Is Better Than to Repent and Repair: A Retrospective Study to Evaluate Efficacy of Collagen Cross-Linking for Progressive Keratoconus in Pediatric Population

*First Author: Sowmya **PERI***
*Co-Author(s): Ravi **CHANDRA K**, Nasrin **DR***

Purpose: To evaluate the efficacy of collagen cross-linking for progressive keratoconus in pediatric patients and assess the halt or slowing of progression of ectasia and effect on visual outcome.

Methods: This retrospective study was done over a period of 2 years.74 eyes of 42 patients (aged 18 years or younger) who underwent collagen cross-linking using Riboflavin and UV-A radiation (370 nm, 3mW/cm2) for 30 minutes, were included in the study.

Results: The mean patient age was 14.3 ± 2.5 years (range: 9-17 years). The mean follow-up duration was 20.1 months (range: 6-48 months). Cross-linked eyes showed a significant reduction in keratometry values. The mean baseline simulated keratometry values were 46.5 diopter (D) in the flattest meridian and 50 D in the steepest meridian. At 24 months after cross-linking, the values were 45.5D (p = 0.03) in the flattest meridian and 49.2D in the steepest meridian. The best corrected visual acuity (BCVA) and topographic astigmatism improved after cross-linking. The topographic astigmatism reduced from mean 3.5D to 3.25D (p = 0.5).

Conclusions: Conventional method of collagen cross-linking using riboflavin and UV-A radiation is an effective and safe treatment method for progressive keratoconus in pediatric patients. Cross-linking halts or slows down the progression of ectasia, stabilizes the condition and helps in better visual acuity in most patients. This drastically reduces the need for corneal transplant in these young patients.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Treating FECD with DWEK and Rho kinase inhibitor eye-drops

*First Author: Haolan **QI***
*Co-Author(s): Liqiang **WANG***

Purpose: Fuchs endothelial corneal dystrophy (FECD) is a progressing dystrophy involving the corneal endothelial layer. As the disease worsens, the cornea develops guttae and thickening of Descemet›s membrane, causing corneal edema, and reduced visual acuity. Corneal transplantation is the first-choice treatment for late stages of FECD. We applied Descemet stripping without endothelial keratoplasty (DWEK), which is an innovative surgery type and has just become popular these years. We applied rho kinase inhibitor eye-drops post-operatively to observe the disease outcome.

Methods: The patient is a 50-year-old female with an early FECD stage in the left eye. The guttae is in the center of the cornea. The peripheral corneal endothelial cells are healthy, and the corneal count is 1844 cells/mm2. We performed DWEK and carefully stripped away a 4mm circle of central diseased endothelial cells without placing any donor cornea tissue. We prescribed a Rho kinase inhibitor eye-drop QID. after the surgery.

Results: Central cornea swelled up right after surgery and the vision temporarily worsened in the first month. After 2 months, the patient achieved lasting corneal clarity and the BCVA reached 20/32. Followed up for 1 year, the patient doesn't need endothelial keratoplasty so far.

Conclusions: DWEK requires no donor cornea, has no adverse complications such as immune rejection, and saves FECD patients from endothelial transplantation, which provides an additional choice. According to

case reports, the success rate of DWEK can be as high as 83% when appropriate patients are selected. At present, there are only a relatively small number of DWEK cases in China.

Evolving Academia, Research, Teaching and Education in Ophthalmology

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Assessment of a High Fidelity, Virtual Reality Based, Manual Small Incision Cataract Surgery Simulator: A Face and Content Validity Study

First Author: Akshay ***NAIR***
Co-Author(s): Chetan ***AHIWALAY****, Ashish* ***BACCHAV****, Van* ***LANSINGH****, Tejas* ***SHETH***

Purpose: To establish the face and content validity of the HelpMeSee Eye Surgery Simulator – a virtual reality-based cataract surgery simulator for manual small incision cataract surgery (MSICS).

Methods: The face and content validity were assessed on the sclero-corneal tunnel construction course. A questionnaire with eleven questions focused on the visual realism, resemblance to real life surgery and the training value of the simulator was developed. Thirty-five experienced MSICS surgeons participated in the study. Responses were recorded using a seven-point scoring system.

Results: Overall, 74.3% (26/35) of the respondents agreed that the overall visual representation of the eye and the instruments in the simulator were realistic. The task of injecting viscoelastic through the paracentesis was reported to be the most visually realistic task with a mean score of 5.78 (SD:1.09; range: 2-7). With regards to content validity, 77.1% (27/35) of the subjects felt agreed that the errors and complications represented throughout the entire tunnel construction module were similar to those encountered in real life; the task of entering the anterior chamber with the keratome, had a mean score of 5.54 (SD: 0.98; range 1-7), being rated the highest in that aspect. Overall, 94.3% (33/35) of the subjects agreed that the simulator would be useful in developing hand-eye co-ordination. A similar number: 94.3% (33/35) agreed that based on their experience, they would recommend cataract surgical training on this simulator.

Conclusions: The results suggest that the HelpMeSee Eye Surgery Simulator appears to have sufficient face and content validity for cataract surgical training.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Citicoline Reduces Matrix Metalloproteinase-2 Expression in Scleral Tissue of Rat Myopia Model

First Author: Eka ***WAHYUNINGSIH***
Co-Author(s): Nanda ***ANANDITA****, Hidayat* ***SUJUTI****, Hariwati* ***MOEHARIADI***

Purpose: The study aimed to demonstrate the effect of citicoline on the expression of matrix metalloproteinase-2 (MMP-2) in the scleral tissue of a rat myopia model. Another objective was to evaluate the axial length and to determine its correlation with the given dosage of citicoline.

Methods: The study was conducted on 4-week-old male rats (n=25). The rats were treated with lens-induced myopia (LIM) with a -10.00 D lens for 3 weeks and divided into a) a negative control group, b) a myopic model group without citicoline as a positive control, and c) a myopic model group treated with citicoline 50, d) 100, or e) 200 mg/kg BW/day given daily for a week on the third week. Immunohistochemistry was performed to evaluate the expression of MMP-2. An electronic digital caliper was used to evaluate the axial length.

Results: The treatment group with 200 mg/kg BW/day had the lowest mean MMP-2 expression (18.38±7.75) and axial elongation (5.742±0.066). Pearson correlation showed there was a strong and negative correlation between the dosage of citicoline and axial length elongation ($p = 0.012$; $r=-0.628$), as well as the dosage of citicoline and MMP-2 expression ($p = 0.013$; $r=-0.626$).

Conclusions: Citicoline controls axial elongation and decreases MMP-2 expression significantly in scleral tissue in a rat myopic model.

Glaucoma and Glaucoma Surgery

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

36-Month Follow-up Study of iStent Technology Combined With Phacoemulsification in Asian Eyes With Various Types of Glaucoma

First Author: See Teng ***TAN***
Co-Author(s): Alice ***CHU****, Rahat* ***HUSAIN****, Jin Rong* ***LOW****, Yamon* ***THANT SYN****, Ting Fang* ***TAN***

Purpose: This study assessed the effectiveness and

safety of iStent technology (iStent, iStent inject, and iStent inject W) combined with phacoemulsification in eyes with various glaucoma severities.

Methods: A 36-month, retrospective longitudinal study between November 2016 and July 2021 evaluated changes in intraocular pressure (IOP) and medications from preoperative values and the proportion of eyes achieving success. Subanalysis was based on preoperative IOP; the associated factors were analyzed using mixed-effects regression. Safety measures included adverse events and additional glaucoma surgeries.

Results: Overall, 284 eyes were enrolled (23iStent, 255iStent inject, and 6iStent inject W) with a mean age of 70.9 ± 9.2 years. The cohort comprised 79.3% mild-moderate glaucoma and 48.6% POAG. The baseline mean IOP was 16.1 ± 4.2 mmHg, and the mean number of glaucoma medications was 1.6 ± 0.9, with 58.8% on ≤ one medication. Regression modelling estimated a mean IOP reduction of 1.41 mmHg (95%CI: -2.01, -0.81; $p < 0.001$) and a 54.0% reduction in mean medications at POM36. The proportion of eyes with fewer medications vs baseline was 64.9%. Complete and qualified success (≤18mmHg) was 46.5% and 91.7%, respectively. Favorable safety outcomes included limited transient postoperative adverse events and stable glaucoma progression markers. Five eyes with more advanced disease underwent additional glaucoma surgeries. Regression modelling estimated increasing mean IOP reduction and mean medication reductions with increasing categories of baseline mean IOP.

Conclusions: This report is one of the largest real-world cohort studies in Asian eyes. The outcomes of combined phacoemulsification with iStent technology have significantly, safely, and sustainably reduced IOP and medication burden through three-year postoperatively.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

A 12-Month Assessment of iStent Infinite (3 Stents) in Open Angle Glaucoma Uncontrolled by Maximum Tolerated Medical Therapy or Prior Surgery

*First Author: Robert **ANG***

Purpose: Studies have shown trabecular micro-bypass with 1 or 2-stent iStent technologies reduced intraocular pressure (IOP) and glaucoma medication use in patients with mild to moderate open-angle glaucoma (OAG) with low treatment burden. The clinical benefits of iStent infinite, 3-stent technology, were assessed in a pivotal trial in subjects with uncontrolled OAG with high treatment burden.

Methods: A 12-month prospective, multi-center, single-arm clinical study recruited subjects with uncontrolled OAG on maximum tolerated medical therapy (MTMT) or failed filtration/cilioablative surgery on ≥ 2 medications. Subjects were implanted with iStent infinite as a standalone procedure. Effectiveness endpoints consisted of proportion of subjects achieving ≥ 20% mean diurnal IOP (MDIOP) reduction from baseline at postoperative month 12 (POM12) on ≤ medications without safety issues (responder endpoint) and mean change from baseline in MDIOP at POM12. Safety outcomes included visual acuity, disease progression, and adverse events.

Results: Among the 72 eyes/subjects enrolled, 11 were MTMT and 61 had failed prior surgery. Preoperative MDIOP was 23.4 ± 2.8 mm Hg and mean medications were 3.1 ± 0.9, with 73.6% of subjects on ≥ 3 medications. Glaucoma severities ranged from mild to severe. At POM12, responder endpoint was achieved in 76.1% of cohort, and mean change from baseline was 5.9 mm Hg (95% CI: 4.8, 7.1). Medication burden did not increase in 93% of subjects. No serious device-related adverse events were observed. Disease markers remained stable. Only 3 eyes required additional glaucoma surgery.

Conclusions: In this challenging population, iStent infinite was a safe treatment that led to clinically significant IOP reductions.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

A Novel Guinea Pig Glaucoma Model Induced by Magnetic Microsphere Injection

*First Author: Peiyuan **WANG***
*Co-Author(s): Shida **CHEN**, Xiuli **FANG**, Jiaxuan **JIANG**, Yunhe **SONG**, Xiulan **ZHANG***

Purpose: We aim to validate the feasibility and effectiveness of a novel glaucoma model in guinea pigs using intracameral injection of magnetic microspheres.

Methods: Twenty-four young guinea pigs were intracamerally injected with magnetic microspheres to induce chronic ocular hypertension (COH). The intraocular pressure (IOP) was recorded for 8 consecutive weeks. Cell degeneration in the ganglion cell layer (GCL) was detected and the density and morphology of optic nerve axons were analyzed.

Results: Glaucoma models were successfully established in guinea pigs with the mean IOP raised from baseline (18.14 ± 1.54 mmHg) to the highest at week 3 (37.98 ± 7.39 mmHg) and remained elevated for at least 7 weeks. TUNEL positive cells in GCL in COH group (77.53%) were significantly higher than contralateral control group (3.14%). Retinal flat mount staining indicated that the density of retinal ganglion cells (RGCs) in the COH group was significantly lower

than that in the control group. The optic disc was excavated and the lamina cribrosa (LC) was significantly depressed and thinned. The number of optic nerve axons in the COH group gradually decreased from (44553 ± 3608/mm2) to (17977 ± 3697/mm2), and degenerative axons and macrophages were observed engulfing myelin debris.

Conclusions: In conclusion, intracameral injection of magnetic microspheres successfully induced COH in guinea pigs that showed typical glaucomatous changes including robust IOP elevation, loss of RGCs, thinning of the LC, and axonal degeneration. This novel glaucoma model has the potential to facilitate the study of high myopia and glaucoma, and the investigation of the role of LC in the pathogenesis of glaucoma.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Aqueous Column Changes in Episcleral Veins After Instillation of Ripasudil Versus Latanoprost: A Randomized, Double-blind, Crossover Clinical Trial

*First Author: Masaru **INATANI***
*Co-Author(s): Shogo **ARIMURA**, Ryohei **KOMORI**, Yusuke **ORII**, Marie **SUZUKI**, Yohei **SUZUKI***

Purpose: The purpose was to investigate whether the topical administration of ripasudil ophthalmic solution enhanced aqueous outflow in the episcleral vein of the human eye.

Methods: A two-sequence, prospective, randomized, double-blind, crossover trial was designed. Sixteen eyes of 16 healthy participants were recruited in this study. Participants were randomized into one of the two crossover sequences to the instillation of ripasudil or the control drug, latanoprost, followed by a washout period of more than 2 days, and crossed over to the alternative instillation. The aqueous columns in the episcleral veins were recorded using a video capture system connected to a slit-light microscope (hemoglobin video imaging) before and 2 and 8 h after the instillation. The primary outcome measure was the comparison between ripasudil and latanoprost for the changes of the aqueous column width after the instillation.

Results: The aqueous column width was significantly larger 2 ($p < 0.001$, Wilcoxon signed-rank test) and 8 h ($p = 0.034$, Wilcoxon signed-rank test) after the instillation of ripasudil than that at baseline. In contrast, no significant differences in aqueous column width were observed after the instillation of latanoprost. Furthermore, 2 h and 8 h after the instillation of ophthalmic solutions, the percent change in the aqueous column width was significantly larger after the instillation of ripasudil than after the instillation of latanoprost ($p < 0.001$ and $p = 0.0212$, respectively, liner mixed model).

Conclusions: Hemoglobin video imaging revealed that the topical administration of ripasudil ophthalmic solution enhanced aqueous outflow in the episcleral vein of the human eye.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Association of SPARC-Related Modular Calcium Binding 2 Gene C/T Variant and G/a Variant in Primary Open Angle Glaucoma Patients

*First Author: Ashok **KUMAR***
*Co-Author(s): Jalpa **BAI**, Syed Habib Ahmed **NAQVI**, Muhammad **RAFIQ**, Hina **SHAIKH**, Ali Muhammad **WARYAH***

Purpose: To investigate the two polymorphisms of SPARC-Related Modular Calcium Binding 2 (SMOC2) gene C/T variant (rs2255680) and G/A variant (rs13208776), phenotypes and correlation between genotype and phenotype in familial and non-familial POAG patients.

Methods: This is a cross-sectional descriptive study, with a total of 212 POAG patients enrolled. After consent, detailed ophthalmologic examination blood sample was collected. Two single nucleotide polymorphisms (SNP) of SMOC2 gene (rs2255680, and rs13208776) were selected. After DNA extraction, primers for RFLP and ARMS analysis were designed followed by optimization for ARMS assays PCR and RFLP condition. Incubation of simple PCR product at 55°C for two hours with restriction enzyme hin1I (BsaHI). The mutational patterns and its association with clinical variables were demonstrated.

Results: Significant difference was found in the C/T variant genotypes. G/A abundantly present in POAG non-familial group compared to other study group ($p < 0.001$). Moderate-to-mild loss of visual acuity was significantly higher among POAG familial group, while higher frequency of left eye blindness and severe loss of visual acuity was observed in non-familial POAG group ($p < 0.001$). The C:D ratio and IOP was significantly higher in non-familial group. Age distribution showed that 85% of familial POAG patients and 90% of non-familial POAG patients were above 40 years of age. Also, 63% familial and 59% non-familial cases were male. Chi-square results indicated significant correlation of C:D ratio and IOP with age ($p < 0.001$).

Conclusions: Significant association of SMOC2 G/A variant polymorphism and non-familial POAG susceptibility were noted, with higher frequency of elevated IOP and C:D ratio in non-familial POAG patients noted versus that of the familial group.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Combined Phacoemulsification and Hydrus Microstent Implantation in Asian Eyes With Moderate-to-Severe Normal Tension Glaucoma: 12-Month Outcomes

*First Author: Bryan **ANG***
*Co-Author(s): Bjorn Kaijun **BETZLER**, Wai Kitt **CHEE**, Leonard **YIP**, Vivien **YIP**, Chun Hau **CHUA***

Purpose: To evaluate the safety and efficacy of combined phacoemulsification and Hydrus Microstent implantation in Asian eyes with moderate to severe normal tension glaucoma (NTG).

Methods: Retrospective study of consecutive surgeries performed from August 2019 to August 2021 in a single tertiary eye center. Data were collected from postoperative day (POD) 1, postoperative week 1, postoperative month (POM) 1, POM3, POM6 and POM12 visits. Outcome measures included reduction in intraocular pressure (IOP), number of glaucoma medications and perioperative complications.

Results: Data from 22 eyes of 22 subjects were analyzed. All subjects were Chinese, and the majority were male (15, 68.2%). At baseline, the mean IOP was 13.3 (2.3) mmHg, all eyes had a HVF mean deviation (MD) of ≥-6 dB [mean -13.6(4.4) dB] and all eyes were on at least one glaucoma medication. There was no statistically significant reduction in IOP at all timepoints compared to baseline (all $p > 0.05$). However, the median number of medications reduced from 2 (IQR 1) to 0 (IQR 1) at all timepoints, up to POM12 (all $p < 0.001$). There were no intraoperative complications. No eyes underwent secondary glaucoma procedures nor lost any Snellen's line of visual acuity by POM12. One (4.5%) eye experienced numerical hypotony at POD1, which resolved conservatively. Two (9.1%) eyes underwent laser iridoplasty for stent occlusion by iris. There was no deterioration in HVF MD at POM12 compared to baseline (n=21, $p > 0.05$).

Conclusions: Combined phacoemulsification and Hydrus Microstent implantation is effective in reducing medication burden in Asian eyes with moderate to severe NTG, up to 12 months after surgery.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Development and Validation of a Deep Learning System to Predict Glaucoma Incidence and Progression Using Color Fundus Photographs

*First Author: Fei **LI***

Purpose: Deep learning has been widely used for glaucoma diagnosis. However, there is no clinically validated algorithm for glaucoma incidence and progression prediction. This study aims to develop a clinically feasible deep learning system for predicting and stratifying the risk of glaucoma onset and progression based on color fundus photographs (CFPs), with clinical validation of performance in external population cohorts.

Methods: We established datasets of CFPs, and visual fields collected from longitudinal cohorts. The mean follow-up duration is 3-5 years across the datasets. AI models were developed to predict future glaucoma incidence and progression based on the CFPs of 17,497 eyes in 9,346 patients. The area under curve (AUC), sensitivity and specificity of the AI models were calculated with reference to the labels provided by experienced ophthalmologists. Incidence and progression of glaucoma were determined based on longitudinal CFP images or visual fields, respectively.

Results: The AI model to predict glaucoma incidence achieved an AUC of 0.90 (0.81-0.99) in the validation set and demonstrated good generalizability with AUCs of 0.89 (0.83-0.95) and 0.88 (0.79-0.97) in the external test set 1 and 2, respectively. The AI model to predict glaucoma progression achieved an AUC of 0.91 (0.88-0.94) in the validation set and remain outstanding predictive performance with AUCs of 0.87 (0.81-0.92) and 0.88 (0.83-0.94) in the external test set 1 and 2, respectively.

Conclusions: Our study demonstrates the feasibility of deep learning algorithms in the early detection and prediction of glaucoma progression.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Factors Associated With Stress Among Juvenile Open-Angle Glaucoma Patients in Malaysia

*First Author: Radtthiga **CHELVARAJ***
*Co-Author(s): Liza Sharmini **AHMAD TAJUDIN**, Azhany **YAAKUB***

Purpose: The study aims to determine the mean score for stress among juvenile open-angle glaucoma (JOAG)

patients and its associated factors.

Methods: This was a comparative, cross sectional study involving 4 tertiary ophthalmology centers with glaucoma subspeciality in Malaysia. The study recruited 64 JOAG patients and 64 controls. Sociodemographic data, latest clinical findings and Humphrey visual field analysis of JOAG group were collected. The Malay version of Perceived Stress Scale (M-PSS) questionnaire was administered. Linear regressions were used to identify the associated factors for stress among JOAG group.

Results: Result: The mean age of the participants was 31.44 ± 6.38 years with no sexual predilection. The mean duration of the glaucoma is 10.98 ± 5.77 years. M-PSS score among the JOAG group was 13.70 ± 3.87 and 8.72 ± 3.96 in the control group. The JOAG group manifested significant perceived stress as compared to the control group (<0.001). From univariate and multivariate logistic regression, perceived stress was notably associated with unemployment [β 2.59, 95% CI (5.06, 0.12); p = 0.040)] and severity of glaucoma. Patients with moderate [β 3.87, 95% CI (0.16, 7.89); p = 0.059)] and severe [β 3.76, 95% CI (0.65, 6.86); p = 0.019)] glaucoma revealed higher stress score.

Conclusions: JOAG patients were noted to have increased stress from this study. Unemployment and severity of glaucoma were associated with higher PSS score. Collaboration between ophthalmologists and psychiatrists is vital in the management of JOAG patients holistically.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Five-Year Results From a Multicenter, Randomized Comparison of Cataract Surgery Combined With Schlemm's Microstent to Cataract Surgery Alone

*First Author: Jimmy Jarvis Gene **LO***
*Co-Author(s): Robert **ANG***

Purpose: This report presents the 5-year findings from a randomized controlled trial of a MIGS device when combined with cataract surgery (HORIZON). The device (Hydrus Microstent) bypasses the trabecular meshwork and dilates 3 clock hours of Schlemm's canal.

Methods: Prospective, multicenter, single masked, controlled, randomized clinical trial. 556 eyes were randomized after phacoemulsification 2:1 to microstent implantation (HS) or no additional treatment (CS).

Results: To note, 443/556 eyes (80%) completed 5 years follow-up. HS eyes were medication free more frequently (66% vs. 46%, p < 0.001) and maintained a greater reduction in medication free IOP vs. baseline (8.3 ± 3.8 vs 6.5 ± 4.0 mmHg, p < 0.001). HS eyes had a lower risk of further incisional glaucoma surgery (2.5% vs 6.4%, p = 0.022, log rank test). Central endothelial cell density (ECD) was 2086 ± 519 cells/mm2 at 3 months and 1967 ± 522 at 5 years in HS (D = -119 cells/mm2, p = 0.99).

Conclusions: At 5 years, HS eyes maintain lower IOP and medications and required further surgery less often compared to CS. There was no significant postoperative ECD loss in the HS group from 3 to 60 months.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Glaucoma Staging System Based on Mean Deviation Underestimates Severity in Common Glaucomatous Visual Field Defects

*First Author: Tutul **CHAKRAVARTI***

Purpose: Evaluating the accuracy of the existing glaucoma staging system based on mean deviation (MD), in common glaucomatous visual field defects (VFD) patterns on 24-2 Visual fields (VF) in an early glaucoma cohort.

Methods: We included 86 eyes of 73 primary glaucoma patients with glaucomatous optic neuropathy and corresponding baseline VFDs on 24-2 VF, MD better than -7dB. Based on locations of VFDs, eyes were grouped into nasal (ND), central-paracentral (CPD), and arcuate-like (AD) defects. Horizontally, CPD was for points lying from 0-10 degrees, ND for points beyond 20degrees, and AD in areas 10–20 degrees from fixation. All VFDs were graded by Brusini staging systems (GSS2), and GSS2 grading was compared with MD-based grading. Further, MD and PSD values of all VFDs were analyzed.

Results: The most frequent characteristic of VFD was ND (45%) and the next common types were AD (35%) and CPD (20%) respectively. The GSS2 classified only 24.4% of eyes with VFDs as stage 1, 62.8% as stage 2, and 12.8% of eyes as stage 3. Further, stage 2 was significantly higher (74.3%) in ND and stage 3 (33.3%) in the AD group (p < 0.001).AD showed significantly higher PSD (5.6 ± 2.3, p < 0.001), and lower VFI (88.3 ± 4.5, p = 0.001) compared to the other patterns.

Conclusions: AD and ND showed moderate to severe damage even if they were staged as early by the MD-based scoring method. These findings suggest that MD-based glaucoma staging of 24-2 VF underestimates disease severity in common glaucomatous VFDs in early and early moderate glaucoma.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Increase in OCT Angles After Pilocarpine Drop: A Possible Additional Indicator for YAG Iridotomy in Primary Angle Closure Suspects in Opportunistic Setup

*First Author: Debdas **MUKHERJEE***

Purpose: Gonioscopy is the only tool to define occludable angles and hence to select for peripheral iridotomy in primary angle closures diseases. It is often difficult to ascertain occludability particularly by general ophthalmologists. An objective method to document angle opening and occludability would be appreciated. Spectral domain optical coherence tomography can measure anterior chamber angle objectively. As pilocarpine drop stretches iris and opens narrow angles SD-OCT can also detect and document these pilocarpine-induced angle changes. We hypothesized that the amount of angle change is directly proportionate to occludability and a suitable cut-off value can be achieved as additional indicator for iridotomy to complement gonioscopy.

Methods: Our prospective cross-sectional single-masked observational study evaluated pilocarpine-induced changes in angle parameters detected by SD-OCT. Out of 372 patients enrolled, 273 patients (539 eyes) remained: with a mean age of 48.6 years (SD = 10.36). All eyes were graded by the Van Herick method, gonioscopy and anterior segment SD-OCT and reassessed after pilocarpine drops.

Results: The sensitivity and specificity of tomography measurements against gonioscopy grades were 61% and 85% respectively. The receiver operating characteristic curve was 0.85. Pilocarpine-induced angle widening was significant in gonioscopically-narrower angles.

Conclusions: Our study results showed that pilocarpine-induced angle widening detected by SD-OCT can offer an alternate indicator for LPI. A well-defined cut-off value of post-pilocarpine increase in Angle OCT value as we propose will be helpful in selection of cases for peripheral Iridotomy. A randomised control trial can achieve a refined module to help managing angle closure disease patients.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Omidenepag Isopropyl 0.002% Versus Latanoprost 0.005% in Open-Angle Glaucoma/Ocular Hypertension: An India Sub-analysis of the Phase 3 Peony Trial

*First Author: Ronnie **GEORGE***
*Co-Author(s): Akihiro **IWATA**, Fenghe **LU**, Noriko **ODANI-KAWABATA**, Chandrima **PAUL**, Sirisha **SENTHIL***

Purpose: The Phase 3, randomized, multinational Peony trial (N=370; NCT02981446) compared efficacy and safety of omidenepag isopropyl (OMDI) 0.002% with latanoprost 0.005% in patients with open-angle glaucoma (OAG) or ocular hypertension (OHT). OMDI was non-inferior to latanoprost in mean diurnal intraocular pressure (IOP) reduction at Month 3. This sub-analysis compared OMDI with latanoprost for patients in India.

Methods: Adults with OAG/OHT were treated with once-daily OMDI or latanoprost bilaterally for 3 months, following a ≤4 week washout period. IOP was measured at 9:00, 13:00, and 17:00 at baseline, Weeks 1 and 6, and Month 3. The primary efficacy endpoint was mean diurnal IOP reduction at Month 3. Adverse events (AEs) were recorded.

Results: Overall, 201 patients from India were analyzed; 98 received OMDI (OAG, 76.5%) and 103 latanoprost (OAG, 66.0%). Baseline mean ± SD diurnal IOP was similar for OMDI (24.88 ± 2.18 mmHg) and latanoprost (24.73 ± 2.13 mmHg). Mean ± SD diurnal IOP change from baseline at Month 3 was comparable between OMDI and latanoprost (−7.88 ± 3.18 vs. −8.12 ± 3.40) and consistent with the global population (−7.28 ± 3.13 vs. −7.90 ± 3.07). Proportions of ocular AEs were 27.3% with OMDI and 15.5% with latanoprost (globally: 36.8% [OMDI], 21.1% [latanoprost]). The most common ocular AEs were conjunctival hyperemia (5.1%) with OMDI and conjunctival hyperemia and eye pain (both 2.9%) with latanoprost. Most AEs were mild and no serious ocular AEs were reported. No appearance-altering AEs were reported in India (globally: 0 [OMDI], 4 [latanoprost]).

Conclusions: In India, efficacy and safety of OMDI and latanoprost were similar; results were consistent with global findings.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

PRESERFLO MicroShunt Versus Trabeculectomy: 1 Year Results on Efficacy and Safety

*First Author: Karin **PILLUNAT***
*Co-Author(s): Maike **HAASE**, Robert **HERBER**, Melanie **JAMKE**, Lutz **PILLUNAT***

Purpose: To compare the efficacy and safety of the PRESERFLO MicroShunt versus trabeculectomy in patients with primary open-angle glaucoma (POAG) after the first year of follow-up.

Methods: Institutional prospective interventional cohort study comparing eyes with POAG, which had received the PRESERFLO MicroShunt versus trabeculectomy. The MicroShunt group was consecutively included and matched with the trabeculectomy group for age, known duration of disease, number and classes of intraocular pressure (IOP) lowering medication to assure similar conjunctival conditions. The study was not randomized but is part of a large study using a uniform study design, with the same inclusion and exclusion criteria, follow-ups as well as standardized definitions of success and failure. Main outcome measures: mean diurnal IOP (mdIOP, mean of 6 measurements), peak IOP, and IOP fluctuations, use of glaucoma medical therapy, and adverse events. Statistical analyses with SPSS 25, Mann-Whitney U test, and Wilcoxon test.

Results: Sixty eyes of 60 patients, 30 in each group, were analyzed after 1 year follow-up. Median [Q25, Q75] mdIOP (mmHg) dropped from 16.2 [13.8-21.5] to 10.5 [8.9-13.5] with no glaucoma medication in the microshunt and from 17.6 [15.6-24.0] to 11.1 [9.5-12.3] with no glaucoma medication in the trabeculectomy group. Reduction of mdIOP (p = .596), peak IOP (p = .702), and fluctuations (p = .528) was not statistically significantly different between both groups. None of the patients experienced severe adverse events.

Conclusions: Both procedures are equally effective and safe in lowering mdIOP, peak IOP and IOP fluctuations in patients with POAG.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Preserflo MicroShunt in High and Normal Pressure Open-Angle Glaucoma: 1-Year Results on Efficacy and Safety

*First Author: Lutz **PILLUNAT***
*Co-Author(s): Maike **HAASE**, Robert **HERBER**, Melanie **JAMKE**, Karin **PILLUNAT***

Purpose: To compare the efficacy and safety of the Preserflo MicroShunt in patients with primary high (HPG) and normal (NPG) pressure open-angle glaucoma after the first year of follow-up.

Methods: Institutional prospective interventional cohort study comparing consecutively included eyes with HPG and NPG, which had received the Preserflo MicroShunt for further lowering intraocular pressure (IOP). Outcome measures: mean diurnal IOP (mdIOP, mean of 6 measurements), peak IOP, and IOP fluctuations and adverse events one year after surgery. Statistical analyses used SPSS 25, Mann-Whitney U test and Wilcoxon test.

Results: Twenty-one patients in the HPG and 9 in the NPG were analyzed and compared. Median [Q25, Q75] mdIOP (mmHg) dropped from 18.7 [15.5-27.3] to 11.2 [9.0-14.4] in the HPG and from 13.8 [12.7-16.3] to 9.7 [7.8-11.2] in the NPG group 1 year after surgery. Reduction of mdIOP (p = .08), peak IOP (p = .09), and fluctuations (p = .1) were not statistically significantly different between both groups. None of the patients experienced severe adverse events.

Conclusions: The Preserflo MicroShunt is effective even in patients with rather low baseline IOP.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Quantitative Assessment of Iridotrabecular Contact and Its Association With Intraocular Pressure After Phacoemulsification in Primary Angle Closure Disease

*First Author: Woo Keun **SONG***
*Co-Author(s): Ko Eun **KIM**, Kyung Rim **SUNG***

Purpose: To investigate the association between the quantitative assessment of iridotrabecular contact (ITC), measured by swept-source anterior segment optical coherence tomography (SS AS-OCT), and intraocular pressure (IOP) control after phacoemulsification in patients with primary angle closure disease (PACD).

Methods: This retrospective, observational cohort study included 51 eyes of 51 PACD patients who underwent uneventful phacoemulsification. Pre- and

postoperative anterior chamber angle parameters were measured using SS AS-OCT. IOP was measured preoperatively and until 6 months postoperatively. Percent IOP reduction and IOP fluctuation after surgery were calculated, and their relationships with SS AS-OCT parameters were assessed by correlation analyses and locally weighted scatterplot smoothing (LOWESS) regression with change-point analysis.

Results: Preoperative ITC index and area (r = 0.626, r = 0.551), as well as changes in ITC index and area (r = 0.632, r = 0.543), were significantly correlated with postoperative IOP reduction, after adjusting for age and gender (all $p < 0.001$). Higher postoperative ITC index (r = 0.405, p = 0.005) and ITC area (r = 0.460, p = 0.001) was associated with greater postoperative IOP fluctuations. Change points on LOWESS curves were observed for preoperative ITC index (33.0%) and change in ITC index (27.0%) and percent IOP reductions were significantly correlated with them above ($\beta = 0.386$, $\beta = 0.664$, all $p < 0.001$), but not below the change points.

Conclusions: Quantitative assessment of circumferential ITC can predict postoperative IOP control after phacoemulsification and thus it may be used as a reference for determining lens extraction in PACD eyes.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 302–303 (Level 3)

Real-life Application of Virna Glaucoma Implant; a Promising New, Low-Cost Implant

*First Author: Widya **ANANDITA***

Purpose: This study aims to assess result of new glaucoma implant, the Virna Glaucoma Implant (VGI), in real-life setting. This implant is a new, PMMA-based, non-valved, low-cost implant made in Indonesia. This is the first study of VGI outside the institution in which it was developed.

Methods: This is a descriptive, retrospective study using data collected from medical record. We collected data from 10 patients who underwent VGI implantation. Visual acuity, IOP, number of anti-glaucoma drug, complication and additional intervention are recorded preoperative, day-1, week-1, month-1, month-6 and year-1 postoperative.

Results: Out of 10 eyes, only 2 eyes have visual acuity better than 1 meter finger-counting on presentation, 8 out of 10 were neovascular glaucoma. Preoperative IOP were 51,64 ± 13,65 mmHg, and postoperative IOP were 19,81 ± 14,94 mmHg, 23,18 ± 18,79 mmHg, 14,16 ± 6,85 mmHg, 13,42 ± 5,2 mmHg and 12,8 ± 3,7 mmHg in 1 day, 1 month, 3 months, 6 months and 1 year respectively. In month-6, 80% of patients had normal IOP without anti-glaucoma medication. Two patients had hypotony in week-1 and day-1, both underwent AC reformation. One patient had to underwent two times of tube flushing before IOP stabilize. Three patients, of which had visual acuity of hand movement in presentation, had loss of light perception. The two patients with good visual acuity in presentation retain relatively good visual acuity.

Conclusions: The Virna Glaucoma Implant is effective in controlling IOP and has good safety profile, offering a good alternative for those practicing in low-cost setting.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

A Novel Assessment of Contrast Sensitivity Using Spaeth Richman Contrast Sensitivity Test in Patients With Glaucoma

*First Author: Fatema **NOBLE***
*Co-Author(s): Suhas **HALDIPURKAR**, Vijay **SHETTY***

Purpose: To determine the efficacy of Spaeth Richman Contrast Sensitivity Test ((SPARCS) as compared to the conventional Pelli Robson Chart Test for the assessment of contrast sensitivity in patients with glaucoma.

Methods: In this analytical cross-sectional study, we tested 174 eyes (87-glaucoma group and 87-age matched control group) between September 2021 and August 2022. SPARCS and PR tests were used to assess contrast sensitivity. The PR score for central contrast sensitivity was obtained and SPARCS scores for four outer zones and the central region were produced.

Results: The mean Pelli Robson and SPARCS scores for each subgroup were compared. The mean scores in glaucoma patients were lower than those in the control group. There was positive correlation between Pelli Robson scores and Total SPARCS scores ($r= 0.64$ $p < 0.001$) and between Pelli Robson and SPARCS central component score ($r= 0.37$, $p < 0.001$, respectively). For glaucoma, a Total SPARCS score of 70 yielded 83.9 percent sensitivity and 96.6 percent specificity, with a Positive predictive value (PPV) of 96.1 percent and a Negative predictive value (NPV) of 85.7 percent. While a Pelli Robson log-based score of 1.35 or less had 93.9 percent sensitivity and 59.8 percent specificity with PPV and NPV of 67.6 percent and 78.8 percent, respectively.

Conclusions: SPARCS and PR tests may be used interchangeably. SPARCS is a superior alternative to PR Test in screening early glaucomatous changes, unaffected by literacy, and assesses both central and peripheral CS, making it more sensitive in glaucoma causing peripheral retinal function loss.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

A Novel Protocol to Assess Iris Stroma Permeability From Human Biopsy Samples Obtained From Iridotomy

First Author: Royston K.Y. ***TAN***
Co-Author(s): Tin ***AUNG****, Anita* ***CHAN****, Michael Julien Alexandre* ***GIRARD****, Monisha* ***NONGPIUR***

Purpose: To evaluate for human iris stroma permeability on iridotomy samples stored using the Allprotect tissue reagent (Qiagen, Hilden, Germany).

Methods: Human biopsies were collected from patients with iridotomy performed (n = 7) and stored in the Allprotect tissue reagent at -80°C. Flow experiments were conducted on the isolated stroma layer to evaluate for their hydraulic permeability. Since the tissues were stored for different durations, the effect of storage was normalized by analyzing the tissue degradation rate on porcine tissues at time points 0, 1, 3, 6 and 12 months. Fresh porcine eyes (n = 32) were purchased from the local abattoir and sections of the same irides were evaluated at the time points. Using an exponential correlation and extrapolation, a compensation factor was applied to the results of the human iris samples.

Results: The average human iris stroma permeability was approximately 7.79 × 10^-5 mm^2/Pa·s, with values ranging from 1.25 × 10^-5 mm^2/Pa·s to 2.00 × 10^-4 mm^2/Pa·s after compensation. The hydraulic permeability of the porcine tissues evaluated at the aforementioned time points were 0.95 ± 0.30 × 10^-5, 1.01 ± 0.58 × 10^-5, 1.47 ± 1.00 × 10^-5, 2.06 ± 1.58 × 10^-5 and 2.19 ± 1.71 × 10^-5 mm^2/Pa·s respectively.

Conclusions: The Allprotect preservation medium was able to prevent substantial tissue degradation, although the iris stroma experienced different rates of decomposition over time. We hypothesize that the change in iris permeability is correlated to the development and progression of angle closure, and this novel protocol sets the foundation for further studies.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

An Integrin-Positive Cluster of iPSC-TM Regenerates the TM in Glaucoma

First Author: Wei ***ZHU***

Purpose: We previously found the therapeutic role of induced pluripotent stem cells derived trabecular meshwork cells (iPSC-TM) in multiple glaucomatous models, yet primary TM (pTM) does not have this capacity. This study aimed to investigate the fundamental difference between iPSC-TM and pTM by analyzing the transcriptomes at a single cell level.

Methods: Human iPSCs were induced to differentiate into TM-resemble cells based on a developed method by using pTM conditioned medium, with 10 × Genomics platform employed to generate high-quality single-cell RNA transcriptomes of iPSC-TM and pTM. Compared to cell compositions of pTM, a peculiar cluster of iPSC-TM robustly expressing an integrin family member was found. A magnetic approach was performed to isolate this cluster. The therapeutic role of this integrin-positive iPSC-TM was investigated in mice receiving Ad5-MYOCY437H-EGFP. IOP was tracked by rebound tonometry. TM cellularity after transplantation was analyzed using morphometric approaches.

Results: We tested the effect of the integrin-positive cluster iPSC-TM, designated ITGA iPSC-TM, on IOP homeostasis in mice receiving Ad5-MYOCY437H-EGFP. Intracameral injection of Ad5-MYOCY437H-EGFP (8×107 PFU) significantly increased the IOPs compared to either Ad5-EGFP recipients or eyes of wild type. Compared to these glaucoma mice receiving PBS, transplantation of ITGA iPSC-TM at integrin-positive ratios of 1.9% (sample 1), 22.8% (sample 2), and 40.6% (sample 3) led to a decrease in IOPs. Sample 3 displayed the highest efficiency in lowering IOPs than other groups. Morphometric analysis revealed the highest TM and Schlemm's canal cellularity in sample 3 than other samples.

Conclusions: ITGA iPSC-TM transplantation is an efficient approach to treat TM degeneration.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Association Between Primary Open Angle Glaucoma and Alzheimer's Disease: A Mendelian Randomization Study

First Author: Raghavan ***LAVANYA***
Co-Author(s): Ching-Yu ***CHENG****, Hengtong* ***LI****, Yih-Chung* ***THAM***

Purpose: Epidemiological studies have reported conflicting evidence about the association of primary open angle glaucoma (POAG) and Alzheimer›s disease (AD). The aim is to determine whether there is a casual relationship between POAG and AD using genetic data.

Methods: Bi-directional genetic association between AD, POAG, and POAG-endophenotypes, including intraocular pressure (IOP), vertical cup:disc ratio (VCDR), retinal nerve fiber layer thickness (RNFL), were investigated using multiple mendelian randomization models, based on summarized data from the largest publicly available genetics consortium and Biobanks (N=25,180 to 762,917).

Results: We found that AD had a protective effect on POAG across all MR models (OR=0.41 to 0.68; p =

3.95x10-5 to 0.01) at Bonferroni-corrected levels of significance. We observed a small effect of POAG on AD (OR=1.01 to 1.02; p = 8.50x10-3 to 7.99x10-3). No significant association were found between AD and POAG-endophenotypes.

Conclusions: Genetic analysis support a bi-directional casual association between the two neuro-degenerative disorders, POAG and AD.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Comparative Study of 2-Year Outcomes for Hydrus or iStent Inject Microinvasive Glaucoma Surgery Implants With Cataract Surgery

*First Author: Mitchell **LAWLOR***
*Co-Author(s): Colin **CLEMENT**, Paul **HEALEY**, David **HOLMES**, Ridia **LIM**, Vuong **NGUYEN***

Purpose: To compare real-world 24-month outcomes of phacoemulsification combined with either iStent inject or Hydrus Microstent.

Methods: Analysis of data from the Fight Glaucoma Blindness (FGB) international registry. Anonymized data from 344 eyes with mild-to-moderate open-angle glaucoma, normal-tension glaucoma or ocular hypertension that underwent phacoemulsification combined with either iStent inject (224) or Hydrus Microstent (120) were included. Data were adjusted for baseline characteristics using linear regression and propensity score matching. The primary endpoint was a comparison of mean intraocular pressure (IOP) at 24 months.

Results: At 24 months, there was no significant difference in IOP reduction between the two groups, consistent across all analyses. The matched cohort showed iStent inject achieved 3.1 mmHg reduction and Hydrus a 2.3 mmHg reduction (p = 0.530) and a mean medication reduction of 1.0 for iStent inject versus 0.5 for Hydrus (p = 0.081). 5.4% of eyes in the iStent inject group and 7.5% of eyes in the Hydrus group required subsequent procedures to improve IOP control within 24 months. Complications were rare with no significant differences between the groups.

Conclusions: The 24-month outcomes showed sustained IOP reduction with a good safety profile for both groups. There was no significant difference in IOP outcomes between the groups. There may be a small additional reduction in glaucoma medication usage following cataract surgery with iStent inject compared to Hydrus.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Comparing the IOP-Lowing Efficacy of In Situ Surgical Reconstruction With Needle Revision on Late Failed Trabeculectomy Blebs: A Prospective, Randomized Trial

*First Author: Xiaobin **XIE***
*Co-Author(s): Yan **ZHANG***

Purpose: To compare the efficacy of the in situ surgical revision augmented with continuous infusion and needle revision on late failed trabeculectomy blebs.

Methods: A prospective randomized controlled trial was conducted on 44 eyes of 44 glaucoma patients with failed bleb for ≥6 months from December 2018 to March 2022. They were randomly divided into two groups: 22 eyes of 22 patients underwent the in-situ surgical revision with continuous anterior chamber infusion in the study group, and 22 eyes of 22 patients were treated with needling revision in the control group. The main outcome measures include preoperative and postoperative intraocular pressure (IOP), IOP reduction, and the number of anti-glaucoma medicines.

Results: The postoperative IOP values decreased significantly from the baseline in both groups (both p < 0.05). IOP was significantly lower in the study group than in the control group at one week, 1, and 3 months postoperatively (all p < 0.05). IOP reductions in the study group were substantially more prominent than in the control group at all postoperative time points (all p < 0.05). The complete success rate in the study group was significantly higher than in the control group (71.4% vs. 33.3%, p < 0.05), while the complete failure rate was significantly lower in the study group (0% vs. 28.5%, p < 0.05).

Conclusions: Both in situ surgical and needle revision have feasible success rates and are safe for the late failed trabeculectomy blebs, while the former is likely to have a higher level of efficacy over the latter.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Comparison of iStent and Hydrus Microinvasive Glaucoma Surgery Implants in Combination With Cataract Surgery for the Treatment of Glaucoma

*First Author: Nathan **KERR***
*Co-Author(s): Keith **BARTON**, Anthony **HALL**, Gok **RATNARAJAN**, Jing **WANG***

Purpose: To compare the efficacy of cataract surgery combined with either trabecular microbypass (iStent,

Glaukos) or Schlemm canal microstenting (Hydrus MicroStent, Ivantis) for the reduction of intraocular pressure (IOP) and glaucoma medications.

Methods: Data was extracted from the International Glaucoma Surgery Registry for patients with glaucoma who underwent cataract surgery with either two iStents or a single Hydrus MicroStent. Outcome measures included the reduction in IOP, glaucoma medications, visual field loss, re-operation for glaucoma, and adverse events at 12 and 24 months.

Results: One-hundred and forty-six eyes underwent cataract surgery with iStent insertion, and 85 eyes underwent cataract surgery with Hydrus MicroStents. There was no difference in pre-operative IOP nor medication use. At 12 months, the Hydrus group had lower IOP (13.0 ± 0.3 mmHg versus 14.1 ± 0.3 mmHg; p = 0.010) on fewer topical glaucoma medications (1.0 ± 0.1 versus 1.3 ± 0.1; p = 0.041) compared to the iStent group. At 24 months, there was no difference in IOP, however eyes which received a Hydrus MicroStent were on fewer topical glaucoma medications (0.9 ± 0.1 versus 1.4 ± 0.1; p = 0.018). At 24 months, visual field loss was greater in the iStent group (-4.8 ± 0.8 dB versus -2.5 ± 0.5 dB; p = 0.038).

Conclusions: Cataract surgery combined with Hydrus MicroStent insertion was associated with a greater reduction in glaucoma medications and less visual field loss at 24 months compared to iStent insertion. Both devices had similar safety profiles.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Effect of Severity of Visual Field Defect on Mobility and Navigation in Patients With Glaucoma

First Author: Abd Hadi ***MOHD RASIDIN***
Co-Author(s): Liza Sharmini ***AHMAD TAJUDIN****, Muhammad Hafiz* ***HANAFI****, Raja Norliza* ***RAJA OMAR***

Purpose: To evaluate the association between mobility performance and severity of primary glaucoma.

Methods: A comparative cross-sectional study was conducted involving patients with 159 primary glaucoma (53 mild, 54 moderate and 52 severe) and 159 age-matched controls. A 12-meter-long obstacle course seeded with obstacles that resembled household items was developed and validated. The course was divided into four zones with different inter-obstacle distances with fixed illumination and surveillance camera. Participants were asked to navigate themselves and completed the course. The time taken were recorded and mobility incidents such as bumps, stumbles and orientation were identified. Mobility incidents were graded using 3 points scale based on the time taken to correct the contact.

Results: Patients with primary glaucoma required significant longer time (31.5 SD 13.5 sec) to complete the obstacle course and more mobility incidence (1.60 SD 2.94) compared to controls ($p < 0.001$). Those with severe glaucoma took the longest time (46.8(15.2) sec) compared to mild (23.0(2.2)) and moderate (25.1(1.3)) ($p < 0.001$). The difference is significant between mild-severe and moderate-severe but not mild-moderate. All the mobility incidents are seen in patients with severe glaucoma. There were no mobility incidents in zone with 1.5m inter-obstacle distance.

Conclusions: Mobilization and navigation is affected by severity of visual field defect in patients with glaucoma. Those with severe constriction of visual field need to adjust their furniture and improved illumination at home to avoid domestic injuries.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Intraocular Pressure Changes With Reading on a Smart Phone/Digital Print Compared to Conventional Printed Text Among Healthy Volunteers and Medically Controlled Primary Open Angle Glaucoma Patients

First Author: Rajat ***SRIVASTAVA***
Co-Author(s): Siddharth ***AGRAWAL****, Devanand* ***BHARTI****, Nayani Amrin* ***HUSSAIN***

Purpose: To compare the effect of reading for 30 minutes using smart phone and printed text on intraocular pressure (IOP).

Methods: Sixty healthy volunteers and 22 medically controlled primary open angle glaucoma (POAG) patients were asked to perform reading tasks using printed text followed by digital (smartphone) text under standardized conditions. IOP assessment was done using rebound tonometer (I Care) at baseline and subsequently at 10, 20 and 30 minutes of reading and 10- and 20-minutes post-completion of reading tasks. IOP variations from baseline were measured and compared. Paired and independent 'T' test analysis was performed to study IOP variations and a p-value < 0.05 was considered statistically significant.

Results: The mean baseline IOP among volunteers and POAG patients was 14.58 (± 2.91) and 15.02 (± 2.18) mmHg respectively. There was a significant rise in IOP in all participants with reading which normalized after 20 minutes of cessation. There was a statistically significant difference in rise in IOP between the 2 modalities of reading at 20 minutes (+0.78 & +2.01 [p = 0.002]) and 30 minutes (+0.64 & +1.72 [p = 0.004]) among volunteers and at 20 minutes (+0.78 & +2.01 [p = 0.002]) in POAG patients.

Conclusions: Reading is associated with rise in IOP in both healthy volunteers and POAG individuals. The

IOP rise is more marked with smartphone compared to conventional reading and is greater and prolonged among POAG patients.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Isoflurane Induced Intraocular Pressure Elevation in ChAT-IRES-Cre Mice

*First Author: Thajunnisa **SAJITHA***
*Co-Author(s): Kevin **CHAN**, Russell **CHAN**, Muneeb **FAIQ**, Giles **HAMILTON-FLETCHER**, Royce **LEE***

Purpose: Recently, our lab demonstrated the potential involvement of the cholinergic nervous system in the brains of both human and experimental animal models of glaucoma, yet its underlying mechanisms remain unclear. The development of ChAT-IRES-Cre knock-in mice with Cre recombinase expression in the cholinergic neurons has allowed experimental manipulations of the cholinergic circuits. Despite evidence for suppression of cholinergic neurons under isoflurane anesthesia, no studies have examined the effects of anesthesia on the intraocular pressure (IOP) in these animals. Here, we evaluate the IOPs of ChAT-IRES-Cre mice under isoflurane or ketamine anesthesia and in the awake state.

Methods: Four ChAT-IRES-Cre and 5 wildtype C57Bl/6J mice were anesthetized with isoflurane inhalation or combined ketamine and xylazine intraperitoneal injection followed by IOP recordings every 5 minutes for 40 minutes. IOPs were also recorded at the same time points while animals were fully awake in both groups.

Results: IOP in ChAT-IRES-Cre mice remained in the physiological range of 10-12 mmHg for the first 15 minutes after isoflurane induction, but increased to 20-30 mmHg thereafter, and returned to the physiological range upon recovery. No apparent IOP change was observed in wild-type mice under isoflurane anesthesia, whereas the ketamine/xylazine cocktail decreased IOP in both ChAT-IRES-Cre and wild-type mice to similar extents. IOP between the two groups did not differ significantly while awake.

Conclusions: Isoflurane elevated IOP in the ChAT-IRES-Cre mice but not wild-type C57Bl/6J mice, suggestive of the mechanisms of IOP elevation due to suppression of cholinergic neurons. Future studies may elucidate which cholinergic neurocircuits participate in such actions.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Long-term Outcomes of Early Postoperative Hypotony Following Primary Trabeculectomy

*First Author: Tanasuang **WIROTJUNLASAK***
*Co-Author(s): Sunee **CHANSANGPETCH**, Anita **MANASSAKORN**, Kitiya **RATANAWONGPHAIBUL**, Prin **ROJANAPONGPUN**, Visanee **TANTISEVI***

Purpose: To determine long-term outcomes of early hypotony following primary trabeculectomy.

Methods: We performed a retrospective chart review of patients undergoing primary trabeculectomy between 2009 and 2020. Early hypotony was defined as those eyes with an intraocular pressure (IOP) of equal to or less than 6 mmHg at 1 month following trabeculectomy. Outcomes measured at 24-month post-operation included success rate, IOP, visual acuity (VA), and presence of clinical hypotony.

Results: A total of 37 eyes from 36 subjects with a mean age of 62.9 (15.2) years were included. The baseline mean IOP was 25.2 (10.6) mmHg, which decreased to 9.9 (7.1) mmHg at month 24 ($p < 0.001$). The baseline median VA (decimal) was 0.286 (interquartile range (IQR), 0.010 to 0.500), which did not differ significantly compared to the postoperative median VA of, 0.286 (IQR 0.080 to 0.500) ($p = 0.49$). At month 24, overall success rate was 63.2%, with 54.1% of complete success and 8.1% of qualified success. There were 33 (89.2%) medication-free patients. Regarding clinical hypotony, 3 (8.1%) eyes had shallow anterior chamber (AC), 4 (10.8%) eyes had choroidal detachment (CD), 3 (8.1%) eyes had both shallow AC and CD. There was no case of hypotony maculopathy. Out of 20 phakic eyes, 2 (10%) eyes had accelerated cataract progression.

Conclusions: Early hypotony after primary trabeculectomy can enable a long-term success with a high proportion of medication-free patients. Early hypotony had no impact on VA over the long term. Few numerical hypotony individuals experienced clinical hypotony.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Lower 24-Hour Systolic Blood Pressure in Progressive Primary Angle Closure Glaucoma

*First Author: Shaoying **TAN***
*Co-Author(s): Carol **CHEUNG**, Clement **THAM***

Purpose: To study the influence of 24-hour blood pressure (BP) variability on glaucomatous progression in primary angle closure glaucoma (PACG) patients.

Methods: The 24-hour BP were recorded every 1 hour by ambulatory 24-hour blood pressure measurement in 29 PACG patients who had been followed up for over 24 months with at least 5 prior visual field (VF) tests by Humphrey automated perimetry. Glaucoma progression was documented with serial changes in visual field index. The variability of BP including weighted means (WM), maximum and minimum readings (MaxR, MinR), standard deviation, number of high and low readings, hypertensive time index, hypotensive time index, hypertension load and hypotensive load in systolic blood pressure (SBP) and diastolic blood pressure (DBP) during 24-hour, daytime (08:00-22:00) and night-time (22:00-08:00), respectively. The variability was compared between the progressive and stable groups by Mann-Whitney U Test.

Results: Six of the 29 patients (20.7%) had significant VF progression despite IOP being within the normal range. The WM and MinR in SBP were statistically significantly lower in the progressive patients (WM: 111.8 ± 7.8 mmHg; MinR in SBP: 84.8 ± 5.4 mmHg), compared to the stable patients (WM: 121.8 ± 10.7 mmHg; MinR in SBP: 97.5 ± 11.0 mmHg) over 24-hours ($p = 0.041$ and $p = 0.005$, respectively), and day time [WM: 114.8 ± 6.6 mmHg (progressive group) and 125.9 ± 10.8 mmHg (stable group), $p = 0.019$; MinR in SBP: 89.2 ± 7.2 mmHg (progressive group) and 103.0 ± 11.8 mmHg (stable group), $p = 0.009$].

Conclusions: Significantly lower SBP was found in progressive PACG patients. Hypotension, or over-treated hypertension, especially in daytime, may be a risk factor for glaucomatous progression in PACG patients.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Mean Intraocular Pressure Reductions in Responders to iDose TR, a Travoprost-Intracameral Therapy, and Timolol 0.5% BID in 3-Year Follow-up

*First Author: Michael **PAROLI***
*Co-Author(s): Robert **ANG***

Purpose: Glaucoma eye drops are effective treatments for open-angle glaucoma (OAG); however, they require patient administration, which adherence is a problem. Furthermore, prostaglandin analogues may induce cosmetic side effects. iDose, a travoprost-eluting intraocular implant, could address patient reliance issues in controlling intraocular pressure (IOP) and minimize aesthetic effects.

Methods: A Phase 2b, randomized, double-masked multicenter noninferiority trial consisting of 3 arms evaluated 2 iDose TR implants [fast-elution (FE)/slow-elution (SE)] vs. timolol 0.5% BID in IOP reduction and safety at postoperative month 36 (POM36) in subjects with OAG or ocular hypertension on 0 to 3 glaucoma medications. This responder analysis focused on patients who were on ≤ medications from screening at POM36. After screening and medication washout, 154 eyes were randomized to iDose FE (n=51), iDose SE (n=54), and Timolol/sham surgical procedure (n=49). Additional medications were added if IOP > 18 mm Hg at any visit.

Results: At POM36, 70% of iDose FE, 68% of iDose SE, and 46% Timolol were well controlled on ≤ medications at POM36 vs. screening (responders). Among responders, the mean IOP reduction from baseline at POM36 was 8.3 mm Hg (iDose FE), 8.5 mm Hg (iDose SE), and 8.2 mm Hg (Timolol), with fewer topical eye medications required in the iDose groups than Timolol group. Safety was favorable in the iDose group, including no occurrence of ocular hyperemia or significant endothelial cell loss, and only 1 iris color change.

Conclusions: iDose TR could be a safer alternative to timolol 0.5% BID.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Novel Approach to Glaucoma Diagnosis Using Superficial to Deep Retinal Layer Thickness Ratios in Low and High Myopia Eyes

*First Author: Thanendthire **SANGAPILLAI***
*Co-Author(s): Jolene Ll **CHIA**, Rachel **CHONG**, Leopold **SCHMETTERER**, Marco **YU***

Purpose: To evaluate superficial/deep retinal layer thickness ratios for diagnosing glaucoma in myopic eyes.

Methods: To present a cross-sectional study. Subjects underwent ophthalmic examination including visual acuity, auto-refraction, visual field testing, axial length (AL) and intraocular pressure measurements, and dilated retinal examination. Eyes were divided into low myope (LM, SE between 0 and -3D and AL<24 mm), high myope (HM, SE<-6D or AL<26mm), with or without glaucoma. Eyes with glaucoma were divided into high tension (IOP>21 mm Hg) or normal tension (IOP£21mmHg). Spectral domain-OCT measurements of the disc and macula were performed and processed to derive sectoral and global measurements of the superficial retinal layers (ganglion cell complex and ganglion cell-inner plexiform layer complex) and deep retinal layers (inner retinal layer to retinal pigment epithelium). Magnification correction was applied based on AL, linear regression performed after correction for age and gender. Area Under the Receiver Operating Characteristic Curves (AUCs) were compared between superficial layer measurements

and superficial/deep thickness ratios.

Results: Together, 110 HM subjects, 95 LM subjects, 62 HM-glaucoma subjects and 27 LM-glaucoma subjects were analyzed. Mean and SD of deep retina layers were similar regardless of myopic status and glaucoma diagnosis. AUCs of superficial vs superficial/deep ratios were highest in the inferotemporal sector using GCIPL/INL to RPE in LM-HTG (0.90), LM-NTG (0.98) and HM-NTG (0.80). AUC of GCIPL was highest inferotemporally for HM-HTG (0.93).

Conclusions: Superficial/deep retinal thickness ratios have good to excellent AUC for glaucoma diagnosis of glaucoma in myopia and may be a useful adjunct for establishing an accurate diagnosis of NTG in HM eyes.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Prospective Outcomes of Combined Trabecular Bypass (iStent Inject) and Cataract Surgery From Fight Glaucoma Blindness Registry

*First Author: Colin **CLEMENT***
*Co-Author(s): Jenny **DANKS**, Frank **HOWES**, Mitchell **LAWLOR**, Vuong **NGUYEN***

Purpose: To examine the efficacy and safety of combined iStent inject and cataract surgery from the Fight Glaucoma Blindness (FGB) registry.

Methods: The FGB registry was searched for cases that received istent inject combined with cataract surgery in a single treatment. Outcomes of interest included change in intra-ocular pressure (IOP), change in medication, need for further surgical intervention and reported complications.

Results: A total of 2,051 eyes from 1,349 patients meet the criteria for inclusion. Follow-up to 6, 12, 24 and 36 months was complete for 1,321, 1,097, 625 and 273 eyes respectively. Primary open angle glaucoma (POAG) comprised 50.3% of the total population with mean age 73.8 years. Baseline IOP was 16.4mmHg on an average 1.5 medications. At 36 months follow-up, there›d been a 7.7% reduction in IOP and 53.3% reduction in medication. At 12 months, any reduction in medication (with same or fewer meds) occurred in 75% of eyes, any reduction in medication (with the same or lesser IOP) occurred in 51% of eyes and both reduction of IOP and medication occurred in 46% of eyes. The commonest reported adverse event by 36 months were subsequent procedure (11.7%), IOP increase >10 mmHg (2.8%) and cystoid macula oedema (0.6%).

Conclusions: Large cohort data from the FGB registry shows that at the point of care, iStent inject combined with cataract surgery is associated with IOP reduction and medication reduction with the need for further intervention being the commonest adverse event.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Prospective, Multicenter, Single-Arm, Open-label Study of Safety and Effectiveness of Gel Stent in Angle Closure Glaucoma

*First Author: Nathan **KERR***
*Co-Author(s): Michael **COOTE**, Xuemin **GU**, Susan **LEE**, Saumya **NAGAR**, Chelvin **SNG***

Purpose: To evaluate the safety and intraocular pressure (IOP)-lowering effectiveness of the gel stent in angle closure glaucoma (ACG).

Methods: Eligible adults had ACG (i.e., iridotrabecular contact in ≥2 quadrants, glaucomatous damage to the optic disc, and visual field loss); IOP 20-35 mmHg after prior medical and/or surgical treatment failed; and healthy, free/mobile conjunctiva in the target quadrant. An angle-widening procedure was permitted before ab-interno gel stent implantation. Primary effectiveness endpoint: patients (%) achieving ≥20% IOP reduction from baseline at Month 12 without IOP-lowering medication increase. Key secondary effectiveness endpoints: Mean IOP and medication count over time and changes from baseline. Postoperative needling was also documented. Safety endpoints included surgical complications and postoperative adverse events (AEs).

Results: Of 62 patients/eyes enrolled/implanted, 50/62 (80.6%) had an angle-widening procedure; 59/62 (95.2%) completed the study. At baseline, IOP was 24.0 (4.3) mmHg on 2.3 (1.4) IOP-lowering medications (means [standard deviations]); 56 (90.3%) patients were using ≥1 IOP-lowering medication(s) and 45 (72.6%) had prior glaucoma procedures. At Month 12, 80.5% of patients achieved the primary endpoint (95% confidence interval [CI], 68.4, 88.8). The mean IOP reduction from baseline was -8.9 mmHg (95% CI, -10.2, -7.6); the mean IOP-lowering medication reduction was -1.6 (95% CI, -1.9, -1.2). Twenty-three (37.1%) eyes required needling. There were no surgical complications. Five (8.1%) study eyes had a serious postoperative ocular AE. All were resolved without sequalae; none were unexpected.

Conclusions: Gel stent implantation effectively lowered IOP and the medication burden in patients with ACG, with an acceptable safety profile.

Intraocular Inflammation, Uveitis and Scleritis

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Clinical Profile and Visual Prognosis of Ocular Inflammation in Rheumatologic Diseases

*First Author: M S **JOSHMITHA***
*Co-Author(s): Radha **ANNAMALAI**, M **MUTHIAH***

Purpose: To evaluate the ophthalmic features and clinical presentation of rheumatological diseases as an early marker to prevent the long-term visual morbidity and complications.

Methods: This is a prospective study on 150 patients performed over two years. Patients with rheumatic disease were evaluated for ocular inflammation at the Ophthalmology clinic at a tertiary care center. Angiography, complete blood count, X-ray and serological markers of connective tissue disorders were done. Patients were treated with steroids and immunosuppressive agents.

Results: Among 150 patients with rheumatic disease, ocular inflammation occurred in 87% with p = 0.02. The types of ocular involvement were Kerato Conjunctivitis Sicca (KCS) with or without in 42%, uveitis in 19%, episcleritis in 23%, scleritis 9%, optic neuritis in 4% and retinal vasculitis in 12%. We found ocular association with rheumatoid arthritis in 63%, SLE 52%, Sjogren's syndrome in 9%, scleroderma in 2%, Behcet's disease in 3%, Granulomatosis with polyangitis in 6%, Inflammatory bowel disease in 3% and juvenile idiopathic arthritis in 12%. Visual loss occurred due to uveitis in 8%, vasculitis in 18% and optic neuritis in 45%.

Conclusions: Ocular inflammation may be the initial feature of rheumatologic diseases and serological biomarkers can help in identifying an early association. An ophthalmic evaluation to prevent complications and blindness needs to be a part of rheumatological workup.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Correlation of Glycoprotein B Genotypes and Clinical Manifestation in Cytomegalovirus-Related Anterior Segment Infection

*First Author: Chu-Yen **HUANG***
*Co-Author(s): Yu-Chun **CHENG**, Ching-Hsi **HSIAO**, Yih-Shiou **HWANG***

Purpose: We analyzed the cytomegalovirus (CMV) glycoprotein B (gB) genotype distribution in patients with anterior segment infection in Taiwan and examined the correlation between clinical characteristics and genotyping.

Methods: We included 57 patients with CMV anterior segment infection that was identified according to clinical features and positivity for CMV DNA in aqueous humor samples in a single tertiary referral central in Taiwan, between 2015 and 2020. Aqueous humor samples were further analyzed for CMV gB1, gB2, gB3, and gB4 through polymerase chain reaction assays. The patients' medical records were retrospectively reviewed.

Results: Among 57 aqueous humor samples tested for gB, 40 (70.28%) had multiple gB genotypes and only 17 (29.82%) had a single gB genotype, namely either gB1 (n = 4, 7%) or gB3 (n = 13, 22.8%). The gB2 or gB4 genotype was detected only in multiple-genotype infection. Compared with single-genotype infection, multiple-genotype infection was correlated with higher CMV loads ($p < 0.001$); nevertheless, we observed no significant correlation between the multiple genotypes and clinical manifestations. At the time of diagnosis, a higher proportion of patients with the gB3 genotype had received filtering surgery than did those without the gB3 genotype ($p = 0.046$).

Conclusions: Multiple-genotype infection was highly prevalent in our patients, and gB1 and gB3 were predominant in patients with CMV anterior segment infection. Although multiple-genotype infection was correlated with higher CMV loads, it was not correlated with specific clinical manifestations or prognostic outcomes. The gB3 genotype may be correlated with poor intraocular pressure control before treatment.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Eyes; Window to the World! Ocular Findings Aiding in Diagnosis of Systemic Tuberculosis Confirmed by TB-Quantiferon Test

*First Author: Chethan **MURTHY***

Purpose: To evaluate ocular symptoms and signs in diagnosing tuberculosis, presenting primarily as ocular manifestations In highly endemic country like India, tuberculosis manifests in wide variety of systemic involvement , ocular tuberculosis is one such and poses significant challenge for diagnosis .In this study we present mainly retinal and vitreous manifestations presenting as primary feature of tuberculosis and majority diagnosed by Quantiferon test.

Methods: Prospective RCT was done. Inclusion: All patients not diagnosed to be tuberculosis [pulmonary or extra pulmonary]. Exclusion: Those who were on Antitubercular Therapy [ATT] at present or taken

in the past. Total number: 110 naïve patients were included among which were males = 66, females = 44 visual acquity, anterior segment, posterior segment evaluation was done. Mantoux test, chest X -ray, CBC, CT chest and TB Quantiferon test were performed wherever necessary.

Results: Ocular manifestations included retinal vasculitis = 35.6%, posterior uveitis = 41.2%, intermediate uveitis=11%, panuveitis =11%, vitritis = 5% macular edema=42.5% ,retinal periphlebitis =33.6% ,multifocal choroiditis=21.5% ,granulomatous uveitis =36%, scleritis =2%. Many patients were Mantoux negative with normal chest X-ray and were diagnosed by TB-Quantiferon test which were positive in 92%. ATT was imitated along with topical and oral steroids. Improvement in visual acuity p > 0.5, resolution of anterior uveitis p > 0.8 Posterior uveitis p > 0.76 were noted.

Conclusions: All patients treated with ATT drugs only had favorable response and no recurrence was recorded for more than 6 months after completion of treatment. Ocular examination and Quantiferon test stand out to be of prime importance in diagnosing and treating tuberculosis.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Inflammatory Cytokines Biomarkers Analysis From Tears in Patients With Uveitis

*First Author: Atul **THADANI***
*Co-Author(s): Ankush **KAWALI**, Padmamalini **MAHENDRADAS**, Rohit **SHETTY***

Purpose: To determine the cytokine expression profile in the tears of patients with uveitis.

Methods: It is a cross-sectional study of tear analysis of uveitis patients in a tertiary eye care center in south India using a biomarker kit with age-matched controls. Schirmers strips were transformed into 1.5 mL microcentrifuge tubes and extraction buffers were added. After mixing, 50 microliters of tears were added to the circular wells in the cartridge and a wash buffer was added to the triangular wells with the microfluidic design. Then it was analyzed in a fluorescence reader with Bio M pathfinder for IL-1β, IL-6, IL-10, IL-17A, TNFα, MMP9, VEGF, and sICAM1 in tear fluid. Statistical analysis was done using the Kruskal Wallis test with Dunn's multiple comparison test.

Results: The age group was between 6-90 years (median age 44.5 years, 62 males and 74 females). Tear biomarker analysis showed IL-1β, IL-17A, TNFα, MMP9, IL6 and sICAM1 were high in anterior, posterior and panuveitis entities and IL10 was high in episcleritis. Also, IL-1β, IL-6 & MMP9 are elevated in post-fever retinitis and TB. VEGF levels increased in post-fever retinitis cases. In viral uveitis, MMP9 levels are elevated.

Conclusions: IL-1β, IL-6, IL-17A, TNFα, MMP9 and sICAM1 are significantly high in uveitis patients. Based on the analysis and quantification of the cytokines and specific tear markers may help in better understanding the pathogenesis of uveitis entities to plan future targeted therapy.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Isolated Intraocular Relapse of B-Cell Acute Lymphoblastic Leukemia Masquerading As Ciliary Body Masses in a Filipino Child

*First Author: Mayleen **JEREZA***
*Co-Author(s): Bryan Vincent **MESINA***

Purpose: To report the case of a pediatric patient with isolated intraocular relapse of B-Cell ALL (Acute lymphoblastic leukemia) initially presenting as bilateral ciliary body masses.

Methods: A 7-year-old female with underlying B-Cell ALL in remission presented with a three-week history of right eye redness and photophobia. Complete ophthalmologic & systemic examination were performed.

Results: The right eye had decreased visual acuity of 20/167 and slit-lamp biomicroscopy revealed a bedewed cornea, hyphema, shallow anterior chamber, anterior bowing of the iris, and increased intraocular pressure at 38 mmHg. The left eye was noted to have fine, non-pigmented keratic precipitates, anterior chamber cells 1+, and anterior bowing of the temporal iris after one month. Ultrasound biomicroscopy revealed large ciliary body masses on all clock hours of both eyes. Bone marrow and cerebrospinal fluid were negative for leukemic cells which strongly suggested the clinical diagnosis of isolated ocular relapse. Remission reinduction chemotherapy was initiated resulting in clinical improvement. On repeat ultrasound biomicroscopy after chemotherapy, the ciliary body masses previously seen were no longer appreciated.

Conclusions: Ocular relapse in ALL is uncommon, comprising 0.5%-2.5% of leukemic relapse. Presence of ophthalmologic manifestations is considered a marker of poor prognosis due to a higher incidence of central nervous system leukemia. Ocular infiltration may be the only manifestation of relapse hence the importance of having a high index of suspicion when a known case of ALL presents with ocular symptoms. Prompt diagnosis and initiation of treatment produce more favorable ophthalmologic and systemic outcomes.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Ocular Complications Post-COVID-19 Vaccination

*First Author: Archana **RAJAMANI***
*Co-Author(s): Eliza **ANTHONY**, Bhavik **JAIN**, Anand **RAJENDRAN***

Purpose: To evaluate a series of patients presenting with ocular complications post-COVID-19 vaccination.

Methods: A total of 6 patients with best-corrected visual acuity (BCVA), Slit lamp examination, fundus examination and time duration between vaccination (ChAdOx1 nCoV- 19- COVISHIELD and BBV152-COVAXIN) and onset of ocular symptoms were reviewed. BCVA, Slit lamp and Fundus Examination was documented at each follow up visit to monitor the treatment response

Results: Six patients presented with ocular complaints post-COVID-19 vaccination. The mean time of onset of symptoms post-vaccination was 5.66 days. Ocular complaints occurred after the first vaccination dose in 5 patients (COVAXIN – 3, COVISHIELD - 1), after the second vaccination dose in 2 patients (COVISHIELD - 2). Out of 6, one patient, one was diagnosed with optic neuritis, one with acute posterior multifocal pigment epitheliopathy (APMPPE), one with Vogt-Koyanagi-Harada disease (VKH), and three patients with acute anterior uveitis

Conclusions: Awareness regarding potential serious ocular side effects of the vaccines are crucial. Since vaccines are the primary health strategy during the pandemic to reduce morbidity and mortality related to COVID-19; the risks are outweighed by the prophylactic benefits of vaccination. However, patients with known history of ocular inflammation should be under close surveillance post-vaccination as it can exacerbate the pre-existing autoimmune and inflammatory conditions.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Ophthalmic Manifestations Post COVID-19 Infection

*First Author: Sameeksha **AGRAWAL***
*Co-Author(s): Ankit **AGRAWAL***

Purpose: To report ophthalmic manifestations in patients after coronavirus disease 2019 infection.

Methods: Patients coming to general eye OPD with history of COVID-19 infection.

Results: Conjunctivitis is the most common manifestation and can develop at any stage of disease. The posterior segment manifestations included cotton wool spots, retinal hemorrhages, CSR, papillophlebitis, optic neuritis, panuveitis, multifocal retinitis, necrotizing retinitis, central retinal artery/vein occlusion.

Conclusions: There is association of COVID-19 with uveitic, retinovascular, and neuro-ophthalmic diseases. COVID-19 patients can experience ophthalmic complications even after recovery. These patients, even if asymptomatic for eye symptoms, should undergo eye evaluation to rule out posterior segment involvement. Ophthalmologists should be aware of possible associations of ocular diseases with SARS-CoV-2 in order to look for specific signs, diagnose and initiate early treatment for vision threatening complications.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Parasitic Eye Diseases: Nuances of Rapid Identification and Advanced Microscopy

*First Author: Dipankar **DAS***
*Co-Author(s): Harsha **BHATTACHARJEE***

Purpose: To study parasitic eye diseases in a tertiary institute of north-east India by live examination of parasites, rapid staining and scanning electron microscopy.

Methods: Ocular parasitic diseases were seen clinically and pathologically. Clinical descriptions including food habits were taken in detail. Live examinations of parasitic diseases were done under compound microscopy. Worms were stained by rapid fluorescein stain in raw specimen and immediate reports of the parasites were done. Wet mount preparation and scanning electron microscopy with energy dispersive spectroscopy was carried out in some of the parasites.

Results: Total 166 cases of ocular parasitic diseases were seen in 12 years study. Toxoplasmosis (n=93, 56.02%), Toxocariasis (n=32, 19.28%), Cysticercosis (n=18, 10.84%), Hydatidosis (n=5, 3.01%), Dirofilariasis (n=5, 3.01%) Thelazia (n=3, 2%), Gnathostoma (n=2, 1.81 %) and Suspected DUSN (n=2, 1.81%). Live examination was seen in 11 cases (6.63%) and 8 cases (4.82%) had scanning electron microscopy evidence with energy dispersive spectroscopy for the elemental structural change.

Conclusions: The present study is a large study where live examinations of ocular parasites were carried out for rapid diagnosis. Fluorescein stain on the identification of parasites and SEM study helped in detailing microscopic and ultrastructural findings.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Pattern, Incidence and Distribution of Uveitis in Systemic Tuberculosis

*First Author: Anniksha **M N***
*Co-Author(s): Radha **ANNAMALAI***

Purpose: Tubercular uveitis is a frequent cause of visual morbidity. Ocular inflammation can have rapid dissemination and result in anterior, intermediate, posterior or panuveitis.

Methods: This is a prospective study on 125 patients over three years. Patients with tuberculosis (TB) were evaluated for uveitis with angiography, complete blood count, X-ray, polymerase chain reaction, QFT Gold, PPD, chest Xray, computed tomography and biopsy were performed on blood, aqueous and vitreous. Treatment was with anti-tubercular therapy (ATT). Ocular investigations performed included fundus photography, fundus fluorescein angiography (FFA), indocyanine green angiography (ICG), B scan ultrasonography and optical coherence tomography (OCT).

Results: Among 125 patients, Uveitis was present in 12% and posterior type was the most common with $p < 0.05$. Manifestation was earliest in miliary and pulmonary tuberculosis. Anterior uveitis in 42%, posterior uveitis in 33%, vasculitis in 12%, keratouveitis in 2%, panuveitis in 4%, intermediate uveitis in 5%. Response to ATT was seen in 93%. 21(58%) had active TB and 15 (42%) patients had latent TB. Pulmonary TB was present in 12(57%) and extrapulmonary TB in 9 (42%) of patients. Among those with extrapulmonary TB, 1 patient (8%) had abdominal TB, 6(50%) had miliary TB, 3(25%) had TB of the central nervous system and 2(16%) had spinal TB.

Conclusions: Uveitis due to TB can occur in pulmonary and extrapulmonary TB and in active or latent forms. Both systemic and ocular investigations are required for conclusive diagnosis

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Pharmacokinetics of Topical Levofloxacin Versus Topical Moxifloxacin Into Aqueous and Vitreous Humor

*First Author: Norashikin **MASLAN***
*Co-Author(s): Shamin **MOHD SAFFIAN**, Mazlina **MOHD SAID**, Mushawiahti **MUSTAPHA**, Wan Haslina **WAN ABDUL HALIM***

Purpose: To compare the pharmacokinetics of topical levofloxacin 1.5% and topical moxifloxacin hydrochloride 0.5% into aqueous and vitreous humor post-instillation in human eyes.

Methods: A prospective, single-blinded, randomized trial of 131 eyes undergoing vitrectomy surgery conducted between September 2019 to May 2022. The eyes were stratified to receive levofloxacin or moxifloxacin before vitrectomy surgery; and into one sampling time point, i.e., 1, 2, 4, or 6 hours after their last instilled eye drop. Patients instilled one drop of the assigned antibiotic, four times daily, for 72 hours prior to surgery. Aqueous humor and vitreous specimen were each collected from the randomized time points. Samples were assayed using HPLC.

Results: Aqueous humor drug concentration as described by median Cmax and pooled AUC0–6 values were greater for levofloxacin than moxifloxacin (Cmax (IQR): 1139.80 ng/mL (343.16, 1478.10) and 520.44 ng/mL (382.36,943.87), respectively, $p = 0.002$; AUC0–6 3658.06 ng.hr/mL and 1593.77 ng.hr/mL $p < 0.001$). The pooled AUC0–6 of levofloxacin vitreous humor concentration was greater than moxifloxacin (232.72 ng□hr/mL and 123.74 ng□hr/mL, respectively, $p = 0.002$), and significant between-treatment difference was observed in median C max (IQR) values (53.53ng/mL (37.97, 85.41) ng/mL and 29.14 (9.78, 59.26) ng/mL, respectively, $p = 0.005$). No treatment-emergent adverse events were reported.

Conclusions: Greater drug concentration post-application of topical levofloxacin 1.5% than moxifloxacin 0.5% were noted in the aqueous and vitreous at all time points. The concentration of levofloxacin is similar in aqueous and vitreous beyond 6 hours. Higher drug concentration in the aqueous humor with levofloxacin 1.5% may demonstrate greater potential for bacterial eradication.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Recalcitrant Mooren's Ulcer: Penetrating Keratoplasty and Immunosuppressants Are the Keys?

*First Author: Arpita **KHASNAVIS***
*Co-Author(s): Somasheila **MURTHY***

Purpose: To describe the clinical course and management outcomes of a series of 5 challenging cases of Mooren's ulcer (MU) which required penetrating keratoplasty (PK) and aggressive systemic immune suppression.

Methods: Retrospective chart review is presented.

Results: A total of 9 eyes of 5 patients presented with Mooren's Ulcer and of which 6 eyes underwent multiple surgical interventions including penetrating keratoplasty. Three out of 5 patients who underwent PK had good outcome post-PK, on immunosuppressants at their 6-month follow-up, with significant improvement in visual acuity with the mean at 0.3 (logMAR). Two

of the patients, however, had recurrence of Mooren's ulcer in the host tissue, presented with recurrent episodes of corneal melt and perforation and underwent multiple surgical procedures to manage the disease and eventually had a visual acuity of light perception on the last follow-up visit.

Conclusions: The case series highlights the unpredictable nature of Mooren's ulcer. Surgical success post PK in Mooren's ulcer can be achieved but requires aggressive immune-suppression and frequent follow ups. Secondary glaucoma, & secondary infections are poor prognostic factors. Immuno-suppressants like Rituximab and Cyclophosphamide can help in improving the outcome post PK surgery in recalcitrant cases.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Retinal Pigment Epithelium and Inner Choroidal Characteristics in Acute and Resolved Vogt-Koyanagi-Harada Disease

*First Author: Niroj **SAHOO***
*Co-Author(s): Jay **CHHABLANI**, Ninan **JACOB**, Raja **NARAYANAN**, Mudit **TYAGI***

Purpose: To evaluate the retinal pigment epithelium (RPE) and inner choroidal characteristics in cases of acute Vogt-Koyanagi-Harada (VKH) disease, and to analyze the correlation between RPE thickness and choroidal characteristics using swept-source optical coherence tomography (SS-OCT).

Methods: This was a retrospective, observational study done in 55 eyes of 29 patients with acute VKH. All eyes underwent treatment with systemic steroids with immunosuppression at baseline. SS-OCT was performed in all eyes at baseline and on resolution. RPE, inner and total choroidal thickness, RPE reflectivity, and inner choroidal vascularity index (CVI) before and after treatment (on complete resolution) were analyzed using Image J software.

Results: The mean age of the cohort was 34.8 ± 12.2 years (11 males and 18 females). RPE characteristics in acute VKH included, increased thickness, undulations, and small pigment epithelial detachments. There was an increase in RPE reflectivity post-treatment due to improvement in media clarity. There was a significant decrease in RPE thickness following treatment ($p = 0.0004$), with RPE thickness correlating with inner and total choroidal thickness in the acute phase. Inner CVI constituted a significant proportion of the total CVI value. A decrease in inner choroidal CVI with the appearance of horizontal slit-like choroidal vessels was seen on resolution.

Conclusions: RPE thickness and inner choroidal vascularity can be used as markers of acute inflammation in VKH when the choroidal thickness measurement or angiography cannot be performed.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Retinal Vasoproliferative Tumors Secondary to Uveitis – A Case Series

*First Author: Arshee **AHMED***
*Co-Author(s): Parthapratim **DUTTA MAJUMDER***

Purpose: To describe the etiology, clinical features and management of retinal vasoproliferative tumors (RVPT) in uveitic eyes.

Methods: To present a retrospective, observational case series.

Results: We report a series of 5 cases of RVPTs in uveitic eyes of 2 patients with Eales disease, one with tubercular placoid retinochoroiditis, one patient with tubercular retinal vasculitis and one patient with ocular toxocariasis. All patients had unilateral involvement with solitary localized tumors. The left eye was more commonly affected. The most common locations were inferotemporal quadrant (2 eyes) and inferior 6 o'clock position (2 eyes) with superotemporal quadrant (one eye). Associated fundus findings included subretinal exudates, feeder vessels, vascular sheathing, vitreous hemorrhage, vitreous membranes, vitreous condensation, vitritis, macular scar and localized tractional retinal detachments. Treatment modalities included scatter laser, cryotherapy and oral corticosteroids for uveitis. In 4 eyes the RVPT healed by fibrosis.

Conclusions: Retinal vasoproliferative tumors are rare retinal lesions which can be primary or secondary to various entities including uveitic diseases. Early identification and management is imperative to prevent vision-threatening complications like tractional retinal detachment and macular scarring.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

To Study Serum Levels of TNF-Alpha and VEGF A in Cases of Primary Open Angle Glaucoma

*First Author: Priya **SHARMA***

Purpose: To study association between serum levels of TNF-alpha and VEGF-A with the severity of primary open angle glaucoma.

Methods: An analytical cross-sectional study among 22 cases of primary open angle glaucoma and 22 age and sex matched healthy controls was done. Serum levels of TNF-alpha and VEGF-A were measured using

enzyme linked immunosorbent assay (ELISA). The assay was performed in duplicates on an automated ELISA analyzer.

Results: Mean serum TNF-Alpha and VEGF-A was significantly increased in cases of primary open angle glaucoma. However, no significant association was seen between serum TNF-Alpha and VEGF-A with age, gender and locality.

Conclusions: High systemic level of an inflammatory cytokine like TNF-alpha and growth factors like VEGF-A may be associated with cases of primary open angle glaucoma. However, it cannot be concluded weather it can be used as a biomarker for early diagnosis of primary open angle glaucoma.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Unusual Presentation of Probable Vogt-Kayanagi-Harada Syndrome in Multiple Sclerosis

First Author: Satabdi ***NANDA***
Co-Author(s): Kalpana ***MURTHY****, Dhwani* ***SHAH***

Purpose: Vogt-Kayanagi-Harada (VKH) is an autoimmune multisystemic disorder targeting melanocytes. MS is an autoimmune chronic CNS inflammatory disorder targeting myelin in axonal nerve sheaths. Their association is quite atypical. Association of uveitis with MS is commonly seen, with intermediate uveitis being the most common, followed by anterior uveitis, retinal vasculitis and panuveitis.

Methods: A 38-year-old female with demyelinating disease presented with progressive blurring of vision in both eyes for three months, pain, photophobia for ten days. She had similar history one year back with numbness and tingling in palms and soles. Neuroimaging revealed bilateral white matter changes. CSF analysis showed oligoclonal bands thereby establishing it as MS. At presentation, BCVA was 6/18 OD and CF1metre OS with active granulomatous panuveitis in both eyes. She was thoroughly investigated. FFA could not be carried out due to non-dilating pupil in view of posterior synechia.

Results: USG-OCT was suggestive of a probable VKH-like picture. Four loading IVMP doses, Systemic and topical corticosteroids followed by azathioprine were started. At one month, she improved dramatically clinically with BCVA of 6/9(OD)and6/9P(OS). She developed peripapillary CNVM in both eyes over 4 months for which intravitreal Anti-VEGF injections were given. She was administered Rituximab following an episode of reactivation.

Conclusions: This presentation of a probable VKH with MS has been reported twice in literature. Options of treatment include azathioprine,rituximab or biologicals. Careful choice of immunosupressants and long term follow up with the ophthalmologist and neurologist are of ultimate importance.

Feb 25, 2023 (Sat)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Valuable Application of β-d-Glucan Testing of Intraocular Fluid for Diagnosis of Fungal Endophthalmitis

First Author: Jing ***FENG***
Co-Author(s): Li ***CHEN****, Yong* ***TAO***

Purpose: To evaluate the value of the β-D-glucan (BDG) testing of intraocular fluid for the diagnosis of fungal endophthalmitis (FE).

Methods: Twenty patients (22 eyes) with FE were diagnosed using both culture and nonculture methods. Intraocular fluid was collected for BDG testing, including 22 eyes of FE and 55 eyes of control group. Under different BDG cutoff points as the test-positives, the BDG sensitivity, specificity, positive predictive value, and negative predictive value for FE were analyzed.

Results: The BDG testing value was 1,022.78 ± 1,362.40 pg/mL in the FE group, significantly higher than that of the control group (105.0 ± 180.80 pg/mL, $p < 0.001$). The area under the receiver operating characteristic (ROC) curve was 0.885 (95% confidence interval, 0.793–0.978; $p < 0.001$). With the prespecified BDG cutoff 107.83 pg/mL as the testpositive, sensitivity was 81.8%, specificity was 87.5%, and the Youden index was 0.693. When the BDG cutoff was depicted as 202.05 pg/mL, sensitivity reduced to 77.3%, specificity increased at 95.8%, and the Youden index reached the highest value of 0.731.

Conclusions: β-D-glucan testing of intraocular fluid demonstrated good sensitivity and specificity regarding the diagnosis of FE, which can provide earlier diagnosis to achieve better outcomes.

Miscellaneous

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Biological Potential and Therapeutic Benefit of Astilbin in Medicine Against Diabetes and Diabetic Nephropathy

First Author: Dinesh ***PATEL***

Purpose: Epidemiological studies have proven the decreased incidence of diabetes and related secondary complications with phytochemicals. Astilbin have

been well known for their anti-inflammatory activity. Diabetic nephropathy is one of the major complications of all the diabetes patients and responsible for end-stage renal disorders of human being.

Methods: Here in the present investigation scientific data analysis of different scientific research works have been performed to know the biological potential of astilbin in the medicine for the treatment of diabetes and related secondary complication. Further biological potential of astilbin on α-amylase and yeast α-glucosidase enzymes were also investigated in the present work through scientific data analysis in order to investigate the therapeutic role of astilbin in diabetes and related secondary complications.

Results: Scientific data analysis revealed the biological potential of astilbin in the medicine for the treatment of diabetes and associated secondary complications, as astilbin have inhibitory potential against carbohydrates-hydrolyzing enzymes. Scientific data analysis revealed therapeutic potential of astilbin in the medicine for the treatment of diabetes and associated secondary complications. Scientific data analysis revealed significant effect of astilbin against both α-amylase and yeast α-glucosidase enzymes signifying their therapeutic potential in the medicine against diabetes and associated secondary complications in meidicne. However, scientific data analysis also signified that astilbin inhibited connective tissue growth factor in the medicine which could be used for the treatment of diabetic nephropathy.

Conclusions: Scientific data analysis signified the biological potential and therapeutic benefit of astilbin against diabetes and diabetic nephropathy.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Botulinum Injection Into Lacrimal Gland – A Solution for Watering

First Author: Sindhuja ***MURUGESAN***
Co-Author(s): Dr.Viji ***RANGARAJAN***

Purpose: To evaluate the efficacy and outcome of botulinum toxin injection into the lacrimal gland for epiphora due to various causes.

Methods: In this retrospective study, 2.5 international units (IU) of botulinum toxin-A (BoNTA) was injected into the lacrimal gland transconjunctivally in 32 eyes. Duct syringing, probing and fluorescein dye disappearance test was done was all patients at the first visit. Using the MUNK's score patients were evaluated at follow-up at 1, 3 and 6 months. BoNTA 50 IU was diluted with 2ml of sterile saline (25units/mL). Upper eyelid is elevated manually, and the patient is asked to look inferomedially to expose the palpebral lobe of the lacrimal gland. Under topical anesthesia, transconjunctival injection of 2.5-5units BoNTA was given into the palpebral lobe.

Results: Amongst the 32 eyes, 25 eyes had epiphora due to lacrimal outflow obstruction. Out of which the most common cause of epiphora was proximal canalicular block (10), post traumatic canalicular block (5), post dacryocystectomy (3), severe punctal stenosis (3), punctal agenesis (2) and common canalicular block (3). The remaining 7 eyes had epiphora due to functional causes such as crocodile tears (4), hypersecretion (2), post 7th nerve palsy (1). The mean interval between injections was 4.06 months. The mean Munk score improved from 3.92 to 1.78 ($p < 0.0001$; paired two tailed t-test) suggesting a significant improvement. Transient ptosis was observed in 10 eyes.

Conclusions: Botulinum toxin injection into the lacrimal gland provides effective temporary relief for at least 5 months and can be a safe effective short-term treatment option in epiphora.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Comparative Study of 3D Videos Recorded on DIY 3D Recording Assembly Versus Conventional Recording System

First Author: Sumeet ***KHANDUJA***
Co-Author(s): B C ***HEMALATHA****, Aravind* ***M.J.****, Raju* ***SAMPANGI****, Rubina* ***SHAIKH****, Rouli* ***SUD***

Purpose: To record and compare the depth perception and other parameters perceived when viewing anterior segment ophthalmology surgeries videos recorded on a "Do it yourself" 3D assembly versus a conventional 2D assembly.

Methods: Surgical videos were recorded using DIY 3D recording assembly made by mounting two cameras of either side of beam splitter and video outputs fused live inside to side format using wedding video mixer. Standard 2D video and pseudo stereo video made by duplicating 2D video to side by side format served as control 1, 2, 3 videos: cataract surgery, scleral buckling and intravitreal injection were shown to 20 subjects and evaluated for stereopsis, color, resolution, overall quality and asked for stereopsis of steps relevant to skill transfer: depth of AC, Phaco trench, IOL position, depth of corneal incision in cataract, crescent depth in buckling and needle depth in intravitreal injection. Stereo and pseudostereo images were viewed onVRBOX and 2D on 13-inch laptop.

Results: Statistically significant higher proportion of subjects rated stereo videos better than control for depth perception of most surgical steps except keratome depth incision. The resolution was rated to be slightly better in standard 2D videos.

Conclusions: The DIY 3D assembly provided better

stereopsis than conventional 2D assembly for critical steps of cataract surgery, scleral buckling and intravitreal drug injection. This cost-effective assembly may pave a way for better methods of surgical teaching and skill transfer.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Epidemiological Pattern of Corneal Foreign Bodies and Awareness of Patients on Utilization of Protective Eye Devices – A Hospital-Based Cross-sectional Study

*First Author: Samata **SHARMA***

Purpose: To find out socio-demographic profile of patients with corneal foreign bodies (CFB), practices following injury and utilization of protective eye devices by them.

Methods: This cross-sectional study was conducted in a tertiary eye hospital in Bhaktapur from April to August 2021. All patients with CFB attending the hospital were included in the study. CFB was removed with ocular examination under a slit lamp biomicroscope, and a face-to-face interview was conducted.

Results: Among 142 patients, 99.3% were males, mostly in the age group 18-40 years, and 41.5% had a previous history of CFB. The most common CFB particle was metallic (n=124, 87.3%). Three-fourths (75.1%) of patients were not using eye-protective devices at the time of injury, and 45.1% tried physically removing the CFB in a harmful way. Nearly one-fifth (19.7%) had used topical antibiotic eye drops before presenting for CFB removal. Nearly half of the participants (46.5%) reported never wearing any protective eye devices, and the main reason for not-wearing was the unavailability (48.4%) of such devices in their workplace. The awareness of the need for protective eye devices ($p < 0.001$) was significantly associated with using protective eye devices during work.

Conclusions: The workers should be made aware of the consequences of harmful practices following CFB injury. Strict enforcement of protective eye wears at workplace is required to minimize the risk of ocular injury and consequent visual impairment.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Our Tertiary Eye Hospital- a Novel Green Campus Combatting Carbon Foot Printing

*First Author: Atul **KAMATH***
*Co-Author(s): M Manjunath **KAMATH**, Dhananjay **BHOSALE**, Aditi **PAI***

Purpose: Global warming is one of the biggest threats of the 21st century. Health care facilities are also one of the main contributors to carbon emission leading to global warming. To assess the carbon foot printing of our tertiary eye institute and tackling the same with the vast green cover present in our campus.

Methods: Retrospective study from March 2018 to April 2019 to assess the carbon foot printing per patient undergoing cataract extraction in our tertiary eye institute. First, carbon emissions produced during the surgical procedure. Second, measures taken to counteract the carbon emission produced using our hospital's green cover.

Results: Each case of SICS from surgical procedure till discharge generated a waste of 310 grams on an average resulting in total of 3.20 kg CO_2 equivalent. The cumulative effect of operating 32073 SICS cases of community patients accounted to be a total of 113.13 tonnes of CO_2 which was overcome by absorption of 133.22 tonnes of CO_2 by the green cover present in our campus which covers approximately 4 acres in area.

Conclusions: With community based SICS being performed on a mass scale ranging from 32,000-33,000 per annual year on an average in our hospital the CO_2 equivalent and carbon foot printing is highly significant. This will have a tremendous impact on the environment and global warming. But with maximum recycling and reusing of the waste generated with minimal usage of disposables along with the green cover of our campus we are able to arrest this burden with ease thus being a model hospital.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Outcomes for Triangular Tarsectomy and Limited Orbicularis Myectomy With Lower Lid Retractor Plication for Involutional Entropion

*First Author: Syeed **KADIR***
*Co-Author(s): Golam **HAIDER**, Riffat **RASHID**, Sadia **SULTANA***

Purpose: To assess the outcomes of triangular tarsectomy and limited orbicularis myectomy with lower eyelid retractor plication versus an everting sutures technique or lateral tarsal strip procedure for the correction of lower eyelid involutional entropion.

Methods: A quasi-study was conducted at two tertiary eye hospitals in Bangladesh between 2016 and 2019. All selected patients presented with involutional entropion and were followed for up to one year. Patients in group A underwent triangular tarsectomy and limited orbicularis myectomy with lower eyelid retractor plication, whereas those in group B received everting sutures, and group C underwent a lateral tarsal strip procedure. All surgeries were performed by a single surgeon.

Results: A total of 78 patients in whom 84 eyelids were affected by lower eyelid involutional entropion. The success rate was higher in group A compared to group B and group C (100% versus 86.7% versus 95.8%); p <0.05). Recurrence at a one-year follow-up was noted in only four (13.3%) eyelids in-group B and one (4.2%) in group C. However, patient's in-group C experienced a higher frequency of minimal postoperative complications, including short-term pain (100%), tenderness on the lateral canthal area (100%), tightness of the eyelid (91.7%), and ecchymosis (54.2%) compared to group A. All approaches to entropion correction were successful in terms of cosmetic outcomes.

Conclusions: Triangular tarsectomy and limited orbicularis myectomy with eyelid retractor plication may be considered the standard procedure for the correction of lower eyelid involutional entropion with no recurrence compared to lateral tarsal strip technique and cost-effective everting sutures procedure.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Retroconjunctival Radiofrequency Electrocautery With a Fine Needle for Conjunctivochalasis – A Novel Surgical Technique

*First Author: Prabhakar **G V***

Purpose: Conjunctivochalasis (CCH) is associated with disruption of the tear meniscus, delayed tear clearance, and punctal occlusion. Different surgical procedures have been described to reduce CCH, such as simple excision, excision, and amniotic membrane transplantation (AMT) with suture or fibrin glue, fixation of the conjunctiva to the sclera, or superficial cauterization with a bipolar electrical cauterizer. However, these surgical procedures introduce certain disadvantages, including prolonged operating time, postoperative discomfort, and suture-related complications. we describe a novel technique using fine needle RF cautery, which coagulates redundant conjunctiva thus reversing the symptoms.

Methods: On the inferior bulbar conjunctiva, retroconjunctival coagulation was performed with a fine needle electrode using a high-frequency radiofrequency cautery unit in coagulation mode under low coagulation settings. 16 patients (28 eyes) were included in the study, patients were followed up for 6 months after surgery and evaluated clinically and symptomatically (OSDI Score).

Results: A total of 28 eyes recovered a smooth, wet, and noninflamed conjunctival surface within 1 month and remained stable for a follow-up period of 6 months. At 6 months postoperatively, 28 eyes had grade 0 CCH with a statistically significant decrease in the OSDI score at 6 months postoperatively.

Conclusions: This new technique of retroconjunctival RF cautery proves to be simple and effective in the reversal of conjunctival contour and establishing tear stability thus reducing patients' symptoms.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

What Percentage of the Public Know How to Self-test Their Eyes When They Are Experiencing Vision Problems?

*First Author: Fuxiang **ZHANG***

Purpose: The objective of this study was to investigate public awareness of self-testing their eyes when they were experiencing vision issues. Many of our patients do not know how to check their eye appropriately when they experience some vision problems. This can potentially delay diagnosis and treatment.

Methods: A study was done from November 2019 to present. All qualified patients were given a 4-question survey after they checked in for an office visit. Only one survey was done for each patient and no survey was given for their follow-up visits.

Results: A total of 4,257 patients (62% female) enrolled in this survey. Sixteen percent had an occupation in the medical field. Six percent did not have a high school education and 27% had college or higher education. For the question: «When experiencing any problems with your vision, for example, blurry vision, floaters, or flashlights, what do you do? (circle yes or no)» Cover each eye to see which eye is experiencing the issue: Yes or No. Only 47% chose «YES» to test each eye individually, 51% chose «NO», and 2% did not know what to do.

Conclusions: More than half of the surveyed patients do not appear to know the correct way of self-testing their eyes when they are experiencing vision problems. The Zhang Ring Test for retinal detachment may have value as a self-testing tool at home to promote early diagnosis of blinding retinal detachment.

Neuro-Ophthalmology

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Efficacy of Plasma Exchange Treatment for Demyelinating Optic Neuritis

*First Author: Shaoying **TAN***
*Co-Author(s): Junxia **FU***

Purpose: To evaluate the value of plasma exchange (PE) for patients with three subtypes of demyelinating optic neuritis (ON): aquaporin-4 (AQP4)-antibody positive ON (AQP4-ON), myelin oligodendrocyte glycoprotein (MOG)-antibody positive ON (MOG-ON), and AQP4 and MOG-antibody double-seronegative ON (D-ON).

Methods: A prospective study compared the logMAR best-corrected visual acuity (BCVA) at most severe onset, 1 day before IVMP treatment, 1 day before PE treatment, after five-cycles of PE therapy, and at 1-, 3-, and 6-month follow-up visits. The proportions of eyes in each visual outcome category were also compared. Logistic regression and a receiver operating characteristic curve were used to analyze predicted factors for VA improvement.

Results: A total of 124 ON attacks of 122 patients were included, but 95 AQP4-ON patients suffering 96 attacks, the mean logMAR BCVA markedly improved and was steadily maintained after five-cycles of PE treatments (adjusted p □ 0.001). BCVA also improved in two of 6 MOG-ON patients, but no significant improvement in 22 D-ON attacks (p = 0.659). Combination of the number of previous ON episodes and the time window to PE treatment showed an accuracy of 74.7% for prediction of BCVA to improve ≥ 2 scores. In addition, a combination of logMAR VA before PE and the time window to PE treatment resulted in 83.4% accuracy to predict whether VA would regain 1.0 logMAR.

Conclusions: PE therapy effectively improves visual outcomes for AQP4-ON patients but offers limited value for D-ON patients. Early initiation greatly increases the likelihood of achieving VA improvement.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Masquerading Optic Neuritis in Tuberous Sclerosis

*First Author: Dhwanee **AGARWAL***
*Co-Author(s): Harinder Singh Sethi **SETHI***

Purpose: To highlight an atypical late presentation of masquerading optic neuritis in a case of tuberous sclerosis in a young female with an intracranial space-occupying lesion.

Methods: A 12-year-old female presented with low grade fever, headache and bilateral gradual onset, progressive loss of vision, with left eye Wagner Grade 3 relative afferent pupillary defect (RAPD) and papilledema on fundoscopy; masquerading as Atypical optic neuritis. MR imaging studies showed features of obstructive hydrocephalus due to subependymal giant cell astrocytoma (SEGA), and multiple subependymal nodules, cortical tubers, and radial migration of bilateral cerebral hemispheres. This along with the clinical image of facial angiofibroma, according to the International Tuberous Sclerosis Complex Consensus Group in 2012, led to the proven diagnosis of Tuberous Sclerosis Complex. The patient was started immediately on intravenous pressure lowering agents and transferred to the Neurosurgery Department for immediate surgical intervention.

Results: Patient gradually started feeling symptomatically better in her post-operative period where the complaint of headache showed complete resolution. The visual acuity, however, showed no significant improvement due to the established optic atrophy because of chronic papilledema.

Conclusions: Tuberous sclerosis is a rare genetic multisystem disorder with a prevalence of 1 in 95,136 in the general population in India. The high degree of variability in its presentation often hampers early diagnosis. It can also have a variable late presentation like in our case where it appeared as optic neuritis. It could be explained by the increased intracranial pressure due to the intracranial space-occupying lesion.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Risk of Clinical and Sub-clinical Radiation-Induced Optic Neuropathy Following High-Dose Irradiation in Chinese Patients With Nasopharyngeal Carcinoma – A Case Control Study

*First Author: Noel **CHAN***
*Co-Author(s): Carol **CHEUNG**, David **JOHNSON**, Ka Wai **KAM**, Chun Yue, Andrew **MAK**, Ho Ming **WONG***

Purpose: To determine the risks of clinically manifested and subclinical radiation-induced optic neuropathy (RION) following high-dose intensity-modulated radiation therapy (IMRT) for nasopharyngeal carcinoma (NPC).

Methods: Clinical and ocular imaging findings of subjects who received IMRT of dose >54 Gy between 2010-2016 were compared with age and sex-matched controls were recruited.

Results: Thirty-six eyes of 18 subjects with a mean age

of 59.0 ± 13.4 years were examined at a mean of 6.9 years following radiotherapy. Ten (55.6%) received 70Gy in 35 fractions and the remaining received 69.96Gy in 33 fractions. The incidence of clinically manifested RION was 2.8%. After excluding the eye with clinical RION, irradiated eyes had significantly thinner average and inferior peripapillary retinal nerve fiber layer (pRNFL) ($p = 0.003$, $p < 0.01$) and macular ganglion cell-inner plexiform layer (GCIPL) in all quadrants (all $p < 0.001$). The inferior quadrant of pRNFL, inferotemporal sector of GCIPL and the inferotemporal peripapillary vessel density (PPVD) were significantly correlated with the maximum dose (Dmax), Dmax to 0.03cc, Dmax to 2% of the volume (D2%), mean dose and biologically equivalent dose of radiation to the eyeball (EDQD-2) (all $p < 0.05$).

Conclusions: Our study demonstrated significant, dose-dependent reductions in the optic nerve fiber thickness, and likely secondary to a microvascular insult from irradiation. Despite anatomical alterations, no functional deficit could be detected by available clinical tests. Clinically manifested RION remained rare. The eyeball was the most susceptible to the effects of radiation among all ocular apparatus, thus a higher threshold for radiation to chiasm/optic nerve may be adopted for better disease control in aggressive tumors.

Feb 26, 2023 (Sun)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Toxic Tobacco: Fundus Changes and OCT Based Ganglion Cell Analysis in Long Term Tobacco Use

*First Author: Ayushi **OJHA***
*Co-Author(s): Syed **HUSSAIN**, Anamika **PANDEY***

Purpose: Our aim was to study the fundus changes documented using standard fundus photography in patients who came to us with a history of Tobacco addiction and were diagnosed with Tobacco amblyopia and to study the effect of tobacco abuse on OCT based Ganglion cell layer analysis.

Methods: An observational study was done over a period of 3 months under the department of ophthalmology at a tertiary care center. All patients aged >25 years coming to the ophthalmic OPD with a history of tobacco addiction in the form of either smoking or tobacco chewing with or without related symptoms were included. The excluded patients were the ones coming to the ophthalmic OPD with long term tobacco use but with any painful eye condition or any active inflammation in the eye and the patients whose fundus view was blocked.

Results: Data from 40 patients with a history of tobacco addiction was analyzed. 74% of the patients had dyschromatopsia in either one or the other eye. The visual acuity was between 6/6-6/9 in the majority of the patients. Fundus picture was relatively normal clinically. A small percentage of patients (6.67%) had severe vision loss not attributable to any cause other than tobacco induced neuropathy.

Conclusions: In patients with long term tobacco use, dyschromatopsia is the first symptom. The fundus picture, though clinically normal, OCT shows a reduction in the GC-IPL complex thickness. A negative correlation was found between the duration of tobacco use and the ganglion cell-internal plexiform layer thickness.

Ocular Imaging

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Alterations in Retinal Oxygen Kinetics, Blood Flow and Eye Movements in Retinal Vein Occlusion Using a Non-invasive Structural-Functional Imaging Analysis System

*First Author: Jingyuan **ZHU***
*Co-Author(s): Haowen **LI**, Qiushi **REN**, Jinyuan **WANG**, Wenbin **WEI**, Chuanqing **ZHOU***

Purpose: This study aims to assess the alterations in retinal oxygen kinetics, blood flow, smooth pursuit eye movements and pupillary light responses of retinal vein occlusion (RVO).

Methods: This was a cross-sectional study on 53 patients with RVO. The study comprised 33, 21 and 39 eyes as branch RVO (BRVO), central RVO (CRVO) and healthy subjects, respectively. Spectrophotometric retinal oximetry, laser speckle contrast imaging (LSCI), and tracking movements of pupil and eye were conducted using a rapid newly developed non-invasive multimodal ocular structural-functional imaging analysis system.

Results: Patients with BRVO had a higher arteriovenous difference of retinal oxygen concentration, higher oxygen extraction fraction and lower venous blood flow velocity (BFV) compared with control group ($p < 0.05$, respectively). Patients with CRVO had a higher flow acceleration index, higher resistivity index and lower blowout score ($p < 0.01$). Patients with CRVO had a lower arterial external diameter ($p < 0.0001$) and higher venous lumen diameter ($p = 0.0345$). Systolic period was shorter in both RVO groups ($p < 0.001$). Moreover, the eye movement speed and velocity gain both differed between BRVO and control groups ($p < 0.001$, respectively). CRVO group had a lower pupillary maximum velocity of constriction than BRVO group ($p = 0.0369$).

Conclusions: Patients with RVO had a lower BFV, resulting in enhanced compensatory blood pumping and increased oxygen extraction. The increased velocity gain may be related to catch-up saccade caused by central visual field defect, which resulted from macular edema of BRVO. LSCI were the first-time using in fundus imaging in clinics, made possible breakthroughs in image stabilization, which will be helpful for early-stage diagnosis and intervention.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Anatomical Compensation Model Improves the Detection of Glaucoma in Chinese and Indian Adults

*First Author: Jacqueline **CHUA***
*Co-Author(s): Tin **AUNG**, Chi **LI**, William **SAW**, Leopold **SCHEMETTERER**, Damon **WONG***

Purpose: To assess whether compensating the retinal nerve fiber layer (RNFL) thickness for anatomical factors can improve the detection of glaucoma in Chinese and Indian adults.

Methods: A total of 1,995 healthy participants (1076 healthy Chinese and 919 healthy Indians) were enrolled to construct a multivariable linear regression compensation model, which was then applied to 523 Chinese glaucoma participants (mean deviation of the visual field -9.73 ± 7.44 dB), 523 healthy Chinese, and 523 healthy Indians. Participants underwent Cirrus spectral-domain optical coherence tomography imaging of the optic disc and macular cubes. Compensated RNFL thickness was generated based on ethnicity, age, refractive error, optic disc (ratio, orientation, and area), and retinal vessel density. RNFL thickness measurements and their corresponding areas under the receiver operating characteristic curves (AUCs) were obtained.

Results: The measured RNFL thickness value in Chinese was 9 µm on average thicker than Indians ($p < 0.001$). After applying the compensation model, the compensated RNFL thickness in Chinese was only 0.24 µm thicker than the Indians, which was no longer statistically significant between ethnicities ($p = 0.704$). The compensation model resulted in an improvement in AUC (91% vs 79%; $p < 0.001$), sensitivity (65% vs 38%), and specificity (52% vs 18%) than the measured RNFL thickness for the discrimination of glaucoma between ethnicities.

Conclusions: Applying the compensation model improved the diagnostic ability of RNFL thickness to distinguish glaucoma as compared with the optical coherence tomography instrument›s built-in values between individuals of different ethnicities. These findings suggest there may be value in adjusting the RNFL measurements for patients› anatomical parameters.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Decoding Enigma of Epiphora in Patent Lacrimal Pathway by Gravity Driven CBCT Dacryocystography

*First Author: Mukesh **KHARE***

Purpose: The enigma of misdiagnosis in cases of epiphora in presence of PATENT lacrimal pathway is still a challenge. Gravity driven CBCT (Conebeam computed tomography) Dacryocystography (DCG) has given the elusive answers in the present study.

Methods: CBCT DCG is done by instillation of Omnipaque dye in conjunctival cul-de-sac of patient in sitting posture. The first image is taken after 2 minutes, the second image is taken after 5 minutes and the third image after 30 minutes OR when patient gates taste of dye. This clinical study was done at one center with one ophthalmologist, one dental radiologist and one CBCT machine.

Results: We analyzed CBCT DCG of 991 eyes (496 patients) done from August 8, 2017, to August 15, 2022. This study revealed NLD stenosis and blockage at tip of NLD as two main causes of delayed emptying.

Conclusions: CBCT DCG is Safe as FDDT, Easy, Able to assess dynamics of tear flow, provides excellent anatomical details with topographical localisation, delineates partial and functional NLD obstructions. CBCT DCG is a physiological tool for fool-proof evaluation of functional epiphora.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Diagnostic Capability of Retinal Nerve Fiber Layer Birefringence for Glaucoma Using Polarization-Sensitive Optical Coherence Tomography

*First Author: Reshma Radhakrishnan **PARAKKEL***
*Co-Author(s): Jacqueline **CHUA**, Xinyu **LIU**, Leopold **SCHEMETTERER***

Purpose: To study the glaucomatous changes in the birefringence of retinal nerve fiber layer (RNFL) and assess the diagnostic performance of RNFL birefringence as a factor to evaluate glaucoma. We used a customized polarization-sensitive optical coherence tomography (PS-OCT) to image patients with glaucoma and compared the results with the RNFL thickness measured from a spectral-domain optical coherence tomography (SD-OCT).

Methods: In total, 86 eyes from 59 subjects were

measured and imaged for analysis consisting of 28 normal control eyes and 58 glaucoma eyes. All the subjects were imaged using an SD-OCT and a PS-OCT system; the glaucoma subjects also performed an additional visual field test. The birefringence of the RNFL was analyzed to evaluate its diagnostic performance using the receiver operating characteristic (ROC) analysis. The area under the curve (AUC), was used to compare the diagnostic capabilities of RNFL thickness and RNFL Birefringence. The relationship between the RNFL Birefringence, thickness, and VF-MD was studied via Pearson's correlation.

Results: Both average RNFL birefringence and average RNFL thickness had AUC values of 0.95. RNFL birefringence and RNFL thickness showed a significant correlation ($p < 0.05$) with the visual field MD (VF-MD). However, birefringence showed a better correlation at lower values of VF-MD in severe glaucoma cases.

Conclusions: The average birefringence has a comparable diagnostic utility with average RNFL thickness. Birefringence is advantageous in severe glaucoma populations with lower VF-MD as the performance of RNFL thickness tends to diminish due to the floor effect.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Importance of Inner Retinal Thickness and Brain Metabolites to Glaucoma Using Information Gain Assessment

*First Author: Jeremy **LI***
*Co-Author(s): Ji Won **BANG**, Kevin **CHAN**, Carlos **PARRA**, Joel **SCHUMAN**, Gadi **WOLLSTEIN***

Purpose: Recent studies have found the involvement of brain metabolites in both human and experimental animal models of glaucoma. However, it is unclear how important such metabolic changes are contributing to the disease. Here, we analyzed clinical ophthalmic assessments and 3-Tesla brain magnetic resonance spectroscopy data for 17 early glaucoma, 25 advanced glaucoma, and 22 healthy control subjects.

Methods: To select the most useful descriptors for class selection, we ranked all descriptors in terms of their information gain using InfoGain in the Weka software. We also ran the machine learning algorithm multi-layer perceptron (MLP) to determine the accuracy and area under receiver-operating-characteristics (ROC) curve using the reduced list of crucial attributes including peripapillary retinal-nerve-fiber-layer (pRNFL) thickness, macular ganglion cell-inner plexiform layer (mGCIPL) thickness, cup-to-disc ratio, visual field mean deviation, and choline, glutamate, and gamma-aminobutyric acid (GABA) in the visual cortex.

Results: When comparing healthy subjects to early or advanced glaucoma, pRNFL thickness ranked the first in terms of information gained. Interestingly, when comparing healthy subjects to early glaucoma, we found that choline metabolite in the visual cortex ranked second, whereas GABA ranked ninth for healthy subjects against advanced glaucoma. MLP was able to differentiate between: healthy control and all glaucoma subjects (accuracy: 85.9%; ROC: 0.913); healthy control and early glaucoma (accuracy: 76.9%; ROC: 0.778); and healthy control and advanced glaucoma (accuracy: 91.5%; ROC: 0.969).

Conclusions: These results provide insight into the relationships between the eye, brain, and glaucoma, as well as the potential contributions of choline to early glaucoma and GABA to advanced glaucoma.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Ocular Manifestations and Imaging Patterns of Rhinoorbital Cerebral Mucormycosis in COVID-19 Patients

*First Author: Rajwinder **KAUR***

Purpose: To estimate the pattern of various ocular manifestations as observed clinically and radiologically in cases of COVID-19 pandemic related rhinoorbital cerebral mucormycosis (ROCM).

Methods: The retrospective cross-sectional observational study was conducted in the department of Ophthalmology, Otorhinolaryngology and Radiodiagnosis after the approval of Research and Ethics committee over the period of five months from April 1, 2021, to September 30, 2021. All OPD and IPD patients who were actively infected or recovered from the COVID-19 pandemic and were microbiologically and histopathologically proven with mucormycosis were enrolled in this study. All the detailed ocular and radiological findings were documented.

Results: The age of patients (n-33) ranged from 34-75 years and the male-female ratio of 2:1. The duration between first positive COVID-19 report and the onset of the COVID-19 associated ROCM was 0 - 23 days. Sixteen patients were COVID-19 positive, and 17 patients had no COVID-19 infection on presentation. Comorbidities noted were diabetes (n- 27), HTN (n-3), HCV+ (n-2) and HBs Ag (n-1). Partial third nerve involvement was seen in 6 patients, complete third nerve involvement in 3 patients and 12 patients who had complete ophthalmoplegia. All eyes (n-13) with negative PL had CRAO. FESS with maxillectomy and exenteration of the involved eye was done in 16 patients. Transcutaneous retrobulbar amphotericin B 0.3mg/mL was given in 7 patients.

Conclusions: ROCM had emerged in this region as severe vision threatening ophthalmic complication in

COVID-19 infected and recovered patients. TRAMB had proven successful in salvaging the vision and improving the prognosis in such patients.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

One-Year Follow-up of Optical Coherence Tomography Angiography Microvascular Findings: Macular Telangiectasia Type 2 Versus Tamoxifen Retinopathy

*First Author: Yujeong **PARK***
*Co-Author(s): Young Hee **YOON***

Purpose: To compare microstructural and microvascular changes in eyes with macular telangiectasia type 2 (MacTel2) and in those with tamoxifen retinopathy (TR) at baseline and at the 1-year follow-up using optical coherence tomography (OCT) and OCT angiography (OCTA).

Methods: We followed up patients diagnosed with MacTel2 or TR for at least 1 year. We included 17 patients with MacTel2 (31 eyes) and 15 with TR (25 eyes) who discontinued tamoxifen use after a TR diagnosis. We performed OCT and OCTA at baseline and after 1 year.

Results: Patients with MacTel2 and TR showed intraretinal cavitation, ellipsoid zone (EZ) loss, and capillary telangiectasia in the superficial and deep plexuses. EZ disruption predominantly affected the temporal region in MacTel2 (32%) and was limited to the foveal center in TR (24%). Vascular density (VD) was significantly reduced within the deep temporal parafovea and superficial fovea in MacTel2 and TR eyes, respectively. After 1 year, the MacTel2 eyes showed enlarged EZ loss, proliferative vascular invasion, and increased VD ($p = 0.021$) in the temporal deep plexus compared with TR eyes.

Conclusions: After 1-year follow-up, the MacTel2 eyes showed proliferative vascular remodeling, particularly in the temporal parafovea of the deep plexus with EZ loss progression, whereas the TR eyes maintained their baseline capillary rarefaction.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Relationship Between Atropine Treatment in Childhood and Choroidal Thickness in Adulthood in Myopic Patients

*First Author: Claire Lixian **PETERSON***
*Co-Author(s): Marcus **ANG**, Jonathan **LI**, Yong **LI***

Purpose: Low-concentration atropine treatment has been shown to induce choroidal thickening in children, while myopic patients tend to exhibit choroidal thinning. We aimed to determine the relationship between childhood atropine treatment and subfoveal choroidal thickness in adulthood in myopic patients.

Methods: A total of 400 children with a mean age of 9.6 ± 1.4 (6-12 years) were randomized to receive atropine 0.5%, 0.1%, or 0.01% once daily in both eyes. Children received atropine for 24 months (phase 1), after which medication was stopped for 12 months (phase 2). Children who had myopia progression (≥0.50D in at least 1 eye) during phase 2 were restarted on atropine 0.01% for 24 months (phase 3). Participants were recalled 10 years later to determine their myopia progression and current ocular status in early adulthood (phase 4). Subfoveal choroid thickness was measured using swept-source optical coherence tomography. Cycloplegic spherical equivalent (SE) and axial length were also measured.

Results: According to the study, 136 (34.0%) participants were recalled in early adulthood (mean age 24.3 ± 1.4). Subfoveal choroidal thickness was 228.9 ± 77.7, 210.5 ± 68.1 and 217.7 ± 67.7µm in the atropine 0.5%, 0.1% and 0.01% groups respectively ($p > 0.05$). A total of 175 eyes (64.3%) were highly myopic (SE > -6.0 diopters) in adulthood. Highly myopic eyes (202.1 ± 66.7µm) had significantly thinner subfoveal choroidal thickness compared with non-highly myopic eyes (250.21 ± 71.96 µm) ($p < 0.001$).

Conclusions: Receiving atropine 0.5%, 0.1% and 0.01% eyedrops in childhood showed no significant impact on subfoveal choroidal thickness in early adulthood. Therefore, the choroidal thickening effect induced by atropine during treatment period may not retain till adulthood in myopic patients.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Slit Lamp Based Intraocular Lens Microscope: A Point of Care Diagnostic Tool for Fungal Hyphae Detection

*First Author: Prithvi **CHANDRAKANTH***

Purpose: To describe a novel technique of attaching the smartphone-based intraocular lens microscope (IOLSCOPE) to the slit lamp thereby using it as a point of care diagnostic tool to detect fungal hyphae in cases of corneal ulcer on a slit lamp during examination of the patient.

Methods: Chart paper of 4 x 2 cm was taken to which a hole was made at one end with a paper puncher and four IOL's of 30D were stacked one upon the other and fixed using a liquid adhesive. The arrangement was then aligned over the smartphone camera. The IOLSCOPE was then fixed to the smartphone holding end of the adapter. the adapter was then attached to

the slit lamp pivot joint to make the slit lamp based intraocular lens microscope (SLIM). scarping from the patient is taken and along with KOH, a mount is prepared which is examined with the joystick. Now the slit lamp has been converted into a microbiological microscope to check microorganisms.

Results: KOH mount sensitivity :92%, specificity 100%; Culture mount sensitivity 100%, specificity 100%, male>females, fungal keratitis 42.78%, age group 41-60yrs, farmers highest affected. SLIM helps us to diagnose fungal hyphae of corneal ulcers on spot to start treatment bypassing the delay required for the sample slide to go to the laboratory for evaluation. It can be used to diagnose parasites too.

Conclusions: SLIM is an innovative novel modification to convert the slit lamp into a microscope especially useful in peripheral centers, vision centers and local clinics for immediate screening and treatment of pathogens like fungi, parasite larvae.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOMS 307–308 (Level 3)

Structural and Functional Changes in Ocular Hypertension Versus Controls

*First Author: Dewang **ANGMO***
*Co-Author(s): Tanuj **DADA**, Shashi **PRAKASH**, Kanchan **GOURI***

Purpose: To evaluate and compare the diagnostic ability of macular ganglion cell inner plexiform layer (mGCIPL) and peripapillary retinal nerve fiber layer (pRNFL) thickness changes on spectral domain-optical coherence tomography (SD-OCT), macular and peripapillary perfusion changes using optical coherence tomography angiography (OCTA), microperimetry average threshold in ocular hypertensive patients (OHT) and compare these modalities with controls over 12 months.

Methods: A total of 80 eyes including 40 normal eyes and 40 eyes of OHT were analyzed at baseline timepoint and at the 6 and the 12 months. The average thickness of mGCIPL and pRNFL on OCT1 and macular vessel density and peripapillary perfusion and flux index on OCTA using CIRRUSTM HD-OCT (Zeiss) and microperimetry of central 10 degrees using MAIA2 were evaluated.

Results: The mean age was 44.4 years among OHT and 43.9 years among controls. There was a significant reduction in average RNFL (p = 0.05) compared to normal (p = 0.075); reduction in average GCC in OHT (p = 0.001) compared to normal (p = 0.07). There was significant reduction in macula VD (p = 0.008), ONH perfusion (p = <0.001), ONH flux index (p = <0.001) and average threshold (microperimetry)(p = 0.005) in OHT versus normal (p = 0.4, p = 0.6, p = 0.02 and p = 0.3 respectively).

Conclusions: OCT, OCT-A, Microperimetry shows that they are useful aid in diagnosis and monitoring progression of OHT. AuROC curve of RNFL OCT was the highest, suggesting that RNFL OCT was most sensitive than GCC. In OCTA parameters, AuROC of ONH flux index was the maximum.

Ocular Oncology and Pathology

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

A Retrospective Comparative Analysis of Genetic Factors in Groups of Patients With and Without Metastases of Uveal Melanoma

*First Author: Vera **YAROVAYA***
*Co-Author(s): Ilia **LEVASHOV**, Andrey **ZARETSKY***

Purpose: To analyze genetic factors in a retrospective comparative analysis of homogeneous groups of patients with and without metastases.

Methods: This study included 96 patients (96 eyes) with UM after enucleation: 41 NoMTS and 55 MTS. NoMTS were included with follow-up period up to 36 months. NoMTS and MTS groups were statistically homogeneous by all known clinical features (p > 0.05). The search for mutations was carried out in GNAQ, GNA11, EIF1AX, SRSF2, and SF3B1. Chromosomes 1, 3, 6 and 8 were analyzed by MLPA. Immunohistochemistry and MLPA were performed for BAP1.

Results: Kaplan-Meier survival analysis showed the GNA11 mutation may indicate an increased risk of metastases at follow-up over 2 years (p = 0.03). EIF1AX gene mutation was frequently detected in NoMTS and associated with high survival (p < 0.0001). BAP1 immunohistochemistry had no association with survival (p=0,98). BAP1 deletion (p=0,012) and deletion of 3p (p = 0,004) and 3q (p=0,006) were associated with low survival. Deletion of 8p (p < 0,0001) and amplification of 8q (p<0,0001) were associated with low survival as well. SF3B1, 6p, 6q did not reveal significant impact on survival (p > 0.05). On the base of our results comparison of cytogenetic and mutational classifications was performed and revealed the coincidence of classes in 20% (kappa = -0.007).

Conclusions: Retrospective comparative analysis allowed to develop a panel of prognostically significant markers for the development of dissemination of UM.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Clinical Outcomes of Fiducial-Free Proton Beam Therapy in Asian Patients With Uveal Melanoma: A Single-Center Case Series

*First Author: Hung Da **CHOU***
*Co-Author(s): An-Ning **CHAO**, Ling **KAO**, Chun Hsiu **LIU**, Yueh-Ju **TSAI***

Purpose: The describe the clinical outcomes of using fiducial-free proton beam therapy in Asian patients with uveal melanoma.

Methods: A retrospective case series study on patients with uveal melanoma who had undergone fiducial-free proton beam therapy and were followed for one year or more. The main outcome measures included tumor control, overall survival, the occurrence of neovascular glaucoma, secondary enucleation, and visual function.

Results: Eight eyes of eight patients were included. The median largest tumor diameter was 11.4 mm (range: 9.7–13.8 mm), with a median thickness of 8.5 mm (range: 4.0–11.5 mm). PBT was delivered in a fiducial-free fashion, with total radiation doses of 50–66 cobalt-gray equivalent given in 5–10 fractions. After a median follow-up of 22 months (range: 14–36 months), local tumor control was achieved in all patients. Unfortunately, two patients died of liver metastases. Two of the three patients who developed neovascular glaucoma required secondary enucleation. On the date of last follow-up, visual acuity was ≥ 20/200 in four eyes (50%) and ≥ 20/40 in two eyes (25%). Other adverse effects included focal skin reactions (one eye), dry eye disease (four eyes), cataract progression (two eyes), and radiation retinopathy (three eyes).

Conclusions: Our preliminary data suggest that fiducial-free proton beam therapy is a promising therapeutic option for Asian patients with uveal melanoma to achieve adequate local tumor control and visual preservation. However, the risk of secondary enucleation due to neovascular glaucoma warrants further scrutiny.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

02 Comparison of High-Risk Histopathological Features in Primary and Secondary Enucleated Eyes in Retinoblastoma

*First Author: Manumuraleekrishna **MANUMURALEEKRISHNA***
*Co-Author(s): Bhavna **CHAWLA**, Neiwete **LOMI**, Seema **SEN***

Purpose: To compare the high-risk histopathological features in primary and secondary enucleated eyes of retinoblastoma patients.

Methods: Comparative study of 175 enucleated eyes of retinoblastoma patients. Eyes were divided into two groups. Group 1- primarily enucleated eyes and Group 2-secondary enucleated eyes. Histopathological high-risk factors (retro-laminar and cut end of optic nerve involvement, massive choroidal infiltration, scleral and anterior segment involvement) are compared between the two groups.

Results: Out of 175 eyes, 90 (51.4%) were primarily enucleated and 85 (48.6%) were secondarily enucleated. 117 cases had unilateral and 58 had bilateral Retinoblastoma. Among 90 primarily enucleated eyes, 87 (96.7%) eyes were Group E (ICRB) and 3 (3.3%) eyes were Group D. In secondarily enucleated eyes, 61 (71.76%) eyes were Group E, 20 (23.5%) Group D, 3 (3.5%) Group C and 1 (1.2%) was Group B. When comparing high-risk histopathological features in Group 1 and 2, retro-laminar optic nerve involvement is more in Group 1(31/90 vs 15/85, p-0.01), optic nerve cut end involvement (1/90 vs 9/85, p-0.007) and anterior segment involvement (12/90 vs 22/85, p-0.03) are significantly more in secondarily enucleated eyes. Choroidal involvement is more in Group 1(22/90 vs 9/85, p-0.13) and scleral involvement is more in secondarily enucleated eyes (9/90 vs 9/85, p-0.89).

Conclusions: Despite having a favorable classification at presentation and getting adequate neo-adjuvant treatments to salvage the globe and vision, the numbers of high-risk histopathological features are more in secondarily enucleated eyes compared to primarily enucleated eyes. The majority of these patients required adjuvant chemotherapy/external beam radiotherapy to decrease the risk of metastasis.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Desire for Individual Metastatic Prognosis in Patients With Uveal Melanoma

*First Author: Ilia **LEVASHOV***
*Co-Author(s): Evgeniya **BULGAKOVA**, Vera **YAROVAYA***

Purpose: Uveal melanoma (UM) is the most common primary intraocular malignancy in adults. Genetic testing of UM is pivotal in prognostication of metastasis development. Such analysis is available for patients with UM even treated with globe-sparing therapy by means of fine needle aspiration biopsy (FNAB). Some patients may consider this procedure as unreasonable and/or unaffordable one and underlying causes of such judgement are not determined. Purpose of this study was to analyze the individual need of metastasis risk assessment in patients with UM.

Methods: This prospective non-randomized cohort

study used questionnaire for 94 patients with UM (mean age 60 years) treated by globe-sparing therapy either with brachytherapy or stereotactic radiosurgery.

Results: Despite the relatively high proportion of applicants who desired to know their risk (77%), only 51% of patients eventually consented for FNAB, which primarily explained by the high cost of genetic testing. The main benefits perceived by patients were that they would have gain greater control of situation (78%) and life planning for themselves and/or relatives (47%). The main motives for reluctance were fear of revealing a high risk of metastasis development ($p < 0,01$) and inability to stabilize mood and anxiety ($p < 0,01$). This anxiety was associated with the higher level of education ($p = 0,02$) and doubt on safety of FNAB ($p = 0,01$).

Conclusions: Genetic prognostication is important part of an integrated approach in management of UM, which may increase the satisfaction of psychological needs in patients and improve understanding of UM.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

High Expression of Microphthalmia-Associated Transcription Factor Promotes Reduced Disease Free Survival in Uveal Melanoma

*First Author: Jayanti **JHA***
*Co-Author(s): Seema **KASHYAP**, Rachna **MEEL**, Seema **SEN**, Lata **SINGH**, Mithalesh **SINGH***

Purpose: High melanin content could lead to high metastatic potential in uveal melanoma (UM). In Asian population, microphthalmia-associated transcription factor (MITF) regulates the melanogenesis pathway and activates silver protein (SILV) for the eumelanin synthesis. MITF also stimulates the hypoxia–inducible factor 1-alpha (HIF-1α) gene that regulates hypoxia around tumor microenvironment. Although their oncogenic potential has been observed in various malignancies, MITF and SILV have not been investigated in UM in Asian population. Therefore, our study aimed to detect the prognostic significance of MITF, SILV and HIF1-α gene/protein expression level in UM patients.

Methods: Immunohistochemistry of MITF, SILV and HIF-1 α was performed on 82 UM tissue samples. Western blot of all three markers was carried out on representative cases, mRNA expression level was done by qRT-PCR in 70 fresh UM cases. Cox proportional hazard model and log rank test were used to determine the prognostic outcome of these markers.

Results: Expression of MITF and SILV protein was found in 56% and 70% cases, respectively. High pigmentation, BAP1 loss and HIF-1α expression were statistically correlated with MITF and SILV protein expression. Upregulation of both genes were found in more than 50% of cases at mRNA level. This was also statistically significant with high pigmentation and HIF-1α mRNA expression. High expression of MITF protein showed reduced disease-free survival.

Conclusions: Our study highlighted the fact that MITF and SILV could be a potential biomarker in the UM development. Hence, it might play a key role in future therapeutic target.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Histopathological Risk Factors After Triple Drug Super-selective Ophthalmic Artery Intra-arterial Chemotherapy in Advanced Retinoblastoma

*First Author: Rolika **BANSAL***
*Co-Author(s): Santosh **HONAVAR**, Kaustubh **MULAY**, Vijay Anand **REDDY***

Purpose: To assess the histopathological risk-factors (HRF)in advanced retinoblastoma (Rb) enucleated following triple drug super-selective ophthalmic artery intra-arterial chemotherapy (IAC).

Methods: Retrospective interventional consecutive case series of eyes enucleated after IAC.

Results: In the study duration, 129 Rb eyes were treated with IAC (mean number of cycles 2.4) and 42 (32%) underwent secondary enucleation [of which 13 (31%) were primary IACs and 29 (69%) were secondary]. Eyes grouped at baseline were International Classification of Retinoblastoma group D in 13 (31%) and group E 22 (52%). Reasons for enucleation included refractory tumor 22 (52%), sub-optimal response 10 (24%) and recurrence 10 (24%). However, only 13 (31%) had HRF (3 primary IACs, 10 secondary IACs) which included infiltration of iris 1 (7%), ciliary body 2 (15%), choroid (>3 mm) 10 (77%); optic nerve retrolaminar 2 (15%), scleral lamellar 4 (30%) and extra-scleral 1 (7%). All were treated with adjuvant chemotherapy. In 3 (7%, n=42) of these cases, bridge intra-venous chemotherapy (IVC) was given initially, and baseline clinical risk factors were present only in 1 (2%). Life salvage was in 42 (100%) at 35.3+25.8 m follow-up and none had IAC related vascular complications.

Conclusions: Even though IAC is considered as an effective treatment modality for cases with advanced Rb, a number of cases may be required to undergo enucleation. The presence of histopathological risk factors advocates adjuvant therapy, to ensure life salvage and a better prognosis.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

How Deep Is Deep? – An Analysis of Multi-Level Biopsy in Orbital Lesions

*First Author: Shaifali **CHAHAR***
*Co-Author(s): Kaustubh **MULAY***

Purpose: To evaluate the role of multi-level incision biopsy in orbital lesions.

Methods: A retrospective clinicopathological study of 169 patients who underwent multi-level orbital incision biopsy between March 2013 and July 2022.

Results: The mean age was 41.2 years. Diagnosis was inflammatory in 101 (60%) and neoplastic in 68 (40%), of which 7 (4%) were benign and 61 (36%) malignant. Superficial biopsy missed the diagnosis in 9 (5%) which was confirmed by deeper biopsy, of which 5 (7%) were neoplastic ($p = 0.014$) and 4 (4%) were inflammatory ($p = 0.02$), thus altering the management in these cases. Deeper biopsy was concordant with the final diagnosis in all the cases.

Conclusions: Multi-level incision biopsy with deep sampling through the epicenter of the lesion helps in determining the accurate diagnosis in orbital lesions.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Intravitreal Topotecan for Vitreous Seeds in Retinoblastoma: A Long-term Review of 91 Eyes

*First Author: Mrittika **SEN***
*Co-Author(s): Santosh **HONAVAR**, Raksha **RAO***

Purpose: To study the efficacy of intravitreal topotecan (IVT) against vitreous seeds in eyes with retinoblastoma and risk factors for their recurrence.

Methods: Retrospective, non-comparative, interventional study on 91 eyes of 90 patients with retinoblastoma treated between 2013-2019. Patients with recurrent or refractory vitreous seeds were treated with IVT (30 µg/0.15 mL) by safety enhanced technique. Injection was repeated every 4 weeks till the regression of seeds. Primary outcome measures were vitreous seed regression, and eye salvage. Secondary outcomes were risk factors for vitreous seed recurrence, visual outcome and complications.

Results: The median age was 18 months, majority being group D (58, 64%) and group E (26, 29%). Vitreous seeds were refractory in 46 (51%) and recurrent in 45 (49%) eyes. The median number of IVT injections required were 2.5 for dust, 3 for sphere and 5 for cloud. Recurrence of vitreous seeds following IVT was seen in 17 eyes (19%) at a mean follow-up of 7.9 months. At a mean follow up 43 months, vitreous seed regression was achieved in 88 (97%) and eye salvage in 77 (85%) eyes. Older age ($p = 0.018$) and recurrence of retinal tumor ($p < 0.05$) significantly increased the risk of vitreous seed recurrence. Cataract was the most common complication seen in 17 (9%) eyes.

Conclusions: IVT at a 4 weekly regimen is effective against refractory and recurrent vitreous seeds. The vitreous seed morphology corresponds to the number of injections required for regression. Increasing age and recurrence of retinal tumor increase the risk of vitreous seed recurrence following treatment with IVT.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Long-term Outcomes of Neoadjuvant Systemic Chemotherapy for Extensive Periocular Sebaceous Gland Carcinoma

*First Author: Anshika **LUTHRA***
*Co-Author(s): Swathi **KALIKI***

Purpose: To assess long-term outcomes of Neoadjuvant systemic chemotherapy in the management of extensive periocular sebaceous gland carcinoma (SGC).

Methods: To present a retrospective study of 6 cases that received neoadjuvant systemic chemotherapy (Cisplatin/Carboplatin and 5-Fluorouracil) for eyelid SGC.

Results: The study group comprised 1 male and 5 females with a mean age of 52.1 years at presentation. Mean tumor basal diameter was 36.5 mm, with orbital extension in all cases. As per 8th edition AJCC classification, they were classified as T4 (n=6), N1 (n= 3), and M1 (n=2). Mean number of systemic chemotherapy cycles was 3. Mean percentage reduction of tumor basal diameter after chemotherapy was 88%. No major systemic side-effects were reported. Post-chemotherapy, all cases received EBRT and surgical treatment for residual tumor was performed in 3 cases (excision biopsy(n=1) and lid-sparing orbital exenteration (n=2). At a mean follow-up period of 41 months, no tumor recurrence was noted and 1 died due to systemic metastasis.

Conclusions: Neoadjuvant systemic chemotherapy is an effective and safe treatment modality for management of extensive periocular SGC, with favorable long-term outcomes.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Malignant Transformation of Retinocytoma

*First Author: Anastasiya **KOTELNIKOVA***
*Co-Author(s): Valentina **KOZLOVA**, Vera **YAROVAYA**, Tatiana **USHAKOVA***

Purpose: To present a clinical case of retinocytoma (RC) malignant transformation.

Methods: Among 10 patients with RC (13 eyes) observed between 2009 and 2021, 9 tumors were stable within follow-up from 6 months to 13 years and 1 demonstrated transformation into retinoblastoma (RB). At the age of 3 the girl was appeared to have left eye deviation and leucocoria. RC was diagnosed: calcinated lesion with thickness of 4,2 mm and basal diameter of 8,1 mm was detected. At 39 months, control RB group D with white central tumor mass with massive vitreous and retinal seeding was seen.

Results: Two cycles of intra-arterial chemotherapy were performed with low effect that required enucleation. No intravitreal chemotherapy was provided due to 360° ora serrata RB seeding. The pathology exam demonstrated well-differentiated RB of a standard risk.

Conclusions: Own experience of observing children and adults with RC has shown that this tumor is stable and rarely undergoes malignant transformation. The possibility of transformation RC into RB at any age makes it a serious challenge. Patients who have been diagnosed with RC need lifelong observation by an ophthalmologist.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Metastatic Risk of Prognostic Fine-Needle Aspiration Biopsy in Uveal Melanoma Patientss

*First Author: Ilia **LEVASHOV***
*Co-Author(s): Evgeniya **BULGAKOVA**, Vera **YAROVAYA**, Andrey **YAROVOY***

Purpose: Despite the wide use of fine needle aspiration biopsy (FNAB) in patients with uveal melanoma (UM) as a prognostic measure, some concerns about its safety are still declared. Purpose of this study was to assess the risk of metastasis in patients with UM after performing FNAB.

Methods: A total of 85 patients treated with brachytherapy and intraoperative FNAB and 144 patients treated with brachytherapy only were included in this study.

Results: FNAB was not associated with increase in metastasis developing in 3 years follow-up (p = 0,22 with Fisher's test and p = 0,11 with logrank test in Kaplan-Meier survival analysis; relative risk was 1,43 [95% CI, 0,79-2,24]). Moreover, no evidence was found of FNAB impact on local features associated with increased metastasis risk: extent of tumor regression (p = 0,46), extraocular growth (no cases in both groups), local treatment failure (p = 0,32) or secondary enucleation (p = 0,99).

Conclusions: Considering no statistically significant difference in survival and local treatment outcomes of patients treated with brachytherapy and intraoperative FNAB and patients treated with brachytherapy only, FNAB seems to be promising technology and should be used on a larger scale.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Risk Factors for Local Tumor Recurrence and Metastasis in Sebaceous Gland Carcinoma of Eyelid in a Large Series

*First Author: Deepthi **KURIAN***
*Co-Author(s): Shaifali **CHAHAR**, Kaustubh **MULAY**, Vijay Anand **REDDY**, Geeta **VEMUGANTI***

Purpose: To describe the clinical profile and identify risk factors for local recurrence (LR) and metastasis in sebaceous gland carcinoma (SGC) of the eyelid.

Methods: A retrospective observational study was done of 183 consecutive patients, histopathologically diagnosed with SGC, operated at a tertiary eye hospital in South India. Data was obtained from out-patient records.

Results: The mean age was 57.3 ± 13.3 years and 53.6% were females. Mean follow-up duration was 25.3 ± 27.2 months. The incidence rate of LR and metastasis was found to be 0.12 and 0.04 per person per year respectively. While LR was significantly higher in those with history of incisional biopsies, longer duration, lymphovascular invasion (LVI) and pagetoid spread (PS); metastasis was associated with caruncular lesions, size more than 20mm, LVI and PS. On logistic regression, independent risk factors for LR were LVI (OR 3.2, 95% CI 0.9 – 10.7) and PS (OR 1.5, 95% CI 0.5 – 4.1), whereas those for metastasis was size more than 20mm (OR 3.3, 95% CI 0.82- 13.79).

Conclusions: Risk factors for LR and metastasis of SGC were identified. Standardized surgical approach could be pivotal in optimizing outcome.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Serum Vascular Endothelial Growth Factors (VEGF) Can Be a Prognostic Biomarker in Ocular Malignancies

*First Author: Anjali **SINGH***
*Co-Author(s): Asha, Syeed **KADIR**, Virendra p **SINGH**, Shivangi **SINGH***

Purpose: To correlate serum vascular endothelial growth factor (VEGF) level in retinoblastoma and eyelid malignancies with their clinicopathological parameters and its utility as a prognostic biomarker.

Methods: Serum level of VEGF in 16 healthy controls and 32 newly diagnosed and histopathologically confirmed patients with eyelid malignancies & retinoblastoma were measured by using a sandwich enzyme immunoassay technique and the result were correlated with clinicopathological factors and outcomes.

Results: Significantly higher serum VEGF level was observed in ocular malignancy cases as compared to control group ($p < 0.03$). Serum VEGF was maximally increased in retinoblastoma (mean 111..86 ± 33.54) followed by sebaceous gland carcinoma (mean 77.83 ± 11.37), squamous cell carcinoma (mean 70.57 ± 5.84) and basal cell carcinoma (mean 67.96 ± 4.55). No significant difference was observed in serum VEGF and histopathological differentiation ($p = 0.15$). Serum VEGF was significantly elevated in advanced stage malignancies (mean 94.43 ± 26.71), as compare to early stage carcinoma (mean 68 ± 6.20) also significant increase was noted in case of regional lymph node metastasis ($p < 0.001$). Statistically significant correlation was seen in serum VEGF level and rate of recurrence ($p < 0.001$).

Conclusions: This results suggest that increase serum VEGF level associated with stage advancement, lymph node metastasis and recurrence. Serum VEGF can be used as prognostic marker in ocular malignancies.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Subretinal Seeding in Retinoblastoma: Clinical Presentation and Treatment Outcomes

*First Author: Vishal **RAVAL***
*Co-Author(s): Swathi **KALIKI**, Vijay Anand **REDDY***

Purpose: To describe the clinical features and treatment outcomes of subretinal seeds (SRS) in eyes with primary intraocular retinoblastoma (RB).

Methods: To present a descriptive analysis of SRS in 50 eyes (47 patients) with primary RB.

Results: M:F ratio was 26:21. The mean age was 19 months (2- 72 months). At presentation, the SRS involved ≥ two quadrants in 88% of eyes located in inferior (36%) and temporal quadrant (30%). Majority of seeds appeared yellowish-grey (66%), round or oval in shape (48%) with a mean size of 1.1 mm (0.1-6 mm). Associated features noted were subretinal fluid (50 eyes, 100%), total retinal detachment (25 eyes, 50%) and vitreous seeds (20 eyes, 40%). Of 50 eyes, 46 (92%) eyes were treated with intravenous chemotherapy (IVC), 2 (4%) with primary enucleation and 2 (4%) with intra-arterial chemotherapy. Adjunctive focal treatment included transpupillary thermotherapy in 18 eyes, cryotherapy in 4 eyes and secondary enucleation in 5 eyes. Local tumor control was achieved in 38 eyes (76%) with 28 eyes (56%) showing type 3 regression pattern, while SRS completely regressed in 23 (46%) eyes, partially in 17 (34%) and worsened in 2 (4%) eyes. Over a mean follow-up period of 30 months (range, 3-68 months), SRS recurrence was noted in 20 eyes (47%), the globe salvage was achieved in 39 (78%) eyes, and 2 patient (4.2%) died.

Conclusions: Primary SRS does poses therapeutic challenge in terms of its location, size and associated features. SRS responds moderately to IVC with one-half cases showing recurrence and one-fifth needing enucleation.

Feb 25, 2023 (Sat)
14:30 – 16:00
Venue: MEETING ROOMS 307–308 (Level 3)

Suture Less Surgery of Small Lesions of Eyelid- Cosmetic Outcome

*First Author: Nuzat **TABASSUM***
*Co-Author(s): Narayon **CHANDRA**, Mukti **MITRA**, Mehbub **KADIR***

Purpose: To assess the outcome of suture less surgeries of small lesions of eyelid.

Methods: To assess the outcome of suture less surgeries of small lesions of eyelid. Methods: Thirty patients of various small lesions of lid had been studied from June 2007 to November 2019 at oculoplasty clinic of National Institute of Ophthalmology and Hospital and Harun Eye Foundation Hospital. Surgeries were done under local anesthesia. No sutures were used except three cases of tarsal cysts. Pre and postoperative photographs were recorded and compared

Results: Among 110 cases nevus 33, papilloma 17, tarsal cysts 10, hemangioma 8, cyst of moll 30, cyst of zeis 12. Any postoperative complications like lid notching, lagophthalmos or recurrence were not found.

Conclusions: Surgeries of small lesions of lid, if not meticulous enough may be ended by scarring notching of lid margin with unsatisfactory cosmetic outcome. Result of suture less surgeries of small lesions of is highly satisfactory.

Ophthalmic Epidemiology and Prevention of Blindness

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Aging Visual Function System and Functional Health in Multi-Ethnic Older Adults: PIONEER Study

First Author: Preeti ***GUPTA***
Co-Author(s): Eva ***FENWICK****, Ecosse* ***LAMOUREUX****, Ryan* ***MAN***

Purpose: Relationship between components of the visual function system (VFS) and functional health (FH), in multi-ethnic Asians aged ≥ 60 years.

Methods: Multi-ethnic elderly Singaporeans from The PopulatION HEalth and Age-Related SEnsory Decline PRofilE (PIONEER), a cross-sectional population-based study were included. VFS assessments comprised visual acuity (VA), contrast sensitivity (CS) and depth-perception (DP). FH included instrumental activity of daily living (IADL), mobility and self-reported falls. VFS impairments in the better eye were defined as: presenting visual impairment (PVI; presenting VA worse than 6/12 (logMAR > 0.3); CS impairment (CSI; CS <1.55 log CS; and DP impairment (DPI; binocular DP ≥150 arc sec.

Results: Of the 1,782 participants (mean age [SD]: 72.7 [8.2] years; 54.7% females), 303 (17.0%), 363 (20.4%), and 502 (28.2%) had PVI, CSI and DPI, respectively. Slow gait speed (< 0.8m/s), low IADL (< 24 (women) and <15 (men)) and at least one fall, was present in 662 (37.9%), 264 (17.6%) and 289 (19.2%) individuals, respectively. In multivariable-adjusted analyses including all VFS impairments simultaneously, PVI was associated with higher odds of poor IADL (odds ratio [OR] = 1.53, 95% confidence interval [CI]: 1.06-2.21), while CSI had higher likelihood of poor IADL (OR = 1.92, 95% CI: 1.37-2.69) and slow gait speed (OR = 2.15, 95% CI: 1.63- 2.85). In turn, DPI increased the odds of any falls by over 40% (OR = 1.43, 95% CI: 1.06- 1.92).

Conclusions: CSI and DPI, independent of VA, are associated with a higher risk of poor FH. Strategies such as highlighting steps or uneven surfaces may potentially reduce the risk of poor FH in elderly with low vision.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Assessing Health Inequity by Identifying Barriers to Accessing a Tertiary Keratoconus and Crosslinking Clinic in Auckland and Associated Visual Outcomes

First Author: Lize ***ANGELO***
Co-Author(s): Simone ***FREUNDLICH****, Akilesh* ***GOKUL****, Charles* ***MCGHEE****, Mo* ***ZIAEI***

Purpose: To investigate inequity in accessing care, including barriers to first specialist assessment (FSA) and follow-up clinics monitoring keratoconus progression and post-crosslinking care, and their effect on visual outcomes in keratoconus.

Methods: Data was collected prospectively from subjects attending the keratoconus and crosslinking service at Auckland District Health Board. Parameters including gender, ethnicity, NZ Deprivation Index (NZDep; area-based measure of socioeconomic status,1=low deprivation and 10=high deprivation), disease severity (maximum keratometry and thinnest corneal thickness), proportion of appointments attended, distance travelled to clinic and worse-eye habitual visual acuity (WHVA) were analyzed.

Results: A total of 119 subjects (54% males) were recruited from FSA clinic. Distance travelled was 13.3 ± 10km, and NZDep was 6.8 ± 2.7. Pacific Peoples (PP) and Māori were over-represented and had significantly lower attendance (Ethnicity(%) FSA, follow-up/attendance(%) FSA, follow-up): PP(42%,48%/58%,75%), Māori(26%,15%/66%,77%), European(21%,19%/88%,88%), Asian(9%,15%/91%,93%) and Other(2%,3%/75%,84%). Mean WHVA at presentation was 6/32. 144 subjects (59% males) were recruited from follow-up clinic. There was no difference between ethnicities in time to first offered and attended FSA from referral, or disease severity at attendance. However, PP and Māori had worse disease severity at follow-up. NZDep was significantly higher for PP and Māori (7.7 ± 2.4, 7.1 ± 2.4, $p < 0.001$).

Conclusions: Māori and Pacific Peoples constitute most subjects attending the keratoconus service and have significantly higher NZDep scores and lower attendance. Despite not having worse disease severity at presentation, vision significantly worsens with follow-up possibly due to increased non-attendance. Further studies are required to determine the root cause of this inequity in outcomes and to explore possible solutions i.e., financial support.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Assessment of Knowledge, Attitude and Practice Towards Diabetic Retinopathy Screening Among General Physicians in Jakarta, Indonesia

First Author: Rizka ***RATMILIA***
Co-Author(s): Gitalisa ***ADRIONO****, Yeni* ***LESTARI****, Christy* ***MAGDALENA****, Ratna* ***SITOMPUL***

Purpose: To evaluate the knowledge, attitude and practice (KAP) towards DR screening among general physicians (GPs) in the Primary Health Cares (PHC) in Jakarta, Indonesia.

Methods: A cross-sectional study was conducted in 17 randomly selected PHCs in Jakarta between April 2021 and February 2022. Data were collected using a validated self-administered online questionnaire assessing KAP and barriers in performing DR screening. Questionnaire was distributed through one person-in-charge in each PHC in conjunction to implementation of DR screening.

Results: A total of 92 GPs completed the questionnaire. The participants were mostly females (85.9%) and aged 33 (24-58) years old. The majority of the GPs (89.1%) had good knowledge, (100%) had positive attitude. However, only 4.3% had good practices regarding DR particularly in performing fundus examination. Spearman's correlation test demonstrated found a negative correlation (r = - 0.008, p = 0.943) between knowledge and attitude, a positive correlation (r = 0.007, p = 0.950) between knowledge and practices. Both correlations were not statistically significant. Then between attitude and practices had a positive correlation (r =0.298, p = 0.004) with statistically significant correlation.

Conclusions: There is a good knowledge and positive attitude regarding DR among GPs, however it is not yet followed by good practices.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Associations Between Chronic Kidney Disease and Thinning of Retinal Nerve Fiber Layer and Ganglion-Cell Inner Plexiform Layer: Findings From Singapore Epidemiology of Eye Diseases Study and UK Biobank

First Author: Shivani ***MAJITHIA***
Co-Author(s): Miao Li ***CHEE****, Crystal* ***CHONG****, Yih-Chung* ***THAM****, Marco* ***YU***

Purpose: To evaluate the relationships between chronic kidney disease (CKD) with retinal nerve fiber layer (RNFL) and ganglion cell-inner plexiform layer (GCIPL) thickness.

Methods: Participants aged ≥40 years without glaucoma were included from the Singapore Epidemiology of Eye Diseases (SEED) study and UK Biobank (UKBB). In the SEED study, peripapillary RNFL and GCIPL thickness were measured by Cirrus HD-OCT. In UKBB, macular RNFL and GCIPL were measured by Topcon 3D OCT. CKD was defined as estimated glomerulus filtration rate (eGFR) <60 mL/min/1.73m2. Multivariable linear regression with generalized estimating equation model was performed in subgroups of Asian (SEED) and Caucasian (UKBB) subjects separately, adjusting for age, gender, ethnicity, systolic blood pressure, anti-hypertensive medication, diabetes, hyperlipidemia, body mass index, smoking status and intraocular pressure.

Results: A total of 9,594 eyes for RNFL and 8,661 eyes for GCIPL analysis were included from the SEED Study. 83,742 eyes for macular RNFL and GCIPL analysis were included from the UK Biobank. In Asian eyes, presence of CKD (β=-1.31) and decreasing eGFR (per 10ml/min/1.73m2; β=-0.32) were associated with thinner average peripapillary RNFL (all p≤0.015). Presence of CKD (β=-1.63) and decreasing eGFR (β=-0.30) were consistently associated with thinner GCIPL in Asian eyes (all p < 0.001). In Caucasian eyes, presence of CKD (β=-0.58) was associated with thinner GCIPL and decreasing eGFR (per 10ml/min/1.73m2; β=-0.05) was associated with thinner macular RNFL (all p≤0.034).

Conclusions: We observed significant associations between CKD and thinning of RNFL and GCIPL, consistently across Asian and Caucasian eyes. These findings further suggest that CKD patients may be at higher risk of glaucoma development and requires further investigation.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Closed and Open Globe Injuries: Epidemiology, Visual and Surgical Outcomes, Prognostic Models and Economic Cost Analyses of an Australian Experience

First Author: Brendon ***LEE***
Co-Author(s): Elsie ***CHAN****, Chameen* ***SAMARAWICKRAMA***

Purpose: Ocular trauma represents a visually and economically significant cause of vision loss. This study examined the gaps in the literature including the epidemiology, predictive variables, prognostic models, and economic cost of closed (CGI) and open globe injuries (OGI).

Methods: Retrospective tertiary trauma and ophthalmic referral center from 2008-2021. Key

outcomes measured were visual acuity, number of operating theatre visits, applicability of prognostic tools (Ocular Trauma Score: OTS, Classification and Regression Tree: CART) and cost analysis using official figures.

Results: A total of 531 CGI and 155 OGI were recruited. For OGI, younger males at work with inadequate eye protection (89.1%) and falls in the elderly were high-risk. In order of effect size, inferior visual outcomes were associated with intraocular foreign body, worse OTS, larger injury zone, retinal detachment, increasing age, globe rupture and extraocular muscle involvement (R2=0.723, $p < 0.001$). Greater number of operating theatre visits were required for retinal detachment, lens involvement, work-related injury, previous intraocular surgery, and globe rupture (R2=0.423, $p < 0.001$). Both the OTS and CART prognosticated OGI outcomes ($p < 0.001$). In terms of specificity and sensitivity, the OTS was superior for no vision and profound vision loss (>6/120), whereas the CART predicted visual survival and minimal-to-severe visual loss (<6/120). Critically, estimated total annual cost of OGI for Australia was USD37.3-47 million. Further cost evaluation will be completed for CGI.

Conclusions: CGI and OGI impose a huge and disproportionate cost on the individual, healthcare system and society. This study strongly supports implementation of cost-effective targeted public health strategies and legislation to ameliorate the overrepresented populations.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Community-Based Assessment of Visual Disability Among Adult Population in Delhi Using WHO-IFC (International Classification of Functioning)

*First Author: Souvik **MANNA***
*Co-Author(s): Suraj **SENJAM***

Purpose: There are currently more than 2 billion persons with disabilities (PwDs) in the world, 20% of which live in India. There is still a lack of comprehensive, cross-culturally validated estimation of prevalence of visual disability based on activity limitations and functioning difficulties in Indian settings. The current study was done to validate the WHO-MDS tool in India and estimate the prevalence of visual as well as multiple disability.

Methods: A cross-sectional study was conducted among 2,000 adults in Delhi selected randomly, using internationally validated WHO-MDS (Model Disability Survey) brief version comprising of38 items. A total of 40 clusters were selected from East Delhi district, and 50 adults were interviewed selected using compact segment sampling techniques.

Results: Internal consistency for the total MDS-38 was > 0.8 using a raw and standardized Cronbach's Alpha and within each domain was > 0.8 using a standardized Cronbach's Alpha. The prevalence of mild to moderate disability was 25.5% and that of severe disability was 6.3%. The highest proportion of difficulty was due to seeing (23.3%), followed by mobility (9.2%) and hearing (2.7%). The usage of AT was reported by 19.9% (95% CI: 19.06-20.77) of the participants and the proportion having unmet need was 8.0% (95% CI: 7.43-8.60).

Conclusions: In India, the MDS-38 shows strong psychometric properties that indicate that it effectively discriminates between persons with and without disabilities and can be used in association with other instruments. The prevalence of disability estimated using WHO methods is much higher than that reported by studies based on impairment only.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Comparison of Repeated Low-level Red Light and Low-Dose Atropine for Myopia Control in Children: A Randomized Controlled Trial

*First Author: Yanxian **CHEN***
*Co-Author(s): Xu **CHEN**, Jinying **LI***

Purpose: To compare the treatment efficacy between repeated low-level red light (RLRL) therapy and 0.01% atropine eye drops in for myopia control.

Methods: A single-masked, single-center randomized controlled trial was conducted recruiting children aged 7-15 years with cycloplegic spherical equivalent (SER) <-1.00D and astigmatism <2.50D. Participants were randomly assigned to the intervention group (RLRL) or low-dose atropine (LDA, 0.01% atropine eye drops) group and were followed up at the first, third, sixth and twelfth months. RLRL treatment was provided by a desktop light therapy device that emits 650nm red light. The primary outcome was the change in axial length (AL), and secondary outcome was the change in SER.

Results: In total, 62 eligible children were equally randomized to each group (31 in the RLRL group, 31 in the LDA group). Of these, 60 children were qualified for analysis. The mean 1-year change in AL was 0.08mm (95% confidence interval [CI] 0.03-0.14mm) in the RLRL group and 0.33mm (0.27-0.38mm) in the LDA group, with a mean difference [MD] of -0.24 mm (-0.32 to -0.17 mm, $p < 0.001$). Change in SER at 12 months in the RLRL group and LDA group was -0.03D (-0.01-0.08D) and -0.60D (-0.7 to -0.48 D) respectively (MD=0.57D; 0.40-0.73D, $p < 0.001$). Progression of AL <0.1mm was 53.2% and 9.7% in RLRL and LDA groups, respectively, and for AL >0.36mm it was 9.7% and 50.0% in the LDA group, respectively.

Conclusions: In this study, RLRL was more effective for controlling AL and SER progression over 12 months of use compared with 0.01% atropine eye drops.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Diagnostic Capacity of Smartphone Imaging in Screening Plus Disease Among Preterm Infants With Retinopathy of Prematurity in a Tertiary Government Hospital

*First Author: Stephanie **CELUCIA***

Purpose: Retinopathy of prematurity (ROP) is an important cause of preventable blindness in children worldwide and the presence of plus disease currently prompts treatment. Screening babies for ROP is not usually done in remote areas where there are no trained ophthalmologists. This study determines the diagnostic capacity of smartphone imaging in screening plus disease among preterm infants with ROP in the neonatal intensive care unit (NICU) of a tertiary government hospital.

Methods: Infants were initially screened for ROP using binocular indirect ophthalmoscopy (BIO) and posterior pole images were captured using a smartphone. Four physicians and four non-physicians, masked to infants' demographics and clinical findings, graded the images regarding its (1) clarity, (2) identifiability of vessels, and (3) presence of plus disease. Diagnostic capability of the smartphone images for clinically significant ROP (CSROP) were measured using accuracy, sensitivity, and specificity.

Results: To note, 75.72% of images were described by graders as clear, 23.57% as slightly hazy and 0.71% as hazy. The mean sensitivity and specificity in grading smartphone images for presence of plus disease were 93.94% and 83.27% respectively for physicians and 92.80% and 75.00% respectively for non-physicians. Mean accuracy of physicians was 88.04% and 83.39% for non-physicians. Intra-grader reliability showed a mean of 83.75% for physicians and 90% for non-physicians.

Conclusions: Posterior pole images captured from smartphone may be used in screening for plus disease in infants screened for ROP with good sensitivity and specificity. Non-physicians may be trained to screen infants to identify plus disease showing good sensitivity, specificity and accuracy comparable to physicians.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Effect of Statin Medication on Age-Related Macular Degeneration Progression According to Complement Genotype

*First Author: Simon **NUSINOVICI***
*Co-Author(s): Ching-Yu **CHENG**, Kelvin Yi Chong **TEO**, Tien **WONG***

Purpose: The objective of this study was to determine whether statin medication could reduce the progression of age-related macular degeneration (AMD). We hypothesized that the effect of statin could vary according to the complement genotype.

Methods: We utilized data from the Singapore Epidemiology of Eye Study (SEED), a multi-ethnic longitudinal population-based cohort. AMD was graded according to the Beckman classification system at the baseline and the follow-up visit ~5 years later. The outcome was defined as any progression between these two visits. Information on statin treatment and covariates (such as age, sex, ethnicity, hypertension, diabetes status, and smoking status) was collected at the baseline visit. We considered 31 genetic variants located in complement genes. We performed logistic regression analyses to estimate the effect of statin on AMD progression in each genetic stratum, independently of possible confounders. Finally, we used UK Biobank as a replication cohort.

Results: Among the 1,321 participants included in this study, 216 progressed (16.3%). Statin was associated with a decreased risk of AMD progression for people with at least one risk allele (rs1329424) with a corresponding OR = 0.41 [0.19, 0.87], p = 0.021. We could replicate this result in UK Biobank according to the same genetic variant; OR = 0.78 [0.63, 0.95], p = 0.017.

Conclusions: Statin reduced the risk of AMD progression for some people depending on their complement genotype. If confirmed, this result could open up a personalized treatment for people with early forms of AMD.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Epidemiology of Retinoblastoma in Nepal 2019

*First Author: Ben **LIMBU***

Purpose: To estimate retinoblastoma occurrence, clinical presentation, and referral pattern among Nepalese children during 2019.

Methods: Multicenteric hospital based, cross sectional

prospective study among 27 eye centers across Nepal in the year 2019. All patients with proven diagnosis of retinoblastoma were included. Data were collected using a special designed online google based performa. A written consent from parents of children and ethical approval from National Health Research Center, Nepal was obtained. All statistical data was calculated using SPPS version 17.

Results: A total of 34 children with 46 retinoblastoma eyes were included. The average age of children was 34.88 months, while the mean age of unilateral Retinoblastoma was 42.9 months and that of bilateral was 20.1 months. Hospital-based estimation on prevalence of Retinoblastoma in Nepal during 2017 was 2.66 per 10,000 children aged 0-6 years. The most common presenting symptom was leukocoria (74.4%), with the average lag time of 173 days and the most common presenting ICRB grouping of Group E (54%) with Stage 0 (88%). The main reason for delayed presentation was due to lack of the knowledge about retinoblastoma and its symptoms (46%). The majority of children with retinoblastoma were offered enucleation as treatment option (52.6%) and the main reason to refer child was for chemotherapy (82.6%), while 100% of parents with retinoblastoma children were unable to afford for treatment of retinoblastoma.

Conclusions: Retinoblastoma survival and vision restoration largely depends upon time of presentation, we found most of the children presenting to eye centers were late and the major reason for delay was unaware of the disease. Similarly, the access to chemotherapy centers was the major challenge in the management of retinoblastoma children.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Factors Associated With Non-compliance to Long-Term Glaucoma Medication in a Developing Country

*First Author: Farah **AKHTAR***
*Co-Author(s): Mahmood **ALI***

Purpose: To assess the level of adherence with long-term glaucoma therapy at a tertiary care eye hospital and correlate the factors associated with non-compliance.

Methods: Two hundred patients presenting at the glaucoma clinic were recruited. An interview-based questionnaire was used to gather data. The dependent variable, adherence to long-term glaucoma treatment, was determined and independent variables were demographic profile, socio-economic variables, ocular and medical history, personal knowledge and understanding about disease and satisfaction level of the patient. The data was analyzed using SPSS version 24. Descriptive analysis was followed by Inferential Statistics. To determine any association between independent and outcome variables, chi-square test was applied. All inferential statistics were based on a 5% significance value.

Results: A high rate (30%) of non-compliance was found. A significant correlation was present between chief complaints of patients with compliance to medication ($p < 0.05$). Knowledge about disease, education status was also found to be correlated with the compliance to glaucoma treatment ($p < 0.05$). However, age and gender had no effect on level of compliance. Eighty two percent knew that glaucoma could lead to blindness which urged them to have regular follow-up.

Conclusions: More than one-fourth of the participants were non-compliant with the glaucoma therapy. Compliance with glaucoma treatment is an important factor for preventing progression of disease. Factors leading to poor compliance can be controlled by good communication between patient and physician.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

How Many Eyeglasses Are Needed Yearly in Thailand? Using Spectacle Provision Rate As Refractive Error Service Monitoring Tool

*First Author: Jerry **VINCENT***
*Co-Author(s): Watanee **JENCHITR***

Purpose: Most countries struggle with how to monitor eye services performance in addressing refractive error needs. The spectacle provision rate (SPR) is the number of eyeglasses provided per million persons per year. It is calculated separately for distance and near corrections. The SPR is used the same way that the Cataract Surgery Rate (CSR) is used - an annual target is set, and the rate is tracked annually against the target. Meeting the target rate indicates you are provided enough services to meet the population's needs.

Methods: Thailand has a refractive error rate of 17%, a population of 70 million, and about half are presbyopic age. Therefore 11,900,000 need distance correction and 35 million needs near correction. Assuming the average pair of eyeglasses is used four years before being replaced, Thailand needs to dispense 2,975,000 distance corrections and 8,750,000 near corrections every year to meet the population's ongoing need for spectacles with replacement at four years.

Results: Converting these numbers to a rate per million persons per year, we note the distance SPR = 42,500 per million/year and the near SPR = 125,000 per million/year.

Conclusions: The SPR provides a way to set targets and monitor if enough eyeglasses are being dispensed yearly to meet the population›s needs. The SPR

has been used previously by individual programs or institutes but is also ideally suited for national-level use. To our knowledge, Thailand will be the first country to use the SPR as a national-level indicator.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Incidence and Progression of Diabetic Retinopathy in Indonesian Adults With Type 2 Diabetes: 5-Year Follow-up of Jogjakarta Eye Diabetic Study in Community (JOGED. COM)

*First Author: Gandhi Anandika **FEBRYANTO***
*Co-Author(s): Angela **AGNI**, Muhammad **SASONGKO**, Supanji **SUPANJI**, Firman **WARDHANA***

Purpose: To report the 5-year incidence and progression of diabetic retinopathy (DR) in Indonesian adults with type 2 diabetes.

Methods: This was a prospective cohort study. A total of 900 adults aged>30 years with type 2 diabetes was selected from the original cohort (N=1,200) who were recruited between 2014 and 2016. There were 694 persons (86.6%) who completed the follow-up examination. Each person underwent standardized interview, anthropometric and eye examinations, and retinal photograph. DR was graded by a trained grader into mild, moderate, severe non-proliferative DR (NPDR) and proliferative DR (PDR) from retinal photograph. We categorized persons with severe NPDR or worse in either eye as vision-threatening DR (VTDR). Incidence of DR was defined as presence of DR in persons without DR at baseline and progression of DR as increasing severity level of DR in persons with less severe at baseline. Incidence and progression and their risk factors were estimated using Cox-proportional hazard model, presented as the rate per 1,000 person-years.

Results: The overall incidence and progression rate of DR were 38.2 and 37.0/1,000 person-years respectively. The rates in patients with <10 years was 32.4 and 30.7/1,000 person-years, 10-20 years was 63.8 and 57.4/1,000 person-years, and > 20 years was 54.5 and 47.3/1,000 person-years.

Conclusions: In this study, we found that incidence and progression of DR were higher in persons with longer diabetes duration. We provided evidence-based data which is key to develop strategies of DR-specific public health program in the country.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Neurodevelopmental and Ophthalmic Complications in Retinopathy of Prematurity: A 10-Year Cohort Study Using National Health Insurance Database in South Korea

*First Author: Heeyoon **CHO***
*Co-Author(s): Seong Joon **AHN**, Young Jin **CHOI**, Eun Hee **HONG**, Inah **KIM**, Yong Un **SHIN***

Purpose: To investigate the epidemiology of ophthalmic complications of retinopathy of prematurity (ROP) and whether severe retinopathy of prematurity (ROP) could be an association factor for neurodevelopmental disorders after preterm birth using population-based database in South Korea.

Methods: Using the National Health Insurance database, ophthalmic complications among premature infants born in 2007–2008 during their 10-year follow-up period were identified. Annual cumulative incidence rate and period prevalence of complications at each age were analyzed among those with ROP and those who underwent treatment for ROP (tROP). The hazard ratios (HRs) according to the presence of ROP and treatment for ROP were also analyzed.

Results: The prevalence at 10th year for overall ophthalmic complications was 11.1% and 35.9% among ROP and tROP. The presence of ROP was associated with higher risk of complications (HR 1.53, 95%CI 1.44–1.61) among premature infants, and the presence of treatment for ROP was associated with higher risk of complications (HR 4.31, 95%CI 3.74–4.98) among ROP cases. Among extremely premature infants with ROP, those with severe ROP had a 3.082-fold higher association with neurodevelopmental complications than those with mild ROP ($p < 0.001$). Compared with other premature infants with ROP, those with severe ROP had a 3.269-fold higher association with neurodevelopmental complications than those with mild ROP.

Conclusions: This study reports the nationwide epidemiologic data on ophthalmic complications of ROP during the first decade of life, which will help advance our understandings and establish national strategies in managing ROP. The severity of ROP may be associated with neurodevelopmental disorders in premature infants.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Profile of Ocular Trauma at a Tertiary Care Center

*First Author: Ayushi **OJHA***
*Co-Author(s): Dr Gayatri **BHONSALE KADAM***

Purpose: A study about the profile and visual outcomes of ocular trauma would enlighten us with its common causes, risk factors (lack of safety measures), causes associated with the worst visual prognosis and the target group(s) in which most cases of ocular trauma occur. With the availability of such data, we could create awareness and suggest and implement necessary preventive measures to reduce the incidence of ocular trauma in our setting.

Methods: This prospective, longitudinal study was conducted over a period of 2 years included cases of ocular trauma presenting to the ophthalmology OPD and general emergency department. Systemically unstable patients (GCS 8 or less), patients with burn injury or patients unwilling to consent were excluded. Complete ophthalmic examination of the patients was done, and they were followed up on day 2, day 7, day 30th and day 60th post injury, when their final visual acuity at 2 months was noted.

Results: A total of 150 participants were evaluated. Predominant trauma was noted in males (82%) and patients in age group of 21-40 years (54%) closed globe injuries were more common (90%). 51.33% cases were RTAs, 40% were accidental while 8.67% were cases of assault. 60.81% of RTA victims and 90% of workplace injuries' cases were not wearing any safety measures.46.75% cases of RTAs were inebriated at the time of accident. 76.92% cases were criminal assaults.

Conclusions: Targeting groups most at risk, making strict driving and riding regulations, providing effective eye protection, and developing workplace safety cultures can together reduce occupational eye injuries.

Feb 25, 2023 (Sat)
09:00 – 10:30
Venue: MEETING ROOMS 307–308 (Level 3)

Six-Year Incidence and Risk Factors for Primary Open Angle Glaucoma and Ocular Hypertension: The Singapore Epidemiology of Eye Diseases Study

*First Author: Sahil **THAKUR***
*Co-Author(s): Ching-Yu **CHENG**, Raghavan **LAVANYA**, Zhi Da **SOH**, Yih-Chung **THAM**, Marco **YU***

Purpose: To determine the incidence and risk factors for primary open angle glaucoma (POAG) and ocular hypertension (OHT) in a multi-ethnic Asian population.

Methods: Data of 10,033 participants of the Singapore Epidemiology of Eye Diseases study from the baseline between 2004 and 2011 was used for the study. Out of them, 6,762 (response rate= 78.8 %) participated in this six-year follow-up visit between 2011 and 2017. Standardized examination and investigations were performed, including slit lamp biomicroscopy, intraocular pressure (IOP) measurement, pachymetry, gonioscopy, optic disc examination and static automated perimetry. Glaucoma was defined according to the International Society of Geographical and Epidemiological Ophthalmology criteria.

Results: The overall six-year age-adjusted incidence of POAG and OHT were 1.31% (95% confidence interval [CI]: 1.04-1.62) and 0.47% (95% CI: 0.30-0.70). The rate of conversion of baseline OHT to POAG at 6 years was 5.32%. POAG incidence was similar (1.37%) in Chinese and Indians and lower (0.80%) in Malays. Malays had higher incidence (0.79%) of OHT than Indians (0.38%) and Chinese (0.37%). Baseline parameters associated with higher risk of POAG were older age (odds ratio [OR] = 1.90 per decade; 95% CI:1.54-2.35, $p < 0.001$), higher baseline IOP (OR=1.20 per mmHg; 95% CI:1.12-1.29, $p < 0.001$) and longer axial length (OR=1.22 per mm; 95% CI:1.07-1.40, $p = 0.004$).

Conclusions: Six-year incidence of POAG was 1.31% in a multi-ethnic Asian population. Older age, higher IOP and longer axial length were associated with higher risk of POAG. These findings can help in future projections and guide public healthcare policy decisions for screening at risk individuals.

Orbital and Oculoplastic Surgery

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Clinical Significance of Corneal Striae in Thyroid Associated Orbitopathy

*First Author: Xulin **LIAO***
*Co-Author(s): Fatema Mohamed Ali Abdulla **ALJUFAIRI**, Kenneth **LAI**, Calvin **PANG**, Clement **THAM***

Purpose: To investigate and report the clinical significances of corneal striae (CS) in thyroid-associated orbitopathy (TAO) patients.

Methods: A cross-sectional study of treatment-naïve TAO patients with unilateral corneal striae. The presence of CS was confirmed by our oculoplastic specialist during slit lamp examination with sodium fluorescence staining. Orbital and radiological parameters were compared between the CS eyes and the unaffected eyes. Orbital parameters included

margin reflex distances (MRD), lagophthalmos, exophthalmos and intraocular pressure (IOP) at primary and up-gaze. The area of the extraocular muscle (EOM) was measured at the largest coronal cut of the orbit using T1-weighted magnetic resonance images.

Results: A total of 53 TAO patients (female=36) with unilateral corneal striae were reviewed (106 eyes). The onset age of TAO was 46.47 ± 14.73 years. 32.08% (17/53) were smokers, and 92.45% (49/53) were diagnosed with Graves' disease. The presenting clinical activity score was 1.77 ± 1.25. When compared eyes with CS to those without, both the amount of lagophthalmos ($p < 0.05$), and the size of levator palpebrae superioris -superior rectus complex (LPS/SR) ($p < 0.05$) were increased in both univariate and multivariable analysis. However, the IOP, MRD, exophthalmos, and the other EOM enlargement including the medial rectus, lateral rectus and inferior rectus did not have significant difference between the TAO with and without CS eyes.

Conclusions: CS was significantly associated with the degree of lagophthalmos and the enlargement of LPS/SR. CS should be further evaluated as a potential non-invasive ocular surface biomarker and signify disease severity in TAO.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Complications of Delayed Tube Removal After DCR Surgery in COVID Era

*First Author: Purnima **RAJKARNIKAR STHAPIT***
*Co-Author(s): Malita **AMATYA**, Rohit **SAIJU***

Purpose: A silicon stent intubation, done after dacryocystorhinostomy (DCR) surgery, is generally removed after 6 weeks. However, COVID-19 related lockdown as well as recommendation to hold the lacrimal procedures for safety related purpose has led to delay in silicon tube removal for many months. Side effects of even short-term silicon stenting are well known. The purpose of this study is to assess the complications of delayed stent removal after DCR surgery, due to COVID restrictions.

Methods: A prospective observational study that included 35 post-DCR patients whose silicon tube removal was delayed due to COVID restrictions. Detail history and clinical examination to note the DCR surgery and tube related complications were noted. Silicon tube was removed, and syringing done where possible.

Results: Mean age was 41 years (SD 14.3; range 7-68 years). Among them, 29(83%) were females. The most common presenting symptom was persistent watering in 19 patients (54.2%); however, syringing was found to be patent in 30 patients (85.7%). Out of 35 eyes, 26 (74.3%) had the silicon tube in situ in normal position without puncta or canaliculus complications. The mean time of delay in tube removal after DCR surgery was 38.1 weeks (median 40; range 6 -59). The average (SD) delay time in weeks of study participants who had complications and without complications were 33.0 (10.9) and 39.9 (11.3) respectively which was not statistically significant.

Conclusions: Delay in silicon tube removal is a safe practice in the COVID era.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Core-Needle Biopsy of Orbital Tumors: 15-Year Experience

*First Author: Andrey **YAROVOY***

Purpose: To present our experience of core needle biopsy (CNB) of orbital tumors.

Methods: Since 2006, 84 orbital lesions of 80 patients (age from 2 to 85 years) were biopsied using 20- and 18-gauge semi-automated needles, some of procedures were done under US-guidance. In 4 cases of deep orbital tumors CNB was fulfilled within orbitotomy. The routine histopathological and cytological examination and immunohistochemical analysis of the tissue cores were fulfilled.

Results: Specimens diagnostically sufficient for histological analysis were obtained in all biopsies. The histopathological diagnosis was established in 96% of specimens: 56 lesions were malignant (32 - lymphoma, 10 - rhabdomyosarcoma, 8 - breast carcinoma metastasis, 2 - lacrimal gland carcinomas, 1 melanoma, 1 malignant schwannoma). Cytology was fulfilled in 66 cases. CNB diagnosis was confirmed by excisional or incisional biopsy in 55% of patients. Four biopsies were diagnostically unsuccessful: 3 (lymphoma, neurofibroma, angiofibroma) showed undetermined identification and one gave false-negative identification (lacrimal gland adenocarcinoma was misdiagnosed as fibrous tissue). Sensitivity, specificity and accuracy for differentiating malignant from benign lesions were 96%, 100%, and 98% respectively. Mild retrobulbar hematoma as a complication of CNB occurred in 4 patients and regressed spontaneously.

Conclusions: CNB of orbital mass lesions is a safe procedure that provides a sufficient amount of tissue material for histological, cytological, and immunohistochemical analysis and can be an alternative to FNAB and diagnostic orbitotomy.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Detailed Eye Movements Before and After Simultaneous Bilateral Orbital Decompression for Protruding Eyes in Thyroid Eye Disease

*First Author: Tomoyuki **KASHIMA***
*Co-Author(s): Masashi **MIMURA***

Purpose: Exophthalmos caused by thyroid eye disease is usually treated by orbital decompression, which involves resection of orbital fat and bone. The most common postoperative complication is new-onset diplopia (NOD), which is reportedly relatively less common after fat decompression. In this study, we investigated how the fusion image area (FIA) changes after orbital decompression surgery using the binocular single vision (BSV) test.

Methods: Of the 104 patients (208 eyes) with thyroid eye disease who underwent bilateral orbital fat decompression under general anesthesia at our oculofacial clinic between January and December 2018, 31 (62 eyes) who were available for a 6-month follow-up were enrolled. Patients who made irregular follow-up visits and those in whom BSV could not be measured were excluded. Patient age and sex, postoperative changes in Hertel exophthalmometer measurements, amount of orbital fat removed, and BSV were recorded.

Results: The 31 patients (28 women, three men) had a mean age of 40.9 ± 12.8 years (range, 15–65). Mean ocular protrusion decreased from 19.8 ± 2.3 mm preoperatively to 16.5 ± 1.6 mm postoperatively. The average amount of fat removed was 3.5 ± 1.1 mL. FIA decreased from 42.3° preoperatively to 38.7° ($p = 0.03$), 38.8° ($p = 0.04$), and 40.8° ($p = 0.35$) at 1, 3, and 6 months, respectively, after surgery. At 6 months postoperatively, no patient had NOD in the first eye position.

Conclusions: The fusion area was decreased significantly at 1 and 3 months after surgery but recovered to the point where there was no significant difference from the preoperative fusion area 6 months after orbital fat decompression surgery.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Detection of Active Signs Thyroid Eye Disease in Photographs: Reliability and Correlation With Clinical Treatment Decision

*First Author: Min Joung **LEE***
*Co-Author(s): Ho-Kyung **CHOUNG**, Namju **KIM**, Gyeong Min **LEE***

Purpose: To evaluate the interobserver agreement of each parameter of clinical activity score (CAS) in photographs and its association with the clinical decision for immunomodulation treatment.

Methods: Photograph images of patients with thyroid eye disease (TED) were presented to 5 oculoplasty specialists to assess 5 soft tissue signs of CAS (eyelid redness, conjunctival redness, caruncular edema, eyelid swelling, and conjunctival swelling). Kappa statistics were used to calculate Interobserver agreement. All assessments were reviewed, and the final rating was made by consensus. The consented CAS rating was compared with the actual CAS rating in the clinic. Patients were divided into two groups: treatment and observation groups and the association with the consented CAS rating was analyzed.

Results: A total of 976 images were collected. The interobserver agreement among 5 oculoplasty specialists was moderate in conjunctival redness ($k=0.51$) and eyelid redness ($k= 0.419$). Eyelid swelling ($k= 0.365$), conjunctival swelling ($k=0.306$), and caruncular edema ($k=0.242$) showed fair agreement. Inter-agreement between the consented CAS rating and the clinical CAS was highest in conjunctival redness and lowest in conjunctival swelling. Comparing treatment and observation groups, eyelid swelling, and conjunctival swelling are the most significantly different parameters between the two groups ($p < 0.0001$).

Conclusions: The soft tissue signs of CAS in photographs showed moderate to fair interobserver agreement. Eyelid swelling and conjunctival swelling had the strongest power to discriminate between treatment and observation groups.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Does Preoperative Horizontal Lid Laxity Affect Postoperative Outcome of Single and Combined Techniques of Lower Eyelid Involutional Entropion Surgeries? A Hospital-Based Retrospective Comparative Study

*First Author: Aashish **PANT***
*Co-Author(s): Singh **AMIT**, Purushottam **JOSHI**, Rinkal **SUWAL***

Purpose: To compares the surgical success rates of single approach surgeries (Wies Procedure (WP) and Jones Procedure (JP)) and combined approach surgery (Lateral Tarsal Strip with Quickert Sutures (LTS+QS)) in cases of Involutional Lower Lid Entropion (ILLE) with and without significant Horizontal Lid Laxity (HLL).

Methods: A hospital based retrospective comparative study comparing the outcomes of WP, JP and LTS+QS surgeries was done. HLL was categorized as significant if >6mm and not significant if <6mm. Success was defined as normal eyelid position at 18 months postoperatively. Ethical approval was obtained from Institutional Ethical Review Board.

Results: A total of 172 eyelids of 153 patients (F:M=1.13:1) were included in the study. The mean age of the patients was 69.86+-10.82(40-97) years. Overall, mean HLL was 7.1+-2.3(3-14) mm. The success rates were 88.60% (70/79) in WP, 90% (36/40) in JP, and 88.67% (47/53) in LTS+QS. Combined surgery group with significant preoperative HLL had the highest success rate (96.7%) while it was 78.3% when HLL was not significant. Single procedures had lower success rates in cases with significant HLL (87.2% vs. 90.6% in WP and 86.4% vs. 94.4% in JP).

Conclusions: Single surgical procedures were equally effective in management of lower lid involutional entropion when HLL was not significant whereas combined entropion surgeries were more effective when HLL was significant. Success rate of a surgical procedure may be associated with preoperative HLL. Thus, preoperative HLL should be considered to determine the choice of surgery for ILLE.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Efficacy of Intravenous Methyl Prednisolone Pulse Therapy With Immunomodulation: A Protocol Based Approach in Active Thyroid Eye Disease

*First Author: Subhav **PERSHAD***
*Co-Author(s): Mohammed Moinul **HOQUE***

Purpose: To study outcomes of intravenous methyl prednisolone (IVMP) pulse therapy and immunomodulation in active thyroid eye disease (TED).

Methods: A retrospective study of 80 patients (147 eyes) with active TED treated with pulse IVMP with or without oral azathioprine (AZT)/mycophenolate mofetil.

Results: The mean age at presentation was 45.8 ± 11.3 (range 17-69) years. Immunomodulation was required in 48 patients (103 eyes). Mean follow-up was 17 ± 11.4 (range 6-47) months. Exophthalmos improved in 50 (55.5%) of 90 eyes. Mean improvement in exophthalmos was 1.51 (range 1-9) mm. Twenty-three patients had orbital decompression for residual exophthalmos. Of 59 patients with diplopia, 31 (52.5%) resolved and 13 needed prisms/extraocular muscle surgery. Overall, 72 (90%) patients had complete remission from activity. Mean EUGOGO activity score was 6 ± 0.5 baseline and 1.76 ± 1.2 after completion of treatment. AZT was discontinued in 1 (3%) patient with pneumonitis.

Conclusions: Monitored IVMP pulse therapy with short-term immunomodulation is safe and effective in controlling disease activity in TED.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Eosinophilic Orbital Myositis Presenting With Isolated Unilateral Severe Ptosis: A Case Report

*First Author: Nizma **PERMAISUARI***
*Co-Author(s): Yunia **IRAWATI**, Meuthia Rana Amira **PRIMAPUTRI***

Purpose: Cases of isolated ptosis by eosinophilic orbital myositis have been very rarely described in the literature. We report a patient who developed unilateral severe ptosis caused by eosinophilic orbital myositis.

Methods: A 19-year-old man presented with drooping of the left eyelid for 2 years. He also reported recurrent redness and swelling of the left eyelid. History of worsening ptosis in the evening, blurry vision, double vision, ocular pain, systemic complaints, and trauma

were denied.

Results: Eosinophilic myositis belong to the idiopathic inflammatory myopathies and are defined by an infiltration of eosinophils within the muscle. The pathogenesis of OEM may represent an abnormal activation of ocular allergic inflammatory mechanisms. Definite diagnosis depends on clinical suspicion and tissue-proven biopsy.

Conclusions: Isolated unilateral severe ptosis can be caused by various etiologies. Abnormal activation of ocular allergic inflammatory mechanisms occurred in EOM. Infiltration of eosinophils within the levator muscle might cause severe ptosis. Definite diagnosis depends on clinical suspicion, laboratory test, and tissue-proven biopsy.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Ocular Surface Changes In in Immunoglobulin G4 -Related Ophthalmic Disease

*First Author: Kenneth **LAI***
*Co-Author(s): Fatema Mohamed Ali Abdulla **ALJUFAIRI**, Chong **LUNG**, Xu Lin **LIAO**, Calvin **PANG**, Clement **THAM***

Purpose: We aim to compare the ocular surface parameters in Immunoglobulin G4 -related Ophthalmic Disease (IgG4-ROD) and age-matched healthy controls.

Methods: Prospective cohort study consisting of IgG4-ROD patients and healthy subjects evaluated at the Chinese University of Hong Kong Eye Centre. The ocular surface disease index (OSDI), Schirmer's test (ST), Oxford schema fluorescein staining grades(OSFS) and meibomian gland dysfunction (MGD) were assessed by slit-lamp examination. Non-invasive Keratograph break-up time (NIKBUT), tear meniscus height (TMH), lipid layer thickness (LLT), meiboscore were examined using OCULUS Keratograph 5M and LipiView.

Results: A total of 32 (64 eyes) IgG4-ROD patients(female=20) and 32 (64 eyes) healthy controls (Female=20) were evaluated. Most IgG4-ROD patients suffered symptomatic dry eye, compared to age-matched healthy controls (90% vs 13.3%). Mean OSDI (13 vs 7), ST without anesthesia (9 vs 13s), and OSFS (2.5 vs1.0) were worse among the IgG4-ROD patients (all $p < 0.05$). The NIKBUT, LLT and meiboscore were comparable between the two groups. The presence and extent of IgG4-ROD lacrimal gland involvement correlated with aqueous-deficient parameters.

Conclusions: Most patients in our IgG4-ROD cohort developed aqueous-deficient DED. Whether systemic treatment may alter its course and the visual impact require further evaluation.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Pakistan Eye Cancer Survey Results

*First Author: Tayyab **AFGHANI***

Purpose: To present the results of first-ever eye cancer survey in Pakistan.

Methods: The information about the magnitude of eye cancer in Pakistan was gathered from major tertiary eye care centers of the country through written requests. In addition, stakeholders were also requested to share this information through a questionnaire. The data was obtained from three major provinces of Khyber Pakhtunkhwa, Punjab and Sindh which comprise over 90% of the country population.

Results: The data shows about 877 cases of eye cancers are diagnosed every year. Among these. 38% are eyelid cancers, 15% of these are cancers of the orbit and the rest are from within the globe or its surface. In Sindh, the average frequency of eye tumors based on stakeholders' answers indicates that benign tumors comprise about 60%, while malignant tumors about 40%. It is however the reverse in Punjab and Khyber Pakhtunkhwa, where malignant tumors comprise 60% of the cancer workload and benign tumors comprise 40%. Based on the information reported, it is estimated that about 2000 eye tumors occur per year -51% are likely to be malignant and 49% benign. In terms of population, it is estimated that there are 5 cases of eye cancer per million population of Pakistan. Overall, there are an estimated 10 cases of eye tumors (both benign and malignant) per million population that are examined annually.

Conclusions: Eye tumors (benign and malignant) comprise about 1.2% of the total cancers annually examined.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Silicone Rod Frontalis Suspension in Patients With Chronic Progressive External Ophthalmoplegia: Outcomes and Complications

*First Author: Sumer **DOCTOR***
*Co-Author(s): Akshay **NAIR**, S **NATARAJAN**, Nita Amit Shah **SHAH***

Purpose: To report the demographics, outcomes and complications among patients of with chronic progressive external ophthalmoplegia (CPEO) who underwent silicone rod frontalis suspension for ptosis.

Methods: To present a retrospective, interventional series.

Results: Between July 2014 and January 2019, 34 eyes of 17 patients underwent ptosis correction surgery using silicone rods. A conventional, five-point Fox Pentagon technique was used. All cases were performed by a single surgeon. Mean age was 56.5 years and 65% of the patients were male. The mean follow-up period was 25.4 months. The mean pre-operative Marginal Reflex Distance (MRD1) was (minus) -1.14 mm (± 1.23 mm) and the mean preoperative levator action was 2 mm. In our cohort, 74% of the eyes had a poor Bell's phenomenon. Post operatively, the mean MRD1 improved to 2.76 mm (± 0.7 mm) suggestive of a significant improvement ($p < 0.0001$). The difference between mean pre-operative and postoperative lagophthalmos measurements were significant (0.61 mm vs 1.32 mm; $p < 0.003$). Postoperatively, 5/34 (15%) developed complications that required active intervention: two eyes showed under-correction at final follow-up and needed revision surgery; one eye developed exposure keratopathy related non-resolving epithelial defect which needed intensive lubricant therapy. One patient developed a corneal ulcer that required topical antibiotics and one patient developed long standing non-resolving edema that necessitated blepharoplasty. Overall, 85% (29/34) of the eyes developed no complications and maintained a clear visual axis.

Conclusions: Frontalis suspension surgery using silicone rods is safe, reproducible and effective with low complication rates in CPEO; especially with planned under-correction to avoid overcorrection and exposure keratopathy.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Sub-eyebrow Blepharoplasty With Dermal Stacking: A Novel Approach to Fill the Superior Orbital Rim Hollow in East Asian Eyelids

First Author: Pallavi ***SINGH***
Co-Author(s): Robert ***GOLDBERG***

Purpose: To describe a new technique for volume-preservation upper blepharoplasty in East-Asian eyelid.

Methods: Description of surgical technique and complications of sub-brow blepharoplasty with dermal stacking performed in 13 patients. Patients with an East-Asian eyelid configuration were included. Pre- and post-procedure photographs were obtained. The patients were followed up for a minimum period of 3 months. An ellipse is drawn under the eyebrow and care is taken to leave at least 20mm of skin post-excision between the lashes and the brow and infiltrated with local anesthesia. The superior incision is started with the blade perpendicular to the skin until it passes the epidermis and upper dermis. The inferior limb of the oval excision is incised with the blade perpendicular to the skin. Coming back to the superior incision, the direction of the blade is then rotated to 180 degrees and the dermis is de-epithelialized. After undermining the eyelid skin as required, the wound edges are closed so that the inferior dermis is stacked on top of the superior dermis.

Results: All patients in our series achieved an aesthetically pleasing result in terms of upper lid rejuvenation and volume retention. However, five out of the first ten patients developed sterile granulomas along the incision line, one of which needed surgical removal. The surgical technique was modified in the next three patients to excise more dermal tissue and no complications were seen.

Conclusions: Our technique describes a method to preserve and even add volume to the East Asian upper eyelid with a hidden scar using autogenous tissue.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Transcutaneous Retrobulbar Amphotericin-B Injections for Management of Post-SARS-CoV-2 Rhino-Orbital-Cerebral Mucormycosis

First Author: Sonal ***ANCHLIA***
Co-Author(s): Daniel ***ROOTMAN****, Pallavi* ***SINGH***

Purpose: To evaluate the utility of transcutaneous retrobulbar amphotericin-B (TRAMB) injections in the management of patients with post SARS-CoV-2 rhino-orbital-cerebral mucormycosis (ROCM) with orbital involvement in a multi-disciplinary setting.

Methods: Non-randomized controlled clinical trial involving patients with ROCM with gross orbital involvement. Inclusion criteria were visual acuity worse than counting fingers at 3 meters; clinical features of eye involvement, such as ophthalmoplegia and orbital cellulitis; and orbital involvement on imaging. All patients received standard systemic treatment and some form of sinus debridement and maxillectomy. Control group included patients undergoing standard systemic therapy and surgery. Patients in the intervention group were additionally administered three doses of TRAMB injections on alternate days before surgery. One mL of liposomal amphotericin-B diluted with 5% dextrose was injected. Primary outcomes were preservation of eyeball, need for orbital debridement during surgery and progression to intracranial spread.

Results: Twenty patients in the intervention group and 25 controls were included. Eight patients required orbital exenteration in controls versus none in the intervention group ($p < 0.0001$). Five had to undergo orbital debridement at the time of surgery in the intervention group compared to 18 in the control

group ($p < 0.05$). None of the patients showed further progression to or worsening of intracranial disease in the intervention group as opposed to 4 patients in the control group ($p < 0.05$).

Conclusions: We conclude that TRAMB can prove to be an excellent alternative to exenteration surgery in most patients with orbital involvement in ROCM post-SARS-CoV-2 infection. Our study is limited by a short follow-up period and non-randomization of the study groups.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Visual Outcomes and Factors Affecting Incomplete Visual Recovery After Dysthyroid Optic Neuropathy Treatment

*First Author: Pimkwan **JARU-AMPORNPAN***
*Co-Author(s): Lalitwadee **CHOTUK**, Kiatthida **HOKIERTI**, Arnan **LIMMAHACHAI**, Kanograt **PORNPANICH**, Sumalee **VANGVEERAVONG***

Purpose: To report epidemiological data, visual outcomes and factors affecting visual outcomes among Thai patients with dysthyroid optic neuropathy (DON).

Methods: We collected demographic data and clinical characteristics of 73 eyes among 50 patients that were diagnosed with DON. These patients had at least 6-month follow-up after treatment completion. The pinhole visual acuity (PHVA) before and after treatments were compared. Associated risk factors for severe visual impairment at presentation (PHVA 6/60 or worse) and incomplete visual recovery (PHVA worse than 6/12) were analyzed.

Results: Thirty-nine eyes with DON (53.4%) had PHVA 6/60 or worse at presentation. All subjects were initially treated with IVMP, and some further had orbital decompression or radiation therapy. At six-month after treatment completion, overall median PHVA changed from 6/60 to 6/9.5 ($p < 0.001$). In subgroup analysis, those who underwent surgery had PHVA improved from 6/60 to 6/12 ($p <0.001$), whereas those without surgery had PHVA improved from 6/24 to 6/9.5 (p 0.048). Abnormal color vision (odds ratio (OR) 11.385 $p = 0.032$) and duration from onset of symptoms to diagnosis (OR 1.011 $p = 0.037$) were found to correlate with poor PHVA at presentation. Age (OR 1.149 $p = 0.001$), presence of diabetes mellitus (OR 5.250 $p = 0.032$) and poor presenting PHVA (OR 14.58 $p = 0.040$) were correlated with incomplete visual recovery.

Conclusions: DON can present with severe vision loss, but majority recovered with treatment. Ophthalmologists should be aware of risk factors associated with incomplete visual recovery including age, presence of DM and poor presenting PHVA.

Feb 23, 2023 (Thu)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Z-Plasty for a Dystopic Eyebrow

*First Author: Juhi **DAGA***
*Co-Author(s): Milind **NAIK***

Purpose: To report correction of congenital eyebrow dystopia and epicanthus with Z-plasty.

Methods: A 13-year-old female was presented with abnormal right eyebrow and eye aperture since birth. The right eyebrow showed significant inferior dystopia along its medial end. An ipsilateral epicanthal fold was also noted.

Results: Epicanthus repair was performed as Stage 1, followed by Z-plasty for the eyebrow to realign the congenitally misaligned medial part of eyebrow. After 3 months of follow-up, the cosmetic correction was acceptable.

Conclusions: Congenital eyebrow dystopia can be successfully corrected with Z-plasty.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

An Impact of Custom-made Ocular Prosthesis on Health-Related Quality of Life and Perceived Stress in Thai Prosthetic Eye Wearers

*First Author: Manachaya **PRUKAJORN***
*Co-Author(s): Pimkwan **JARU-AMPORNPAN**, Arnan **LIMMAHACHAI**, Saranporn **PIAMPRADAD***

Purpose: To determine the changes in health-related quality of life (HRQOL) and perceived stress (PS) after custom-made prosthesis fitting among prosthetic eye wearers

Methods: In this prospective questionnaire-based study, 90 Thai patients undergoing first-time custom-made prosthesis fitting were enrolled to fill out the 36-Item HRQOL Short Form Survey and the PS Scale form before and after custom-made prosthesis fitting. The data was analyzed with paired t-test. In former stock-eye wearers, satisfaction scores when wearing stock-eye and custom-made prostheses were compared using Wilcoxon signed-rank test.

Results: Among 71 patients who completed this study, 46 patients had already worn stock-eye prosthesis, while 25 patients had never worn prosthesis prior to the first visit. After custom-made prosthesis fitting, HRQOL dimensions including physical functioning ($p = 0.02$), physical role limitations ($p = 0.01$), social functioning ($p = 0.02$), emotional role limitations ($p = 0.03$), and mental health ($p = 0.03$) significantly improved. In former stock-eye wearers,

PS is significantly less after switching to a custom-made prosthesis ($p = 0.02$). Custom-made prostheses resulted in higher levels of satisfaction compared to stock-eye prostheses in terms of similarity ($p < 0.01$), overall appearance ($p < 0.01$), and prosthesis motility ($p = 0.02$).

Conclusions: Since custom-made prostheses significantly improve HRQOL, PS, and satisfaction even among former stock-eye wearers, ophthalmologists should advocate for custom-made prosthesis fitting for these patients, especially in Asian countries where stock-eye prostheses are prevalent.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Fifty in 1 or 50 in 2 – Which Acts Better?

*First Author: Nishat **PARVEEN***
*Co-Author(s): Shafiul **MOSTAFIZ**, Riffat **RASHID***

Purpose: To observe the effects and duration of action of 50 IU of Botox injection diluted in 1 cc and 2 cc of normal saline in severe BEB & HS patients.

Methods: It was a prospective observational study conducted at a tertiary eye hospital in Bangladesh. The study period was July 1, 2021, to June 30, 2022. A total of 50 cases of severe BEB & HS patients were enrolled for the study. All of them were getting 50 IU of Botox injection.

Results: Amongst 50 patients 30 were suffering from BEB & 20 from HS. 50 IU of Botox injection was diluted in 1 cc and 2 cc normal saline. These 2 different concentrations of Botox injection were given in 2 types of blepharospasm patients in a 50/50 ratio. In 12 BEB patients' effect of 50 IU Botox in 1 cc normal saline lasted for almost 4 months. 10 BEB patients treated with 50 IU Botox in 2 cc normal saline lasted for 21/2 months. In HS patients 8 out of 10 were well for more than 4 months with 50 IU of Botox in 1 cc normal saline. And 7 out of 10 were well for 3 months with 50 IU in 2 cc normal saline.

Conclusions: Effectivity and duration of action of Botox injection can be increased by increasing its concentration & can be applied safely to severe & chronic BEB & HS patients who responds poorly to the usual concentration of Botox injection.

02

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Foam Sclerotherapy: A Management Option for Benign Cystic Orbital Lesions

*First Author: Swati **GOYAL***

Purpose: To analyze the outcome of foam sclerotherapy in patients with benign cystic lesions of orbit.

Methods: A retrospective computerized data analysis was conducted on 18 cases of Benign cystic orbital lesions (peri-orbital dermoid (9), lymphangioma (5), microphthalmia with cyst (3) and development cysts (2) with age range of 3 months to 50yrs over a 3-year period. Clinic-radiological reduction in size was the outcome parameter. Cyst aspiration was performed using 18 g needle under full aseptic precautions. Foam was prepared- using Tessari method [Sodium Tetradecyl Sulphate (30mg/mL)], 10% volume equivalent of total aspirate was injected, followed by patching. Follow-up visits for outcome parameter and complications were done on the first, the 30th and the 90th days.

Results: At the end of 90 days, 78% cysts led to complete resolution or cosmetically acceptable reduction in size, 11% resulted in resolution after second injection and 11% required surgical intervention.

Conclusions: Foam sclerotherapy is an effective, safe minimally invasive therapeutic modality for orbital benign cystic lesions.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Outcomes of Bi-canalicular Silicone Tube Glide in External Dacryocystorhinostomy Surgeries

*First Author: Bijnya **PANDA***

Purpose: To analyze the outcomes of a novel bi-canalicular silicone tube (BST) glide used during external dacryocystorhinostomy (DCR) surgeries.

Methods: Study design-prospective observational study. Methodology: One hundred patients with primary nasolacrimal duct obstruction were divided equally into two groups (n=50 in each group) comparing conventional BST (group 1) and novel method (with help of BST glide, group2). Outcome measures: Aetiology of nasolacrimal duct obstruction, epiphora grading, surgical time, intraoperative and postoperative pain score, correlation of etiology of obstruction and surgical time, and postoperative anatomical and functional success rates were studied. Statistical analysis: Categorical variables were compared using chi-square or Fisher's exact test. p-values <0.05 were considered statistically significant.

Results: Surgical time, intraoperative and postoperative pain scores were statistically significant ($p < 0.05$) between the two groups. However, the etiology of nasolacrimal obstruction and epiphora grading did not correlate with the anatomical and functional success rates.

Conclusions: BST glide is a novel, economical and efficient method of BST insertion during DCR.

Pediatric Ophthalmology and Strabismus

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Astigmatism in Children and Adults of Hong Kong

*First Author: Arnold **CHEE***
*Co-Author(s): Li Jia **CHEN**, Ka Wai **KAM**, Jason **YAM**, Wilson **YIP***

Purpose: To report the epidemiology of astigmatism in school children and adults of Hong Kong and evaluate the influence of parental astigmatism on child astigmatism.

Methods: We conducted a population-based, cross-sectional study involving Chinese school children aged 6 to 8 years and their parents. The prevalence of refractive (RA), corneal (CA) and internal astigmatism (IA) was estimated. Trios involving both parents and the child were analyzed separately to identify the risk of child astigmatism among parents with different severities of astigmatism.

Results: The prevalence of RA (≤–1.0D) and CA (≥+1.0D) in children was 24.1% (95% CI, 23.1%–25.3%) and 60.5% (95% CI, 59.2%–61.8%), whilst 33.1% (95% CI, 32.3%–34.0%) and 43.4% (95% CI, 42.4%–44.3%) of adults had RA and CA respectively. Children exhibited greater astigmatic compensation by IA than adults in vectoral analyses. Based on 17,124 subjects from 5,708 parent-sibling trios, astigmatism of ≥1.0D in both parents increased a child's risk of developing RA and CA by 1.62 folds ($p = 0.01$) and 1.94 folds ($p < 0.01$) respectively. The risks increased to 3.10 ($p = 0.01$) and 4.31 folds ($p = 0.01$) when both parents had ≥2.0D of astigmatism. Regression analyses revealed that parental astigmatism had the strongest association with child astigmatism ($p < 0.01$) after adjusting for demographic and environmental factors.

Conclusions: Astigmatism is prevalent among school children and adults of Hong Kong, yet we observed a different compensatory pattern between children and adults, suggesting an age- related attenuation of astigmatism compensation. Parental astigmatism is an important risk factor for child astigmatism.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Efficacy of Oral Citicoline as an Adjuvant Therapy in Treatment of Adult Amblyopia

First Author: Deepanshu.
*Co-Author(s): Subhash **DADEYA**, Aakanksha **RAGHUVANSHI***

Purpose: To study the efficacy of oral citicoline as an adjuvant therapy in the treatment of adult amblyopia.

Methods: It was a randomized controlled trial of 40 adult patients aged 18-40 years with anisometropic or strabismic amblyopia for a period of 1year, with 2 groups of 20 patients each. Group A received patching for 6 hours a day/week for 4 months while group B received oral citicoline (500mg BD, 2 cycles ,45days each with 15 days gap) along with patching. The outcomes were assessed monthly and final results were assessed after 4 months in terms of distance vision, near vision, number of snellens line improvement, stereoacuity and contrast sensitivity (CS).

Results: No significant difference was noted in terms of distance vision (p value-0.6), near vision (p value-0.06), stereoacuity (p value-0.09), CS (p value-0.5) and number of snellen's line improved (p value-0.50) between group A & B. Distance vision improved significantly in both groups but it was more in group B at 1month. CS & stereopsis improved in group B only, but it was statistically not significant after 4 months.

Conclusions: Both interventions were equally effective in terms of distance vision, but Citicoline improves the visual acuity in the first month of therapy which is statistically more significant in the intervention group. Citicoline also improves stereopsis and contrast sensitivity, however it is statistically not significant.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Histologic Findings in Retinoblastoma With Magnetic Resonance Imaging Detected Post-laminar Optic Nerve Invasion

*First Author: Chanyanut **PHLAIPHICHIT***
*Co-Author(s): Chaiwat **APHIVATANASIRI**, Somkiat **ASAWAPHUREEKORN**, Teerawatchara **RERKSOONTREE**, Nipaporn **TEWATTANARAT**, Phanthipha **WONGWAI***

Purpose: Post-laminar optic nerve invasion (PLONI) in retinoblastoma had been reported to associated with enhancement and/or enlargement of post-laminar optic nerve from magnetic resonance imaging (MRI). Our study aimed to verify this association and its clinical implication.

Methods: Medical records of retinoblastoma patients

from January 2015 to April 2021 were reviewed. Preoperative MRI was reviewed by two independent radiologists and compared with histopathologic findings. In case of disagreement, the final decision was made by the third senior radiologist. All radiologists were masked to the histopathological findings.

Results: Fifty-five eyes of 52 patients were included. The mean age was 21.7 months (1-80 months). Twenty-one eyes were classified as group D and 34 eyes as group E. There were 8 eyes (14.5%) with PLONI on histopathology. Of these, 3 eyes (37.5%) showed optic nerve enhancement on MRI and only 1 eye (12.5%) showed optic nerve enlargement on MRI. There were 47 eyes without PLONI on histopathology. Of these, 10 eyes (21.3%) showed optic nerve enhancement on MRI, 10 eyes (21.3%) showed optic nerve enlargement on MRI, and 5 eyes (10.6%) showed both optic nerve enhancement and enlargement on MRI. Sixteen eyes (29.1%) were treated by primary enucleation (5 eyes with PLONI). Thirty-nine eyes (70.9%) received chemotherapy prior to enucleation (3 eyes with PLONI).

Conclusions: The association of histopathologic PLONI with enhancement and/or enlargement of optic nerve on MRI was inconsistent. These MRI findings should be interpreted cautiously for predicting high risk retinoblastoma with histopathologic PLONI.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Horizontal Recti Down Displacement for Unilateral Dissociated Vertical Deviations – A Case Series

*First Author: Akshay **MOHAN***
*Co-Author(s): Priyanka., Siddharth **AGRAWAL**, Rajat Mohan **SRIVASTAVA***

Purpose: To study the effect of down displacement of horizontal recti in patients of unilateral dissociated vertical deviations (DVD) associated with comitant horizontal deviations.

Methods: Five patients of comitant horizontal deviations associated with unilateral DVD underwent unilateral recession and resection surgery (in the eye with DVD) for horizontal deviation with half tendon down displacement of horizontal recti.

Results: Out of these 5 patients, 3 had exotropia and 2 had esotropia. The mean horizontal deviation preoperatively was 33.0 ± 6.71 PD and post-operatively was 6.0 + 2.24 PD. The mean preoperative DVD was 11.60 ± 0.89 which had a near complete resolution in all patients. No increase in DVD of other eye was noticed in any of the patients. None of the patients required second surgery for correction of horizontal deviation or DVD.

Conclusions: Half tendon down displacement with recession and resection surgery of horizontal recti is effective in correction of unilateral DVD in selected patients.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

How Successful Is Full-time Patching in Amblyopia, of Any Severity and at Any Age?

*First Author: Sameera **IRFAN***

Purpose: To investigate the effectiveness of full-time occlusion therapy in treating amblyopia of any severity, irrespective of a patient's age.

Methods: Prospective, interventional study was conducted from January 2012 to December 2021. A total of 1,689 consecutive cases of unilateral amblyopia due to anisometropia and strabismus from age 4-46 years were included. After wearing refractive correction for 8-12 weeks, the severity of amblyopia was assessed (mild, moderate, and severe). Then Full-time occlusion of good eye by commercial eye-patch was started, along with reading/writing 6 hours daily with the amblyopic eye. End point of therapy was achieving BCVA of either 6/6 (0.9 ETDRS) or equal to that in the good eye.

Results: Thirty-seven cases did not comply to therapy (dropouts). Results were calculated for 1,652 cases, comprising of 785 males and 867 females. They were divided into groups according to age. Group A had 464 cases (age group 4-7 years) with moderate-severe amblyopia in 410 cases (88.3%) achieved 6/6 (0.9 ETDRS) within 3-20 weeks. Group B had 607 cases (age 8-12 years) with moderate-severe amblyopia in 529 cases (87%) achieved 0.9 ETDRS within 3-24 weeks. Group C had 581 cases (13-46 years, median 19 years) with moderate-severe amblyopia in 553 cases (95.1%), had full visual recovery in 6-32 weeks. Cases with mild amblyopia recovered their vision within 2-4 weeks of therapy.

Conclusions: Cases that were fully compliant to therapy achieved 6/6 Snellens (0.9 ETDRS) within 3-32 weeks. This was considered 100% success. Time taken to full visual recovery was dependent on the severity of amblyopia and compliance to therapy.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Knowledge, Attitude, and Practice Patterns Related to Digital Eye Strain Among Parents of Children Attending Online Classes in the COVID-19 Era: A Cross-sectional Study

*First Author: Kirandeep **KAUR***
*Co-Author(s): Bharat **GURNANI**, Veena **KANNUSAMY***

Purpose: To assess the prevalence of digital eye strain among children and extrapolate the association between knowledge, attitude, and practice patterns related to device use during the coronavirus disease 2019 (COVID-19) lockdowns.

Methods: A cross-sectional, descriptive, questionnaire-based analysis was done to assess the knowledge, attitude, and practice patterns related to digital device use among parents of children attending online classes.

Results: A total of 305 responses were obtained. The most common reason for device use was online classes (288 children; 94.4%), and the most common mode was smartphone (263 children; 86.3%). The prevalence of digital eye strain was 64.6%. The mean knowledge score was 48.5 ± 5.1, the mean attitude score was 26.7 ± 4.9, and the mean practice score was 17.8 ± 3.5. The difference between knowledge, attitude, and practice scores among parents of children with and without glasses was not statistically significant (p = .580, .521, and .503, respectively). A direct correlation was found between the knowledge and practice scores (p = .002), but attitude scores did not show a significant correlation (p = .712).

Conclusions: Digital devices have been a boon to continuing education during the ongoing COVID-19 pandemic. This study reveals a large knowledge gap among parents related to safe digital device use. Further, there is a need to adopt methods that would help spread awareness to the masses about the effects of excessive screen time in children in the form of digital eye strain and myopia and the corrective measures to avoid the same.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Outcomes of 4-Point Sutured Scleral-Fixated Intraocular Lens Implantation Using Gore-Tex Suture in Pediatric Eyes

*First Author: Li Yen **CHAN***
*Co-Author(s): Shuan **DAI**, Ye **LI***

Purpose: To study the visual and refractive outcomes and postoperative complications of four-point sutured scleral-fixated intraocular lenses (SSFIOL) using Gore-Tex in children.

Methods: A total of 32 eyes of 20 patients under 18 years old who underwent primary or secondary four-point SSFIOL (Akreos Adapt AO) using Gore-Tex in a tertiary referral eye hospital were recruited retrospectively.

Results: The mean age of SSFIOL implantation was 7.14 ± 3.36 years and mean follow up time was 18.09 ± 9.79 months. The most common indication of SSFIOL was aphakia after cataract surgery without any capsular support in 18 eyes (56.25%) followed by subluxated crystalline lens in 11 eyes (34.38%) and subluxated IOL in 3 eyes (9.38%). Best corrected visual acuity (BCVA) was maintained/improved from the preoperative BCVA in 30 eyes (93.75%). Postoperative BCVA was 0.24 ± 0.17 logMAR at 1 year follow-up ($p < 0.05$) and 0.21 ± 0.19 logMAR at more than 1 year follow-up ($p < 0.05$). Mean refractive prediction error (RPE) at 2-4 months postoperatively was –0.03 ± 1.31. RPE in 17 eyes were within 1.00 diopters and in 11 eyes were within 2.00 diopters. Early complications (under 1 month) included iris atrophy/trauma in 5 eyes (15.63%), transient hypotony in 2 eyes (6.25%), transient elevated IOP in 2 eyes (6.25%). Late complications (after 1 month) were prolonged inflammation in 1 eye (3.13%), persistent elevated IOP in 1 eye (3.13%), retinal detachment in 1 eye (3.13%) and IOL tilt/decentration in 1 eye (3.13%).

Conclusions: Four-point SSFIOL implantation using Gore-Tex suture provides good visual and refractive outcomes. Minimal complication rates were reported, however long-term follow-up of these children is necessary.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Outcomes of Vision Screening in School Children Aged 4-7 in Queensland, Australia

*First Author: Ye **LI***
*Co-Author(s): Rachael **BESWICK**, Shuan **DAI**, Shelley **DUFFY**, Rachel **KEEL**, Sagen **WILKS***

Purpose: To report the positive predictive value of vision screening in school children through the Primary School Nurse Health Readiness Program (PSNHRP).

Methods: A retrospective review of PSNHRP records between January 2017 to December 2020 in Queensland, Australia was undertaken. Vision screening, conducted through a unique dual-examination method, using the Parr 4m Letter-Matching Vision Test with Confusion Bars and the Welch Allyn SPOT Vision Screener, was offered to school children aged 4-7. Based on an algorithm, children were referred to an optometrist or ophthalmologist for review. Positive predictive values (PPV) were calculated based on whether an ophthalmologist or optometrist confirmed a visual abnormality.

Results: In the study, 176,164 of 185,685 (94.9%) eligible children consented to vision screening, while164,890 (93.6%) children underwent vision screening, 12,148 (7.4% of screened) children were referred for an eye assessment, and 10,461 children were screened with both visual acuity and the photoscreener, as the latter was introduced in November 2017. Of the 8,659 (71.3% of referred) children with a known outcome, 6,011 (69.4% of referred) children had a confirmed visual abnormality, and 2,648 (30.6% of referred) children did not. The PPV was 0.73 when a referral was indicated by the photoscreener result only, 0.76 when indicated by visual acuity only, and 0.91 when indicated by both the photoscreener and visual acuity.

Conclusions: The PSNHRP vision screening program showed a high uptake, and the dual screening method was effective in identifying visual abnormalities with higher accuracy when both visual acuity and photoscreener results were used.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Retinoblastoma: Global Strata in Treatment Outcomes, Strata Mobility and Associated Factors

*First Author: Wai Chak **CHOY***
*Co-Author(s): Li Jia **CHEN**, Wai Kit **CHU**, Esther Wai Chi **TANG**, Suhan Emily **WONG**, Jason **YAM***

Purpose: Improvements in retinoblastoma outcomes are inconsistent globally despite advancements in globe-preserving treatments. We aimed to characterize strata in retinoblastoma outcomes during 1981-2021, identify factors associated with outcome strata changes, and understand systemic disparities of investigation and treatment modalities across clusters.

Methods: We obtained global retinoblastoma survival and globe salvage rate from our prior systemic review and meta-analysis, which covered articles in any language in nine databases published between Jan 1, 1981, and Oct 8, 2021. Indicators on socioeconomic and health-care factors were extracted from the World Bank and World Health Organization. We clustered countries by survival and globe salvage rate with ranks for successive decades from 1981-2021 using KMeans clustering, and identified factors associated with strata changes with Spearman rank correlation and multivariable linear regressions.

Results: We covered 38,130 patients from 80 countries presenting during 1981–2021. KMeans clustering identified two clusters in 1981-1990 and evolved to fives clusters in 2011-2021. Notable improvement for Latin American countries during 2001-2021 was associated with increased government health expenditure on multivariable linear regression. (beta=1.280, p = 0.0410). Globally, a decreasing out-of-pocket healthcare expenditure percentage was associated with improvements in outcomes (beta=-0.427, p = 0.0347). In 2011-2021, differential availabilities for intra-arterial chemotherapy (rho=0.5476, p = 0.0010), and genetic testing (rho=0.4519, p = 0.0083) demonstrated the strongest associations with global outcomes disparity.

Conclusions: Clustering method can reveal global relative changes of outcomes. Widening disparity was observed in 1981-2021. Targeted policies for middle-cluster countries regarding healthcare accessibility may encourage attainment of outcomes comparable to top clusters. Addressing disparity in management modalities is needed to improve outcomes worldwide.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Role of Video Games as a Form of Near Visual Activities in Adult Amblyopia

*First Author: Rishabh **SAH***
*Co-Author(s): Subhash **DADEYA***

Purpose: To assess the role of dichoptic video games in treatment of adult amblyopia.

Methods: The study included 30 patients between 18-40 years of age, with unilateral amblyopia. patients were prescribed optimal spectacle correction and occlusion therapy, i.e. 6 hours of occlusion of the better eye for 6 days a week. Subjects were randomly divided into two groups of 15 each. Patients in Group A were prescribed patching alone. Patients in Group B were made to play dichoptic mobile game Tetris in two-hour sessions, weekly for 12 weeks. Follow-up assessments included best corrected visual acuity (BCVA) (both distance and near) and stereoacuity measurements at baseline, 1week, 4week, 8weeks and 12weeks.

Results: The mean age of patients was 23.23 ± 5.51 years. The distance BCVA in the amblyopic eye showed a significant improvement at final follow-up (12 weeks) in both groups: from 0.78 ± 0.20 to 0.69 ± 0.22 LogMAReq in Group A and 0.71 ± 0.20 to 0.59 ± 0.23 LogMAReq in Group B. However, there was no significant difference in improvement in BCVA between the two groups (p = 0.33, 12 weeks). There was also a statistically significant improvement in near visual acuity within each group at final follow up but no significant difference between the two groups. there was no significant improvement in stereoacuity.

Conclusions: Video games as a supplement to patching did not have benefits additional to patching alone in terms of distance visual acuity, near visual acuity and stereoacuity in amblyopic adults.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Trabeculotomy Versus Trabeculectomy With Mitomycin C for Primary Congenital Glaucoma in Malaysia

First Author: Wei Loon ***NG***
Co-Author(s): Nor Akmal ***BAHARI****, Jamalia* ***RAHMAT***

Purpose: To evaluate the surgical outcome of trabeculotomy and trabeculectomy with mitomycin C in Malaysian children with primary congenital glaucoma.

Methods: This retrospective study involved 26 patients with 43 eyes. Thirty-two eyes were treated with trabeculotomy, and 11 eyes were treated with trabeculectomy with mitomycin C. Main outcome measures were preoperative and postoperative intraocular pressure (IOP) and visual acuity. All children were followed up for at least 4 years.

Results: Sixty patients (61.5%) were female while 10 patients (38.5%) were male. Mean age at diagnosis was 21.6 ± 30.14 months and 17 children (65.4%) presented with bilateral disease. Mean preoperative cornea diameter, CDR were 12.24 ± 1.14 mm, 0.69 ± 0.87. Mean IOP at presentation for trabeculotomy group and trabeculectomy with MMC group were 30.28 ± 12.53 mmHg and 36.91 ± 13.81 mmHg (p = 0.523) respectively. Mean baseline LogMAR visual acuity for trabeculotomy and trabeculectomy with MMC group were 2.48 ± 0.68 and 0.85 ± 0.45 respectively (p = 0.388). At year four follow up, IOP control for both groups were not significantly different as trabeculotomy group were 17.25 ± 5.79 mmHg and trabeculectomy with MMC were 15.45 ± 5.13 (p = 0.642). However, visual acuity improvement is better in trabeculotomy group as the mean LogMAR visual acuity were 1.43 ± 1.11 in trabeculotomy group and 0.78 ± 0.61 in trabeculectomy with MMC group (p = 0.001).

Conclusions: Both trabeculotomy and trabeculectomy with MMC have no difference in achieving IOP control, but trabeculotomy group showed better visual acuity outcome for primary congenital glaucoma.

Feb 23, 2023 (Thu)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Twelve-Year Review of Children With Retinoblastoma in Queensland, Australia

First Author: Ye ***LI***
Co-Author(s): Jayne ***CAMUGLIA****, Li Yen* ***CHAN****, Jaclyn* ***WHITE***

Purpose: To report the characteristics and outcomes of children with retinoblastoma in Queensland, Australia.

Methods: A retrospective review of children who presented with retinoblastoma from January 2011 to April 2022 to the Queensland Children's Hospital in Queensland, Australia was undertaken. Patients with retinoblastoma confirmed on clinical examination were included. Demographic information, age at diagnosis, ocular symptoms, ocular signs, and the timing from referral to diagnosis were collected. Management and mortality outcomes were tabulated.

Results: A total of 63 children with retinoblastoma were included for review. The average age at presentation was 20.88 ± 16.57 months and 38 (60.32%) were females. The most common presentation was leukocoria (45 patients, 71.43%), followed by strabismus (17 patients, 26.98%). Five patients (7.94%) were referred following concerns on newborn screening, one patient (1.59%) presented with proptosis and orbital cellulitis, one patient (1.59%) presented with buphthalmos, and two patients (3.17%) presented with heterochromia. The mean duration of disease from onset of symptoms to presentation was 65.11 ± 86.24 days and the majority (46.03%) presented within one month of symptom onset. To note, 41 patients (65.08%) had unilateral involvement and 23 patients (36.51%) were RB1-gene positive. More than half (60.00%) of patients presented with Group D or worse. 47 patients (74.60%) required enucleation and most patients (69.85%) underwent systemic chemotherapy. At the last follow-up, 59 patients (93.65%) were alive, one (1.59%) was deceased, and the outcome was unknown for three patients (4.76%).

Conclusions: Compared to other developed nations, the mean lag time of retinoblastoma presentation in Queensland was comparable. Prompt diagnosis and treatment enabled a low rate of mortality.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Refractive Status in Children With History of Birth-Related Retinal Hemorrhagege

First Author: Xin Ying ***LIM***
Co-Author(s): Hanisah ***ABDUL HAMID****, Stephanie Evelyn* ***FONG****, Mohamad Israk* ***MOHAMAD ISA****, Shuaibah* ***AB.GHANI***

Purpose: To compare refractive status between children with history of birth-related retinal hemorrhage (RH) and children without birth-related RH.

Methods: A hundred children from a previous population-based study on the incidence of RH were followed-up from birth up to 2 years of age. They were equally divided into two groups: children with a history of birth-related RH (N=50) and without birth-related RH (N=50). Children with history of birth-related RH group were further subdivided into mild (N=16), moderate (N=17), and severe (N=17). Cycloplegic retinoscopy was

performed. Refractive status and spherical equivalents were documented.

Results: At birth, the difference in mean Spherical Equivalent (SE) of babies with (+4.41(1.20)) and without birth-related RH (+4.63(1.13)) was insignificant (p =0.359). However, at 2 years old, the mean SE of children with birth-related RH was more myopic (-0.25(1.99)) than children without RH (+1.80(0.93)) (p < 0.001). Children with a history of mild, moderate, and severe RH had mean SE of +0.91(1.89), -0.91(1.95), and -0.68(1.73) respectively (p = 0.015). Comparing the mean changes in SE at birth and at 2 years old, more myopic shifts were discovered in children with a history of RH (-4.66(2.35)) versus children without RH (-2.83(1.27)) (p < 0.001). Among children with RH, the myopic shift was higher in RH with macula involvement (-5.03(2.25)) compared to those without macula involvement (-2.77(1.30)) (p < 0.001).

Conclusions: Birth-related RH might cause myopia later in life especially if the macula was involved. Close monitoring is necessary to detect early refractive errors.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Clinically-Evident Bilateral Macular Hole in a Case of Probable Stromme Syndrome

*First Author: Maria Christine **DY***
*Co-Author(s): Manuel Benjamin **IBAÑEZ**, Ronaldo **JARIN**, Sharlene **PRILE***

Purpose: To report a case of a newborn female clinically diagnosed with Stromme syndrome presenting with microcephaly, jejunal atresia, and bilateral macular hole.

Methods: A full-term newborn female presented with microcephaly and diagnosed with jejunal atresia during the first 50 hours of life. Ophthalmologic examination revealed a full thickness and a stage 1B partial thickness macular hole on the right and left eye, respectively. Serial documentation was done using a pediatric retinal imaging system.

Results: Cranial MRI revealed lissencephaly-pachygyria. The rest of the systemic workup was unremarkable. Genetic counseling was done and the ciliopathies panel for 173 genes was negative for Centromere Protein F (CENPF) variants but revealed variants of uncertain significance in the following: ALMS1, DNAH11, DNAH8, DNAKB11, IFT140, IFT52, and ZMYND10. However, features of their associated conditions are absent. Subsequent examinations reported partial regression of the bilateral macular hole with absence of the previously observed hollow-like lesions. The patient is continuously being observed with regular posterior segment documentation and vision monitoring.

Conclusions: Stromme syndrome is a rare autosomal recessive ciliopathy caused by mutations in the CENPF gene characterized by the triad of microcephaly, intestinal atresia, and ocular abnormalities. The prevalence is unknown with only 13 individuals diagnosed as of 2017, mostly with anterior segment dysgenesis and only one reporting posterior segment findings of optic nerve hypoplasia and retinal vessel tortuosity. Of the 13 reported cases, there are no literature accounts for macular hole. Ciliopathies may also present overlapping phenotypes that can be predictors to gene associations in complex hereditary disorders.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Comparison of Conventional Versus Inverse Occlusion in Amblyopia With Eccentric Fixation

*First Author: Vaishali **TOMAR***
*Co-Author(s): Himshikha **AGGARWAL**, Subhash **DADEYA**, Shipra **SHARDA***

Purpose: To compare role of conventional versus inverse occlusion in treatment of amblyopia with eccentric fixation in terms of visual acuity, fixation pattern and stereopsis.

Methods: A prospective randomized interventional comparative study was conducted consisting of patients with unilateral amblyopia with eccentric fixation of >12 years of age. They were randomly divided into two groups. Group C consist of 30 patients who had undergone conventional occlusion therapy and Group I consist of 30 patients who had undergone inverse occlusion therapy. Group C received 6 hours patching/day of the sound eye while group I received 6 hours patching/day of the amblyopic eye. Parameters assessed were best corrected visual acuity, fixation pattern and stereopsis.

Results: The mean ± S.D. of baseline distance visual acuity of amblyopic eye was 1.3 ± 0.27 in group C and 1.32 ± 0.32 in group I(p = 0.784). After 3 months of conventional occlusion in group C and inverse occlusion in group I, the mean ± S.D. of distance visual acuity of amblyopic eye was 1.17 ± 0.15 in group C and 1.1 ± 0.27 in group I. There was no statistical difference between the two groups (p = 0.223) after 3 months of occlusion therapy but within groups, results are statistically significant (p = 0.007 in group C, p < 0.001 in group I).

Conclusions: Both methods of occlusion are equally efficacious in terms of improvement of visual acuity and stereopsis in amblyopia with eccentric fixation in adult patients. But inverse occlusion therapy is more advantageous as there is less compliant issues especially in adult patients. Moreover, it prevents reinforcement of anomalous fixation behavior in

eccentric fixation.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Discovery of Tear Fluid Protein Markers in Preterm Infants With Retinopathy of Prematurity; a Cross-sectional Pilot Study Using Mass Spectrometry-Based Proteomics

*First Author: Alicia Hoi Ying **LIU***
*Co-Author(s): Chung Yin, Benjamin **CHU**, Connie **LAI**, Thomas Chuen **LAM**, Wai-Ching **LAM**, Ying Hon **SZE***

Purpose: Retinopathy of prematurity (ROP) is the leading cause of preventable childhood blindness worldwide. Indirect ophthalmoscopy is the current gold standard for ROP screening, yet it is a stressful procedure for preterm infants and requires experienced ophthalmologists. We aim to study tear proteome as a source of non-invasive biomarkers to assess ROP.

Methods: ROP screening was conducted for infants with birth weight ≤ 1,500g or gestational age of ≤ 30 weeks. Screening began at 4 weeks chronologic age or 31 weeks postmenstrual age, whichever later. ROP diagnosis was made using the International Classification for Retinopathy of Prematurity. Eighteen tear samples, including ROP (n=12) and healthy control (n=6), were collected from both eyes with Schirmer's strip before ROP screening in preterm infants (37.1 ± 3.2 gestational weeks). Sequential window acquisition of all theoretical mass spectra (SWATH-MS) as an emerging unbiased and untargeted data acquisition was conducted with the tear samples.

Results: A total of 862 unique protein groups were quantified from each sample. Antithrombin-III (SERPINC1) protein (fold-change=0.4), at 95% confidence interval (CI)=0.36-0.44 and apolipoprotein A-IV (APOA4) protein (fold-change=0.24), at 95% CI=0.22-0.27 distinguished ROP tear samples from independent age-matched healthy tear samples. The downregulation of antithrombin-III and apolipoprotein A-IV has been reported to correlate with vascular disruption which could contribute to the development of incompletely vascularized retina among ROP infants.

Conclusions: Multiplexed SWATH-MS assay identified two novel potential tear protein markers for ROP. Future investigation on the role of antithrombin-III and apolipoprotein A-IV in retinal angiogenesis will provide better understanding on their role in ROP pathogenesis.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Is Massage or Topical Antibiotics More Effective Than Observation Alone in Congenital Nasolacrimal Duct Obstruction?

*First Author: Brian **MOHNEY***
*Co-Author(s): Ryan **FRANK**, Saraniya **SATHIAMOORTHI***

Purpose: The purpose of this study was to determine if nasolacrimal massage or topical antibiotics are associated with higher rates of resolution compared with observation alone in a population-based cohort of infants with congenital nasolacrimal duct obstruction (CNLDO).

Methods: The medical records of all children aged below 5 years old diagnosed with CNLDO while residing in Olmsted County, Minnesota from 1 January 1995, through 31 December 2004, were retrospectively reviewed for type of management and non-surgical resolution of tearing.

Results: Among the 1,958 infants diagnosed and followed for CNLDO, 516 (26.4%) were merely observed, 506 (25.8%) were prescribed massage alone, 485 (24.8%) were prescribed at least one course of topical antibiotics, 397 (20.3%) were prescribed both topical antibiotics and massage, and 54 (2.8%) had no documented therapy. Non-surgical resolution, occurring in 1,669 (85.2%) during a median follow-up of 3.1 months (range: 1 week–248 months), was 74.6% for the merely observed, 89.7% for those prescribed digital massage, 87.0% for those prescribed antibiotics and 90.7% for those treated with both. This comparison was significant in unadjusted ($p < 0.001$) and multivariable comparisons ($p < 0.001$).

Conclusions: Prescribing topical antibiotics or digital massage for infants with CNLDO in this cohort, individually or in combination, was associated with a higher rate of spontaneous resolution than observation alone.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Long-term Effects of Botulinum Toxin A for Horizontal Concomitant Strabismus in Chinese Children

*First Author: Jingjing **JIANG***

Purpose: Botulinum toxin type A (BTX-A) injection is an alternative to incisional surgery that is fast, less invasive, and preserves a more normal biomechanical construct. This study was undertaken to assess the safety and effectiveness of BTX-A for horizontal concomitant strabismus in children in our institution.

Methods: Records of all children with follow-up at least 12 months who were treated with BTX-A for horizontal concomitant strabismus at Beijing Children's Hospital between December 2014 and February 2021 were reviewed retrospectively. Bilateral injections of BTX-A (Henli, 1.25 IU to 5 IU/0.1ml) were made into the medial or lateral rectus muscles according to the angle of deviation. Motor success was defined as a final misalignment ≤ 10 PD. Sensory success was defined as the presence of any evidence of sensory fusion, distance stereopsis, or near stereopsis at the last visit.

Results: A total of 71 patients were included, with 52 had esotropia and 19 had exotropia. The overall motor success rate was 60.6%. The motor success rate was highest in children with esotropia <50 PD (81.5%). Motor success was better for children with partially accommodative esotropia and acquired non-accommodative esotropia (80%, 83.3%, respectively) than for children with infantile esotropia (47.4%). Compared with the esotropia group, sensory outcomes were significantly better in the exotropia group.

Conclusions: BTX-A appears to be an effective treatment for the management of horizontal strabismus with motor outcomes best in children with acquired smaller-angle esodeviations. Children with exodeviations had better sensory outcomes in this cohort.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Myopic Shift in Pseudophakic Children Operated for Developmental Cataract

First Author: Priyanka .
*Co-Author(s): Siddharth **AGRAWAL**, Akshay **MOHAN**, Vipin **SINGH**, Rajat Mohan **SRIVASTAVA***

Purpose: To assess the role of age and axial length (AL) at the time of surgery on the postoperative refractive change.

Methods: This was a tertiary care center based cross sectional study done on children between 6 months and 12 years undergoing lens aspiration with PCIOL implantation for developmental cataract. Medical records of 27 consecutive children operated over a 4-month period were retrieved and children called for 9-month follow-up. Their refraction at this follow-up was compared to that at 2 weeks post operatively and mean myopic shift calculated. The myopic shift was calculated and compared in 2 groups based on age (< and > 2 years) and in 2 groups based on AL (< and > 21 mm). A p value of <0.05 was considered statistically significant.

Results: Forty eyes were evaluated. The mean age of the patients was 6.01 years (± 4.27 years). The mean myopic shift was 1.69 ± 1.13 diopters at a mean follow-up of 8.78 ± 0.92 months. The mean shift in children younger than 2 years was greater than in those above this age however this difference was not statistically significant (p = 0.227). The shift towards myopia was statistically greater in children with AL < 21 mm compared to those with larger eyes at the time of surgery (p = 0.013).

Conclusions: Greater myopic shift in pseudophakia occurs in children younger than 2 years and in eyes with AL lesser than 21 mm compared to older children and larger eyes. This difference in statistically significant in eyes with AL of 21 mm or lesser.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Outcomes of a Simplified, Fixed Surgical Dosage Calculation for Uncomplicated, Horizontal, Concomitant Strabismus in Adults

*First Author: Tanie **NATUNG***
*Co-Author(s): Laura **LYNGDOH**, Ishita **PANDEY***

Purpose: To evaluate the outcomes of a simplified, fixed surgical dosage calculation for uncomplicated, horizontal, concomitant strabismus in adults.

Methods: Outcomes analysis of a fixed-dose calculation method for uncomplicated, horizontal, concomitant strabismus in adults (≥18 years) wherein 1-mm recession/resection equals 2 PD for lateral rectus and 3 PD for medial rectus. This was a retrospective case series.

Results: The mean age of the patients was 28.50 ± 8.43 years, the mean amount of preoperative deviation was 35.16 ± 9.97 PD, the mean expected correction was 36.26 ± 9.49 PD, and the mean correction achieved was 35.92 ± 10.74 PD. There were 22 monocular exotropias, six monocular esotropias, eight alternate divergent squints, and two alternate convergent squints. There were 20 cases of sensory strabismus (54.28%). There was no statistically significant difference between the expected correction and correction achieved (p = 0.519), meaning that our fixed-dose calculation method was effective. Thirty-five out of 38 patients had successful outcomes as per our criteria of less than 10 PD deviations from straight in primary position. Therefore, the success rate achieved by this procedure was 92.10%. There was no statistically significant correlation between age and the amount of deviation (p = 0.611).

Conclusions: Our case series had a high postoperative success rate in terms of motor alignment. It is hoped that this simplified, fixed-dosage calculation method would help the numerous novice strabismus surgeons, make their starting steps easier and give them the confidence to do strabismus surgeries. They can modify the dosages later as per their own experiences.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Quantitative Measurement of Passive Tension in Intermittent Exotropia and Its Clinical Implications

*First Author: Hyun Jin **SHIN***

Purpose: To evaluate the passive tensions of extraocular muscles (EOMs) in patient with intermittent exotropia (IXT) using quantitative tension measuring device.

Methods: This prospective, case-control study enrolled 25 patients with IXT and age/sex matched 26 controls. We developed tension measuring device based on compression weighing force sensor. Tension was measured as the eyeball was rotated medially or laterally from the resting position under general anesthesia 10 mm away from the direction of force to be tested. The preferred eye for fixation was determined with cover-uncover test.

Results: The passive tension of the IXT and the control group were 60.9 g and 52.1 g for the lateral rectus (LR) ($p = 0.046$), 53.0 g and 48.8 g for the medial rectus (MR) ($p = 0.293$). When the eyes were separately examined in the IXT group, the LR tension of nonpreferred eye for fixation was higher than that of control group ($p = 0.030$), whereas preferred eye for fixation does not ($p = 0.244$). In addition, the relative LR tension of nonpreferred eye compared to the ipsilateral MR tension positively associated with duration of strabismus ($p = 0.042$) and mean angle of near and far deviation ($p = 0 .023$).

Conclusions: The passive tension of LR in patient with IXT could increase in nonpreferred eye for fixation in accordance with longer duration of strabismus and larger angle of deviation. Evaluation of passive EOMs tension could provide useful information about strabismus management and understand its pathophysiology.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Retinopathy of Prematurity: Preferred Anti-vascular Endothelial Growth Factor Treatment Practices Over 10 Years

*First Author: Amy **WANG***
*Co-Author(s): Shuan **DAI***

Purpose: To examine anti-vascular endothelial growth factor (VEGF) use as the first-line therapy for retinopathy of prematurity (ROP) between two time periods: 2012 to 2019, and 2020 to 2022.

Methods: A retrospective survey of 14 questions was distributed to pediatric ophthalmology interest groups internationally. Main outcome measures included the proportion (measured as 20% intervals between 0-100%) of anti-VEGF use as first-line therapy for ROP, and the incidence of repeat anti-VEGF treatment between the two time periods.

Results: Between 2012 and 2019, 66.5% of ophthalmologists reported infrequent use of anti-VEGF as first-line therapy (<20% of total treated babies). 5.7% and 14.2% of ophthalmologists reported anti-VEGF use in 20-40% and 40-60% of total treated babies, respectively. None reported using anti-VEGF in the 60-80% interval; and only 11.4% of ophthalmologists used anti-VEGF in the >80% interval. Between 2020 to 2022, the number of ophthalmologists using anti-VEGF as first-line therapy increased in the 20-40% and >80% intervals (from 5.7% to 15.3%; 11.4% to 17.9%, respectively). In the 60-80% interval, 12.8% of ophthalmologists reported anti-VEGF use post 2020 as compared with none between 2012 to 2019. The majority did not require repeat anti-VEGF treatment in both time periods (51.5% and 55.8%, respectively). The preferred anti-VEGF agent was Bevacizumab administered at the 0.625 mg dose.

Conclusions: The survey outcome suggests there has been an overall increase in anti-VEGF use as first-line therapy worldwide since 2020. The preferred anti-VEGF agent is Bevacizumab administered at 0.625mg. Further studies should be undertaken to standardize anti-VEGF treatment for ROP.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Visual Outcomes After Pediatric Limbal Dermoid Excision: A Retrospective Analysis

*First Author: Hennaav **DHILLON***
*Co-Author(s): Sumita **AGARKAR***

Purpose: To evaluate the visual and refractive outcomes in children who underwent limbal dermoid excision.

Methods: In a retrospective analysis 51 eyes of 50 patients with limbal dermoid, treated with dermoid excision and additional procedures, were studied. Medical records including best corrected visual acuity, refractive error, keratometery, clinical presentation data, age at presentation and surgery, surgical modality and follow up information were reviewed.

Results: There were 32 males and 18 females with a mean age at presentation at 6.39 years (range 10 days-23 years). The left and the right eye were affected equally in the cohort. The mean pre-operative visual acuity was 0.64 logMAR (range 0.00-1.78 logMAR) and the mean post op visual acuity at 6 weeks and final visit were 0.67 and 0.52 logMAR. There was no significant difference between the pre-op and the post-op visual acuity at 6 weeks or final visit (p value: 0.429 and

0.084). The mean pre-op cylindrical error was -4.87 D (SD=3.36) and post op cylindrical error at 6 weeks and final visit were -3.82 D (SD=2.52) and -4.18 D (SD=2.38) respectively. There was a statistically significant difference at 6 weeks visit (p value: 0.19), but not at the final visit (p value: 0.091).

Conclusions: Dermoid excision resulted in a reduced cylindrical refractive error but a corresponding improvement in the best corrected visual acuity was not observed.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Well-Circumscribed Intramuscular Lipoma of Superior Rectus Muscle

*First Author: Phantaraporn **TANGTAMMMARUK***
*Co-Author(s): Mingkwan **LUMYONGSATIEN**, Mongkol **UIPRASERTKUL***

Purpose: To report a rare case with well-circumscribed intramuscular lipoma of superior rectus muscle.

Methods: To present a case report.

Results: Extraocular muscle lipoma is a very rare benign mesenchymal tumor of the orbit. We herein report a Thai woman who presented with one-year progressive proptosis, diplopia and inferior globe displacement of the left eye. A yellowish subconjunctival mass was visible at superior bulbar area on eye examination. Magnetic resonance imaging (MRI) showed a well circumscribed mass confined in superior rectus muscle belly and tendon with fat signal. Debulking surgery was performed to preserve important structures via transconjunctiva and vertical lid split approach. Pathological study demonstrated matured adipose tissue cells, encapsulate by a thin layer of fibrous tissue. In additional to chronic non-specific inflammation in tenon capsule. The patient's symptoms were significant improved after treatment with surgery and short course of systemic steroid at 3 months' follow-up.

Conclusions: The diagnosis of lipoma is based on clinical, imaging and standard histopathologic analysis. In this case report, the histopathological finding of the mass complied with well-circumscribed intramuscular lipoma. This case is the first reported of this type of rectus lipoma.

Refractive Surgery

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Comparing Clinical Outcome of Transepithelial Photorefractive Keratectomy and Traditional Photorefractive Keratectomy in Correction of Moderate Myopia: A Randomized Clinical Trial

*First Author: Kourosh **SHEIBANI***
*Co-Author(s): Nariman **NASSIRI**, Saman **NASSIRI**, Nader **NASSIRI**, Kavousnezhad **SARA***

Purpose: To compare the clinical outcome of transepithelial photorefractive keratectomy (tPRK) and traditional PRK techniques.

Methods: This randomized clinical trial included 120 eyes from 60 consecutive patients with moderate myopia referred to our clinic, in year 2020. Patients were randomly assigned to be operated either using tPRK method (using Wong baker scale) or traditional PRK method.

Results: The mean UCVA improvement was significantly higher in tPRK group ($p = 0.031$), but not significant when comparing the BCVA. Comparison of the mean Spherical Equivalent in one month follow-up indicated significantly higher improvement in the tPRK group ($p = 0.012$). The mean haze in patients undergoing tPRK was significantly lower than the PRK group one month postoperatively ($p < 0.001$). Also, the patients undergoing tPRK experienced significantly less pain ($p = 0.027$) and discomfort ($p < 0.001$) compared to the PRK group. There was no difference between the two groups regarding intraocular pressure after surgery.

Conclusions: The results of our study showed the superiority of the tPRK method over the PRK in some parameters when correcting moderate myopia.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Comparison of Postoperative Haze in Photorefractive Keratectomy Among Patients With Low Myopia and Ablation Depth of Less Than 70 Micron With and Without Mitomycin C Application

*First Author: Nader **NASSIRI***
*Co-Author(s): Nariman **NASSIRI**, Saman **NASSIRI**, Kavousnezhad **SARA**, Kourosh **SHEIBANI***

Purpose: To evaluate the use of 5 seconds of mitomycin C (MMC) application during photorefractive keratectomy (PRK) with ablation depth of less than 70

Micron.

Methods: In this prospective randomized double masked controlled trial, 35 patients with low myopia and an ablation depth of less than 70 micron who were candidates for PRK in both eyes were recruited. One eye of each patient randomly received intraoperative topical MMC 0.02% for 20 to 30 seconds and the other eye received placebo. The main outcome measure was postoperative corneal haze development based on confocal microscopy.

Results: The mean haze based on confocal microscopy readings six months postoperatively was significantly lower in the group receiving mitomycin ($p = 0.003$). The mean endothelial cell density was not significantly different between the MMC group and the control group ($p = 0.006$).

Conclusions: Application of MMC 0.02% reduces the haze formation in eyes with low myopia undergoing PRK with an ablation depth of less than 70 micron without a significant effect on endothelial cell count.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Corneal Epithelial and Stromal Thickness Profile After Photorefractive Keratectomy Using Anterior Segment Optical Coherence Tomography

*First Author: Basitali **LAKHANI***

Purpose: To study the epithelial remodeling after photorefractive keratectomy (PRK) using anterior segment optical coherence tomography (AS-OCT).

Methods: This prospective observational study was performed from October 2018 to March 2020. Eighty-five eyes with simple myopia in age group of 21-38 years and spherical equivalent range of -2.25 to-6 underwent PRK with Mytomicin-C (MMC). Epithelial and corneal thickness maps were acquired by AS-OCT preoperatively and postoperatively at 1 week,1month, 3months and 6 months.

Results: The visual acuity of all patients was 0LogMAR until 6months. We observed epithelial thickening of the cornea at 1 week followed by a decrease at 1 month and a slight increase at 3 months and 6 months. The mean corneal thickness increased from the baseline values in the central 2mm 2 to 5mm and 5 to 7mm zones at 6 months respectively ($p < 0.001$).

Conclusions: The corneal epithelial thickness increased up to 6 months after PRK-MMC and did not have any significant effect on the visual acuity.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Effect of 0.1% Ciclosporin Cationic Emulsion on Ocular Surface After Small Incision Lenticule Extraction

*First Author: Alex Lap Ki **NG***

Purpose: To study the effect of 0.1% ciclosporin in cationic emulsion (CsA CE) on the ocular surface after small incision lenticule extraction (SMILE).

Methods: Thirty patients undergoing SMILE surgery were treated with unpreserved single-dose 0.1% CsA CE daily for one-month post-surgery. Corneal fluorescein staining (CFS) scores, ocular surface disease index (OSDI) scores and tear osmolarity at postoperative Month 1 and Month 3 were compared between the CsA CE treated group and a control group.

Results: At baseline, ocular parameters were similar in the CsA-CE ($n = 26$) and control ($n = 28$) groups. Post-operative CFS scores in the CsA CE group were significantly lower than in the control group at both time-points: Month 1, mean 0.31 ± SD 0.74 for CsA-CE versus 0.75 ± 0.89 for control ($p = 0.02$); Month 3, 0.05 ± 0.21 versus 0.43 ± 0.84 ($p = 0.04$). Compared with the control group, mean CFS scores in the CsA CE group were 0.44 lower at Month 1 and 0.38 lower at Month 3. OSDI scores and tear osmolarity remained normal at Months 1 and 3 in both groups, with no statistically significant between-group differences. Treatment with 0.1% CsA CE was well-tolerated, with 57.7% of patients reporting no instillation site pain. No other adverse effects were reported.

Conclusions: The anti-inflammatory action of CsA CE treatment in the early post-operative period after SMILE resulted in significantly lower CFS scores at Months 1 and 3 compared with the control group, indicating that 0.1% CsA CE treatment reduced ocular surface damage.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Functional Outcomes and Reading Speeds Following Presbyond LBV Using Non-Linear Aspheric Ablation Profiles Combined With Micro-Monovision

*First Author: Smith **SUTE***
*Co-Author(s): Sheetal **BRAR**, Sri **GANESH***

Purpose: To report the functional outcomes and reading speeds following Presbyond laser blended vision (LBV) using non-linear aspheric ablation profiles with micro-monovision with the Carl Zeiss Meditec MEL 90 Platform.

Methods: Data was collected retrospectively for all patients who underwent Presbyond LBV, using the MEL 90 excimer laser. Post-operative binocular uncorrected distance and near visual acuity, stereo-acuity, contrast sensitivity and reading performance was compared with pre-op values measured with patient's progressive glasses. Mean follow-up was 6 ± 1.2 months.

Results: Sixty eyes of 30 patients (mean age 50.47 ± 6.43 years) were included. Of these, 18 patients were hyperopic, and 12 patients were myopic with mean SE of 1.28 ± 1.38 D and -2.84 ± 1.86 D respectively. At 6 months, the mean binocular UDVA was ≥-0.03 ± 0.06 LogMAR and the mean binocular UNVA of ≥0.22 ± 0.04 LogMAR. The uncorrected reading speeds (words per minute) at the preferred reading distance of 46.17 cm, 60 cm and 80 cm were significantly better(p-value<0.01), whereas the smallest letter size and reading acuities were comparable to the pre-operative values ($p > 0.05$ for all distances). Uncorrected contrast sensitivity log values showed mild reduction, however, this was not statistically significant for any spatial frequency. There was a significant reduction in post uncorrected stereopsis to 89.67 arc sec, compared to pre-op corrected stereopsis (50.67 arc sec); however, it recovered fully with near correction (53.33 arc sec, $p > 0.05$ compared to pre).

Conclusions: Presbyond LBV resulted in significantly better reading speeds and satisfactory functional visual outcomes, without a permanent loss in stereo-acuity and contrast sensitivity 6 months post-operatively.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Impact of Corrected Refractive Power on Corneal Denervation and Ocular Surface in SMILE and LASIK

*First Author: Chang **LIU***
*Co-Author(s): Isabelle Xin Yu **LEE**, Molly Tzu-Yu **LIN**, Yu-Chi **LIU**, Jodhbir **MEHTA***

Purpose: To evaluate the impact of the corrected manifest refractive spherical equivalent (MRSE) on corneal denervation and ocular surface following SMILE and LASIK.

Methods: A total of 86 eyes received SMILE or LASIK were divided into low-to-moderate (MRSE less than -6 D) and high myopia (MRSE greater than -6 D) groups. In vivo confocal microscopy (IVCM) examination and clinical assessments were performed preoperatively and 1, 3, 6, and 12 months postoperatively. Corneal denervation was evaluated by calculating 1-(1-month nerve parameters/pre-operative nerve parameters).

Results: The high myopia group presented with significantly greater reduction in CNFA and CFracDim after SMILE compared to the low-to-moderate myopia (both $p < 0.05$). There was a significant and negative correlation between the corrected MRSE and the reduction of CNFD, CNBD, CNFL, CNFA and CFracDim after SMILE ($r = -0.66, -0.47, -0.61, -0.55, r = -0.38$; all $p < 0.05$). The corrected MRSE showed a significant and negative correlation with the reduction of CNBD, CTBD and CNFA, and a significant and positive correlation with the reduction of CNFW after LASIK ($r = -0.37, r = -0.42, r = -0.41, r = 0.43$, all $p < 0.05$). Compared to SMILE group, LASIK had a greater extent of CNBD and CNFA reduction for every diopter increased in corrected MRSE. Compared to low myopic, high myopic SMILE resulted in significantly lower TUBT in 1, 6 months (both $p < 0.05$). The postoperative reduction of CNFA and CFracDim was significantly associated with the postoperative Schirmer I test (both $p < 0.001$).

Conclusions: Corneal denervation is related to the corrected refractive power in both SMILE and LASIK. With the same refractive power of correction, LASIK led to more prominent corneal denervation.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Knight with or without Armor: Ocular Viscoelastic Devices (OVD) vs OVD Free Implantation of ICL

*First Author: Pavitra **PATEL***
*Co-Author(s): Nitin **BALAKRISHNAN***

Purpose: To ascertain the safety and efficacy outcomes of OVD vs OVD Free (OVDF) implantation (under irrigation) of Implantable Collamer Lens (ICL).

Methods: Based on OVD use during implantation, 130 eyes who had undergone ICL implantation for myopia correction were divided into 2 groups. Groups were compared postoperatively in terms of intra ocular pressure (IOP), corneal endothelial cell loss, corrected distance visual acuity (CDVA), spherical equivalent (SE), ICL vault.

Results: A rise in IOP >20 mmHg at 4 hours was noted in 66.0% and 2.6% eyes in the OVD and OVDF groups respectively ($p < 0.001$). There was no significant difference in the LogMAR CDVA or SE changes between the two groups ($p <0.005$). In the OVDF, mean endothelial cell loss was 4.6% and 3.2% at 3 months respectively in the OVDF and OVD groups ($p = 0.187$). No significant difference in the mean postoperative vault between the 2 groups was noted ($p < 0.001$).

Conclusions: OVDF implantation of ICL is a safe and efficient method and can help avert postoperative IOP spike.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Outcomes of Refractive Implantable Lens Implantation After Deep Anterior Lamellar Keratoplasty

*First Author: Samruddhi **DANI***
*Co-Author(s): Jagadeesh Kumar **REDDY***

Purpose: To assess the refractive outcomes and effect on the corneal endothelium after refractive implantable lens (RIL) implantation in patients post deep anterior lamellar keratoplasty (DALK).

Methods: This was a retrospective study on 10 eyes of 10 patients who had undergone DALK and subsequently underwent toric RIL implantation. Patients who had undergone DALK, with a stable refraction at 6 months after suture removal, were chosen to undergo RIL implantation. Preoperatively, patients underwent evaluation including uncorrected and best corrected visual acuity, refraction, slit lamp evaluation, specular microscopy, autokeratometry, corneal tomography, optical biometry, white-to-white measurement and fundus evaluation. Post-operatively, patients were assessed at 1 month, 6 months and 1 year.

Results: There was a significant improvement in the average mean refractive spherical equivalent from -7.8D pre-operatively to -0.6D at 1 year (p = 0.001) and the cylindrical acceptance from 5.5D pre-operatively to 0.2D at 1 year post-operatively (p = 0.002). Mean logMAR uncorrected distance visual acuity improved significantly from 1.1 pre-operatively to 0.3 at 1 year (p = 0.02). The mean endothelial cell density declined by 2.22% at 1 year, suggesting no significant adverse impact on the endothelium (p = 024).

Conclusions: RILs are effective and safe for visual rehabilitation of patients with high ametropia following DALK, with excellent refractive outcomes and no adverse effects on the corneal endothelium.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Outcomes of SmartSight for Myopic-Astigmatism Treatment With SCHWIND ATOS Comparing Low Energy Asymmetric Spacings With High Energy Symmetric Spacings

*First Author: Kishore **PRADHAN***
*Co-Author(s): Samuel **ARBA MOSQUERA***

Purpose: To compare the impact of low energy asymmetric spacings versus high energy symmetric spacings in the outcomes of SmartSight lenticule extraction in the treatment of myopic astigmatism.

Methods: The first 70 eyes of 35 patients consecutively treated with SmartSight lenticule extraction using low energy asymmetric spacings (Group A; Study group) were compared to the last 70 eyes of 35 patients consecutively treated with SmartSight lenticule extraction using high energy symmetric spacings (Group S; Controls). Monocular corrected distance visual acuity (CDVA), uncorrected distance visual acuity (UDVA) were assessed preoperatively and postoperatively. Refractive changes have been determined in terms of changes in subjective manifest refraction.

Results: Laser Energy was -25 ± 2nJ lower for asymmetric treatments; Spot distance was +0.3 ± 0.1 µm larger for asymmetric treatments; Track distance was -0.8 ± 0.1µm shorter for asymmetric treatments. Postoperative Cyl was -0.07 ± 0.03D lower for asymmetric treatments; achieved change in toricity was -0.29 ± 0.15D higher for asymmetric treatments. Postoperative UDVA was -0.04 ± 0.01 logMAR better for asymmetric treatments; Postop CDVA was -0.03 ± 0.01 logMAR better for asymmetric treatments. Difference between postoperative UDVA and preoperative CDVA was +0.4 ± 0.1 lines better for asymmetric treatments; change in CDVA was +0.3 ± 0.1 lines better for asymmetric treatments. Postoperative EPI was +3 ± 1 µm thicker for asymmetric treatments; Change in EPI was +2 ± 1 µm more for asymmetric treatments.

Conclusions: The use of low energy asymmetric spacings may further improve the outcomes of SmartSight lenticule extraction in the treatment of myopic astigmatism with SCHWIND ATOS compared to the use of high energy symmetric spacings. A massage/ironing technique has been applied potentially increasing satisfaction levels. The central epithelial thickness barely increased.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Small Incision Lenticule Extraction and Visumax 800: Experience in First 200 Cases at a Private Ophthalmic Practice

*First Author: Colin **CHAN***
*Co-Author(s): Chris **HODGE**, Michael **LAWLESS**, Gerard **SUTTON***

Purpose: To report visual and refractive outcomes in patients undergoing small incision lenticule extraction and the Visumax 800 (SMILE Pro) refractive laser procedures. Additionally, to identify a possible learning curve with respect to surgery centration, decentration from intended target was evaluated.

Methods: Subjects who underwent SMILE Pro surgery were followed at 3 weeks as per local practice standards for routine visual and refractive variables. Centration represents a key introduction for the Visumax 800. Decentration from intended location

was measured in a subset of patients with results presented. The cohort was split evenly per surgeon into early and late cohorts for consideration of a unit learning curve.

Results: A total of 200 consecutive SMILE Pro procedures of 104 patients were followed. Mean preoperative spherical equivalent (SE) was -5.21 ± 1.87Ds (Range -2.38 to -10.38Ds). Postoperatively, mean absolute difference from intended SE target was 0.28 ± 0.32Ds with 85.5% within ± 0.5Ds of SE target. 85.1% of eyes reached 6/7.5 or better at 2 weeks unaided. Mean laser time was 10.45 ± 0.75 seconds (range 9-18 seconds). The mean vector decentration was 0.15 ± 0.07mm with 75.9% of eyes indicating decentration ≤0.20mm (range 0 to 0.35mm). There was no statistically significant difference in any refractive outcome or decentration variable between early and late cohorts.

Conclusions: In this real-world assessment of patients undergoing SMILE surgery with the Visumax 800, visual and refractive outcomes appear to match best practice. The use of the new Visumax 800 indicated no additional difficulty or learning curves for all surgeons albeit, each surgeon had extensive prior experience completing SMILE surgery.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Stereoacuity Changes After Small Incision Lenticule Extraction

*First Author: Vandana **MAGANTY***
*Co-Author(s): Kiran **KUMAR***

Purpose: To study changes in near and distance stereoacuity after small incision lenticule extraction (SMILE)

Methods: Prospective interventional study was done where near and distance stereoacuity was tested in 30 patients (60 eyes) who underwent SMILE surgery for myopic correction and got unaided vision of 0.00 LogMar or better in each eye. Testing was done before and after surgery using near and distance Randot tests.

Results: Thirty patients (60 eyes) had a mean (± SD) refractive error of -4.25 (± 1.50) DS OD, -4.50 (± 1.50) DS OS and anisometropia of 0.45 (± 0.51) DS. The median pre-SMILE stereoacuity for near was 70 arcsec and for distance was 200 arcsec, both of which improved after SMILE to 30 and 60 arcsec, respectively ($p < 0.001$). Anisometropia ≥1D had significantly worse stereoacuity for distance in both the pre and post SMILE period.

Conclusions: Near and distance stereoacuity shows improvement after SMILE. Degree of anisometropia is associated with stereoacuity, not the amount of refractive error corrected.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Visual Rejuvenation of Dynamic Range of Focus Using Laser Scleral Microporation in Emmetropic Presbyopes

*First Author: Robert **ANG***

Purpose: To evaluate the visual outcomes and effect on Dynamic Range of Focus (DRoF) of emmetropic presbyopic patients who underwent Laser Scleral Microporation (LSM).

Methods: LSM was performed in critical zones in four quadrants using an Er:YAG laser for 27 emmetropic presbyopes. Visual acuity was measured with and without correction at distance, 60cm and 40cm. Add power was measured at 40cm. Patient reported outcomes were assessed using a QOL questionnaire.

Results: LSM demonstrated improved DRoF in all ranges. DCIVA and DCNVA improved from 0.16 and 0.46 to 0.06 and 0.24 respectively post-LSM with no reduction in distance vision at 12 months. Near vision comfort was improved based upon patient reported outcome measurements.

Conclusions: Early results suggest LSM to be a safe and effective procedure for restoring DRoF in presbyopes in all ranges. Early results also suggest that LSM can improve intermediate and near vision without sacrificing distance vision.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 409 (Level 4)

Visual, Refractive and Biomechanical Comparison of 110- and 145-µm SMILE Cap Thickness: A Comparative Randomized Contralateral Eye Study

*First Author: Siamak **ZAREI-GHANAVATI***
*Co-Author(s): Siamak **ZAREI GHANAVATI***

Purpose: To assess the visual, refractive and biomechanical outcomes of small incision lenticule extraction (SMILE) with two different cap thicknesses.

Methods: Thirty-four patients were included in this prospective, randomized, contralateral eye study. Subjects were randomized to receive SMILE surgery with a 110-µm cap thickness in one eye and 145-µm cap thickness in the fellow eye. Uncorrected and corrected distance visual acuity, contrast sensitivity (CS), total higher-order aberrations (THOAs), corneal biomechanical properties, the persistence of hyper-reflective line at the interface layer, and hardness of lenticule dissection were compared 3 months after surgery.

Results: Postoperative refractive and visual outcomes, contrast sensitivity (CS), and total higher-order aberrations (THOAs) were similar between the two groups. At 3 months postoperatively, there was a significant difference in Corvis Biomechanical Index (CBI); stiffness parameter at first applanation (SP A1), and Integrated Radius between cap thicknesses of 110 and 145 µm (all P<0.05).

Conclusions: Eyes with thicker corneal cap has no advantage regarding visual acuity, contrast sensitivity and reducing THOAs. However, higher cap thickness may result in better corneal biomechanical properties, postoperatively.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Artificial Intelligence and Simulation Driven "Pathfinder" in Refractive Surgery

*First Author: Pooja **KHAMAR***

Purpose: To demonstrate the accuracy of AcuSimX, the first-ever artificial intelligence (AI) and inverse finite element methods (iFEM) simulation-based prediction tool for estimating postoperative (post-op) corneal stiffness (CS) after laser refractive surgery using preoperative (pre-op) data, in SMILE, LASIK and PRK

Methods: A total of 529 eyes of 529 patients were randomly divided into training (n = 371) and test (n =158) cohorts. We evaluated pre-op data of 12 eyes (10 SMILE and 2 LASIK eyes) that developed ectasia after surgery. An iFEM virtual patient-specific corneal model was built from pre-op Corvis-ST deformation and Pentacam HR tomography (OCULUS Optikgerate Gmbh) data. iFEM used virtual model and planned aspheric ablation profile to estimate post-op CS. The computed post-op CS was refined using Lasso regression AI equation derived from training cohort and was validated on test cohort. An ectasia risk assessment nomogram was built to differentiate ectasia from normal eyes using a decision tree AI.

Results: The mean absolute error was 6.24 N/m and the intraclass coefficient 0.84 [95% confidence interval was 0.80-0.87] in the training cohort of 371 eyes. The mean absolute error was 6.47 N/m and the intraclass coefficient 0.84 [0.78-0.89] in the test cohort of 158 eyes. The actual post-op CS measured in-vivo, and the software-computed post-op CS was statistically similar (p > 0.05) in ectasia. The ectasia risk assessment nomogram could differentiate all ectasia from normal eyes.

Conclusions: An excellent intraclass coefficient (>0.84) demonstrated the accuracy of predicted post-op CS, thus suggesting that AcuSimX could help in predicting and preventing ectasia.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Does Cycloplegia Relieve Discomfort Following Photorefractive Keratectomy?

*First Author: Deniz **KILIC***

Purpose: To assess the effectiveness of topical cycloplegic eye drops in reducing post-photorefractive-keratectomy (PRK) eye pain.

Methods: A total of 32 patients who were eligible for bilateral PRK surgery were enrolled in this prospective controlled research. After the corneal epithelium was removed excimer laser was performed. A plano-bandage contact lens was inserted. Topical fluorometholone and moxifloxacin eye drops were used as post-operative treatments for both eyes, four times per day. All patients were advised to use artificial tear drops every hour. One eye of each subject received cycloplegic drops, while the other received artificial tear drop as placebo drops for three times a day. Each patient was followed up at 1st hour,24th hours,48th hours and 1st-week after surgery. At each visit they were required to complete a visual analogue scale (VAS) of pain, photo, and blurring discomfort.

Results: Mean VAS scores at the first postoperative hour did not show any significant difference between cycloplegic and controls eyes (p > 0.50). However, the cycloplegic eyes had significantly lower mean VAS scores at 24h and 48h postoperatively(p < 0.001,0.01). In the first postop day,13.3% of the control eyes had mild, 66.7% moderate and 20% had severe pain, while 30.0% of the cyslopelgic eyes had mild and 70% had moderate pain (0% severe).All cycloplegic eyes had photophobia and blurring during the 3 postoperative days, which rapidly improved after cessation of the cycloplegic drops.

Conclusions: Cyclopegic eye drops are effective in reducing pain and discomfort after removal of the corneal epithelium in PRK and corneal cross linking with tolerable side effects which rapidly improves after cessation of the drops.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Risk Factor Analysis for Modifiable Tomographic Biomechanical Index Score

*First Author: Gayathri **GOVINDASAMY***
*Co-Author(s): Yu-Chi **LIU**, Cheng Yi **LOO**, Jod **MEHTA***

Purpose: Cornea biomechanic assessment with the CORVIS ST is an integral part of the refractive assessment. However, in certain cases the Corvis Biomechanical factor (CBI) and Tomographic Biomechanical Index (TBI) values may be unstable. The

aim of this study is to study the risk factors for unstable TBI, and the effect of dry eye treatment on these values.

Methods: All consecutive refractive patients from September 2019 to April 2022 were assessed for consideration for refractive surgery, with manifest and cycloplegic refraction, history, tomography and corneal biomechanic assessment using the CORVIS ST. Patients with unstable TBI score were placed on a specific topical regime and re-assessed 3 months later. A decision was then made as to whether to proceed for laser vision correction (LVC).

Results: The eyes were divided into two groups; normal TBIs and abnormal TBIs of more than 0.28. 987 eyes were assessed and 12.7% had abnormal TBI values. Dry eye treatment was instituted in the abnormal group and then reassessed. 28% of those with an initial abnormal TBI, normalized post treatment. 32% still had abnormal TBI following topical/oral therapy. 66 eyes (75% of those with abnormal initial TBI) were subsequently able to undergo LVC following treatments of their dry eye disease, causing stromal dehydration.

Conclusions: The TBI is a valuable tool in detecting patients at risk for ectasia post LASIK. However, it is important to note that even patients with mild dry eye disease may present with an unstable TBI score. This is modifiable by topical hydration therapy.

Feb 26, 2023 (Sun)
11:00 – 12:30
Venue: MEETING ROOM 409 (Level 4)

Topography Guided Ablation With Crosslinking - iTrace as a Tool in Decision Making

*First Author: Ramya **RAVINDRAN***
*Co-Author(s): Devyani **GADRE***

Purpose: To study the role of ray tracing aberrometer in the surgical decision making in patients of progressive keratoconus.

Methods: A retroprospective study of 15 patients with documented progressive keratoconus. The role of higher order aberrations in deciding the need for topography guided ablation combined with collagen crosslinking vs only collagen crosslinking was studied.

Results: Fifteen eyes of 15 patients were included in the study, with 7 females and 8 male patients. All these patients had a progression noted on Sirius scans-defined as an increase in the K max of 1D or more and associated increase in corneal thinning of 15 microns or more. All eyes were subjected to iTrace ray tracing and 10 out of 15 eyes were subjected to TcAT cxl while in 5 eyes only CXL was performed on the basis of higher order aberrations and lens compensation seen on aberrometer.

Conclusions: There seems to be a role for ray tracing aberrometer in deciding between topography guided ablation combined with collagen crosslinking (TCAT-CXL) vs only collagen crosslinking in early or mild progressive keratoconus where lens aberrations nullify aberrations induced by the corneal ectasia.

Retina (Medical)

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Comparison of Intravitreal Ranibizumab+triamcinolone Versus Ranibizumab Monotherapy in Treatment Naïve Macular Edema in Diabetic Retinopathy and Retinal Vein Occlusions

*First Author: Reshma **PADMARAM***
*Co-Author(s): Monika **KAPOOR**, Mahesh **KUMAR**, Manjushree **SUNDI***

Purpose: To compare the visual and anatomical outcomes and safety of intravitreal ranibizumab (0.05 mL) +triamcinolone (2mg) combination therapy with ranibizumab monotherapy in treatment naïve DME & RVO patients with CMT more than 500 microns.

Methods: It was a single center prospective study done on 54 eyes of 50 patients with 3 months follow up. Baseline IOP, best corrected visual acuity anterior segment and fundus exams were done. Subjects were grouped to A and B after simple randomization, Group A received combination injection in a single shot and B Ranibizumab monotherapy. OCTs were obtained from Spectralis HRA OCT and Pro-re-Nata regimen was followed. Data charts were made, and analysis was done using appropriate statistical tests using SPSS software.

Results: Both groups were matched for age, gender and diagnosis. At 3 weeks,3 lines improvement was noted in 19% in A and 3.6% in B. At 3 months,3lines improvement was noted in 42% (p <.002) with single injection in group A, whereas in group B it was only 4.3%. CMT reduction post 2 months averaged 61.36 + />-150 microns in A which is higher than -30.16 ± 179 group B. Average 2.1 injections were required for B for the same effect. Although the IOP at different points of consideration was higher for the combination group, it was within the normal range. Development or cataract progression was also not noted.

Conclusions: Combination therapy was safe and was found to have significant gain in visual acuity and improved CMT reduction with lesser number of injections thereby reducing the treatment burden and better cost effectiveness.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

DX-211: A Phase 2 Study Evaluating the Efficacy and Safety of Oculis OCS-01 as a Topical Therapeutic for Diabetic Macular Edema

*First Author: Timothy **LAI***
*Co-Author(s): Joanne **CHANG**, Riad **SHERIF***

Purpose: DX-211 is a phase 2 study aimed to assess the efficacy and safety of OCS-01, a novel topical formulation of dexamethasone, in the treatment of diabetic macular edema (DME).

Methods: DX-211 was a prospective, multi-center, randomized, double-masked, parallel group, vehicle-controlled study. Patients with DME duration of <3 years, central macular thickness (CMT) of ≥310µm and ETDRS best-corrected visual acuity (BCVA) score between 24 to 73 letters in the study eye were recruited. Patients were randomized in a 2:1 ratio to OCS-01 or matching vehicle eye drops, 1 drop tds for 12 weeks. Patients were then followed for an additional 4 weeks of observation period.

Results: A total of 144 patients were randomized with 133 (92.3 %) patients completed the study. Mean CMT showed a greater reduction in the OCS-01 group than the vehicle arm at Week 12 (-53.6 µm vs -16.8 µm, p = 0.0115). Mean CMT also showed significant differences between groups favoring OCS-01 from Week 2 to 12. Mean change in BCVA from baseline to Week 12 was higher in the OCS-01 group than the vehicle group (+2.62 vs 1.04 letters, p = 0.125). Local ocular tolerability was not significantly different between the OCS-01 and the vehicle group with the exception of rising in intraocular pressure being more common in OCS-01.

Conclusions: DX211 met its pre-defined efficacy endpoints and showed that OCS-01 eye drops were more effective than vehicle in improving CMT and BCVA in DME patients. OCS-01 is now undergoing further develop in phase 3 clinical trials.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Faricimab in Neovascular Age-Related Macular Degeneration: Year 1 Results With Week 12 Fluid Data From Phase 3 TENAYA and LUCERNE Trials

*First Author: Gemmy **CHEUNG CHUI MING***
*Co-Author(s): Robyn **GUYMER**, Aachal **KOTECHA**, Philippe **MARGARON**, Audrey **SOUVERAIN**, Ming **YANG***

Purpose: To assess the anatomical outcomes of faricimab (a dual angiopoietin-2/vascular endothelial growth factor-A inhibitor) compared with aflibercept in patients with neovascular age-related macular degeneration, during the initial dosing phase of TENAYA/LUCERNE trials (through week 12), when patients in both treatment arms received same number of injections.

Methods: TENAYA/LUCERNE (NCT03823287/ NCT03823300) were double-masked, active comparator–controlled, 112-week phase 3 trials. Treatment-naïve patients (pooled N = 1329) were randomized 1:1 to faricimab 6.0 mg up to every 16 weeks (Q16W; n = 665, based on disease activity at weeks 20 and 24) after 4 initial Q4W doses or aflibercept 2.0 mg Q8W (n = 664) after 3 initial Q4W doses.

Results: Faricimab up to Q16W offered durable vision gains that were non-inferior to aflibercept Q8W at weeks 40–48, with 79% of faricimab-treated patients on ≥ Q12W and 45% on Q16W dosing at week 48. Faricimab resulted in a greater mean reduction in central subfield thickness from baseline at week 12 (–145.4 µm) compared with aflibercept (–132.9 µm). The proportions of patients with no subretinal fluid (SRF) and no retinal fluid (SRF or intraretinal fluid) were greater with faricimab through week 12 versus aflibercept. Faricimab was well tolerated, with no reported vasculitis or occlusive retinitis.

Conclusions: TENAYA/LUCERNE data demonstrate that, through week 48, faricimab up to Q16W offered durable vision gains/meaningful anatomical improvements that were comparable with aflibercept Q8W and was well tolerated. When treated Q4W through week 12, faricimab resulted in a more rapid improvement in anatomical outcomes compared with aflibercept.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Foveal Avascular Zone Parameters Predict Progression of Diabetic Retinopathy

*First Author: Rose **TAN***
*Co-Author(s): Charumathi **SABANAYAGAM**, Kelvin Yi Chong **TEO**, Tien **WONG***

Purpose: To evaluate optical coherence tomography angiography (OCTA) baseline parameters of the retinal microvasculature and choriocapillaris in predicting the progression of diabetic retinopathy (DR).

Methods: We included 265 eyes (160 patients) in a one-year longitudinal study. OCTA examination was performed with a swept-source OCTA (Plex-Elite, Carl Zeiss Meditec, Dublin, USA). Perfusion density (PD), vessel density (VD), and foveal avascular zone (FAZ) of superficial vascular complex (SVC), deep vascular complex (DVC), and choriocapillaris flow void density,

size, and number were evaluated on 3 x 3 mm2 scans. DR progression was defined as a worsening of at least 2 steps on the ETDRS severity scale. Multivariate analysis was performed using a generalized estimating equation accounting for inter-eye correlation, and adjusting with age, duration of diabetes, pulse rate, mean arterial pressure, HbA1c, cholesterol/HDL ratio, and baseline DR severity.

Results: There were 115 eyes (43.4%) with no DR, 91 eyes (34.3%) with mild DR, and 59 eyes (22.3%) with moderate DR at baseline. Forty-eight eyes (18.3%) had DR progression during the follow-up time. In the multivariate model, eyes with DR progression had a greater baseline FAZ area (OR: 6.66, 95%CI: 1.71 – 25.04, p = 0.006), perimeter (OR: 1.51, 95%CI:1.15 – 1.98, p = 0.003), and circularity (OR: 3.48, 95% CI: 1.31 – 9.23, p = 0.01) in SVC. PD, VD in both the SVC and DVC, and choriocapillaris flow void disruption were not associated with DR progression in our model.

Conclusions: Our longitudinal study showed that changes in FAZ dimensions and morphology were predictive of DR progression.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Is Serum Lipid a Reliable Biomarker in Retinal Vein Occlusion?

*First Author: Mohamed **AZZAM***
*Co-Author(s): Abrar **AHMED**, Muhammad **MONIRUZZAMAN***

Purpose: To evaluate the connection between the modifiable risk factor, serum lipids in retinal vein occlusion.

Methods: Brief evaluation in previous studies. Our own study including patients presented with retinal vein occlusions from 2021 to 2022 were evaluated. Any patients with other associated risks such as diabetes, hypertension, among others, were excluded to eliminate bias. Fasting lipid profile (HDL, LDL, Total Cholesterol, Triglycerides) were done and data were evaluated.

Results: Data of 30 patients were evaluated. Our results will be presented at the talk.

Conclusions: RVO is a disease with many etiological factors. It may affect population of various age ranges. Our study focused on the studying the modifiable risk factor (serum lipid) for this disease. Study reveals that Serum TC, serum TG, positive correlation with RVO. No significance could be established between HDL and LDL cholesterol with RVO. Timely diagnosis followed by adequate treatment may impact lipid having retinal vein occlusion.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Key Clinical Pearls for Evaluating Surgical Candidates, and Patient Preference for Port Delivery System With Ranibizumab

*First Author: Andrew **CHANG***
*Co-Author(s): Ashwini **BOBBALA**, Marta **FIGUEROA**, Dominic **HEINRICH**, Nancy **HOLEKAMP**, Alicia **MENEZES***

Purpose: The port delivery system with ranibizumab (PDS) includes a refillable ocular implant for the continuous delivery of a customized formulation of ranibizumab. Here, we present key clinical pearls for the preoperative evaluation of PDS surgical candidates, and patient preference for the PDS versus intravitreal ranibizumab injections.

Methods: The phase 3 Archway trial (NCT03677934) assessed the safety and efficacy of PDS with ranibizumab 100 mg/mL with fixed refill-exchanges every 24 weeks versus intravitreal ranibizumab 0.5 mg injections every 4 weeks in patients with neovascular age-related macular degeneration. Treatment preference was evaluated in the PDS arm at Week 40 using the PDS Patient Preference Questionnaire.

Results: PDS candidates require careful preoperative evaluation, which includes a comprehensive review of medical and surgical history to identify factors that may negatively affect conjunctival health and impact suitability for PDS implantation. Preoperative examination of the conjunctiva and Tenon's capsule should be performed at the slit lamp with a cotton swab to assess tissue mobility, scarring and translucency/thickness. Eyelid health should also be evaluated, with attention to lid hygiene, position and mobility, which may affect postoperative infection risk and wound healing. In Archway, 93.2% of PDS-treated patients (n=234) preferred ranibizumab delivered via the PDS versus intravitreal injections. Patients' top reasons for preferring the PDS included fewer treatments, less discomfort and less worry/ nervousness.

Conclusions: To ensure optimal surgical outcomes for PDS candidates, careful preoperative evaluation is critical. PDS-treated patients demonstrated a notable preference for the PDS over intravitreal injections. Consistent attention to the clinical pearls presented may help to maintain high levels of patient satisfaction.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Key Surgical Pearls for Best Practice During Port Delivery System With Ranibizumab Implant Insertion Procedure

*First Author: Young Hee **YOON***
*Co-Author(s): Philip **JAYCOCK**, Varun **MALHOTRA**, Alicia **MENEZES**, Natasha **SINGH**, Mark **WIELAND***

Purpose: The port delivery system with ranibizumab (PDS), US-FDA approved for treatment of neovascular age-related macular degeneration (nAMD), includes a refillable ocular implant surgically placed at the pars plana for continuous intravitreal release of a customized ranibizumab formulation. We present key pearls for best practice during the PDS implant insertion procedure.

Methods: The phase 2 Ladder (NCT02510794) and phase 3 Archway (NCT03677934) trials compared the PDS with monthly intravitreal ranibizumab 0.5 mg for nAMD, with the Portal extension trial (NCT03683251) currently evaluating long-term safety and tolerability of PDS 100 mg/mL.

Results: In clinical trials, 2.0% of PDS patients experienced an episode of endophthalmitis, with most cases associated with concurrent or preceding conjunctival erosion or conjunctival retraction. Steps to help mitigate these adverse events include precise conjunctiva and Tenon's capsule handling during peritomy and closure, which is critical to preserve tissue integrity over the implant; key pearls include use of non-toothed forceps, planning of scleral incision in relation to conjunctival incision, achieving adequate tissue laxity, and scleral anchoring of the conjunctiva and Tenon's capsule to the anterior limbus. Other key steps for surgical success are a final scleral incision size of 3.5 mm and edge-to-edge pars plana laser ablation to ensure secure implant fit and postoperative hemostasis.

Conclusions: The PDS implant insertion procedure requires careful attention to elements not often emphasized in vitreoretinal procedures. Meticulous scleral incision with laser ablation and proper handling of the conjunctiva and Tenon's capsule are critical for surgical success. Clinical trial learnings have informed the evolution of PDS surgical methodologies, optimizing patient outcomes.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Macular Microvasculature in X-Linked Retinoschisis: Optical Coherence Tomography and Optical Coherence Tomography Angiography Study

*First Author: Hye Ji **KWON***
*Co-Author(s): Yoon Jeon **KIM**, You Na **KIM**, Joo Yong **LEE**, Junyeop **LEE**, Young Hee **YOON***

Purpose: The study aimed to evaluate the macular microvasculature of X-linked retinoschisis (XLRS) and identify correlations between vascular changes, structural changes, and functional outcome.

Methods: Genetically confirmed XLRS patients and heathy controls underwent complete ophthalmic examination, dilated funduscopic examination, optical coherence tomography (OCT) and optical coherence tomography angiography (OCTA). Schisis distribution, outer plexiform layer discontinuation, photoreceptor layer thickness (PRLT), and photoreceptor outer segment (PROS) length were reviewed using OCT. Vascular flow density and foveal thickness at foveal and parafoveal area were measured using OCTA.

Results: A total of 17 eyes of nine XLRS patients and 22 eyes of 11 controls were examined from July 2018 to August 2020. Flow density in the deep capillary plexus (DCP) at foveal and parafoveal area decreased in XLRS patients compared to controls ($p = 0.014$ and $p = 0.001$, respectively), while foveal avascular zone (FAZ) area and perimeter remarkably increased ($p = 0.015$ and $p = 0.001$, respectively). While outer and total retinal layers were significantly thicker in XLRS, inner retinal layer was thinner with reduced PRLT and shortened PROS length ($p < 0.001$ and $p < 0.001$, respectively). Foveal flow loss in DCP, FAZ enlargement, thinner inner retina and PRLT, and shortened PROS length correlated with best-corrected visual acuity.

Conclusions: XLRS eyes exhibit decreased flow density in the DCP and variable FAZ with enlarged perimeter. Structural deterioration of the photoreceptor best reflects the degenerative changes, while microvascular alteration shows considerable correlation with functional outcome in XLRS.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Neurodevelopmental Outcomes for Retinopathy of Prematurity: A Nationwide Database Study

*First Author: Yen-Ting **CHEN***
*Co-Author(s): Kuan-Jen **CHEN**, Yu-Chuan **KANG**, Nan-Kai **WANG**, Wei-Chi **WU**, Laura **LIU***

Purpose: To evaluate the neurodevelopmental outcomes in premature infants who received intravitreal anti-vascular endothelial growth factor (anti-VEGF) injections to treat retinopathy of prematurity (ROP).

Methods: This study was conducted retrospectively using the database from the Taiwan Premature Infant Follow-up Network. Demographic data, systemic risk factors, ROP status, and neurodevelopmental assessment using the Bayley Scales of Infant and Toddler Development, Third Edition (Bayley-III) were collected. Patients were divided into 4 groups: prematurity without ROP, ROP without treatment, ROP with laser treatment, and ROP with intravitreal anti-VEGF treatment. Generalized estimating equation was used for analyzing repeated measurements of Bayley-III at corrected ages of 6, 12, and 24 months.

Results: A total of 2,090 patients with a mean gestational age of 31.2 weeks were included. The Bayley-III composite scores of patients with ROP treated with anti-VEGF were comparable to those of patients with ROP without treatment (cognitive: $p = 0.491$; language: $p = 0.201$; motor: $p = 0.151$) and premature patients without ROP (cognitive: $p = 0.985$; language: $p = 0.452$; motor: $p = 0.169$) after adjusting for confounders. Patients with ROP treated with laser photocoagulation exhibited poorer cognitive composite scores than did those without treatment ($p < 0.001$), premature patients without ROP ($p < 0.001$), and those treated with anti-VEGF ($p < 0.001$).

Conclusions: Intravitreal anti-VEGF treatment for ROP was not associated with adverse neurodevelopment in premature infants. Further studies are needed to determine whether general anesthesia or sedation used in laser treatment for ROP has significant impacts on neurodevelopmental outcomes.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Portal Extension Trial: 3-Year Follow-Up From Phase 3 Archway Trial of Port Delivery System With Ranibizumab

*First Author: De-Kuang **HWANG***
*Co-Author(s): Steve **BLOTNER**, Melina **CAVICHINI CORDEIRO**, Shamika **GUNE**, Philip **JAYCOCK**, Carl **REGILLO***

Purpose: The port delivery system with ranibizumab (PDS) is an innovative drug delivery system for continuous delivery of a customized formulation of ranibizumab for neovascular age-related macular degeneration (nAMD) approved in the United States. The phase 3 Archway trial (NCT03677934) evaluated PDS with ranibizumab 100 mg/mL with fixed refill-exchanges every 24 weeks (PDS Q24W) for nAMD through week (W) 96. The Portal extension trial (NCT03683251) is evaluating long-term PDS outcomes in patients who completed Archway.

Methods: Archway was a randomized, active-treatment-controlled trial that compared PDS Q24W with intravitreal ranibizumab 0.5mg injections every 4W through four 24W treatment intervals (W96). At W96, eligible patients from both arms could rollover into Portal and receive PDS Q24W from Day 1.

Results: PDS was non-inferior to monthly ranibizumab in change from baseline in adjusted best-corrected visual acuity score averaged over W88/92 (difference [95% CI], –0.6 [–2.5, +1.3] letters). Through each 24W treatment interval, 98.4%, 94.6%, 94.8% and 94.7% of PDS patients evaluated did not receive supplemental ranibizumab treatment. The PDS ocular safety profile was generally consistent with the primary analysis. Results from the Archway-to-Portal cohorts with a 3-year follow-up since Archway enrollment will be presented.

Conclusions: Archway end-of-study results support continued PDS efficacy over 2 years. Adverse events were generally manageable, with learnings continually implemented to optimize patient outcomes. Three-year follow-up of Archway PDS Q24W patients will inform on long-term PDS outcomes. Results from Archway monthly ranibizumab patients who received the PDS in Portal will inform on outcomes in patients previously treated with anti-VEGF injections for ≥2 years.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Risk of Diabetic Retinopathy Between Sodium-Glucose Cotransporter-2 Inhibitors and Glucagon-Like Peptide-1 Receptor Agonists

*First Author: Tzu-Yi **LIN***
*Co-Author(s): Yih-Shiou **HWANG**, Yu-Chuan **KANG***

Purpose: To compare risk of diabetic retinopathy (DR) between patients taking sodium-glucose cotransporter-2 Inhibitors (SGLT2is) and those taking glucagon-like peptide-1 receptor agonists (GLP1-RAs) in routine care.

Methods: This retrospective cohort study emulating a target trial included patient data from the multi-institutional Chang Gung Research Database in Taiwan. Totally, 33,021 patients with type 2 diabetes mellitus using SGLT2is and GLP1-RAs between 2016 and 2019 were identified. 3,249 patients were excluded due to missing demographics, age <40 years, prior use of any study drug, a diagnosis of retinal disorders, a history of receiving vitreoretinal procedure, no baseline HbA1c, or no follow-up data. Baseline characteristics were balanced using inverse probability of treatment weighting (IPTW) with propensity scores. DR diagnoses and vitreoretinal interventions served as the primary outcomes. Occurrence of proliferative DR and DR receiving vitreoretinal interventions were regarded as vision-threatening DR.

Results: There were 21,491 SGLT2i and 1,887 GLP1-RA users included for the analysis. Patients receiving SGLT2is and GLP-1 RAs exhibited comparable rate of any DR (subdistribution hazard ratio [SHR] 0.90, 95% confidence interval [CI] 0.79-1.03) and nonproliferative DR (SHR 1.16 ,95% CI 0.99-1.36), whereas the rate of proliferative DR (SHR 0.53, 95% CI 0.42-0.68) and composite surgical outcome (SHR 0.58, 95% CI 0.48-0.70) were significantly lower in the SGLT2i group.

Conclusions: Compared to those taking GLP1-RAs, patients receiving SGLT2is had a lower risk of proliferative DR and vitreoretinal interventions but not any DR and nonproliferative DR. Thus, SGLT2is may be associated with a lower risk of vision-threatening DR.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Serum Pro-Brain Natriuretic Peptide As Biomolecular Biomarker for Proliferative Diabetic Retinopathy

*First Author: Ms **PRACHI***
*Co-Author(s): Shashi **BHASKER**, Apjit **KAUR**, Sandeep **SAXENA***

Purpose: To study serum pro-brain natriuretic peptide (BNP) as a biomolecular biomarker for proliferative diabetic retinopathy.

Methods: Fifty consecutive patients aged 40-65 years having type 2 diabetes mellitus (DM) (non-proliferative DR [NPDR], n = 25 and proliferative DR [PDR], n = 25) and 25 healthy controls were prospectively recruited. They underwent serum pro-BNP estimation as per standard protocol. Data were statistically analyzed.

Results: Mean serum pro-BNP (pg/mL) in controls, NPDR and PDR (mean ± SE) were 14 ± 12.045, 278 ± 105.39 and 118 ± 44.62 respectively. Area under curve analysis showed serum pro-BNP to be an accurate biomarker for severity of diabetic retinopathy ($p < 0.001$). Pearson correlation analysis showed significant negative correlation of serum pro-BNP and severity of diabetic retinopathy ($p < 0.001$).

Conclusions: Serum pro-BNP has a negative correlation with the severity of diabetic retinopathy and is a novel reliable biomarker for proliferative diabetic retinopathy.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

The Protective Role of Apelin in Early Stage of Diabetic Retinopathy

*First Author: Weiqiang **YANG***
*Co-Author(s): Jing **FENG**, Yong **TAO***

Purpose: The aim of this study was to investigate the potential protective role of apelin in pericyte and the blood-retinal barrier in the early stage of diabetic retinopathy (DR).

Methods: We used a high-fat diet/streptozotocin (HFD/STZ)-induced type 2 diabetic mouse model. The mice were divided into the lentivirus control group (LV-EGFP), the apelin-overexpression group (LV-Apelin+), and the apelin-knockdown group (LV-Apelin-), which were all administrated by intravitreal injection. The efficiency of LV transfection and the expression of apelin were observed by immunofluorescence staining of frozen sections. The expression of pericyte and the retinal leakage were assessed by whole-mount staining. In addition, we examined the differential expression of retinal genes by transcriptome sequencing analysis and

assessed the content of retinal tight junction proteins using Western blot analysis.

Results: LV was widely expressed in the mouse retina, which persisted for at least 8 weeks. LV-Apelin+ ameliorated the loss of pericyte in DR mice, whereas LV-Apelin- aggravated instead. Meanwhile, LV-Apelin+ apparently reduced the leakage of retinal vessels, while LV-Apelin- exacerbated the leakage of retinal vessels. Next, we found that LV-Apelin+ up-regulated genes related to pericyte survival and down-regulated genes related to pericyte apoptosis, while LV-Apelin- was the opposite. Additionally, LV-Apelin+ increased the contents of ZO-1 and Occludin whereas LV-Apelin- decreased instead.

Conclusions: Our results suggest that apelin can reduce vascular leakage in the early stage of DR by protecting pericyte, which offers a new promising direction for the early treatment of DR.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

Two-Year Real-world Results for Aflibercept Using Treat-and-Extend Regimen in Age-Related Macular Degeneration and Polypoidal Choroidal Vasculopathy

*First Author: Chu Hsuan **HUANG***
*Co-Author(s): Ta-Ching **CHEN**, Yi-Ting **HSIEH**, Tso-Ting **LAI**, Chao-Wen **LIN***

Purpose: To evaluate the real-world efficacy of aflibercept using the treat-and-extend (TnE) regimen in treating neovascular age-related macular degeneration (nAMD) and polypoidal choroidal vasculopathy (PCV), and to analyze the biomarkers on optical coherent tomography (OCT) for predicting visual outcome.

Methods: Patients who were diagnosed as nAMD or PCV and had received intravitreal injection of aflibercept following the TnE regimen for at least two years were retrospectively reviewed. Best-corrected visual acuity (BCVA), injection numbers, treatment interval, and OCT biomarkers including central macular thickness (CMT), presence of subretinal fluid (SRF), and serous pigmented epithelial detachment (SPED) were collected at baseline, third, sixth, 12th, 18th and 24th months after treatment.

Results: A total of 43 eyes were enrolled, including 24 diagnosed as nAMD and 19 as PCV. After 24-month treatment, the BCVA in LogMAR improved from 0.75 ± 0.41 to 0.60 ± 0.41 at the 3rd month ($p = 0.006$), but then gradually declined to 0.66 ± 0.46 at the 24th month ($p = 0.234$). The total injection number was 11.0 ± 3.7. At the 24th month, the treatment interval could be extended to 16 weeks or more in 60.5% of cases, and to 12 weeks or more in 69.8% of cases. PCV cases received fewer injections ($p = 0.041$) but had more CMT reduction ($p = 0.038$) than nAMD cases. Presence of SPED at baseline and 12th month was associated with less BCVA improvement.

Conclusions: Aflibercept using TnE regimen was effective in treating nAMD and PCV in a real-world setting. The treatment interval could be extended to 16 weeks or more in 60.5% of cases at 2 years.

Feb 23, 2023 (Thu)
16:30 – 18:00
Venue: MEETING ROOM 410 (Level 4)

VOYAGER: A Real-world Study of Faricimab and Port Delivery System With Ranibizumab in Neovascular Age-Related Macular Degeneration and Diabetic Macular Edema

*First Author: Adrian **KOH***
*Co-Author(s): Monica **BENGUS**, Voraporn **CHAIKITMONGKOL**, Robyn **GUYMER**, Stefan **SCHEIDL***

Purpose: To gather robust long-term clinical data among patients receiving Vabysmo (faricimab) or Susvimo (Port Delivery System with ranibizumab) for neovascular age-related macular degeneration (nAMD) and diabetic macular edema (DME) in routine clinical practice globally. These data will help address the disparity between treatment outcomes in clinical trials and clinical practice.

Methods: VOYAGER (NCT05476926) is a prospective real-world study in which patients (≥ 5000) receiving Vabysmo or Susvimo for approved indication(s) in routine local clinical practice (~500 sites; 31 countries) will be observed for ≤ 5 years. Variables being collected include visual acuity (VA), imaging assessments, clinical decisions/management, treatment patterns and safety events. Optical coherence tomography and other images will be captured to evaluate retinal fluid and anatomical biomarkers impacting VA.

Results: The primary outcome is change in VA from baseline at month 12 per eye, by indication and per product. Key secondary outcomes include real-world treatment regimens, treatment patterns, tolerance to fluid and correlations with change in VA over time. Safety outcomes include the incidence, severity, duration and outcome of ocular/non-ocular adverse events. The effectiveness of Vabysmo or Susvimo on nAMD- and DME-specific disease features (eg, disease activity, fluid presence/location/change over time, presence/location of atrophy and fibrosis in nAMD and diabetic retinopathy severity level in DME) will also be evaluated.

Conclusions: By collecting real-world long-term clinical data in patients treated with Vabysmo or Susvimo for their approved indication(s), VOYAGER will generate insights into treatment patterns and factors driving treatment decisions, real-world effectiveness and safety outcomes on a global and regional level.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

A Novel Splice Site Mutation in CDH3 Gene: The First Reported Chinese Family of Hypotrichosis With Juvenile Macular Dystrophy

*First Author: Jie **HU***
*Co-Author(s): Zheng **LI**, Zhixi **LI**, Meng **XUAN***

Purpose: To present the first Chinese family of hypotrichosis with juvenile macular dystrophy (HJMD) with a novel splice site mutation in CDH3 gene.

Methods: A 19-year-old male presented with gradual vision loss in both eyes. This patient underwent detailed clinical assessment, including fundus imaging, electrophysiologic evaluation, and genetic testing.

Results: He had sparse scalp hair from early childhood. Best corrected visual acuity was 20/50 OU. Fundus photography revealed ring-shaped area of chorio-retinal atrophy surrounding the macular area with scattered pigmentation in both eyes, corresponded to fused patchy hypo-autofluorescence and scattered hyper-autofluorescence on fundus autofluorescence. Fluorescein fundus angiography and indocyanine green angiography also showed chorio-retinal atrophy surrounding the macular area OU. On optical coherence tomography, extensive atrophy of the retina, retinal pigmental epithelium, and choroid was also noted, with partial preservation of the inner segment ellipsoid band at the fovea. Electro-oculography (Arden ratio 2.5 OD; 2.1 OS) and electroretinogram were normal OU. Genetic testing revealed a pathogenic variant, c.2003-8_2003del CCTTGCAGT (p.G665_S667del), in the CDH3 gene in homozygous state; this confirmed the diagnosis of HJMD. On further questioning, the patient reported that his parents were first cousins, and his 8-year-old younger brother also had thin hair, who demonstrated relatively early stage of macular damage after ocular examination.

Conclusions: HJMD is an autosomal recessive disorder caused by mutations in CDH3 gene encoding p-cadherin. We reported the first Chinese family of HJMD with a novel splice site mutation in CDH3 gene. These two brothers demonstrated varying ocular manifestations due to different disease stages.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Diagnosis of Polypoidal Choroidal Vasculopathy and Age-Related Macular Degeneration and Using Multicolor Imaging

*First Author: Colin **TAN***

Purpose: Multicolor imaging is a new imaging investigation and its sensitivity for detecting polypoidal choroidal vasculopathy (PCV) and age-related macular degeneration (AMD) has not been well described. Hence, we aim to evaluate the accuracy of multicolor imaging compared to standard color fundus photography (CFP) in differentiating AMD from normal eyes, and in detecting features of PCV.

Methods: In a prospective cohort study of 50 consecutive patients with PCV or AMD, standardized multimodal imaging was performed, including CFP and multicolor imaging. All images were graded independently by a Central Reading Center using standardized grading protocols. Sensitivity, specificity, positive and negative predictive values (PPV and NPV) were assessed for differentiating AMD from normal eyes, and in detecting features of PCV.

Results: Multicolor imaging had superior specificity (73.9% vs. 52.2%) and NPV (94% vs. 85.7%) compared to CFP for detecting AMD. For the detection of PCV, multicolor imaging had higher sensitivity (86.4% vs. 59.1%) and NPV (89.3% vs. 74.3%) compared to CFP. Polypoidal lesions were detected in 39 of 44 eyes (88.6%) using multicolor imaging, while the branching vascular network (BVN) was detected in 16 of 44 eyes (36.4%) using the infrared image. Infrared imaging had very high specificity (96.6%) and PPV (88.9%) for detecting BVN.

Conclusions: Multicolor imaging is superior to standard CFP in differentiating AMD from normal eyes, and in detecting features of PCV. This will help alert and prompt additional investigations for definitive diagnosis.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Efficiency in Edema Volume Reduction Kinetics – Ranibizumab, Brolucizumab and Combination of Ranibizumab and Steroids in Retinal Vein Occlusion

*First Author: Thirumalesh **M B***
*Co-Author(s): Aayesha **KHANUM***

Purpose: VO is an acute phenomenon which is driven by increased angiogenic factors like VEGF and also to a certain extent by inflammatory factors. We conducted

the study to compare the edema resolution kinetics in Ranibizumab (RBZ), versus Brolucizumab (BRZ), and versus the combination (RBZ and steroids).

Methods: Three groups with 27 eyes, diagnosed with RVO were offered treatment with RBZ, BRZ & RBZ+steroid after explaining the risk and benefit of treatment. Pre and post injection (inj) 1-month central macular thickness (CMT) noted. CMT > 300micron(u) on 1 month follow up were offered repeat injection

Results: RBZ group- mean CMT preinj-560u, mean CMT postinj 1 month-348u, >50percent require reinjection at 1 month. BRZ group- mean CMT preinj 529u, mean CMT postinj 1 month- 270u, none of the eyes required repeat injection. RBZ+steroid- mean CMT preinj 690u, mean CMT postinj 1 month- 320u, <10 percent of eyes required repeat injection at 1 month.

Conclusions: BRZ is a stronger VEGF suppressor in a predominantly VEGF driven diseases such as RVO and hence offers earlier resolution of edema and earlier visual rehabilitation. Combined treatment offers earlier resolution when compared to RBZ monotherapy.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Our Experience With Biosimilar Razumab: Clinical Efficacy and Safety of Razumab Study

*First Author: Anuja **PATIL***
*Co-Author(s): Avnindra **GUPTA**, Ajay **PUROHIT**, Lalit **VERMA***

Purpose: The aim of this study was to evaluate the clinical efficacy and safety of Razumab (CESAR, with Razumab being the biosimilar Ranibizumab by Intas Pharmaceuticals Ltd.) for the treatment of chorioretinal vascular diseases such as diabetic macular edema (DME), choroidal neovascular membrane (CNVM), and macular edema secondary to retinal vein occlusion (RVO).

Methods: We conducted a singlecenter, retrospective study, including patients with DME, CNVM, and RVO, who had received treatment with Razumab between October 2018 and September 2019. Primary outcome measures were the changes in corrected distance visual acuity (CDVA) and central foveal thickness (CFT) from baseline to 1 month and 3 months. Secondary outcome measures included intraocular pressure (IOP) at day 1, any signs of ocular inflammation or systemic adverse events during the followup.

Results: One hundred and fiftythree eyes of 141 patients were analyzed. The indications included DME in 70 (45.8%) eyes, CNVM in 70 (45.8%) eyes, and RVO in 13 (8.4%) eyes. Mean CDVA improved from baseline (0.62 ± 0.44) to month 1 (0.45 ± 0.42) and maintained till 3 months (0.42 ± 0.44; $p < 0.001$). Mean CFT showed significant reduction from baseline (405.68 ± 192.422 um) to month 1 (286.08 ± 118.36 um) and month 3 (271 ± 104.24 um; $p < 0.001$). None of the eyes recorded IOP >20 mmHg on day 1.

Conclusions: Razumab showed a rapid improvement most of the eyes with efficacy observed as early as 1 month and maintained till 3 months. The biosimilar Ranibizumab can be a safe and effective lowcost drug for treating macular diseases.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Plasma Apolipoproteins Are Differentially Regulated in the Pachychoroid Spectrum Disorders

*First Author: Xinyuan **ZHANG***

Purpose: Lipid dyshomeostasis has been implicated in the pathogenesis of various retinal and choroidal vascular diseases. This study aims to investigate whether apolipoprotein (apo) mediated differential regulation of lipid metabolism contributes to the phenotypes of polypoidal choroidal vasculopathy (PCV) and neovascular age-related macular degeneration (nAMD).

Methods: A total of148 subjects including 53 patients with PCV, 44 patients with nAMD, and 51 age-, sex-matched subjects with normal fundus controls were enrolled in this study. Routine blood biochemistry profile was evaluated. Apolipoproteins was estimated by Luminex technology.

Results: After controlling for age, gender, body mass index, duration of hypertension and type 2 diabetes mellitus, apoB/non-high density lipoprotein cholesterol (HDL-C) ($p = 0.015$) was an independent risk factor for nAMD, apoB was an independent risk factor for PCV ($p = 0.011$), compared with control. Low-density lipoprotein cholesterol (LDL-C) was significantly higher in patients with PCV when compared with nAMD ($p = 0.037$). Furthermore, apoB/non-HDL, LDL-C, triglycerides and were significantly correlated with the pathogenesis of subgroups of PCV and nAMD.

Conclusions: Lipid profiles and apos are differential regulated in PCV, nAMD and their subtypes, indicating different pathogenicity contributed to the different phenotypes of PCV and nAMD. Non-pachy PCV shares pathological similarities with nAMD, which is highly correlated with age-related atherosclerosis.

Feb 24, 2023 (Fri)
14:30 – 16:00
Venue: MEETING ROOMS 406–407 (Level 4)

Relationship Between Monocular Visual Function Assessments and Activities of Daily Living in Patients With Age-Related Macular Degeneration

*First Author: Claire Lixian **PETERSON***
*Co-Author(s): Gemmy **CHEUNG CHUI MING**, Eva **FENWICK**, Ecosse **LAMOUREUX**, Anna **TAN**, Chun Lin **YAP***

Purpose: To evaluate the relationship between various monocular visual function (VF) assessments and activities of daily living task tests (ADLTT) in patients with age-related macular degeneration (AMD).

Methods: A prospective case-controlled cohort study comparing the VF of 36 AMD patients with 36 healthy control subjects by assessing monocular best corrected visual acuity (BCVA), contrast sensitivity [CS], microperimetry testing and AMD lesion area measured on optical coherence tomography (OCT). Binocular vision was used to perform validated ADLTTs–1] reading test, 2] item-search task, 3]money-counting task and 4] drink-making.

Results: AMD patients had significantly poorer VF ($p < 0.001$) for BCVA, CS and microperimetry mean retinal sensitivity [MRS] and mean macula sensitivity [MMS] compared to healthy controls. Monocular BCVA in both the worse and better vision eye was moderately correlated only with ADLTT-1 and ADLTT-3 (rho=-0.50 and -0.47 respectively). In worse vision AMD eyes, there were strong correlations between AMD lesion area with reading speed (ADLTT-1)(rho=-0.61;$p = 0.002$), and MRS with efficiency of ADLTT-3 (rho=0.62;<0.001). Overall, in worse vision eyes, MRS, CS, AMD lesion area and AMD lesion sensitivity showed moderate correlations to various parameters of the ADLTTs, while better vision eyes had weaker correlations.

Conclusions: Although monocular BCVA remains the most common measure of VF, CS and microperimetry testing may be better correlated with the ability to perform ADLTT in AMD patients and should be considered as complimentary VF outcome measures. In AMD, VF of the worse vision eye correlates better to ADLTT function compared to the better vision eye and should not be neglected during AMD treatment.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Seven-Year Clinical Outcomes of Combined Treatment of Anti-vascular Endothelial Growth Factor With Photodynamic Therapy for Polypoidal Choroidal Vasculopathy on Early Polypoidal Lesion Regression

*First Author: Jong Beom **PARK***
*Co-Author(s): Eung-Suk **KIM**, Kiyoung **KIM**, Joon Woo **LEE**, Seung Young **YU***

Purpose: To evaluate the long-term visual outcomes and causes of vision loss in polypoidal choroidal vasculopathy (PCV) treated with anti-vascular endothelial growth factor (VEGF) combined with photodynamic therapy (PDT) according to early polypoidal lesion regression.

Methods: A retrospective review of multimodal image of 36 naïve PCV eyes treated with anti-VEGF and combined verteporfin PDT and followed for 7 years or longer. Collected data included demographic profile, best corrected visual acuity (BCVA), central subfield retinal thickness (CSRT), any fluid on OCT, causes of vision loss and treatments. Analysis was done according to OCT-and ICGA-defined polypoidal lesion regression at one-year after the first combined treatment: group R (regression) and group p (persistent).

Results: The mean BCVA was significantly improved until 3-year in Group R (23 eyes) ($p = 0.010$) and 1-year in Group p (13 eyes) ($p = 0.018$). The mean BCVA of Group R was significantly better than the that of Group p at 1, 2 and 3-year follow-up (all $p < 0.04$). At the 7-year visit, 10eyes in Group R and 4eyes in Group p maintained BCVA of 20/40 or better and 3eyes in Group R and 3eyes in Group p were legally blind with BCVA of 20/200 or worse. The mean CSRT were not significantly different between Group R and Group p and 4 eyes in Group R had recurrence of polypoidal lesion during 7-year follow-up. For 7 years, in Group R and p, total number of PDT was 1.59 ± 1.37 and 1.80 ± 1.23 ($p = 0.325$), respectively and total number of anti-VEGF was 11.36 ± 14.45 and 10.60 ± 6.08 ($p = 0.411$).

Conclusions: Polypoidal lesion regression at 1-year after the initial combination treatment was associated with long-term BCVA changes and may be predictors of long-term visual outcomes.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Choroidal Thickness and Its Correlation With Oct Biomarkers in DME

First Author: Isha ***ACHARYA***
Co-Author(s): Ayushi ***CHOUDHARY****, Ashit* ***HANDA****, Naresh Kumar* ***YADAV***

Purpose: To study the correlation of OCT biomarkers and visual acuity (VA) with central choroidal thickness (CCT) in DME.

Methods: Retrospective study of 100 eyes, 83 patients with ciDME divided into 2 groups with CCT <300 µm- Group 1, 54 eyes and ≥ 300 µm - Group 2,46 eyes. EDI scans were used to calculate CCT & OCT biomarkers evaluated. They received intravitreal antiVEGFs and/ steroids.

Results: The mean age was 65.80 ± 8.10 and 62.37 ± 7.42 years in group 1 and 2 respectively with a male preponderance. Presenting VA <20/120 was noted in 24.07% and 34.78% eyes in group 1 &2 respectively (p = 0.24). CME was observed in group 1 (33.9 %) and 2 (56.7%) with significantly (p = 0.01) more SRF in group 2. Group 1 and 2 showed 91.1 & 89.1 % HE and/ HRDs, 20.5 & 41.3% DRIL, 8.9 & 21.7% ICHRM, 15.2 & 32.6% HCF and 70.37 & 67.39 % EZ/ELM disruption respectively (p > 0.05). In group 1 and 2, 74.04% & 73.9% eyes were treated with intravitreal antiVEGFs and/ 29.62% & 23.91 % eyes with steroids respectively (p > 0.05). Overall mean follow up was 13.76 ± 4.59months. CCT was significantly decreased in group 2 (89.13% eyes) than group 1 (66.66% eyes) on final visit (p = 0.007). VA gain was seen in 20.37 and 23.91% eyes in group 1 and 2 respectively (p =0.864).

Conclusions: CCT did not affect the OCT biomarkers and VA. SRF was seen more often in patients with thicker choroid.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Clinical Profile of Visual Loss Due to Retinopathy of Prematurity in High-Risk Twin Infants

First Author: Gowtham ***KIM***
Co-Author(s): Radha ***ANNAMALAI****, M* ***MUTHIAH***

Purpose: The objective of this study was to determine the profile of asymmetry of retinal maturity, variations in postnatal risk factors, and the effects of management on retinopathy of prematurity (ROP) progression in preterm twin pairs.

Methods: Over two years, a retrospective study was performed on 250 infants (125 twin pairs) with premature birth, low weight, or other risk factors at a multi-specialty tertiary referral center. Indirect ophthalmoscopy was performed with continuous monitoring of oxygen saturation using a pulse oximeter in the presence of a neonatologist. All babies were examined to identify the stage and zone of ROP, systemic association, spontaneous regression, and requirement for treatment.

Results: Among 150 twin pairs, 40 twin pairs (34%) had ROP which was asymmetrical in 32% and symmetrical in 6%. Disparity developed before 35 weeks when both twins had ROP. Two-stage differences occurred in 85%. Both were statistically significant (p < 0.05). Spontaneous regression occurred after 35 weeks, and the majority regressed by 40 weeks. Laser treatment was required in 12% of babies. Risk factors apart from birth weight and gestational age were anemia, respiratory distress, patent ductus arteriosus, hypoxia, intraventricular hemorrhage, and apnea.

Conclusions: The systemic status of the individual premature infant seems to be a predictor of vascularization progression and the asymmetry of retinal maturity. Respiratory distress has the highest risk. It is essential to screen and follow up on all twins irrespective of the normal-appearing retina in one twin, as differences and transitions can occur within the pair.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Design and Rationale of SALWEEN Trial: A Phase 3b/4 Study of Faricimab, a Dual Angiopoietin-2 and Vascular Endothelial Growth Factor-A Inhibitor, in Patients With Polypoidal Choroidal Vasculopathy

First Author: Tomohiro ***IIDA***
Co-Author(s): Gemmy ***CHEUNG CHUI MING****, Timothy* ***LAI****, Won Ki* ***LEE****, Philippe* ***MARGARON****, Paisan* ***RUAMVIBOONSUK***

Purpose: The phase 3 TENAYA (NCT03823287)/ LUCERNE (NCT03823300) trials in neovascular age-related macular degeneration (nAMD) demonstrated that dual inhibition of the angiopoietin-2/vascular endothelial growth factor-A pathways with faricimab, the first bispecific antibody designed for intraocular use, resulted in 63% of patients achieving every-16-week (Q16W) dosing at week 112, with comparable vision gains and anatomic outcomes versus aflibercept Q8W. SALWEEN will assess the efficacy, durability and safety of faricimab in polypoidal choroidal vasculopathy (PCV), a subtype of nAMD and a population under-represented in TENAYA/LUCERNE.

Methods: SALWEEN is a phase 3b/4 multicenter, open-label, single-arm, 108-week study of faricimab in PCV in Asia. Patients with symptomatic macular PCV are

administered intravitreal faricimab 6.0 mg Q8W, Q12W or Q16W based on protocol-defined disease activity assessments at weeks 20 and 24 after 4 initial Q4W doses. At weeks 44/48 through 104, patients follow a protocol-driven treat-and-extend-based personalized treatment interval (PTI) regimen, during which treatment intervals ranging from Q8W–Q20W are adjusted based on individualized treatment response, assessed by pre-specified anatomical and functional criteria.

Results: The primary endpoint is change from baseline in best-corrected visual acuity based on an average of weeks 40, 44 and 48. Secondary endpoints, including visual and anatomic outcomes, durability and safety will be assessed through week 108.

Conclusions: The phase 3 TENAYA/LUCERNE trials demonstrated durable efficacy with faricimab up to Q16W dosing at week 112 in patients with nAMD. SALWEEN will evaluate the efficacy, durability and safety of faricimab in patients with PCV in Asia, where PCV represents up to 50% of the nAMD population.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Faricimab in Neovascular Age-Related Macular Degeneration: Year 2 Patient Case Profiles From Phase 3 TENAYA/LUCERNE Trials

*First Author: Shih Jen **CHEN***
*Co-Author(s): Adrian **KOH**, Aachal **KOTECHA**, Philippe **MARGARON**, Vaibhavi **PATEL**, Balakumar **SWAMINATHAN***

Purpose: Year 1 data from the TENAYA/LUCERNE (NCT03823287/NCT03823300) trials suggest that dual inhibition of the angiopoietin-2/vascular endothelial growth factor-A pathways with faricimab may promote vascular stability and durable efficacy for neovascular age-related macular degeneration. We present a selection of case profiles for patients treated through year 2 of TENAYA/LUCERNE.

Methods: TENAYA/LUCERNE were randomized, active comparator–controlled, 112-week trials. Treatment-naïve patients were randomized 1:1 to faricimab 6.0 mg up to every 16 weeks (Q16W), per protocol-defined disease activity assessments at weeks 20 and 24 after 4 initial Q4W doses, or aflibercept 2.0 mg Q8W through week 108 after 3 initial Q4W doses. From week 60, faricimab-treated patients followed a protocol-driven treat-and-extend–based personalized treatment interval (PTI).

Results: A total of 1,329 patients were enrolled (TENAYA, N=671; LUCERNE, N=658). Vision gains and central subfield thickness (CST) reductions from baseline with faricimab up to Q16W were comparable with aflibercept Q8W through week 112. Mean best-corrected visual acuity gains (weeks 104–112): faricimab, 4.4 letters; aflibercept, 4.3 letters. Faricimab-treated patients received fewer injections than aflibercept-treated patients (week 108 median: 10 vs 15; PTI phase median: 3 vs 6). At week 112, >60% and ~80% of faricimab-treated patients achieved Q16W and ≥Q12W dosing, respectively. Faricimab was well tolerated; no cases of retinal vasculitis/occlusive retinal vasculitis were reported. Here we will describe representative cases and present retinal images for patients treated through year 2 of TENAYA/LUCERNE.

Conclusions: Year 2 TENAYA/LUCERNE case profiles will explore whether early vision gains, reductions in CST and extended (up to Q16W) faricimab dosing are maintained over 2 years.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Gene Independent Gene Therapy for Cone Photoreceptor Preservation and Functional Restoration in Inherited Rod/Cone Dystrophies

*First Author: Daniel **CHUNG***

Purpose: To review strategies for gene independent gene therapy for cone photoreceptor preservation and functional restoration in inherited rod/cone dystrophies. With over 270 different genes that cause inherited retinal dystrophies, clinical development for all genes would not be possible. Therefore, investigating gene independent approaches could be a viable gene therapy treatment option.

Methods: Two approaches for cone photoreceptor survival have been under investigation for rod/cone dystrophies, concentrating on retinitis pigmentosa (RP). One, using a neurotrophic factor, Rod-Derived Cone Viability Factor (RDCVF). RDCVF is an inactive thioredoxin that is secreted by rod photoreceptors that protects cones from degeneration, as rod cells degenerate, they no longer can support cone viability, resulting in cone photoreceptor loss. An AAV vector was used to deliver the transgene to the subretinal space of murine models of retinitis pigmentosa. Optokinetic reflex and histological analyses were performed.

Results: Gene transfer of RDCVF to the retina has demonstrated a decreased rate of cone photoreceptor degeneration in several rodent models of retinitis pigmentosa, utilizing optokinetic reflex measures. Based on these finding, preparations are underway for human clinical trials.

Conclusions: RDCVF gene therapy approach has demonstrated preliminary efficacy in slowing cone photoreceptor function degeneration in models of

retinitis pigmentosa. As this is a gene independent approach, its potential to address a wider scope of rod cone dystrophies, could significantly broaden gene therapy approaches, and address a disease with high unmet need.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Intravitreal Panitumumab for Prevention of Myopic Axial Elongation in Highly Myopic Adult Eyes With Myopic Macular Degeneration: Clinical Phase-1 Study

*First Author: Jost **JONAS***
*Co-Author(s): Mukharram M. **BIKBOV**, Frank G **HOLZ**, Leisan **GILEMZIANOVA**, Gyulli **KAZAKBAEVA**, Songhomitra **PANDA-JONAS***

Purpose: Recent histomorphometric, experimental and clinical studies suggested that axial myopic elongation occurs through an enlargement of Bruch´s membrane (BM) in the retroequatorial and equatorial region, leading to a thinning of choroid and sclera at the posterior pole. The equatorial-to-retroequatorial BM enlargement may be caused by an epidermal growth factor (EGF)-associated RPE activity.

Methods: Phase-1 study included highly myopic adult patients with myopic macular degeneration. The eyes received one to two intravitreal injections of 0.6 mg (60 µL), 1.2 mg (120 µL) or 1.8 mg (180 µL) panitumumab.

Results: The study included 10 patients (age 57 to 72 years, axial length: 29.10 mm-32.67 mm). Examined at day 1, 7, and 28 and at 2 and 3 months after the injections, the injected eyes did not show any intraocular inflammation or morphologic or functional changes, assessed by retinal electroretinography, perimetry, optical coherence tomography, tonometry and visual acuity measurement.

Conclusions: The preliminary observations of these ten patients are in agreement with a notion of an intraocular tolerability of panitumumab repeatedly injected intravitreally in doses of 0.6mg, 1.2 mg or 1.8 mg.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Macular Structure and Foveal Pit Characteristics in Patients With Unilateral Idiopathic Macular Hole and Their Healthy Fellow Eyes

*First Author: Yi-Ting **HSIEH***
*Co-Author(s): Chung-May **YANG***

Purpose: To investigate the morphology of macular structure and foveal pit in the lesion eyes and healthy fellow eyes of patients with unilateral full-thickness macular holes (MHs), and to compare them among different types of MHs.

Methods: Patients with unilateral MH were retrospectively recruited as the study group, and their age and sex-matched individuals with no vitreomacular diseases were recruited as the control group. The MHs were further classified as MH with lamellar hole-associated epiretinal proliferation (LHEP), MH with LHEP, and MH without vitreomacular separation. Macular structure parameters including foveal base width (FBW), central foveolar thickness (CFT), central subfield thickness (CST), central subfield volume (CSV) and retinal artery trajectory (RAT) were measured using optical coherence tomography and fundus photography. These parameters were also compared among different groups of MH.

Results: A total of 68 patients (39 women) with unilateral MH and 68 healthy controls were enrolled. The RAT of the lesion eyes (0.19 ± 0.06) and the healthy fellow eyes (0.14 ± 0.04) were both smaller than the normal controls (0.37 ± 0.14) ($p < 0.001$ for both). The FBW of the healthy fellow eyes (446.8 ± 98.2 µm) were significantly larger than those in the control group (338.4 ± 80.6 µm, $p < 0.001$). No significant differences in any macular parameters were noted among three different types of MH.

Conclusions: Patients with unilateral MH had a wider RAT in the lesion eyes as well as the healthy eyes, and a wider foveal base in their healthy fellow eyes than normal controls, which suggest a stronger tangential traction at macula.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Myopic Macular Bruch's Membrane Defects

*First Author: Songhomitra **PANDA-JONAS***
*Co-Author(s): Jost **JONAS**, Rahul A. **JONAS***

Purpose: To examine peculiarities of macular Bruch´s membrane defects (BMD) in axially elongated eyes.

Methods: Methods: Using light microscopy, enucleated human globes were histomorphometrically.

Results: The study included 247 eyes (axial length:20.0-37.0mm). BMDs were detected in 15 (6.1%) eyes (axial length:30.6 ± 2.4mm) (1.9 ± 0.9 BMD/eye with BMDs), located in the macular region in 10 eyes. Mean BMD size was 1.93 ± 1.62mm (range:0.22mm-6.24mm). Prevalence and size of BMDs were associated with longer axial length (OR:1.52; $p = 0.001$) and higher prevalence of scleral staphyloma (OR:16.3; $p < 0.001$). BMD width was smaller than the defect width in the overlying retinal pigment epithelium (RPE) layer ($p = 0.003$) and larger than the length of a defect in the

overlying inner nuclear layer (0.43 ± 0.76 mm; p = 0.008) and the width of an inner limiting membrane bridge (0.13 ± 0.33 mm;p = 0.001). Choriocapillaris thickness (8.8 ± 5.0µm versus 7.9 ± 3.2 µm; p = 0.94), BM thickness (3.1 ± 0.6 µm versus 3.0 ± 0.5 µm; p = 0.43) and RPE cell density (31.6 ± 8.4 cells/480 µm versus 27.4 ± 8.8 cells/480 µm; p = 0.051) did not differ significantly between the region at the BDM margin and neighboring regions. The sclera was thinner in the BDM region than in the neighboring regions (0.28 ± 0.19mm versus 0.36 ± 0.13 mm; p = 0.006).

Conclusions: BMDs as hallmark of myopic macular degeneration are characterized by a larger defect in the overlying RPE layer, smaller defects in the overlying retinal outer nuclear layer and inner nuclear layer, localized scleral thinning and an association with scleral staphylomas. Thickness of the choriocapillaris and density of the RPE cell layer, both absent within the BDMs, do not differ between the BMD margin and neighboring regions. The results suggest a biomechanical role BM may play.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Personalized Treatment Interval Dosing Dynamics Over 2 Years in Phase 3 YOSEMITE/RHINE Trials of Faricimab in Diabetic Macular Edema

*First Author: Tien-Yin **WONG***
*Co-Author(s): Acner **CAMINO**, Bianca S. **GERENDAS**, Zdenka **HASKOVA**, Glenn **JAFFE**, Yannan **TANG***

Purpose: Treat-and-extend–based personalized treatment interval (PTI) dosing in the phase 3 YOSEMITE/RHINE trials was designed to evaluate the durability of dual angiopoietin-2 (Ang-2) and vascular endothelial growth factor (VEGF)-A inhibition with faricimab in patients with diabetic macular edema (DME).

Methods: In YOSEMITE/RHINE (NCT03622580/NCT03622593), patients were randomized to faricimab 6.0 mg per PTI, faricimab 6.0 mg every 8 weeks (Q8W) or aflibercept 2.0 mg Q8W through week 100 (pooled N = 1891). In the PTI arms, patients received faricimab Q4W until central subfield thickness (CST) < 325 µm was achieved at or after week 12. Once achieved, treatment intervals were adjusted (Q4W up to Q16W) based on CST and best-corrected visual acuity criteria.

Results: In the faricimab PTI arms, 62% of patients achieved Q16W dosing and 78% achieved ≥ Q12W dosing at week 96. Most patients who achieved ≥ Q12W dosing at week 52 (79%) maintained ≥ Q12W dosing without an interval reduction below Q12W through week 96, and most patients who achieved Q16W dosing at week 52 (76%) maintained Q16W dosing through week 96. A minority of patients (8.6%) remained on ≤ Q8W dosing throughout the 2-year trials. Faricimab was well tolerated through study end; intraocular inflammation event rates were low, and no cases of retinal vasculitis or occlusive retinal vasculitis were reported. Faricimab PTI dosing dynamics through week 96 and illustrative case studies will be presented.

Conclusions: Treat-and-extend–based PTI dosing in the phase 3 YOSEMITE/RHINE trials supports the extended durability of dual Ang-2/VEGF-A inhibition with faricimab in patients with DME.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Photoreceptor Density in Dependence of Axial Length and Retinal Location in Human Eyes

*First Author: Songhomitra **PANDA-JONAS***
*Co-Author(s): Jost **JONAS**, Rahul A. **JONAS***

Purpose: To examine the density of retinal photoreceptors and retinal pigment epithelium (RPE) cells in relation to myopic axial elongation in human eyes.

Methods: Using light microscopy, we counted the density of photoreceptors and RPE cells at the ora serrata, the equator, and at the midpoint between the equator and the posterior pole (MEPP) in enucleated human globes.

Results: The study included 78 eyes (mean age:59.2 ± 15.6 years; range:32-85 years) with a mean axial length of 27.3 ± 3.6mm (range:21.5-37.0mm). Close to the ora serrata, at the equator and at the MEPP, the photoreceptor and RPE cell density was 11.8 ± 8.8, 29.0 ± 14.3 and 52.3 ± 21.1 cells/48 µm and 27.0 ± 6.6, 21.7 ± 7.2 and 23.4 ± 7.5 cells/480 µm, respectively. Densities of both cell types in all regions measured were positively correlated with each other (all $p < 0.001$) and decreased with longer axial length (all $p < 0.001$) and retinal length (all $p < 0.001$), most marked at the MEPP and least marked close to the ora serrata. Close to the ora serrata, at the equator and at the MEPP, differences between both globe sides in photoreceptor and RPE cell density were 3.98 ± 3.91, 8.93 ± 8.03 and 11.8 ± 11.1 cells/48µm and 4.67 ± 4.37, 4.27 ± 3.13 and 5.30 ± 4.65 cells/480µm, respectively. They were not significantly (all $p > 0.05$) related with axial length and did not differ (all $p > 0.05$) between both globe sides.

Conclusions: The data suggests that the axial elongation-associated enlargement of the eye wall predominantly takes place in the retro-equatorial region, followed by the equatorial region, and different elongation rates between both sides of the globe.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Post-viral Maculopathy

*First Author: Priya **BAJGAI***
*Co-Author(s): Chandra **GURUNG**, Gopal Prasad **POKHREL**, Varun **SHRESTHA***

Purpose: To report clinical and optical coherence tomography angiography (OCTA) features of post-viral illness maculopathy.

Methods: We report two cases who presented with the visual loss after a viral illness.

Results: One patient tested COVID-PCR positive, and the other had a self-resolving flu-like illness. One patient developed massive macular oedema with a cartwheel-like appearance without any features of vasculitis in the periphery, and the other patient had features of pigment epithelitis and corresponding flow void areas at the outer retinal slab as seen on OCTA. Both patients received a short course of oral steroids after consultation with the physician, and there was a good visual recovery in both patients. The patient with pigment epithelitis had gradual resolution of the hyper-reflective material and restoration of all the retinal layers.

Conclusions: The prognosis is good in such maculopathies, and certain cases are self-resolving. Serial follow-up with fundus photographs and OCT helps visualize recovery in such cases. OCTA helps in visualizing the defect in each layer of the retina and in following up such patients.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Quantitative Assessment of Photoreceptor Outer Segment Layer Thickness in Diabetic Eyes Using Optical Coherence Tomography

*First Author: Janika **SHAH***
*Co-Author(s): Jacqueline **CHUA**, Qinglan **HU**, Leopold **SCHMETTERER**, Bingyao **TAN***

Purpose: To quantitatively assess photoreceptor outer segment (PROS) layer thickness in normal and diabetic eyes across various severity levels.

Methods: A cross-sectional study was conducted on healthy participants and patients with diabetes mellitus (DM) with no DR diabetic retinopathy (DR), mild non-proliferative diabetic retinopathy (NPDR), and moderate NPDR. The PROS thickness was extracted from Cirrus spectral domain optical coherence tomography using the Iowa Reference Algorithm.

Results: An analysis was conducted on 262 normal eyes and 203 diabetic eyes including 76 DM no DR, 79 mild NPDR, and 48 moderate NPDR eyes. In patients with DM no DR (53.0 ± 3.2 µm; p = 0.021) and mild NPDR eyes (52.3 ± 3.3 µm; p < 0.001), the mean PROS thicknesses were significantly thinner than normal controls (54.0 ± 3.1 µm). However, no significant difference was found between normal and moderate NPDR (52.5 ± 6.3, p = 0.107) and among DR groups (p≥0.560).

Conclusions: The photoreceptor outer segment in the macula is thinner in diabetic patients without retinopathy as compared to controls.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Randomized Controlled Trial of Monotherapy Versus Combination Intravitreal Injection via Exploring Dexamethasone Implant as Adjunctive Treatment Regime for Diabetic Macular Edema

*First Author: Muhammad Aizuddin **AHMAD***
*Co-Author(s): Ayesha **MOHD ZAIN**, Mushawiahti **MUSTAPHA***

Purpose: To evaluate the efficacy of concurrent combination therapy with dexamethasone implant and intravitreal ranibizumab monotherapy as the first-line treatment in treatment-naïve DME.

Methods: This randomized controlled trial comprises two groups of eyes with center involving DME at the Ophthalmology department, PPUKM. One arm received a monthly intravitreal Ranibizumab injection (IVR). On the other arm, the other arm (IVR-D) received IVR in combination with dexamethasone implant within one week of the initial IVR injection. The primary outcome measures were the VA and CFT, monitored every four weeks for four months.

Results: A total of 57 eyes recruited with a mean age of 61. Mean letter score for Group IVR (n=29 eyes) and Group IVR-D (n=30 eyes) was 45.42 and 44.83 respectively, while mean letter gains were 17.59 (95% CI, −12.58 to 22.59) and 13.17 (95% CI, 8.62 to 17.71) (p = 0.209).IVR-D group showed a mean reduction in CFT of 138.93 µm (95% CI, −177.07 to -100.80) compared to the IVR group, 98.83 µm(95% CI, −133.72 to -63.94) but was not statistically significant (p = 0.568). Within the group comparison, IVR and IVR-D groups showed statistically significant improvement on each four-week visit in terms of VA and CFT (p < 0.05).33% in the combination group experienced an increase in IOP compared to none in the IVR group.

Conclusions: Both groups were equally effective in managing DME. The addition of Ozurdex is more likely to reduce CFT and increase IOP however does not improve VA more compared to the IVR group in treatment naïve eyes at the end of 20 weeks.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Retinopathy of Prematurity Among Neonates in a Multi-Specialty Eye Hospital of Northern Bangladesh

*First Author: Md Usha Al Sayed **AYON***
*Co-Author(s): Md Sajidul **HUQ**, Khairul **ISLAM**, Tarannum **ISLAM**, Md **KAMRUZZAMAN***

Purpose: To determine the incidence and risk factors for developing retinopathy of prematurity among neonates attending an eye hospital for ROP screening.

Methods: It was a retrospective, record-based study of neonates who were screened for ROP in the ROP clinic of an eye hospital between February 2022 and July 2022. Data collected for each neonate included their gestational age, birth weight, past medical history, ROP screening findings and treatment advised. ROP screening was done by indirect ophthalmoscope and ROP was classified as stage I-V, APROP and Plus disease.

Results: Forty-seven newborn infants were evaluated. Mean Birth Weight (BW) ± standard deviation (SD) was 1707.55 ± 453.46 g and Mean Gestational Age (GA) ± SD was 32.66 ± 2.28 weeks. 14 babies 28 eyes (29.85%) were found to have ROP (18 eyes 19.1% Stage II, 6 eyes 6.4% Stage III, 4 eyes 4.3% APROP, 8 eyes 8.2% plus disease) and all of them had BW ≤ 2000 g and gestational age ≤ 35 weeks. In regard to treatment, 8 (8.5%) eyes were advised for laser, 6 (6.4%) for Anti-VEGF and rest of them for follow-up. ROP was significantly associated with history of blood transfusion ($p = < 0.001$), supplementary oxygen administration ($p = 0.01$), gestational age ($p = 0.03$).

Conclusions: Considering the high incidence of ROP in this region, effective screening and timely intervention is needed to prevent the progression of ROP. It is also important to follow strict oxygen therapy guidelines and transfusion practices in the NICU to decrease the incidence of ROP.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Sex and Age-Related Differences in Foveal Pit Morphology

*First Author: Yi-Ting **HSIEH***

Purpose: To measure foveal pit morphology parameters and evaluate their correlation with age and sex.

Methods: This retrospective observational study included 40 men and 40 age-matched women who underwent macular optical coherence tomography (OCT) between January 2016 and July 2020 and had normal macular structures and foveal contours. Foveal pit parameters including top width, base width, nasal width, temporal width, minimal thickness, nasal thickness, temporal thickness, nasal height, temporal height, nasal slope, and temporal slope were measured on horizontal B-scan macular OCT and compared between men and women.

Results: The average patient age was 51.4 ± 17.5 (21–84) years. Women had a wider base width (313.1 ± 68.0 µm vs 266.8 ± 70.9 µm, $p = 0.006$), wider temporal width (1043.1 ± 245.6 µm vs 968.9 ± 261.0 µm, $p = .006$), thinner nasal thickness (345.6 ± 36.2 µm vs 359.7 ± 35.8 µm, $p = 0.048$), and flatter temporal slope (11.60 ± 2.52° vs 12.98 ± 2.68°, $p = 0.016$) than men. With age, the base width ($r = 0.35$, $p = 0.025$) and temporal width ($r = 0.54$, $p = 0.0003$) tended to be wider, and temporal slope flatter ($r = -0.45$, $p = 0.003$) in women but not men. The minimal thickness tended to be thinner in the elderly group ($r = 0.038$, $p = 0.015$).

Conclusions: Women had a significantly wider base width, wider temporal width, thinner nasal thickness, and flatter temporal slope of the foveal pit than age-matched men. The base width and temporal width were wider and temporal slope flatter with age in women but not men.

Retina (Surgical)

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

A Hybrid 26G Needle Drainage Technique in Scleral Buckling: A Mini Scleral Cut-Down

*First Author: Parshant **SINGLA***
*Co-Author(s): Mohit **DOGRA**, Ashish **MARKAN**, Ramandeep **SINGH***

Purpose: To evaluate efficacy and safety of hybrid 26-gauge needle drainage in scleral buckling for rhegmatogenous retinal detachment (RRD).

Methods: In this retrospective study, we included patients who underwent scleral buckling surgery along with subretinal fluid (SRF) drainage using the 'Hybrid 26G needle drainage technique'. Preoperative assessment included best corrected visual acuity (BCVA), lens status and extent of retinal detachment. Intraoperative surgical details like the height of retinal detachment, number of attempts required to drain the fluid, amount of fluid drained, adequacy of break buckle relationship and any intraoperative or postoperative complications were noted. Postoperatively, final visual outcome and retina status was assessed at 3 months of follow up.

Results: A total of 10 eyes with primary RRD and

PVR C1 or less were included. Preoperatively mean BCVA was 2.43+1.01 logMAR units, which improved significantly to 0.679+0.45 logMAR units (p value<0.05). Regarding the extent of RRD, five eyes (50%) had a total detachment, two eyes (20%) had subtotal detachment and three eyes (30%) had an inferior detachment. Four eyes had shallow detachment, 4 had a moderate detachment and two eyes had bullous detachment. Complete drainage of SRF (>75%) was achieved in 5 patients and a partial, but adequate drainage (50-75%) was achieved in the rest of the 5 patients. The retina was attached in 8 out of 10 eyes at 1-week and at a 1-month follow up period.

Conclusions: The «hybrid needle drainage» technique is a safe and effective technique for subretinal fluid drainage in scleral buckling surgery.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Comparative Study Between Inverted Flap Technique and Internal Limiting Membrane Peeling for Vitrectomy in Management of Traumatic Macular Hole: A Systematic Review and Meta-analysis

*First Author: Silmi **RAHMANI***
*Co-Author(s): Mohammad **PRAYOGO**, Supanji **SUPANJI***

Purpose: The aim of this systematic review is to analyze the literature regarding anatomical and functional outcomes of inverted flap technique (IFT) compared to ILM peeling as a treatment for traumatic macular hole (TMH).

Methods: Related studies were reviewed by searching electronic databases of PubMed, Scopus, and Cochrane Library. The PRISMA guidelines were followed. Inclusion criteria for eligibility included randomized control trials (RCTs) and retrospective studies in which IFT was compared to ILM peeling for management of patients with TMH and postoperative follow-up evaluations at 6 months minimum. The primary outcomes in the collected articles included the postoperative MH closure rate and best-corrected visual acuity (BCVA).

Results: Our search yielded 690 records from which two retrospective comparative studies reported 86 eyes that met inclusion criteria. The MH closure rate was significantly higher in the IFT group than in the ILM peeling group at 6 months after initial surgery (OR = 4.23; 95% CI: 1.10 to 16.30; p = 0.04). The postoperative BCVA was significantly better in the IFT group than in the ILM peeling group at 6 months after initial surgery (MD = −0.27; 95% CI: −0.40 to −0.15; p < 0.0001).

Conclusions: Based on the available evidence, IFT should be an effective technique for management of TMH with better MH closure rate and functional outcome compared to ILM peeling. However, further studies in large randomized controlled trials comparing these two techniques are necessary.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Comparison of Cognitive Workload and Surgical Outcomes Between a Three-Dimensional and Conventional Microscope for Macular Hole Surgery

*First Author: Akshay **KOTHARI***
*Co-Author(s): Mounika **BOLISETTY**, Jai **KELKAR**, Aditya **KELKAR***

Purpose: Performing a surgical task subjects the surgeon to multitudinal stressors, especially with the newer 3D technology. The quantum of cognitive workload using this modern surgical system in comparison to the Conventional microscope system remains unexplored. We evaluate the surgeon's cognitive workload and the surgical outcomes of macular hole (MH) surgery performed on a 3D versus a Conventional microscope operating system.

Methods: Fifty eyes of 50 patients with MH undergoing surgery using the 3D or Conventional microscope visualization system were included. Cognitive workload assessment was done by real-time tools(Surgeons' heart-rate[HR] and oxygen saturation[SPO2]) and self-report tool (Surgery Task Load Index[SURG-TLX] questionnaire) of three Vitreoretinal surgeons. Based on the SURG-TLX questionnaire was performed.

Results: Of the 50 eyes, 30 eyes and 20 eyes underwent surgery with the Conventional microscope and the 3D system, respectively. No difference was noted in the MH basal-diameter (p = 0.128), total surgical-duration (p = 0.299), internal-limiting membrane (ILM) peel time (p = 0.682), and the final VA (p = 0.515) between the two groups. Both groups showed significant improvement in VA (p < 0.001) with a 90% closure rate at one-month post-surgery. Cognitive workload comparison, the intraoperative HR (p = 0.024), total workload score (p = 0.005), and temporal-demand dimension (p = 0.004) were significantly more in Conventional microscope group as compared to 3D group. In both the groups, the HR increased significantly from the baseline while performing ILM peeling and at the end.

Conclusions: The surgeon's cognitive workload is markedly reduced while performing macular hole surgery with a 3D viewing system. Moreover, duration of surgery including ILM peel time, MH closure rates and visual outcomes remains unaffected irrespective of the operating microscope system.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Comparison of Core-Vitrectomy Time in 25 Gauge Ultrasonic and Pneumatic Guillotine Vitrectomy

*First Author: Bulat **AZNABAEV***
*Co-Author(s): Tagir **DIBAEV**, Timur **MUKHAMADEEV***

Purpose: To evaluate time spent for core-vitrectomy, using 25G ultrasonic vitrectomy cutter in comparison to 25G pneumatic guillotine cutter.

Methods: Novel technology of vitreous fragmentation based on ultrasonic oscillations was developed in 25-gauge single-tube design. Core-vitrectomy time was counted in seconds in 306 patients who underwent 25G ultrasonic (first group, n = 171) and guillotine (second group, n =135) vitrectomy. Core vitreous volume was defined intraoperatively as the central area of the vitreous that could be visualized via panoramic lens (128D lens, supplied to Carl Zeiss Lumera 700 microscope) with constant and independent distance from the lens to the eye. In first group working frequency of ultrasonic vitrector was 32 kHz (1 920 000 cuts/min), average ultrasonic stroke amplitude - 18 ± 9,8 µm. In second group cutting frequency was 6000 cuts/min, traditional pneumatic guillotine cutter was used.

Results: Average core-vitrectomy time in first group 277,8 ± 133,9 s., in second group – 387,7 ± 129,4 s., differences were statistically significant ($p < 0,05$, Mann-Whitney test).

Conclusions: In summary, 25G ultrasonic vitrectomy can be considered as effective tool for vitreous removal, allowing to reduce core-vitrectomy time during posterior segment surgery.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Experience With Pneumatic Retinopexy With Subretinal Fluid Drainage: A 3-Year Report

*First Author: Saurabh **DESHMUKH***
*Co-Author(s): Manshu **DESHMUKH**, Krati **GUPTA**, Surpriya **HAWAIBAM**, Ronel **SOIBAM***

Purpose: To assess the efficacy of the pneumatic retinopexy (PR) with subretinal fluid drainage (SRF) for the treatment of bullous rhegmatogenous retinal detachment (RRD) and compare it against scleral buckling (SB) over a long period of three years.

Methods: A total of 42 cases were enrolled in the study after following the strict inclusion criteria. One specific inclusion criterion was bullous RD where the retinal surface could not be reached with scleral indentation, suggesting an unsuitable candidate for cryoretinopexy and laser retinopexy. So, in these cases, PR with SRF drainage was done.

Results: This study, first of its kind in India, was done over a period of three years. Of the 42 cases, redetachment was seen in four cases, one was due to missed break and three were due to new break formation. Statistical analysis showed the efficacy of PR with SRF drainage to be equal to SB.

Conclusions: PR with SRF drainage provides a cost-effective method for treatment of bullous RRD.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Experimental Study of the Functional Activity of the Retina After Exposure to Low-Frequency Ultrasound

*First Author: Bulat **AZNABAEV***
*Co-Author(s): Tagir **DIBAEV**, Timur **MUKHAMADEEV**, Aleksandr **VAFIEV***

Purpose: To study the electroretinogram of rabbits after the use of ultrasonic and traditional pneumatic guillotine vitrectomy.

Methods: Forty Chinchilla rabbits underwent vitrectomy surgery. In the experimental group (n=20) surgery was performed using a 25G caliber ultrasound vitrectomy, the operating frequency of the instrument was 32 kHz, the maximum power was 10%, in the control group (n=20) surgery was performed using traditional pneumatic guillotine, the cutting frequency was 6000 cuts / min. The vitrectomy time in both groups was 300 s. An electroretinogram was recorded before surgery and on 1, 7, 14, and 30 days after using of Tomey EP-1000 (Japan). The amplitude and latency of a- and b-waves were estimated.

Results: On day 1, there was a decrease in the amplitude and latency of a- and b-waves in the experimental group, as well as in the control group. On days 7 and 14, the dynamics of electroretinogram parameters in both groups tended to recover. On the 30th day, there was a complete recovery to the baseline values of the amplitude and latency of a- and b-waves in the experimental group.

Conclusions: Based on the foregoing, electrogenesis of the retina of rabbits was restored in the experimental group by the 30th day. It can be concluded that the use of low-frequency ultrasound for vitreous removal can be considered safe and has prospects for further development and application.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Five-Year Journey of Pneumatic Retinopexy: How to Achieve Single Operation Success?

*First Author: Putu **AYU WULANSARI***
*Co-Author(s): Diah **PANTJAWATI***

Purpose: Single Operation Success (SOS) rate of pneumatic retinopexy remained to be one of the most conflicted results under the circumstances of retinal detachment repair. This finding rendered the underutilization of this procedure compared to scleral buckling or vitrectomy. This five years study aimed to describe success rate and clinical outcome of pneumatic retinopexy procedure for rhegmatogenous retinal detachment repair.

Methods: This study used the method of descriptive analysis with retrospective design using medical records of patient undergoing pneumatic retinopexy by a single operator during 2016-2021.

Results: There were 39 procedures carried out for 5 years. The mean age of subjects was 52 ± 15.25 year with male predominance (66%). All patients (100%) were phakic and had break in superior quadrant. 19 of 33 eyes (57%) included in the study were successful with single operation. Combined scleral buckle, vitrectomy, and silicone oil tamponade were done for failed cases. Detachment occurred mostly in 2 weeks post-operative (64%) with break re-opening, new/missed break, and inadequate positioning as possible causes. Single procedure resulted in better BCVA outcome compared to repeat procedure, but the difference was not statistically significant (p = 0,32). All patients (100%) achieved anatomical success at 6 months follow up. Among other variables, preoperative BCVA, macula status, number of breaks, and post-operative laser are associated with higher success rate, respectively p = 0,008, p = <0,001, p = <0,001, and p = 0,03.

Conclusions: Selective and thorough patient selection are essential to increase SOS rate. Post-operative lasers are encouraged when there are no related contraindications. Pneumatic retinopexy is considered an effective procedure for simple retinal detachment repair.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Fluorescein-Assisted Subretinal tPA Delivery for Submacular Hemorrhage

*First Author: Sunil **GANEKAL***
*Co-Author(s): Ramachandran **NAIR***

Purpose: To assess the efficacy of fluorescein-assisted subretinal tPA delivery during pars plana vitrectomy for submacular hemorrhage.

Methods: Prospective study of 18 eyes of 18 patients undergoing PPV with fluorescein-assisted subretinal delivery of tPA for submacular hemorrhage. Out of 18 patients, 10 had wet AMD and 8 had PCV. All patients underwent standard 23-guage vitrectomy. Two mL tPA (concentration:25 µg/0.1 mL) poured into a standard silicone oil syringe with attached 41-gauge cannula. A sterile fluorescein sodium strip was placed into the tPA creating an orange solution. Silicone oil syringe with 41-gauge cannula was then connected to the vitrectomy system and injection titrated to allow a slow trickle of tPA into subretinal space; tPA was delivered into the subretinal space until an adequate bleb formed. SF6 gas in 16 eyes and air in 2 eyes was used as tamponade. All patients post operatively assessed for successful postoperative displacement of submacular hemorrhage and change in visual acuity from baseline.

Results: Mean age was 72 ± 9 years (range 51–79 years). At mean follow-up of 463 ± 262 days, mean Snellen visual acuity improved from 20/690 preoperatively to 20/234 postoperatively (p = 0.14). Overall, 9/18 eyes gained visual acuity, 8/18 eyes remained stable, and 1/18 eyes lost visual acuity. There were no intraoperative or postoperative complications.

Conclusions: Fluorescein-assisted delivery of subretinal tPA during PPV for submacular hemorrhage allowed improved visualization of subretinal tPA and was not associated with a unique toxicity concern or intraoperative complication.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Foldable Capsular Vitreous Body Indications, Complications, and Outcomes: A Systematic Review

*First Author: Hashem **ABU SERHAN***
*Co-Author(s): Leen **ABU SERHAN**, Ayman **ELNAHRY**, Sara **IRSHAIDAT***

Purpose: Foldable capsular vitreous body (FCVB) is an emerging vitreous substitute that has been recently introduced to treat various advanced vitreoretinal conditions including severe ocular trauma, complicated retinal detachment (RD), and proliferative vitreoretinopathy. We conducted the first systematic review on the indications, complications, and outcomes of FCVB.

Methods: The review protocol was prospectively registered at PROSPERO (CRD42022342310). A systematic literature search using PubMed, Ovid MEDLINE, and Google Scholar for articles published until May 2022 was performed. The search included the following keywords: foldable capsular vitreous

body, FCVB, artificial vitreous substitutes, and artificial vitreous implants. Outcomes included indications of FCVB, anatomical success rates, postoperative intraocular pressure (IOP), best-corrected visual acuity (BCVA), and complications.

Results: A total of 17 studies that utilized FCVB up to May 2022 were included. FCVB was used intraocularly as tamponades or extraocularly as a macular/scleral buckle for various retinal conditions including severe ocular trauma, simple and complex RD, silicone oil (SO) dependent eyes, and highly myopic eyes with foveoschisis. FCVB was reported to be successfully implanted in the vitreous cavity of all patients. Postoperative IOP was improved or maintained in most eyes, with lower postoperative complication rates, while BCVA improved in most subjects.

Conclusions: Indications of FCVB implantation have recently widened to include multiple advanced ocular conditions such as complex RD, but also include simpler conditions such as uncomplicated RD. When compared to SO, FCVB showed good visual outcomes, fewer IOP fluctuations, and a good safety profile. Larger comparative studies are required to further evaluate FCVB implantation.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

National Health Expenditures Associated With Diabetic Retinopathy in Type 2 Diabetes in Indonesia From 2015 to 2020

*First Author: Alfia **ZAHARO***
*Co-Author(s): Muhammad **SASONGKO**, Firman **WARDHANA***

Purpose: To identify the overall health expenditure associated with diabetic retinopathy (DR) from the perspective of the National Health Insurance (Jaminan Kesehatan Nasional [JKN])

Methods: A dataset of 1% of all individuals registered in JKN database was selected by JKN central statistician using systematic random sampling. Of these data, we retrieved individuals who were diagnosed primarily with type 2 diabetes mellitus (T2DM) (ICD-10 E11) and or T2DM with ophthalmic complications (E11.3), then we retrieved all with further diagnosis of DR (H36). Five groups of medical procedures related to DR management were developed: diagnostic, laser photocoagulation and cryotherapy, minor (intravitreal injection) and major surgical procedures (e.g., vitrectomy), coded according to Indonesian Case Base Groups (INA-CBGs). We performed descriptive analyses for the annual expenses and costs incurred for DR-related medical procedures.

Results: There were 156,752 of individuals with DR in JKN database sample. The overall DR costs was US $56.5 million, increased annually from 2015 to 2019 ($5.2, $6.9, $9.5, $11.4, and $15.7 million, consecutively) but declined substantially in 2020 ($7.7 million). The largest amount was spent on intravitreal injection ($31.5 million [73%]) followed by major eye surgery ($6.8 million [15.5%]), retinal imaging ($2.7 million [8.7%]) and laser photocoagulation ($2.5 million [8.1%]).

Conclusions: Health expenditure associated with DR in Indonesia has shown significant increased from 2015 to 2019 but decreased in 2020 possibly due to COVID-19 pandemic. The majority of funding was spent to treat severe spectrum of DR, suggesting that nationwide screening to detect early DR is needed.

Feb 24, 2023 (Fri)
09:00 – 10:30
Venue: MEETING ROOM 409 (Level 4)

Observational Study of Intraoperative Bleeding in Diabetic Vitrectomy With Intravitreal Ranibizumab (Accentrix) Used as Preoperative Adjunct Therapy

*First Author: Su Huan **CHONG***
*Co-Author(s): Mae-Lynn catherine **BASTION**, Zabri **BIN KAMARUDIN**, Ayesha **MOHD ZAIN**, Mushawiahti **MUSTAPHA***

Purpose: To compare intra-operative bleeding among patients who received ranibizumab (Accentrix) 0.23mg/0.05mL as pre-operative adjunct therapy for diabetic vitrectomy, in comparison to the patients with no pre-treatment of Ranibizumab.

Methods: Prospective observational comparative study was performed on the patients listed for diabetic vitrectomy in a tertiary eye center. The IVR group received intravitreal administration of Ranibizumab 0.23mg/0.05mL, 1-10 days before vitrectomy; the control group did not receive pre-operative intravitreal Ranibizumab. Intra-operative parameters included intraoperative bleeding, duration of surgery, endodiathermy spots used, retinal breaks, and tamponade agents used. Surgical outcomes included best-corrected visual acuity at three months, recurrent vitreous hemorrhage, retinal detachment, and iris neovascularization.

Results: A total of 202 patients were divided into two groups with mean age of 51.6 ± 9.5 years. The duration of diabetes mellitus in IVR group was significantly longer (10.0 ± 5 years) than the non-IVR group (8.0 ± 5 years) with $p = 0.02$. Patients' age was significantly older in non-IVR group (54.0 ± 8.14years) with $p = 0.032$. There was no statistically significant difference for intraoperative bleeding between both groups, with $p = 0.805$. Median duration of vitrectomy (minutes) and mean endodiathermy spot application were statistically significant with $p < 0.05$. For postoperative outcomes at three months, best-corrected visual acuity was statistically significant with $p = 0.022$.

Recurrent vitreous hemorrhage and development of iris neovascularization was also statistically significant.

Conclusions: The intraoperative bleeding during diabetic vitrectomy was not significant among two groups. Preoperative IVR 0.23mg/0.05mL can reduce surgery time and endodiathermy spot application, improve BCVA post-operatively, reduce recurrent vitreous hemorrhage and iris neovascularization.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 302–303 (Level 3)

Fibrin Glue-Assisted Retinopexy for Rhegmatogenous Retinal Detachment Study: Long-term Outcomes of New Surgical Technique With No Silicone Oil or Gas Tamponade and No Postoperative Positioning

*First Author: Mudit **TYAGI***

Purpose: To describe long-term outcomes of a new surgical technique utilizing fibrin glue-assisted retinopexy for rhegmatogenous retinal detachment (GuARD) as temporary tamponade that obviates the need for oil or gas in cases of rhegmatogenous retinal detachments.

Methods: Prospective interventional study of 30 consecutive eyes of 30 patients with RRD. A complete pars plana vitrectomy was done in all cases followed by fluid–air exchange, laser photocoagulation around the breaks and application of 0.1 to 0.2 mL of fibrin glue. No long-acting gas or silicone oil was used for tamponade. No postoperative positioning was prescribed. Primary outcome measure was successful anatomical retinal reattachment. Secondary outcome measures were improvement in best corrected visual acuity (BCVA) and complications. Patients with more than 6 months of follow up were included.

Results: The median age was 58 (range: 36-61 years) years and median duration of symptoms was 18 (range: 7- 60) days. 25 eyes were pseudophakic and 5 were phakic. To note, 18 eyes had inferior, 7 had superior and 5 eyes had a total RD. Successful retinal reattachment was achieved in 27 out of 30 (90%) cases and was maintained at the end of 6 months of follow-up. The median BCVA improved from 20/100 preoperatively to 20/80 at 1-week and 20/50 at 1-month follow up. No eyes had elevated intra-ocular pressures or unexpected inflammation during the course of follow-up.

Conclusions: Fibrin glue as a tamponade in cases of rhegmatogenous retinal detachment allows early visual recovery while avoiding the problems of gas or oil tamponade and obviating the need of postoperative positioning

Translational and Visual Sciences Research

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Abnormally High Optic Nerve Head Strains Under Acute IOP Elevation in Eyes With Staphyloma

*First Author: Thanadet **CHUANGSUWANICH***
*Co-Author(s): Tin **AUNG**, Fabian **BRAEU**, Michael **GIRARD**, Quan **HOANG**, Tin **TUN***

Purpose: To assess optic nerve head (ONH) strains (i.e. deformations) following acute IOP elevation in healthy, highly myopic eyes (HM), pathologic myopia (PM) and pathologic myopia in the presence of staphylomas (PM+S).

Methods: We recruited 247 subjects, which comprised of 99 emmetropic controls, 51 HM (>25 mm in axial length and diopters greater than 5), 79 PM and 18 PM+S. For each subject, we imaged the ONH using Spectral-domain optical coherence tomography (OCT) under the following conditions: (1) primary gaze and (2) primary gaze with acute IOP elevation via ophthalmodynamometer. For each OCT volume, we automatically segmented the ONH tissues. We then digitally align volume (1) and (2) before performing digital volume correlation (DVC) to quantify IOP-induced tissue displacements and strains.

Results: We found that PM+S subjects exhibited significantly higher ONH strains (10.3 ± 7.9%, $p < 0.001$), as compared to other groups: PM subjects (5.6 ± 2.8%, $p < 0.05$), HM subjects (3.9 ± 1.8 %, $p < 0$ .01) and control subjects (3.8 ± 1.6%, $p < 0.01$).

Conclusions: Staphylomas are associated with structural weakening of the ocular globe and are known to precede or occur concurrent with the major vision-threatening changes that occur in PM. Our results showed a significant ONH weakening of eyes with staphylomas under a simple biomechanical test. With further studies (longitudinal), our biomechanical test has the potential to predict which highly myopic eyes may develop staphylomas.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Associations of VEGF Genetic Polymorphisms With Retinopathy of Prematurity

*First Author: Xiao Chun **LING***
*Co-Author(s): Yih-Shiou **HWANG**, Yu-Chuan **KANG**, Wei-Chi **WU**, Shun-Fa **YANG***

Purpose: Vascular endothelial growth factor (VEGF) is a key regulator of angiogenesis and plays an essential role in the retinopathy of prematurity (ROP) pathogenesis. This study examines associations between VEGF gene polymorphism and ROP risk and examines its potential moderating effects in terms of preterm characteristics among ROP infants.

Methods: Infants born prematurely at any time during 2009 to 2018 were recruited. Five single-nucleotide polymorphisms (SNPs) of VEGF were analyzed by real-time PC for all patients. Multivariate logistic regression was applied to model associations between VEGF genetic polymorphisms and ROP susceptibility, severity and premature clinicopathologic characteristics.

Results: A total of 334 patients were recruited. Among female patients with ROP, those with VEGF polymorphism rs3025035 and the combination of CT and TT genotypes exhibited significantly higher risks of developing severe ROP compared with their wild-type genotype counterparts at 3.231- (95% confidence interval [CI]: 1.238 to 8.431) and 2.643-fold risks (95% CI: 1.056 to 6.619), respectively. Among 178 patients with ROP, female allelic carriers of VEGF rs3025010 C (TC + CC) had a lower risk of developing ROP stage 3 or above (OR: 0.406; 95% CI 0.165-0.999) relative to female patients with TT homozygotes.

Conclusions: The relationship of VEGF polymorphism genotypes to ROP risks differed between male and female patients. The VEGF rs3025035 and rs3025010 could serve as a predictor of ROP severity in female patients.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Development of a Biosimilar Adeno-Associated Virus Vector-Based RPE65 Gene Therapy in a Murine Model

*First Author: Tien-En **TAN***
*Co-Author(s): Veluchamy Amutha **BARATHI**, Jodhbir **MEHTA**, Sai **TUN**, Hwee Goon **TAY**, Kelvin Yi Chong **TEO***

Purpose: To establish the efficacy of a biosimilar RPE65 gene therapy using an adeno-associated virus serotype 2 (AAV2) vector delivered by subretinal injection in an Rd12 murine model of biallelic RPE65 mutations.

Methods: Seventeen Rd12 mice and 4 wildtype (WT) mice aged 4-8 weeks underwent baseline evaluation with electroretinography (ERG) in both eyes, and vision-dependent behavioral testing with the Morris water maze test (MWMT). After baseline evaluation, 12 Rd12 mice were treated with subretinal injections of AAV2-RPE65 in one eye, and control injections with saline in the other eye. 4-6 weeks later, all 17 Rd12 mice underwent repeat ERG and MWMT testing. 1 week later, the 12 treated mice had their AAV2-RPE65-treated eye sutured shut and underwent repeat MWMT testing. Immunohistochemical (IHC) staining for RPE65 protein expression was performed.

Results: At baseline, untreated Rd12 eyes (n=34) had significantly diminished rod and cone ERG responses compared to WT eyes (n=8). After treatment, AAV2-RPE65-treated Rd12 eyes (n=12) showed improvement in rod, but not cone, responses, compared to saline-injected Rd12 eyes (n=12). At baseline, Rd12 mice (mean 42.8 ± 20.0s, n=17) performed poorly on MWMT compared to WT mice (4.1 ± 3.1s, n=4, $p < 0.001$). After treatment, MWMT performance of Rd12 mice improved significantly (12.7 ± 10.9s, n=12) from baseline (41.9 ± 22.4s, n=12, $p = 0.001$). After suturing AAV2-RPE65-treated eyes shut, MWMT performance dropped, becoming similar to baseline levels (35.6 ± 18.1s, n=12, $p = 0.420$). IHC analysis demonstrated RPE65 protein expression in 3 of 4 treated Rd12 eyes.

Conclusions: This biosimilar AAV2-RPE65 subretinal gene therapy produces electrophysiologic, functional and immunohistochemical improvements in a murine Rd12 disease model.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Evaluating Therapeutic Potential of Gypenosides for Retinal Degeneration

*First Author: Aileen **WONG***
*Co-Author(s): Xinhua **SHU***

Purpose: Retinal degeneration is characterized by the death of neural retinal cells. It is well known that oxidative stress and inflammation play a critical role in the pathogenesis of retinal degeneration. Gypenosides are major functional saponins in Gynostemma pentaphyllum and have shown anti-inflammatory, anti-oxidative, antihyperlipidemic, anti-diabetic and anti-tumor activities. The current study aims to investigate the effect of gypenosides against oxidative stress and inflammation in human retinal pigment epithelial (RPE) cells and in a zebrafish retinal degeneration model.

Methods: Protection of gypenosides against oxidative stress and inflammation was initially examined in human RPE cells by measuring cell viability, expression of antioxidant and inflammation genes, activities of catalase and superoxide dismutase (SOD),

malondialdehyde (MDA) level, and cell death rate. Effect of gypenosides on photoreceptor death was assessed in a zebrafish retinitis pigmentosa (RP) model which carries a naturally occurring loss-of-function in the rpgrip1 gene and shows early retinal degeneration

Results: Treatment of gypenosides resulted in increased cell viability, decreased production of reactive oxygen species (ROS) and MDA, increased activities of SOD and catalase, higher expression of antioxidant genes and lower expression of proinflammatory genes, and decreased cell death rate in H2O2-treated ARPE-19 cells, compared to cells exposed to H2O2 alone. The RP zebrafish treated with gypenosides had significantly increased antioxidative capacity, decreased expression of proinflammatory genes and increased survival of both rod and cone cells.

Conclusions: This study demonstrates that gypenosides protect retinal cells against oxidative stress and inflammation and suggest they have therapeutic potential for patients with retinal disorders.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Investigation of Hemodynamic Changes in Rat Retinal Vascular Network Under Time-Dependent Pressure Gradient Condition

*First Author: Chi Wei **ONG***
*Co-Author(s): Fabian **BRAEU**, Thanadet **CHUANGSUWANICH**, Shaista **HUSSAIN**, Bingyao **TAN**, Ziling **WU***

Purpose: It is believed that altered local hemodynamic forces in the retinal vasculature plays an important role in understanding disease progression such as glaucoma and myopia, however, the details of retinal hemodynamics have yet to be completely characterized. The main objective of the current paper is to understand the local hemodynamic changes due the change of retinal vasculature under various time-dependent pressure gradient through computational modelling.

Methods: Three-dimensional rat retinal vasculature was reconstructed from confocal microscopy images of a Brown rat by manual segmentation. We conducted a computational fluid dynamics (CFD) analysis on different sections of retinal vasculature network where different time-dependent pressure profiles were applied to mimics a change of intraocular pressure (IOP) which is a major risk factor of glaucoma.

Results: We compared wall shear stress and pressure gradient in different sections, which can be hard to measure in vivo. The velocity patterns from different sections showed good qualitative agreement with published literature. Our study revealed that the pressure gradient between arterioles and venules strongly affects the local wall shear stress distribution along with the geometry of the retinal vasculature. The alteration of wall shear stress magnitude can be useful to understand the autoregulation behavior in the rat retinal.

Conclusions: Our results showed that CFD modelling of rat vasculature under various time-dependent pressure gradient corresponding to different clinically relevant conditions like increase of IOP could be useful to characterize retinal flow behavior. The significant hemodynamic differences under various pressure gradient conditions could help to explain the development of various optic disorders.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Is Next Generation Sequencing a Promising Tool in the Diagnosis of Endophthalmitis?

*First Author: Joveeta **JOSEPH***
*Co-Author(s): Akash **BELENJE**, Taraprasad **DAS**, Suchita **PANDEY**, Savitri **SHARMA***

Purpose: To evaluate the diagnostic utility of targeted next-generation sequencing (NGS) in diagnosing infectious endophthalmitis.

Methods: Vitreous fluid collected from patients with clinical diagnosis of postoperative infectious endophthalmitis between April 2019 and April 2022 was processed by traditional microbiology and NGS techniques. Conventional tests included aerobic and anaerobic culture of bacteria and fungi; these were subsequently identified using Vitek-2 and lactophenol cotton blue wet mount, respectively. NGS technique included DNA extraction using Qiagen mini kit, afterward amplification of V3–V4 regions of the bacterial and ITS 4 regions of the fungal genome by PCR, and deep sequencing on Illumina HiSeq 2500 machine. Paired reads were curated, taxonomically labelled, and filtered.

Results: Thirty-three vitreous samples from 100 clinically diagnosed endophthalmitis patients were culture positive; it included 29 bacteria and 4 fungi. All these samples were also positive by NGS. Additionally, NGS detected 34 microorganisms in culture-negative vitreous samples; these included 26 bacteria (predominantly Staphylococcus spp, n=14), 6 fungi (predominantly Aspergillus spp, n=3), and 2 mixed infections. Also, NGS detected polymicrobial infections in many culture-negative samples (18/34; 52.9%) and a few culture-positive samples (9/33; 27.2%). Thus, together with conventional culture and NGS, microbiology positivity was 67% (33+34 of 100); including 55 bacteria and 10 fungi. The ability to detect microorganisms was statistically higher in NGS. (p = 0.005).

Conclusions: NGS is evolving into a molecular

tool for identifying pathogens in postoperative endophthalmitis. Currently, cost is the main challenge. The conventional culture is still required for antibiotic susceptibility testing.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Modulation of Morphogens Promotes Differentiation of Human Induced Pluripotent Stem Cells With Potential for Corneal Epithelial-Like Formation

*First Author: Bakiah **SHAHARUDDIN***
*Co-Author(s): Komathi **SELVARAJAH**, Jun Jie **TAN***

Purpose: This study aims to determine the optimal protocol for inducing corneal epithelial-like differentiation from human induced pluripotent stem cells (hIPSC) as a potential therapy in limbal stem cell deficiency.

Methods: Cord blood hiPSC were seeded at 2.5 x 104 cells per square centimeter and maintained in matrigel-coated plates with miltenyi medium for two days. Rho kinase inhibitor, Y27632 was added for the first 24 hours. The cells were treated from 0 to 3 days with small molecules i.e. Bone morphogenetic factor 4(BMP4), Retinoic acid (RA) and Epidermal growth factor (EGF) at various combinations with minor inductive modifications during early differentiation towards desired ectodermal cell lineages.

Results: Immunocytochemistry (ICC) analysis revealed that cells treated with RA and/or exogenous BMP4 signaling have a significantly enhanced corneal markers ABCB5, ABCG2 and p63+/PAX6+ expression at 10 days of differentiation. ICC finding corresponds quantitatively with flow cytometry evaluation of ATP Binding Cassette (ABC) B5 and G2 genes, which are limbal stem cell markers and responsible for corneal development and repair. Pax6 expression was accompanied by a significantly high expression of the nuclear transcription factor, p63α (a marker which supports stem cell proliferation and regulation in epithelia) at Day 10.

Conclusions: Combined modulation of retinoic acid efficiently mediated presumptive corneal epithelial differentiation in conjunction with BMP signaling. Further optimization with a cornea epithelial-specific media would make this protocol to differentiate to corneal progenitors and mature cornea epithelial-like cells. Acknowledgment: Ministry of Education grant scheme: FRGS/1/2019/SKK08/USM/02/3

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Morphometric Evaluation of Nasolacrimal Canal in Mongolian

*First Author: Erdenetuya **ENKHZAYA***
*Co-Author(s): Erdenezul **GANTULGA***

Purpose: The purpose of this study was to determine the normal distribution of the morphometry of nasolacrimal canal in Mongolian populations. To determine the diameters, angles and sectional area of the bony nasolacrimal canal using computed tomography for obtaining detailed anatomical knowledge of the drainage system and utilizing these measurements in planning interventions for nasolacrimal duct obstruction in adults.

Methods: Using computed tomography, we measured the nasolacrimal duct length, upper end, middle and lower end anteroposterior and transverse diameters, axial area and angle and sectional area of the bony nasolacrimal duct in 384 patients without nasolacrimal duct disease.

Results: A total of 384 the mean age of the study population was 49.88 ± 16.4 years (18-92). There was no statistically significant difference in parameters between two sides. The bony canal length was shorter in females and angle between bony canal and nasal floor significantly greater in females. Upper end transverse diameter was shorter in males and anteroposterior diameter was greater in males.

Conclusions: 1. The morphometric measurements of the nasolacrimal canal was defined on the right and on the left side considered to be a manifestation of a similar pattern of development of symmetrical organs. 2. The morphometric measurements of the nasolacrimal canal was not defined differently for age groups, the length of its canal is greater in men, the diameter was different in the upper, in the middle and at the lower end, but the angle of formation of the nasolacrimal canal parallel to the nasal floor less defined in men.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Myopia Progression From Stopping Childhood Atropine Treatment to Early Adulthood

*First Author: Yong **LI***
*Co-Author(s): Marcus **ANG**, Joey **CHUNG**, Daniel **TING**, Angeline **TOH***

Purpose: To identify the factors which may have attributed to myopia progression from stopping childhood atropine treatment to early adulthood.

Methods: A group of children aged 6-12 years randomized to receive atropine 1%, 0.5%, 0.1%, 0.01% or placebo eyedrops once daily. They received treatment for 2-4 years during childhood. After over 10 years, they were recalled determining myopia progression and their current ocular status. Those who had myopia progression by spherical equivalent (SE) greater than 1.0 D were defined as progressors.

Results: A total of 161 patients were recalled and included for analysis. They had no significant differences in baseline SE or axial length (AL). A total of 110 eyes were defined as progressors. Compared with non-progressors, progressors showed significant differences in atropine treatment in childhood with a higher percentage of receiving placebo. Progressors were younger at baseline, with greater SE and longer AL at the end of treatment and showed a higher percentage of high myopia (SE greater than -6.0 D) in adulthood. Also, progressors showed greater AL/ corneal radius of curvature (CR) ratio, AL/ anterior chamber depth (ACD) ratio, and significantly thicker central and peripherical corneal thickness (CT).

Conclusions: Childhood atropine treatment may have a long-term effect on myopia progression from stopping treatment till early adulthood. Children who were younger at baseline, with greater SE and longer AL at the end of treatment were more likely to progress after stopping treatment. AL/CR, AL/ACD, and central and peripheral CT may be the associated factors for myopia progression.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Optigraft as Electron-Beam Irradiated Human Donor Cornea for Refractive Keratoplasty

*First Author: Andri **RIAU***
*Co-Author(s): Evelina **HAN**, Yu-Chi **LIU**, Jodhbir **MEHTA**, Nur Zahirah **BINTE M. YUSOFF***

Purpose: Optigraft is a commercially available, electron-beam (E-beam) sterilized donor cornea with a shelf-life of 2 years at room temperature. Here, we aimed to characterize the Optigraft, determine the accuracy of femtosecond laser (FSL)-assisted lenticule creation, and the effects of the lenticular implantation in vivo.

Methods: Seven lenticules (-6.00D power) were cut in the Optigraft using small incision lenticule extraction (SMILE) program on a VisuMax FSL. The lenticular thickness was measured in situ on an anterior segment-optical coherence tomography (AS-OCT). After extraction, the lenticular transparency (n=4) was measured, and the collagen I, glycoproteins, and glycosaminoglycans (GAG) were assessed with histological staining. Separately, the lenticule (n=3) was implanted in an intrastromal pocket in the rabbit for 4 months. Slit-lamp photography, AS-OCT, in vivo confocal microscopy, and topography were performed biweekly on the rabbit. 'Fresh', non-sterilized donor cornea was used as the control of the study.

Results: The AS-OCT revealed that the accuracy of the FSL cut was similar between the Optigraft and 'fresh' corneas (p = 0.735). There was a tendency for cavitation bubble coalescence in the Optigraft most likely due to the lower level of GAG (reduced corneal hydration). The levels of collagen I and glycoproteins were similar between the groups. The Optigraft lenticular transparency, however, was not affected by the GAG discrepancy (p = 0.506). The lenticular implantation was uneventful. No signs of rejection and cytotoxicity were observed. Both 'fresh' and Optigraft lenticular implantation gained approximately 3D power after 4 months.

Conclusions: Optigraft can be a viable source of lenticule for on-demand refractive keratoplasty or stromal keratophakia.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Seven-Year Clinical Course of Autologous Induced Pluripotent Stem Cell-Derived Retinal Pigment Epithelial Cell Sheet Transplantation for Age-Related Macular Degeneration

*First Author: Yasuo **KURIMOTO***
*Co-Author(s): Masashi **FUJIHARA**, Yasuhiko **HIRAMI**, Michiko **MANDAI**, Sunao **SUGITA**, Masayo **TAKAHASHI***

Purpose: To report the results after 7 years of follow-up in the previously presented first-in-human case of autologous induced pluripotent stem cell (iPSC)-derived retinal pigment epithelium (RPE) transplantation for exudative age-related macular degeneration (AMD).

Methods: The patient was a 77-year-old woman who had been diagnosed with polypoidal choroidal vasculopathy (a subtype of exudative AMD) in both eyes and had experienced a steady decrease in vision despite receiving 13 anti-vascular endothelial growth factor (VEGF) injections over 4 years. Autologous iPS cells were established from the patient's skin, RPE cells were induced to differentiate, and RPE sheets were prepared for transplantation. The primary endpoint of the clinical study concerned safety of the treatment, and the secondary endpoint was efficacy.

Results: An iPS cell derived RPE sheet was successfully transplanted under the fovea after the removal of choroidal neovascularization (CNV) in the right eye. At a long-term follow-up of 7 years postoperatively, the primary endpoints of tumorigenesis, failure of engraftment, rejection, and other serious complications of transplanted cells were not observed, and no

recurrence of CNV was observed without anti-VEGF therapy. Corrected visual acuity of 0.09 preoperatively was maintained for 7 years. Imaging studies showed relative preservation of photoreceptor cells and choriocapillaris at the site of RPE implantation.

Conclusions: The first clinical study of autologous iPS cell-derived RPE sheet transplantation for exudative AMD showed a 7-year postoperative period without significant adverse events, suggesting the effectiveness of the transplanted tissue including preservation of adjacent photoreceptor and choroidal tissue.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Small Molecule Mediated Inhibition of Intercellular Adhesion Molecule Mediated Effects As Potential Target for Diabetic Vascular Leakage: A Pre-clinical Efficiency Trial

*First Author: Thirumalesh **M B***
*Co-Author(s): Arkasubhra **GHOSH**, Aayesha **KHANUM***

Purpose: Diabetic macular edema (DME) is currently treated with intravitreal Anti-VEGF/steroids. We investigate role of intercellular adhesion molecule (ICAM) and effect of intravitreal injection of a small molecule which inhibits the ICAM mediated effect versus intravitreal Ranibizumab in prevention of vascular leakage in Streptozocin (STZ) induced diabetic mouse model and to explore this a potential target for treatment of DME.

Methods: We analyzed the aqueous humor of patients of DME undergoing intravitreal injection, apart from pro-inflammatory cytokines (like IL6 and IL8), VEGF, there was elevated levels of sICAM. Based on this, invitro study on RPE and endothelial cell lines which were subjected to glycemic stress resulted in cell surface expression of ICAM which paved the way for sICAM1 as the lead target for mechanistic exploration in-vivo in STZ induced Diabetic Mouse model (Gold standard).

Results: The RWJLFA1 antagonist treated eyes and ranibizumab treated showed significant and comparable reduction in the leakage patterns which demonstrates sICAMs role. Further mRNA expression of pro-inflammatory and pro-angiogenic genes were increased post STZ treated mouse retinas which was seen in the aqueous from human subjects with DME. ICAM1, IL6 and PEDF expression is reduced post RWJLFA1 antagonist treatment than the diabetic rat retinas. Anti-VEGF is able to achieve reduction in mRNA expression of all genes to varying levels.

Conclusions: This translational study shows that RWJLFA1 antagonist is a potential drug target which can be used as a novel treatment option for DME. More robust animal data is needed before this can go to phase1 trial.

Feb 25, 2023 (Sat)
16:30 – 18:00
Venue: MEETING ROOMS 307–308 (Level 3)

Visual Outcomes Following Bilateral Implantation of Monofocal Intraocular Lens Designed for Enhanced Monovision

*First Author: Jing **ZHONG***
*Co-Author(s): Jin **YUAN**, Jijing **LI***

Purpose: Limbal dermoid (LD) is a congenital ocular tumor that causes amblyopia and damages visual acuity (VA) and visual function. This study aimed to evaluate the therapeutic efficacy of perceptual learning (PL) toward improving contrast sensitivity function (CSF) and VA.

Methods: A total of 25 children with LD and 25 normal children were compared in terms of CSF and VA. The LD group was further randomly allocated into two arms: nine underwent PL combined with patching and eight underwent patching only; eight patients quit the amblyopia treatment. The primary outcome was the area under log CSF (AULCSF), and the secondary outcome was the best corrected VA (BCVA).

Results: The CSF was obviously reduced in the LD group compared with that in the normal group. Moreover, the difference in the changes in the AULCSF between the PL and patching groups after 6 months of training was 0.59 (95% CI: 0.32, 0.86, $p < 0.001$), and the between-group difference in VA at 6 months was −0.30 (95% CI: −0.46, −0.14, $p < 0.001$).

Conclusions: Children suffering from LD with amblyopia exhibited CSF deficits and VA loss simultaneously. PL could improve CSF and VA in the amblyopic eye better than patching.

POSTERS

Applying Big Data, Artificial Intelligence and Telemedicine in Ophthalmology

Poster No.: PO-008
Panel No.: 008, Session: PO

A Deep Learning System for Automating OCT Retinal Layer Segmentation

*First Author: Laura **GUTIERREZ***
*Co-Author(s): Yanyu **XU***

Purpose: Optical coherence tomography (OCT) with retinal segmentation analysis can be a valuable tool for classifying patients and optimizing specialist time. Therefore, we evaluate the ability of a deep learning system (DLS) to perform OCT retinal layer segmentation.

Methods: The DLS was trained, validated then tested on 120 OCT volumes (3,729 OCT slices) from 67 healthy eye patients. These OCT volumes are randomly divided into training, validation, and testing sets. The training set included 64 OCT volumes (1984 OCT slices) from 39 patients, a validation set of 28 OCT volumes (868 OCT slices) from 14 patients, and a testing set of 28 OCT volumes (868 OCT slices) from 14 patients. A trained ophthalmologist marked the ground truth layer surfaces. We used a U-Net in the DLS and the average Dice score to evaluate the performance of the DLS.

Results: The DLS correctly segmented the layer regions in the qualitative assessment. The DLS achieved 0.8648 Dice scores on validation and 0.8976 on testing sets.

Conclusions: We developed a DLS that can detect and segment the OCT retinal layers with high performance. Future prospective studies comparing the performance of DLS in different clinical settings (e.g., more eye diseases) will determine the clinical utility of this DLS.

Poster No.: PO-004
Panel No.: 004, Session: PO

Comparison of a Novel Automated Visual Acuity Test Using Augmented Reality With Snellen Visual Acuity and Early Treatment of Diabetic Retinopathy Study Chart

*First Author: Victor **KOH***
*Co-Author(s): Evangeline **LEONG**, Azri **MUHAMMAD BIN RAZALI**, Lyana **SHAFFIEE**, Adrian **TAY**, Dayna **YONG***

Purpose: Assess the performance and correlation a novel device, automated visual acuity test using augmented reality (AVAT-AR), and Snellen VA testing chart with the Early Treatment of Diabetic Retinopathy Study (ETDRS) chart as reference.

Methods: We developed AVAT-AR as a portable, automatic and space-saving prototype for self-testing of VA by patients in the outpatient clinic. Between February and April 2022, a total of 69 patients with visual acuity between 6/6 and 6/60 by Snellen testing were enrolled in this prospective observational study. All the subjects underwent VA testing of both eyes using three methods: manual Snellen chart tested at 6 meters from the subject; ETDRS chart tested at 4 meters; and AVAT-AR device. All the results were converted to logMAR scale for comparison analysis.

Results: After excluding 11 subjects (16%), 58 were included for the final analysis. The mean age of the subjects was 54.5 ± 13.2 (standard deviation) years; 22 (36.2%) were males; and 49 (84.5%) of the patients were Chinese. Compared to ETDRS, the mean difference in VA measured by AVAT-AR and Snellen were 0.01 ± 0.31 and 0.05 ± 0.29 logMAR respectively. Compared to ETDRS, Pearson Correlation Coefficients of AVAT-AR and Snellen were 0.88 (0.82, 0.92) ($p < 0.001$) and 0.90 (0.86, 0.93), ($p < 0.001$) respectively.

Conclusions: Both AVAT-AR and Snellen VA tests demonstrated good and comparable correlation with ETDRS test in this pilot study. Further studies are needed to evaluate the device's test-retest reliability with a larger population.

Poster No.: PO-001
Panel No.: 001, Session: PO

Demographic Profile of Patients Seeking Teleophthalmology Consultations Through E-Sanjeevani: Retrospective Analysis of 5138 Patients From North India

*First Author: Ashish **MARKAN***
*Co-Author(s): Amit **AGARWAL**, Madhuri **AKELLA**, Alisha **KISHORE***

Purpose: To report the demographic profile of patients registered through e-Sanjeevani OPD seeking teleophthalmology services.

Methods: This was a cross-sectional data analysis of patients with ocular complaints registered through the e-Sanjeevani platform at a tertiary care center. It was a doctor-to-doctor consultation, where teleophthalmology consultants provided teleconsultation services at sub-centers (SCs), primary health centers (PHCs), and community health centers (CHCs). Data regarding the patient's age, gender, residential address, provisional diagnosis, and treatment prescribed was recorded from May 2021 to Feb 2022, for 9 months.

Results: A total of 5,138 patients were teleconsulted from May 2021 to Feb 2022. The mean age of the patients was 37.64+19.34 years. Amongst these patients, 44% were males and 56% were females. Most of the teleconsultation calls were made from Palwal district (19.8%), followed by Hisar (14.5%) and Sonipat. The most common provisional diagnosis was dry eyes (21%), followed by allergic conjunctivitis (18%), refractive error (15%), and cataract (14%). These constituted about 70% of the diagnosis made through teleconsultations. The rest of the eye problems were diagnosed as stye, blepharitis, nasolacrimal duct obstruction, pterygium, subconjunctival hemorrhage, etc. The majority of the patients were managed medically (56.6%) and about 11.6% of the patients were referred because of some surgical intervention.

Conclusions: The e-Sanjeevani is an effective way to provide teleconsultations to patients in remote locations. The majority of the patients seeking ophthalmology consultations could be managed conservatively. Patients requiring surgical intervention could be referred timely, thus avoiding any delay in treatment.

Poster No.: PO-003
Panel No.: 003, Session: PO

Evaluating Performance of No-Code Artificial Intelligence Solution to Classify Retinal Pathologies From Optical Coherence Tomography Images

*First Author: Laura **GUTIERREZ***
*Co-Author(s): Kabilan **ELANGOVAN**, Arun **THIRUNAVUKARASU***

Purpose: Automated machine learning (AutoML) allows researchers without computational experience to build machine learning models to address real-world challenges. This study aims to evaluate the performance of a code-free AutoML platform in its discriminative performance in classifying retinal pathologies using optical coherence tomography images.

Methods: A multi-class AutoML model was engineered to classify retinas as Normal, Choroidal Neovascularization (CNV), Drusen, or Diabetic Macular Edema (DME) using publicly available optical coherence tomography image dataset (84,484 images). The dataset was partitioned into training (83,484 images) and testing (1000 images) datasets and was uploaded to Amazon Rekognition to train and test AutoML model for image classification. Conventional, bespoke deep learning models using VGG16 and Xception were also trained and evaluated with identical training and testing datasets, for technical comparison

Results: The multi-class AutoML model demonstrated high differentiation capability in accurately classifying the respective retinal pathologies. The model demonstrated perfect internal validation evaluation metrics: F1 = 1.00, precision = 1.00, overall recall = 1.00. Assumed threshold values for each of the individual classes were CNV @ 0.978, DME @ 0.558, Drusen @ 0.287 and Normal @ 0.747. In comparison, VGG16 and Xception models resulted in F1-Scores ranging from 0.98-1.00 for the respective classes.

Conclusions: A multi-class AutoML model created without code can detect CNV, Drusen, Normal and DME retinas with diagnostic accuracy comparable to bespoke deep learning models, with assumed threshold values tailored for each class. AutoML enables non-specialists to harness the powerful capabilities of deep learning for research and training.

Poster No.: PO-002
Panel No.: 002, Session: PO

Explainable Artificial Intelligence Model Using Gradient-Weighted Class Activation Mapping for Detection of Myopic Macular Degeneration on Color Fundus Photographs

*First Author: Ting Fang **TAN***
*Co-Author(s): Zhen Ling **TEO**, Daniel **TING**, Xiaoman **ZHANG***

Purpose: To use an explainable artificial intelligence (XAI) model to evaluate a deep learning algorithm for detection of myopic macular degeneration (MMD) on color fundus photographs (CFP).

Methods: In this study, we utilized a previously developed AI MMD model that has achieved >90% accuracy. Specifically, we evaluated the performance of a visualization technique, Gradient-Weighted Class Activation Mapping (GradCAM), using a self-developed assessment criteria on a separate test dataset (776 CFP). Correlating to lesions used for clinical diagnosis of MMD (META-Pathological Myopia Category 2 or worse), true positives (674) were divided based on visualization heatmaps into clinically acceptable (attention area matches MMD lesion), almost acceptable (within 1 disc-diameter from MMD lesion) and unacceptable (>1 disc-diameter from MMD lesion).

Results: Out of the true positives, 324(48.1%) were clinically acceptable, 97(12.9%) almost acceptable and 253(37.5%) unacceptable. Of those clinically acceptable, 58.6% focused exclusively on MMD lesions, while 40.9% highlighted elsewhere (Eg. vessels) in addition to MMD lesions (Figure 2B). Of those almost acceptable, 45.3% highlighted vessels. Notably, of those unacceptable, 38.7% had no highlighted area despite MMD lesion present (Figure 3A), and 40.3% focused beyond the CFP boundary. Out of the true negatives (65), majority (56.9%) highlighted the entire CFP equally. One-third (28.6%) of false positives (28) highlighted optic disc, while two-thirds (66.7%) of false negatives (9) highlighted vessels.

Conclusions: It is promising that GradCAM heatmaps corroborated with clinical interpretation in the majority. However sizeable proportions of clinically unacceptable cases (none highlighted/ highlighted beyond CFP boundary), yet classified as true positives, question the credibility of model prediction despite its high performance.

Poster No.: PO-005
Panel No.: 005, Session: PO

Garbage In, Garbage Out: Evaluation of How Fundal Imaging Affects Assessment of Diabetic Retinopathy and Real-world Application of Deep Learning Systems

*First Author: Michelle **YIP***
*Co-Author(s): Gilbert **LIM**, Daniel **TING***

Purpose: To assess the effect of image-related factors (including compression, number of fundal fields and media clarity) in the diagnostic performance of referable diabetic retinopathy (DR) by a deep learning system (DLS).

Methods: We utilized 455,491 retinal images (76,370 images for training, 379,121 images for testing) from a general population to assess the impact of image-related factors including compression (reducing image size to 350, 300, 250, 200, and 150 KB), number of fundal fields (7-field, 2-field, 1-field) and media clarity (pseudophakic vs phakic) on the diagnostic performance of a DLS for DR detection.

Results: Diagnostic performance of DR by the DLS dropped significantly when image size decreased below 250KB (AUC 0.936, 0.900, $p < 0.001$). Performance was higher with increased number of fields (7-field vs 2-field vs 1-field, AUC 0.949 vs 0.911 vs 0.895) and better in the pseudophakic than phakic eyes (AUC 0.918 vs 0.833, $p < 0.001$).

Conclusions: This study suggests that detection of DR by DLS is affected by the quality, quantity and clarity of information provided by input fundal photographs, with increased performance seen in lower compression, increased number of fundal field images and in eyes with better media clarity. This provides more understanding of how to improve deep learning systems performance to aid in better application in the real-world settings.

Poster No.: PO-007
Panel No.: 007, Session: PO

Quality of Life in Patients Post Orbital Fracture Repair With Implants

*First Author: Preethi **JEYABAL***
*Co-Author(s): Stephanie **YOUNG***

Purpose: To determine the quality of life (QoL) scores in patients who have undergone orbital fracture repair and compare the QoL scores between bioresorbable and permanent implants.

Methods: Survey of patients who have undergone orbital fracture repair with permanent or bioresorbable implants between 2004 and 2018 at a single tertiary institution. Questionnaire was designed with 20 questions divided into 3 domains: Biophysical, Oculofacial aesthetics and Performance/function.

Patients' responses were recorded on Likert scale of 1 (maximum satisfaction) to 5(minimum satisfaction).

Results: Eighty-one patients with mean age of 41 years completed the questionnaires. Mean duration since primary surgery was 81 months (Range: 3-180 months). Duration of follow up post-surgery was classified as: short (<60 months) [n=39], medium (60-120 months) [n =20] and long term (120-180 months) [n=22]. 55 patients had permanent implants and 26 patients had bio-resorbable implants. Mean Likert score for 3 different domains were as follows: Biophysical = 1.48, Oculo-facial aesthetics = 1.965 and Performance/ Function = 1.434. No statistically significant difference was found between the mean overall QoL score between the following groups of patients: i) permanent (34.09) and bioresorbable (37.71) implants ii) short (32.256), medium (31.7) and long(32.591) term follow up Among the different domains, Oculofacial aesthetics showed significantly lower mean Likert score among bioresorbable implant (1.8) than permanent implant (2.1).

Conclusions: Our study is the first to look at QoL in patients post orbital fracture repair with bioresorbable implants and show that a large proportion of patients had considerably good QoL measures in all 3 domains, with scores comparable to or even better than patients with permanent implants.

Poster No.: PO-006
Panel No.: 006, Session: PO

Role of Artificial Intelligence in Understanding Ocular Surface Pain

*First Author: Ritica **MUKHERJI***
*Co-Author(s): Gairik **KUNDU**, Abhijit **SINHA ROY***

Purpose: To analyze various confocal nerve parameters along with systemic and orthoptic parameters in patients presenting with ocular surface pain using a random forest artificial intelligence (AI) model.

Methods: Observational and cross-sectional methods were designed: A total of 240 eyes of 120 patients with primary symptom of ocular surface pain or discomfort and control group of 60 eyes of 31 patients with no symptoms of ocular pain were analyzed. A detailed ocular examination included visual acuity, refraction, slit-lamp and fundus. All subjects underwent laser scanning confocal microscopy (Heidelberg Engineering, Germany) and nerve parameters were evaluated. Presence or absence of orthoptic issues and connective tissue disorders were included in the AI. The subjects were grouped as those (Group 1) with symptom grade higher than signs, (Group 2) with similar grades of symptoms and signs, (Group3) without symptoms but with signs, (Group 4) without symptoms and signs. The area under curve (AUC), accuracy, recall, precision and F1-score were evaluated.

Results: Overall, the AI achieved an AUC of 0.736, accuracy of 86%, F1-score of 85.9%, precision of 85.6% and recall of 86.3%. The accuracy was the highest for Group 2 and least for Group 3 eyes. The top 5 parameters used for classification by the AI were microneuromas, immature and mature dendritic cells, presence of orthoptic issues and nerve fractal dimension parameter.

Conclusions: This study demonstrated that various confocal nerve parameters, presence or absence of systemic and orthoptic issues coupled with AI can improve the diagnoses and help better customize treatment of ocular surface pain.

Cataract and Cataract Surgery

Poster No.: PO-022
Panel No.: 022, Session: PO

A Tip for Continuous Curvilinear Capsulorhexis

*First Author: Shu Yu **TAN***

Purpose: Pivoting within the incision is the key to success in continuous curvilinear capsulorhexis (CCC). Details in pivoting technique may shorten the learning curve of this key step in phacoemulsification among junior surgeons.

Methods: This is a technical report.

Results: This method requires use of a capsulorhexis forcep. The anterior capsule is divided into two half spheres evenly by an imaginary line across the center of cataract, parallel to main corneal incision wound. A capsular flap is created by using either a cystotome or sharp end of capsulorhexis forcep. Within the distal half sphere from main corneal incision, while grasping the capsular flap, capsulorhexis forcep is rotated right or left according to the direction of tear (clockwise or anticlockwise), pivoting within the incision to maintain the radius of capsulorhexis. Forcep is moved forward and backward to enlarge and reduce the size of capsulorhexis respectively. Whereas within the proximal half sphere, forcep is moved forward and backward to maintain the radius of capsulorhexis, while rotation to left or right enlarges or reduces the size of capsulorhexis. Exception applies when capsular tear is near to main corneal incision, where rotation of forcep is required to maintain the size of capsulorhexis.

Conclusions: By using this method, junior surgeons are able to familiarize with movement of capsulorhexis forcep to achieve a good CCC.

Poster No.: PO-017
Panel No.: 017, Session: PO

Cataract Surgery Outcomes in Australia: A Retrospective Study of Outcomes in 5,018 Cases and Review of Literature

*First Author: Muhammad **KHAN***
*Co-Author(s): Brendon **LEE***

Purpose: To report and review visual and surgical outcomes of phacoemulsification cataract surgery in Australia, and to compare these results with international standards to inform a national benchmark.

Methods: Electronic medical record review was completed for all patients who had phacoemulsification cataract surgery at a tertiary-referral center between 2017 and 2020 (n=5018 eyes) for three time-points: preoperative, intraoperative and postoperative (one month). For the literature review, published Australian studies on phacoemulsification cataract surgery outcomes were identified and examined.

Results: Of the 5,018 eyes, 37.3% were operated on by consultants, 47.1% by trainees, and 15.6% by fellows. Ocular pathology was seen in 52.5% of eyes (n=1709). The mean preoperative and one-month postoperative UCVA was 20/160 (0.92 ± 0.68 logMAR) and 20/40 (0.28 ± 0.34 logMAR) respectively. There was an intraoperative complication in 7.6% of eyes (n = 379) and posterior capsular rupture (PCR) occurred in 2.7% (n=136). There was no statistically significant difference in the intraoperative complication or PCR rate between consultants and trainees ($p \geq 0.4$). Logistic regression analyses demonstrated advanced cataract and the use of alpha-2 antagonists to be strongly associated with PCR. The visual acuity improvement from cataract surgery was maximal between the ages of 40-89 years.

Conclusions: This is the largest Australian study of phacoemulsification cataract surgery outcomes to date. Outcomes were comparable to national and international benchmarks despite a high rate of ocular pathology and trainee case load. This study also highlights the critical need to establish a national Australian cataract registry to allow for ongoing comparison of outcomes.

Poster No.: PO-023
Panel No.: 023, Session: PO

Clinical Outcomes of Retropupillary Iris Claw IOL Fixation in Pediatric Age Group

*First Author: Tavishi **SINGHAL***

Purpose: To study the clinical outcomes of retro-pupillary iris claw IOL fixation in the pediatric age group.

Methods: We conducted an ambispective study where we took 50 eyes of children of the ages (5-15 years old) with subluxated lens or aphakia with insufficient capsular support who underwent retro-pupillary iris claw IOL fixation from January 2019 till August 2020(retrospective arm)and from August 2020 till August 2021 (prospective arm) at our center and recorded their clinical outcomes in terms of visual acuity, pupil size, central macular thickness, effective lens position on UBM and complications, if any.

Results: With a mean follow-up period of 15months (6 months to 30 months) with a mean age of 8.32 (± 1.52). The BCVA on last follow up was 0.30 (± 0.24) which improved from 0.82 (± 0.45). The mean postoperative spherical equivalent was +1.12 (± 1.91) diopter sphere at our last follow-up. The endothelial cell count dropped from 3,239 (± 242.34) mm2 to 3,150.58 (± 253.89) mm2 making it a 2.8% loss over a mean follow-up of 15months. The maximum pupil dilation wasn't affected by retrofixated iris claw IOLs. About 44% eyes had early horizontal pupil opalization, 14% had corneal edema on postoperative day one, five had IOL disenclavation out of which two were traumatic and three were spontaneous, all were successfully re-enclaved. About 2% had wound leak and subsequently Choroidal detachment on post-op day one which required resuturing. One eye developed retinal detachment on 18 months follow-up. None of the eyes developed uveitis, glaucoma or macular edema.

Conclusions: We conclude that retro-pupillary iris claw IOL fixation is a safe method of correcting pediatric aphakia with insufficient capsular support.

Poster No.: PO-020
Panel No.: 020, Session: PO

Comparison of Corneal Endothelial Cell Loss in Femtosecond Laser-Assisted Cataract Surgery and Conventional Phacoemulcification

*First Author: Altantsetseg **ALTANSUKH***
*Co-Author(s): Doyodmaa **ADIYABAZAR**, Ning **HUNG**, David **MA**, Kathleen Sheng-Chuan **MA***

Purpose: This study aims to compare changes in corneal endothelial cells in different part of the cornea following femtosecond laser-assisted or conventional phacoemulcification (phaco).

Methods: This is a single-center, retrospective study. 1. Total phaco energy. 2. Total phaco time. 3. Pre-OP and post-OP 6 M corneal endothelial density at central cornea Changes expressed as percentage of the original density were compared.

Results: A total of 46 eyes receiving LenSx, and 65 receiving phaco were enrolled. The mean age was 61.8 ± 14.0 and 64.2 ± 12.0 y/o (p = 0.212). At post-Op 1 month, changes in endothelial density in position 1, is -2.16% vs -3.97%, (p = 0.447) and in post-Op 3 month, it is 1.63% vs -3.97%, (p = 0.001) and at post-Op 6 month, -0.13% vs -2.7% (p = 0.093). At post-Op 1

month, changes in endothelial density in position 2, is -3.1% vs -8.2%, (p = 0.062) and in post-Op 3 month, it is -6.9% vs -13.8%, (p = 0.650) and at post-Op 6 month, -13.6% vs -14.7% (p = 0.067). At post-Op 1-month, changes in endothelial density in position 3, is -4.1% vs -2.5%, (p = 0.7) and at post-Op 3-month, it is -0.6% vs -3.1%, (p = 0.043) and at post-Op 6- month, 1.73% vs -2.36% (p = 0.036).

Conclusions: LenSx required significantly less phaco energy and time to complete the surgery, endothelial cell loss rate in both the LenSx and phaco group at position 2 was much higher than position 1, 3. For the position 3, endothelial damage is significantly lower in LenSx group at post-Op 3- and 6-month.

Poster No.: PO-024
Panel No.: 024, Session: PO

Contribution of Posterior Corneal Astigmatism to Total Corneal Astigmatism in Healthy Eyes

*First Author: Norazlida **IBRAHIM***

Purpose: To evaluate the contribution of posterior corneal astigmatism (PCA) to the total corneal astigmatism (TCA) in healthy eyes and to study the agreement between estimated TCA and measured TCA among subjects.

Methods: This study is a cross-sectional observational study performed in Hospital Melaka from 1st January 2021 to 1st December 2021. It comprises a total of 242 subjects. Corneal astigmatisms were measured using IOL Master 700 and Anterion. Measured TCA were extracted from Anterion. Estimated TCA were calculated with Barrett Toric Calculator. Analysis was done with SPSSv23 and a p value of <0.05 was considered statistically significant.

Results: The mean age ± SD of subjects was 27.9 ± 14.78 years. The subgroups based on race were 139 (57.4%) Malays, 64 (26.5%) Chinese and 39 (16.1%) Indians. With increasing age, the axis orientation of the anterior corneal surface shifts from with-the-rule (WTR) to against-the-rule (ATR) (p value <0.05). Most eyes had WTR anterior astigmatism and ATR posterior astigmatism. The mean magnitude of PCA was 0.24D (± 0.10D). When compared against estimated and measured TCA, keratometric astigmatism simulated (KCAs) overestimated WTR astigmatism (0.43 ± 0.02D and 0.12 ± 0.07D, respectively, p <0.01) and underestimated ATR astigmatism (0.41 ± 0.10D and -0.20 ± 0.10D, respectively, p <0.01). The mean difference (measured TCA-estimated TCA) was 0.07 and the 95% limits of agreement were -0.509 to 0.641D with small proportional bias (r2=0.03, p = 0.02).

Conclusions: There is a good agreement between estimated and measured TCA. However, there is small positive proportional bias with increasing corneal power. Estimated PCA results in higher overestimation and underestimation in overall, WTR and ATR astigmatism, compared to measured PCA.

Poster No.: PO-019
Panel No.: 019, Session: PO

Extended-Depth-of-Focus Intraocular Lenses for Glaucoma Patients

*First Author: Nadezhda **GORBUNOVA***
*Co-Author(s): Yevgeniy **BATKOV**, Nadezhda **POZDEYEVA**, Roman **YAKOVLEV***

Purpose: To evaluate the efficacy of extended-depth-of-focus (EDOF) IOL implantation in patients with cataract and combined controlled glaucoma.

Methods: A total of 16 eyes of 13 patients with glaucoma were followed for up to 6 months after LENTIS Comfort IOL (Teleon Surgical BV, the Netherlands) implantation. At the time of implantation, 10 eyes were in the early stage of glaucoma, 5 eyes were in the mild stage, while one eye had advanced glaucoma. In 14 cases, the combined cataract and glaucoma surgery has taken place. Standard cataract phacoemulsification with IOL implantation was performed in 2 eyes as planned after the hypotensive stage of surgery. Uncorrected distance (UDVA) and near visual acuity (UNVA) was measured on the first postoperative day (POD1) and 2-6 months after the surgery. Computer perimetry and contrast sensitivity assessment were also performed before the operation and for the same period (2-6 months) after the surgery.

Results: POD1 decimal UDVA was 0.87 ± 0.45. UNVA was 0.65 ± 0.18. Two-six months postoperatively UDVA and UNVA were found stable in all patients. Satisfaction with postoperative quality of vision was high. According to survey data, patients did not require glasses at home. After surgery, the increase of photo and contrast sensitivity was indicated with all patients.

Conclusions: EDOF IOL implantation improves quality of life in patients with cataract and glaucoma and eliminates the need for eyeglasses in most cases. The wide application of EDOF IOLs for PACG population deserves further study, as well as careful and extended follow-up, taking into account the chronic nature of the underlying optic neuropathy.

Poster No.: PO-016
Panel No.: 016, Session: PO

Innovative Use of Leap Motion Technology for Cataract Surgery Simulation: A Wet Lab Training Model

*First Author: Bharat **GURNANI***
*Co-Author(s): Prasanth **GIREESH***

Purpose: To demonstrate the innovative use of leap motion technology for cataract surgery training in the wet lab.

Methods: In this model user's hand, gestures are captured by a small USB peripheral device called Leap Motion. The data in terms of hand and finger movements, corresponding orientation, and coordinates are communicated to the host computer, which is analyzed by the Leap Motion controller. Hand Gesture recognition unity software›s interactive 3D and 2D contents can be connected and accessed through scripting. Every action performed by a user has a specific outcome on the simulator. These outcomes are evaluated by the medical simulator engine to provide feedback to the users by altering the simulated environment.

Results: Supervised wet lab sessions allow faculty to identify surgically struggling residents early and hasten the cataract surgery learning curve. This model serves as a benchmark for trainees or beginner surgeons to practice simulation without the need for costly equipment. This model can be practiced from anywhere without the need for a wet lab training set up and helpful for trainees specially during pandemic like the COVID-19 pandemic.

Conclusions: Virtual reality surgical simulator training shortens the learning curve and reduce complication during cataract surgery.

Poster No.: PO-014
Panel No.: 014, Session: PO

Medical and Surgical Risk Factors for Early and Late IOL Dislocation

*First Author: Soonil **KWON***
*Co-Author(s): Bo Sook **HAN***

Purpose: To evaluate predisposing risk factors of IOL dislocation.

Methods: Medical and surgical records of patient diagnosed Intraocular lens dislocation between January 2011 and December 2021 after received extracapsular cataract extraction, phacoemulsification, combined phacovitrectomy in Hallym university sacred heart hospital were retrospectively reviewed. Preoperative factors (ocular parameters, demographics) and intraoperative factors(surgery time, surgeon, intraoperative complication) were evaluated and compared by early and late, and bilateral dislocation.

Results: In 68 patients and 71 eyes, the average age at diagnosis of dislocation was 63.3 years, and 77.5% of patients were men. Possible predisposing factors were high myopia(9eyes), retinal detachment(8eyes), Nd:YAG capsulotomy(6eyes) and normal tension glaucoma(6eyes). The rate of out-of-the bag dislocation was higher with the early dislocation than the late one. Early dislocation had statistically significantly older age and had longer surgery time with higher intraoperative complication prevalence during cataract surgery. However, no difference was found in surgery time in late dislocated eyes compared to non-dislocated eye. There was no difference in the incidence of dislocation between phacoemulsification and combined phacovitrectomy, and prior vitrectomy showed 7 eyes of late dislocation. 7 patients with bilateral IOL dislocation had retinitis pigmentosa (1), retinal detachment (2), high myopia(1). The bilateral dislocation was significantly younger when cataract surgery than the unilateral.

Conclusions: The risk factors for IOL dislocation were high myopia, retinal detachment, Nd:YAG capsulotomy, and glaucoma. Early dislocation was associated with long surgical time and intraoperative complications, but late dislocation had no significant correlation with perioperative factors. Vitrectomy seemed to be associated with the late dislocation, but it was not statistically significant.

Poster No.: PO-011
Panel No.: 011, Session: PO

Multiple Linear Regression Model for Improving the Accuracy of Capsulorhexis Size Calculation in Femtosecond Laser-Assisted Cataract Surgery for Adults: A Retrospective Single-Center Study

*First Author: Miki **AKAISHI***
*Co-Author(s): Seiichiro **HATA**, Akira **MEGURO**, Nobuhisa **MIZUKI**, Takeshi **TESHIGAWARA***

Purpose: The purpose of this study is to identify the preoperative ophthalmic variables influencing capsulorhexis diameter index (CDI) in femtosecond laser-assisted cataract surgery (FLACS) for adults and create a multiple linear regression model for obtaining a more accurate capsulorhexis diameter.

Methods: This retrospective study involved sixty-seven eyes who received FLACS. The actual resulting capsulorhexis diameter (ARCD) was measured postoperatively. Keratometry, anterior chamber depth (ACD), lens thickness (LT), anterior chamber width (ACW), white-to-white (WTW), the curvature radius of the anterior lens capsule (Front R), and axial length (AL) were measured preoperatively. The ratio of the programmed capsulorhexis diameter and ARCD was defined as the CDI. Correlation analysis was conducted to examine the relationship between the preoperative variables and CDI. Multiple linear regression analysis was applied to select the most influential preoperative variables on CDI.

Results: ACD, LT, ACW, Front R, AL, LT/ACW, LT/AL, LT/ACD, and LT/ACW/Front R showed a significant correlation with CDI. Front R and LT/ACW/Front R were selected as constants in the multiple linear regression model using stepwise variable selection. The following formula represents the multiple linear regression model: CDI = 1.306-4.516×LT/ACW/FrontR - 0.011 × Front R. The predicted postoperative capsulorhexis diameter (PPCD) formula was created based on CDI

formula as follows: PPCD= programmed capsulorhexis diameter x 1.306 - 4.516 × LT/ACW/FrontR-0.011 × Front R.

Conclusions: Front R and LT/ACW/Front R were found to be the most significant influences on ARCD. CDI and PPCD calculation formulas may be useful in setting up more accurate programmed capsulorhexis diameter for FLACS in adults, resulting in a precise ARCD.

Poster No.: PO-021
Panel No.: 021, Session: PO

Outcomes and Practices of Paediatric Cataract Surgeries During COVID-19 Pandemic

*First Author: Atiqah **WAN KHAIRUZZAMAN***
*Co-Author(s): Nandini **VIJAYA SINGHAM***

Purpose: To discuss the impact on pediatric cataract surgery services in a tertiary hospital in Seremban, Malaysia during the COVID-19 pandemic and the postoperative clinical outcomes.

Methods: A retrospective review of clinical records of pediatric cataracts, who underwent cataract surgery during COVID-19 pandemic in a tertiary hospital in Seremban, Malaysia from January 2020 until January 2022.

Results: The nation has experienced difficult times during the national lockdown and pandemic that has suspended many elective surgeries and outpatient services in our department. Nevertheless, pediatric cataract services continued. We performed surgeries on a total of 28 eyes of 20 children presented with either unilateral or bilateral cataracts, which includes 8 (40%) cases of congenital cataracts, 8 (40%) cases of developmental cataracts, and 4 (20%) traumatic cataracts. Seven patients underwent lens aspiration and kept aphakic while the remaining 13 patients underwent lens aspiration with intraocular lens (IOL) implantation. Three patients had combined cataract surgery with posterior capsulotomy and anterior vitrectomy. One traumatic cataract patient underwent a corneal toilet and suturing. Postoperatively, 3 patients had best corrected visual acuity (BCVA) of 6/6, 10 of them had BCVA better than 6/18. There were no reports of endophthalmitis, however, one patient had postoperative increased intraocular pressure (IOP).

Conclusions: Cataract is one of the leading causes of preventable blindness in children. Timely management of pediatric cataract is challenging especially during the COVID-19 pandemic. Lens aspiration remains the mainstay of treatment for pediatric cataracts with favorable visual outcomes.

Poster No.: PO-009
Panel No.: 009, Session: PO

Partial Versus Full Thickness Limbal Relaxing Incisions During Phacoemulsification for Treatment of With-the-Rule Astigmatism in Senile Cataract Patients

*First Author: Nader **NASSIRI***
*Co-Author(s): Nariman **NASSIRI**, Saman **NASSIRI**, Kavousnezhad **SARA**, Kourosh **SHEIBANI***

Purpose: To compare the use of partial thickness and full thickness limbal relaxing incisions (LRI) during phacoemulsification for treatment of with-the-rule astigmatism in senile cataract patients.

Methods: In this prospective randomized controlled trial, 88 older than 65 years patients with by the rule astigmatism cylinder of over 1.25 were randomly divided and either received two partial thickness or one partial thickness and one full thickness corneal incision in limbus area to correct their astigmatism.

Results: One month postoperatively the mean BCVA ($p = 0.12$) and UCVA ($p = 0.011$) correction was higher in the partial thickness group, but this difference was not significant at six months. There was no significant difference between the two groups regarding spectacle independence, photophobia, foreign body sensation and patient satisfaction.

Conclusions: Since a full thickness LRI might lead to complications (leakage, endophthalmitis) in rare cases and does not result in better astigmatism correction it is suggested that partial thickness LRI should be considered as the preferred method.

Poster No.: PO-010
Panel No.: 010, Session: PO

Plug the Hole Before You Bail the Boat: Modified Hydrodissection to Prevent Iris Prolapse

*First Author: Pavitra **PATEL***
*Co-Author(s): Nitin **BALAKRISHNAN***

Purpose: To demonstrate a new hydrodissection technique in cases of high risk of iris prolapse to prevent the same.

Methods: The prospective interventional study was conducted at a single center during a period of 2 years. Hydrodissection prior to Phacoemulsification was performed using this novel technique in 42 patients who had a high risk of iris prolapse including patients on Tamsulosin or short main port wounds. Phaco probe is inserted into the main wound & hydrodissection is performed through side port incision.

Results: None of the 42 patients had prolapse of iris from the main port or side port wounds during hydrodissection. 41 of the 42 patients (93.37%) had a freely rotating nucleus following hydrodissection.

Conclusions: This novel technique of placing the phaco probe to plug the main port during hydrodissection can be successfully used to prevent Intraoperative Floppy Iris Syndrome.

Poster No.: PO-018
Panel No.: 018, Session: PO

Role of Clinical Judgment and Risk Stratification Systems in Allocating Cataract Surgery Cases: A Comparative and Optimization Study of 2 Recent Systems

*First Author: Muhammad **KHAN***
*Co-Author(s): Yashar **RAZAVI**, Lauren **SARTOR***

Purpose: To assess the accuracy of clinical judgement against two recently developed cataract surgery risk stratification systems for case allocation to reduce intraoperative complications of cataract surgery.

Methods: Data was retrospectively collected for all cataract surgical patients at Westmead Hospital between 2017 and 2020. All preoperative risk factors were scored using the United Kingdom's updated Cataract Complexity Scoring System (UKCCSS) and the New Zealand Cataract Risk Stratification System (NZCRSS). Scores were then stratified to low- or high-risk cases and compared to allocation by clinical judgement (CJ). The UKCCSS and NZCRSS were then modified through ad-hoc analyses to optimize their accuracy for intraoperative complications.

Results: A total of 3188 eyes had adequate data for risk stratification. The overall complication rate was 8.6% (n = 275) with 99 cases (3.1%) with a posterior capsule rupture (PCR). More than 80% of intraoperative complications and PCR occurred outside of the high-risk groups for the UKCCSS and NZCRSS. Optimization of the UKCCSS and NZCRSS led to a two- to fourfold increase in the proportion of intraoperative complications and PCR detected ($p \leq 0.004$). The modified systems were thus considerably closer in accuracy to CJ, with both modified systems being equivalent to CJ for dropped nucleus ($p \geq 0.50$).

Conclusions: The UKCCSS and NZCRSS were not sensitive with the significant majority of PCRs occurring outside of their high-risk groups. Modifications to these systems in this study were closer to CJ and can better serve as strong adjuncts for allocating cases to trainees.

Poster No.: PO-012
Panel No.: 012, Session: PO

Safety and Efficiency of Hydroimplantation of Foldable Intraocular Lens

*First Author: Roderick **VICENTE***

Purpose: To describe the safety and efficiency of implanting foldable intraocular lens using a gauge 23 irrigating cannula without ophthalmic viscoelastic device.

Methods: This is a retrospective study of 525 patients who underwent phacoemulsification surgery from January 2020 to January 2022 and were subsequently implanted with intraocular lens using the hydroimplantation technique. A gauge 23 irrigating cannula attached to the irrigating solution of the phacoemulsification machine is inserted through the side port and is used as a modified anterior chamber maintainer during intraocular lens implantation.

Results: The irrigating cannula provides stability and is used to manipulate the intraocular lens during unfolding, rotation and placing the intraocular lens in the bag. The use of irrigating solution during intraocular lens implantation decreases surgical time and cost, reduces instrumentation and manipulation to remove ophthalmic viscoelastic devices behind the lens. There was no observed injury to the posterior capsule during the intraocular lens implantation and manipulation. The use of balance salt solution during implantation reduces the risk of ophthalmic viscoelastic device related intraocular pressure spike after cataract surgery. The average time of surgery is 4 minutes 37 seconds and mean intraocular pressure is 12.543mmHg.

Conclusions: The hydroimplantation technique is safe alternative to ophthalmic viscoelastic devices in implanting intraocular lenses in uncomplicated cataract surgery. It has advantages over the ophthalmic viscoelastic device assisted intraocular lens implantation in reduce surgical time, lesser cost, decrease manipulation and lower risk post cataract intraocular pressure spike.

Poster No.: PO-015
Panel No.: 015, Session: PO

Still Blurring of Vision Post Nd:YAG Laser Capsulotomy?

*First Author: Noor Sarah **MUHAMMAD AZMI KHOR***

Purpose: To report a case of vitreous prolapse with secondary high intra-ocular pressure (IOP) post neodymium yttrium aluminum garnet (Nd:YAG) laser capsulotomy.

Methods: To present a case report.

Results: A 57-year-old Malay male complaining of right hair-like floaters for one week and associated with painless blurring of vision (BOV). Patient underwent bilateral eye uneventful phacoemulsification surgery with multifocal intraocular lens (IOL) implantation six years ago. Post operatively, his vision was 6/6 in both eyes. He developed bilateral posterior capsular opacification (PCO) ten months ago when he presented to ophthalmologist elsewhere with vision of 6/24 bilaterally. He subsequently underwent bilateral Nd:YAG laser capsulotomy. Post procedure his vision was 6/6 bilaterally. Four months later he complained

of right painless BOV and found to have right residual PCO. A repeated right Nd:YAG laser was done for enlargement of previous posterior capsulotomy. Upon examination, right eye visual acuity (VA) 6/36 and left eye VA 6/6. Examination of right eye demonstrated clear cornea and vitreous in the anterior chamber. The IOL is stable and well-centered. Right eye IOP was 38 mmHg and goniosopy showed open angle. He was diagnosed to have right eye vitreous prolapse with secondary high IOP post-YAG capsulotomy. Medication prescribed to control IOP and was planned for right anterior vitrectomy. Postoperative IOP and vision restored.

Conclusions: Although Yag laser has been a standard treatment for PCO, it has been associated with complications which can affect visual outcome. This case highlights the potential complications of vitreous prolapse in the presence of well-centered IOL.

Poster No.: PO-013
Panel No.: 013, Session: PO

Surgical Outcomes of Secondary Retropupillary Iris Claw Intraocular Lens Implantation in Aphakia

*First Author: Mithun **THULASIDAS***
*Co-Author(s): Ajita **SASIDHARAN***

Purpose: To assess the surgical outcomes following retropupillary iris-claw intraocular lens (ICIOL) implantation.

Methods: A single-center retrospective study was conducted including patients who had undergone retropupillary ICIOL implantation for aphakia correction between January 2021 and January 2022. Postoperative corrected distance visual acuity (CDVA) at 2 months and complications were noted.

Results: One hundred and sixty-seven eyes of 158 patients were analyzed. The mean logMAR CDVA improved from 1.0 ± 0.55 preoperatively to 0.4 ± 0.36 postoperatively at 2 months ($p < 0.001$). One hundred and thirty-one eyes (78.4%) had final CDVA ≥20/40. Complications included pupil ovalization in 35 eyes (20.9%), iris atrophy in 24 eyes (14.4%), elevated intraocular pressure in 19 eyes (11.4%), cystoid macular edema in 6 eyes (3.6%), and retinal detachment in 1 eye (0.6%). ICIOL disenclavation occurred in 5 eyes (2.9%), all of which were repositioned later.

Conclusions: Secondary retropupillary ICIOL implantation in eyes with inadequate capsular or zonular support is a safe, faster, and effective procedure with good visual outcomes and fewer complications.

Cornea, External Eye Diseases and Eye Banking

Poster No.: PO-032
Panel No.: 032, Session: PO

A Man With Primary Bulbar Conjunctival Sporotrichosis

*First Author: Haolan **QI***
*Co-Author(s): Liqiang **WANG***

Purpose: Sporotrichosis is a disease caused by Sporothrix spp. Cutaneous infection is the most prevalent clinical manifestation of sporotrichosis. Cases of ocular sporotrichosis are rare. According to the latest review of sporotrichosis published in 2021, only 56 patients with conjunctival sporotrichosis have been reported worldwide. Itraconazole is often recommended as the first line drug, and potassium iodide is often used as an alternative in developing countries. We creatively used a more potent drug: Posaconazole to study the outcome of the disease.

Methods: We report the clinical manifestations, diagnosis, and treatment in detail. The diagnosis of Primary Bulbar Conjunctival Sporotrichosis is made by biopsy of affected conjunctiva, fungal culture, and genomic sequencing. As for treatment, we adopted an innovative method. In the early stage, the patients were given oral Posaconazole 300 mg/d, for antifungal purpose, and in the later stage, a small dose of steroid eye-drops – Loteprednol, were used to control inflammation (since steroids used in the early stage can aggravate fungal infection).

Results: At the time of the patient›s first visit, there was much salmon-like granuloma in the bulbar conjunctiva around the corneal limbus. After two months of treatment, granuloma regressed significantly, pustules disappeared, and inflammation subsided. The patient›s visual acuity increased much, and the intraocular pressure decreased to normal.

Conclusions: This patient is the first case of Primary Bulbar Conjunctival Sporotrichosis reported in China, which has clinical guiding value. Awareness of the disease should be raised since early diagnosis and correct treatment can reduce the occurrence of ocular complications.

Poster No.: PO-043
Panel No.: 043, Session: PO

Acute and Chronic Ocular Outcomes in SJS/TEN Patients Treated With Oral Ciclosporin Versus Intravenous Immunoglobulin

*First Author: Hon Shing **ONG***
*Co-Author(s): Valencia **FOO**, Haur Yueh **LEE***

Purpose: To evaluate differences in ocular

complications of Stevens Johnson Syndrome (SJS)/Toxic Epidermal Necrolysis (TEN) in patients receiving either systemic IVIG or Ciclosporin (CsA) as initial treatments.

Methods: Retrospective review of consecutive patients admitted for SJS/TEN at the Singapore General Hospital (SGH) from 2011 to 2017 who received either IVIG or Ciclosporin and had ophthalmological follow-up >6 months were include. Baseline demographic, ocular and systemic data were compared. Acute ocular severity of SJS/TEN was graded using the Gregory grading score; chronic ocular complications were graded using the Sotozono system. The worse eye was used for analysis.

Results: A total of 18 subjects were included for analysis, with 8 in the IVIG group and 10 in the CsA group. There were no significant differences between the 2 treatment groups in terms of acute Gregory severity grading of cornea, conjunctival, or lid involvement at presentation. Subjects in the CsA group had a trend towards worse overall Sotozono grading scores compared to those in the IVIG group (6.22 + 4.27 vs 2.62 + 1.20, p = 0.27). Subjects in the CsA group also had a significantly higher incidence of ocular intervention, with 1 subject (10%) needing an amniotic membrane transplant and 1 (10%) needing repeated penetrating keratoplasties, compared to those in the IVIG group (0).

Conclusions: SJS/TEN patients who received CsA at the acute disease stage with similar acute ocular involvement, had worse chronic complications and were more likely to require surgical ocular interventions, than those who received IVIG. Further studies are required to validate these findings.

Poster No.: PO-029
Panel No.: 029, Session: PO

Association of Meibomian Gland Dysfunction With Oral Statin Use

*First Author: Sun-Kyoung **PARK***
*Co-Author(s): Kyung-Do **HAN**, Ho-Sik **HWANG**, Hyun-Seung **KIM**, Ji-Hye **LEE**, Kyung-Sun **NA***

Purpose: This retrospective cross-sectional study aimed to determine the association of oral statin use, dry eye disease (DED), and meibomian gland dysfunction (MGD).

Methods: A total of 93 subjects were included and divided into two groups: statin users (n = 45) and non-statin users (n = 47). The following objective tests for MGD were performed in the following order: characterization of DED symptoms using the validated questionnaire Standard Patient Evaluation of Eye Dryness (SPEED), slit-lamp examination of the ocular surface to assess tear break-up time (TBUT), corneal/conjunctival fluorescein staining, meibomian gland expressibility, meibum quality, and noncontact meibography.

Results: Significant differences were observed in the total cholesterol (p = 0.013), low-density lipoprotein (LDL) (p = 0.005), and meiboscore (p = 0.000) levels between the two groups. For stratified analysis, the statin group was divided into subgroups according to the type or dose of statin and total duration of statin use. However, there were no differences in clinical features between the subgroups. In multiple regression analysis, meiboscore was significantly associated with age (slope = 0.05, p = 0.00) and statin use (slope = −1.19, p = 0.00), with an R2 of 0.44. Thus, older adults and participants who do not use statin appeared to have higher scores.

Conclusions: In conclusion, although the mechanism is unclear, statins may exert a protective effect on the meibomian gland. Further lipidomic studies are required to determine the pharmacological effects of statins on the meibomian gland and other meibum components.

Poster No.: PO-034
Panel No.: 034, Session: PO

Case Series of Recurrent Conjunctiva and Cornea Intraepithelial Neoplasia Successfully Treated With Chemo-Adjuvant Mitomycin C

*First Author: Seng Hong **YEOH***
*Co-Author(s): Che Mahiran **CHE DAUD**, Siti Nor Roha **DAMAN HURI**, Nurliza **KHALIDDIN**, Shamala **RETNASABAPATHY**, Nor **YUSOF***

Purpose: Conjunctival intraepithelial neoplasia (CIN) is a dysplastic condition with a tendency for recurrence post-operatively. Topical mitomycin C (MMC) is a chemo-adjuvant to treat CIN medically. This study describes a retrospective case series of recurrent CIN successfully treated with chemo-adjuvant MMC.

Methods: A retrospective case series of three recurrent CIN.

Results: Case 1: A 40-year-old lady was diagnosed with right eye CIN grade 2. She was planned for chemo adjuvant with MMC after surgical removal however it was deferred due to a persistent right corneal epithelial defect. Recurrent of the lesion occurred at 3 months. Topical MMC was initiated, and the lesion resolved completely after 3 cycles of treatment. Case 2: A 60-year-old male with right eye CIN, successfully treated 5 years ago with simple excision and adjuvant topical MMC, currently presents with a recurrent opalescent lesion with a fimbriated border in the same eye. Chemo reduction was commenced, followed by resection of the residual lesion. To avoid further recurrence, adjuvant therapy with 3 cycles of MMC was completed. Full resolution was seen during the post-resection 3rd month follow up. Case 3: A 73-year-old male with underlying right eye CIN grade 2 was treated with excision and adjuvant topical MMC. Eight years later, he presented with papilliform mass at the inferior part of the right cornea. The topical MMC 0.04% for 6

cycles was initiated and the mass regressed without surgery.

Conclusions: Post-treatment follow-up is important to monitor the clinical recurrence of CIN. MMC is an effective chemotherapeutic agent in treating recurrent CIN.

Poster No.: PO-026
Panel No.: 026, Session: PO

Clinical Profile and Corneal Complications of Staphylococcal Blepharitis at a Tertiary Referral Eye Center

*First Author: George Michael **SOSUAN***
*Co-Author(s): Ruben **LIM BON SIONG**, Pablito Jr. **SANDOVAL***

Purpose: This study described the clinical profile of patients with staphylococcal blepharitis seen in a tertiary referral eye center and determined the frequency and the type of corneal complications.

Methods: This study was a single-center, five-year retrospective case series design. The data extracted were age, sex, chief complaint, laterality, time of onset of symptoms to consult, previous consults, lid and lid margin findings, conjunctival and corneal findings, and pre- and post-treatment uncorrected distance visual acuity.

Results: Ninety-nine eyes of 55 patients were analyzed. The median age was 19 years. Sixty-seven percent were females. Corneal opacity, eye redness, and blurring of vision comprised 70% of the reasons for consult. Seventy-eight eyes had fibrin or crust on the lashes. Fifty percent of the eyes had concomitant conjunctivitis, while 30% had meibomitis. Fifty-eight percent of patients had corneal complications. The median age of patients with corneal complications subgroup was 13 years. The most common corneal complications noted were neovascularization, phlyctenulosis, pannus formation, and marginal infiltrates/ulcers. Twenty-two percent of all study eyes had visually-disabling corneal complications like corneal ulcer, descemetocoele, and corneal perforation/scar. The mean uncorrected-distance-visual-acuity at initial consult of eyes with corneal complication was 20/55 (LogMAR 0.43 ± 0.51) and 20/35 (LogMAR 0.25 ± 0.40) after treatment ($p = 0.032$).

Conclusions: Staphylococcal blepharitis was most prevalent among young female patients, and it affected both eyes. Almost all patients manifested the typical lid margin lesions. Nearly 60% of the patients presented with corneal complications, and 22% had corneal lesions that were potentially blinding.

Poster No.: PO-038
Panel No.: 038, Session: PO

Comparison of Graft Survival Rates Between Descemet's Stripping Automated Endothelial Keratoplasty vs Descemet's Membrane Endothelial Keratoplasty

*First Author: Nicole **SIE***
*Co-Author(s): Anshu **ARUNDHATI**, Marcus **ANG**, Jodhbir **MEHTA***

Purpose: To report on graft survival in eyes with primary endothelial keratoplasty (EK) performed in our tertiary eye center and the relation to glaucoma.

Methods: An audit of patients who had undergone primary Descemet's stripping automated endothelial keratoplasty (DSAEK) or Descemet's membrane endothelial keratoplasty (DMEK) from 2006 to 2020 was performed.

Results: A total of 1,449 eyes were audited, 1251 had DSAEK and 198 had DMEK performed. Preoperative glaucoma was present in 415 eyes (33.2%) vs 44 eyes (22.2%) in the DSAEK and DMEK groups. In eyes without glaucoma, 21.8% in the DSAEK group vs 13.0% in the DMEK group developed raised intraocular pressures or secondary glaucoma. In patients with pre-existing glaucoma, comparison of Kaplan-Meier curves showed initial survival in the first five years was higher in the DSAEK group (96.2% at year 1, 81.1% at year 4, 74.6% at year 5, 53.7% at year 10) than the DMEK group (88.5% at year 1, 70.4% at year 4, 5 and 10). For patients without glaucoma graft survival in the first two postoperative years were higher in eyes who underwent DSAEK (97.1% year 1, 94.8% year 2) vs DMEK (95.3% year 1, 94.6% year 2). From the third postoperative year onwards, eyes in the DMEK group had higher survival rates.

Conclusions: DSAEK survival is initially higher in the first few postoperative years in both patients with and without glaucoma but subsequently DMEK have higher survival rates. Overall graft survival is higher in patients without glaucoma and risk of developing glaucoma is higher following DSAEK.

Poster No.: PO-045
Panel No.: 045, Session: PO

De Barsy Syndrome: Lifting the Curtain on a Cloudy Cornea

*First Author: Arpita **KHASNAVIS***
*Co-Author(s): Merle **FERNANDES***

Purpose: To describe the clinical features and challenges in the management of a child with De Barsy syndrome.

Methods: This is a case report.

Results: A 15-month-old baby girl, born out of a non- consanguineous marriage, presented to us with

progressive increase in corneal opacity since birth, photophobia, delayed milestones, and poor weight gain. On examination she had dysmorphic facies, wrinkled loose skin on forehead, hands and feet with adducted thumbs, pectus excavatum, prominent veins, hyperextensible joints and large low set ears. The pediatrician opined that she had cutis laxa type III or De Barsy syndrome. Both eyes had corneal opacities with superficial and deep vascularization with poor visualization of remaining structures for which penetrating keratoplasty was done 5 weeks apart. She also underwent trabeculectomy with MMC in the right eye after 15 days since IOP measured 42mm Hg. Allograft rejection of the left eye was noted 22 weeks after surgery and intensive topical steroids have been started. Histopathology of the cornea showed the Bowman's layer replaced by fibrous pannus, loss of stromal lamellar architecture with anterior and mid stroma showing vascularization, perivascular infiltrates and fibroblasts and Posterior stroma showing thick, hyalinized lamellae. Genetic analysis revealed homozygous missense variation in exon 6 of PYCR1 gene on Chromosome 17.

Conclusions: The importance of a detailed clinical examination and the integrated co management involving pediatric ophthalmologist, cornea and glaucoma specialists, pediatrician and geneticist, of a rare case of de Barsy syndrome cannot be underscored in the approach to children with congenital corneal opacities.

Poster No.: PO-027
Panel No.: 027, Session: PO

Deep Anterior Lamellar Keratoplasty Rejection Following SARS-CoV-2 Vaccination: 2 Case Reports

*First Author: Rishi **SWARUP***
*Co-Author(s): Samip **MEHTA***

Purpose: To report two cases of deep anterior lamellar keratoplasty (DALK) rejection occurring in association with SARS-CoV-2 vaccination.

Methods: Two patients with prior history of DALK developed immunologic rejection after SARS-CoV-2 vaccination. The first patient, a 15-year-old girl, had a stromal and sub-epithelial rejection nine days after receiving the first dose of the SARS-CoV-2 vaccine BBV152 (COVAXIN(TM), Bharat Biotech, India). The second patient, an 18-year-old male, had a stromal rejection 13 days after receiving the second dose of the ChAdOx1 SARSCoV-2 vaccine (COVISHIELD(TM), Serum Institute of India, India).

Results: Both patients received frequent topical corticosteroids. The first patient recovered within four weeks and the second patient recovered within two weeks of initiating therapy. Both patients experienced complete resolution of corneal edema and had improvement in their visual acuity.

Conclusions: DALK rejection is a rare but distinct possibility in patients following SARS-CoV-2 immunization. Further studies are required before establishing clear guidelines regarding risk, follow-up and treatment strategies in such a scenario.

Poster No.: PO-039
Panel No.: 039, Session: PO

Dry Eye Disease in Real World Clinical Practice: The Save Sight Dry Eye Registry

*First Author: Stephanie **WATSON***
*Co-Author(s): Francisco **ARNALICH-MONTIEL**, Gerd **GEERLING**, David **MINGO**, Fiona **STAPLETON***

Purpose: The Save Sight Dry Eye Registry (SSDER) is the first international web-based multinational, interdisciplinary registry able to collect high-quality outcome data from patients in clinical settings. We report on patients with dry eye disease (DED) at their baseline visit from routine clinical practice from 1 November 2020 to 26 July 2022

Methods: The SSDER collected data from routine clinical practice in Australia, Spain, Germany, and the United Kingdom. Primary outcomes were the baseline demographic data and dry eye diagnosis and secondary outcomes; visual acuity in logMAR letters, TBUT, and ocular surface staining score, and the OSDI score.

Results: Data was entered for 576 eyes of 289 patients with meanSD age 55.8 ± 16.8 years (range 14-94) and 80.6% (n=233 patients) female were included. 514 (89.2%) eyes had evaporative, 248 (43.1%) aqueous deficiency; 194 (33.7%) of them have both evaporative and aqueous deficiency DED. 34 (5.9%) eyes had corneal neuropathic pain. 19 (6.6%) patients wore CLs. Most eyes (n = 527, 91.5%) had Meibomian gland disease. The median visual acuity and TBUT at baseline were 83 (IQR 76-85) logMAR letters and 4 (IQR 2-8) sec, respectively. Ocular surface staining was graded as none (n = 205, 35.6%), minimal (n= 172, 29.9%), mild (n = 122, 21.2%), moderate (n = 61, 10.6%) and severe (n = 16, 2.8%). 62.3% of patients completed the OSDI. The mean (SD) OSDI score was 33.6 (16.9).

Conclusions: The SSDER allows the efficient capture of dry eye patient data from everyday clinical practice with Meibomian gland disease present in most.

Poster No.: PO-040
Panel No.: 040, Session: PO

Graft Survival and Visual Outcomes of 10 Years of Corneal Transplantation – A Single Center Retrospective Study

*First Author: Hayden **KIRK***
*Co-Author(s): Chameen **SAMARAWICKRAMA***

Purpose: To report the numbers, indications, characteristics and outcomes of a decade of corneal transplantation at a single tertiary center.

Methods: We undertook a retrospective audit of corneal transplantations performed at our institution between 2010-2019. Baseline characteristics, indications, procedures, complications, survival and visual outcomes were described in 90 eyes.

Results: Twenty-nine Penetrating Keratoplasties, 34 Descemet's Stripping (Automated) Endothelial Keratoplasties and 20 Descemet's Membrane Endothelial Keratoplasties were performed. The most common indications were pseudophakic bullous keratopathy (25.6%), failed previous graft (24.4%), Fuchs' Endothelial Dystrophy (21.1%) and microbial keratitis (12.3%). Cumulative survival ranged from 70 to 89.7% at 1 year, and 61.8 to 75.9% overall according to graft type. Best corrected visual acuity (BCVA) improved by an average of 30.5 ETDRS letters at 1-year follow-up, and 42.0% of eyes achieved a BCVA of 6/12 Snellen equivalent or better. On multivariate analysis history of glaucoma (HR 3.62, p = 0.003) and donor graft preparation difficulties (HR 5.17, p <0.0005) were associated with graft failure. DS(A)EK and DMEK survival was poorer than expected (2-year survival 60.7% and 53.5% respectively) and graft preparation difficulties were associated with failure in these eyes. Transplantation frequency, particularly endothelial keratoplasties (EK), increased in the latter half of the decade, and graft survival rates improved (2-year survival 58.8% vs 66.1%).

Conclusions: Our results describe a trend of increasing uptake of corneal transplantation and particularly EK techniques in our center. Lower than expected survival in EK supports conservative prognostication in the context of real-world populations with heterogenous indications and disease severity.

Poster No.: PO-037
Panel No.: 037, Session: PO

Intraoperative Optical Coherence Tomography Guided Iris Stromal Cyst Treatment With Absolute Alcohol Injection

*First Author: Sing Hui **LIM***
*Co-Author(s): Victoria Grace **DIMACALI***

Purpose: Iris stromal cysts are difficult to treat as they are progressive and tend to recur with aspiration alone. This paper reports a case of utilising intraoperative optical coherence tomography (iOCT) to safely guide the injection of alcohol into the iris stromal cyst.

Methods: This is a 61-year-old Chinese gentleman who sustained a left eye corneoscleral laceration from a screwdriver injury in 1982. Slit lamp examination showed a large inferonasal iris stromal cyst, measuring 10 by 10 mm, inducing Descemet membrane folds and superonasal drawing of the pupil. The patient underwent left eye iris stromal cyst aspiration and absolute alcohol injection according to the protocol by Shields et al. During the surgery, iOCT was employed to visualize the iris stromal cyst before performing aspiration. This was followed by 100% alcohol injection directly into the cyst for 2 minutes before aspiration. The cycle was then repeated twice.

Results: Our case demonstrated the use of iOCT to visualize and guide the cyst aspiration and alcohol irrigation. Complete collapse of the iris stromal cyst was confirmed by iOCT at the end of the surgery. Direct visualization with iOCT aided the accurate placement of the needle into the cyst for aspiration of its contents and injection of alcohol, avoiding damage to adjacent corneal endothelial cells. Postoperatively at month 3, the endothelial cell count was stable.

Conclusions: In summary, we report the case of a traumatic iris stromal cyst which was successfully treated with absolute alcohol induced sclerosis under the guidance of iOCT.

Poster No.: PO-042
Panel No.: 042, Session: PO

Keratoconus Risk Factor in Malaysia; Allergy Versus Familial Inheritance

*First Author: Norsyariza **RAZAK***
*Co-Author(s): Bariah **MOHD ALI**, Premalatha **SANTHIRAN**, Wan Haslina **WAN ABDUL HALIM***

Purpose: Keratoconus (KC) is a progressive corneal ectasia that commonly starts in adolescence. It is a multifactorial disease resulting from interaction of environmental, behavioral and genetic factor. This study aimed to identify the possible risk factor among KC patients in Malaysia and to investigate the severity in corneal parameters between group with allergy and familial inheritance.

Methods: This is a cross-sectional study undertaken in Kuala Lumpur and Selangor, Malaysia. History taking addressing age, gender, race, medical history, present of allergy and habit of rubbing was collected. Eye examination involving corneal astigmatism (CA), central corneal thickness (CCT) and thinnest pachymetry (TP) was undertaken. A total of 90 KC subjects were included in this study.

Results: In gender, 53% of KC patients are male and 47% are female consist of 54% (Malays), 42% (Indian) 3% (others). In overall, 82% reported history of rubbing, 56% with allergy problem, 26.7% with asthma, 18.9% with sinusitis/rhinitis, 17.8% with eczema and 8.9% with first degree relatives of KC. Twenty-six patients did not report any risk factor that could be linked to familial inheritance. There was no significant different in CA, CCT and TP between allergy and hereditary group at same stages of KC. However, CA are reported higher among hereditary group stage IV. Familial inheritance also showed higher number of KC cases at Stage III and IV.

Conclusions: KC patients in Malaysia are highly related to rubbing, allergy, asthma, eczema, sinusitis and rhinitis. Thus, it is highly recommended to screen KC

among teenagers with these problems.

Poster No.: PO-035
Panel No.: 035, Session: PO

Neuropathic Ocular Surface Changes, Corneal Nerve Imaging and Neuromediator Profiles in SMILE and Femtosecond LASIK

*First Author: Alvin **TEO***
*Co-Author(s): Isabelle Xin Yu **LEE**, Molly Tzu-Yu **LIN**, Yu-Chi **LIU**, Jodhbir **MEHTA***

Purpose: To evaluate, compare and correlate neuropathic ocular surface changes, corneal nerve imaging and neuromediator profiles in Small Incision Lenticule Extraction (SMILE) and femtosecond laser in-situ keratomileusis (LASIK).

Methods: Twenty-five SMILE (n=50 eyes) and 25 LASIK (n=50 eyes) patients were prospectively followed up for 1 year. 5 clinical neuropathic ocular surface assessments, 7 corneal nerve parameters, OSDI questionnaire, and 4 tear neuromediators were evaluated.

Results: SMILE, compared to LASIK, had significantly better corneal sensitivity at 1 week, 1, 3 and 6 months, better TBUT at 3 months, lower NEI and Oxfords scores at 1 week. SMILE had significantly better corneal nerve fiber length (CNFL), density (CNFD), total branch density, fiber area, fiber width (CNFW) and fiber fractal dimension (CFracDim) than LASIK throughout 1 year. At 1 year, the nerve metrics were significantly impaired in LASIK, while fiber area and width were restored in SMILE. A significant increase occurred in nerve growth factor, with a decrease in substance p (SP) at 1-month post-LASIK, while these changes were insignificant in SMILE. CNFL, CNFD, CNFW, CFracDim and tear SP levels were significantly associated with TBUT. Tear SP, neuropeptide Y (NPY), and calcitonin gene-related peptide (CGRP) concentrations significantly correlated with all the nerve parameters, except CNFW.

Conclusions: Postoperative corneal denervation was long-lasting, with faster restoration in SMILE. SMILE was associated with lesser negative impact on the ocular surface and fluctuations in neuroinflammatory reactions. Although symptoms and signs resolved, significant alterations in corneal neurobiological status and nerve metrics were still observed.

Poster No.: PO-047
Panel No.: 047, Session: PO

03 Ocular Features of Gliptin Induced Bullous Pemphigoid

*First Author: Mariya **DOCTOR***
*Co-Author(s): Sayan **BASU**, Anahita **KATE***

Purpose: To highlight the clinical features, ocular involvement and course of the disease in patients with gliptin induced Bullous Pemphigoid (BP).

Methods: A case series of four patients on treatment with Gliptins for diabetes mellitus, who presented with ocular and systemic manifestations similar to that of classic Bullous Pemphigoid. The diagnosis of BP was confirmed with conjunctival biopsy.

Results: Patients presented with tense, pruritic blisters similar to BP, with bilateral ocular involvement such as punctal stenosis and loss of medial canthal folds. Two patients had bulbar conjunctival cicatricial changes with inferior forniceal shortening and symblepharon. The suspected drug was discontinued, and patients were treated with topical lubricants and short course of topical steroids. An association between the clinical features of BP and use of gliptins was present, and there was resolution of these features on discontinuing the medications.

Conclusions: This case series shows the ocular adverse effects of the DPP-4i group of anti-diabetic medications which an ophthalmologist should be aware about.

Poster No.: PO-028
Panel No.: 028, Session: PO

Ocular Manifestations of Patients With COVID-19 in Dr Wahidin Sudirohusodo General Hospital

*First Author: Rini **DHANY***

Purpose: This study aims to determine the clinical manifestations and prevalence of conjunctivitis and other ocular manifestations in COVID-19 patients at RSU Dr. Wahidin Sudirohusodo Mojokerto during January-June 2021.

Methods: A retrospective cross-sectional, single-center study conducted in outward and admitted patients between January to June 2021 in a tertiary hospital in East Java. Data is collected from the hospital records of ocular history and ocular examinations.

Results: In 861 cases of COVID-19 PCR positive patients, a total of 67 patients that consulted to ophthalmologist were included in the study with a median age of 42.6 years. Among 67 patients, fifty-nine (88%) had conjunctival injection. Eight (12%) patients had developed ciliary injection due to keratitis in 7 patients and 1 patients of corneal ulcer.

Conclusions: Conjunctivitis manifesting as conjunctival injection is one of the major ocular manifestations in COVID-19 positive patients.

Poster No.: PO-033
Panel No.: 033, Session: PO

Pattern of Dry Eye Patients Presenting in a Tertiary Care Center in Bangladesh

*First Author: Tamanna **SWEETY***

Purpose: To determine the pattern of dry eye in out-patients department at a Tertiary Care Hospital and its

association with various clinico-epidemiological factors.

Methods: Patients were consecutively selected and underwent a routine ophthalmological examination along with tear film break-up time (TBUT) and Schirmer test 2 as a screening tool for detecting the presence of dry eye.

Results: A total of 150 patients were screened. The mean age of the study population was 58.6 years. The overall pattern of dry eye was found to be 48% male and 52% female. An association was found between dry eye prevalence and outdoor workers, participants working indoor using air conditioners, housewives, diabetics, and those with meibomian gland dysfunction. Mild to moderate dry eye found associated with pterygium and ocular allergy. Severe dry eye found associated with Steven-Johnson syndrome and Sjogren's syndrome.

Conclusions: Dry eye is a very common condition with a high prevalence among the elderly. We recommend the screening of all out-patients by TBUT, which is a simple test to perform and examination of lids for meibomian gland disease, which if present can be treated. Further studies are needed to establish uniform diagnostic criteria for dry eye, which will help to get more concrete prevalence data, as well as its etiological factors.

Poster No.: PO-025
Panel No.: 025, Session: PO

Post-surgery Challenges After Descemet Stripping Endothelial Keratoplasty in a Vitrectomized Eye and Post-glaucoma Implant Patient

*First Author: Herdanti Rahma **PUTRI***
*Co-Author(s): Rio **RHENDY***

Purpose: To highlight the dilemma in managing recurrent graft detachment after Descemet Stripping Endothelial Keratoplasty (DSEK), in pseudophakia bullous keratopathy (PBK) with vitrectomized eye who had glaucoma drainage device (GDD) implantation.

Methods: A 70-year-old man with vitrectomized eye, PBK, and post GDD implant presented with hand movement visual acuity (VA), hazy cornea, and increased central corneal thickness. The patient underwent DSEK of the left eye with a 7.5 mm graft. Unfortunately, the graft detached after surgery, necessitating graft repositioning and re-bubbling. The graft was well-apposed with no cleft postoperatively. However, the lenticular was decentered and unattached one week later. Therefore, he had a second re-bubbling procedure, and the graft was attached using nylon 10-0 sutures.

Results: The degree of fit between graft-host surface is an essential factor to generate adequate surface tension. DSEK has a high risk of graft dislocation, which can lead to graft failure, due to its nature from manually dissected. The presence of tube in anterior chamber possessed further challenge due to the risk of insufficient air fill. After several re-bubbling and anchoring sutures, the graft can be kept attached. At six months postoperative, VA increased to 6/20, the cornea remained clear, and intraocular pressure was normal.

Conclusions: Due to the difficulties in retaining enough air, the DSEK procedure in patients with post-implant glaucoma is a challenging situation. However, it is not impossible to obtain a positive post-operative outcome. A number of parameters, including donor preparation, intraoperative technique, and post-operative follow-up, must be closely managed to get a satisfactory result.

Poster No.: PO-046
Panel No.: 046, Session: PO

Probiotics Pretreatment Attenuates Impaired Corneal Re-epithelialization in Diabetic Mice Through Amelioration of T Cell Immunity and Remodulation of the Intestinal Microbiome

*First Author: Yashan **BU***
*Co-Author(s): Amy C.y. **LO**, Kendrick **SHIH***

Purpose: To compare corneal re-epithelialization rates, ocular surface and systemic T cell immunity, and gut microbiome composition after corneal alkaline burn injury between probiotics- or vehicle (PBS) -pretreated Akita (diabetic) and wild type (WT) mice.

Methods: Probiotics IRT5 or PBS was administered to the mice continuously for 14 days. At day 15, alkaline burn was induced on the right eye of mice under general anesthesia. On post-injury day 0 and day 3, slit lamp examination was performed on the mouse cornea. T cell profiles on the ocular surface and in the peripheral blood were analyzed by flow cytometry. Intestinal microbiome was characterized by shotgun metagenomics sequencing.

Results: Probiotics pretreatment has restored the delayed corneal wound healing in diabetic mice. In the peripheral blood and on the ocular surface, significantly elevated levels of CD4+ T cells were seen in PBS-pretreated WT mice and probiotics-pretreated WT and diabetic mice but were not seen in PBS-pretreated diabetic mice. On post-injury day 3, the gut microbiome of diabetic mice had higher alpha diversity in the PBS-pretreated groups but not in the probiotics-pretreated groups. In the probiotics-pretreated diabetic mice, we observed increased Muribaculaceae and Enterococcus faecalis, and reduced Lactobacillus johnsonii and Bacteroides at baseline compared to vehicle pretreated ones.

Conclusions: Probiotics pretreatment attenuated the impaired corneal wound healing response after injury in diabetic mice, which may be related with the ameliorated T cell immunity and remodulated gut microbial composition.

Poster No.: PO-041
Panel No.: 041, Session: PO

SD OCT Biomarkers' Role in Predicting Visual Outcome in Diabetic Macular Oedema

*First Author: Tamanna **SWEETY***

Purpose: To determine the pattern of dry eye in ophthalmology out-patients at a Tertiary Care Hospital and its association with various clinico-epidemiological factors.

Methods: Patients were consecutively selected and underwent a routine ophthalmological examination along with tear film break-up time (TBUT) and Schirmer test 2 as a screening tool for detecting the presence of dry eye.

Results: A total of 150 patients were screened. The mean age of the study population was 58.6 years. The overall pattern of dry eye was found to be 48% male and 52% female. An association was found between dry eye prevalence and outdoor workers, participants working indoor using air conditioners, housewives, diabetics, and those with meibomian gland dysfunction. Mild to moderate dry eye found associated with pterygium and ocular allergy. Severe dry eye found associated with Stevens-Johnson syndrome and Sjogren›s syndrome.

Conclusions: Dry eye is a very common condition with a high prevalence among the elderly. We recommend the screening of all out-patients by TBUT, which is a simple test to perform and examination of lids for meibomian gland disease, which if present can be treated. Further studies are needed to establish uniform diagnostic criteria for dry eye, which will help to get more concrete prevalence data, as well as its etiological factors.

Poster No.: PO-030
Panel No.: 030, Session: PO

Spontaneous Subconjunctival Abscess Caused by Pseudomonas Aeruginosa

*First Author: Xin Wei **CHIN***
*Co-Author(s): Diymitra K **GANASAN***

Purpose: To report a case of spontaneous subconjunctival abscess associated with bacterial conjunctivitis caused by Pseudomonas aeruginosa in an immunocompromised patient.

Methods: To present a case report.

Results: A 23-year-old woman was admitted to intensive care unit for acute flare of Systemic Lupus Erythematosus (SLE) with neutropenic sepsis. She was referred to ophthalmology department with two days history of bilateral eyes redness and swelling, associated with right upper eyelid swelling. Ocular examination showed bilateral conjunctival chemosis and injection. A subconjunctival abscess measuring approximately 5x3mm was detected at the inferotemporal region of her right eye. Other ocular findings were unremarkable. No previous history of trauma or surgery was known. She was treated for bilateral eyes bacterial conjunctivitis with right subconjunctival abscess. Pseudomonas aeruginosa was cultured from the subconjunctival abscess to confirm the causative pathogen while initiating empirical antibiotics. Her symptom improved with topical moxifloxacin and oral ciprofloxacin. The subconjunctival abscess resolved completely after 2 weeks of antimicrobial therapy.

Conclusions: Spontaneous subconjunctival abscess is a rare ocular infection. We reported a case of atypical ocular infection caused by Pseudomonas aeruginosa, which commonly caused opportunistic infection. Thus, we recommend that early empirical treatment to be tailored based on patient's immune status. Surgical drainage of subconjunctival abscess could be considered in addition to antimicrobial therapy.

Poster No.: PO-044
Panel No.: 044, Session: PO

Topographic and Visual Outcomes Post-pterygium Surgery: A Prospective Study in a Tertiary Eye Care Hospital in India

*First Author: Aarti **HEDA***

Purpose: To compare the corneal topography changes in astigmatism, keratometry and pachymetry, pre- and post-pterygium excision with conjunctival autograft surgery.

Methods: In this single centric prospective study, 150 eyes of 150 patients with primary nasal pterygia of grade 1 or more were included. Exclusion criteria were double headed and recurrent pterygia and pterygia with cataract. All patients underwent pterygium excision with conjunctival autograft surgery using fibrin glue. On follow-up visits, at 1 and 3 months, changes in Best Corrected Visual Acuity (BCVA), Spherical Equivalent, topographic astigmatism, Nasal & Central pachymetry were noted using Pentacam.

Results: Considerable improvement in spherical equivalent (SE) was seen post-surgery, more so, in patients with Grade III (Preoperative SE -3.30 ± 0.95, Postop. SE -0.72 ± 0.38) and Grade IV (Preop. SE -4.7 ± 1.3, Postop. SE -1.38 ± 0.75) pterygia. Statistically significant ($p < 0.0001$) reduction in topographic astigmatism was seen in patients with Grade II, III & IV pterygia at 1 month and 3 months. Nasal pachymetry showed significant changes at 1 and 3 months postoperatively, whereas central pachymetry showed no changes irrespective of grade of pterygia. Postoperatively, 56% of patients showed myopic with the rule astigmatism and 40% against the rule astigmatism. No recurrence of pterygium was observed in our series.

Conclusions: Given the high incidence of pterygium and morbidity like with chronic irritable eye, reduced vision due to pterygium, in tropical country like ours, surgery is a very safe & efficacious treatment option with good visual outcomes and predictable results.

Poster No.: PO-036
Panel No.: 036, Session: PO

Treatment and Analysis of Chronic Follicular Conjunctivitis Complicated by Molluscum Contagiosum on Eyelid Margin

*First Author: Shuzo **OKUNO***
*Co-Author(s): Yuko **HARA**, Hiroko **HOSOKAWA**, Hidenori **INOUE**, Atsushhi **SHIRAISHI**, Koji **TORIYAMA***

Purpose: To treat molluscum contagiosum (MC) patients and confirm the presence of molluscum contagiosum virus (MCV) in lesions and identify the types of MCV.

Methods: We diagnosed and treated two patients (35 yo man, and 6 yo girl) with follicular conjunctivitis complicated by ophthalmic MC by excision of the lesions on the eyelid margin. We observed the lesion pathologically, extracting and purifying the DNA from the lesions. The DNA was amplified by PCR and sequenced by Sanger sequencing to identify the genetic types of MCV.

Results: Follicular conjunctivitis and hyperemia disappeared soon after the MC lesions were excised in both of the patients. Pathological observation revealed that there were Henderson-Patterson bodies and a lot of CD3 positive cells, that were consistent with MC. The extracted and purified DNA were amplified with MCV primers. The DNA sequences were highly matched to type 1 MCV in the lesions.

Conclusions: Intractable follicular conjunctivitis could be caused by any cause. For example, there are Chlamydial conjunctivitis, Verruca Vulgaris, Chickenpox, Folliculitis, Condyloma acuminatum, Milia, Basal cell carcinoma, Acne vulgaris, Allergic conjunctivitis, conjunctival lymphoma, and MC. We experienced two cases of follicular conjunctivitis complicated by ophthalmic MC. MC can disappear just by the excision of lesions on the eyelid margin. In these cases, both patients were infected with type 1 MCV. However, it has been little reported about the relationship between MCV types and clinical significance. Further research will probably be necessary in the future too.

Poster No.: PO-031
Panel No.: 031, Session: PO

Upper Eyelid Adult Loa loa in a Partially Treated Loiasis Patient: The Worm That Never Dies

*First Author: Elaine Ju Yen **GAN***
*Co-Author(s): Hanida **HANAFI**, Ee Ling **LIM**, Joan **PALIKAT***

Purpose: We report a case of sequential ophthalmic infestation of adult Loa Loa worm as a result of partially treated Loiasis.

Methods: To present a case report.

Results: A 32-year-old male with underlying diabetes mellitus presented with intermittent upper eyelid movement sensation for one month, which mainly occurred at night. His wife noted a moving cylindrical lesion on the left upper eyelid 3 days prior to presentation. On examination, His visual acuity for his right eye was 6/6 and left eye was hand movement due to childhood amblyopia. However, the eyelid was normal, there were no lid swelling or any lesion noted. Ocular examination was also unremarkable. He had history of traveling to Africa for 6 months back in 2016, and had been treated for subconjunctival worm on the other eye. Although his blood smear was negative for microfilariae at that time, he was treated empirically for Loiasis with 21 days of oral Albendazole. Patient remained asymptomatic for 5 years until current presentation. His latest blood smear however was positive for Loa Loa microfilariae with density of 9mf/60ul blood. He was started on oral Albendazole 200mg BD for 21 days and is later planned for treatment with Diethylcarbamazine (DEC).

Conclusions: Loiasis can be persistent as it can reside in our human body for years when it's partially treated as seen in this case. Despite being rare in Malaysia, a high index of suspicion is key to the diagnosis and management of Loiasis in those with history of travel to Africa.

Evolving Academia, Research, Teaching and Education in Ophthalmology

Poster No.: PO-048
Panel No.: 048, Session: PO

An Unusual Ptosis With a Napkin Ring Sign

*First Author: Zjen Pang **MOI***
*Co-Author(s): Yong **GENG YI***

Purpose: Myotonic dystrophy (DM) is a multisystem autosomal-dominant disorder characterized by

muscular weakness and degeneration, namely DM1 (Steinert disease) and its milder variant DM2 (Ricker syndrome). In this report, we aim to identify significant clinical findings for diagnosing a case of DM.

Methods: A case report is presented.

Results: We described a 50-year-old gentleman presenting with dysphagia and progressive bilateral hands and proximal muscle weakness. On examination, he had an expressionless Hatchet face with frontal baldness, wasting of the masseter, pterygoid and temporalis muscles. He had a clinical hand grip and percussion myotonia. The Napkin ring sign was elicited upon percussion of his tongue resulting from a sustained contraction of tongue muscles. His eye examination revealed bilateral ptosis and mild orbicularis oculi weakness but no lagophthalmos. A needle electromyography done demonstrated classic myotonic discharges of DM2.

Conclusions: The Napkin ring sign is an uncommon but invaluable sign of myotonia, an objective assessment tool for not only physicians but ophthalmologists as well.

Poster No.: PO-049
Panel No.: 049, Session: PO

Molecular Genetics and Clinical Characteristics of Isolated Cryptophthalmos: A Case Series

*First Author: Rutusha **DODWAD***
*Co-Author(s): Harsha **BHATTACHARJEE**, Nilutparna **DAS***

Purpose: Need to expand our horizon in understanding the role of genetic testing and defining its applicability in diagnostic precision of complex ocular disorders of childhood.

Methods: A detailed ocular and systemic evaluation was followed by genetic counselling and pedigree analysis. The whole exome/genome sequencing (NGS, Illumina sequencing platform), targeted variant analysis using bidirectional Sanger sequencing from peripheral blood was done after a full written consent.

Results: Homozygous missense mutation c.C6499T (p.Arg2167Trp) for FREM2 at exon 9 of chromosome 13 was noted. Substitution of arginine to tryptophan at position 2167 (Arg2167Trp), resulted in disruption of the folding of FREM2. A diagnosis of AR, bilateral, abortive, isolated cryptophthalmos (OMIM #123570) was made.

Conclusions: Identifying the genomic location and specific nature of a variant in the context of what we know about the processes of central dogma can be informative but by no means comprehensive. Therefore, a well-developed clinical diagnosis is imperative before ordering a test and to interpret the result in the context of the patient's findings.

Poster No.: PO-050
Panel No.: 050, Session: PO

Rhegmatogenous Retinal Detachment Surgery Trends and Training in Asia-Pacific Region and Impact of COVID-19 Pandemic

*First Author: Hung Da **CHOU***
*Co-Author(s): Vivek **DAVE**, Adrian **FUNG**, Lawrence **IU**, Chee-Wai **WONG***

Purpose: To assess rhegmatogenous retinal detachment (RRD) surgery trends and training and the impact of COVID-19 pandemic.

Methods: One hundred and seventeen young ophthalmologists in the Asia-Pacific region completed an online survey regarding RRD surgery experiences in 2021-2022.

Results: To reach a 90% probability of achieving surgical competency, 91 vitrectomy and 34 scleral buckling (SB) completions during fellowship were needed. In the COVID vs. pre-COVID era, however, a decrease in the volume of SB completions (median [IQR] 3.3 [1.5, 9] vs. 13 [6.5, 23]; $p < 0.001$) per fellowship year was observed and was lower than the required volume to achieve competency. Young surgeons were less confident in conducting SB vs. vitrectomy (3.5 ± 1.1 vs. 4.2 ± 0.8, $p < 0.001$), and they reported decreased proportion of SB (-3.1%, $p = 0.047$) and increased proportion of vitrectomy (+4.8%, $p < 0.001$) after the pandemic outbreak. Apart from RRD clinical characteristics, surgical confidence was a main factor affecting surgical methods. More surgeons took the surgical duration and anesthesia methods into consideration during the pandemic.

Conclusions: SB surgical exposure was suboptimal in most fellowship programs in the Asia-Pacific region and further declined during the COVID-19 pandemic. Young surgeons were less confident in performing SB than vitrectomy, leading to a trend toward primary vitrectomy since the COVID-19 outbreak.

Glaucoma and Glaucoma Surgery

Poster No.: PO-072
Panel No.: 072, Session: PO

Big Challenges in a Small Eye: Management of Secondary Angle Closure Glaucoma and Aqueous Misdirection in a Nanophthalmic Patient, a Case Report

*First Author: Cherry Vhie **ORTEGA***

Purpose: Nanophthalmos is a rare ocular disorder presenting with a short axial length and a high lens/eye volume ratio, wherein patients are predisposed

to develop secondary angle closure glaucoma (SACG). This report discusses the management of a challenging case of a nanophthalmic patient with SACG, who subsequently developed aqueous misdirection.

Methods: A 40-year-old female with nanophthalmos presented with left eye pain, blurring of vision and elevated intraocular pressure (IOP). Anti-glaucoma medications were given, and two laser procedures were done prior to and in preparation for incisional surgery: (1) laser iridotomy, and (2) MicroPulse transscleral cyclophotocoagulation. Two incisional procedures were performed to manage SACG: (1) trabeculectomy with mitomycin, and (2) phacoemulsification with intraocular lens implantation combined with glaucoma drainage device (GDD) implantation.

Results: Despite maximum tolerated anti-glaucoma medications, laser procedures and trabeculectomy, the IOP remained fluctuating, hence the need to perform a second incisional procedure in the form of lens extraction with GDD implantation. However, the IOP and AC were still rising and progressively shallowing, respectively. Ultrasound biomicroscopy revealed findings suggestive of aqueous misdirection, for which pars plana vitrectomy combined with GDD repositioning, synechiolysis, surgical iridectomy and transeptal injection of steroids was performed. Post-surgery, the AC deepened and the IOP stabilized until 10 days post-surgery.

Conclusions: Management of glaucoma in nanophthalmos can be quite challenging and results can be very unpredictable. The outcomes of this report suggest that a meticulous tailor-fit approach and a very careful vigilance for complications, even many weeks post-surgery, are required so prompt management can be performed.

Poster No.: PO-059
Panel No.: 059, Session: PO

Clinical Response to MicroShunt in Glaucoma Patients With History of Ocular Surgery: A Subgroup Analysis

*First Author: Joseph **PANARELLI***
*Co-Author(s): Brian **FLOWERS**, Patricia **FRANCO**, Julian **GARCIA-FEIJOO**, Tuan **NGUYEN***

Purpose: To examine clinical outcomes of MicroShunt in patients with primary open-angle glaucoma and a history of ocular surgery.

Methods: Change in intraocular pressure (IOP) from screening was examined in patients with primary open-angle glaucoma and uncontrolled IOP (≥15 to ≤ 40 mmHg) on maximum tolerated therapy who received MicroShunt in a 2-year, randomized, noninferiority study (NCT01881425). Outcomes were evaluated in patients who had a history of ocular surgery (iStent, trabectome, and trabeculotomy). Adverse events (AEs) also were examined.

Results: A total of 395 patients received MicroShunt; of those, 30 had a history of ocular surgery (iStent: 36.7% (11/30); 8/30 [26.7%] trabectome; 11/30 [36.7%] trabeculotomy). At 12 and 24 months after screening, respectively, mean IOP was reduced by –6.5 and –6.6 mmHg from 21.1 mmHg in the overall population, and by –6.4 and –7.4 mmHg from 22.0 mmHg in those with prior ocular surgery. Postoperative ocular AEs in the study eyes were reported in similar percentages in the overall (92.7% [366/395]) and subgroup populations (96.7% [29/30]) at 24 months.

Conclusions: IOP reductions and postoperative ocular AEs in patients treated with MicroShunt were similar between the overall and subgroup populations.

Poster No.: PO-064
Panel No.: 064, Session: PO

Clinical Response to MicroShunt in Glaucoma Patients With Screening IOP <18 mmHg

*First Author: Joseph **PANARELLI***
*Co-Author(s): Brian **FLOWERS**, Patricia **FRANCO**, Julian **GARCIA-FEIJOO**, Tuan **NGUYEN***

Purpose: To examine clinical outcomes of MicroShunt treatment in patients with primary open-angle glaucoma and a subgroup population with screening intraocular pressure (IOP) <18 mmHg.

Methods: Outcomes were examined in patients with primary open-angle glaucoma and uncontrolled IOP (≥15 to ≤ 40 mmHg) on maximum tolerated therapy who received MicroShunt in a 2-year, randomized, noninferiority study (NCT01881425). Mean change from screening in IOP and glaucoma medication dose reduction were assessed at 12 and 24 months in the overall population and in a subgroup of patients who had IOP <18 mmHg at screening. Postoperative interventions also were assessed at 12 and 24 months in both groups.

Results: Overall, 395 patients were treated with MicroShunt; of those, 119 (30.1%) had an IOP <18 mmHg at screening. At 12 and 24 months, respectively, mean change in IOP from screening was –6.8 and –7.2 mmHg in the overall population (IOP at screening: 21.1 mmHg) and –3.0 and –3.5 mmHg in the subgroup population (IOP at screening: 16.4 mmHg). At 12 and 24 months, respectively, 71.6% and 66.1% of patients in the subgroup population did not require glaucoma medications. Postoperative interventions in the subgroup population included reoperation in the study eye (10.9% at 12 months and 13.4% at 24 months) and needling of the bleb with or without use of an injected antifibrotic (13.4% at 12 months and 17.6% at 24 months).

Conclusions: MicroShunt treatment resulted in decreased IOP in both the overall population and those who had screening IOP of <18 mmHg.

Poster No.: PO-065
Panel No.: 065, Session: PO

Comparative Analysis of Efficacy of Hydrus Microstent in Open-Angle Glaucoma and Mixed-Mechanism/Narrow-Angle Glaucoma

*First Author: Minh-Khanh **VINH***
*Co-Author(s): Sunee **CHANSANGPETCH**, Shan **LIN**, Ngoc **NGUYEN**, Sunita **RADHAKRISHNAN**, Alan **TRAN***

Purpose: To evaluate the effectiveness of the Hydrus Microstent in reducing intraocular pressure (IOP) and the need for long term medication therapy in patients with open-angle glaucoma (OAG) versus those with mixed-mechanism glaucoma (MMG) or narrow-angle glaucoma (NAG).

Methods: In this retrospective study, we reviewed patients with OAG and MMG/NAG who underwent cataract extraction with insertion of the Hydrus Microstent placement and1 year follow up. Success was defined as IOP ≤18mmHg without medication.

Results: There were 24 patients in the OAG group and 30 patients in the MMG/NAG group. Success rates were similar between the two groups: 75% (18/24) in OAG and 80% (24/30) in MMG/NAG (p = 0.73). IOP dropped significantly in MMG/NAG (14.7 to 12. 5 mmHg) and remained the same in OAG. Both groups showed significant reductions in medications (OAG 2.4 to 0.5; MMG/NAG 2.2 to 0.3, p <0.001 for both .

Conclusions: Combined phacoemulsification with Hydrus Microstent raised the success rate and reduced the number of medications needed by patients in both OAG and MMG/NAG.

Poster No.: PO-055
Panel No.: 055, Session: PO

Comparative Effect of Hemodialysis on Intraocular Pressure of End-Stage Renal Disease Patients With and Without Diabetes Mellitus

*First Author: Sangeetha **SUBRAMANIAM***
*Co-Author(s): Jemaima **CHE HAMZAH**, Raja Norliza **RAJA OMAR***

Purpose: To evaluate the changes in intraocular pressure (IOP) during a hemodialysis (HD) session in end stage renal disease (ESRD) patients with and without diabetes mellitus (DM).

Methods: This is a comparative cross-sectional study consists of 96 eyes from 96 ESRD patients undergoing HD for various causes in Hemodialysis Unit of Hospital Melaka. The subjects were categorized into 2 groups according to the presence or absence of diabetes. The intraocular pressure measurements were taken with tonopen within 30 minutes before and after a single HD session. Patients on antiglaucoma treatment or who have had earlier laser or surgical procedures for it were excluded. Paired t-test, independent t-test and Spearman correlation test were used to determine the statistical significance.

Results: The IOP decreased significantly after HD with a mean decrease of 1.08 ± 3.29 mmHg (p = 0.002). The reduction in IOP was seen slightly more in the DM group (1.13 ± 3.08, p = 0.015) compared to the non-DM group (1.03 ± 3.52, p = 0.048). However, the changes in IOP comparing both the groups were not statistically significant. There was no significant relationship seen between duration of DM, ESRD and HD with the changes in IOP in both DM and non-DM groups.

Conclusions: A reduction in IOP was seen after HD irrespective of presence or absence of DM.

Poster No.: PO-058
Panel No.: 058, Session: PO

Comparison of 36-Month Effectiveness of iStent Technology Combined With Phacoemulsification in Asian Eyes With Primary Open-Angle Glaucoma or Normal-Tension Glaucoma

*First Author: Ting Fang **TAN***
*Co-Author(s): Alice **CHU**, Rahat **HUSAIN**, Jin Rong **LOW**, See Teng **TAN**, Yamon **THANT SYN***

Purpose: To evaluate the effectiveness of iStent technology (iStent, iStent inject, iStent inject W) combined with phacoemulsification in Asian eyes with primary open-angle (POAG) or normal-tension glaucoma (NTG).

Methods: This retrospective study collected intraocular pressure (IOP) and glaucoma medication data at baseline and post-operative month (POM) 1, 6, 12, 24 and 36 in eyes implanted with iStent technology combined with phacoemulsification between November 2016 and July 2021. At the last follow-up, complete surgical success was defined as target IOP reached at 2 consecutive visits, without additional glaucoma surgery or medications, whereas qualified success included with or without medications.

Results: Analysis consisted of 138 POAG and 78 NTG eyes. Baseline mean IOP and medications were statistically significantly different. Change in mean IOP at POM36 from baseline in the POAG and NTG groups were estimated to be -1.94mmHg (95%CI: -2.71,-1.17) and -0.30mmHg (95%CI:-1.35,0.75), respectively. Both groups were predicted to have mean medication reductions of 0.70 (95%CI:0.37,1.03; POAG) and 0.82 (95%CI:0.43,1.21; NTG) at POM36 versus baseline. Complete and qualified success ≤18mmHg in POAG and NTG were 37.0%, 91.2%, 55.7% and 98.3%, respectively. Complete and qualified success ≤15mmHg in POAG and NTG were 30.6%, 67.7%, 50.8% and 93.1%, respectively. No sight-threatening complications were noted. Additional glaucoma surgeries were required in 3 POAG eyes and 2 NTG eyes.

Conclusions: In this largest study to date with iStent technology in Asian eyes, while statistically significant IOP reductions were observed in POAG at POM36, both groups experienced medication reductions. Qualified success ≤15mmHg was greater in NTG eyes than POAG eyes.

Poster No.: PO-071
Panel No.: 071, Session: PO

Comparison of Anterior Segment Characteristics in Caucasian Eyes With Different Primary Angle Closure Mechanisms After Laser Peripheral Iridotomy

*First Author: Tin **TUN***
*Co-Author(s): Tin **AUNG**, Andrzej **SAWICKI**, Agnieszka **WILKOS-KUC**, Tomasz **ŻARNOWSKI***

Purpose: To compare anterior segment parameters in Caucasian eyes with different angle-closure mechanisms before and after laser peripheral iridotomy (LPI)

Methods: Sixty-six subjects underwent swept-source optical coherence tomography (SS-OCT, CASIA, Tomey Corporation, Nagoya, Japan) angle imaging in the dark before and 7, 30, 90 days after LPI. Based on the baseline SSOCT images, the eyes were categorized into 4 angle-closure mechanisms such as pupillary block (PB), plateau iris configuration (PIC), thick peripheral iris (TPI) and large lens vault (LLV). Sixteen out of 128 cross-sectional images (11.25 degrees apart) were selected for analysis. We used generalized estimating equation to compare quantitative anterior segment parameters among angle-closure mechanisms and between before and after LPI after adjusting the inter-eye correlation.

Results: The mean age of subjects was 67.7 ± 9.2 years, with the majority being female (82.2%). 129 eyes were categorized into PB (n = 71, 55%), PIC (n = 40, 31%), TPI (n = 14, 10.9%) and LLV (n = 4, 3.1%). Anterior chamber depth was the shallowest in the LLV, followed by TPI, PB and PIC group at baseline. Widening of the angle and reduction of the iris curvature (IC) due to LPI were observed in all groups (all $p < 0.01$). When compared to the PB, the LPI-induced angle widening in the TPI group was significantly lesser even though IC reduction in the TPI was greater (all $p < 0.05$).

Conclusions: Anterior segment morphology and the LPI-induced angle widening were different among the angle-closure mechanisms. Subgrouping of angle-closure mechanisms based on the SSOCT images may help to predict the effect of LPI and changes in anterior segment progressively.

Poster No.: PO-073
Panel No.: 073, Session: PO

Effect of Gingko Biloba Extract EGb761 on Ocular Blood Flow: An Optical Coherence Tomography Angiography Study

*First Author: Shayne **TAN***
*Co-Author(s): Ching Lin **HO**, Monisha **NONGPIUR**, Shamira **PERERA**, Leopold **SCHMETTERER***

Purpose: To assess the changes in peripapillary retina and macular perfusion after using gingko biloba extract in subjects with normal tension glaucoma (NTG), using optical coherence tomography angiography (OCTA).

Methods: In this prospective case-control clinical study, 40 NTG subjects who were on topical anti-glaucoma eyedrops received gingko biloba extract EGb761 (Tebonin, Schwabe Pharma) supplementation with a dosage of 120 mg twice daily for 2 months. Controls were 21 NTG subjects who did not receive the supplement. All subjects underwent AngioVue (Optovue, Inc., Fremont, CA) OCTA 6 mmx 6 mm imaging of the optic nerve head as well as the macula at baseline and after 2 months. The main outcome measures were change in perfusion density (vessel area/image area x 100) at the optic nerve head (ONH), radial peripapillary capillaries (RPC), and macula.

Results: Of the 61 patients, 27 (44.3%) were male, and a majority (95.1%) were Chinese, with an average age of 64.8 years. We observed no significant changes in the perfusion density of the ONH retinal nerve fiber layer (RNFL) as well as the macular ganglion cell-inner plexiform layer in both the cases and controls (all $p > 0.05$).

Conclusions: The results of this study indicate that when using OCTA Angiovue, 2 months supplementation of Gingko biloba did not significantly influence the perfusion density at the ONH and macula in patients with NTG.

Poster No.: PO-076
Panel No.: 076, Session: PO

Effect of Low-Cost Aqueous Drainage Device and Trabeculectomy on Corneal Endothelium and Anterior Chamber Flare: A Prospective Randomized Open-label Blinded Endpoint (PROBE) Study

*First Author: Abinaya **VALLIAPPAN***
*Co-Author(s): Sushmita **KAUSHIK**, Surinder **PANDAV**, Srishti **RAJ**, Faisal **TT***

Purpose: The Aurolab Aqueous Drainage Implant (AADI) (Aurolab, Madurai, India) is a cost-effective substitute to the other commonly used non-valved shunts worldwide and has gained attention in developing countries. Though there have been multiple studies which explored the corneal endothelial changes associated with trabeculectomy, with other glaucoma

drainage devices, there is minimal literature available on AADI.

Methods: Every participant underwent ophthalmic examination, Noncontact specular microscopy (TOMEY EM 4000) (readings taken from 5 corneal quadrants) and LFM (FM-600, Kowa). A total of 42 eyes were randomly allocated into AADI and Trabeculectomy groups. Postoperatively, readings were repeated on day 1, 7, 1st month and 3rd month.

Results: The mean cell density values measured in the AADI group significantly decreased till postoperative day 1 in all the quadrants from their respective baselines apart from the inferotemporal group ($p < 0.03$ in all quadrants). The mean LFM variation was statistically significant (0.00 p-value POD 30 and 0.013 p-value POD 3m). There was hexagonality loss in the AADI group superotemporal quadrant which persisted even at POD90. In the AADI group, corneal cell count reading in the central quadrant correlated with the age (p value:0.014) and the tube corneal endothelial distance (p value 0.003).

Conclusions: There was no significant variation in the CECD loss, IOP reduction, anterior chamber flare and complication rate between the two groups. The IOP reduction failure rate, rise in flare from baseline, secondary procedure requirement and the requirement of antiglaucoma medication were significantly more in the trabeculectomy group. Thus, this low-cost shunt device is a safe option.

Poster No.: PO-067
Panel No.: 067, Session: PO

Effect of Mitomycin C-Augmented Trabeculectomy on Astigmatism

*First Author: Brindha **GULENDRAN***
*Co-Author(s): Haireen **KAMARUDDIN**, Rona Asnida **NASARUDDIN***

Purpose: To evaluate the relationship between the pre and postoperative astigmatism following trabeculectomy-augmented with mitomycin C.

Methods: This was a prospective, observational study involving glaucoma patients attending the Ophthalmology Clinic, who had been planned for primary trabeculectomy-augmented with mitomycin C between December 2019 and December 2020. Patients were recruited using convenience sampling and were evaluated pre-operatively and at 1 week, 1 month and 3 months postoperatively. Two surgeons, who practised the modified Moorfields Safer Surgery technique performed the mitomycin C-augmented-trabeculectomy. Patients were reviewed by two examiners at each visit and refracted using the Auto Refractometer AR-600A (Nidek, Japan) and keratometry (K) readings were measured by the Humphrey Zeiss ATLAS Corneal Topographer Model 990.

Results: Twenty-one eyes from 21 glaucoma patients were recruited with a mean age of 54.95 ± 13.79 years. They were predominantly POAG (66.7%), male (62%) and Malay ethnicity (47.6%). 12 (66.7%) eyes showed shift in astigmatism with-the-rule (WTR) at 3 months postoperatively. There was statistical significance in surgically induced astigmatism (SIA) from postoperative 1 month to 3 months. We could not predict the postoperative SIA at 3 months based on the pre-operative astigmatism, although in the preoperative astigmatism group of 2.54 ± 0.47 diopter (D), there was SIA of 4.40 ± 0.36 D at 3 months postoperatively ($p = 0.36$) which was almost double.

Conclusions: Our study showed a significant change in SIA with-the-rule astigmatism especially at 3 months post-mitomycin C-augmented trabeculectomy. Further cataract surgery and prescription of spectacles should be planned with caution in these patients.

Poster No.: PO-060
Panel No.: 060, Session: PO

Efficacy and Safety of Canaloplasty vs Trabeculectomy Either Standalone or Combined With Cataract Surgery: An Updated Meta-analysis

*First Author: Abdelaziz **ABDELAAL***
*Co-Author(s): Hashem **ABU SERHAN**, Helmy **BADR**, Mohamed **EBRAHIM**, Mohamed **ELMALLAHY***

Purpose: To compare the efficacy and safety between trabeculectomy (TE) and canaloplasty (CP) either as standalone or combined with phacoemulsification (PTE and PCP).

Methods: The review protocol was pre-registered on PROSPERO [CRD42022316363]. PubMed, Scopus, EMBASE, Web of Science, EBSCOhost, CENTRAL, ProQuest, clinicaltrials.gov, and Google Scholar were searched for studies comparing TE/PTE to CP/PCP. Efficacy endpoints included postoperative intraocular pressure (IOP), complete, and qualified success, while safety endpoints included failure, revision surgery, and complications. The GRADE approach was used to assess the certainty of reported outcomes.

Results: Fourteen studies were included, 11 of which compared TE to CP, while three studies compared PTE to PCP. Overall, TE/PTE was associated with lower IOP when compared to CP/PCP [mean difference (MD)=-2.55; 95%CI=-3.30: -1.80]. Similarly, TE/PTE was associated with significantly higher odds of complete [log odds ratio (LogOR)=1.20; 95%CI=0.79:1.61] and qualified success [LogOR=0.64; 95%CI=0.16:1.13] when compared to CP/PCP, respectively. Although no significant differences in failure and revision surgery were noted between TE/PTE and CP/PCP, in the TE subgroup, a significant reduction in failure was observed when compared to CP [LogOR=-0.82; 95%CI=-1.61: -0.04]. TE/PTE was associated with higher odds for hypotony [LogOR=2.02; 95%CI: 1.35: 2.70] and

choroidal detachment [LogOR=3.23; 95%CI: 1.95: 4.51] and lower odds for Descemet's membrane detachment [LogOR=-2.76; 95%CI: -4.02: -1.51] and hyphema [LogOR=-2.33; 95%CI: -3.12: -1.53].

Conclusions: Our findings highlight a superior effect of TE/PTE over CP/PCP regarding IOP, complete and qualified success, and lower failure and revision surgery rates. However, the certainty of these findings is low to very low.

Poster No.: PO-052
Panel No.: 052, Session: PO

Efficacy and Safety of Combined Phacoemulsification and Trabeculectomy in Late Advanced Stage of Primary Glaucoma: A 12-Month Follow-up

*First Author: Widya Artini **WIYOGO***
*Co-Author(s): Zeiras Eka **DJAMAL**, Emma **RUSMAYANI**, Iwan **SOEBIJANTORO***

Purpose: To evaluate the efficacy and safety, described in intraocular pressure (IOP) and vision-threatening complication, respectively, after combined phacoemulsification and trabeculectomy in adults with late-advanced stage primary glaucoma in Indonesia.

Methods: The medical records of selected patients were retrospectively reviewed. Data collection included IOP, visual acuity, visual field, optic disc ratio, retinal nerve fiber layer thickness, and IOP lowering medication used preoperatively and through up to 12 months post operatively. Complications, if any, were also noted. Paired T test and Wilcoxon tests were utilized to analyze the result.

Results: Data from 47 eyes of 40 subjects were analyzed. Majority of the subjects were male and most had primary open angle glaucoma compared to primary angle closure glaucoma (62.5% vs 37.5%). The mean visual field deviation (dB) was -22.68 ± 6.90 at baseline and -23.31 ± 7.04 post operatively. Mean IOP (mmHg) was 29.08 ± 11.39 at base line and 15.11 ± 6.40 after mean follow up of 12 months. IOP reductions of ≥ 20% were achieved in 41/47 eyes (87.2%) with mean IOP reduction of 43%. Mean IOP lowering medication reduction of 60% after mean follow-up of 12 months. Sixteen out of 47 eyes (34%) were medication-free at last follow-up. No vision-threatening complications were observed.

Conclusions: Combined phacoemulsification and trabeculectomy is a safe procedure to perform in late-advanced stage of primary glaucoma. This procedure provides statistically and clinically significant reduction of IOP and medication use with no wipe-out complication has been reported.

Poster No.: PO-066
Panel No.: 066, Session: PO

Efficacy and Tolerance of Netarsudil Latanoprost Fixed Dose Combination in a Switch Study With Other Glaucoma Medications

*First Author: Nandini **KANDAMURI***

Purpose: To study the Efficacy and Tolerance of Netarsudil-Latanoprost Fixed-Dose Combination (NLFC) in a switch study in Glaucomatous Eyes with inadequate IOP control in 24 Patients (24 OD & 24 OS).

Methods: 24 Glaucoma Patients (POAG 20 PACG 1 SOAG 3) 17 Black 6 White amp; 1 Hispanic; 16M: 8F; 24 OD, OS & 24 OS on current medications & Switched to NLFC 23 Pts (20 OU, 2 OD & 1 OS) complete 48 wks were studied. Pre-switch Medications switched to NLFC Netarsudil PGAS Netarsudil & PGAs Other Medications IOPs in measured at Visit 0 (Initial) VisIt 1 @ 2 wks Visit 2 @ 4 wks Visit 3 @ 12 wks Visit 4 @ 24 wks AND Visit 5 @ 48 wks.

Results: IOPs Visit 0: 24.6 OD 21.9 OS Visit 1: 20.9 OD (p: 0.004) 19,8 OS (p: 0.002) Visit 2: 21 OD (p: 001) 19.6 OS (p: 002) Visit 3: 20.5 OD (p: 0.001) 19.1 OS (p: 0.003) Visit 4: 20.5 OD (p: 0.001) 20.1 OS (p: 0.002) Visit 5: 18.4 OD (p: 0.001) 16.95 OS (p: 0.02) Reduction in No. of Bottles: 3.2 Pre vs 2.7 Post Switch. No. Meds: 2.8 Pre vs 2.4 Post Switch

Conclusions: First, NLFC is better than most single and combination glaucoma medications and is equal to Netarsudil and Latanoprost is used separately together. Second, the safety profile is comparable to the other glaucoma medications.

Poster No.: PO-075
Panel No.: 075, Session: PO

Free Fall: Spontaneous Detachment of Ahmed Glaucoma Valve Tube

*First Author: Varsha **BELAMGI***
*Co-Author(s): Gowri **MURTHY***

Purpose: To report a rare case of Ahmed Glaucoma valve tube detachment from the plate.

Methods: A regularly followed up patient who underwent AGV implantation for secondary silicone oil induced glaucoma after primary repair for Penetrating corneal injury and Intraocular foreign body. After 2 years of implantation, concurrent movement of AGV tube into the anterior chamber with lid movement was noted but there was no endothelial touch. Despite the tube movement the implant appeared to be functioning well with good intraocular pressure control until this year when he presented with detachment of tube from the plate. The proximal end of the tube was seen at 7 o clock with endothelial contact. An immediate surgical removal of the AGV tube was

performed.

Results: An immediate surgical removal of the detached tube in the anterior chamber was performed.

Conclusions: Although dynamic movement of AGV tube has been reported previously, Spontaneous detachment of AGV tube from plate is a yet not documented complication. The proposed mechanism in this case appears to be the anterior migration of the encircling band leading to slow weakening of the plate tube junction and eventually tube detachment. AGV tube movement and migration of encircling band are known complications. Synchronously leading to tube extrusion is being reported for the first time.

Poster No.: PO-062
Panel No.: 062, Session: PO

Is There a Difference in Surgical Outcome Based on Location of Scleral Flap for Trabeculectomy?

*First Author: Satoshi **YOKOTA***
*Co-Author(s): Masashi **FUJIHARA**, Yasuhiko **HIRAMI**, Yasuo **KURIMOTO**, Shogo **YAMAMOTO**, Satoru **YOSHIMIZU***

Purpose: Although few previous reports have suggested that supra-nasal trabeculectomy has better surgical outcomes than supra-temporal, there is no sufficient consensus. In the present study, we reviewed trabeculectomy from multiple surgeons at a single institution and compared the surgical outcomes of supra-nasal and supra-temporal incisions.

Methods: Sixty-nine eyes that underwent trabeculectomy at our institution between January and December 2019 were included. Patients were divided into two groups: supra-nasal and supra-temporal, based on the site of the scleral flap. Patient background, postoperative intraocular pressure, and postoperative visual acuity were compared between the two groups. Age, intraocular pressure, and visual acuity were tested with a t-test, and gender, left or right, lens status, and whether or not the patient had undergone re-operation were tested with a chi-square test. The significance level was set at 0.05.

Results: There were 81 eyes in the supra-nasal group and 26 eyes in the supra-temporal group. Mean age, gender, and right and left eyes did not differ between groups. Phakic eyes were more common in the nasal group ($p = 0.03$). Previous filtration surgery was more common on the supra-temporal side ($p < 0.01$). There were no differences in IOP or visual acuity at preoperative and 1, 3, 6, 12, and 24 months postoperatively. There were no differences in re-operation rates.

Conclusions: The supra-nasal side was preferred for initial filtration surgery. There was no difference in filtration outcomes between supra-nasal and supra-temporal procedures.

Poster No.: PO-056
Panel No.: 056, Session: PO

Is This Really Juvenile Glaucoma?

*First Author: Kah **LENG***
*Co-Author(s): Jie Jie **LIM**, Hong Kee **NG***

Purpose: The aim of this case report is to highlight the usage of imaging modalities to improve diagnostic accuracy.

Methods: To present a case report.

Results: A 34-year-old man who had been treated by private ophthalmologist, presented to us with bilateral visual acuity of 6/9, normal anterior segment, intraocular pressure (IOP) of 17 mmHg on 3 antiglaucoma eyedrops and fundus showing cup disc ratio of 0.8. Gonioscopy showed open angles in both eyes. Initial diagnosis of bilateral juvenile open angle glaucoma was made. Subsequent follow up, his IOP increased, and he was noticed to have bilateral concave iris. Repeated gonioscopy revealed dense hyperpigmentation in both angles. Anterior segment optical coherence tomography (AS-OCT) showed posterior bowing of mid-iris in both eyes. Therefore, diagnosis was revised to pigment dispersion syndrome (PDS). The reverse pupillary block was successfully treated with laser peripheral iridotomy (LPI) as visualized on repeated AS-OCT. His intraocular pressure in both eyes remained stable and series visual fields showed no disease progression.

Conclusions: The use of AS-OCT provides an objective visualization of iris configuration which in this case aids in the diagnosis of PDS. Timely management may prevent vision loss due to misdiagnosis.

Poster No.: PO-053
Panel No.: 053, Session: PO

Latanoprostene Bunod 0.024% in the Treatment of Open-Angle Glaucoma and Ocular Hypertension

*First Author: Yu-Yen **CHEN***
*Co-Author(s): Man-Chen **HUNG***

Purpose: Latanoprostene bunod (LBN) 0.024% is metabolized into latanoprost acid and a nitric oxide (NO)-donating moiety, thus increasing the outflow of aqueous humor through the uveoscleral and trabecular routes, respectively. This study aimed to evaluate the intraocular pressure (IOP)-lowering effect of LBN among patients with open-angle glaucoma (OAG) and ocular hypertension (OHT). The effectiveness of LBN was also compared with timolol maleate 0.5% and latanoprost 0.005%.

Methods: We searched PubMed and Embase between 1 January 2010, and 31 March 2022 and adopted only peer-reviewed clinical studies in our meta-analysis. A total of nine studies (2389 patients with OAG or OHT) assessing the IOP-reduction effect of LBN were

included. Standardized mean differences (SMDs) of IOP between post-treatment time points (2 weeks, 6 weeks, 3 months, 6 months, 9 months, and 12 months) and baseline were calculated.

Results: The pooled analysis according to each time point revealed a significant IOP drop after LBN treatment (all p values for SMD < 0.05). In addition, LBN revealed a significantly stronger efficacy in decreasing IOP than timolol maleate 0.5% and latanoprost 0.005% during the follow-up period of three months. No serious side effects of LBN 0.024% were reported. Our study concluded that LBN could achieve good performance for IOP reduction in patients with OAG and OHT. The safety was favorable with no severe side effects.

Conclusions: LBN 0.024% could significantly reduce IOP and was more effective than timolol maleate 0.5% and latanoprost 0.005% during the follow-up period of three months. There were no serious adverse effects related to LBN.

Poster No.: PO-068
Panel No.: 068, Session: PO

Long-term Follow-up in Myopic Glaucoma: Progression Rates and Associated Factors

*First Author: Mingu **HUH***
*Co-Author(s): Yoon **JEONG**, Jin Wook **JEOUNG**, Young Kook **KIM**, Ki Ho **PARK**, Young-In **SHIN***

Purpose: The aim of this study is to investigate the long-term prognosis for glaucoma in patients with myopia.

Methods: In this retrospective case series study, a total of 115 glaucoma patients with myopia from January 2005 to May 2022 were included in this study. Initial presentations and follow-up data were obtained from medical records.

Results: Of the 115 patients included in the study, were classified into three myopia groups [mild myopia (32.2%), moderate myopia (40%), high myopia (27.8%)]. The mean follow-up time was 10.3 years (range 7.2 - 17.1 years). There was no difference in baseline intraocular pressure (IOP) and mean IOP during follow-up period between the three groups. Visual acuity loss of 3 lines or more according to the Snellen chart was significantly increased in the high myopia groups [OR = 3.06; CI = 1.14 – 8.61]. In the entire myopia group, the central visual field defect significantly increased according to the central involvement of the retinal nerve fiber layer (RNFL) defect [OR = 3.37; CI = 1.27 – 9.54]. Among them, the moderate myopia group was significantly related more than other groups [OR = 5.25; CI = 1.10 – 33.97] .

Conclusions: In myopic glaucoma patients, the higher the degree of myopia, the higher the rate of visual loss. In the eyes with myopic glaucoma, the central visual field defect is often associated with the central involvement of the RNFL defect.

Poster No.: PO-061
Panel No.: 061, Session: PO

Longitudinal Evaluation of Advanced Glaucoma: 10 Years and Beyond Follow-up Cohort Study

*First Author: Young-In **SHIN***
*Co-Author(s): Mingu **HUH**, Yoon **JEONG**, Jin Wook **JEOUNG**, Young Kook **KIM**, Ki Ho **PARK***

Purpose: To investigate the long-term clinical course of more than 10 years and the risk factors of progression in patients with advanced glaucoma treated with topical medications.

Methods: Patients with advanced glaucoma were followed for 10 years or more, with disc photography, red-free retinal nerve fiber layer (RNFL) photography, optical coherence tomography, and visual field (VF) examinations performed every year. The diagnosis of advanced glaucoma was made using the Hoddap-Parrish-Anderson criteria (standard automated perimetry mean deviation (MD) worse than -12 dB). Glaucoma progression was defined as functional deterioration (as determined by event-based guided progression analysis using the Humphrey Field Analyzer). Multivariate analysis with Cox's proportional hazard model was performed to identify risk factors for glaucoma progression.

Results: A total of 116 patients (116 eyes) were included (mean age, 54 years old). Over the course of 11.2 ± 3.3-year follow-up period, glaucoma progression was detected in 58 eyes (50%). The MD change was -0.46 ± 0.45 dB/yr in the whole population; -0.68 ± 0.50 dB/yr in progressors; -0.23 ± 0.25 dB/yr in non-progressors. The progressors showed significantly greater baseline visual field index and lesser mean deviation than the non-progressors (64.1 ± 13.0% vs 53.2 ± 15.8, -12.6 ± 3.7dB vs -15.7 ± 4.8dB; both p <0.001). Disc hemorrhage (DH) was detected more frequently in the progressors (12.1% vs 0%; p = 0.006). Multivariate Cox's proportional hazard model indicated that the presence of DH (HR = 2.496; p = 0.033) was significantly associated with progression.

Conclusions: Baseline visual field status and the occurrence of DH for progressors are significantly different from those who remain stable, and the DH was a consistent risk factor for progression.

Poster No.: PO-063
Panel No.: 063, Session: PO

Outcomes of Micro Pulse Transscleral Diode Laser Cyclophotocoagulation in Refractory Glaucoma

*First Author: Ambreen **GUL***

Purpose: The current study was conducted to evaluate

outcomes of micro pulse transscleral diode laser (μP-TSCPC) in terms of safety and efficacy in various types of refractory glaucoma.

Methods: It was a prospective interventional trial including 31 eyes of 30 patients with refractory glaucoma. Patients underwent μP-TSCPC with Cyclo G6 glaucoma laser (Iridex). Micropulse P3 probe delivered 2,000 mW for 80 seconds 3mm away from limbal margin. Duty cycle was 31.3 % with 0.5ms on time and 1.1ms off time. Best corrected visual acuity and intraocular pressure was documented pre-laser as baseline and post-laser 1week, 1 month till 3 months.

Results: The mean age of patients was 55.16 ± 13.9SD years. There were 20 (64.5%) males and 11 (35.5%) females. Mean pre-laser IOP was 33.26 ± 7.0. Mean post-laser IOP was 11.77 ± 3.6 at 1 week, 14.42 ± 5.7 at 1 month and 15.97 ± 5.2 at 3month. Significant reduction in IOP from baseline was seen at each follow-up. Mean pre-laser BCVA was 0.07 ± 0.20 Snellen decimal. Mean post-laser BCVA was 0.07 ± 0.20. BCVA was preserved in all patients (100%) with no complete loss of vision in any eye. 2 patients had mild early post-laser inflammation, hyphemia, hypotony and IOP spike was seen in 1 patient each. At 3 months, treatment success was seen in 27 (87.1%) patients. The use of antiglaucoma medications decrease from 3.74 ± 0.8 to 0.26 ± 0.81 which was statistically significant.

Conclusions: The μP-TSCPC is a safe, effective and noninvasive method of treatment for refractory glaucoma leading to both persistent reduction of intraocular pressure and decrease need for topical anti-glaucoma medications without significant intraoperative and postoperative complications.

Poster No.: PO-054
Panel No.: 054, Session: PO

Phacoemulsification Versus Phacotrabeculectomy in Pseudoexfoliation Glaucoma

First Author: Rakhi ***DCRUZ***

Purpose: Pseudoexfoliation glaucoma (XFG) is often associated with higher complication rates and less surgical success. Studies comparing long term outcome of cataract surgery alone versus combined surgery in pure cohort of XFG is lacking in literature. This study aims to compare the long-term surgical outcomes of cataract surgery alone versus combined surgery in XFG in terms of intraocular pressure (IOP) reduction.

Methods: All patients with XFG who underwent either cataract surgery alone (group1-phacoemulsification-n=35) or combined surgery (Group 2 -n=47) from 2013-2019 by a single trained surgeon, were screened and recalled for a detailed clinical examination, including Humphrey visual field analyzer at 3 monthly intervals for a minimum of 2 years.

Results: A total of 81 eyes of 67 patients with XFG were included in this study (Group 1 – 35 eyes and Group 2 - 46 eyes each). Both groups achieved 26-40% IOP reduction from pre-operative IOP levels, p < 0.001, with cataract surgery alone achieving > 23% IOP reduction at final follow up. Surgical success rates were similar in both groups (complete success 66% in Group 1 and 55% in Group 2, p = 0.4), and qualified success 17% in Group 1 versus 24% in Group 2, p = 0.8). Group 2 eyes had more post-operative transient and late complications than group1.Kaplan-Meier analysis showed a marginally better survival rate for Group 1 (75% [55-87%]) than Group 2 (66% [50-78%]), at 2years which was not significantly different.

Conclusions: Cataract surgery can be as effective as combined surgery in moderate XFG eyes. The final visual acuity, IOP profile, and complication rates are comparable between the two procedures.

Poster No.: PO-070
Panel No.: 070, Session: PO

Phacoemulsification With Endoscopic Cyclophotocoagulation Versus Phacoemulsification Alone in Primary Angle Closure Glaucoma

First Author: Dewang ***ANGMO***
Co-Author(s): Tanuj ***DADA****, Kanchangouri* ***SATPUTE****, Namrata* ***SHARMA****, Saurabh* ***VERMA***

Purpose: Comparative evaluation of phacoemulsification (phaco) alone versus phaco combined with endoscopic cyclophotocoagulation (phacoECP) in PACG.

Methods: A prospective randomized clinical trial in which 11 consecutive PACG patients uncontrolled on maximal hypotensive therapy, meeting all inclusion criteria were recruited. Patients were randomized into 2 groups and underwent phaco ECP Group 1 or phaco alone- Group 2. IOP, angle parameters and visual acuity were recorded at one week, 1 month and 3 months.

Results: The average age of patients was 58.5 ± 7.29 years and 56.5 ± 9.17 years in Group 1 and 2 respectively, p = 0.39. Axial length in group 1 was 22.27 ± 0.61 mm and Group 2 was 22.63 ± 0.94 mm (p = 0.07), ACD in group 1 was 2.49 ± 0.08 mm and Group 2 was 2.23 ± 0.07 mm (p = 0.01); lens thickness in group 1 was 4.67 ± 0.06 mm and Group 2 was 4.51 ± 0.07 mm (p = 0.12). The mean preoperative IOP was 24.54 ± 9.61 mmHg and 34.17 ± 0.91 mmHg, which significantly reduced postoperatively IOP to 15.22 ± 1.787 mmHg and 14.46 ± 1.66 at 3 month (p < 0.05) in Group 1 and 2 respectively). Significant widening of the angle was noted at 3 months with an increase as compared to baseline values in AOD500 nasally: in Group 1 (0.244 ± 0.0768 mm Vs 0.4023 ± 0.213 mm) and Group 2 (0.22 ± 0.06 mm Vs 0.45 ± 0.20 mm); TISA500 at nasally: in Group 1 (0.077 ± 0.02 mm Vs 0.107 ± 0.06 mm) and Group 2 (0.07 ± 0.02 mm Vs 0.15 ± 0.07 mm); all p <

0.05.

Conclusions: Both phaco or phacoECP is associated with a significant reduction in IOP, widening of the anterior chamber angle and a reduced need for ocular hypotensive medications in PACG eyes.

Poster No.: PO-074
Panel No.: 074, Session: PO

Platelet Parameters and Coagulation Profile in Primary Open Angle Glaucoma Patients

*First Author: Shweta **SINGH***

Purpose: To study platelet parameters and coagulation profile in patient with Primary Open Angle Glaucoma (POAG).

Methods: A total of 80 (40 cases and 40 controls) consecutive POAG were consecutively recruited as per inclusion-exclusion criteria. Detailed ophthalmological and systematic examinations were performed. Various hematological parameters including platelet parameters (PLT, PDW, PCT, MPV and p-LCR) were measured. Cases (POAG) classified according to age (< MD ≤ 12 dB), and severe (MD > 12 dB).

Results: In POAG patients, PLT counts (208.45 ± 55.15 x 109 /L) were significantly lower than those of the control group (221.02 ± 54.97 ?109 /L). In the POAG group, PDW (14.04 ± 3.64 fL) and MPV (11.12 ± 1.53 fL) values were significantly higher than those of the control group (PDW 12.04 ± 2.81 fL, MPV 10.82 ± 1.21 fL). PDW and MPV values were highest in the severe POAG group (PDW 14.49 ± 2.34 fL; MPV 10.31 ± 1.66 fL), followed by the moderate group (PDW 12.92 ± 3.53 fL; MPV 10.14 ± 1.41 fL) and then the mild group (PDW 12.02 ± 2.67 fL; MPV 9.74 ± 0.82 fL), with statistically significant differences observed between mild-severe POAG and moderate-severe POAG groups by LSD post-hoc test.

Conclusions: Platelet activation may have a role in the pathomechanisms of POAG, since both PDW and MPV values were considerably increased in POAG patients and PDW was positively associated with disease severity.

Poster No.: PO-051
Panel No.: 051, Session: PO

Role of Combined Phacoemulsification and External Cyclodiode Laser in Managing Patients With End-stage Glaucoma

*First Author: Sudipto **BHATTA***

Purpose: Management of end-stage glaucoma patients in elderly patients is challenging due to high-risk of visual loss from invasive surgery and other associated factors like life-expectancy, tolerability and acceptance for invasive surgery. This study highlights the role of combined phacoemulsification and external trans-scleral cyclodiode laser (IRIS Oculight SLx, Iris Medical, CA) for managing such patients.

Methods: 25 patients with a mean age of 83 years and a diagnosis of end-stage glaucoma and coexisting cataract were included. 10 patients underwent previous trabeculectomy. The mean LogMAR visual acuity was 0.6, the mean intraocular pressure (IOP) was 24 mmHg, and cup-disc ratio was 0.95. All patients had very advanced visual field loss with an average mean deviation of -29 decibels and were using an average of 3.3 glaucoma medications. All patients underwent combined phacoemulsification with external trans-scleral cyclodiode laser by a single surgeon.

Results: At 12 months post-operative, mean visual acuity improved by one line to 0.5 on LogMAR. The mean IOP reduction was 40% to 12 mmHg, and the average reduction of glaucoma medication was by 0.5 drop. One patient lost 4 lines of vision from severe post-operative uveitis; 2 patients lost 3 lines of vision after 12 months from natural glaucoma progression.

Conclusions: Combined phacoemulsification and external diode laser is a safe, effective and well tolerated surgery for treating selected patients with end-stage glaucoma and cataract with a very low risk of visual loss. This combined surgery has a relatively easy learning curve and could be practised safely in most glaucoma units around the world.

Poster No.: PO-057
Panel No.: 057, Session: PO

Steroid-Induced Glaucoma Combined With Purtscher-Like Retinopathy in a Young Patient With Systemic Lupus Erythematosus: A Case Report

*First Author: Channdarith **KITH***
*Co-Author(s): Piseth **KONG**, Chukmol **KOSSAMA**, Un **LENG**, Sun **VINH***

Purpose: To report a subsequent complication of long-term high-dose steroids in a patient with systemic lupus erythematosus (SLE) manifested as steroid-induced glaucoma.

Methods: We review a case of SLE in a 14-year-old teenager. In addition to steroid-induced glaucoma, the burden in diagnosing Purtscher-like retinopathy (PLR) is huge, the interdisciplinary care approach was done to better deal with the SLE in both short- and long-term periods.

Results: We present a case who came with an acute-onset, painless blurring of vision in both eyes. She has been using systemic steroids for four months for SLE. Her presenting visual acuity is of hand motions and pupillary reactions were sluggish. Her pressure was 34, 36 mmHg. Gonioscopy has shown hyperpigmentation and peripheral anterior synechia. Fundus revealed Purtscher fleckens with numerous flame-shaped retinal hemorrhages and venous tortuosity. The cup-to-disc

ratio is 0.7 with inferior excavation. Her visual field 24-2 revealed superior nasal steps. She was diagnosed with both eye steroid-induced glaucoma and Purtscher-like retinopathy. Anti-glaucoma was added. After six months, her visual acuity improved by 2 lines, and there was no more damage to the optic disc. She was off steroids and supplemented with oral folinic acid after her SLE became stable, and her pressure is now well controlled with timolol 0.5% eye drop.

Conclusions: The ocular manifestations of SLE are due to the condition itself or the treatment. More importantly, steroid-induced glaucoma and Purtscher-like retinopathy could cause devastating visual loss. Therefore, it is essential to detect this condition as soon as possible and implement a vision-preserving treatment plan.

Poster No.: PO-069
Panel No.: 069, Session: PO

iTrack Global Data Registry to Support Role of Canaloplasty for Treatment of Glaucoma

*First Author: Nathan **KERR***
*Co-Author(s): Ike **AHMED**, Keith **BARTON**, David **LUBECK***

Purpose: The iTrackTM Global Data Registry (iTGDR) is a prospective, multicenter, real-world study of patients with primary and secondary open angle glaucoma undergoing canaloplasty using the iTrackTM or iTrackTM Advance devices (Nova Eye Inc., Fremont, USA). Canaloplasty lowers intraocular pressure by targeting the three main sites of outflow resistance: the trabecular meshwork, Schlemm's canal and the distal collector channels. During the surgical procedure, a flexible microcatheter is advanced 360-degrees around Schlemm's canal. As the microcatheter is withdrawn, viscoelastic fluid is injected to dilate Schlemm's canal, collector channel ostia and the distal outflow system.

Methods: The iTGDR is a surgeon-led initiative conducted in collaboration with the International Glaucoma Surgery Registry (IGSR). The IGSR is an independent cloud-based platform that collates high quality longitudinal data on the outcomes of glaucoma surgery. The iTGDR will collate efficacy, safety and canaloplasty specific treatment parameters such as intraocular pressure (IOP), number of glaucoma medications, pachymetry values, adverse events and complications.

Results: The iTGDR commenced in January 2022 with approximately 20 sites in the USA, Canada, Europe, Asia and Australia. Canaloplasty outcomes will be followed for a minimum of 12-months and up to 24 to 60 months. A minimum of 300 patients will be enrolled. It will generate analytics and reports of outcomes for each participating site as well as the entire iTGDR.

Conclusions: The iTGDR will make a major contribution to understanding the clinical effectiveness of canaloplasty to guide evidence-based decision making for surgeons to achieve improved outcomes in the treatment of their glaucoma patients.

Intraocular Inflammation, Uveitis and Scleritis

Poster No.: PO-081
Panel No.: 081, Session: PO

A Rare Case of Paradoxical Reaction of Eyes to Anti-tuberculosis Drugs

*First Author: Zayani **ZOHARI***
*Co-Author(s): Zunaina **EMBONG**, Sakinah Binti **ZAKARIA***

Purpose: We report a rare case of the paradoxical reaction of the eyes to anti-tuberculosis drugs.

Methods: To present a case report.

Results: A 41-year-old lady with no medical illness presented in 2014 with a history of left eye (LE) anterior uveitis with reduced vision. She had a few episodes of recurrent LE anterior uveitis in 2015 and 2017, then had a right eye (RE) anterior uveitis in 2020. Anterior uveitis was treated with a topical steroid each episode, and vision improved to 6/6 in bilateral eyes (BE). Based on positive Mantoux test (20 mm induration), and positive Interferon-Gamma Release Assay (IGRA), she was diagnosed as having ocular tuberculosis. Anti- tuberculosis was initiated and three days after starting on anti-tuberculosis, she developed severe LE panuveitis with fibrin in the anterior chamber, and vision dropped from 6/6 to hand movement (HM). The diagnosis of LE paradoxical reaction to anti-tuberculosis was made. Anti-tuberculosis was continued, and topical dexamethasone was increased hourly. Vision LE improved from HM to 6/9. Nine months later, she complained of reduced vision in BE. Examination revealed vision 6/9 in BE. Ishihara test in RE was 14/15, and LE was 11/15. BE anterior segment and fundi were normal. The patient was diagnosed with BE toxic optic neuropathy, anti-tuberculosis was discontinued, and tab mecobalamin 500 mg TDS was started. Two months later, vision improved to 6/6 in BE, and Ishihara improved to 15/15 in BE.

Conclusions: Diagnosing ocular tuberculosis can be challenging, and paradoxical reactions should be managed without anti-tuberculosis termination.

Poster No.: PO-077
Panel No.: 077, Session: PO

An Unexpected Occurrence: Acute Retinal Pigment Epitheliitis Following COVID-19 Vaccination

*First Author: Shao Sze **TAN***
*Co-Author(s): Tajunisah **IQBAL**, Abdul Manan **NORANIDA**, Amir **SAMSUDIN***

Purpose: We report the ocular findings of a patient which occurred after receiving coronavirus disease 2019 (COVID-19) vaccination.

Methods: To present a case report.

Results: A 36-year-old gentleman with no underlying medical illness was administered the first dose of COVID-19 vaccine (Cominarty, BNT162b2, Pfizer-BioNTech). He developed left eye metamorphopsia around the central and paracentral region three hours after vaccination. Visual acuity was 6/12 OU unaided, best corrected to 6/6 OU. Anterior segment examination was unremarkable. Fundus examination of the left eye showed a well-circumscribed yellowish raised elevation superior to the fovea with no subretinal fluid, exudates, drusen or hemorrhages. Optical coherence tomography (OCT) showed a dome-shaped hyper-reflective elevation at the left fovea involving the photoreceptor layer and causing disruption of the ellipsoid zone. Fundus autofluorescence showed hyperautofluorescence at the foveal region corresponding to the macular lesion. Fundus fluorescein angiography and indocyanine green angiography demonstrated hyperfluorescence at the fovea in the venous phase corresponding to fundus and OCT findings. There was no evidence of leakage, pooling or neovascularization. These findings were suggestive of acute retinal pigment epitheliitis (ARPE). He was treated conservatively. At one month post vaccination, his symptoms improved with minimal residual metamorphopsia and visual acuity of 6/6 OU. The anatomical lesion persisted with residual pigment epithelial defect. He opted not to continue with subsequent doses of his vaccine.

Conclusions: Ocular adverse effects like ARPE can occur following COVID-19 vaccination. We would suggest patients receiving COVID-19 vaccination to be aware of possible ocular complications and to report any symptoms, regardless of severity.

Poster No.: PO-083
Panel No.: 083, Session: PO

Bilateral Choroidal Folds With Exudative Retinal Detachment As First Presentation of Extra-Articular Rheumatoid Arthritis

*First Author: Wan Mohd Aiman **WAN ABDUL RAHMAN***
*Co-Author(s): Marium **JAMALUDDIN AHMAD**, Tengku **KAMALDEN***

Purpose: Rheumatoid arthritis typically presents with synovitis of the small and medium joints of the hands. However, it can also involve other organs including the eyes. We report a rare case of bilateral posterior scleritis with choroidal folds and exudative retinal detachment in extra-articular rheumatoid arthritis

Methods: To present a case report.

Results: A 67-year-old male with no previous medical problems presented with bilateral eye redness, pain, and gradual loss of vision. His fundus shows bilateral choroidal folds with left exudative retinal detachment. Both eyes have posterior scleritis supported via B-scan showing T-signs. He also developed fever a week later with leukocytosis and raised C-reactive protein. Infective screening was negative. However, his rheumatoid factor and anti-cyclic citrullinated peptide sera levels were significantly elevated. Other connective tissue disease screening tests were negative. The diagnosis of extra-articular rheumatoid arthritis was made by rheumatologist, and systemic steroids treatment was commenced. Two months following treatment, both choroidal folds abated completely, and he regained his baseline vision of OD 6/9 and OS 6/12 with no evidence of optic neuropathy.

Conclusions: Extra-articular rheumatoid arthritis is a very rare occurrence and can primarily present with ocular signs and symptoms. The atypical clinical presentation poses a diagnostic challenge. However, the outcome can be favorable as highlighted in this case.

Poster No.: PO-086
Panel No.: 086, Session: PO

Double Trouble – A Case Series of Concurrent HLA-B27 Associated Uveitis and Tuberculous Uveitis

*First Author: Arshee **AHMED***
*Co-Author(s): Parthapratim **DUTTA MAJUMDER***

Purpose: To assess the co-existence of tuberculous uveitis in patients with uveitis who were HLA B27 positive.

Methods: To present a retrospective, observational case series.

Results: A retrospective chart review was done of 13 eyes of 7 patients presenting to our institute (2010 to 2020) who were HLA B27 positive and had

evidence of tuberculosis. 7 eyes (53.85%) presented with anterior uveitis, 2 eyes (15.38%) had both anterior and intermediate uveitis and 4 eyes (30.77%) had panuveitis. The mean age of presentation was 34.14 ± 9.06 years. 6 patients (85.71%) had bilateral involvement. All patients tested positive for HLA-B27 antigen after initial ocular manifestation. Mantoux was positive >15mm in 5 patients (71.43%) while the other 2 patients had chest Xray findings suggestive of tuberculosis. 2 patients (28.57%) were diagnosed as ankylosing spondylosis, 2 (28.57%) gave history of multiple joint pain, 1 had cervical spondylosis and 1 had lower back pain. All patients were treated with oral and topical steroids and cycloplegics; anti-tubercular treatment for uveitis was given for 4 patients (57.14%), 2 patients (28.57%) were given methotrexate and 1 patient was lost to follow up.

Conclusions: This series highlights the clinical overlap between HLA B27 associated uveitis and tuberculous uveitis in countries where TB is endemic. Appropriate management of both entities simultaneously is essential for better anatomical and visual outcomes.

Poster No.: PO-085
Panel No.: 085, Session: PO

Missed Intraocular Foreign Body Resulting in Siderosis Bulbi: A Case Report

*First Author: Farah **IBRAHIM***

Purpose: To report a case of siderosis bulbi as a result of missed intraocular foreign body.

Methods: This is a case report.

Results: A 29-year-old healthy Malay man presented to ophthalmology clinic with complain of left eye blurring of vision for 2 weeks associated with discomfort and eye redness. He recalled that he had an ocular trauma on the same eye 2 years ago while hammering metal. He sustained subconjunctival hemorrhage and treated at district hospital without referral to ophthalmology. Visual acuity on right eye is 6/6 and 1/60 on left eye. Reverse RAPD was negative. Ocular examination on the left eye showed anterior uveitis with endothelial iris pigments. Fundus examination showed severe vitritis and small intra retinal yellowish lesion. CT brain confirmed the presence of IOFB, and treatment was commenced instantly with intravenous antibiotic, topical and intra vitreal antibiotics. Vitreous biopsy came back as no growth. Subsequently, vitrectomy surgery, intra ocular foreign body removal and cataract extraction was done and revealed a metallic foreign body with self-sealed entry wound and retinal scar. Vision improved to 3/60 (6/60 with +10 diopter) however patient developed high intra ocular pressure secondary to steroid induced/ uveitic, requiring IOP lowering eye drops to control IOP. The patient was planned for secondary intra ocular implantation combined with glaucoma drainage device soon to control intra ocular pressure and improve his vision.

Conclusions: This case exhibit the importance of taking a thorough history and examination as missing IOFB in penetrating injury results in devastating consequences.

Poster No.: PO-079
Panel No.: 079, Session: PO

Role of COVID-19 Vaccination in Scleritis and Episcleritis

*First Author: Ashit **HANDA***
*Co-Author(s): Padmamalini Mahendra **DAS**, Ankush **KAWALI**, Sanjay Srinivasan **SRINIVASAN***

Purpose: To report scleritis and episcleritis within a month following administration of the COVID-19 vaccine. Ocular side effects are known to occur.

Methods: To present a retrospective case series.

Results: A total of 16 eyes of 12 consecutive patients with scleritis and episcleritis from March 2021 to September 2021 were included. The mean time of onset of symptoms in patients with scleritis was 15.7 days and for episcleritis, it was 13.2 days. The majority received COVISHIELD (10 patients). Five patients had denovo and 7 had recurrent inflammation. The median time from the previous (any ocular inflammation) to the current episode was 12 months. Episcleritis was treated with topical steroids and systemic COX-2 inhibitors while patients with scleritis were treated with topical steroids/oral steroids/antiviral medications depending on the etiology.

Conclusions: Scleritis and episcleritis following COVID-19 vaccination are milder and do not require intensive immunosuppression except in rare cases.

Poster No.: PO-080
Panel No.: 080, Session: PO

Role of Multimodal Imaging in Serpiginous Like Choroiditis Secondary to Toxoplasmosis

*First Author: Isha **ACHARYA***
*Co-Author(s): Padmamalini Mahendra **DAS**, Ankush **KAWALI**, Sai Bhakti **MISHRA**, Sanjay **SRINIVASAN***

Purpose: To study the role of multimodal imaging in the management of serpiginous like choroiditis (SLC) secondary to toxoplasmosis.

Methods: A retrospective cases series of 3 patients with serpiginous-like choroiditis (SLC) due to ocular toxoplasmosis confirmed using serological evidence of Toxoplasma antibodies and immunological assays with or without PCR for B1 gene for toxoplasmosis from aqueous. Multimodal imaging included colored fundus photography, autofluorescence (AF), multicolor imaging, SD-OCT, FFA and OCTA. Follow up period varied from 12 months to 8 years.

Results: The mean age of our patients was 46.4 (range: 40-50) years. The most common symptom was blurring of vision. All of our patients had anterior segment

involvement along with typical multifocal choroiditis lesions at the posterior pole. Posterior vitreous cells localized at the choroiditis lesions were observed in all our cases on OCT. OCTA revealed hyporeflective flow void lesions corresponding to areas of choroiditis in the choriocapillaris layer in all the cases. All the cases had negative Quantiferon TB gold test and a negative PCR for MTB on presentation. Two of these cases had positive IgG antibody to Toxoplasma gondii (T. gondii) and two patients showed a positive PCR with toxoplasma B1 gene.

Conclusions: SLC due to toxoplasma is a rare entity requiring high index of suspicion especially in a tuberculosis endemic country. Multimodal imaging can play a critical role in the diagnosis and management of toxoplasma SLC differentiating it from the typical tubercular SLC, particularly in the absence of the facility for intraocular fluid sampling.

Poster No.: PO-084
Panel No.: 084, Session: PO

Uveitic spontaneous lens resorption in a Filipino male: A case report

*First Author: Patricia Kaye **SY***
*Co-Author(s): Karlo Marco **CLAUDIO**, Cristina **GARCIA***

Purpose: To report a case of near-total spontaneous lens reportion in a Filipino male.

Methods: This is a case report.

Results: A 42-year-old male presented to the clinic with blurring of vision of both eyes. The left eye had a dense posterior subcapsular cataract while the right eye had an almost completely resorbed lens with only the opacified capsule left behind. There were uveitic signs on the anterior segment of both eyes including keratic precipitates, iris nodules, and iris atrophy. Standard uveitic work-up was performed with unremarkable results. An additional test that would have been ideal to request was PCR of the aqueous fluid to reveal a specific viral etiology but was not done due to limited accessibility. He underwent scleral-fixated intraocular lens implantation but developed vitreous inflammation shortly thereafter.

Conclusions: Spontaneous lens resorption is a rare occurrence. When it occurs, it is usually in association with certain conditions like Down syndrome, leptospirosis, rubella, PHPV, and lens-induced uveitis. There are very few articles on cases of spontaneous lens reportion. It would have been ideal to have had access to complete diagnostics for the patient but due to limited resources, surgical management was instead performed to give the patient better functional vision.

Poster No.: PO-078
Panel No.: 078, Session: PO

Vogt-Koyanagi-Harada Syndrome following COVID-19 Vaccination

*First Author: Ann Ran **TEOH***
*Co-Author(s): Rohana **TAHARIN**, Yih Chian **YEW***

Purpose: COVID-19 vaccination plays a critical role in preventing severe morbidity and mortality caused by SARS-CoV2 pandemic. We report a rare case of Vogt-Koyanagi-Harada (VKH) syndrome that occurred one day after the COVID-19 vaccination, which was successfully treated with systemic steroid therapy.

Methods: Case report: A 53-year-old female patient developed acute loss of vision in both eyes with headache the day after receiving the second dose of Oxford/AstraZenaca vaccine. Otherwise, there was no systemic involvement. She sought treatment 2 weeks after the symptoms. Visual acuity was hand movement in right eye and counting finger in left eye. Anterior chamber showed OD 1+ cells, OS occasional cells. Fundus examination revealed bilateral multifocal serous retinal detachment with hyperemic, swollen optic disc. Bilateral OCT macular demonstrated extensive subretinal fluid with serous retinal detachment. An infectious workup was unremarkable.

Results: Patient received 3-day course of megadose IV Methylprednisolone, followed by tapering dose of oral prednisolone. After one month of steroid treatment, her visual acuity improved to 6/12 in both eyes. OCT macula showed resolution of subretinal fluid and retinal detachment.

Conclusions: VKH syndrome results from an autoimmune process directed against melanocyte-associated antigen. In this unique case, it is hypothesized that COVID-19 vaccine possibly being a triggering factor for the development of pre-existing latent autoimmune VKH disease. Thus, ophthalmologists should be aware of this possible adverse ocular effect after COVID-19 vaccination. Prompt diagnosis and treatment is essential in preventing the irreversible vision loss.

Miscellaneous

Poster No.: PO-095
Panel No.: 095, Session: PO

A Multi-Center Retrospective Review of Bird Related Penetrating Eye Injuries

*First Author: Lauren **SARTOR***
*Co-Author(s): Thomas **CAMPBELL**, Christopher **GO**, Krishna **TUMULURI***

Purpose: To investigate the nature and complications of bird-related penetrating eye injuries (PEI) in an

Australian setting.

Methods: A multicenter retrospective chart review of bird related PEIs from tertiary centers in Sydney and Melbourne. A medical record search of PEIs from bird attacks was conducted from year 2000 to September 2021.

Results: A total of 23 patients (10 females) were included, 57% of injuries occurred during the spring, followed by 17% during the winter season; 87% of injuries involved the cornea, 4% the sclera and 9% did not specify. Complications included traumatic cataract in 43% of patients, retinal tear, and retinal detachment in 4%. Endophthalmitis was suspected in 4% of cases; 78% of eyes underwent primary repair, of these 94% required corneal repair, 28% lensectomy, 22% vitrectomy and 33% of cases had a secondary repair. Antibiotic regimens were both systemic and ocular in 44% of cases, ocular only in 17%, systemic only in 4%, not used in 4% and not specified in 31%. The median follow-up time was 7.5 months, ranging from 1 day to 3 years. The mean (SD) uncorrected distance visual acuity at presentation was 1.1 (0.9) logMAR and at last follow-up was 0.8 (0.9) logMAR.

Conclusions: Bird-related PEIs are more common in the spring months and often involve a corneal laceration requiring closure. Common complications include traumatic cataract and less commonly involve the posterior chamber and retina. A small number of patients require secondary procedures and experience ongoing morbidity.

Poster No.: PO-090
Panel No.: 090, Session: PO

A Rare Case of Warburg Micro Syndrome

*First Author: Aakanksha **RAGHUVANSHI***

Purpose: To have awareness regarding a rare disease. Warburg micro syndrome is a rare autosomal recessive disease characterized by microcephaly, cortical dysplasia, intellectual disability, microcornea, congenital cataract, spastic diplegia and hypogonadism.

Methods: An 18-year-old male presented with complaints of dimension of vision both eyes since childhood. He had history of developmental delay, seizures in childhood. BCVA was 5 MFC in right eye and CFCF in left eye. On examination. He had congenital total cataract both eyes with nystagmus. NCCT head and orbit shows brachycephaly and periventricular white matter hypodensity. He also had right foot contracture, hypogonadism, and delayed puberty. After cataract surgery, fundus assessment showed optic disc pallor with foveal thinning both eyes.

Results: All features suggested Warburg micro syndrome.

Conclusions: We are reporting this case as it is a rare disease and genetic counselling should be done to avoid consanguineous marriages to prevent the occurrence of this disease.

Poster No.: PO-094
Panel No.: 094, Session: PO

Cases Series: Cysticercosis's Ocular Manifestations

*First Author: David **CHANTHAN***

Purpose: The aim of this presentation is to illustrate different manifestations of cysticercosis, a parasitic tissue infection caused by larval cysts of the tapeworm Taenia solium, that we observed in eyes.

Methods: This a case-series which will present the chief complaints that brought the patients to seek consultation with ophthalmologist, the history, diagnostic investigations, as well as the management.

Results: There are various manifestations of cystisticercosis in eyes, which could mimic several ophthalmological conditions that could cause misdiagnosis.

Conclusions: Cysticercosis is still a public health issues in most low-income countries, which Cambodia is not excluded. This disease could cause serious complications like permanent retinal scar or toxicity, or in severe form like neurocysticercosis, it could be life-threatening if left untreated.

Poster No.: PO-096
Panel No.: 096, Session: PO

Impact of COVID-19 on Eye Health Access: Patient Perspectives

*First Author: Anamika **PANDEY***

Purpose: The COVID-19 pandemic has affected health care delivery and access in a myriad number of ways, but the ones affected most are our patients. For us to provide appropriate health care, especially with regards ophthalmology, we need to take into consideration patients perspectives with regards access to eye health care delivery.

Methods: A questionnaire-based, cross-sectional, and observational study, with emphasis on patient perception with regards general eye care, refractive errors, cataract, diabetic retinopathy and pediatric ophthalmology. Results were recorded and analyzed using spreadsheet based assessment.

Results: The majority of the people questioned felt that COVID-19 era with its restrictions and serious ill effects on general health has affected their eye care, though in a mild way with decrease in vision being the most common complaint. Increase in screen time associated dryness, advancing cataracts, lack of regular IOP monitoring, worsening retinopathy and children with undetected or poorly updated refractive corrections.

Conclusions: Considering eye health is many times neglected in the developing world due to socio-economic reasons, the pandemic has only worsened this scenario. This study concluded that we need to step up routine eye care, with regular follow up and outreach programs, especially for advancing cataracts, unmonitored glaucoma, school aged children and those lost to follow up, having a targeted approach.

Poster No.: PO-089
Panel No.: 089, Session: PO

Importance of Conjunctival Swab and Ocular Manifestation in COVID-19 Patients

*First Author: Titiek **ERNAWATI***
*Co-Author(s): Wilson **KHUDRATI**, Ferdy Royland **MARPAUNG**, Rofiqi **ROFIQ**, Audrey **FEDORA***

Purpose: The study aimed was to analyze the conjunctival swab as a sample to aid in COVID-19 diagnostic and provide characteristics of ocular findings of COVID-19 patients.

Methods: A cross-sectional study was conducted on 47 patients. We obtained and analyzed sociodemographic data, patients' symptoms, ocular manifestations, and the result of reverse transcription-polymerase chain reaction (RT-PCR) from nasopharyngeal and conjunctival swabs for SARS-CoV-2. We analyzed the data using spearman correlation test.

Results: Forty-seven patients were enrolled in the study with baseline characteristics shown most of the patients in this research have mild-moderate COVID-19. Conjunctival swab PCR result is more likely negative with percentage (95.7%) and only (4.3%) subjects positive PCR results, the correlation between COVID-19 severity is not significant (p = 0.589). This study also found significant correlation between the disease severity and ocular manifestations, which showed that ocular manifestations are more likely to be found in more severe disease.

Conclusions: In conclusion, the limited sensitivity of conjunctival specimens based on the result of this study showed that the diagnostic value of conjunctival specimens for the detection of SARS-CoV-2 was quite low. Conjunctival hyperemia are the most common ocular manifestations reported in COVID-19 patients, its occurrence are correlated to the severity of the disease in COVID-19.

Poster No.: PO-091
Panel No.: 091, Session: PO

Interesting Case of Spontaneous Dislocation of IOL in Patient With Gyrate Atrophy

*First Author: Aakanksha **RAGHUVANSHI***

Purpose: To highlight that gyrate atrophy may be associated with dislocation of intra ocular lens (IOL).

Methods: A 48-year-0old male presented with inferiorly dislocated IOL in right eye and posteriorly dislocated IOL in left eye. He underwent cataract surgery 20 years back. Neither he had history of trauma nor performed strenuous physical activity. On fundus examination, there was gyrate atrophy of retina and choroid. He underwent IOL explant in both eyes, pars plana vitrectomy in left eye and ACIOL was implanted in both eyes.

Results: It shows that dislocation of IOL is associated with Gyrate atrophy as reported in few reports earlier.

Conclusions: Patients with gyrate atrophy are at risk of subluxation or dislocation of IOL so such patients should undergo frequent examination to detect subluxation of IOL early to allow surgical fixation of IOL prior to its dislocation.

Poster No.: PO-093
Panel No.: 093, Session: PO

Monkeypox-Associated Manifestations and Complications Involving the Eye: A Meta-analysis of Previous and Current Outbreaks

*First Author: Abdelaziz **ABDELAAL***
*Co-Author(s): Hashem **ABU SERHAN**, Abdul Rhman **HASSAN**, Basant **KATAMESH**, Abdelhafeez **MASHAAL***

Purpose: To determine the prevalence of ocular manifestations and complications associated with monkeypox (MPX).

Methods: PubMed, Scopus, Web of Science, EMBASE, and Google Scholar were searched for original articles reporting MPX-associated ocular involvement. The primary outcome included MPX-associated eye manifestations and complications. The secondary outcome included a subgroup analysis based on the timing of the outbreak (previous "before 2022" vs. current "in 2022"). The prevalence was estimated by pooling the effect size (ES) and its corresponding 95% confidence interval (CI) across studies through the metaprop command in STATA.

Results: Eleven studies reporting 3179 MPX-confirmed cases were meta-analyzed. Overall, MPX-associated eye manifestations included conjunctivitis [ES=12%; 95%CI: 5-18%], corneal and conjunctival lesions [ES=7%; 95%CI: 2-13%], eyelid lesions [ES=1%; 95%CI: 0-3%], photophobia [ES=33%; 95%CI: 30-36%], and pain [ES=9%; 95%CI: 6-14%]. The current outbreak is associated with much lower rates compared to previous outbreaks in terms of conjunctivitis [1% vs. 17%], corneal and conjunctival lesions [1% vs. 13%], and eyelid lesions [1% vs. 13%]. Photophobia and eye pain are not reported in the current outbreak. Eye complications included keratitis [ES=4%; 95%CI: 3-6%], corneal ulceration [ES=4%; 95%CI: 2-5%], unilateral blindness [ES=3%; 95%CI: 1-4%], bilateral blindness [ES=0%; 95%CI: 0-2%], and impaired vision [ES=4%; 95%CI: 1-8%]. None of these complications were

reported in the current outbreak.

Conclusions: Compared to previous MPX outbreaks, the current outbreak revealed much lower rates of ocular involvement, but the interpretation value of these findings is limited because of the scarcity of available data.

Poster No.: PO-087
Panel No.: 087, Session: PO

Safety and Tolerability of Intraocular Cetuximab in Young and Adult Rabbits

*First Author: Mukharram **BIKBOV***
*Co-Author(s): Jost **JONAS**, Gyulli **KAZAKBAEVA**, Songhomitra **PANDA-JONAS***

Purpose: To assess safety and tolerability of intraocularly applied cetuximab as an epidermal growth factor receptor antibody.

Methods: The experimental study included a group of adult rabbits (body weight: 2.4kg) and a group of young rabbits (body weight: 1.6 kg). All rabbits received 3 intravitreal injections of 0.5 mg cetuximab (Erbitux®) (0.10 mL) into their right eyes in 4-week intervals, the contralateral eyes received intravitreal injections of Ringer›s solution in the same volume at the same time points. After each injection IOP was measured in both eyes. All animals underwent regular ophthalmological examinations at baseline and at two-week intervals, including inspection of the external eye, ophthalmoscopy, tonometry, fundus photography and ocular biometry.

Results: The study included 10 adult rabbits with a mean age of 12 months (range: 10 - 14 months) and 8 young rabbits with a mean age of 6 months (range: 5 - 7 months). Neither in the young animal group nor the adult rabbit group did the biometric measurements of axial length, anterior chamber depth and lens thickness and the IOP readings differ significantly between study and control eyes. None of the eyes showed an intraocular inflammation during the study period. Comparing photographs of the anterior segment and of the fundus taken at the study end and at baseline in a masked manner did not reveal any detected difference.

Conclusions: The repeated intravitreal application of cetuximab did not result in any detected intraocular toxic or destructive effect. The results do not contradict the assumption of intraocular tolerability of cetuximab.

Poster No.: PO-097
Panel No.: 097, Session: PO

Smartphone Fundus Photography – Tips and Tricks! 1-Year Journey of a New VR Surgeon

*First Author: Harshit **VAIDYA***

Purpose: To highlight the practical implications, difficulties, and learnings of smartphone fundus imaging.

Methods: A total of 500 patients were examined over a period of 1 year by a single ophthalmologist. Fundus images were captured using the Samsung M21 smartphone and a 20D volk lens in an outpatient setting across multiple clinics and hospitals in Mumbai, India.

Results: Smartphone fundus photography essentially uses indirect ophthalmoscopy while capturing fundus photographs. The image quality of the initial 100 photographs was poor than the more recently acquired fundus photos, attributed to the learning curve of the technique. The portability and the basic to almost no extra cost of the machine make it a viable option for ophthalmologists who've joined the practice recently, those working in remote areas with lesser access and financial support, for fundus evaluation of bedside patients as well as a telemedicine tool. Reduced field of view and the need for pupillary dilatation is undoubtedly a drawback, but most lesions can be acquired with practice just like indirect ophthalmoscopy. Newer smartphones help acquire similar to superior images of macular lesions in experienced hands. Counseling and explaining to the patient about the procedure and flashlight definitely aid in patient cooperation and reduce discomfort, thus enabling a better quality of images.

Conclusions: A cheap and portable fundus evaluation, screening, and documenting method of smartphone fundus photography is a value addition to the ophthalmic armamentarium of ophthalmologists especially those in residency or just starting out their ophthalmic practice, for bedside fundus examinations as well as telemedicine.

Poster No.: PO-100
Panel No.: 100, Session: PO

Traumatic Choroidal Rupture by Penetrating Ocular Trauma: A Case Report

*First Author: Izyani **HUSSIN***
*Co-Author(s): Nur Athirah **ADNAN**, Liza Sharmini **AHMAD TAJUDIN**, Nurhamiza **BUANG***

Purpose: To report an uncommon case of traumatic choroidal rupture by penetrating ocular trauma at workplace.

Methods: This is a case report.

Results: A 13-year-old, boy, alleged right eye hit by a knife while cutting iron rod at his workplace. He noted bleeding from the right eye and blurring of vision. On examination, the right eye vision was hand movement and reverse relative afferent pupillary defect (RAPD) not detected. There was hyphema level 8 mm of vertical height. He also sustained laceration wound over the right eyelid margin and lateral canthus. He underwent wound exploration and toilet and suturing at minor operation theatre at the clinic. Once the

hyphema resolved one week later, vitreous hemorrhage which obscured the retinal view was detected. Three weeks after the trauma, there was RAPD over the right eye and the vision was 2/60. Fundus examination revealed macular commotio retina and also a choroidal rupture that formed a crescent shape and intraretinal hemorrhage temporal to the macula. He was diagnosed as delay onset right eye traumatic optic neuropathy with traumatic choroidal rupture and guarded visual prognosis explained to the patient.

Conclusions: Choroidal rupture is more frequently occur after the blunt ocular trauma, but it may also occur following penetrating ocular trauma which can lead to serious late complication.

Poster No.: PO-099
Panel No.: 099, Session: PO

Treatment Dilemma of Left Orbital Cellulitis Complicated With Cavernous Sinus Thrombosis in Pregnancy: A Case Report

*First Author: Izyani **HUSSIN***
*Co-Author(s): Liza Sharmini **AHMAD TAJUDIN**, Nurhamiza **BUANG***

Purpose: To report a case of a pregnancy woman presenting with left orbital cellulitis complicated with cavernous sinus thrombosis in pregnancy.

Methods: This is a case report.

Results: A 35-year-old woman presented to an eye clinic with 6-day history of left periorbital swelling started from a small blister over the left lower eyelid. There were pain, redness and eye discharge. She also had severe headache but no blurring of vision. She reported no dental or otorhinolaryngologic symptoms. She was afebrile and the periorbital region was swollen with presence of proptosis and ophthalmoplegia. The visual acuity and optic nerve function test were normal. Urine pregnancy test prior to admission was positive and she was at 7-week pregnancy. Intravenous augmentin was started, however because of the worsening eye condition and increasing headache, it was changed to ceftriaxone the next day. An urgent CT brain, orbit and paranasal sinus was performed, and she was diagnosed as left orbital cellulitis with left ophthalmic vein & cavernous sinus thrombosis (CST). Subcutanous clexane was started by neuromedical team and the intravenous antibiotic was continued till 14 days. Upon discharged, her eye condition improved. She was on aspirin later and safely gave birth at 35 weeks pregnancy by spontaneous vertex delivery.

Conclusions: This case highlights the importance of early diagnosis and safe treatment for CST during pregnancy.

Poster No.: PO-098
Panel No.: 098, Session: PO

Unilateral Arteritic Anterior Ischemic Optic Neuropathy As Presenting Manifestation of Fatal Giant Cell Arteritis: A Case Report

*First Author: Nasyitah **YAKUB***
*Co-Author(s): Rosiah **MUDA**, Julieana **MUHAMMED**, Maizan **YAAKUB***

Purpose: To describe a case of arteritic anterior ischemic optic neuropathy (AAION) as the presenting manifestation of giant cell arteritis (GCA) in an elderly Malay lady.

Methods: This is a case report.

Results: A 61-year-old Malay lady with hypertension and chronic kidney disease presented with two days history of sudden onset visual loss in the right eye preceded by inferior visual field defect for four days associated with both lower limbs pain. Otherwise, there were no fever, headache, scalp pain and jaw claudication. Her vision was hand movement and 6/6 in the right eye and left eye respectively with positive relative afferent pupillary defect. Fundus examination showed swollen 'chalky white' pallid appearance optic disc with splinter hemorrhage. Examination of the left eye was normal. Both temporal arteries were dilated, tortuous and non-pulsatile. There were multiple painful necrotic skin lesions over both lower limbs. Blood tests showed erythrocyte sedimentation rate (120 mm/hour) and C-reactive protein (144.2 mg/L) were markedly high. Temporal artery biopsy suggestive of giant cell arteritis and the findings were supported by biopsy from the necrotic skin lesions. She was treated with intravenous methylprednisolone for 3 days and her vision maintain at hand movement with no involvement of the left eye. She was discharged with oral prednisolone 1 mg/kg. However, one month later, she succumbed to death from cardiac complication.

Conclusions: GCA should be suspected in patient older than 50 years with AION. Cutaneous manifestations are not frequent in GCA. Despite prompt and appropriate treatment, the prognosis is very poor and multidisciplinary approach is needed to provide the best care for GCA patients.

Poster No.: PO-088
Panel No.: 088, Session: PO

Visual Acuity affects Performance of Blind Tennis

*First Author: Satoshi **YOKOTA***
*Co-Author(s): Alistair **LI WAN CHEUN***

Purpose: To investigate how much the difference in visual acuity affects the outcome of blind tennis matches, we examined the relationship between visual acuity and the outcome of classifications in past tournaments.

Methods: Athletes who participated in the 2017-2019 World Championships were statistically examined for visual acuity and competitive event performance among the pre-classification results.

Results: Winners have better visual acuity in 50% of cases, winners and losers are the same visual acuity in 13% of cases, and the loser has better visual acuity in 37% of cases. The mean (-0.080) and median(-0.100) values were below 0, indicating that the winners tended to have better visual acuity. A logistic regression analysis was performed to predict the win rate based on the difference in visual acuity. Odds ratio was 0.93 [0.90-0.97 95% interval] per a logMAR 0.1 difference. For B1, where both players were wearing blindfolds, matches by players with light perception versus no light perception were analyzed, and then we found that the win rate was not different in these groups.

Conclusions: In blind tennis tournaments, players with better vision were shown to have a higher winning percentage. Including visual acuity in the classifications is reasonable.

Poster No.: PO-092
Panel No.: 092, Session: PO

Visual Functions and Spectacle Usage in Elderly Patients Sustaining a Simple Fall

*First Author: Divyanshi **JAIN***
*Co-Author(s): Siddharth **AGRAWAL**, Sanjiv **GUPTA**, Rajat **SRIVASTAVA***

Purpose: To study visual functions and spectacle usage in elderly patients sustaining a simple fall. Objectives were to study (i) the compromise in binocular visual acuity, contrast sensitivity, binocular visual fields and stereopsis (ii) the frequency of use and type of spectacles (iii) association of visual functions and spectacle use with simple fall

Methods: This was a prospective cross-sectional observational study of a 1 year (July 2018-July 2019). Consecutive patients above 60 years of age presenting to Ophtha OPD for refraction were recruited. History of a simple fall in the previous 6 months, duration since their last ophthalmology consultation and details regarding spectacle used was taken. Binocular visual acuity, contrast sensitivity, distance stereopsis, and Esterman binocular field were assessed. These factors were then analyzed to study any association with history of simple fall.

Results: Out of 399 patients enrolled in the study, 229 were females and 170 males. The mean age of the patient was 65 ± 3 years. 274 (68.4%) patients presented with visual acuity of less than 6/18. 128 (32.1%) patients were not using any glasses .H/o simple fall was given by 110 (27.6) patients. Patients with reduced distance stereopsis (p = 0.00 CI 1.389-3.408), depressed binocular visual fields (p = 0.01 CI 1.116-2.736), more than 2 years since last ophthalmology consultation (p = 00 CI 1.83-4.81) and without glasses (p = 0.00 CI 1.508-3.757) were more likely to have experienced simple fall in previous 6 months.

Conclusions: Elderly patients without spectacle correction, impaired contrast sensitivity, and depressed binocular fields were more likely to experience a simple fall.

Neuro-Ophthalmology

Poster No.: PO-102
Panel No.: 102, Session: PO

A Case of Linezolid-Induced Optic Neuropathy

*First Author: Gianina Louise **GARCIA***

Purpose: In cases of tuberculosis, isoniazid and ethambutol are the most common agents known to develop toxic optic neuropathy. However, there are reports of linezolid-induced optic neuropathy from chronic treatment of drug-resistant tuberculosis (XDR-TB). Early detection and discontinuation of drug contributes to significant visual recovery.

Methods: A 27-year-old female came in with a 3-month history of bilateral glare and blurring of vision. Patient was diagnosed with XDR-TB and was currently on long term therapy of Linezolid. On examination, patient had a best corrected visual acuity (BCVA) of 20/80 for right eye (OD) and 20/100 for the left eye (OS). Anterior segment and intraocular pressures were unremarkable. Color vision using Ishihara revealed 1/16 on both eyes (OU). Funduscopic examination revealed indistinct borders and hyperemic optic disc, OU. OCT showed bilateral thickening of retinal nerve fiber layer. Fluorescein angiography showed no early nerve leakage. Visual field perimetry showed central scotoma, OD and paracental scotoma, OS. Patient was advised discontinuation of linezolid once cleared. Five days after discontinuation of the drug, she noted subjective improvement of vision on both eyes. 4 weeks after, VA improved to 20/20 and repeat Ishihara test revealed 16/16 OU.

Results: Linezolid has a relatively good safety profile with recommended duration of therapy of 28 days; wherein prolonged use can be associated with optic neuropathies. It inhibits bacterial protein synthesis and cause mitochondrial dysfunction in retinal ganglion cells.

Conclusions: Thorough history and examination together with early detection of offending agent and monitoring visual function can prevent visual damage in toxic optic neuropathy.

Poster No.: PO-109
Panel No.: 109, Session: PO

A Rare Case of Recurrent Painful Ophthalmoplegia: Is It a Tolosa-Hunt Syndrome?

*First Author: Sita **AYUNINGTYAS***
*Co-Author(s): Salmarezka **DEWIPUTRI**, Syntia **NUSANTI**, Muhamad **SIDIK***

Purpose: To describe a rare case of recurrent painful ophthalmoplegia with optic nerve involvement that leads to a diagnosis of Tolosa-Hunt syndrome.

Methods: A case report is presented of a 43-year-old woman who had recurrent right drooping eyelids, diplopia, and orbital pain within two months. A right-sided headache and blurred vision in the right eye (RE) were reported. The last attack was resolved with nonsteroidal anti-inflammatory drugs (NSAIDs) prescribed by a general practitioner. The best-corrected visual acuity (BCVA) of RE and LE was 6/24 and 6/6, respectively. Ptosis, ophthalmoplegia, a relative afferent pupillary defect (RAPD), and a normal fundus were observed in RE. The ophthalmic and maxillary branches of the right trigeminal nerve were affected.

Results: The orbital CT contrast was performed two weeks later, which revealed hyperdense lesions in the right superior orbital fissure, cavernous sinus, and filling defects in both cavernous sinuses. When she returned two weeks later to provide CT results, her complaints were resolved with NSAIDs. BCVA of both eyes was 6/6. Ptosis, diplopia, RAPD, and ophthalmoplegia were not present. Tolosa-Hunt syndrome was considered as a diagnosis, with differential diagnosis of orbital pseudotumor and meningioma. Steroids were not administered. An autoimmune disease investigation should be performed.

Conclusions: Although Tolosa-Hunt syndrome is a rare disease, it should be considered in recurrent painful ophthalmoplegia with evidence of cavernous sinus and/or superior orbital fissure lesions. Optic nerve dysfunction indicates a pathological process involving the orbital apex. Spontaneous remission of symptoms in Tolosa-Hunt syndrome is known to occur.

Poster No.: PO-108
Panel No.: 108, Session: PO

Assessment of Macular Thickness Variation Regarding Mutation Sites in Leber Hereditary Optic Neuropathy by Optical Coherence Tomography

*First Author: Xiayin **YANG***
*Co-Author(s): Shaoying **TAN***

Purpose: This study aimed to illustrate different patterns of the macular thickness (MT) about different mutation sites by Optical Coherence Tomography (OCT) in Leber Hereditary Optic Neuropathy (LHON). Moreover, it also investigates the correlation between MT and best-corrected visual acuity (BCVA).

Methods: A total of 127 eyes carrying two mutations m.11778G>A (89 eyes) or m.14484T>C (38 eyes) in mitochondrial DNA (mtDNA) affected by Leber Hereditary Optic Neuropathy (LHON) were divided into 4 groups with respect to the duration from onset of disease (1st group: within 3 months;2nd: 3-6 months; 3rd group: 6-24 months; 4th group >24 months). the comparisons of MT in different individual quadrants between the 11778 cohort and the 14484 cohort were conducted. The correlation between MT and BCVA was calculated.

Results: Comparisons of MT between the 11,778 cohort and 14484 cohort revealed that within the first 3 months of the onset, the MT in the whole inner ring of macular region underwent more severe thinning in 11,778 cohort. The MT of all quadrants in both inner and outer ring of macula region except the fovea in the 11,778-cohort experienced more severe thinning from 3 to 6 months. At either 6-24 months or after 24 months, more severe thinning in the temporal quadrant of the inner ring could be revealed ($p = 0.004$ and $p = 0.05$). No significant correlation between MT and BCVA was detected.

Conclusions: The diversity of thinning patterns regarding different mutation sites in LHON was identified.

Poster No.: PO-101
Panel No.: 101, Session: PO

Assessment of Retinal Sensitivity and Structural Integrity in Optic Neuritis

*First Author: Ragib **KHAN***
*Co-Author(s): Rebika **DHIMAN**, Swati **PHULJHELE**, Amar **PUJARI**, Rohit **SAXENA***

Purpose: To evaluate Microperimetry as a tool for retinal sensitivity in ON (optic neuritis) and to correlate retinal sensitivity with anatomical changes in ON.

Methods: This was a case control study with 19 cases of ON and 15 controls. Detailed ophthalmic evaluation was done. Microperimetry for retinal sensitivity and RNFL thickness was evaluated at time of presentation and at 3 months.

Results: The mean logMAR BCVA of the affected eyes at presentation was 0.79 ± 0.08 improving significantly to 0.24 ± 0.06 at 3 months. The mean sensitivity (MS) thresholds (dB) on MAIA at presentation were 9.42 ± 7.08, 20.12 ± 7.34 and 28.94 ± 1.89 in affected, fellow and control eyes respectively of which affected and fellow eyes improved significantly to 20.43 ± 3.82 and 23.52 ± 5.03 at 3 months. The mean RNFL thickness (um) at presentation was 110.12 ± 15.27, 98.24 ± 6.12 um, and 98.66 ± 2.28 um which decreased to 86.26 ± 7.1um in affected eyes. A significant correlation was seen between logMAR BCVA and MS (r=-0.387), BCVA

and RNFL thickness (r=0.235), MS and RNFL thickness (r=-0.603), RNFL thickness and HVF30-2 (r= -0.522), MS and HVF30-2 (r=0.702) in affected eyes at baseline. At 3 months, significant correlation was found between BCVA and MS (r=-0.244), BCVA and RNFL thickness (r=-0.184), MS and RNFL thickness (r= 0.479), MS and HVF 30-2 (r=0.702), RNFL thickness and HVF30-2 (r= 0.737).

Conclusions: Microperimetry may be able to pick up subtle changes in retinal sensitivity, especially in fellow eye of patients with ON with significant correlation between structural and functional parameters of retina in these patients.

Poster No.: PO-115
Panel No.: 115, Session: PO

Atypical Optic Neuritis Due to Syphilis Infection: A Case Series

*First Author: Syntia **NUSANTI***
*Co-Author(s): Lazuardiah **ANANDI**, Erika **ANGGRAINI**, Rona Ali **BADJRAI**, Brigitta Marcia **BUDIHARDJA**, Lourisa Ruth **ELDINIA***

Purpose: Optic neuritis is a disease with numerous possible etiologies. Although less common than other causes, infectious diseases should always be considered in optic neuritis patients, including syphilis and human immunodeficiency virus. This case series aims to highlight the importance of considering syphilis infection in optic neuritis patients.

Methods: This is an observational case series of two male adult patients diagnosed with syphilitic optic neuritis.

Results: The first case is a 43-year-old male referred from another hospital with bilateral sudden blurry vision. Previous magnetic resonance imaging and computed tomography scan did not reveal any significant findings. After a thorough history taking, an infection workup was performed, revealing reactive HIV and syphilis results. The second case is a 26-year-old male who came with blurry vision and photopsia in the left eye. The funduscopic examination revealed optic disc swelling. Then, this patient underwent an infection workup with a result suggesting syphilis as the underlying cause of this optic neuritis case. These two cases were diagnosed in two different manners. The first case was suspected as syphilitic optic neuritis long after other possibilities were ruled out by numerous advanced examinations. Meanwhile, the second case was suspected to be caused by syphilis early in the process as the history of promiscuity was attained earlier thus minimizing the diagnostic procedure needed.

Conclusions: In light of its re-emergence, syphilis should be taken into account when diagnosing atypical optic neuritis considering the costly diagnostic procedure and the difference in therapeutic strategy with optic neuritis of other causes.

Poster No.: PO-117
Panel No.: 117, Session: PO

Bilateral Optic Neuritis Without Ophthalmoplegia as Initial Presentation of Incomplete Bickerstaff Brainstem Encephalitis: An Atypical Presentation

*First Author: Cheau Wei **CHIN***
*Co-Author(s): Jaya Vani **ETTIKAN**, Francesca Martina **VENDARGON***

Purpose: Bickerstaff brainstem encephalitis (BBE) is a rare autoimmune encephalitis characterized by ophthalmoplegia, ataxia and impaired consciousness. We hereby present a rare case of incomplete BBE, presented with bilateral optic neuritis and absence of ophthalmoplegia.

Methods: This is a case report.

Results: An 18-year-old girl, no known medical illness, presented with bilateral eye sudden onset blurring of vision for a month, associated with gait instability. Her visual acuity was 6/38 and 6/60 on the right and left eye, respectively. The optic nerve function was reduced bilaterally. Anterior segment examination was unremarkable, while fundoscopy showed bilateral blurred disc margin. Her extraocular movements were full bilaterally, with fast phase nystagmus noted upon left gaze. Neurological examination revealed normal muscle tone and power, but her reflexes were hyperreflexia. Cerebellar signs were negative except for past-pointing. She was admitted for observation, but her GCS dropped requiring mechanical ventilation. Her infective, autoimmune, and paraneoplastic screening were negative. Although she tested negative for antiGQ1b antibodies, BBE cannot be excluded. Lumbar puncture showed CSF albuminocytologic dissociation, MRI brain showed hyperintensity changes in pons, cerebellar peduncle and posterolateral aspect of 4th ventricle, and electroencephalogram revealed diffuse cortical dysfunction with theta-delta polymorphic slowing, supportive of BBE. She was diagnosed with incomplete BBE clinically and was successfully treated with intravenous immunoglobulin. Upon follow-up at 3 months, her vision improved to 6/20 and 6/24 and optic nerve functions recovered.

Conclusions: High index of suspicion for BBE should be held for young patients with optic neuritis and ataxia, as early co-management with neuromedical team is essential for adequate treatment.

Poster No.: PO-105
Panel No.: 105, Session: PO

Bitemporal Hemianopia as a Clinical Manifestation Secondary to Various Optic Chiasmal Injuries

*First Author: Channdarith **KITH***
*Co-Author(s): Piseth **KONG**, Chukmol **KOSSAMA**, Chenda **KIM**, Bunrong **SRUN***

Purpose: To report cases presenting with bitemporal hemianopia due to distinct etiologies and compare the clinical findings with each individual case.

Methods: A retrospective, descriptive, case-series study was performed. Case reports with no follow-up were excluded. Five cases from the previous four years were examined, and the results were summarized for comparison, which included details of each case with bitemporal hemianopia serving as the index clinical feature.

Results: All the reported cases share some common features: bitemporal hemianopia with varying visual acuity. There were two cases due to traumatic chiasmal syndrome: one patient with visual loss following traumatic brain injury and another after micro-clip brain surgery repaired for ruptured cerebral aneurysms, and there were three other patients having optic chiasm compression secondary to pituitary gland tumor.

Conclusions: Despite the fact that field loss can vary in severity, bitemporal hemianopia is a significant hallmark of optic chiasmal injury. Indeed, tumors, inflammation, demyelination, infiltration, ischemia, and traumatic chiasmal syndrome are just a few of the lesions that can lead to this field loss. Above all, pituitary tumors are the most common etiology whereas patients with bitemporal hemianopia following head trauma should also be evaluated for the traumatic chiasmal syndrome, even if it is a rare occurrence.

Poster No.: PO-116
Panel No.: 116, Session: PO

Case Report: Glomus Vagale Tumor as an Unusual Cause of Horner's Syndrome

*First Author: Wan Cheng **NG***
*Co-Author(s): Mazaya **MAHMUD**, Raja Nor Farahiyah **RAJA OTHMAN**, Mohd Khairul **ABD MAJID**, Rozita **ISMAIL***

Purpose: To report a case of glomus vagale tumor in a patient presented with Horner's syndrome.

Methods: This is a case report.

Results: A 35-year-old lady with background history of extrapulmonary tuberculosis complicated with peritonitis in 2008 and subcentimeter left submandibular lymph node, presented with left upper eyelid drooping for the past 2 months duration associated with left sided headache. Ocular examination showed left eye 2mm ptosis with left pupil miosis. MRI brain showed features suggestive of glomus vagale tumor however the patient refused for surgical intervention.

Conclusions: Glomus vagale tumor, a type of sympathetic paraganglioma are exceedingly rare tumors in the head and neck and should be considered in the differential diagnosis in patients with Horner's syndrome with the absence of neck mass.

Poster No.: PO-112
Panel No.: 112, Session: PO

Diplopia As First Sign of Nasopharyngeal Carcinoma: A Case Report

*First Author: Ker Dee **LIM***
*Co-Author(s): Woon **QING***

Purpose: To report a case of isolated sixth cranial nerve (Abducens nerve) palsy as first sign of nasopharyngeal carcinoma (NPC).

Methods: To present a case report.

Results: A 51-year-old Chinese man, pre-morbidly well, presented with chief complaint of diplopia for one month. There was no history of ocular trauma, reduced of vision, eye pain, redness, tinnitus, epistaxis, nasal discharge or shortness of breath. Upon examination, blood pressure and glucose monitoring were normal. Visual acuity of OU was 6/6, no relative afferent pupillary defect (RAPD), however abduction action of right eye was restricted. Extraocular movement of left eye was normal. There was horizontal diplopia at primary gaze and right lateral gaze. Intraocular pressure, findings of anterior and posterior segment of bilateral eyes were normal. There was isolated right sixth cranial nerve palsy. Patient was referred to Otolaryngology Department (ENT) and endoscopic examination noted a mass over right fossa of Rosenmuller, histopathology of biopsied specimen reported as non-keratinizing nasopharyngeal carcinoma. Contrast-Enhanced Computed Tomography (CECT) neck and thorax showed lung metastasis. Patient was scheduled for Magnetic Resonance Imaging (MRI) at the time of case reporting and for further management.

Conclusions: Diplopia secondary to isolated sixth cranial nerve palsy is rare yet can be the first sign of nasopharyngeal carcinoma. Suspicion should be raised in elderly, Chinese race, without any comorbidity patient who presented with isolated sixth cranial nerve palsy. Timely detection of nasopharyngeal carcinoma may result in prompt treatment.

Poster No.: PO-103
Panel No.: 103, Session: PO

Dry Eye Disease Associated With Peripheral Neuropathy in Type 2 Diabetes

First Author: Shyam Sunder ***TUMMANAPALLI***
Co-Author(s): Roshan ***DHANAPALARATNAM****, Arun Vishwanathan* ***KRISHNAN****, Eric* ***PAPAS****, Ann* ***POYNTEN****, Leiao Leon* ***WANG***

Purpose: To determine the risk of developing dry eye disease in the presence of peripheral neuropathy in participants with type 2 diabetes (T2D). PI: Dr Maria Markoulli

Methods: Fifty-three participants with T2D underwent a detailed assessment of neuropathy using the Total Neuropathy Score (TNS) and were stratified into no/mild (n=38) and moderate/severe (n=15) neuropathy groups. Symptoms and signs of dry eye disease were assessed by Ocular Surface Disease Index, Dry Eye Questionnaire-5 (DEQ-5), tear osmolarity, lipid layer thickness, non-invasive keratographic tear break-up time, meibography, phenol red thread test (PRT), and ocular surface staining. The corneal nerve fibers at the central cornea and the inferior whorl were imaged using corneal confocal microscopy and the nerve parameters were quantified using an automated image analysis software.

Results: Sixty-seven percent of the moderate/severe neuropathy group had dry eye disease compared to 37% of the no/mild neuropathy group. Chi-squared analysis showed that the odds of developing dry eyes were 3.4 (CI:1.0-12.1; p = 0.049) times greater for those with moderate/severe neuropathy compared to no/mild neuropathy group. Participants with dry eye had a significantly higher mean TNS compared to non-dry eye participants (p = 0.026). The mean scores of DEQ-5 were significantly higher in the moderate to severe neuropathy group (p = 0.041) but there were no significant differences in any of the clinical signs of dry eye disease or corneal nerve parameters. The DEQ-5 scores (rho=0.292, p = 0.042) and PRT values (rho=-0.278, p = 0.044) were correlated with increasing neuropathy severity.

Conclusions: The likelihood of suffering dry eye disease increases in the presence of peripheral neuropathy in T2D.

Poster No.: PO-110
Panel No.: 110, Session: PO

Gradenigo Syndrome: A Unique Case of Abducens Nerve Palsy

First Author: Wan Dalila ***WAN HAZMY***
Co-Author(s): Logesvaran ***MURUGAN****, Sangitha* ***MANIAM****, Chandramalar T.* ***SANTHIRATHELAGAN***

Purpose: To report uncommon presentation of abducens nerve palsy and papilloedema following cerebral venous sinus thrombosis secondary to otomastoiditis.

Methods: To present a case report.

Results: A healthy 12-year-old boy presented with right-sided headache, right eye esotropia and horizontal diplopia for 4 days. He had history of right ear otitis media for one week and was inadequately treated with oral antibiotics for 5 days duration. On examination, there was limitation of right eye abduction and bilateral optic disc hyperemia. Hess chart reciprocate clinical findings with underreaction of the lateral muscle of the right eye and overaction of the medial rectus of the left eye. Computed tomography (CT) brain, paranasal sinuses, petrous bone and orbit showed right otomastoiditis and filling defects at right transverse and sigmoid sinuses suggestive of venous sinus thrombosis. Magnetic Resonance Imaging (MRI) brain and Magnetic Resonance Venography (MRV) showed right otomastoiditis and right dural venous sinuses and internal jugular venous (IJV) thrombosis. He was started on four doses of subcutaneous enoxaparin and oral warfarin 5mg daily for the venous sinus thrombosis and intravenous antibiotics for the right otomastoditis. The abducens nerve palsy completely resolved one month after the treatment was commenced.

Conclusions: Gradenigo syndrome is a rare cause of abducens nerve palsy nowadays due to easy availability of antibiotic. However, inadequate treatment with oral antibiotic can cause reemergence of this syndrome. Ocular symptoms can be initial signs of this illness.

Poster No.: PO-114
Panel No.: 114, Session: PO

Monitoring Progression in Non-arteritic Anterior Ischemic Optic Neuropathy With Optical Coherence Tomography Angiography: A Case Report

First Author: Brigitta Marcia ***BUDIHARDJA***
Co-Author(s): Lazuardiah ***ANANDI****, Erika* ***ANGGRAINI****, Rona Ali* ***BADJRAI****, Lourisa Ruth* ***ELDINIA****, Syntia* ***NUSANTI***

Purpose: Non-arteritic anterior ischemic optic neuropathy (NAION) is the most common cause of non-glaucomatous optic neuropathy, yet many questions remain unanswered regarding how to manage and monitor its progression. This case report aims to demonstrate the potential of optical coherence tomography angiography (OCTA) as a modality to capture the progression of NAION.

Methods: This is an observational case report.

Results: This report describes a case of 56-year-old male with NAION on his right eye. At first examination, OCTA of the optic nerve head revealed a decreased level of perfusion in the superior area. This finding corresponded with the inferior altitudinal visual field defect found with Humphrey examination. After a

month of treatment with warfarin and acetylsalicylic acid, OCTA showed improvement of perfusion level. Humphrey visual field examination indices also showed improvement. After 6 months of follow-up period, OCTA revealed that the perfusion level had decreased to the pre-treatment level. However, Humphrey examination showed that the visual field defect had continue to improve. This finding portrays the use of OCTA in capturing the progression of pathophysiological process in NAION. Reduced perfusion detected with OCTA might reflect ongoing ischemic insult that was temporarily improved with treatment or as a result of neural loss in the retinal nerve fiber layer.

Conclusions: The continuous ischemic process of the optic nerve was endured invisibly. The OCTA insinuates the possibility of ongoing ischemic process even in later phase. Further studies are needed to evaluate whether OCTA can have a role as a tool to monitor progression in NAION eyes.

Poster No.: PO-104
Panel No.: 104, Session: PO

Photopsia and Transient Visual Field Loss as an Early Symptom of Intracranial Visual Pathway Involvement by Brain Metastasis

*First Author: Tuck Chun **NG***

Purpose: To report on occurrence of photopsia and transient visual loss over an area of visual field as an early symptom which corresponds to the location of the visual pathway affected by brain metastasis.

Methods: To present a case report.

Results: A 40-year-old lady with underlying history of treated stage 3 breast carcinoma was presented with a complaint of intermittent visual symptoms on left side of her visual field in both her eyes for 3 months. The visual symptoms were described as intermittent episodes of flashes of light over her left lower visual field lasting for few seconds followed by loss of her left lower visual field in both eyes for 15 minutes and improved completely over 5 minutes. She experiences these visual symptoms 1 to 2 days in a week with each day having 2 to 4 episodes. Visual acuity was 6/9 both eyes, anterior and posterior segment examination were unremarkable. MRI of the brain shows an enhancing heterogenous mass at the right occipital lobe. Surgical excision was done, and histopathologic evaluation showed the mass was a metastatic carcinoma originating from the breast. Visual field post-surgery shows left congruous homonymous inferior quadrantanopia.

Conclusions: This case highlights that visual symptoms of photopsia and transient visual field loss can be an early symptom to visual pathway affection by brain metastasis prior to development of a permanent visual field loss.

Poster No.: PO-111
Panel No.: 111, Session: PO

Retinal Migraine With Prolonged Scotoma

*First Author: Siti Hajar **DARUSSALAM***
*Co-Author(s): Rafidah **MD SALEH**, Amirah **MOHAMMAD RAZALI**, Mazaya **MAHMUD**, Muhammad Syamil **MOHAMAD SALMI***

Purpose: To report a case of retinal migraine in young patient with prolonged scotoma.

Methods: To present a case report.

Results: A 44-year-old gentleman with underlying well controlled hypertension and migraine, presented with a 2-week history of sudden onset left inferonasal scotoma. Symptoms first appeared whilst jogging. He had no associated headache or neurological symptoms. Patient had good distant and near vision of 6/6 and N5 bilaterally with no relative afferent pupillary defect. The anterior segment examination was unremarkable. Left eye fundus examination revealed the presence of cotton wool spot over the superotemporal arcade. He otherwise had normal optic disc findings with no retinal hemorrhage seen. The fellow eye examination was normal. Humphrey visual field examination of the left eye revealed a non-specific scotoma over inferonasal quadrant. Blood investigation done was within normal limits. A final diagnosis of retinal migraine was made by the neurologist and the patient was started on amitriptyline 12.5 mg ON. His symptoms resolved after 6 weeks, with no more scotoma detected on Humphrey visual field examination and resolution of the cotton wool spot.

Conclusions: Retinal migraine is a rare condition with non-specific symptoms. Other alarming differentials such as transient ischaemic attack should be excluded. In most cases, the visual symptoms are transient, but in cases with intense spasms, ischemic events in the eye may occur leading to prolonged or even permanent visual loss. Thus, medication to reduce or prevent attacks is paramount to prevent further damage to the ocular structures.

Poster No.: PO-107
Panel No.: 107, Session: PO

Serum Angiotensin-Converting Enzyme in Patients With Acute Idiopathic and Demyelinating Optic Neuritis

*First Author: Ali **FOROUHARI***
*Co-Author(s): Alireza **DEHGHANI**, Nastaran-Sadat **HOSSEINI**, Majid **MIRMOHAMMADKHANI**, Mohsen **POURAZIZI***

Purpose: To assess the serum angiotensin-converting enzyme (ACE) level in individuals with acute optic neuritis (ON), which can be considered a predictive factor in favor of an early diagnosis of demyelinating disorders.

Methods: This case-control study involved patients with established acute ON as the study group and healthy matched controls. After systemic and neurological evaluation, the study group was divided into two subgroups: idiopathic ON and demyelinating ON -including Multiple sclerosis (MS) and Neuromyelitis Optica (NMO). Using enzyme-linked immunosorbent assay, serum ACE levels were compared between groups.

Results: Fifty-one patients with acute optic neuritis (78.4% female, mean age 29.8 ± 8.4 years) and 51 controls (78.4% female, mean age 29.9 ± 6.9 years) were recruited. In the study group, 29 patients were idiopathic ON (56.9%), and 22 patients were demyelinating ON (43.1%) (MS-ON, n=16; NMO-ON, n=3; and clinically isolated syndrome, n=3). The median serum ACE levels were 33.50 U/L (range: 29.40–46.20), 34.25 U/L (range: 29.30–46.10), and 26.2 U/L (range: 24.80–20.50) for patients suffering from idiopathic ON, demyelinating ON, and control group, respectively ($p < 0.001$). A high level of serum ACE (defined as a serum ACE >65 U/L) was present in 3 (10.3%) patients with idiopathic ON and 2 (9.1%) patients with demyelinating ON ($p > 0.99$).

Conclusions: These results reveal that serum ACE levels are significantly greater in both groups of individuals with acute ON compared to healthy subjects. Serum ACE levels of demyelinated and idiopathic ON patients did not show a significant difference.

Poster No.: PO-113
Panel No.: 113, Session: PO

Visual Loss Post-indirect Trauma: A Diagnostic Dilemma

*First Author: Aini Zahidah **ISMAIL***
*Co-Author(s): Abirami **SANMUGAM**, Rohana **TAHARIN**, Evelyn **TAI**, Hun Heng **TAN***

Purpose: Purtscher retinopathy is a chorioretinopathy associated with indirect trauma. We present a case of Purtscher retinopathy in a patient with traumatic optic neuropathy.

Methods: To present a case report.

Results: A 28-year-old gentleman with no comorbidities presented 3 days after a motor vehicle accident with sudden onset of left central scotoma. His visual acuity was hand movement in the left eye and 6/6 in the right eye. He had a left relative pupillary afferent defect, with reduced red saturation and light brightness. Dilated fundus examination of the left eye showed disc hemorrhages, peripapillary cotton wool spots and retinal nerve fiber layer swelling, as well as dot-blot hemorrhages involving the macula. The right eye fundus was normal. Anterior segment and intraocular pressures were unremarkable bilaterally. Systemic examination revealed only a minor forehead laceration. Amsler grid testing confirmed a central scotoma. Optical coherence tomography of the macula revealed retinal thickening and oedema, with a hyperreflective band at the inner nuclear layer and the perifoveal region, suggestive of paracentral acute middle maculopathy. A contrasted computed tomography of the brain and orbit was negative for fractures, intracranial bleeding or cerebral oedema. Patient was treated as traumatic optic neuropathy with a three-day course of megadose intravenous methylprednisolone. On day 2 of treatment, the left eye visual acuity improved to 6/18, returning to 6/6 by day 3 of treatment. The central scotoma and fundus abnormalities resolved within two weeks.

Conclusions: Indirect traumatic optic neuropathy may have a delayed presentation. Purtscher retinopathy may coexist with traumatic optic neuropathy.

Poster No.: PO-106
Panel No.: 106, Session: PO

Weight Loss Control in Idiopathic Intracranial Hypertension Papilledema: A Case Series

*First Author: Rahmah **SADIDA***
*Co-Author(s): Riski **PRIHATNINGTIAS***

Purpose: Idiopathic intracranial hypertension (IIH), also known as pseudotumor cerebri, is a condition marked by elevated intracranial pressure (ICP) that primarily affects obese women of childbearing age. The main ocular finding is papilledema, which, if left untreated, may eventually cause optic atrophy and blindness. There are numerous therapy possibilities, however there are no official guidelines about the therapeutic strategy. Herein, the case series of visual outcome after weight loss control in IIH Papilledema were reported.

Methods: Three obese women came with complaints of blurry vision, shadowing and getting worst over time. There was a decrease visual acuity and on dilated fundus examination, papilledema was found. Optical coherence topography (OCT) and Fundus Photograph investigations showed papilledema, a computerized tomography scan (CT scan) showed a normal impression and magnetic resonance imaging (MRI) examination revealed a widening of the subarachnoid space which supports the diagnosis of IIH. Multidisciplinary management performed in collaboration with nutrition department to generate weight loss program.

Results: At follow-up, weight loss was found in line with improved visual acuity in these 3 patients. The patients lost an average of 6.4 kilograms in weight and the clinical condition of papilledema improved as a result of the firming of the papillary borders.

Conclusions: Weight loss can be an effective treatment and is always recommended; even moderate weight loss can resolve the signs and symptoms of IIH.

Ocular Imaging

Poster No.: PO-120
Panel No.: 120, Session: PO

Choroidal Biomarkers in Central Serous Chorioretinopathy

*First Author: Arman **ZARNEGAR***
*Co-Author(s): Supriya **ARORA**, Jay **CHHABLANI**, Joshua **ONG**, Amrish **SELVAM**, Sanya **YADAV***

Purpose: The choroid is involved in the pathogenesis of central serous chorioretinopathy (CSCR); however, choroidal imaging biomarkers have not been evaluated for long-term treatment options. The purpose of the present study is to examine choroidal biomarkers in CSCR as predictors of treatment outcomes.

Methods: This retrospective study included 31 eyes of 28 patients with CSCR with a minimum one-year follow-up and high-quality optical coherence tomography (OCT) images. Choroidal imaging biomarkers, such as subfoveal choroidal thickness (SFCT), inner choroid layer (ICL) and Haller's layer (HL) thicknesses, and choroidal vascularity index (CVI) were measured at baseline and 3-monthly intervals till month 12.

Results: The mean visual acuity at baseline and month 12 was 0.30 ± 0.35 and 0.28 ± 0.34 logMAR, respectively (p = 0.43). Choroidal parameters (µm) included mean SFCT (306.58 ± 48.33 vs 314.29 ± 50.14 (p = 0.54)); HL thickness (143.48 ± 33.19 vs 143.84 ± 36.29 (p = 0.97)); ICL thickness (101.58 ± 48.49 vs 97.52 ± 49.65 (p = 0.75)). The mean CVI for the cohort was 0.59 ± 0.05 vs 0.60 ± 0.03 (p = 0.61). Logistic regression analysis using OCT parameters showed baseline SFCT (p = 0.06, R^2 = 0.27) as the only predictor of disease resolution.

Conclusions: Reduced baseline SFCT may be associated with an increased likelihood of disease resolution at 12 months.

Poster No.: PO-118
Panel No.: 118, Session: PO

Comparison of Automated Subfoveal Choroidal Thickness Segmentation in Topcon Triton Deep Range Imaging Optical Coherence Tomography and PLEX Elite 9000 OCT Among Myopic Subjects

*First Author: Joey **CHUNG***
*Co-Author(s): Marcus **ANG**, Jonathan **LI**, Yong **LI**, Zhi Wei **LIM**, Angeline **TOH***

Purpose: To evaluate the agreement between two established swept-source optical coherence tomography machines (SS-OCT) for subfoveal choroidal thickness (SFCT) measurement.

Methods: Subjects aged ≥16 years, with binocular myopia of ≥0.50 diopters, were recruited. OCT scans were acquired using Triton deep range imaging optical coherence tomography (DRI-OCT) and PLEX Elite 9000. Proprietary auto-segmentation algorithms were employed to segment the choroid, with adjudication by 2 independent graders if necessary. Bland-Altman plot and intraclass correlation coefficient (ICC) were used to evaluate the agreement between modalities.

Results: A total of 229 subjects (456 eyes) with mean (± standard deviation [SD]) age of 34.1 (10.4) years were included. The mean (SD) SFCT was 216.9µm (82.7) with Triton DRI-OCT and 239.3µm (84.3) with PLEX Elite 9000. ICC values demonstrated excellent agreement between modalities (ICC=0.930, 95% confidence interval [CI] 0.602 to 0.974, p <0.001). Notably, Triton DRI-OCT measurements were comparatively thinner than PLEX Elite 9000, with a fixed bias of -22.363µm (95%CI -24.435 to -20.291, p <0.001). We further stratified our analysis for SFCT and observed that subjects with thicker SFCT (≥300µm; ICC=0.759, 95% CI 0.175 to 0.905, p <0.001) demonstrated weaker agreement as compared to those with thinner SFCT (<300 µm; ICC=0.874, 95% CI 0.423 to 0.951, p <0.001). The magnitude of fixed bias was also larger in subjects with thicker SFCT (-26.512 versus -21.467).

Conclusions: Among adults with myopia, Triton DRI-OCT and PLEX Elite 9000 demonstrated excellent agreement for the measurement of SFCT. Our findings are crucial to allow meaningful comparisons and clinical interpretations across these SS-OCT modalities.

Poster No.: PO-122
Panel No.: 122, Session: PO

Diagnosing Patients With Polypoidal Choroidal Vasculopathy Using Spectral Domain and Swept-Source Optical Coherence Tomography Angiography

*First Author: Sejun **PARK***
*Co-Author(s): Eung-Suk **KIM**, Kiyoung **KIM**, Jong Beom **PARK**, Seung Young **YU***

Purpose: To analyze polyps in polypoidal choroidal vasculopathy (PCV) using spectral domain optical coherence tomography angiography (SD-OCTA) and swept-source optical coherence tomography angiography (SS-OCTA).

Methods: This retrospective study included 25 treatment-naïve eyes with 25 patients who have diagnosed PCV by indocyanine green angiography (ICGA) in Kyung Hee university hospital (April 1, 2017, to November 30, 2020). Each eye was reviewed by using SD-OCTA and SS-OCTA using RPE-RPE fit image (6 × 6-mm macular cube scan). Polyps in PCV was evaluated with or without B-scan segmentation. In initial group, sensitivity and positive predictive value of polyp was analyzed compared with ICGA. SS-OCTA and SD-OCTA with or without B scan were analyzed in the

3-month and the 12-month group.

Results: A total of 25 study eyes of 25 subjects, 76% was male. The mean patient age was 67.7 ± 6.9 years. In SS-OCTA with and without B-scan segmentation group, sensitivity was 0.94, 1.00, positive predictive value was 0.94, 0.85. In SD-OCTA with and without B-scan segmentation, sensitivity was 0.85, 0.92, positive predictive value was 0.82, 0.71. In the 3-month and the 12-month group, which was analyzed compared to SS-OCTA with B-scan segmentation. In 3 months, SS-OCTA without B-scan segmentation, SD-OCTA with and without B-scan segmentation, sensitivity was 1, 0.75, 0.5. and specificity was 0.88, 0.75, 0.5. In 12 months, sensitivity was 0.89, 0.89, 0.73 and specificity was 0.83, 0.80, 0.75.

Conclusions: This study suggest that SS-OCTA with B-scan segmentation group has high sensitivity and positive predictive value in detecting polyps in PCV. SS-OCTA group has higher sensitivity, positive predictive value and specificity compared to SD-OCTA in all groups.

Poster No.: PO-121
Panel No.: 121, Session: PO

Pocket FundaScope - Foldable Ultraportable Smartphone Fundus Camera

*First Author: John **AKKARA***
*Co-Author(s): Anju **KURIAKOSE***

Purpose: To design and make a foldable smartphone fundus camera that can fit inside a pocket using the technology of 3D printing.

Methods: This was done by the author using 3D modelling CAD (Computer Aided Design) software FreeCAD, which is also an open-source software. This model was tweaked, and 3D printed and finally we settled on a design which worked to achieve our goal of being a foldable smartphone fundus camera. The smartphone attachment to the device was done using an innovative magnetic docking system. This was then tested for taking fundus photographs using a smartphone. An inbuilt illumination system was also added to make it compatible with all smartphones.

Results: After a few attempts, we successfully designed and made a 3D printed smartphone fundus camera which was able to take fundus photos in dilated eyes. This could easily be folded and kept inside a shirt or pant pocket making it ultraportable. It could be opened very quickly and unfolded, and smartphone attached within 5 seconds. It could be aligned, and fundus photo captured in another 30 seconds. This could work on practically all smartphones without any restriction of size or flash alignment due to the unique design of the attachment and illumination system. Additional slitlamp attachment designed can allow easy alignment.

Conclusions: This design of an ultraportable fundus camera that can fit inside a dress pocket has far reaching implications on affordable and accessible healthcare. Hope this innovation reaches the hands of millions of ophthalmologists and ophthalmic workers around the world.

Poster No.: PO-119
Panel No.: 119, Session: PO

Resurgence of an Old-world Disease: Ocular Features and Multimodal Imaging Characteristics in Acute Syphilitic Posterior Placoid Chorioretinitis

*First Author: Shew Fei **CHEE***
*Co-Author(s): Zunaina **EMBONG**, Hanizasurana **HASHIM**, Rajasudha **SAWRI RAJAN***

Purpose: To describe the ocular and multimodal imaging features of patients with acute syphilitic posterior placoid chorioretinitis (ASPPC).

Methods: To present a case series.

Results: Three patients with a diagnosis of ASPPC were identified between 2020 to 2022. All of them had bilateral involvement. All patients were males. Two of them were positive for human immunodeficiency virus (HIV). One of the patients was identified as MSM (men who have sex with men). All 3 patients presented with blurring of vision with central scotomas. Clinically, 2 of them presented with panuveitis and 1 with posterior uveitis. The mean BCVA on presentation was 0.65 logMAR and improved to 0.18 logMAR post-treatment. Spectral domain optical coherence tomography (SD-OCT) of all 3 patients showed disruption of ellipsoid zone with hyper-reflectivity in the retinal pigment epithelium (RPE). Fundus autofluorescence showed placoid hyper-autofluorescence at the posterior pole in all 3 patients. Fundus fluorescein angiography of one patient showed optic nerve leakage in both eyes. Their non-treponemal tests were positive with a titer value ranging from 64 to 256. They were comanaged with the infectious disease team and treated with intravenous C-Penicillin regime for two weeks. At latest follow ups, their SD-OCT showed restored ellipsoid zone with reduced RPE nodularity after treatment.

Conclusions: Syphilis may present solely as ocular inflammation without systemic symptoms. A high level of suspicion is important as early diagnosis and treatment usually leads to a good visual outcome. Multimodal imaging provides a fast assessment in leading to diagnosing and monitoring the disease resolution after treatment commencement.

Poster No.: PO-123
Panel No.: 123, Session: PO

Seven-Year Clinical Outcomes of Central Serous Chorioretinopathy According to Age

*First Author: Tae Rim **KIM***
*Co-Author(s): Eung-Suk **KIM**, Kiyoung **KIM**, Jong Beom **PARK**, Seung Young **YU***

Purpose: To evaluate 7-year clinical outcomes in patient with central serous chorioretinopathy (CSC) according to age at presentation.

Methods: This retrospective study reviewed multimodal imaging data (fundus photo, optical coherence tomography, fundus autofluorescence, fluorescein angiography, indocyanine green angiography) of 75 eyes of 71 patients with CSC. All subjects were followed up at least 7 years. The eyes were divided into 3 groups according to age at diagnosis, as < 50 years old (Group 1, 28 eyes), 50 to 59 years old (Group2, 28eyes), and ≥60 years old (Group 3, 19 eyes). Best corrected visual acuity (BCVA), subfoveal choroidal thickness (SFCT), central subfield retinal thickness (CST), and multimodal imaging were analyzed.

Results: At base line, mean BCVA and CST among three groups were statistically different (BCVA; p = 0.047, CST; p = 0.034). Seven-year mean change of SFCT were -7.0 ± 56.7 µm in Group1, -12.3 ± 51.0 µm in Group2, and -66.4 ± 57.6µm in Group3. Mean SFCT in Group3 significantly decreased compared to that of other groups (p = 0.004; compared to Group1, p = 0.016; compared to Group2). Seven-year prevalence of shallow RPE elevation was 10.7% in Group1, 25.0% in Group2, 42.1% in Group3. Seven-year prevalence of choroidal neovascularization was 7.1% in Group1, 14.3% in Group2, 36.8% in Group3. In older age group (over 50), advanced fundus autofluorescence patterns appeared and progressed during 7-year follow-up.

Conclusions: During 7-year follow up of CSC, mean SFCT decreased by 7.0 µm in age 30-49, by 12.3 µm in age 50-59, and by 66.4 µm in age over 60 which was significantly different. Age at presentation were associated with decreases of choroidal thickness. In CSC, long-term and planned researches are needed.

Ocular Oncology and Pathology

Poster No.: PO-130
Panel No.: 130, Session: PO

A Neglected Periocular Basal Cell Carcinoma With Orbital Invasion: A Case Report

*First Author: Amelia **INDRIASARI***
*Co-Author(s): Purjanto **UTOMO**, Irene **DARAJATI***

Purpose: To report case illustrations and management of neglected destructive basal cell carcinoma (BCC).

Methods: This case presents a 65-year-old male patient with advanced basal cell carcinoma. For over 15 years, he had a nodular ulcer that affected his upper-lower eyelid of the right eye and extended to the parietal-temporal area of his face, but it was painless and resulted in significant visual impairment and severe facial injury. A Head CT-Scan showed that the tumor had spread to the bulbus oculi, bone, and surrounding soft tissue. The patient was treated with right eye extended exenteration, in which frozen section surgery to reach tumor-free margins, followed by a regional flap and skin graft.

Results: BCCs are usually slow-growing tumors with rare metastases, locally destructive lesions that cause serious disfigurement. This can affect not only the surrounding skin, but also deeper tissues such as muscle and bone. Final histopathology after surgery revealed an epithelial tumor: nodular BCC with pathological stage pT4aNxMx. The procedure was successful, whereby no graft failure occurred during the 8-month follow-up. However, radiotherapy was continued because of lymphovascular invasion.

Conclusions: Early diagnosis and treatment are critical to ensure the best clinical outcome. An increase in tumor size can lead to worsened surgical complexity as it can extend to the surrounding structures. The lack of pain in the tumors, poor social environment, and poorly educated community have resulted in delays in diagnosis and treatment. This presents a problem in developing countries due to the high cost of healthcare.

Poster No.: PO-127
Panel No.: 127, Session: PO

A Patient With Chronic, Recurrent Bilateral Conjunctivitis – A Rare Systemic Disease Unearthed in a Young Adult Female

*First Author: Manoj **VASUDEVAN***
*Co-Author(s): Vigneshwaran **JEYASEKARAN***

Purpose: The objective of this presentation is to highlight the manifestation of a rare auto immune disorder which can be either purely ocular or at times

a part of ocular, cutaneous and mucous membrane disease spectrum.

Methods: A female of 45 years initially presented with bilateral conjunctival redness and was treated for allergic conjunctivitis. During tapering of topical steroids, the patient reported similar recurrences of redness increasing without the medications and developed symblepharon over these episodes. During these 8 months she also developed recurrent oral aphthous ulcers with genital ulcers and some skin hyper pigmentations over the thigh and legs. A detailed work up by the physician, dentist and dermatologist were done. Skin as well as oral buccal mucosal biopsies were done.

Results: The blood investigations were done, biopsy showed inflammatory pathology and with the help of clinical and laboratory work up a diagnosis of Mucous membrane Pemphigoid disease was made, and patient started on systemic immunosuppression and low dose steroids as she is diabetic, and on topical low dose steroids, regular lubricants and tacrolimus eye ointment at bedtime. She was frequently followed up to avoid complications of corneal blindness and was educated about the course of the disease. A team comprising of Physician, dentist, ophthalmologist and Dermatologist are involved in her treatment. She is one eyed as her left eye is blinded from exanthematous lesion of chicken pox causing adherent leucoma during her childhood, so is closely monitored to prevent total blindness.

Conclusions: A diagnosis of mucous membrane pemphigoid was made and followed.

Poster No.: PO-126
Panel No.: 126, Session: PO

An Acute Periorbital Swelling in an Infant

*First Author: Manoj **VASUDEVAN***

Purpose: The clinical presentation of a very common disease as an unusual ocular feature in an infant. This is a single case report study to highlight the unusual presentation of a rather common disease and to the knowledge of the presenting authors the youngest globally to present with such a presentation from the literature review.

Methods: A 10-month-old female was referred from pediatrician for ophthalmology opinion for left periorbital swelling of 2 weeks duration. The child was febrile, had poor feeding with irritable nature and had an attempted incision and drainage of the swelling. A diffuse ill-defined swelling of the left periorbital region pushing the lower lid up and narrowing the left palpebral fissure was noted which was erythematous, warm and tender to touch with an opening through which sero-purulent discharge was noted. There was surrounding facial edema with a palatal swelling and sub-mandibular Lymphadenopathy. A provisional diagnosis of periorbital cellulitis was made and relevant investigations to identify the cause were done.

Results: Blood investigations showed a elevated total cell count and ESR. Radio-imaging with CT orbits and chest X-ray were done. Blood culture was negative. CT orbits revealed left maxillary and ethmoidal sinusitis with osteomyelitis of maxilla. A culture of the secretions from the discharging sinus and acid-fast staining were done for mycobacterium tuberculosis and it came out positive. Child responded well to ATT (Anti-Tuberculosis Treatment) which was continued for 6 months.

Conclusions: Osteomyelitis of maxilla due to Tuberculosis from primary pulmonary lesion is a rare cause of periorbital cellulitis in infants.

Poster No.: PO-133
Panel No.: 133, Session: PO

An Unusual Presentation of Elastofibroma Oculi: A Case Study Report

*First Author: Arianne Angeli **BALUYUT***
*Co-Author(s): Alex **SUA***

Purpose: Elastofibromas are rare, benign, slow-growing connective tissue neoplasms first described in 1961, that most commonly occur in the subscapular region (elastofibroma dorsi). To date, there have only been two published reported cases involving the ocular structures (Austin et al. 1983, Hsu et al. 1995). The purpose of this study is to showcase the clinical and histopathological presentations of a case of elastofibroma oculi.

Methods: This is a retrospective chart review of the clinical and histopathological presentation of a consenting patient with elastofibroma oculi.

Results: The patient is a 61-year-old male who initially presented with a two-month history of foreign body sensation and tearing in the left eye. External eye examination showed a well-circumscribed, slightly elevated, gelatinous, yellowish lesion at the nasal conjunctiva. The lesion was initially thought to be an ocular surface squamous neoplasia, thus wide excision of the conjunctival lesion with ocular surface reconstruction was advised. On histopathologic analysis of the lesion, microscopic evaluation discloses conjunctiva with a thicker than normal overlying epithelium, with thickened bundles of collagen and fragmented fibers in the substantia propria separate from the immediate subepithelial zone, which stained positive for elastin with Verhoeff stain.

Conclusions: The case in the study is consistent with findings in elastofibroma oculi and similar to lesions described in previously reported case reports. Activated fibrocytes are presumed to be the cause of excess production of elastin and collagen. While surgically removing the lesion is curative, the importance of histopathologic analysis is important in aiding in its

diagnosis.

Poster No.: PO-129
Panel No.: 129, Session: PO

Benign Variant of Retinoblastoma in an 18 Months-Old Male: A Case Report

*First Author: Aufaa Shafira **WIDOWATI***
*Co-Author(s): Purjanto **UTOMO***

Purpose: To report a case of unilateral retinocytoma and its management on an 18 months-old male.

Methods: We evaluate and follow the clinical progression of a patient with unilateral intraocular tumor. Clinical presentation, B-scan ultrasonography, and head MSCT scan results led to the diagnosis of suspected retinoblastoma of the right eye. Enucleation under general anesthesia was planned. The enucleated bulbus was found to be deflated and was sent to the pathology department for histological examination.

Results: Gross cross-section of the bulbus revealed a grey-brownish mass with jelly-like consistency. Histological staining resulted in a well-differentiated and well-circumscribed tumor with the characteristics of retinocytoma, histological grading G1, and pathologic staging T1NxMx. The patient was diagnosed with right eye retinocytoma. Funduscopy of his fellow eye was done under anesthesia and the retina was within normal limit. On the post-operative outpatient visit was referred to the pediatric oncology clinic. Routine evaluation of his fellow eye was planned by scheduling monthly visits.

Conclusions: Retinocytoma is a variant of retinoblastoma that, while has the characteristics of a benign tumor, has the potential to degenerate into malignancy. This disease has a similar genetic mutation to retinoblastoma, and patients with retinocytoma should be closely observed even if they had undergone enucleation to observe any growth of similar tumor on their fellow eye.

Poster No.: PO-141
Panel No.: 141, Session: PO

Choroidal Metastasis in a Middle-Aged Woman - A Diagnostic Dilemma

*First Author: Wan Mohd **WAN HASSAN***
*Co-Author(s): Roslin **AZNI**, Nur Muhammad Ammar **MOHD RAZAK**, Muharliza **MUSA***

Purpose: To report a rare case of amelanotic choroidal mass as a first sign of distant metastasis of advanced lung adenocarcinoma.

Methods: To present a case report.

Results: A 51-year-old previously healthy woman with 2 months history of painless right eye paracentral scotoma. Her unaided right eye vision was 6/36 and fundus examination revealed large amelanotic choroidal mass with overlying fluid involving macular region. The left eye was unremarkable. She had strong family history of malignancy in which her only child died due to brain cancer. B scan ultrasonography showed double hump hyperechoic elevation and fundus fluorescein angiography (FFA) showed no double circulation. Her blood tests for tumor markers were unremarkable, however the chest x-ray showed lung mass in the right upper lobe, which was confirmed by computed tomography (CT) scan of thorax. Unfortunately, there was evidence of distant metastasis to the liver, heart, uterus and vertebral spine by CT abdomen/pelvis. She was referred to chest team and lung biopsy revealed advanced lung adenocarcinoma.

Conclusions: Choroidal metastasis is rare in general but is the most common intraocular malignancy and usually originates from primary breast or lung cancer. Thus higher index of suspicion is mandatory in a patient with amelanotic choroidal mass.

Poster No.: PO-136
Panel No.: 136, Session: PO

Diagnostic Utility of Cytospin in Primary Intraocular Lymphoma

*First Author: Neelima **SHARMA***
*Co-Author(s): Rohan **CHAWLA**, Seema **KASHYAP**, Seema **SEN***

Purpose: Diagnosis of primary intraocular lymphoma (PIOL) is complex and challenging for both pathologists and clinicians. The volume of vitreous sample is very less and often mixed with inflammatory cells. Also, patients often present with uveitis (masquerade syndrome), which delays diagnosis. Involvement of CNS is seen in 60% PIOL cases. The prognosis is poor, with a median survival of 3 years with treatment.

Methods: A total of 39 vitreous samples were received from 2018-2020, of which 24 patients (61.5%) presented with a clinical suspicion of lymphoma. The samples were processed by cytospin (Thermo Scientific) and slides were stained with MGG, PAP and immunostains (CD-20, CD-3 and CD-68).

Results: Of the 24 vitreous samples, 13 (47.3%) were diagnosed as large B-cell lymphoma. The mean age was 61 ± 14.9 years with slight female preponderance (6/7). Right eye was involved in 7 cases (53.8%), left eye in 1 case (7.6%), and both eyes in 5 cases (38.4%). The atypical lymphoid cells exhibited a large size, an irregular nucleus with prominent nucleoli and scant cytoplasm. Degenerating cells and few mature lymphocytes were seen often. The remaining cases (11) showed scant material or reactive lymphocytes. These patients were kept on close follow up. All the 13 PIOL patients underwent testing for CNS lymphoma and treated with intravitreal methotrexate (MTx) for 6 months.

Conclusions: Cytospin is a very useful technique

for diagnosing PIOL in the hands of experienced cytopathologists. Elevated IL10/IL6 ratio by ELISA and MYD88-specific PCR are beneficial diagnostic tools in cases of diagnostic dilemmas.

Poster No.: PO-138
Panel No.: 138, Session: PO

Maxillary Squamous Cell Carcinoma Masquerading as Orbital Cellulitis: A Case Report

*First Author: Maria Christine **DY***
*Co-Author(s): Mariel Angelou **PARULAN***

Purpose: To report an undiagnosed case of maxillary squamous cell carcinoma presenting as orbital cellulitis in an elderly Asian male.

Methods: A 62-year-old male Asian presented with a one-month history of painful progressive left periobital swelling. Vision was good, but with chemosis, minimal extraocular muscle limitation, and beginning signs of compressive optic neuropathy. Imaging results revealed pansinusitis with osteomyelitis and epidural abscess. Nasal endoscopy was generally unremarkable. He was initially managed as a case of orbital cellulitis and started on topical and high-dose intravenous antibiotics co-managed with otorhinolaryngology, infectious disease, and neurosurgery services. With rapid clinical deterioration, incision biopsy was done, and he was advised possible endoscopic sinus surgery.

Results: Histopathology results revealed a maxillary sinus squamous cell carcinoma- moderately differentiated stage IVB (T4BN0M0). He was then administered standard induction then sequential chemotherapy. The patient is currently under palliative care and has completed three cycles of chemotherapy without radiologic evidence of tumor progression.

Conclusions: Sinonasal malignancies are rare overall and undiagnosed pathologies can have a variety of ophthalmologic clinical presentations. Orbital invasion occurs in majority of maxillary sinus malignancies with a 5-year survival of only 17%. Management has evolved from routine orbital exenteration to globe-sparing procedures as aggressive methods may not necessarily result to better survival outcomes. Orbital preservation with chemoradiotherapy has resulted in satisfactory outcomes although prognosis still remains dependent on tumor histopathology. Recurrence remains a treatment obstacle, therefore close monitoring is warranted. Despite the relative infrequency of sinus tumors, early diagnosis is essential for effective management.

Poster No.: PO-134
Panel No.: 134, Session: PO

Mortal Masquerades: Variable Presentations of Choroidal Metastasis

*First Author: Aditya **MAITRAY***
*Co-Author(s): Eliza **ANTHONY**, Anand **RAJENDRAN***

Purpose: To describe a series of cases showcasing the variable scenarios and forms in which choroidal secondaries can be presented.

Methods: Retrospective description of 3 different presentations of choroidal metastases.

Results: Case 1: A 48-year-old male presented with decreased vision in his right eye secondary to a choroidal mass lesion at posterior pole. Investigations revealed adenocarcinoma lung. He received systemic chemotherapy and orbital radiation and showed significant regression of the lesion with visual improvement. Case 2: A 25-year-old male, non-smoker, presented with pain, redness and diminished vision (6/36) in his right eye. There was marked nasal episcleral congestion and fundus examination showed disc edema with peripapillary deep infiltrate and surface hemorrhages. Findings were initially suggestive of an inflammatory pathology, but a detailed systemic evaluation revealed a metastatic adenocarcinoma lung. Patient was started on chemotherapy but expired 3 months later. Case 3: A 52-year-old male presented with sudden onset metamorphopsia in right eye secondary to 2 nodular choroidal lesions around the posterior pole. He was a known case of adenocarcinoma floor of mouth and was in remission. Repeat imaging showed new areas of previously undetected metastasis and he was advised systemic chemotherapy and orbital radiation.

Conclusions: Choroidal metastasis can often be the presenting feature of an underlying systemic malignancy, can rarely present with inflammatory/uveitic features even in young patients with no risk factors or present long after a malignancy is deemed cured. Being aware about the typical features on multimodal imaging and high index of suspicion can often be live saving.

Poster No.: PO-128
Panel No.: 128, Session: PO

Ocular Presentation of NK/T Cell Lymphoma at a Hematology Center: A Case Series

*First Author: Timothy **LIEW***
*Co-Author(s): Zairah **ABIDIN**, Zalifa **ASNIR**, Ng **WAI***

Purpose: To report two different presentations of NK/T cell lymphoma (necrotizing fasciitis and preseptal cellulitis).

Methods: To present a case series.

Results: The first case is a 48-year-old Malay man,

presented with skin lesion over nasal bridge for 2 months spreading over both eye (BE). His visual acuity (VA) was 6/9 BE. Other examinations were normal except a large crusty-brown fungating mass measuring 6cm x 3cm at nasal bridge infiltrating both medial canthus and punctum with of bony erosions. CT showed soft tissue changes over nasal bridge encroaching bilateral orbits involving bilateral upper and lower eyelids. Impression was BE preseptal cellulitis secondary to NK/T cell lymphoma with skin infiltration. Patient was started on intravenous Augmentin and topical Ciprofloxacin eyedrops, and daily wound debridement and dressing. The second case is a 50-year-old Chinese male presented with extensive right periorbital swelling and nasal blockage for 3 months. It subsequently became an ulcerative wound. His RE VA was non-perception of light (NPL). LE VA was 6/9. RE was unable to be examined. He was treated as necrotizing fasciitis involving right orbit and facial skin. CT brain/orbit showed large irregular heterogeneously enhancing soft tissue mass (4.7cm x 5.9cm x 7.6cm) occupying right orbit, extending to extraconal region with bony erosion. Excision biopsy showed extranodal NKT/T cell lymphoma (Nasal Type). He underwent multiple periorbital wound debridement with Dermasyn dressing and Gentamicin ointment.

Conclusions: They eventually succumbed to death due to poor prognosis of the disease. NK/T cell lymphoma is highly invasive and has aggressive course with different presentation. It has high mortality rate with low response to chemotherapy.

Poster No.: PO-131
Panel No.: 131, Session: PO

Orbital Myeloid Sarcoma Concurrent With Acute Myeloid Leukemia

*First Author: Jard Evans **GARCIA***
*Co-Author(s): Andrei **MARTIN**, Elaine **OMANA***

Purpose: To present a case of a 7-year-old female with orbital myeloid sarcoma (MS) concurrent with acute myeloid leukemia (AML).

Methods: Ophthalmologic examination, orbital CT-scan, incision biopsy, bone marrow aspiration biopsy, and peripheral blood smear were done.

Results: We report a case of a pediatric Filipino female, who presented in our clinic without underlying illness. She came in with a five-month history of left upper and left lower lid swelling which worsen over time and affected the contralateral eye. Patient was given corticosteroid elsewhere with no improvement of symptoms. On examination, patient had gross proptosis, chemosis, and bilateral superotemporal orbital mass. Incision biopsy via anterior orbitotomy revealed extramedullary myeloid tumor. Bone marrow aspirate smears revealed the presence of 72.5% myeloblasts, and the diagnosis of orbital MS concurrent with AML was made. The patient was started on chemotherapy but ended with a poor clinical outcome.

Conclusions: Any ophthalmologist should consider acute myeloid leukemia before treating a rapidly progressing unilateral or bilateral exophthalmos. MS occurs in patient with AML, but it can also emerge before myeloproliferative diseases within a few months without signs of hematological illness at the time of bone marrow aspiration and biopsy at the initial diagnosis (isolated, primary, or non-leukemic MS). A timely identification of MS is crucial for the best clinical care, especially in these patients, since standard AML-type chemotherapy and/or allogeneic hematopoietic cell transplantation increase overall free survival.

Poster No.: PO-140
Panel No.: 140, Session: PO

Outcomes of Gamma-Knife Radiosurgery of Posterior Uveal Melanoma Unsuitable for Other Eye-Sparing Treatment: 10-Year Single-Center Experience

*First Author: Vera **YAROVAYA***
*Co-Author(s): Andrey **GOLANOV**, Valery **KOSTJUCHENKO***

Purpose: To present the results of gamma-knife radiosurgery (GKRS) of PUM unsuitable for other eye-sparing treatment modalities.

Methods: Since 2012, 37 consecutive patients aged from 14 to 78 years with PUM were treated with GKRS. These tumors were not indicated to other eye-sparing modalities available in Russia. Three patients had the only seeing eye. Tumor thickness was from 5.5 to 10.8 mm, mean 8.4 mm, basal diameter from 9.4 to 21.4 mm, mean 14.3 mm. GKRS irradiation doses were 30-40 Gy on 50% marginal isodose curve. Maximum doses on critical structures were calculated – lens (2.1-35.5 Gy, mean 10.7), ciliary body (5.1-53.0 Gy, mean 21.4), optic disc (3.4-62 Gy, mean 21.2 Gy), central retina (3.5-65 Gy, mean 24.8 Gy).

Results: Thirty-four eyes (92%) were preserved. Mean tumor regression was 53%. Retina reattached in all but 4 patients. Two tumors progressed and the eyes were enucleated. Two patients underwent surgical excision of the tumor 2 years after GKRS. Radiation complications included retinopathy (38%), optic neuropathy (26%), cataract (8%), vitreal and subretinal hemorrhages (11%), glaucoma (5%). One eye was removed because of phthisis bulbi. Vision increased in 13% of patients, unchanged in 31%, decreased in 56%. Two patients developed liver metastasis and died in 2 years after treatment, one patient died because of the second cancer.

Conclusions: GKRS is an effective alternative for removing the eye in patients with PUM when brachytherapy or surgical excision are not indicated. GKRS can save vi-sion in selective cases. Radiation complications were associated with large irra-diated

tumor volume and may be reduced by planning optimization.

Poster No.: PO-135
Panel No.: 135, Session: PO

Pilomatricoma, Tumor of the Hair: Unveiling the Story of a Ghost!

*First Author: Raghuraj **HEGDE***
*Co-Author(s): Niveditha **HANUMEGOWDA**, Prajwala **RAJASHEKAR**, Sundeep **SHETTY***

Purpose: The present study is aimed at demonstrating the varied clinical presentations and morphological features of Pilomatricoma. Pilomatricoma is a benign tumor from hair follicle matrix cells, usually originating on head, neck and upper extremities, rarely on trunk and lower extremities. Recent review of literature and increasing case reporting shows that this tumor may not be as rare as previously believed.

Methods: Four cases were involved in the study, out of which one is female and three are males, presenting with tumor in the periorbital region. Patients' detail history, complete ocular and systemic examinations were done with relevant investigations. All patients underwent excision and biopsy under local anesthesia and sent for histopathological examination.

Results: Presentations can vary widely and can be clinically misdiagnosed frequently into different entities. In our study the 4 cases were clinically diagnosed as basal cell carcinoma, infected chalazion, Pyogenic granuloma and epidermoid cyst but not as pilomatricoma. The pathognomic cells of Pilomatricoma are "Ghost cells". The duration of the masses varied from 20 days to 20 years but none of the clinical specimens were malignant.

Conclusions: This study illustrates that even with variable duration of presentation, the tumor is usually benign. The preoperative diagnosis of pilomatricoma is difficult due to lack of knowledge, and therefore, it is mostly misdiagnosed. The definitive treatment is complete surgical excision of the mass.

Poster No.: PO-125
Panel No.: 125, Session: PO

Plaque Brachytherapy for Ocular Melanoma in New Zealand: Preliminary Results of the Auckland Experience in 2005–2020

*First Author: Joevy **LIM***
*Co-Author(s): Akilesh **GOKUL**, Peter **HADDEN**, Charles **MCGHEE**, Stuti **MISRA**, Hannah **NG***

Purpose: To evaluate the clinical outcomes of plaque brachytherapy on the treatment of ocular melanoma in Auckland, New Zealand.

Methods: Retrospective, single-center cohort study of ocular melanoma treated with plaque radiotherapy from January 1, 2005 to December 31, 2020. Medical records were reviewed for demographics, tumor features, and clinical outcomes.

Results: A total of 199 cases were identified. The mean age at diagnosis was 63.2 ± 14.2 years. 106 (53%) cases were female, and 188 (94%) cases were of European ethnicity. Almost half (47%) of the cases were asymptomatic at presentation. The most common symptoms were photopsia and blurred vision. Presenting tumor features in the affected eye included mean Snellen visual acuity ≥6/12 (logMAR 0.26 ± 0.48), mean intraocular pressure 15.0 ± 3.7mmHg, mean largest tumor basal diameter 11.5 ± 3.5mm and mean apical thickness 3.5 ± 2.2 mm. The median time to treatment was 13 days (IQR 6–27 days). The mean follow-up was 9.5 ± 4.4 years and all-cause mortality was found in 57 cases (29%). The median survival time was 6.1 years; with 1 and 5-year overall survival probabilities of 96% and 78% respectively. Documented metastases occurred in 16 cases (8%) and the primary location of spread was to the liver.

Conclusions: Patients with small to medium-sized uveal melanomas receiving plaque radiotherapy in Aotearoa had comparable 5-year overall survival to the COMS (this study vs. COMS: 78% vs. 81%).

Poster No.: PO-132
Panel No.: 132, Session: PO

Sub-conjunctival Perilesional Interferon Alpha 2b in Treatment of Ocular Surface Squamous Neoplasia

*First Author: Kiran **KUMAR***
*Co-Author(s): Suresh Babu **GANGASAGARA**, Vandana **MAGANTY**, Neeraja **TG***

Purpose: To evaluate the safety and efficacy of subconjunctival Perilesional Interferon alpha 2b (IFNα2b) in the treatment of Ocular surface squamous Neoplasia (OSSN).

Methods: This is a prospective, nonrandomized interventional case series study of 68 patients with histological proven OSSN. Patients were given weekly subconjunctival/ perilesional injection of recombinant Interferon alpha 2b (IFNα2b) 3 million international units (IU) in 0.5 mL. Patients were followed up with clinical and photographical monitoring until complete resolution of tumor.

Results: A series of 68 eyes (68 patients) that were treated with perilesional, subconjunctival recombinant IFNα2b was taken. Clinical resolution of tumor occurred in 95.6 % (65/68) of cases. The median time for tumor resolution was 1.5 months (range 1- 3). In the time of follow-up (average, 9 months, range 2- 15 months), there have been no treatment failures or recurrences. Systemic side effect that was encountered was post-injection flu like illness for 2 days.

Conclusions: Interferons have emerged as a promising

therapeutic modality for the treatment of ocular surface squamous neoplasia. Subconjunctival/ perilesional Interferon injection can be used as safe alternative to topical treatment. It has the advantage of better patient compliance with fewer local side effects.

Poster No.: PO-137
Panel No.: 137, Session: PO

Successful Management of Extensive Bilateral Periocular Xanthogranuloma in Adult: A Case Report

*First Author: Karina **LUTHFIA***
*Co-Author(s): Mutmainah **MAHYUDDIN***

Purpose: To present a successful management of rare case of extensive bilateral periocular xanthogranuloma.

Methods: A 60-year-old female complained of multiple masses slowly growing on both upper and lower eyelids for 5 years before with additional gritty sensation. Similar masses were also observed on different parts of her body which were already in the care of a dermatologist and showed as xanthogranuloma in pathology examination. Other auxiliary test result shows hypercholesterolemia. On examination, there were extensive multiple yellowish nodular masses surrounding the eyelids with gravitational ptosis and narrower vertical fissure that mechanically altered the blinking function. Single-stage tumor excision and eyelid reconstruction were done in both eyes in the span of two months. Both eyelid masses were successfully removed in one piece, followed by upper lateral tarsal strip to tighten the horizontal ligament, advanced cheek flap to cover the lower lid, and temporal flap to cover the lower and upper lid. Post-auricular graft was also harvested to cover the remaining area. Additional surgery was done to thin the flap/graft and to create lid crease in both eyes one month after initial surgery.

Results: At three months after the surgery, both eyelids function well with vertical fissure measuring around 12 mm without observed ptosis. Both flap and graft were taken with acceptable cosmetic result.

Conclusions: Although rare, extensive periocular xanthogranuloma could cause gravitational ptosis and mechanical irritation to the eye, therefore debilitate patient's vision. Careful and timely surgical management is imperative, as also the management of risk factors such as hypercholesterolemia to avoid recurrence.

Poster No.: PO-124
Panel No.: 124, Session: PO

Uveal and Conjunctival Melanoma in New Zealand – A 21-Year Review

*First Author: Joevy **LIM***
*Co-Author(s): Alana **CAVADINO**, Akilesh **GOKUL**, Peter **HADDEN**, Charles **MCGHEE**, Stuti **MISRA***

Purpose: To investigate the incidence and survival of histologically confirmed ocular melanoma (OM) in New Zealand (NZ).

Methods: Epidemiological data on histologically confirmed eye melanoma between 01/01/2000 to 31/12/2020 were extracted retrospectively from the NZ cancer registry. The main outcome measures were patient demographics, incidence, trends, and survival.

Results: A total of 771 cases (1.6%) of OM were identified from 47,997 cases of all melanomas. Most OM cases were of European ethnicity, with only 3.6% Māori, 0.9% Asian and 0.5% Pacific Peoples. Half (50.8%) were female. The mean follow-up time was 6.7 ± 5.2 years. The mean age at diagnosis was 63.89 ± 14.57 years, and the mean age at diagnosis in Māori was on average 7.5 (95%CI: 2.1-13.0, p = 0.007) years lower than in Europeans. OM was predominantly found in the uvea (85.3%), of which 80.4% were in the choroid and 19.6% in the ciliary body/iris. The remaining OM cases arose from the conjunctiva (8.4%) and from ocular sites not specified (6.2%). The age-standardized incidence was 6.97 ± 1.10 per million NZ population per year, and no significant trend was observed over 21 years. The 1-, 5- and 10-year overall survival probabilities were 94.5%, 67.7% and 51.0%.

Conclusions: Consistent with international studies, OM in NZ predominantly occurs in patients with fair skin and light irises. The stable incidence should be interpreted in the context of advancing technology, which may have facilitated earlier detection, and therefore, treatment of smaller sized tumors that did not require tumor renewal.

Poster No.: PO-139
Panel No.: 139, Session: PO

Von Hipple-Lindau Disease: Ocular Manifestations and Management Outcomes

*First Author: Shaifali **CHAHAR***

Purpose: To describe ocular manifestations and management outcomes in patients of Von Hipple Lindau (VHL) disease.

Methods: To present a retrospective, interventional case series of VHL patients presenting with ocular disease to a tertiary eye care center between March 2018 to August 2022.

Results: The series included 14 eyes of 7 patients with VHL disease out of which 5(71.4%) were females and

all (100%) had bilateral presentation. Retinal capillary hemangioblastoma was seen in 12 (85.7%) eyes while 2 (14.2%) had juxta-papillary tumor. Modalities of treatment used included transpupillary thermotherapy, cryotherapy, intravitreal anti-VEGF injection and plaque brachytherapy in various combinations tailored for the cases with stable regression seen in all cases on follow-up. Systemic involvement was seen in 3 (42.8%) cases.

Conclusions: Von Hipple Lindau disease is a rare autosomal dominant phakomatoses with variable systemic manifestations. Retinal capillary hemangioblastomas are the most common tumors in the systemic spectrum and commonly the initial manifestation of this potentially life- threatening disease. This makes it imperative that clinicians identify these ocular lesions for early detection , counselling, close follow-up and proactive treatment of these cases. Various modalities of treatment are available for adequately treating retinal lesions providing good results to stabilize and also preserve vision in these cases.

Ophthalmic Epidemiology and Prevention of Blindness

Poster No.: PO-144
Panel No.: 144, Session: PO

A 3-Year Review of Cerebral Visual Impairment in Children in a Tertiary Hospital

*First Author: Sangeetha **THARMATHURAI***
*Co-Author(s): Jason **CHEAH**, Norhafizah **HAMZAH***

Purpose: Cerebral visual impairment is becoming the most common cause of visual impairment in children. It is becoming more common in developing countries due to increased survival rates of premature children and improved neonatal intensive care services. The purpose of this study is to evaluate the aetiology, associated neurological and ophthalmologic findings of pediatric cerebral visual impairment (CVI) at a tertiary care center.

Methods: The medical records of children attending the cerebral visual clinic between 2019 and 2020 at a national referral center were retrospectively reviewed. Data include demographics, aetiology, visual acuity, neurological and ophthalmological associations.

Results: A total of 148 children (111 blind, 111; 37 low visions, 37) were included in the study. The average age for low vision was 5.5 years and 4.3 years for the blind category. Principle causes of CVI include non-accidental injury (26%), hereditary (22%), periventricular leukomalacia (9%) and seizure (9%). Approximately 44% of CVI were avoidable with blindness seen in 74%. There were neurological impairments in almost all of the cerebral visual impairment children with developmental delay being the commonest cause. Strabismus was seen in 28%, refractive error in 26% and nystagmus in 17%.

Conclusions: Non-accidental injury was the most common cause of CVI in this study is an avoidable cause. Most patients have neurological and ophthalmological association.

Poster No.: PO-145
Panel No.: 145, Session: PO

Central Corneal Thickness and Primary Open-Angle Glaucoma: A Mendelian Randomization Study

*First Author: Skanda **RAJASUNDARAM***

Purpose: Traditional observational studies identify a reduced central corneal thickness (CCT) as being associated with the onset and progression of primary open-angle glaucoma (POAG). However, any inference from such observational data that CCT is truly a causal risk factor for POAG is undermined by confounding and reverse causation. This study used Mendelian randomization (MR) to investigate the causal effect of genetically proxied CCT on liability to POAG.

Methods: Summary genetic association data from the largest genome-wide association studies (GWASs) of CCT (N = 17,803) and POAG (Ncases = 16,677, Ncontrols = 199,580), respectively, were leveraged in an MR framework. MR uses genetic variants within an instrumental variable analysis to strengthen causal inference. By virtue of Mendel's Law of Segregation and Law of Independent Assortment, the inheritance of genetic variants is random. Furthermore, germline genetic variation is non-modifiable by the environment and temporally precedes the onset of clinical outcomes. In comparison to traditional observational studies, MR thus enables investigation of the causal effect of CCT on the risk of POAG in a manner that is less vulnerable to confounding and reverse causation.

Results: A thinner genetically proxied CCT was associated with an increased risk of POAG. A 0.35% increase in the odds of POAG was observed per micron decrease in genetically proxied CCT (p-value = 0.005, 95% CI = 0.11% to 0.60%). MR estimates were consistent across pleiotropy-robust methods.

Conclusions: These results provide genetic evidence to support a causal role for reduced CCT in driving liability to POAG.

Poster No.: PO-143
Panel No.: 143, Session: PO

Field Testing of Survey Protocol for Assessing Effective Cataract Surgical Coverage and Effective Refractive Error Coverage – Novel Indicators for Universal Eye Health Coverage

*First Author: Praveen **VASHIST***
*Co-Author(s): Sumit **GROVER***

Purpose: To assess prevalence and causes of avoidable visual impairment in the pilot district. To estimate the effective cataract surgical coverage (eCSC) and effective refractive error coverage (eREC) including presbyopia.

Methods: This was a cross-sectional, population-based survey conducted in pilot district of Gurugram among age 6 years and above population as per modified RAAVI (Rapid Assessment of Avoidable Visual Impairment) methodology. Presenting and pinhole visual acuity and near visual acuity was taken for each eye. Details about cataract surgery and spectacle use were also recorded for each individual.

Results: Prevalence of Blindness and VI in population aged ≥ 6 years (PVA <6/12 in better eye) was 4.2%. Major cause of Blindness and VI were Cataract (60%) and refractive errors (65.4%) respectively. eCSC in population ≥ 50 years was 61.8%. The eREC for distance vision was assessed among 6+ population and eREC for near vision was assessed in 35+ population. The eREC for distance was 59.83%. The eREC for near was 47.06%.

Conclusions: Field surveys to assess coverage data will provide valuable information on the effectiveness of eye health programmes and would assess which sectors of the community are failing to access cataract surgery. eCSC and eREC are important indicators for eye health and for monitoring progress towards UHC and attaining sustainable developmental goals.

Poster No.: PO-142
Panel No.: 142, Session: PO

Hand Grip Strength and Its Ocular Associations: Ural Eye and Medical Study

*First Author: Gyulli **KAZAKBAEVA***
*Co-Author(s): Mukharram **BIKBOV**, Jost **JONAS**, Songhomitra **PANDA-JONAS**, Ellina M. **RAKHIMOVA***

Purpose: To explore associations between the hand grip strength (HGS) as indicator of general health and ocular parameters and diseases.

Methods: The population-based Ural Eye and Medical Study included 5899 (80.5%) out of 7328 eligible individuals who underwent systemic and ophthalmological examinations including dynamometric HGS measurements.

Results: The study included 5381 (90.4%) individuals (age:58.6 ± 10.6 years; range:40-94 years) with HGS measurements. In multivariable analysis, a higher HGS correlated with better visual acuity (beta:0.05;p <0.001), longer ocular axial length (beta:0.02;p = 0.008), higher intraocular pressure (beta:0.03;p = 0.001) and lower prevalence of diabetic retinopathy (beta:-0.02;p = 0.006) after adjusting for younger age, male sex, Russian ethnicity, higher body height and waist-hip ratio, higher educational level, lower number of smoking package years, lower self-reported salt consumption, higher degree of processing meat, higher physical total score, higher serum concentration of hemoglobin, higher prothrombin index, lower leucocyte cell count, lower prevalence of non-alcoholic fatty liver disease, lower depression score, and lower prevalence of arthritis and previous falls. In that model, HGS was not correlated with the prevalence of any cataract (p = 0.24), nuclear cataract (p = 0.35), cortical cataract (p = 0.88), subcapsular posterior cataract (p = 0.87), any glaucoma (p = 0.57), open-angle glaucoma (p = 0.89), or angle-closure glaucoma (p = 0.69).

Conclusions: In addition to parameters such as lower physical activity, higher depression score and worse general health status, a reduced HGS is associated with visual impairment, shorter axial length, lower intraocular pressure and higher prevalence of diabetic retinopathy. HGS dynamometry or a handshake may give additional clinical information for the ophthalmologist about the general health and some ocular parameters of the patient.

Poster No.: PO-146
Panel No.: 146, Session: PO

Myopic Astigmatism Patients Especially in Young and Adult in Local Hospital of East Timor

*First Author: Lilia **AMARAL***

Purpose: To assess and to determine frequent etiologies of myopic patients and vision impairment in school-age and young adults in local hospital of Baucau, Timor-Leste.

Methods: Selection of medical status of patients to define children, young and adults. All the patients were come to eye clinic for eye consultations. Visual acuity measurements, cycloplegic retinoscopy, cycloplegic autorefraction, ocular motility evaluation, and examination of the external eye, anterior segment, media, and fundus.

Results: A retrospective study was conducted during one year of 132 eyes with pathologic myopia obtained from 66 patients (2 (2%) cases are postcataract surgery; 130 (98%) cases are by congenital and others chronic eye diseases). Those patients are more common between 17-25 years old and they are students in secondary school and university. 41 (31%) cases are myopic astigmatism with the rule; 36 (27%) cases myopic astigmatism against the rule; 22 (16%) cases are myopic with astigmatism oblique; 22 (16%) cases

are myopic simple and 11 (8%) cases with high myopic. Visual acuity of these patients is between 6/18 and 6/60. The hospital does not have any gratuity glasses and also non-government partnership to provide the glasses to the patients. The income of the patients also one of the reasons.

Conclusions: A refractive error, associated primarily with myopia, is a major cause of reduced vision in school-age in the local hospital. More causes of myopic astigmatism are by congenital and chronic aye disease. Efforts are needed to make existing programs, school screening and home visited to take more data for farther treatment.

Orbital and Oculoplastic Surgery

Poster No.: PO-160
Panel No.: 160, Session: PO

A Challenging Case of Penetrating Ocular Injury Resulting Intraorbital and Intracranial Foreign Body

*First Author: Anditta **SYIFARAHMAH***
*Co-Author(s): Trilaksana **NUGROHO**, Krisna **TSANIADI**, Raja **ERINDA***

Purpose: To present challenging case of penetrating ocular injury resulting intraorbital and intracranial foreign body adjacent to optic nerve.

Methods: A 49-year-old male patient came to the emergency unit after being hit by mouth of milk shark (Rhizoprionodon acutus) while diving. He complained of blurring vision, pain, and redness in the right eye following the trauma. His visual acuity was NLP and 6/6.6 in his right and left eyes, respectively. There was a subconjunctival bleeding, severe chemosis, mid-dilated pupils, negative pupillary reflexes and lower eyelid laceration which is thought to be the entry point of the foreign body. Immediate surgery was planned, the patient underwent exploration for foreign body removal, and eyelid reconstruction at the site of injury. The surgery is carried out in conjunction with the neurosurgery department to explore and remove foreign body in the intracranial section. The foreign body were found intraorbital adjacent to optic nerve. It also found retrobulbar and extending intracranial in the right middle fossa through the superior orbital fissure with the anterior end attached to the retrobulbar optic nerve and the posterior end attached to the right temporal lobe.

Results: Interestingly, the foreign bodies were also discovered next to the internal carotid artery but did not perforate it. All of the foreign bodies were successfully removed.

Conclusions: A thorough examination and imaging should be performed in cases of ocular injuries to identify the position, size, and type of the foreign body. Close monitoring is required for the patient to assess complication postoperatively.

Poster No.: PO-156
Panel No.: 156, Session: PO

A Peculiar Case of a Retained Air-Rifle Bullet as an Intraorbital Foreign Body

*First Author: Meta **AN NAZZILA***

Purpose: To report a case of an air-rifle bullet as an intraorbital foreign body with concomitant full-thickness palpebral laceration and its management.

Methods: We evaluate the clinical diagnostic findings of a patient with a retained air-rifle bullet as an intraorbital foreign body (IOrFB) and full-thickness superior eyelid laceration which led to early surgical management.

Results: A 28-year-old male was brought to the emergency department after his right eye was struck by an air rifle bullet 8 hours before his arrival. A bullet went through from the right nostril to the right eye causing pain, bleeding, tearing, swollen right eye, markedly decrease vision, and eyelid laceration. Before being referred, a plain head X-ray and situational sutures of the right eyelid were done at the local hospital. Examination showed superior palpebral hematoma accompanied by a full-thickness eyelid laceration with situational sutures, subconjunctival hemorrhage, diffuse hyphema, and decreased light reflex. Non-contrast head CT showed corpus alienum with metallic material density in front of the right ocular bulbous with a diameter of 0.6 cm. Immediate foreign body extraction surgery with C-Arm fluoroscopy guiding and repair of superior palpebra was done and followed with intravitreal and subconjunctival injections. This patient was followed up for one month postoperatively, the vision was getting better with vitreous hemorrhage observed.

Conclusions: Suspicion of foreign bodies in any trauma cases with high velocity should be maintained. Immediate medical and surgical removal of IOrFB may result in optimal visual and anatomical outcomes.

Poster No.: PO-157
Panel No.: 157, Session: PO

Affordable and Open-Source 3D Printed Hertel Exophthalmometer for Increased Accessibility

*First Author: Mohammad **WASIM***
*Co-Author(s): Mason **KRAUSHAR**, Michael **KRYSHTALSKYJ**, Michael **MAK**, David **PLEMEL***

Purpose: Commercial exophthalmometers are costly, which prevents widespread availability in developing

countries. We describe our design for a cheap 3D printed Hertel exophthalmometer to increase accessibility in areas of need.

Methods: Our design for the Hertel alternative had to meet two main requirements; firstly, it had to be constructed with a durable but affordable material, that was safe to sanitize. Secondly, it needed to be accurate in the axial positions of the eye when compared to commercial exophthalmometers. To accomplish this, we utilized 3D printing and commonly available materials, such as mirrors. This model was drafted on Solidworks. Using Polylactic acid filament on the Prusa MKS3+ printer, we printed the bases. Afterwards, we engraved medium density fibreboard and cut two mirrors from a sheet of mirror. The pieces were connected with superglue and screws.

Results: Physical models will be displayed. The 3D printed exophthalmometer cost approximately $5.00 CAD. Parts were attainable at the engineering department at the university and a glass cutting store. The 3D printed Hertel was reported to be sturdy and mimic the use and handling of the official. Recruitment to compare this device to its commercial counterpart is underway; approximately 50 patients will be recruited, and measurements will be obtained by an oculoplastic specialist. Comparative statistics will be applied through the Bland-Altman approach to measure agreement.

Conclusions: This functional 3D printed Hertel allows for a cheap and accurate alternative to the official Hertel. We hope to release this as an open-source design for adoption in low resource settings.

Poster No.: PO-155
Panel No.: 155, Session: PO

Choroidal Melanoma: A Case Series

*First Author: Chia Yaw **TEOH***
*Co-Author(s): Wan Mariny **KASIM**, Norlaila **TALIB***

Purpose: To report cases of choroidal melanoma and the outcome in 2021 to 2022.

Methods: Retrospective case series from 2021 to 2022.

Results: Seven patients with choroidal melanoma were reviewed. There were six females and one male with mean age of 60 years old. Five were Malay and two were Chinese ethnics. One of the patients has naevus present at bilateral eyelid and conjunctiva before diagnosis of choroidal melanoma. The presenting complaints were decreased vision (n=5), visual field defect (n=2) and mass (n=3). The tumor thickness ranged from 10.0 to 28.0 mm (mean=16.8mm). Two patient was noted to have high LDH level. Two cases had exudative retinal detachment. Five patients had undergone enucleation and two patients undergone exenteration. The histopathological examinations showed four cases of epitheliod cells, two with mixed features and one pending result. All patients were well under regular follow-up. Two patients have extraocular extension while one has liver metastasis. One patient had recurrence malignant melanoma. Average diagnosis to treatment time was 97 days.

Conclusions: There were increasing cases of late-stage choroidal melanoma in during COVID pandemic. One third of patients with choroidal melanoma have metastasis. Most cases of choroidal melanoma follow typical presentation and findings. Awareness of choroidal melanoma should be raised to prevent late disease and hence reduce morbidity and mortality of patient.

Poster No.: PO-161
Panel No.: 161, Session: PO

Congenital Lower Eyelid Coloboma: Clinical and Surgical Management

*First Author: Amalia **HAPSARI***
*Co-Author(s): Najatullah **NAJATULLAH**, Trilaksana **NUGROHO***

Purpose: Congenital eyelid coloboma is an uncommon, unilateral or bilateral, partial or full-thickness eyelid defect caused by failure of fusion of the mesodermal lid folds. The purpose of this case report is to present the clinical and surgical management of patient with congenital coloboma of the lower eyelid.

Methods: A case report of a 5-month-old patient with congenital lower eyelid coloboma and facial cleft who underwent eyelid defect and facial cleft surgeries. The clinical evolution was monitored from the time patient attend to hospital to the present day.

Results: A 5-month-old baby girl, presented with right lower eyelid coloboma from birth. Unilateral lower eyelid coloboma involving the medial two-third of the lower eyelid margin. Ocular examination revealed scleral show, corneal exposure and symblepharon. This patient had sustained facial cleft Tessier No.4. The lower eyelid defect was repaired in three stages. The first reconstruction of lower eyelid coloboma was performed using Hughes procedure with full thickness skin graft. Combined surgery with Plastic Surgery was performed in order to correct facial cleft. Second surgical procedure needed to separate the flap followed by canthotomy and cantholysis. The third surgery was aimed to correct the eyelid defect with reconstruction using cartilage graft. A good cosmetic result was achieved from the treatment, but the eyelid function needs to be evaluated.

Conclusions: Eyelid colobomas are potential threat to vision at an early age, which requires close monitoring. The surgical technique and timing of surgery is necessary for good visual, cosmetic and functional outcome.

Poster No.: PO-237
Panel No.: 237, Session: PO

Curcumin as an Adjunct in Treatment of Thyroid Associated Ophthalmopathy

*First Author: Swati **GOYAL***

Purpose: To assess changes in diffusion weighted MRI of orbital muscle, tear film and corneal hysteresis after the administration of curcumin.

Methods: A prospective interventional data analysis was conducted on 17 cases of varying severity of thyroid-associated ophthalmopathy over a 6-month period. Radiological reduction in apparent diffusion coefficient (ADC) was the main outcome parameter. Pre- and post-curcumin corneal hysteresis, precorneal tear film were also analyzed. Follow up for outcome parameters was done at the third month and the sixth month.

Results: At the end of the sixth month, significant reduction in ADC of orbital muscles was noted. Precorneal tear film improved, analyzed by significant increase in Tear film break uptime (<0.05). Corneal hysteresis also improved post-administration of curcumin.

Conclusions: Objective evidence of reduced ADC makes curcumin an effective adjunct modality in treatment of thyroid-associated ophthalmopathy.

Poster No.: PO-152
Panel No.: 152, Session: PO

Discovery of Hidden Cure; Similarities Between Two Cases of Recurrent Orbital Abscess

*First Author: Aini Aniz Izzuani **ARIDAN***
*Co-Author(s): Wan Mariny **KASIM**, A.r **ROSNIZA**, Norlaila **TALIB**, Nurul Nadiah **WAHID ALI***

Purpose: Orbital abscess is an ophthalmic emergency which usually requires surgical intervention. This study aims to highlight the necessity of finding a secondary cause in cases with recurrent orbital abscess to ensure complete resolution.

Methods: To present a case series.

Results: This study involves 2 cases, in which both patients sustained open wound via eyelid laceration after a motor-vehicle accident. Toilet and suturing were done in both cases, however both the patients developed eyelid swelling few days after trauma. Orbital CT scan in both cases showed orbital abscess, however patient from case 1 had also developed orbital compartment syndrome. Case 1 underwent endoscopic orbital decompression and foreign body removal, whereas case 2 underwent incision and drainage. Despite intravenous antibiotics, both patients failed to respond effectively. A repeat radiological imaging for both patients showed recurrence of orbital abscess with possible retained foreign body. Surgical intervention was opted for both patients again. In case 1, a wooden foreign body was found, measuring 20mmx0.5mm. In case 2, a foreign body measuring 30mmx7mm was removed together with other small pieces of foreign body.

Conclusions: It is of utmost importance to ensure that proper and detailed history taking is done in trauma cases, to rule out the likelihood of having orbital foreign bodies. This is for prevention of secondary infection which may lead to recurrent abscesses. Any history of recurrent orbital abscess post trauma should alert us of the possibility of a retained foreign body.

Poster No.: PO-148
Panel No.: 148, Session: PO

Efficacy of Intralesional Bleomycin in Treatment of Orbital Lymphangiomas

*First Author: Sindhuja **MURUGESAN***
*Co-Author(s): Dr.Viji **RANGARAJAN***

Purpose: To study the effectiveness of intralesional bleomycin injection in orbital lymphangiomas.

Methods: Sixteen patients diagnosed with orbital lymphangiomas were included in this prospective interventional study. Patients underwent detailed ophthalmological examination and MRI was done. Serial photographs were documented throughout the treatment. Informed written consent was taken from all patients. All of them received intralesional bleomycin injection at a dose of 0.5mg/kg body weight (maximum 15mg) along with 2% lignocaine. The volume injected into the lesion was proportional to the volume of the aspirate from the lesion but did not exceed 5 mL at a session. For deep intraconal lesions ultrasound guided injection was given. Pupillary reactions and visual acuity were checked after a couple of hours following injection. Patients were reviewed on the first day postoperatively and at 2 weeks. Repeat injections were given once in every 4 weeks. Treatment was discontinued after a maximum of 3 injections or when no sign of resolution was noticed clinically.

Results: Out of the total 16, 10 were females and 6 were males. Five patients were in the pediatric group. Proptosis and lid swelling was the common presenting sign. All patients were treated with 2-4 injections of bleomycin. The follow up period ranged from 6-18 months. 11 patients had complete resolution, 3 patients had poor response and required surgical excision and 2 patients had recurrence. No long-term or systemic complications were noted.

Conclusions: Intralesional bleomycin therapy is an effective and safe method of treatment of orbital lymphangioma without any significant ophthalmic or systemic side effects.

Poster No.: PO-150
Panel No.: 150, Session: PO

Excellent Combination of Glabellar and Tenzel Semicircular Rotational Flap in the Reconstruction of Eyelid After Wide Excision of Nodular Basal Cell Carcinoma

*First Author: Yessi **SARI***
*Co-Author(s): Banu **DIBYASAKTI***

Purpose: To report a case of the management of eyelid reconstruction after wide excision due to nodular basal cell carcinoma with a combination of Glabellar and Tenzel Semicircular Rotational Flap.

Methods: A 68-year-old male patient presented with growing mass in the inner corner of his left eye for 6 months prior. A pink-colored lesion measuring approximately 10 x 12 mm with pearly edges and telangiectasia was seen in the left medial canthal region, extending into the nasal sidewall. Ulceration, bleeding and peripheral keratosis were also present. No ocular symptoms such as blurred vision or restriction of ocular motility were reported. CT scan results showed tumor was confined to the skin, without infiltration to other structures such as eyeball or bone. The tumor was removed using wide excision extending until 5mm from tumor margin. The upper eyelid reconstructed using Glabellar Flap while Tenzel Semicircular Rotational Flap was used to reconstruct the lower eyelid. Biopsy revealed nodular basal cell carcinoma with keratotic component. Radiotherapy was given to the patient as adjuvant therapy.

Results: One year follow up, there was no sign of recurrence. The concavity of the medial canthus was achieved. Patient was able to preserve normal function of the eyelid as well as acceptable cosmetic appearance.

Conclusions: The reconstruction of eyelid using a combination of Glabellar and Tenzel Semicircular Rotational Flap after wide excision of nodular basal cell carcinoma showed excellent functional and anatomical outcome.

Poster No.: PO-164
Panel No.: 164, Session: PO

Improvement of Brow Symmetry with Botulinum Toxin Injections: A Longitudinal Study

*First Author: Pallavi **SINGH***
*Co-Author(s): Robert **GOLDBERG**, Jason **STRAWBRIDGE***

Purpose: The purpose of this study is to describe patients who received asymmetric injection patterns for uneven brow position and demonstrated an improvement in brow symmetry over long-term follow-up.

Methods: Institutional databases records were reviewed to identify asymmetric botulinum injection patterns in patients. Image J was used to measure the brow position at the medial, lateral, central and highest point of the eyebrow from a horizontal line passing through both medial canthi. Data was extracted regarding the injection pattern at each visit. Digital measurements were taken prior to initial injection and following achievement of symmetrical injection patterns. All photographs were taken at least >4 months after the last botulinum injection to ensure drug washout. The point of maximal asymmetry between the right and left eyebrow at the beginning of the treatment was compared to the corresponding point after treatment.

Results: A total of 14 patients were included. 13 females and one male. At the first injection, the mean asymmetry of the botulinum toxin pattern was 4.5 + 2.0 units which became symmetrical over 71 + 38 months. All patients received 1-4 treatments per year. The mean eyebrow asymmetry at the beginning of the treatment was 3.2 +1.0 mm which improved significantly to 1.0 + 0.9 mm at the last visit ($p = 0.002$).

Conclusions: Our study suggests that patients with an asymmetric brow position may become more symmetrical over time with treatment. Improvements in symmetry are possibly due to cumulative effects on the motor end plates of muscle fibers. Another explanation could be central retraining of asymmetric frontalis activation.

Poster No.: PO-162
Panel No.: 162, Session: PO

Minimally Invasive Levator Resection Versus Conventional Levator Advancement Surgery in Management of Aponeurotic Ptosis

*First Author: Sharmin **AHMED***
*Co-Author(s): Mahziba **CHOWDHURY**, Golam **HAIDER***

Purpose: The aim of this study is to compare minimally invasive levator surgery and conventional levator advancement surgery through the transcutaneous approach in the management of aponeurotic ptosis.

Methods: It was a case series study of all aponeurotic ptosis of upper eyelid at a tertiary care center in Bangladesh from 2016 (July) to 2018 (December). Total 50 cases of aponeurotic ptosis were enrolled. Meticulous history taking, clinical examination was done to evaluate type of ptosis. Levator advancement surgery and minimally invasive levator surgery through the transcutaneous approach was performed in 50 aponeurotic ptosis and followed up for 6 months.

Results: Of them, Male 46% were male and 54% were female with age range from 15 to 80 years. Where 38% was right eye, 46% was Left eye and 16% involving both eyes. Among all cases, we had 16% mild, 52% moderate and 32% severe ptosis with 12% fair, 72% good & 16% normal LPS function. In our study majority

of our patient had (96%) full OM, (86%) doesn't obey herring's law, (100%) good Bells Phenomenon, (100%) doesn't had MGJW phenomenon & (100%) negative ice test. Levator advancement was performed in 70% cases, and minimal invasive levator resection was done in 30% cases. The ultimate outcome was good in minimal invasive levator surgery than levator advancement.

Conclusions: For aponeurotic ptosis correction, the levetor resection surgery is effective in all type of ptosis but the minimally invasive levator surgery technique is effective in mild & moderate type of ptosis with good levator action.

Poster No.: PO-151
Panel No.: 151, Session: PO

Non-Hodgkin Lymphoma of Lacrimal Sac in the Philippines: A Case Series

*First Author: Kryzka **MEDINA***
*Co-Author(s): Alexander **TAN***

Purpose: This study reports three cases of lacrimal sac lymphoma, a rare disease entity, in the Philippine population. Review of common clinical features and presentation in life-threatening illnesses are important to allow early diagnosis and treatment. This study also discusses the management and outcomes of lacrimal sac lymphomas in the setting of a low-income country.

Methods: In this retrospective case series, three cases (one male, two females; mean age: 59.3 years) of non-Hodgkin lacrimal sac lymphoma seen in a state-supported tertiary hospital in the Philippines were include. Clinical features and diagnostic findings were collected and reviewed. Treatment outcomes for two of the three cases were also included.

Results: All patients presented with non-bloody epiphora and a medial canthal mass that extends above the medial canthal tendon. Imaging studies revealed a lacrimal sac mass with orbital and nasolacrimal duct extension. Histopathological findings and preliminary immunohistochemistry studies revealed three cases of Non-Hodgkin B Cell lymphoma, two case were subclassified into Diffuse Large B Cell Lymphoma. One case was treated with systemic chemotherapy alone while the other case was treated with a combination of radiotherapy, chemotherapy, and immunotherapy. The remaining patient is still for complete systemic work and initiation of treatment.

Conclusions: A high index of suspicion allows early diagnosis of lacrimal sac tumors in the presence of epiphora and medial canthal mass even in the absence of pain or bleeding. Multidisciplinary management in necessary for appropriate staging and management. Combination therapy is an effective treatment for non-Hodgkin lacrimal sac lymphomas.

Poster No.: PO-154
Panel No.: 154, Session: PO

Normal Values of Hertel Exophthalmometry in a Javanese Population From Southern Java Region

*First Author: Andi Ashady **PAWALLANGI***
*Co-Author(s): Banu **DIBYASAKTI**, Agus **SUPARTOTO**, Purjanto **UTOMO**, Irene **DARAJATI***

Purpose: Many orbital diseases can cause proptosis, including thyroid-associated orbitopathy, tumors, inflammation, head and orbital trauma, and craniofacial abnormalities. Therefore, when evaluating the results of measurements, the normal exophthalmometry value range in a specific population must be taken into consideration. Aims of this study were to determine the normal range of absolute and relative Hertel exophthalmometric values (EVs) in a Javanese population.

Methods: This population-based cross-sectional study consisted of 300 healthy Javanese (154 females and 146 males) aged between 18–62 years living in Southern Java Region. The data taken in Sardjito General Hospital Yogyakarta. A Hertel exophthalmometer was used by one physician for the measurement of EV and Intercanthal distance (ICD).

Results: For the entire study population, the Hertel EVs ranged from 16 mm to 19 mm; the mean EVs for the left eye (OS) and right eye (OD) were 17.41 ± 0.9 mm and 17.39 ± 0,9 mm, and Intercanthal distance was 116.5 ± 1.86 mm.

Conclusions: We concluded that our study provides normative ophthalmic data in a Javanese population. The normal EVs, asymmetry and ICD values have been established for clinical reference.

Poster No.: PO-153
Panel No.: 153, Session: PO

Not Just an Ordinary Phthisical Eye: A Rare Case of Left Ciliary Body Adenocarcinoma

*First Author: Sai Priyalatha **MARIAPAN***
*Co-Author(s): Mae-Lynn catherine **BASTION**, Gowri **SUPRAMANIAM**, Wan Mohd Hafidz **WAN ABDUL RAHMAN**, Atiqah **WAN KHAIRUZZAMAN***

Purpose: To describe the clinical presentation and histopathological features of ciliary body adenocarcinoma.

Methods: To present a case report.

Results: A 35-year-old gentleman with childhood left eye (LE) blindness presented with LE throbbing pain, redness and glaring for a few months. Examination of the left eye revealed injected conjunctiva with chemosis, opaque bulging cornea, and raised intraocular pressure (IOP) with appearance of phthisis. He was admitted for urgent imaging and LE

evisceration. Plain computed tomography (CT) of orbits showed left phthisis bulbi complicated with orbital and periorbital cellulitis. The histopathological findings of eviscerated tissue sample revealed malignant epithelial tumor with features suggestive of adenocarcinoma of ciliary body. Immunohistochemical study showed tumor cells diffusely positive for PanCK and focal positive for CK20. The Contrast-enhanced CT of brain, orbit, thorax and abdomen reported left ocular mass likely from ciliary body with no evidence of distant metastasis. The tumor markers were otherwise within normal range. He subsequently developed left eyelid swelling 4 months after evisceration and had Magnetic resonance imaging (MRI) of orbits done which revealed residual tumor with local infiltration and a bulky left lacrimal gland. The patient was referred to oculoplastic team and underwent exenteration and is currently recovering well.

Conclusions: Adenocarcinoma of the ciliary body is indeed a diagnostic challenge. High suspicion, appropriate laboratory, histopathological, immunohistochemical and imaging studies are required to aid in the management of these cases.

Poster No.: PO-149
Panel No.: 149, Session: PO

Ocular Management of Haberland Syndrome: A Rare Case Report

*First Author: Berlian **HAPSARI***
*Co-Author(s): Datu **RESPATIKA***

Purpose: To report a rare case and ocular management of Haberland syndrome.

Methods: The constellation of these clinical and imaging findings led to a diagnosis of encephalocraniocutaneous lipomatosis.

Results: Haberland syndrome or Fishman syndrome also known as encephalocraniocutaneous lipomatosis (ECCL) is a rare, congenital neurocutaneous disorder. It is characterized by unilateral involvement of skin, eyes and central nervous system. A 12-years-old boy presented with mass in his right eye since birth. Ocular examination of the right eye showed hyperemic mass of bulbar conjunctiva with limbal dermoid, conjunctivalization of the corneal, and coloboma of iris. Dermatological examination showed alopecia, nevus psiloliparus, focal dermal hypoplasia on forehead, focal aplastic lesions on the scalp, skin tag at canthus, and lipoma in the fronto-temporal region. Computed tomography scan finding arachnoid cysts. The management consist of excision of the conjunctival mass, eyelid multiple noduls, lateral canthoplasty. There was no surgical intervention from Neurosurgery Department, and only observation from Dermatovenerology Department.

Conclusions: We discuss the ocular management, histopathological features, other associated symptoms, and the pathogenesis of ECCL in a child.

Poster No.: PO-163
Panel No.: 163, Session: PO

Orbitotomy for Primary Orbital Tumors in National Referral Center in Indonesia: Review and Outcome of 4 Years

*First Author: Andi **PRATIWI***
*Co-Author(s): Neni **ANGGRAINI**, Mutmainah **MAHYUDDIN***

Purpose: To describe the characteristic and functional outcome of 136 various primary orbital tumors after different orbitotomy approach for tumor excision in the National Referral Center in Indonesia.

Methods: We described and analyzed patients with primary orbital tumor who underwent either anterior or lateral orbitotomy from January 2018 to December 2021, and studied the postoperative visual impairment, ptosis, ocular movement and pupillary disturbance.

Results: The most common type of tumor were optic nerve and meningeal tumor (28.4%), followed by orbital cystic lesion (19.6%). Most tumor were located at extraconal (60.8%), followed by intraconal (18.6%) and both compartment (10.8%). Anterior orbitotomy was predominantly performed for orbital cystic lesion (40.5%) transcutaneously and for peripheral nerve tumor (46.7%) transconjunctivally. Lateral orbitotomy with and without osteotomy were the main approach for optic nerve and meningeal tumor (36.8% and 66.7%, respectively). Extraconal tumors was most frequently managed via anterior transcutaneous approach (50%), followed by lateral approach with osteotomy (22.6%). Most tumors located at intraconal space were managed with lateral orbitotomy with osteotomy (78.9%). Amid 39 patients with decrease in vison postoperatively ($p = 0.043$), 23 cases were analyzed as Postoperative Severe Visual Impairment (PSVI) in which lateral orbitotomy with osteotomy contributed to 56.5% occurrences ($p = 0.069$), and intraconal tumor location has the highest incidence (21.7%). Ptosis, ocular movement and pupillary disturbance were found in all types of surgery, but not statistically significant.

Conclusions: Orbital tumors adversely affected functional outcome, its characteristic and location provide the surgeons with important information for orbitotomy approach strategy, as well as predicting the prognosis.

Poster No.: PO-158
Panel No.: 158, Session: PO

Spectrum of Orbital Cellulitis: A Case Series

*First Author: Kah Suen **LENG***
*Co-Author(s): Soh Yee **CHONG**, Wan Mariny **KASIM**, Gunavathy **NANDAKUMAL***

Purpose: Our aim is to describe four distinct cases of

orbital cellulitis along with its management approach and the outcome.

Methods: To present a case series.

Results: Here, we report a case series of four patients, age ranging from 7 to 60 years old who presented with painful swollen eye, clinically suspicious of orbital cellulitis. We proceeded with contrast-enhanced computed tomography (CECT) orbit, paranasal sinus, brain which confirmed the diagnosis and revealed subperiosteal abscess in three patients. On presentation, one patient had developed complication of orbital cellulitis which is cavernous sinus thrombosis. Surgical intervention was carried out for all the patients, ranging 10 hours to 3 days from the time of presentation, which has yielded a favorable outcome. On follow up at three months, all the patients had complete resolution of signs and symptoms of orbital cellulitis.

Conclusions: In our experience, it is important to have a high index of suspicion when diagnosing orbital cellulitis. Visual morbidity can be prevented when it is treated aggressively without delay.

Poster No.: PO-147
Panel No.: 147, Session: PO

Superimposition Study to Determine Angular Arterial Distribution and Its Clinical Application

*First Author: Hyun Jin **SHIN***

Purpose: To determine the distribution of the angular artery (AA) in the medial canthal area with the aim of defining an arterial course to prevent AA injury during facial surgery in this region.

Methods: We dissected 36 hemifaces of 18 cadavers. The horizontal distance from the vertical level through the medial canthus to the AAs was measured. The AA course of each specimen was then recorded, and all of them were then superimposed to determine the AA course. The diameter and depth of the AA around the medial canthal area were also investigated using ultrasonography on living subjects.

Results: The horizontal distances from the medial canthus level and 2 cm below the medial canthus were 9.0 ± 2.0 mm (mean ± standard deviation) and 1.9 ± 2.4 mm, respectively. The superimposed image demonstrated that most of the AAs were present inside the vertical line through the medial canthus. Ultrasonography indicated that the AA was 2.3 ± 0.9 mm below the skin and 1.7 ± 0.3 mm in diameter.

Conclusions: The AA course was relatively constant along the nasojugal fold. The AAs were most often present between the middle of the medial canthus and the facial midline but were very scarce in both the medial and lateral thirds. Knowledge of the detailed course of the AA may help oculofacial surgeons to avoid arterial injury and decrease the risk of surgical morbidities around the nasal root and medial canthal area.

Poster No.: PO-159
Panel No.: 159, Session: PO

White Eyed Blow Out Fracture: An Easily Missed Diagnosis

*First Author: Aniana Katherine **NICANOR***
*Co-Author(s): Ma.Regina Paula **VALENCIA***

Purpose: "White-eyed blow out fracture (WEBOF)» is a term used for children who had periorbital trauma with mild signs of soft tissue damage. WEBOF can be easily missed, resulting in a lost opportunity for surgical intervention.

Methods: A pediatric patient presented with vomiting and diplopia after sustaining trauma, she was referred to our institution 2 weeks after a suspected head injury. Examination showed marked limitation on upgaze and downgaze on the right eye with accompanying diplopia. CT scan of the orbits revealed a right orbital floor fracture, with herniation of orbital fat and a mildly thickened right inferior rectus muscle. Patient underwent repair of orbital floor fracture and release of muscle entrapment with silicone implant under general anesthesia.

Results: The patient was referred to our institution Day 14 postinjury while surgical intervention was done on Day 18. Although release of muscle entrapment and repair of floor fracture was achieved, EOM underaction on vertical gaze and diplopia persisted. This finding supports the study of Yamanaka et al. which states that surgical repair within 8 days from injury fared better in terms of postoperative diplopia. The persistence of diplopia in our patient also supports the study of Yew et al, wherein persistent diplopia was the most common complication of WEBOF patients.

Conclusions: Timely diagnosis and intervention of WEBOF is important, not only to reverse the oculocardiac reflex but also to minimize the possibility of permanent ischemic injury and contracture of the involved extraocular muscle, which could lead to long-term strabismus and diplopia.

Pediatric Ophthalmology and Strabismus

Poster No.: PO-167
Panel No.: 167, Session: PO

A New Technique of Y-Splitting of Inferior Oblique Muscle to Minimize the Anti-elevation Syndrome: A Pilot Study

*First Author: Amar **PUJARI***

Purpose: To describe the novel Y-splitting procedure of inferior oblique muscle to mitigate the anti-elevation syndrome.

Methods: A pilot, prospective interventional study was undertaken to assess the effect of inferior oblique muscle Y-splitting procedure in patients with unilateral 3+ or more overaction. To correct the primary gaze hypertropia and excyclotorsion, a Y-splitting procedure was performed (along with routine horizontal muscle surgery as per the deviation).

Results: The mean age of 14 subjects was 25.14±7.70 years. The mean pre-operative hypertropia, excyclotorsion and inferior oblique muscle over-action was 18.42±3.50 PD, 14.14±2.65 degrees, and +3.21±0.42 respectively. Following surgery this was reduced to 1.57±1.74 PD of residual hypertropia (a net correction of 16.85±2.31 PD, p = 0.005), 3.85±1.46 degrees of residual excyclotorsion (a net correction of 10.28±1.72 degrees, p <0.05), and +0.28±0.46 of residual inferior oblique over-action (a net correction ~+3) at the end of 6 months. Amongst fourteen, three patients experienced residual/variable anti-elevation effect. During study period, none of the patients developed any adverse events and none required any additional surgeries.

Conclusions: While anteriorizing inferior oblique muscle to correct the primary gaze hypertropia and excyclotorsion, a simple "Y splitting" procedure can be followed to achieve the desired results with mitigated anti-elevation effect.

Poster No.: PO-186
Panel No.: 186, Session: PO

Acquired Monocular Nystagmus in Pilomyxoid Astrocytoma

*First Author: Qi Xun **LIM***
*Co-Author(s): Tin Kj **CHAN**, Nikki **HALL**, Katherine **ORR**, Alexandre **STAN***

Purpose: Acute onset monocular or asymmetric nystagmus is rare in the pediatric population. This tends to be seen in children in three scenarios: monocular visual loss; spasmus nutans; or as a presenting feature of an chiasmal/midbrain lesion. Optic pathway glioma (OPG) accounts for 20% of pediatric brain tumor in patients younger than 2 years old with pilocytic astrocytoma as the main type. We aim to report a rare case of acute monocular nystagmus in a 4-month-old girl whose radiological and histopathological findings confirmed a diagnosis of pilomyxoid astrocytoma, a rarer and more aggressive subtype of OPG.

Methods: Details of history and examination, imaging results and histopathology report including immunohistochemistry and molecular analysis were obtained from the patient's digital clinical record.

Results: A 4-month old girl presented initially with a right monocular nystagmus with no other ocular findings. Subsequent investigations showed radiological findings of a highly aggressive brain tumor in the suprasellar region with widespread metastases in the posterior fossa, Circle of Willis, intracranial optic nerves and in C2, C6 and C7 spinal canal. Histopathology confirmed features in keeping with pilomyxoid astrocytoma. The patient underwent debulking surgery, ventriculoperitoneal shunt insertion and chemotherapy. Despite this, the disease progressed, and she sadly passed away 5 months after initial presentation.

Conclusions: This case highlighted the importance of neuroimaging in children presenting with acquired monocular nystagmus especially in those younger than 2 years old, even if optic discs appear healthy on examination. There should be a very low threshold for suspecting OPG in the presence of asymmetrical nystagmus.

Poster No.: PO-182
Panel No.: 182, Session: PO

An Infant Case of Congenital Stromal Corneal Dystrophy Caused by a Novel Variant c.953del of DCN Gene

*First Author: Hazuki **MORIKAWA***
*Co-Author(s): Maki **FUKAMI**, Katsuhiro **HOSONO**, Yoshihiro **HOTTA**, Sachiko **NISHINA**, Kaoruko **TORII***

Purpose: Congenital stromal corneal dystrophy (CSCD) is caused by mutations in the decorin (DCN) gene. Decorin is distributed throughout the body including the cornea, where it plays a role in the assembly of collagen fibers and helps maintain corneal transparency. We present an infant case of CSCD confirmed by genetic analysis.

Methods: The patient was a 1-year-old girl with CSCD, who was followed for 2 years. A detailed ophthalmic investigation was conducted, and whole exome sequencing was performed on the patient and parents, who were not consanguineous.

Results: Both anterior segments were diffusely opaque over the corneal stroma and subepithelium. Swept-source optical coherence tomography conducted in both eyes showed hyperreflective zones consistent with corneal opacity from the subepithelium to the

stroma. A systemic investigation to rule out other diseases that cause diffuse corneal opacity in infants, such as congenital metabolic disorders and congenital infections, was negative. The corneal opacity in this infant did not progress for 2 years. The visual acuity was 0.03 bilaterally. Genetic analysis performed to counsel the parents about the recurrence rate identified a novel variant in the patient: c.953del: p.(N318Tfs*10) of the DCN gene.

Conclusions: Prompt genetic studies were useful to determine the diagnosis, causal gene, and hereditary mode. Genetic counseling also provided the parents with information about a second child being affected and also may contribute to treatment decisions for the patient.

Poster No.: PO-180
Panel No.: 180, Session: PO

Analysis of Stereopsis and Fusion in School-Aged Children With Reduced Visual Acuity Due to Refractive Error

*First Author: Hye Jun **JOO***
*Co-Author(s): Dong Gyu **CHOI***

Purpose: In patients with strabismus, the stereopsis and Worth 4-dot (W4d) tests have often been used to evaluate whether sensory fusion is achieved. However, if patients face difficulties undergoing the Titmus or W4d test because of poor visual acuity (VA) due to refractive error abnormalities, the results of these tests cannot be appropriately interpreted. Therefore, we evaluated the correlation between distance uncorrected visual acuity (UCVA) and sensory status in children with reduced visual acuity (VA) due to refractive error abnormalities in order to find the effects of refractive errors on sensory test results.

Methods: We retrospectively reviewed the medical records of 195 children with reduced VA at first visit, whose VA improved to ≥20/25, Titmus stereoacuity to ≤50 arcsec, and achieved fusion in W4d test results after refractive error correction with spectacles. We evaluated the correlation between distance UCVA in logMAR and sensory status measured by Titmus stereotest and W4d test. Additionally, the minimum required UCVA for interpreting Titmus or W4d results was assessed using a receiver operating characteristic (ROC) curve.

Results: The UCVA showed marginal, but no significant correlation with Titmus stereoacuity ($p = 0.053$), and significant correlation with fusion in W4d ($p < 0.001$). The ROC curve analysis showed an optimal cut-point value of VA required for interpreting the results of W4d test as 0.3 logMAR (20/40 in Snellen acuity).

Conclusions: Correcting refractive error in advance may help appropriately interpret sensory status in school-aged children with reduced VA due to refractive error abnormalities.

Poster No.: PO-178
Panel No.: 178, Session: PO

Birth-Related Retinal Hemorrhages in Healthy Full-term Newbornsns

*First Author: Xin Ying **LIM***
*Co-Author(s): Stephanie Evelyn **FONG**, Mohamad Israk **MOHAMAD ISA**, Shuaibah **AB.GHANI***

Purpose: To screen for common retinal changes among healthy term newborns, investigate the risk factors contributing to retinal hemorrhages (RHs) and determine their effect on refractive status.

Methods: This was a cross-sectional observational study. 398 healthy full-term newborns were recruited from October 2018 to March 2019 and underwent eye screening within 24 hours after birth. Cycloplegic refraction was carried out, followed by anterior segment examination and fundus examination using Wide Field Digital Retinal Imaging (RetCam3).

Results: Out of 398 newborns screened, 199 were delivered via spontaneous vaginal delivery (SVD) and 199 via cesarean section (CS). A total of 95 (23.8%) babies had RHs on fundus examination, with 78 (16.9%) born via SVD and 17 (4.3%) via CS. Among 20 babies born via instrument-assisted delivery (forceps or vacuum), 9 of them developed RHs. The study showed 6.90 times odds (p-value < 0.001) of RHs in babies born via SVD and 2.78 times odds (p-value 0.028) of RHs in instrument-assisted delivery. There was no significant association between other demographic factors and RHs. The difference in refractive status between newborn babies with and without RHs was insignificant.

Conclusions: Birth-related RHs are common among healthy term newborns. Mode of delivery remains an important predictor of RHs due to its significant association with SVD and instrument-assisted delivery. Refractive status in newborns was not affected by the presence of RHs. However, further studies are required to determine the long-term refractive outcome between newborns with and without RHs.

Poster No.: PO-179
Panel No.: 179, Session: PO

Case Report of a Large Muscle Cyst After Esotropia Surgery

*First Author: Tamami **SHIMIZU***
*Co-Author(s): Hiroshi **ENAIDA**, Akiko **HIKOYA**, Yoshihiro **HOTTA**, Miho **SATO**, Nobutaka **TACHIBANA***

Purpose: Muscle cysts are a rare complication of strabismus surgery. We report on a case of a left muscle cyst overlying the medial rectus muscle after bilateral medial rectus muscle recession and Faden surgery.

Methods: To present a case report.

Results: A 7-year-old girl underwent bilateral medial rectus muscles recession and Faden surgery under general anesthesia following diagnosis of acute acquired comitant esotropia. The surgical area was rinsed with poppidone-iodine at the start and at end of surgery. Three weeks later, a bulge appeared on the nasal side of the left eye. Corticosteroids and antibacterial drops were administered for 3 weeks to no effect, and the cyst was removed 7 weeks postoperatively. The conjunctiva over the cyst was easily peeled from the cyst but was strongly adherent to the sclera. A solid cyst measuring 11x8x4 mm was removed. However, 4 weeks later, the cyst recurred and was removed again 13 weeks later. A 5-0 polyester used during the Faden surgery was found at the posterior edge of the cyst. The pus-covered thread was removed along with the conjunctiva and the cyst, and an amniotic membrane graft was performed. Bacterial culture results were negative, and pathology results showed a cyst measuring 5x4x3 mm and inflammatory granulation tissue. No recurrence was observed 3 months after the second surgery.

Conclusions: The muscle cyst was most likely caused by a foreign body reaction to the sutures.

Poster No.: PO-166
Panel No.: 166, Session: PO

Characterization and Diagnostic Ability of Optic Nerve, Retinal, and Choroidal Changes Measured by SD-OCT in Childhood Glaucoma

*First Author: Zulvikar Syambani **ULHAQ***
*Co-Author(s): Aulia Abdul **HAMID**, Ferdi **KURNIAWAN**, Lely **WULANDARI***

Purpose: To investigate the changes of the optic nerve (ON), individual retinal and choroidal layers in childhood glaucoma and adult primary open-angle glaucoma (POAG) based on circumpapillary and macular images of spectral-domain optical coherence tomography (SD-OCT), in addition to the assessment of the diagnostic ability of each parameter in determining childhood glaucoma.

Methods: This study was conducted using retrospective and prospective designs involving 20 children with glaucoma and 25 adult patients with POAG. The changes in the ON and retina layers were compared with matched controls. In addition, the changes in all parameters were also evaluated in fellow eyes of glaucomatous children.

Results: Children with glaucoma tended to have a wider rim and had significantly shallow foveal depth than POAG. We identified that cpGC-IPL and PRL-RPE had a better performance in diagnosing childhood glaucoma than cpRNFL. Contrastingly, only cpRNFL was more useful in identifying POAG than other parameters. Our data pinpoint that circumpapillary analysis likely had better accuracy than macular analysis. Moreover, it was also worth mentioning that fellow eyes of glaucomatous children had similar results as the affected eyes.

Conclusions: Circumpapillary OCT imaging is a promising tool in managing children suspected of glaucoma. We have also demonstrated that the use of SD-OCT could be implemented in daily practice for diagnosing pediatric glaucoma by evaluating cpRNFL, GC-ICL, and PRL-RPE thickness. Additionally, retinal layer damage at the corresponding locations of the fellow eye is similarly detected in the glaucomatous eye. Future research with larger sample size is still needed to confirm this finding.

Poster No.: PO-177
Panel No.: 177, Session: PO

Clinical Diagnostic Dilemmas and Management Challenges of Acute Onset Esotropia In COVID-19 Pandemic

*First Author: Kirandeep **KAUR***
*Co-Author(s): Veena **KANNUSAMY***

Purpose: The purpose of our study was to describe the demographics, clinical profile, and treatment outcomes of patients with acute onset esotropia who presented to us during the COVID-19 era.

Methods: This was a retrospective case series of patients with AACE of undetermined etiology from June 2020-2022 at a tertiary eye care center. The demographics, clinical profile, investigations, and treatment outcomes were retrieved and analyzed.

Results: A total of 27 cases with a mean age of 9.1+/- 1.2 years were reviewed. Male: female ratio was 4:1. Diplopia was present in 9 (33.3%) cases. The mean duration of complaints was 1.8+/- 0.2 months. Excessive mobile usage was present in 14 (51.8%) patients. The mean deviation for distance was 38.71+/- 2.1, and near was 37.30+/- 1.7 prism diopters. One patient resolved fully with patching. Five patients underwent surgical correction. Three of these with less than one-month duration of presentation recovered binocularity post-surgery. Imaging revealed pathology in 2 patients, and 3 had evidence of periventricular leukomalacia.

Conclusions: Neurological associations and perinatal insult should always be ruled out. Early correction, either surgically or with prims or botulinum, can preserve binocularity in these cases.

Poster No.: PO-170
Panel No.: 170, Session: PO

Comparison of Effects of Orthokeratology Lens and Cyclopentolate on Myopia Progression in Children

*First Author: Da Ran **KIM***

Purpose: To compare the effects of orthokeratology

lens (Ortho-K lens) and topical cyclopentolate on myopia progression in children.

Methods: This retrospective study analyzed the medical records of 36 children who received Ortho-K lens and 28 who received cyclopentolate (i.e., total of 64 eyes). The following data were recorded: sex, age, age at first intervention, follow-up duration, and visual acuity and axial length (AL) at the time of first treatment and after 6, 12, and 24 months of treatment.

Results: In the Ortho-K group, the changes of AL significantly decreased by 0.3 ± 0.25 mm at 12 months and 0.52 ± 0.34 mm at 24 months (p for trend < 0.001). In the cyclopentolate group, the changes of AL significantly decreased by 0.36 ± 0.17 mm at 12months and 0.62 ± 0.29 mm at 24 months (p for trend = 0.022). Compared to the use of cyclopentolate, the use of Ortho-K lens resulted in smaller changes in AL during follow-up (p = 0.038).

Conclusions: In myopic children, Ortho-K reduced myopia progression, whereas cyclopentolate significantly less affect myopia progression than Ortho-K lens.

Poster No.: PO-188
Panel No.: 188, Session: PO

Comparison of Mean Reading Speed Between Children With Unilateral Blindness and Normally Sighted

*First Author: Adzleen **MOHMOOD***
*Co-Author(s): Nor Akmal **BAHARI**, Ai-Hong **CHEN**, Norshamsiah Md **DIN***

Purpose: To compare reading speed between children with unilateral blindness and normally sighted.

Methods: A total of 56 children (25 from unilateral blindness children and 32 normally sighted) aged 10-15 years old were included in this study. Visual acuity, contrast sensitivity and accommodation function were measured. Reading acuity and mean reading speed were measured using Buari-Chen Malay Reading Chart for contextual sentence (CS) and random words (RW).

Results: Contrast sensitivity of unilateral blindness group was significantly better compared to normally sighted group. Reading acuity were slightly lower for CS set (0.09 ± 0.11 vs 0.04 ± 0.06) and for RW set (0.12 ± 0.09 vs 0.09 ± 0.08) for unilateral blindness group compared to normally sighted group, but not statistically significant with p-value = 0.61 and p = 0.81 respectively. Mean reading speed were better for CS set (136.12 ± 30.7 wpm vs 129.45 ± 37.66 wpm) and RW set (95.30 ± 24.61 wpm vs 90.16 ± 26.55 wpm) for unilateral blindness group compared to normally sighted group but not statistically significant with p-value = 0.3 and 0.54 respectively. Accommodation rock was significantly correlated with mean reading speed of CS set (r = 0.59, p = <0.01) and RW set (r = 0.36, p = 0.04) within normally sighted group, and was significantly correlated with mean reading speed of CS set only in unilateral blindness group (r = 0.45, p = 0.03).

Conclusions: No significant difference in mean reading speed between two groups. Either reading speed is not affected by monocular vision or that children with unilateral blindness adapt well and have reading speed as fast as their normal counterpart.

Poster No.: PO-185
Panel No.: 185, Session: PO

Conjunctiva in Squint Surgeries – Stick or Stitch?

*First Author: Aishwarya **KADAM***
*Co-Author(s): Rajesh **PRABU***

Purpose: Comparing the outcome of fibrin glue versus vicryl sutures for conjunctival apposition in strabismus surgery.

Methods: Conjunctival closure with 8-0 vicryl or fibrin glue was done in a randomized interventional trial in 64 patients undergoing unilateral recession-resection surgery. Postoperative symptoms and signs of conjunctival inflammation and conjunctival thickness were assessed using a five-point scale, a modified conjunctival inflammation scale for hyperemia, discharge and chemosis and AS-OCT respectively.

Results: Patients in the fibrin glue group had significantly less postoperative pain, redness, watering, irritation and conjunctival hyperemia at 1 day (p < .01) and 2 weeks (p < 0.05). Postoperative medial (p <0.001) lateral (p < 0.002) conjunctival thickness was less in the fibrin glue group. conclusion: is a good alternative to vicryl sutures for closure strabismus surgeries, with significantly early postoperative pain inflammation, providing more comfortable course of recovery.

Conclusions: Fibrin glue is a good alternative to vicryl sutures for closure strabismus surgeries, with significantly early postoperative pain inflammation, providing more comfortable course of recovery, even in pediatric squint surgeries.

Poster No.: PO-168
Panel No.: 168, Session: PO

Convergent Acquired Strabismus Fixus in High Myopia Patients-An Overview in a Tertiary Eye Hospital

*First Author: Sidratul **NAZNIN***
*Co-Author(s): Quazi **IFTEKHAR**, Mohammad **MOSTAFA HOSSAIN***

Purpose: Patient with high myopia may develop large angle esotropia along with limited abduction. Sometimes this rare entity is not properly diagnosed and treated due to lack of proper evaluation. Purpose of current study is to create attention, identify and keep special concern in management of such cases.

Methods: This observational study was included six cases from January 2018 to December 2019. Children between three to 16 years with high myopia and esodeviation were included and developmental delays were excluded. Visual acuity measurement, cyclorefraction, anterior segment evaluation, fundoscopy, orthoptic evaluation with stereopsis level was done. Orbital imaging was done to see globe size and muscle displacement.

Results: Average age of presentation was 10 +/- 2 years. Visual acuity of two (33.3%) patients was (snellen3/60-6/60 logMAR1.3-0.1), three (50%) was (snellen6/60-6/24logMAR0.1-0.6), one (16.7%) had (snellen6/24-6/12 logMAR0.6-0.3). Maximum refractive error of -11 D whereas minimum -7 D were noted in current study. Three (50%) patients had esodeviation within 25-35 prism diopter (PD), two (33.3%) had 35-45 PD; one (16.7%) had 40- 50 PD. Stereopsis was absent for three (50 %) patients, 100 degrees of arc for two (33.3%), 80 degrees of arc for one (16.7%). Ocular motility was -1 restriction in abduction for two (33.3%) cases whereas -2 to -4 restrictions in four (66.7%). Orbital imaging showed large globe with inferior displacement of lateral rectus with nasal displacement of superior rectus in most cases.

Conclusions: In case of high myopia with esotropia, understanding different presentation patterns and appropriate evaluation with investigation for diagnosis need to be considered.

Poster No.: PO-169
Panel No.: 169, Session: PO

Craniofacial Fibrous Dysplasia- a Rare Case Report in a Tertiary Eye Hospital

*First Author: Sidratul **NAZNIN***
*Co-Author(s): Quazi **IFTEKHAR**, Mohammad **MOSTAFA HOSSAIN***

Purpose: Fibrous dysplasia (FD) is a rare fibro-osseous lesion of the osseous structures of the body. Craniofacial FD confined to contiguous bones of the craniofacial skeleton. Purpose of the study is to report such a rare case which was diagnosed and managed in the outpatient department in our tertiary eye hospital.

Methods: A 12-year-old girl complained of painless swelling over right side of eyebrow for 4 months. Facial examination revealed well-defined bony swelling rounded in shape with hard consistency, nontender; diameter 10x10 mm; overlying skin free; no regional lymphadenopathy. Visual acuity was 6/6. Anterior and posterior segment revealed normal. Ocular motility was full. No other swelling was present in body and café-au-lait spots were absent. Routine investigations such as hemogram, serum calcium and serum alkaline phosphatase (ALP) were performed. Among them ALP was raised to 300 U/L. CT scan showed a radio dense mass with ground-glass appearance involving right frontal bone whose expansion causing facial asymmetry. An incisional biopsy with histopathological analysis was done. It showed irregular bony trabeculae in Chinese script pattern scattered within fibrous stroma. The bone appeared woven rather than lamellar. MRI suggest diffuse thickening of right frontal bone.

Results: Clinical history, radiographic assessment and histological features suggested that it was a case of craniofacial FD involving right side of frontal bone.

Conclusions: Detection of early suspicious sign for diagnosis and early initiation for management is crucial to prevent the long-term complication with avert the process of optic nerve compression

Poster No.: PO-183
Panel No.: 183, Session: PO

Demystifying Acquired Monocular Elevation Deficit – A Case Series of Rare Etiologies

*First Author: Himshikha **AGGARWAL***
*Co-Author(s): Deepanshu ., Subhash **DADEYA**, Shipra **SHARDA**, Aakanksha **RAGHUVANSHI***

Purpose: To describe different etiologies of Acquired Monocular Elevation Deficit (MED).

Methods: A series of five adult patients presenting to the squint clinic of a tertiary care hospital with acute onset inability to elevate one eye from all gaze positions, with normal ductions in all other gazes, were investigated to find out the underlying cause of this «acquired monocular elevation deficit.»

Results: All 5 patients of Acquired MED were found to have different etiologies described as follows: 1. Latrogenic MED post-surgery for orbito-cranial fibrous dysplasia 2. MED secondary to sphenoid wing meningioma 3. MED secondary to cysticercosis of inferior rectus muscle 4. MED secondary to sarcoidosis 5. Post-traumatic MED secondary to head trauma involving midbrain

Conclusions: MED is characterized by an inability to elevate the affected eye from any position of gaze with normal ductions in all other gazes. It can occur due to both acquired and congenital causes. Acquired MED can occur due to a variety of causes. Having a high index of suspicion for the more serious underlying causes is of utmost importance. Thorough ocular examination and appropriate imaging as indicated; help clinch the diagnosis.

Poster No.: PO-172
Panel No.: 172, Session: PO

Efficacy and Safety of 0.01% Atropine in Childhood Myopia: A Systematic Review and Meta-analysis

*First Author: Fang-Ling **CHANG***
*Co-Author(s): Cheng Jen **CHIU***

Purpose: Some conflicting results about the efficacy and safety of 0.01% atropine in childhood myopia remain unsolved. To resolve this issue, we conducted a systematic review and meta-analysis.

Methods: A meta-analysis was performed using the random-effects model, and heterogeneity was evaluated with the I2 statistic. The search was conducted in PubMed, EMBASE, Cochrane Library without language filters. Randomized controlled trials (RCTs), cohort, and case-controlled studies comparing 0.01% atropine with controls were considered. Subgroup analysis was conducted to explore potential modifiers. The efficacy outcomes were mean annual progression in standardized equivalent refraction (SER) and axial length (AL). The safety outcomes included mean annual change in accommodative amplitude, photopic pupil diameter, and mesopic pupil diameter.

Results: Five RCTs and three retrospective studies, including 1178 myopic children, were considered for the analysis. The results showed that 0.01% atropine significantly retarded SER progression compared with controls (weighted mean difference [WMD], 0.28 D per year; 95% CI, 0.17 to 0.38; $p < 0.01$), and axial elongation (WMD, - 0.06 mm; 95% CI - 0.09, - 0.03; $p < 0.01$) during the one-year period. Patients receiving 0.01% atropine showed no significant changes in accommodative amplitude (WMD, - 0.45 D; 95% CI – 1.80, 0.90; $p = 0.51$) but showed dilated photopic pupil diameter (WMD, 0.35 mm; 95% CI 0.02, 0.68; $p = 0.04$) and mesopic pupil diameter (WMD, 0.20 mm; 95% CI 0.08, 0.32; $p < 0.01$) at the one-year follow-up.

Conclusions: In summary, 0.01% atropine has favorable efficacy and safety in childhood myopia over a one-year period.

Poster No.: PO-187
Panel No.: 187, Session: PO

Higher Risk for Retinopathy of Prematurity in Infants >1,000 Grams Following Higher Oxygen Saturation Targets

*First Author: May-May **CHOO***

Purpose: The incidence of retinopathy of prematurity (ROP) increased following rise in oxygen saturation targets. This study aims to show that higher oxygen saturation targets introduced in our neonatal intensive care unit resulted in a rise in risk of retinopathy of prematurity in larger birthweight premature infants.

Methods: Between 2003 to 2016, a cohort of 626 premature infants were screened for ROP. Midway through this period, oxygen saturation targets were revised to increase infant survival. Hence 2 epochs of oxygen groups were observed, i.e. Epoch 1(88% - 92%) in 2003-2019 and Epoch 2(90 - 95%) in 2010-2016. Incidence of ROP for infants for infants 1,000 -1,500g were compared. Risk factors for development of ROP were analyzed with multiple logistics regression analysis to reveal odds ratio for development of ROP and the development of severe ROP requiring intervention.

Results: Altogether 408 infants had birthweight 1,000 grams or more were screened. Their mean gestation was 30.38 +1.90 weeks, and mean birthweight was 1,329.62 + 222.66 grams. Epoch 2 had higher percentage (15%, 32/213) vs Epoch 1 (11.3%, 22/194) who developed ROP. Multiple logistics regression analysis revealed Epoch 2 had higher odds ratio for development of ROP (OR:2.7, 95% CI:1.3-5.7, $p = 0.009$). Other significant risk factors were presence of sepsis (OR:3.1, $p = 0.005$) and gestational age <27weeks (OR:5.2, $p = 0.002$). The number of infants developing severe ROP was too small for analysis.

Conclusions: A higher percentage of infants of larger birthweight groups developing ROP were observed during the Epoch of higher oxygen saturation. This translates to more follow-up examinations and higher burden of workload.

Poster No.: PO-173
Panel No.: 173, Session: PO

Identifying Left and Right Eyes in Facial Photographs of Infants Using Deep Learning

*First Author: Shion **HAYASHI***
*Co-Author(s): Emi **KASHIZUKA**, Sachiko **NISHINA**, Kohji **OKAMURA**, Tadashi **YOKOI**, Tomoyo **YOSHIDA***

Purpose: Infantile organic diseases are difficult to detect early during health screenings. To construct a system to detect organic ocular diseases in infancy, we investigated whether the left and right eyes of infants can be discriminated using deep learning applied to facial photographs.

Methods: The facial photographs of infants 3 years old and younger obtained in our ophthalmology clinic were evaluated. Multiple photographs were taken of each case, and the left and right eye areas, including the eyelids, were extracted from the photographs and used as training data. The left and right eye regions also were extracted from the facial photos of infants without diseases obtained from the Flickr-Face-HQ Dataset and used as test data for deep learning using a convolutional neural network.

Results: A total of 1,523 facial photographs of 280 eyes of 140 cases were used. The average patient age was 19.7 months, and the diseases included strabismus

without organic disease in 45 cases, lacrimal and eyelid diseases in 10 cases, anterior-segment dysgenesis in 15 cases, cataracts in 15 cases, glaucoma in 4 cases, fundus diseases in 25 cases, and others in 7 cases (with overlap); no abnormalities were found in 21 cases. The test data consisted of 1,203 facial photographs. The accuracy of the generated model was 0.9896, recall 0.9800, precision 0.9992, and F-measure 0.9895.

Conclusions: Deep learning using a relatively small amount of training data can discriminate differences between left and right infant eyes with high accuracy.

Poster No.: PO-174
Panel No.: 174, Session: PO

Intraocular Pressure at Different Gaze Positions in Patients With Highly Myopic Strabismus

*First Author: Shinji **ARAI***
*Co-Author(s): Akiko **HIKOYA**, Yoshihiro **HOTTA**, Risako **INAGAKI**, Miwa **KOMORI**, Miho **SATO***

Purpose: To evaluate intraocular pressure (IOP) at different gaze positions in patients with highly myopic strabismus (HMS).

Methods: This is a nonrandomized, prospective, observational study. This study included 18 eyes of 14 patients with HMS and 51 eyes of 51 age-matched controls without strabismus; these were further divided into two groups based on refractive errors: > -6.00 diopter (D) (n=22 eyes) and ≤ -6.00 D (n= 29 eyes). IOP was measured in primary and side gazes and compared within and among groups. The relationships between IOPs and axial length, angle of globe dislocation measured on magnetic resonance imaging, strabismus angle, and degree of abduction deficit were studied.

Results: The HMS group showed higher IOP in abduction (19.3 ± 4.9 mmHg) than in the primary (12.5 ± 4.3 mmHg) and adducting positions (13.0 ± 3.3 mmHg), ($p < 0.001$). The IOP in the adducting position in the HMS group (13.0 ± 3.3 mmHg) was lower than in the control groups both with (17.6 ± 3.5 mmHg) and without (16.9 ± 4.1 mmHg) high myopia, ; ($p < 0.001$ and = 0.003). The difference in IOP between abduction and adduction was significantly larger in the HMS group (6.4 ± 4.6 mmHg) compared to others ($p < 0.001$) and positively correlated with the strabismus angle and the angle of globe dislocation and negatively with abduction deficit.

Conclusions: The IOP of patients with HMS changes dramatically on side gazes, therefore, care should be taken while measuring IOP.

Poster No.: PO-175
Panel No.: 175, Session: PO

Ocular Findings in Dandy Walker Syndrome: A Rare Case Report

*First Author: Riva **IRLINDA***
*Co-Author(s): Liana **EKOWATI***

Purpose: Dandy-Walker Syndrome (DWS) is a rare neurologic multi-entity malformation. There are three types of DWS: malformation, variant, and mega cisterna magna. Ocular findings have been described in fewer than 10% of DWS. Common retinal observations include optic atrophy, morning glory disc, dysplasia, hemorrhage, and gliosis. Other common ocular findings include iris artery hypertrophy, congenital cataract, sclerocornea, and lens coloboma. The aim of the review was to report the ocular findings in DWS patient.

Methods: A 4-year-old boy with worsening protrusion, redness, and pain in the right eye was presented. We found protrusion, buphthalmos, and intraocular hemorrhage in the right eye. Ultrasonography and CT scan showed a mass-like lesion and an enlarged right bulbus oculi with intravitreal hemorrhage, suspecting intraocular retinoblastoma. The CT scan also showed widening of the cisterna magna, associated with a dilated IV ventricle, with partial hypoplasia of the vermis, indicating imaging of DWS variant type. Enucleation was performed for diagnostic and therapeutic purposes. Histopathological examination revealed that the intraocular tumor was an atypical glial proliferation with nodular and massive retinal gliosis. Immunohistological reactions were positive for glial fibrillary acid protein, supporting the diagnosis of retinal gliosis.

Results: This patient showed signs of protrusion, buphthalmos, intraocular hemorrhage, and retinal gliosis of the right eye. Other manifestations related to DWS could not be evaluated because the camera oculi anterior is filled with hemorrhage.

Conclusions: The results of this study support the theory that described intraocular hemorrhage and retinal gliosis are the ocular findings that can be found in DWS patients.

Poster No.: PO-176
Panel No.: 176, Session: PO

Post-Lensectomy in Marfan Syndrome: A Visual Outcome Review

*First Author: Nur Hanisah **MOHAMAD KANI***
*Co-Author(s): Nor Akmal **BAHARI**, Jamalia **RAHMAT**, Sangeetha **THARMATHURAI***

Purpose: To evaluate the visual outcome of children with Marfan syndrome following lensectomy and intraocular lens implantation with Artisan iris claw lens or sclera fixated intraocular lens implantation.

Methods: The medical records of children with Marfan syndrome between May 2019 and August 2022 were retrospectively reviewed. Patients underwent lensectomy and intraocular lens implantation by a single surgeon. The pre and postoperative best corrected visual acuity (BCVA) following lensectomy and intraocular lens implantation and complications were reviewed.

Results: The study involved 23 eyes of 14 children with Marfan syndrome who had subluxated lens. There were 14 eyes with Artisan iris claw lens and 9 eyes with sclera fixated intraocular lens. The mean age of presentation was 8.79 ± 2.69. Mean preoperative best corrected visual acuity (BCVA) was 0.63 ± 0.40 logMAR. Following intraocular lens implantation, postoperative BCVA was 0.32 ± 0.24 logMAR. The mean postoperative BCVA of patients with Artisan iris claw lens was 0.38 ± 0.27 while mean postoperative BCVA of patients with sclera fixated lens was 0.19 ± 0.13. Four patients with preoperative BCVA less than 1.30 logMAR had Artisan iris claw lens implantation. There was no statistical difference of postoperative visual outcome between Artisan and sclera fixated intraocular lens group (p = 0.12). Postoperatively, two patients with sclera fixated lens implantation had iris capture and subluxated intraocular lens while one patient with Artisan lens had subluxated intraocular lens.

Conclusions: The surgical results following lensectomy and intraocular lens implantation for subluxated lens in Marfan syndrome children had favorable visual outcome.

Poster No.: PO-165
Panel No.: 165, Session: PO

Rectus Muscle Pseudo-Adherence Syndrome

*First Author: Amar **PUJARI***

Purpose: To describe the clinical entity called rectus muscle pseudo-adherence syndrome following buckling surgery.

Methods: A retrospective data review was undertaken to review the patients' clinical details of those who have undergone strabismus corrective surgery following previous buckling surgery. Between 2017 and 2021, a total of 14 patients were identified. The demographic details, surgical details, and intraoperative features of these patients were reviewed.

Results: The mean age of 14 patients was 21.71±5.23 years. Mean pre-op deviation was 42.35±14.35 PD, and mean post op deviation was 8.25±4.88 PD at the end of 26.16±19.53 months. In absence of buckle, the thinned-out rectus muscle was adherent to underlying sclera with much denser adhesions along its margins. Similarly, in presence of buckle, the rectus muscle was again densely adherent to outer surface of buckle. In both the scenarios, due to the absence of protective muscle coverings, the rectus muscles were naturally adsorbed onto immediate surface by the healing tenon's. Hence, in both the conditions, after conjunctival peritomy a false sense of absent or significantly thinned out muscle was evident, nevertheless, a landmark guided meticulous approach proved fruitful in all these cases.

Conclusions: While correcting ocular deviations following buckling surgery, a false sense of absent/slipped/thinned-out rectus muscle is very much possible. These findings are due to active healing of sclera or the buckle with the muscle in a single layer of tenon's, rather than displacement of the muscle or attachment elsewhere.

Poster No.: PO-181
Panel No.: 181, Session: PO

Subconjunctival Botulinum Toxin A Injection for Consecutive Esotropia

*First Author: Keng-Sheng **LIN***
*Co-Author(s): Wei-Wei **HSIA***

Purpose: To present a case of subconjunctival botulinum toxin A (BTXA) injection for consecutive esotropia (ET) after the second operation of exotropia correction.

Methods: This study is a case report of a patient presenting with consecutive esotropia, who received BTXA injection.

Results: A 40-year-old man who had undergone exotropia correction 15 years ago presented with the complaint of double vision. His presenting alternative exotropia was 35 prism diopters (PD) at distance and 25 PD at near. Bilateral medial rectus resection was performed. Consecutive ET was noticed with the deviation of 6 PD after surgery. The patient was troubled by the diplopia. Thus, subconjunctival BTXA injections without electromyographic guidance were carried out twice (3 and 5 weeks postoperatively). The total dosage of injection was 4 and 8 units in the right and left eye, respectively. Transient adduction palsy in the left eye was noticed after second injection. There were no other complications including ptosis, vertical deviation, or other vision-threatening conditions. Binocular diplopia resolved 1 week after second injection and the patient was still orthotropic 6 months after injection.

Conclusions: Subconjunctival BTXA injection is a safe and effective option for consecutive esotropia following exotropia correction and it is easy to perform in OPD. However, the optimal timing and dosage of BTXA injection in consecutive esotropia still remain unclear.

Poster No.: PO-184
Panel No.: 184, Session: PO

Trends in Practice Patterns for Retinopathy of Prematurity Worldwide

*First Author: Amy **WANG***
*Co-Author(s): Shuan **DAI***

Purpose: To assess the preferred treatment patterns for retinopathy of prematurity (ROP) amongst ophthalmologists worldwide.

Methods: Between March and May 2022, a retrospective survey was distributed to ophthalmologists performing ROP screening and treatment internationally. Treatment patterns of ROP over a ten-year time frame: between 2012 to 2022, was assessed.

Results: A total of 44 ophthalmologists from 12 different countries responded to the survey. Per annum, there were an average number of 427 babies screened by each respondent. In total, between 2012 to 2022, 2688 babies (35%) were treated with laser therapy, and 3708 babies (48%) were treated with anti-vascular endothelial growth factor (VEGF). Anti-VEGF is the preferred treatment method for aggressive posterior (AP)-ROP (59.52%), Type 1 ROP in Zone 1 (66.67%), and Type 1 ROP in posterior Zone 2 (52.38%). The majority used laser for first-line treatment of Type 1 ROP in anterior Zone 2 (73.81%), and Type 1 ROP in Zone 3 (80.95%). Laser remains the preferred treatment modality utilized in babies requiring repeat treatment of AP-ROP (51.35%), Type 1 ROP in Zone 1 (44.44%), Type 1 ROP in posterior Zone 2 (54.05%), Type 1 ROP in anterior Zone 2 (70.59%), and Type 1 ROP in Zone 3 (76.47%).

Conclusions: For cases of posterior disease (AP-ROP, Type 1 ROP in Zone 1 and posterior Zone 2), anti-VEGF appears to be the first-line treatment of choice. Most ophthalmologists use laser as first-line treatment for Type 1 ROP in anterior Zone 2 and Zone 3. For repeat treatments, laser is the preferred intervention.

Poster No.: PO-171
Panel No.: 171, Session: PO

Whether Early or Late Surgical Intervention Is More Effective in Intermittent Exotropias

*First Author: Aakanksha **RAGHUVANSHI***

Purpose: To find out whether early or late surgical intervention is more effective in intermittent exotropias?

Methods: Sixty consecutive patients were divided into two groups of 30 each. 30 patients had their surgery prior to the age of 4 years and 30 after the age of 4 years. Pre and postoperative deviations were measured at 6m, and 33 cm. Patients were followed up at 1,4,8 and 12 weeks after surgery.

Results: The study showed 85.7% (24 patients out of 28) satisfactory alignment (± 10PD) was obtained in those patients who had their surgery prior to the age of 4 years in contrast to 42.85% (12/28) in those who had their surgery following their 4th birthday ($p < 0.02$). There was improvement in binocular status also.

Conclusions: Surgical intervention before 4 years of age yields better functional and cosmetic results compared to surgical intervention after 4 years of age.

Refractive Surgery

Poster No.: PO-191
Panel No.: 191, Session: PO

Clinical Efficacy of Fluorometholone Versus Loteprednol Eye Drops After Photorefractive Keratectomy: A Triple-Blinded Randomized Controlled Trial

*First Author: Ali **FOROUHARI***
*Co-Author(s): Alireza **PEYMAN**, Mohsen **POURAZIZI**, Hasan **RAZMJOO***

Purpose: This study aimed to compare the anti-inflammatory efficacy and safety of 0.1% Fluorometholone (FML) versus (vs.) 0.5% Loteprednol etabonate (LE) following photorefractive keratectomy (PRK).

Methods: A triple-blinded randomized controlled trial was conducted on both eyes of 100 patients with stable refraction who were candidates for PRK. Both eyes in each subject were randomly allocated to the FML or LE groups. The product to be tested was 0.1% FML eye drops packaged in droppers vs. the 0.5% LE sterile ophthalmic suspension (Lotemax) packaged in identical droppers. The main clinical outcomes were changes in best-corrected distance visual acuity (BCDVA) and corneal optical density. The second clinical outcomes were a change in intraocular pressure (IOP) after the intervention.

Results: There was no significant difference regarding mean corneal optical density changes between the two groups, one ($p = 0.55$) and three months ($p = 0.98$) after the intervention. The mean ± SD BCDVA after one month of the intervention was 0.79 ± 0.11 and 0.84 ± 0.11 in LE and FML groups, retrospectively ($p = 0.02$). There was no significant difference in mean BCDVA between the two groups three months after intervention ($p = 0.21$). The IOP showed no significant difference between the two groups after one ($p = 0.18$) and three months ($p = 0.53$) of the intervention.

Conclusions: The results of this clinical trial demonstrate that LE and FML treatment was effective with no clinically meaningful effect on IOP following a short course of treatment.

Poster No.: PO-192
Panel No.: 192, Session: PO

Impact of Social Media in Refractive Surgery Practice

*First Author: Ashraful **RIDOY***
*Co-Author(s): Ishtiaque **ANWAR**, Mahziba **CHOWDHURY**, Ava **HOSSAIN**, Mominul **ISLAM***

Purpose: We aim to explore the use of social media to increase the practice and grow patient interests about refractive surgery.

Methods: A refractive surgery (posts and videos about LASIK, PRK, SMILE, ICL) campaign was run in social media (Facebook, YouTube & Instagram) from July 2021 to December 2021 (6 months). A variety of social media posts and videos were posted on those three platforms. Total number of patient input in the refractive surgery unit of a tertiary eye hospital in response to only social media posts were recorded.

Results: Since the commencement of the campaign, we observed a 30% of the overall attendance at the Refractive surgery unit of a tertiary eye hospital came by viewing only social media posts. Out of 390 patients attending for refractive surgery, 117 patients came by viewing the campaign. Out of 117 patients 60% (70 patients) were female and 40% (47 patients) were male. Also, we observed 23% more patients in the campaign period, compared with previous six months when there was no campaign.

Conclusions: Social media has a great value to increase refractive surgery practice. These can be used as a good tool to increase awareness for eye diseases and treatments among the general population.

Poster No.: PO-190
Panel No.: 190, Session: PO

Myopic Patient Acceptance and Preference to Refractive Surgery

*First Author: Mengtian **KANG***
*Co-Author(s): Mayinuer **YUSUFU***

Purpose: To investigate the influence factors in myopic patient acceptance and preference to refractive surgery including T-PRK, LASIK, SMILE, RLE and PIOL.

Methods: The online questionnaire survey was carried out during April to May 2022. Questionnaires were distributed in five randomized cities in China. Participants inclusive criteria included 1) aged 18- to 50-year-old; 2) diagnosed with myopia; 3) no refractive surgery history; and 4) willing to have refractive surgery. In each city, 100 valid questionnaires were collected.

Results: A total of 500 valid questionnaires were collected. Main population who wanted to have refractive surgery was under 35 years old (473/500, 94.6%), and a small number of middle-aged people over 35 years old (27/500, 5.4%) want to have surgery to correct myopia. The purpose of surgery was for the convenience of sports (47.6%), beauty (22.4%), job search (10.2%) and others. The understanding of different refractive surgery were SMILE (75.4%), LASIK (74.4%), RLE (66.4%), PIOL (63.4%) and T-PRK (61.4%). The benefits of different refractive surgeries were interpreted as 0 as no benefit and 10 as very good: The average benefit score of SMILE was 8.82 ± 1.67, LASIK was 8.42 ± 1.63, T-PRK was 8.41 ± 1.77, PIOL was 8.28 ± 2.24, and RLE was 7.5 ± 2.75.When the patients were asked to choose a preferred surgical method, LASIK was considered the first choice by 144 (28.8%), T-PRK by 142 (28.4%), SMILE by 142 (28.4%), PIOL by 50 (10%), RLE by 22 (4.4%).

Conclusions: At present, Chinese patients with myopia have a high acceptance of corneal laser surgery and are more inclined to choose LASIK and SMILE.

Poster No.: PO-189
Panel No.: 189, Session: PO

Spectrum of Post-LASIK Epithelial Ingrowth-Optimizing Outcomes With Intraoperative Optical Coherence Tomography

*First Author: Manpreet **KAUR***
*Co-Author(s): Sridevi **NAIR**, Jeewan **TITIYAL***

Purpose: To evaluate outcomes of iOCT guided management of post-LASIK epithelial ingrowth.

Methods: Case 1 was presented with progressive epithelial ingrowth in right eye 3 years post-LASIK. iOCT guided removal of epithelial ingrowth was performed with interface application of ethyl alcohol and MMC to prevent recurrence. Case 2 was presented with long-standing flap dislocation with coexisting epithelial ingrowth encroaching visual axis. Flap amputation was performed in view of long-standing fixed flap folds, along with removal of epithelial ingrowth with 0.02% MMC as adjunct.

Results: Case 1 gained UCVA of 20/25 with no recurrence till 1 year follow up. iOCT helped determine extent of flap lifting and complete removal of ingrowth. Case 2 regained UDVA of 20/32 with minimal paracentral corneal haze and no ectasia or recurrence.

Conclusions: Optimal visual and anatomical outcomes can be achieved with iOCT guided management of post-LASIK epithelial ingrowth. iOCT enables real time dynamic monitoring of intraoperative surgical steps, aids decision making regarding complete ingrowth removal and allows precise surgical dissection with minimal manipulations.

Poster No.: PO-193
Panel No.: 193, Session: PO

To Report an Unusual Case of Unilateral Post-LASIK Ectasia 7–8 Years After Surgery and Without Any Apparent Reason or Risk Factors

*First Author: Ronak **SOLANKI***

Purpose: An unusual case report on post-LASIK ectasia diagnosed in a young patient 7-8 years after surgery and without any apparent reason or risk factors.

Methods: Report of case: A 30-year-old male patient presented to us with diminution of vision for 2 years.

Results: At presentation his BCDVA was OD Plano 20/20 and OS 20/30 with - 3.25DS/-0.50DC@40. He has history of optical shop prescription 2 years back of OD plano 20/20 and OS -2.50DS/- 0.50DC@45. Pentacam corneal topography showed OD Q-0.58 thinnest pachymetry 521 microns, Sagittal maps normal, no I-S variations and posterior elevation of +18. OS showed Q +0.05, thinnest pachymetry 462 microns, I-S variation, Sagittal map changes, Posterior Elevation +22 and BADD display changes. Axial length OD 22.48 / OS 25.46 on IOL Master 700 to confirm history of anisometropia before surgery.

Conclusions: Suspicion for unilateral post-LASIK ectasia without any obvious risk factors was thought for as a diagnosis and decision to wait for corneal cross linking (CXL) treatment was done since patient had a good visual acuity, no previous records and no clarity of a progressive nature of the changes on history and tomography. A careful look into previous history, eliminating all other possible causes of post-LASIK refractive errors along with documenting progression on topography for post-LASIK ectasia before planning for crosslinking treatment may be the best approach in patients with good visual acuity.

Retina (Medical)

Poster No.: PO-217
Panel No.: 217, Session: PO

A Rare Case of Unilateral Pigmented Paravenous Retinochoroidal Atrophy With Optic Disc Drussen

*First Author: Ipsita **BARMAN***

Purpose: To report an atypical case of unilateral pigmented paravenous retinochoroidal atrophy with optic disc drussen.

Methods: Ultra-wide fundus photography, fundus autofluorescence (FAF), spectral domain-optical coherence tomography (SD-OCT), OPTOS CP could help us to confirm the diagnosis.

Results: Ultra-wide fundus photography revealed pigment clumps and grayish lesions along retinal vein in left eye.

Conclusions: PPRCA is typically bilateral and symmetric, affecting primarily the outer retina and choroid. However, in rare cases, this disease can present unilaterally with optic disc drussen.

Poster No.: PO-202
Panel No.: 202, Session: PO

A Unique Case of Non-tuberculous Mycobacterium Ocular Tuberculosis in an Immunocompromised Patient

*First Author: Zjen Pang **MOI***
*Co-Author(s): Envira **LEE ZHI YIN**, Kiew Ing **TIONG**, Mas **PUTRIKU INTAN***

Purpose: Systemic nontuberculous mycobacterium (NTM) leading to intraocular lesions are relatively rare but highly susceptible in immunocompromised patients. Among those reported cases, misdiagnosis and misidentification of causative organism are of high prevalence.

Methods: To present a case report.

Results: A 23-year-old gentleman with underlying Retrovirus Disease (RVD) on high active antiretroviral therapy (HAART) since October 2021, was initially referred for a routine eye assessment in view of his immunocompromised state. On examination, he was asymptomatic with best corrected visual acuity (BCVA) of 6/9 and 6/18 for right and left eye respectively. Anterior segment examination was unremarkable with normal intraocular pressure. However, posterior segment revealed bilateral multiple whitish, well-demarcated subretinal lesions mainly over posterior pole region with no overlying vitritis, vasculitis or surrounding retinal hemorrhages. Bilateral eyes optical coherence tomography (OCT) confirmed multiple sub-RPE lesions with no intraretinal/subretinal fluids. Further investigations revealed systemic NTM bacteremia evident from positive blood cultures which led to commencement of Azithromycin and Ethambutol, planned for at least 1-year duration. After 6 months of treatment, his treatment was escalated to IV Azithromycin, IV Amikacin and IV Moxifloxacin in view of persistent mycobacterium avium complex (MAC) from blood cultures. He retains good vision throughout treatment with latest BCVA of 6/9 bilaterally, however the lesion over both eyes remains with minimal improvement.

Conclusions: Opportunistic NTM are ubiquitous and capable of infecting ocular tissue. This presents as an ever-growing clinical challenge due to difficulty in identifying and initiation of definitive treatment. A high index of suspicion is warranted as delayed treatment may lead to detrimental outcomes.

Poster No.: PO-219
Panel No.: 219, Session: PO

Association Between Albuminuria and Retinal Microvascular Parameters Measured With OCT-Angiography in Patients With Diabetic Retinopathy

*First Author: Kiyoung **KIM***

Purpose: To evaluate the relationship between urine albumin excretion (UAE) and retinal microvascular parameters assessed by wide-field swept-source OCT angiography (SS-OCTA) in patients with diabetic retinopathy (DR).

Methods: A retrospective cross-sectional study was performed in 180 diabetic patients and 50 age-matched controls. Diabetic patients were grouped in accordance with five-stage diabetic retinopathy (DR) severity combined with presence of albuminuria. All subjects underwent 12 x 12 mm field SS-OCTA. Foveal avascular zone (FAZ) metrics, vessel density (VD), and the capillary nonperfusion area (NPA) were quantified with a semiautomatic software algorithm on three different rectangular fields (i.e., 3 x 3 mm, 6 x 6 mm, and 10 x 10 mm). The correlations between albuminuria and four OCTA-parameters were analyzed.

Results: Capillary NPA on 3 x 3 mm, 6 x 6 mm, and 10 x 10 mm fields were significantly increased in albuminuria group compared to normal UAE and control group in patients whose DR severity was higher than mild NPDR (102 eyes). None of OCTA parameter was significantly different in patients with mild NPDR or without DR. Logistic regression analysis showed that increase of NPA on 6 x 6 mm, 10 x 10 mm field were significant associated factors for the albuminuria.

Conclusions: Retinal capillary NPA was significantly increased in patients with diabetes and albuminuria. Increase of capillary NPA from 6 x 6 mm SS-OCTA image was independently associated with albuminuria in clinically visible DR.

Poster No.: PO-194
Panel No.: 194, Session: PO

Association of Serum Vitamin D Levels With Clinical Spectrum of Central Serous Chorioretinopathy Patients of Indian Origin

*First Author: Ashok **KUMAR***
*Co-Author(s): Amit **ARORA**, Rohit **BHANOT**, Sanjay **MISHRA**, Sandeep **SHANKAR***

Purpose: To determine serum vitamin D levels in various clinical profiles of central serous chorioretinopathy and their effect on its pathophysiology in Indian population.

Methods: This case control observational study included 42 patients (group p) of central serous chorioretinopathy (CSCR) diagnosed with optic coherence tomography (OCT), fundus fluorescein angiography (FFA) which were further sub-grouped into acute(P1), chronic (P2) and recurrent (P3). A total of 44 age & sex-matched healthy control subjects (group C) were also included. The vitamin D levels of both groups were examined and analyzed.

Results: No significant difference between the groups p and C in respect of age, gender or baseline best corrected visual acuity (p =0.153, p = 0.123 and p = 0.08 respectively) was noted. Vitamin D levels were determined as 16.473 ± 7.307 ng/mL in group p and 34.940 ± 8.348 ng/mL in group C and difference was statistically significant (p = 0.001). There were statistically significantly more no of patient in group p (78.57%) with deficient vitamin D levels as compared to normal serum levels (4.76%) (p = 0.04). Patients in group P1(acute CSCR) and P2(Chronic CSCR) also had significant more no of subjects with deficient vitamin D levels as compared to normal serum levels (p = 0.01 & p = 0.03).

Conclusions: The low serum vitamin D levels were determined in all clinical sub-types of central serous chorioretinopathy patients which point to its possible role in the pathophysiology of the disease. There is a need for further studies to determine the changes that could occur with vitamin replacement therapy in CSCR.

Poster No.: PO-205
Panel No.: 205, Session: PO

Association of VEGF -141 C/a Polymorphism With Neovascular Age-Related Macular Degeneration in Indonesia

*First Author: Supanji **SUPANJI***
*Co-Author(s): Angela Nurini **AGNI**, Mohammad **PRAYOGO**, Muhammad **SASONGKO**, Firman **WARDHANA***

Purpose: This study was aimed to investigate the association of polymorphisms in VEGF 141 C/A with Neovascular Age-related macular degeneration (nAMD) in Indonesia patients.

Methods: Patients and controls were undergone BCVA, funduscopy, and OCT. Baseline characteristic included in this research was age, smoking status, body weight, and blood pressure. Whole blood was collected from nAMD patients and controls for DNA isolation. Genotyping for the VEGF −141 C/ A was performed in 93 AMD patients and 75 controls by Polymerase chain reaction-Restriction fragment length polymorphism (PCR-RFLP). Statistical analysis was done using STATA.

Results: The baseline characteristic was similar between case and controls group except age. The evaluated SNPs, CA genotype of VEGF -141 C/A (OR = 3.79, p = 0.07) have shown no association with nAMD.

Conclusions: The present study suggests insignificant genetic associations for VEGF − 141 C/A polymorphisms with nAMD.

Poster No.: PO-199
Panel No.: 199, Session: PO

Audit on Satisfaction of Provided Pain Management Among Patients Who Received Intravitreal Antivascular Endothelial Growth Factor Injections in a Teaching University Hospital

*First Author: Goh **HAN***
*Co-Author(s): Tajunisah **IQBAL**, Gowri **SUPRAMANIAM***

Purpose: Repeated intravitreal injections of antivascular endothelial growth factor (IVI anti-VEGF) over an indefinite time course are often needed to treat a few medical medical diseases. The treatment outcomes depend greatly on treatment adherence, which can in turn be influenced by patient experiences and pain perceptions during this procedure. According to local ministry of health (pain free program), patients reported satisfaction on pain management after procedure must be ≥80%. This audit was carried out to determine the satisfaction of the provided pain management among patients who received IVI antiVEGF in a teaching university hospital from 7th February to 7th March 2022.

Methods: A single centered prospective clinical audit was conducted in a teaching university hospital. Computer generated simple randomization sampling method was used to select the days within the study period for data collection. All patients arrived for IVI anti-VEGF were interviewed face-to-face by an auditor. All patients were interrogated verbally with a standardized pre-set of questions. Wong-Baker FACES and Visual Analog Scales were shown to patients for grading of pain and discomfort.

Results: A total of 52 patients were audited. 49 out of 52 (94.2%) patients were satisfied with the pain management offered during and after IVI anti-VEGF. Among those who unsatisfied with the provided pain management, 3.8% (2/52) of patients suggested possibility of inadequate anesthesia and 1.9% (1/52) of patients claimed there was negligence of pain management.

Conclusions: Patient reported satisfaction on pain management after IVI antiVEGF procedures achieved the standard targeted by local ministry of health.

Poster No.: PO-214
Panel No.: 214, Session: PO

Baseline Factors Associated With 1-Year Outcomes in Phase III Comparison of SB11 (BYOOVIZ, Ranibizumab-Nuna) With Reference Ranibizumab (LUCENTIS) in nAMD

*First Author: Neil **BRESSLER***

Purpose: To describe baseline factors associated with one-year efficacy outcomes of a phase III randomized clinical trial comparing SB11 (BYOOVIZ, Ranibizumab-nuna), with its reference ranibizumab (rRBZ) product (LUCENTIS) in neovascular age-related macular degeneration (nAMD).

Methods: In a post-hoc analysis of a randomized, double-masked, parallel-group, multicenter, 52-week phase III clinical trial, 705 patients with nAMD were randomized to receive monthly 0.05 mL intravitreal injections of either 0.5 mg SB11 or rRBZ. The primary endpoint was change from baseline in BCVA at week 8 and change in CST at week 4, with secondary endpoints through week 52. Associations between baseline factors and treatment responses at week 52 were assessed through a post-hoc analysis.

Results: Of 705 participants, 634 continued to week 52. Least squares mean letter change from baseline at Week 52 was SB11=9.79 (0.76) and RBZ=10.41 (0.74) (difference: -0.62, [90% CI: -2.092, 0.857]), and CST change was SB11= -139.55 (4.57) and RBZ= -124.46 (4.43) µm (difference: -15.09, [95% CI, -25.617, -4.563]). Comparisons of PK, safety, or immunogenicity between SB11 and RBZ appeared similar. Through a post-hoc analysis, baseline age, BCVA, and CST were predictive of treatment outcomes.

Conclusions: Baseline age, BCVA, and CST were predictive of visual acuity and anatomical outcomes when managing nAMD with SB11 or rRBZ. Similar results were shown from post-hoc analysis of multiple clinical trials in nAMD, such as CATT, MARINA, and VIEW studies. These similarities further support equivalent clinical efficacy between the products.

Poster No.: PO-197
Panel No.: 197, Session: PO

Branch Retinal Artery Occlusion in a Young Patient After Radiotherapy for Nasopharyngeal Carcinoma

*First Author: Elizabeth **CHEN***
*Co-Author(s): Helen **MI***

Purpose: To report a case of branch retinal artery occlusion (BRAO) in a young patient who received previous neck radiotherapy for nasopharyngeal carcinoma.

Methods: We describe an interesting case of a branch retinal artery occlusion in a patient with previous neck radiotherapy for nasopharyngeal carcinoma 14 years ago.

Results: The patient was a 49-year-old Chinese male, who presented with new onset left eye branch retinal artery occlusion. Past ocular history included bilateral LASIK surgery for myopic correction 10 years ago. Significant past medical history included borderline raised hyperlipidemia, hypothyroidism on thyroxine replacement, osteoporosis and nasopharyngeal carcinoma for which he was treated with radiotherapy and chemotherapy 14 years ago. He underwent extensive workup in view of his young age and minimal

ischemic risk factors. Ultrasound of the carotid arteries revealed more than 50% bilateral common carotid arteries stenosis, and 80-99% bilateral internal carotid artery (ICA) stenosis. Magnetic resonance imaging of the brain showed presence of chronic infarcts. Screening for hypercoaguable states and cardioembolic causes were unremarkable.

Conclusions: Based on our current review of literature, this is a rare case of a young patient who presented with unilateral BRAO secondary to carotid artery stenosis after neck radiotherapy. This case highlights that irradiation over the carotid area is a significant risk factor of developing carotid stenosis, with its consequent complications including cerebrovascular events and embolic events such as retinal artery occlusions. Long-term surveillance with carotid ultrasound and aggressive modification of the traditional risk factors for these patients have been proposed.

Poster No.: PO-203
Panel No.: 203, Session: PO

Coats Disease: A Case Report

*First Author: Khairun Nisa **MOHD ZAIDAN***
*Co-Author(s): Rafidah **MD SALEH**, Amirah **MOHAMMAD RAZALI**, Mazaya **MAHMUD**, Muhammad Syamil **MOHAMAD SALMI***

Purpose: To report a case of Coats disease with fibrotic subfoveal nodule.

Methods: A case report is presented.

Results: A 13-year-old boy with no known medical illness presented with an incidental finding of right eye poor vision by an optician. On examination, visual acuity for the right eye was 6/60 and 6/6 for the left eye. Relative afferent pupillary defect was negative. Anterior segment examination was unremarkable. Fundus examination of the right eye revealed talengiectatic retinal vessels with subretinal exudation and subretinal fluid involving the fovea. Left eye examination was normal. OCT macula of the right eye showed presence of subretinal and intraretinal fluid with central subfield thickness of 770 micrometer. Fundus fluorescein angiography of the right eye revealed telangiectatic vessels with aneurysms and areas of capillary fall out temporally. A diagnosis of Coats disease was made. The patient responded well initially to intravitreal ranibizumab injection and 2 sessions of laser photocoagulation with an improvement in vision from 6/60 to 6/24. Unfortunately, 17 months after presentation, the patient developed a fibrotic subfoveal nodule, leading to a drop in vision to counting finger.

Conclusions: Coats disease is a rare disease affecting young boys. Early and effective treatment with multiple modalities and sessions are usually needed. Parental and patient education is core in ensuring adequate treatment and optimization of vision. If left untreated, it may lead to devastating permanent blindness in young children.

Poster No.: PO-196
Panel No.: 196, Session: PO

Correlation of Video Display Terminal Exposure and Macular Pigment Optical Density Levels Among Filipinos

*First Author: Ronald **TIU***

Purpose: In this cross-sectional analytical study, we investigated the correlation of video display terminal (VDT) exposure to the macular pigment optical density levels (MPOD) levels.

Methods: We compared the macular pigment optical density levels (MPOD, using Zeiss Visucam 500) between 2 groups of 20 to 35 years old individuals with healthy eyes and with varying lengths of exposure. The Exposed group were individuals who spends at least 8 hours with VDT for the past 1 year. The Less exposed group were those who would spend less than 6 hours with VDT per day.

Results: The study included 40 subjects per group with the Exposed group spending 10 hours with VDT on average per day, while the less exposed group would spend 3 hours on average per day. The MPOD level, specifically Max OD, was statistically lower ($p = .0051$) in the exposed group (0.2034 DU) compared to the less exposed group (0.2467 DU). This coincided with an observed negative correlation between the length of hours spent on the device and the MPOD levels (Max OD, with $r = -0.387$ $p = .0005$). The negative value denotes that the more time is spent with the device, the lower the MPOD becomes.

Conclusions: This cross-sectional analytical study showed that the exposed group had statistically lower MPOD levels. This coincides with the negative correlation between the length of hours exposed and the MPOD levels. As of date, the clinical implication of low MPOD levels is still undetermined.

Poster No.: PO-198
Panel No.: 198, Session: PO

Cryptococcus chorioretinitis: A Case Report

*First Author: Siti Aeisyah **AYOB***
*Co-Author(s): Nor Azita **AHMAD TARMIDZI**, Hamisah **ISHAK***

Purpose: To describe a case of disseminated cryptococcosis and correlate optical coherence tomography (OCT) findings with disease pathology.

Methods: To present a case report.

Results: A 32-year-old man with advanced acquired immunodeficiency syndrome (AIDS) was referred for an eye assessment during an admission for new onset

seizure. Preceding symptoms were headache, vomiting and blurred vision suggesting that he had raised intracranial pressure. Fundoscopy revealed bilateral multifocal creamy yellow choroidal lesions of varying sizes distributed mainly at the nasal retina sparing the macula. Optics discs were mildly swollen. Pupils, extraocular motility, anterior segment and intraocular pressure were all unremarkable. OCT showed intraretinal fluid limited by a prominent and irregular external limiting membrane with underlying nodular choroidal thickening, retinal pigment epithelium disorganization and hyperreflectivity of photoreceptor layer, consistent with cryptococcal chorioretinitis. His CD4+ T-lymphocyte count was 15 cells/L. Computed Tomography (CT) imaging showed no ring or leptomeningeal enhancement. He was subjected to a lumbar puncture for further investigation. Cerebrospinal fluid (CSF) culture yielded encapsulated yeasts in budding, characteristic of Cryptococcus sp. Combination of Amphotericin B and Flucytosine was given intravenously for 40 days. Neurological symptoms improved and repeated CSF culture was clear. However, resolution of chorioretinitis was only evident after the commencement of intravitreal Amphotericin B in both eyes.

Conclusions: Disseminated cryptococcosis results in infectious microemboli that could travel into choroidal circulation, leading to choroiditis giving characteristic findings on OCT. Intraocular penetration of intravenous Amphotericin B is low thus intravitreal therapy is the optimal choice for treatment of cryptococcosis with ocular affection.

Poster No.: PO-204
Panel No.: 204, Session: PO

Double Disk Double Risk

*First Author: Amit Kumar **DEB***
*Co-Author(s): Shreays **TEMKAR***

Purpose: Many developmental defects can simulate the optic disc (optic disc pseudodoubling). True optic disc duplication with two independent retinal vasculatures is rare. Associated optic nerve duplication is rarer still and seen in lower vertebrates.

Methods: We, hereby, report a rare and unique case of a true optic disc duplication in one eye of a patient with bilateral proliferative diabetic retinopathy.

Results: Our case was a 50-year-old diabetic who presented with decreased vision in both eyes for 6 months associated with floaters in both eyes for 1 month. His BCVA was 20/200 in RE and 20/60 in LE. RE had a subcapsular cataract. Both eye fundus examinations showed features of PDR with vitreous hemorrhage and incomplete PRP. RE showed two optic discs which were confirmed on FFA and OCT scans. Both the optic discs had neovessel on the disc (NVD), thereby, increasing the risk of vitreous hemorrhage as well as the progression of PDR. He was treated with BE completion PRP and intravitreal anti-VEGFs along with RE cataract surgery

Conclusions: The patient is being closely followed up with OCT macula and serial fundus photographs. Additional PRP in both eyes ± intravitreal anti-VEGFs can be planned as deemed necessary during follow-up. Concomitant strict systemic control has to be advised.

Poster No.: PO-195
Panel No.: 195, Session: PO

Evaluation of Deep Choroidal Vascular Changes Using EnFace OCT in Central Serous Chorioretinopathy

*First Author: Nasiq **HASAN***
*Co-Author(s): Rohan **CHAWLA**, Dheepak **SUNDAR***

Purpose: To detect changes in deep choroidal vasculature following resolution of CSCR using Enface SSOCT.

Methods: Fifteen eyes of patients with CSCR were studied during the acute phase and following resolution. OCT-A scans were obtained, and the deep choroidal layer was segmented between 150 to 300 microns below the RPE. The dilated deep choroidal vessels visible on EnFace OCT corresponding to the leak on FA were localized and the area and width of the vessel was compared using imageJ software. Other parameters like best corrected visual acuity and central choroidal thickness was also measured and compared before and after resolution of CSCR.

Results: Mean age of the patients was 41.22 ± 7.45 years. There was a significant decrease in width (0.89±0.48mm vs 0.662±0.27mm, p = 0.007) and area (0.81±0.61mm2 vs 0.56±0.46mm2, p = 0.009) of the dilated vessel post resolution of CSCR) however the overall decrease in choroidal thickness from 428.22±73.11 to 419±69.77 microns was not significant. (p = 0.365).

Conclusions: EnFace SSOCT scans can be used as a tool to identify anatomical changes in the deep choroidal vessels during the course of the disease and to help monitor the response of treatment in CSCR.

Poster No.: PO-207
Panel No.: 207, Session: PO

Imaging Biomarkers Affecting Visual Outcomes in Polypoidal Choroidal Vasculopathy

*First Author: Colin **TAN***

Purpose: Polypoidal choroidal vasculopathy (PCV) has high prevalence among Asians, with variable clinical course and visual prognosis. We aimed to evaluate the imaging features which affect long-term visual outcomes for PCV.

Methods: Study of 107 consecutive patients with PCV.

Patients were imaged using fluorescein angiography (FA) and indocyanine green angiography (ICGA). Color fundus photographs and angiograms were graded independently using standardized diagnostic criteria by two ophthalmologists to confirm the diagnosis of PCV.

Results: Of the 107 patients, leakage on FA leakage was observed in 57 patients (53.3%). Patients with FA leakage had significantly worse LogMAR VA compared those without leakage (LogMAR 1.04 vs. 0.32 at 5 years, p <0.001), and experienced higher rates of visual loss ≥3 lines (60% vs. 0%, p <0.001). Those without FA leakage experienced higher rates of good visual acuity (≥20/40) (74.4% vs. 19.6%, p <0.001) at all follow-up visits.

Conclusions: The presence of FA leakage affects the long-term visual outcomes for PCV.

Poster No.: PO-200
Panel No.: 200, Session: PO

Nutritional Blindness – A Plight of Vitamin B-12 Deficiency

*First Author: Izzati **OTHMAN***
*Co-Author(s): Norlelawati **ABU**, Wanni **GOH**, Sangeeta **KUGANASAN**, Evelyn **TAI***

Purpose: Nutritional deficiencies are a rare, potentially reversible cause of optic atrophy.

Methods: A case report of bilateral optic atrophy secondary to vitamin B-12 deficiency.

Results: A healthy 65-years-old lady complained of bilateral, gradual, painless reduction in vision for 6 months. She had decreased oral intake for 1 year. She denied any gastrointestinal or constitutional symptoms. Her visual acuity was 1/60 bilaterally. She had pale optic discs with attenuated vessels in both eyes, with a cup-disc-ratio of 0.3. Ocular and systemic examination were otherwise unremarkable. The blood workout was distinguished by low blood indices (hemoglobin 4.7g/dl, white blood cells 2.5x103/uL, platelet 83x109/L) and low serum vitamin B-12 (72.22 mmol/L). Peripheral blood film was suggestive of mixed nutritional deficiency anemia. She was diagnosed with bilateral nutritional optic neuropathy due to pancytopenia with vitamin B-12 deficiency. Intramuscular cyanocobalamine and other supplements were administered. Unfortunately, due to the chronicity of her condition, her vision remained poor upon her last review six months post presentation.

Conclusions: Optic neuropathy may be the presenting sign of a nutritional deficiency. A dietary history is essential in all patients presenting with optic neuropathy, as timely nutritional supplementation may reverse visual loss.

Poster No.: PO-208
Panel No.: 208, Session: PO

Pigment Epithelial Detachment Scarring Index: A New Imaging Biomarker in Wet Age-Related Macular Degeneration

*First Author: Amrish **SELVAM***
*Co-Author(s): Jay **CHHABLANI**, Sanjana **HARIHAR**, Vinisha **SANT**, Stavan **SHAH**, Sumit **SINGH***

Purpose: To quantify fibrotic changes in eyes with wet age-related macular degeneration (AMD) by using pigment epithelial detachment scarring index (PEDSI).

Methods: A retrospective case series of 31 treatment-naïve wet AMD eyes undergoing anti-vascular endothelial growth factor (anti-VEGF) monotherapy over a 6-month period was performed. PEDSI was determined using an automated kernel-based image processing technique on high-definition optical coherence tomography.

Results: The mean age of 77.3 ± 8.6 years. Mean of 3.7 ± 1.4 anti-VEGF injections during the mean follow-up duration of 6.3 ± 1.1 months. Median (IQR) visual acuity (VA) at baseline, month 3, and month 6 were 0.48 (0.30 to 1.0), 0.40 (0.18 to 0.70), and 0.39 (0.17 to 0.70) respectively (p = 0.02, Friedman test). Median (IQR) PEDSI values at baseline, month 3, and month 6 were 0.09 (0.01 to 0.40), 0.28 (0.06 to 0.81), and 0.23 (0.06 to 0.54) respectively (p = 0.07). Correlation analysis showed a weak, negative correlation (r = - 0.06, p = 0.75) between VA and PEDSI. Good responders (14 eyes with >0.1 improvement in VA) showed a positive correlation (r = 0.296, p = 0.30) between VA and PEDSI.

Conclusions: PEDSI may demonstrate the therapeutic effects of anti-VEGF monotherapy in wet AMD patients.

Poster No.: PO-218
Panel No.: 218, Session: PO

Plasma Homocysteine Contributes to Diabetic Retinopathy Associated With Dysregulated Lipid Profile and Impaired Kidney Function in Patients With Type 2 Diabetes Mellitus

*First Author: Xiaosi **CHEN***
*Co-Author(s): Yiyun **ZENG**, Xinyuan **ZHANG***

Purpose: Diabetic retinopathy (DR) remains the leading cause of preventable blindness in working-age population. Landmark cohort studies have indicated that diabetes induced retinal microvascular complication remains high rates after controlling for hyperglycaemia, hypertension, and hyperlipidaemia. This study aims to test if elevated plasma levels of homocysteine (Hcy) and lipoprotein (a) (LPA) contribute to DR associated with dysregulated lipid profile and kidney function.

Methods: A total of 83 patients with type 2 diabetes mellitus (DM) were enrolled in this prospective case-

control study. Patients were assigned to the DM group, non-proliferative DR (NPDR) group, and proliferative DR (PDR) group. Age and sex-matched individuals with no diabetes were included in the control group. Biochemical tests, including fasting blood glucose (FBG), glycated hemoglobin (HbA1c), Hcy, LPA, lipid profile, and urine microalbumin (UMA), were evaluated.

Results: Hcy was negatively correlated with high-density lipoprotein-cholesterol (HDL-C) ($p < 0.05$), but positively correlated with [total cholesterol (TC)-HDL-C)/HDL-C] ($p < 0.05$), low-density lipoprotein cholesterol (LDL-C)/HDL-C ($p < 0.05$), and UMA ($p < 0.05$). Traditional risk factors, Hcy, arteriosclerosis-associated plasma indices, and UMA, resulted as the independent risk factors for the occurrence of DM and DR. After controlling for age, sex, duration of DM, and FBG, a multiple ordinal logistic regression model showed that LPA [OR = 2.90, 95% CI 1.16-7.23, p = 0.023)], LDL-C (OR = 4.28, 95%CI 1.24-14.79, p = 0.021), and (TC-HDL-C)/HDL-C (OR = 1.92, 95%CI 1.05-3.53, p = 0.035) were risk factors for DM and DR.

Conclusions: Hcy and LPA contributed to DM and DR. Hcy was positively correlated with kidney dysfunction and lipid profiles, and negatively with HDL-C, LPA, LDL-C. (TC-HDL-C)/HDL-C resulted as predictors of the DM and DR.

Poster No.: PO-210
Panel No.: 210, Session: PO

Practice Patterns of Hydroxychloroquine Retinopathy Screening in South Korea: Screening Timing and Modalities in a Nationwide Cohort Study

*First Author: Seong Joon **AHN***
*Co-Author(s): Ko Eun **KIM***

Purpose: To investigate the practice patterns of hydroxychloroquine retinopathy screening in terms of timing and tests used in South Korea using the Korean national health claims database.

Methods: In this nationwide population-based cohort study, subjects at risk were identified as those who initiated HCQ therapy from January 2010 to December 2020 and used for >6 months by accessing health claim records provided by the HIRA service of South Korea. Yearly cohort analyses on timing and screening modalities were performed. The timing and modalities used for baseline examination were assessed. For long-term (> 5 years) users, monitoring visits from Year 5 and modalities used for the regular monitoring were additionally evaluated. Adherence to the 2016 AAO recommendations was judged as appropriate, unscreened (no examination), and under-screened (insufficient interval or numbers of tests).

Results: The number of yearly patients initiating hydroxychloroquine therapy decreased over the period between Year 2010 and 2020. Baseline screening was performed mostly using funduscopy, followed by OCT and VF. Monitoring after 5 years was performed, using OCT in most occasions. Appropriate, regular monitoring according to AAO guideline was performed only in less than 5% of patients at risk in any yearly period between 2015 and 2021; however, the percentages of appropriate screening showed increasing trend over time. Most of the patients had not been screened after 5 years of HCQ use, which may lead to late diagnosis of the retinopathy.

Conclusions: Most Korean patients on long-term treatment are not regularly screened, which requires further measures to improve adherence to established guidelines.

Poster No.: PO-238
Panel No.: 238, Session: PO

Prognostic Value of Myopic Disc Deformation in Myopic Choroidal Neovascularization

*First Author: Yoonjeon **KIM***

Purpose: To evaluate the clinical characteristics of myopic choroidal neovascularization (mCNV) according to peripapillary atrophy (PPA) and optic disk tilt and to explore whether those myopic disk deformations are associated with the prognosis of mCNV.

Methods: Patients with subfoveal mCNV who received intravitreal bevacizumab injection and followed for ≥3 years were included. PPA was quantified as area of the ß-zone PPA/disk area ratio (PDR) and optic disk tilt as the tilt ratio (the longest/shortest disk diameter). We compared the clinical characteristics in terms of PDR and tilt ratio and identified the poor prognostic factors using Logistic regression and Cox proportional hazard model.

Results: Among 80 eyes of 80 patients, 29 (36.30%) eyes developed macular atrophy during 80.71 ± 34.76 months. PDR and tilt ratio are strongly correlated with each other ($p = 0.004$). Higher PDR showed significant correlations with longer axial length ($p = 0.013$), worse baseline and final VA ($p = 0.007$ and $p = 0.047$), and thinner subfoveal choroidal thickness ($p = 0.039$), while higher tilt ratio showed significant correlations only with longer axial length ($p = 0.036$). High PDR was also an independent risk factor for both macular atrophy (OR = 2.257, $p < 0.001$) and poor visual outcome (HR = 1.174, $p = 0.007$), while high disk tilt ratio was not.

Conclusions: Subfoveal mCNV with higher ß-zone PPA area/disk area ratio had worse functional and structural outcomes.

Poster No.: PO-209
Panel No.: 209, Session: PO

Purtscher-Like Retinopathy in Preeclampsia

*First Author: Francis Dominic **VILLANGCA***
*Co-Author(s): Jazel **VERDE***

Purpose: To report a case of Purtscher-like retinopathy secondary to severe preeclampsia with severe features in a pregnant woman.

Methods: To present a case report.

Results: A 35-year-old and36-week pregnant patient complained of visual disturbances immediately post-partum. Visual acuity was counting fingers at 5 feet bilaterally. Posterior segment exam revealed Purtscher-flecken in the posterior pole with scattered dot hemorrhages. Optical coherence tomography (OCT) revealed inner retinal thickening and increased hyper-reflectivity. The patient was diagnosed with Purtscher-like retinopathy and observed. Three months follow up revealed resolution of the funduscopic findings and best corrected visual acuity improved to 6/20 in the right eye and 6/7.5 in the left eye.

Conclusions: Purtscher-like retinopathy should not be neglected in complex clinical contexts. Its unclear pathophysiology determines an uncertain treatment strategy, but a meticulous follow-up is compulsory in order to avoid its severe complications.

Poster No.: PO-206
Panel No.: 206, Session: PO

Rapid Orbital and Optic Nerve Infiltration in a Lady With Aggressive Diffuse Large B-Cell Lymphoma

*First Author: Sharon Yet **XUE ER***
*Co-Author(s): Sangeeta **KUGANASAN**, Sujaya **SINGH**, Nandini **VIJAYA SINGHAM***

Purpose: Patients with Diffuse Large B-Cell Lymphoma (DLBCL) have a lower risk of central nervous system (CNS) metastasis, only 5% risk of optic nerve infiltration. We report a case of aggressive DLBCL with CNS, orbital and optic nerve infiltration.

Methods: To present a case report.

Results: A 50-year-old lady with DLBCL on RCHOP regime presented with 3-week-history floaters, blurring of vision over her eye and facial asymmetry. She had multiple pet cats. On examination right eye visual acuity was 6/9. The optic disc was diffusely swollen with a subretinal mass inferiorly. Left eye was normal. MRI revealed no signs of CNS infiltration. Fundus Fluorescein Angiogram showed presence of hot disc with no vasculitis. She was treated for right Bell's palsy with Jansen papillitis secondary to Presumed Ocular Toxoplasmosis with negative serology. Oral Bactrim was commenced. Lumbar puncture with intrathecal methotrexate injection was performed in suspicion of CNS Lymphoma due to the new onset Bell›s palsy. Cerebrospinal fluid was negative for malignancy. 5 weeks later, she developed right axial proptosis, visual deterioration to counting fingers, positive RAPD, complete ophthalmoplegia with keratopathy and marked worsening of optic disc swelling. Contrasted CT imaging revealed an intracranial mass extending to bilateral optic nerves, intraconal and cavernous sinus space. Her condition worsened rapidly with systemic metastases. She was treated palliatively and succumbed to her illness shortly after.

Conclusions: Although rare, optic nerve, orbital infiltrations of DLBCL should be suspected in patients with optic disc swelling. However, its diagnosis is challenging as optic nerve neoplastic infiltrations may be confused with several infective lesions.

Poster No.: PO-211
Panel No.: 211, Session: PO

SD OCT Biomarkers' Role in Predicting Visual Outcome in Diabetic Macular Oedema

*First Author: Vinod **SINGH***
*Co-Author(s): Jagriti **RANA**, Deeksha **SINGH**, Kamaljeet **SINGH**, Shivna **THAKER***

Purpose: To determine the role OCT biomarkers and their association with visual outcome in patients of diabetic macular edema either after treatment or normal follow up.

Methods: OCT scan was carried out in 50 eyes of 50 patients of diabetic macular edema out of which disorganization of retinal inner layers were found in eyes 28 eyes (56%) and ellipsoid zone and external limiting membrane disruption was found in 35 eyes (70%) and they were given 0.05 mL of ranibizumab monthly injection for consecutive 3 months.

Results: In this study ellipsoid zone, external limiting membrane disruption and horizontal extent of disorganization of retinal inner layers directly proportional to the decrease in visual acuity ($p = 0.001 < 0.05$) , ($p = 0.012 < 0.05$), ($p = 0.006 < 0.05$) . The horizontal extent of disruption had decreased after injecting 3 monthly intravitreal ranibizumab.

Conclusions: Final visual outcome depends on these imaging biomarkers.

Poster No.: PO-216
Panel No.: 216, Session: PO

Sparkle in the Eye: A Rare Case of Biettis Crystalline Dystrophy

*First Author: Priethikka **M S***
*Co-Author(s): Nivetha **GANDHI***

Purpose: To report a unique case of Biettis Crystalline Dystrophy- a rare corneo-retinal degeneration. It is associated with intra-retinal glistening crystalline

deposits commonly in the posterior pole, and yellow crystals in the paralimbal area of the cornea. It is seen to be associated with 3% of cases of Retinitis Pigmentosa. The crystal deposits are believed to be cholesterol esters deposited due to altered Lipid metabolism, in South India.

Methods: We are presenting a case of a 55-year-old male, referred from psychiatry department for alcohol withdrawal syndrome, with complaints of progressive diminution of vision in both eyes and defective night vision. There was no similar history in the family. He gives no history of any prior chronic medications.

Results: On ocular examination, his BCVA was 6/12 in the right eye and 6/18 in the left eye, N12 in both eyes. His Color vision was impaired. His anterior segment was unremarkable with fundus evaluation showing white, refractive, crystalline deposits in the deeper retinal layer restricted to the parafoveal region, associated with RPE degeneration. Fundus photo was taken which reconfirmed our observation. Worth four dot test showed no signs of diplopia. On SD-OCT, hyper-reflective dots were seen in intra-retinal layers, corresponding to the crystalline deposits observed on fundus examination, along with intra-retinal tubulations. 24-2 Humphrey's Visual field showed paracentral scotomas bilaterally with ERG showing subnormal results. We made a provisional diagnosis of Bilateral early Bietti's Crystalline Dystrophy.

Conclusions: This is an interesting case due to its rarity and no associated family linkage to the condition.

Poster No.: PO-201
Panel No.: 201, Session: PO

Translocator Protein a New Therapeutic Target for Age-Related Macular Degeneration

*First Author: Xinhua **SHU***
*Co-Author(s): Aileen **WONG***

Purpose: Age-related macular degeneration (AMD) is the most common cause of visual disorder in the aged population. Abnormal accumulation of cholesterol is present in drusen, a clinical feature of AMD. Promotion of cholesterol removal in drusen will slow down AMD progression. The translocator protein (TSPO) is responsible for mitochondrial cholesterol trafficking. The current study aims to investigate TSPO-mediated cholesterol trafficking in retinal pigment epithelial (RPE), which will develop new treatment for AMD.

Methods: Expression of TSPO in RPE and CE cells was confirmed by qRT-PCR, Western blotting and immunostaining. The functional activity of TSPO was manipulated with selective TSPO ligands. Cellular responses were analyzed by cholesterol efflux assay, lipid uptake and accumulation assay. Furthermore, TSPO gene was deleted from RPE cells using the clustered regularly interspaced short palindromic repeats (CRISPR)/Cas9 engineering system. Effect of TSPO ligands on removal of cholesterol from the RPE were examined in mice fed with high-fat diet.

Results: TSPO was highly expressed in RPE cells and decreased during ageing. TSPO-specific ligands significantly promoted cholesterol efflux in RPE, while deletion of TSPO impaired cholesterol efflux. TSPO deletion caused cholesterol accumulation in human and mouse RPE cells. TSPO ligand treatment decreased cholesterol levels in the RPE of mice fed high-fat diet. TSPO ligands also showed inhibition of systemic and local inflammation induced by high-fat diet, possibly via regulating gut microbiota.

Conclusions: This study sheds light on molecular and cellular aspects of AMD pathogenesis and suggests that TSPO is a potential therapeutic target for treating AMD.

Poster No.: PO-215
Panel No.: 215, Session: PO

Vogt-Koyanagi-Harada Disease With Variable Clinical Spectrum: A Case Series

*First Author: Muharliza **MUSA***
*Co-Author(s): Nor Azita **AHMAD TARMIDZI**, Hamisah **ISHAK***

Purpose: To study a variable clinical spectrum and multimodal imaging features in Vogt-Koyanagi-Harada (VKH) disease.

Methods: Medical records of patients treated as VKH disease between 2018 and 2022 were evaluated retrospectively. Fundus fluorescein angiography (FFA), optic coherence tomography (OCT) and B-ultrasonography scan features were evaluated. All patients were classified according to the revised diagnostic criteria for VKH syndrome as «complete,» «incomplete,» and «probable.»

Results: Fourteen eyes of 8 patients were included. The mean age at presentation was 46 years (range 21-73), with equal gender distribution. The disease was incomplete in 3 patients (37.5%) and probable in 5 patients (62.5%). All cases presented in acute uveitis stage and the most common findings were exudative retinal detachment and disc edema (100%), while in chronic stage, the most common presentation was choroidal depigmentation (100%). 6 patients (75%) had bilateral involvement, whereas 2 patients (25%) had pre-existing blind in one eye. 1 patient (12.5%) had profound vision loss, followed by 4 patients (50%) with severe and 3 patients (37.5%) had moderate impairment at initial presentation. 4 patients (50%) received pulse corticosteroids followed by oral corticosteroids therapy. All patients (100%) required second line immunomodulatory agent. 5 patients (62.5%) gained good final vision of 20/30, whereas 3 patients (37.5%) had final vision of 20/50-20/60 in which 1 patient (12.5%) had cataract removal in both eyes.

Conclusions: VKH can present with variable clinical

spectrum and early diagnosis can be challenging in atypical presentation. Thus, higher index of suspicion is mandatory for a timely ocular diagnosis and administration of imperative treatment.

Poster No.: PO-212
Panel No.: 212, Session: PO

When Time Is More Valuable Than Anything Else

*First Author: Zokri **MOHD FAIZAL***
*Co-Author(s): Othman **OTHMALIZA***

Purpose: To illustrate 3 cases of retinal artery occlusion with different etiologies and its immediate management.

Methods: This is a case series.

Results: Case 1: A 41-year-old lady with underlying chronic myeloid leukemia presented with right eye sudden onset loss of vision. Her visual acuity was light projection. Fundus showed blurred disc margin with tortuous and dilated vessels. Her right vision improved to 6/60 after oral diamox and ocular massage. Impression was right eye reperfusion central retina artery occlusion secondary to hypercoagulable state. Case 2: A 61-year-old gentleman with underlying ischemic heart disease presented with left eye sudden onset loss of superior visual field during coronary angiogram. His left eye vision was 6/36. Fundus showed pale inferior half retina with attenuated vessels and Hollenhorst plaque at bifurcation of inferior retinal artery. Impression was left inferior hemi-retinal artery occlusion secondary to thromboembolism with sparing of the cilioretinal artery post angiogram. Though Vision improved to 6/6 after ocular massage and oral diamox, superior visual field defect persists. Case 3: A 43-year-old lady underlying diastolic hypertension presented with right eye sudden onset loss of vision upon woke up from sleep with vision of non-light projection. Posterior segment showed swollen hyperemic disc with cherry red spot and pale posterior pole. Her vision improved to hand motion after ocular massage. Coagulation profile, thrombophilia studies and imaging were unremarkable. Impression was right eye central retinal artery occlusion secondary to retinal artery vasospasm.

Conclusions: The time of initial presentation from onset of symptom is very crucial to avoid from irreversible visual loss.

Retina (Surgical)

Poster No.: PO-220
Panel No.: 220, Session: PO

Amniotic Membrane Graft for Treatment of Large Refractory Macular Hole

*First Author: Hussain **KHAQAN***

Purpose: Study off-label human amniotic membrane (hAM) use outcomes for giant refractory macular hole closure.

Methods: The study was performed at Lahore General Hospital, Lahore, over 52 months on patients who had undergone standard MHs surgical procedures for treatment, but the hole failed to close. Refractory MHs dimensions ranged from 824 µm to 1568 µm. Before surgery, patients underwent slit-lamp examination, fundus photography, and OCT for macular scan. AMG used in surgery was harvested from a human placenta 24 hours prior. Before AMG application, enough internal limiting membrane peeling was done to ensure perfect fitting and recovery. All holes were plugged with AMG and SF6 gas tamponade.

Results: A total of 29 patients, 20 male and 9 female, were included in this study. Mean age of patients was 58 ± 6. Patients had refractory holes of average 1237.48 ± 151.25 µm. Post-op, 100% MH closure was achieved in all patients. Type 1 closure was found in patients (37.93%) who underwent AMG surgery within 3 months after primary surgical failure. Type 2 closure was found in patients (62.07%) who were operated on 3 months after primary surgical failure.

Conclusions: Refractory MHs treated by AMG with SF6 gas tamponade achieve anatomical type 1 closure if performed within 3 months of primary surgical repair.

Poster No.: PO-226
Panel No.: 226, Session: PO

Anatomical and Functional Outcomes of Retinectomy in Recurrent Retinal Detachment: A Detailed Analysis

*First Author: Naresh **KANNAN***
*Co-Author(s): Avik **DEY SARKAR**, Mathu Krishnan Vallinayagam **VALLINAYAGAM***

Purpose: The treatment of Recurrent Retinal Detachments (ReRD) is complex and existing literature is sparse, failing to support any particular surgical procedure in surgical management. In this study, Retinectomy as a viable treatment option for enhancing successful outcome in re-detachment is evaluated.

Methods: This is a retrospective case series of74 patients with recurrent retinal detachment surgically managed with retinectomy during a span of three years (July 2018- June 2021) were reviewed. The patients

who completed at least 6 months of postoperative follow-up. After the re-surgery, all the patients were divided into 2 groups, Group A with successful anatomical outcome after retinectomy and Group B with surgical failure.

Results: The mean age was 47.8 ± 17.8 years with Male preponderence. The types of retinal breaks included horseshoe tear (41.36%), giant retinal tear (22.97%) and retinal holes (25.67%). 33.78% of patients had PVR grade C at baseline. Breaks involved the inferior quadrant (70.27%). The patients with ReRD had a mean BCVA of 2.3 in LogMAR scale on presentation. 40 patients were pseudophakic, 32 phakic and 2 aphakic. Presence of PVR Grade C (p = 0.004), greater number of vitreo-retinal surgeries (p = 0.001), BCVA below 1.477 logMar prior to surgery (p = 0.041) and GRT (p = 0.007) have shown significant association with failure of re-surgery. BCVA better than 6/60 on Snellens chart was achieved in significantly higher population (p = 0.04) in Group A

Conclusions: PPV with retinectomy and silicone oil injection in cases with re-detachment can be a good choice in a surgeon's armamentarium.

Poster No.: PO-221
Panel No.: 221, Session: PO

Association Between Restoration of Ellipsoid Zone and External Limiting Membrane After Macula Hole Surgery and the Visual Outcome

*First Author: Michele Shi-Ying **TEY***
*Co-Author(s): Nor Azita **AHMAD TARMIDZI**, Zabri **BIN KAMARUDIN**, Wardati Hanisah **BINTI JAMI**, Francesca Martina **VENDARGON***

Purpose: To examine the restoration of EZ and ELM in those with successful anatomical closure of idiopathic full thickness macular hole (FTMH) after surgery and their association with visual recovery.

Methods: A retrospective review of medical records and optical coherence tomography (OCT) scans of 48 eyes of 44 patients with successful idiopathic MH closure at two tertiary centers.

Results: There was a significant improvement in the best corrected visual acuity (BCVA) after surgery (p <0.001). The ELM was restored in 37 (77.1%) of the eyes, while the EZ was restored in 26 (54.2%) of the eyes. None of the eyes demonstrated restoration of the EZ without presence of recovery of ELM. Both the presence of recovery of EZ and ELM were found to be significantly associated with the improvement in BCVA post-operatively (p = 0.034 and p = 0.003 respectively). The duration of hole was also found to be significantly correlated with the improvement in BCVA (p = 0.001). However, there was no significant correlation found between the MH size and improvement in BCVA in this study (p = 0.425).

Conclusions: The restoration of ELM is closely associated with that of the EZ and the presence of EZ and ELM reflectivity on SD-OCT after macular hole surgery have been demonstrated to be significantly correlated with the improvement in the BCVA.

Poster No.: PO-231
Panel No.: 231, Session: PO

Causes and Outcomes of Intraoperative Retinal Breaks During Surgery for Tractional Retinal Detachments Secondary to Retinopathy of Prematurity

*First Author: Komal **AGARWAL***
*Co-Author(s): Subhadra **JALALI**, Praneet **TELUKUNTA***

Purpose: To evaluate the surgical steps causing intra-operative retinal breaks during surgery for indications secondary to retinopathy of prematurity (ROP) and assess their anatomical outcomes

Methods: Retrospective study of cases where intra-operative breaks occurred during surgery for indications secondary to ROP. Preterm infants diagnosed with ROP requiring surgery were included. All demographic details, clinical findings at presentation and during surgery, treatment details were documented. Site of rhegma, surgical step during which rhegma occurred and tamponade used were evaluated. The anatomical outcome was categorized as good (attached retina), fair (attached with folds), and poor (detached retina) according to retinal status at last visit. Post-operative complications were noted.

Results: Thirty-five eyes of 34 babies were included. Nineteen (54.2%) were male. Mean gestational age was 29.4 weeks, mean birth weight was 1286.6 grams. Nineteen (54.2%) eyes had left eye involved. The most common indication for surgery was stage V ROP (n=12, 34.2%) followed by stage IVA ROP (n=11, 31.4%). Vitrectomy was the most common step during which intraoperative rhegma occurred (n=18, 51.4%) followed by membrane peeling (n=11, 31.4%). Silicon oil was used for tamponade in 30 eyes (85.7%). Anatomical outcome was good in 9 (25.7%), fair in 15 (42.8%) and poor in 11 eyes (31.4%). Re-detachment was most common complication (n=11,31.4%).

Conclusions: With advancements in microsurgical instrumentation for vitreoretinal surgery, more than 2/3rd of eyes had fair to good anatomical outcome and could be salvaged. Careful vitrectomy and membrane peeling with minimal traction to the retinal surface can help prevent this complication.

Poster No.: PO-230
Panel No.: 230, Session: PO

Clinical Profile and Outcomes of Rhegmatogenous Retinal Detachment Secondary to Retinopathy of Prematurity

*First Author: Komal **AGARWAL***
*Co-Author(s): Kiran **CHANDRA**, Subhadra **JALALI**, Praneet **TELUKUNTA***

Purpose: To evaluate the clinical profile, causes and outcomes of rhegmatogenous retinal detachment (RRD) secondary to retinopathy of prematurity (ROP).

Methods: Retrospective study of cases with RRD developing secondary to ROP. Preterm infants diagnosed with ROP who developed RRD were included. Infants undergoing VR surgery where intra-operative break was noticed were excluded. All demographic details, clinical findings at presentation and during surgery, treatment details were documented. Possible cause of detachment, site of rhegma, anatomical and refractive details, complications were analyzed. The anatomical outcome was categorized as good (attached retina), fair (attached with folds), and poor (detached retina) according to retinal status at last visit.

Results: Fifty-one eyes of 50 babies were included. 34 patients (66.6%) were male. Mean gestational age was 29.3 weeks, mean birth weight was 1.31 kgs. Thirty-one (60.7%) eyes had left eye involved. Mean age at the diagnosis of RRD was 44.4 months (2-206 months). The most common cause of RRD was late primary RRD without prior history of treatment (n=16, 31.3%) followed by RRD immediately following laser photocoagulation (n=11, 21.5%). Re-attachment surgery was offered in 44 eyes (86.2%). Site of rhegma was most common in temporal region (n=25, 49%). Anatomical outcome was good in 11 (25%), fair in 14 (31.8%) and poor in 19 eyes (43.1%). Most common complication was recurrent RD in 19 eyes (43.1%).

Conclusions: RRD secondary to ROP can happen in acute and regressed stages. Even with advancements in instrumentation, anatomical outcome was poor in 43% of the eyes. Recurrent RD is common.

Poster No.: PO-223
Panel No.: 223, Session: PO

Does Timing of Vitreoretinal Surgery Impact Your Surgical Performance? – A Simulator-Based Study

*First Author: Ashish **MARKAN***
*Co-Author(s): Mohit **DOGRA**, Deeksha **KATOCH**, Ramandeep **SINGH**, Simar Rajan **SINGH**, Basavaraj **TIGARI***

Purpose: To compare the surgical performance of vitreoretina trainees while performing various surgical maneuvers on the Eyesi surgical simulator (VRMagic Holding AG) during different times.

Methods: This was a prospective cross-over observational study where vitreoretina trainees (less than two years of surgical experience) were asked to perform various surgical tasks using the Eyesi surgical simulator (VRMagic Holding AG). The trainees were randomized into two groups. Group A performed surgeries during the morning (7-9 AM), and group B performed surgeries during the evening (4-7 PM). After completing assigned tasks, the trainees were crossovered to the alternative group. Primary outcome measures included objective scores and time to perform each surgical maneuver in both groups. Secondary outcome measures included subjective scores given by each trainee and complications encountered.

Results: Eight vitreoretina trainees (3 males, 5 females) were included in the study. The mean objective score obtained to perform various tasks like navigation anti-tremor, pars plana vitrectomy and posterior vitreous detachment, bimanual training, bimanual scissors, and epiretinal membrane peeling was similar in both the groups. The time taken to perform the above tasks was similar, whether during the morning or evening shift. Iatrogenic retinal tears and retinal injuries were the most common intraoperative complications and were more frequently seen in evening shifts than morning shifts. Subjectively the residents did not find any difference in either group.

Conclusions: The timing of performing vitreoretinal surgery does not alter the surgical performance. This can be attributed to high motivation to learn and a good attention span of trainees at young age.

Poster No.: PO-227
Panel No.: 227, Session: PO

Enface Optical Coherence Tomography Closure Patterns in Idiopathic Macular Holes

*First Author: Niroj **SAHOO***
*Co-Author(s): Jay **CHHABLANI**, Ashika **PATIL**, Mudit **TYAGI***

Purpose: To determine the postoperative enface optical coherence tomography (OCT) pattern of closure in idiopathic macular holes (MH).

Methods: This was a retrospective, multicentric, observational study done in eyes with idiopathic MH. Baseline characteristics and pre-operative OCT parameters were measured. Type of hole closure was analyzed using enface OCT of the outer retina, by manually adjusting the segmentation to a level corresponding to the base of the closed hole.

Results: A total of 64 eyes of 62 patients (24 males and 40 females) with a mean age of 63.8 ± 12.4 years. The median duration of symptoms was 3 months (IQR 1.75 to 10.5). The eyes had a mean baseline visual acuity of 0.97 ± 0.46 logMAR. On the basis of closure pattern on enface OCT, three different patterns were noted -

round, horizontal, or oblique. A total of 38 eyes had a round/ centripetal closure and 26 eyes had a linear closure (17 eyes had a horizontal closure, 7 eyes had an oblique closure, while 2 eyes had a vertical closure). On analyzing eyes with horizontal MLD more than 650 microns, it was seen that eyes with linear closure (0.76 ± 0.23 logMAR) had a significantly (p = 0.03) better visual acuity than the round closure group (1.07 ± 0.28 logMAR).

Conclusions: We describe three different patterns of hole closure on enface OCT. This provides some idea on the pattern of migration of retinal layers and the plane of apposition during MH closure and its prognostic significance in larger holes.

Poster No.: PO-225
Panel No.: 225, Session: PO

Global Incidence and Temporal Trend of Rhegmatogenous Retinal Detachment

*First Author: Jasmine **GE***
*Co-Author(s): Ning **CHEUNG**, Zhen Ling **TEO***

Purpose: To estimate the global incidence of rhegmatogenous retinal detachment (RRD), and its temporal trend.

Methods: We conducted a systematic review of RRD incidence. The electronic databases PubMed, Scopus, and Thomson Reuters' Web of Science were searched from inception through 19th July 2021. Random-effects meta-analysis model with logit transformation was performed to obtain pooled annual incidence estimates of RRD. Pooled analysis was performed to evaluate the temporal trend of RRD incidence.

Results: Of the 20,645 records identified from database search, 32 studies from 21 countries were included for analysis (244,791 cases of RRD in 245,587 persons). The annual global incidence of RRD was estimated to be 9.56 (95% confidence interval [CI] 6.62 – 13.80) per 100,000 population. There was an increasing trend for the RRD incidence over time (p <0.001). Amongst world regions, the RRD incidence was highest in Europe (14.24 [95% CI 11.61 – 18.03] per 100,000 population), followed by Western Pacific (11.45 [95% CI 9.93-13.20] per 100,000 population), Regions of Americas (8.66 [95% CI 6.05-12.39] per 100,000 population), and lowest in Africa (0.17 [95% CI 0.03-0.94] per 100,000 population).

Conclusions: The global incidence of RRD is 9.56 per 100,000 population with significant increasing temporal trend (p <0.001). Our data may assist in the conceptualization, planning and development of public health strategies for RRD.

Poster No.: PO-222
Panel No.: 222, Session: PO

Lens Status: A Protective Factor for Endothelium During Phacofragmentation Following Complicated Phacoemulsification

*First Author: Nasiq **HASAN***
*Co-Author(s): Mohamed **IBRAHIME ASIF**, Nimmy **RAJ***

Purpose: To evaluate the effect of phacofragmentation on the corneal endothelium following complicated phacoemulsification surgery and to compare the endothelial cell loss between eyes with aphakia and pseudophakia during the procedure.

Methods: This is a prospective interventional comparative case series. Patients who were referred to our center for phacofragmentation with nucleus drop following complicated phacoemulsification surgery were recruited. They were divided into two groups- Group 1 included patients in whom an intraocular lens (IOL) was placed in the sulcus during the primary cataract surgery; Group 2 included those who were left aphakic. Corrected distance visual acuity (CDVA), Intraocular pressure (IOP), corneal clarity, and endothelial cell count (ECC) were recorded before and after phacofragmentation and were analyzed.

Results: Pre-phacofragmentation CDVA, IOP, and ECC were comparable between the two groups. Endothelial cell loss at 1 week, 1 month, and 3 months were 4.01%, 6.14%, 7.99% in group 1 and 6.39%, 8.68%, and 10.66% in group 2 patients respectively. Severe corneal edema was seen at day1 postoperative period in 9 patients in group 2 compared to 3 in group 1. Significant IOL decentration was seen in 2 patients in group 2 and none in group 1.

Conclusions: Patients who were pseudophakic during phacofragmentation had significantly less endothelial cell loss and better corneal clarity. IOL decentration was common when IOL was inserted during the phacofragmentation procedure. Hence, it is advisable to place the IOL during the primary cataract surgery.

Poster No.: PO-224
Panel No.: 224, Session: PO

Racial Differences in Outcomes of Full Thickness Macular Hole Repair Following Pars Plana Vitrectomy

*First Author: Chloe **KHOO***
*Co-Author(s): Haig **PAKHCHANIAN**, Marena **PATRONAS**, Rahul **RAIKER***

Purpose: To study the outcomes of full thickness macular hole (FTMH) repair following pars plana vitrectomy (PPV) between white and black patient population groups.

Methods: A retrospective cohort study was performed using TriNetX, a federated electronic health records

research network comprising multiple health organizations in the United States. Patients who underwent PPV for FTMH repair were identified and categorized into white and black cohorts using ICD-10 and CPT codes. Outcomes were compared 90-days postoperatively between groups after propensity score matching using logistic regression and greedy nearest-neighbor matching algorithm.

Results: A total of 2,974 patients were included in the analysis with 1,487 patients in each of the white and black cohorts. At the 90-day postoperative period, black patients had a significantly greater risk of macular hole (RR 1.35; 95% CI 1.23-1.49) while white patients had a significantly greater risk of retinal detachment with retinal break (RR 1.62; 95% 1.19,2.21), glaucoma (RR 0.75; 95% 0.62,0.9), epiretinal membrane (RR 2.52; 95% 2.07,3.07), and macular edema (RR 2.83; 95% 1.79,4.49). The incidence of a second vitrectomy for FTMH repair within the 90-day period was similar in both cohorts (4.8% vs 4.0%).

Conclusions: While white patients have a greater risk of postoperative complications, black patients have a greater risk of persistent macular holes. However, there is no significant difference in the incidence of second vitrectomy rate within the 90-day period, after initial FTMH repair. It is unclear if black patients have poorer surgical outcomes with longer recovery time, but we hypothesize a possibility of a varied postoperative inflammatory response in black patients compared to white patients.

Poster No.: PO-228
Panel No.: 228, Session: PO

Successful Management With Implementation of Complete and Early Vitrectomy for Acute-Onset Postoperative Endophthalmitis: A Case Report

*First Author: Adiarani **PUSPITAATI***
*Co-Author(s): Rosy **ALDINA**, Mirza **METITA***

Purpose: To report a case of acute-onset postoperative endophthalmitis patient managed successfully with a Complete and Early Vitrectomy for Endophthalmitis (CEVE).

Methods: The diagnosis of acute-onset postoperative endophthalmitis was made based on history taking and ophthalmology examination. The management of the case was accomplished according to CEVE algorithm which was intravitreal antibiotic injection followed by Pars Plana Vitrectomy (PPV).

Results: A 61-year-old woman complained of sudden blurred vision and pain on her right eye since 2 days before admission, accompanied by red eye, pain, tearing, and glare. The ophthalmology examination showed visual acuity of 1/300, eyelid spasm, conjunctival and pericorneal injection, corneal edema, hypopyon, membrane at anterior chamber, and dim fundus reflex. The CEVE algorithm was applied to manage the patient. The patient was given vancomycin-ceftazidime 1mg/2,25mg intravitreal injection but there was no improvement. Therefore, PPV combined with intravitreal injection of vancomycin-ceftazidime 1mg/2,25mg was performed. The intraocular inflammation resolved with improvement of best corrected visual acuity to 6/30 three days after the procedure and 6/18 one month afterwards.

Conclusions: This patient was diagnosed with acute-onset postoperative endophthalmitis. The management with CEVE resulted in a rapid and satisfactory improvement of intraocular inflammation and visual acuity, which indicated a successful management of this case.

Poster No.: PO-229
Panel No.: 229, Session: PO

To Operate or Not? Postoperative Outcomes in Our Series of LHEP Patients

*First Author: Henal **JAVERI***
*Co-Author(s): Mahesh Shanmugam **PALANIVELU**, Rajesh **RAMANJULU***

Purpose: Lamellar macular hole associated epiretinal proliferation (LHEP) is a thick homogenous material of medium reflectivity on the retinal surface, typically contiguous with the middle retinal layers. Eyes with LHEP are characterized by poorer BCVA in comparison to LMH with ERM alone. The purpose of this study was to analyze the anatomical and visual outcomes in patients with LHEP following vitrectomy.

Methods: Five eyes with LHEP were recruited for the study after obtaining informed consent. All of these patients underwent 23G vitrectomy with epiretinal membrane and internal limiting membrane peeling. They were followed up and the anatomical and visual outcomes were studied. Anatomical outcome measured was restoration of ellipsoid zone and visual outcome measured was improvement in best corrected visual acuity.

Results: 5 eyes were recruited for the study. Mean follow up duration was 2.4 years. Mean age of patients was 50.2 years. Male-female ratio was 3:2. In all the 5 eyes, there was ellipsoid zone disruption at baseline, which was restored post-surgery. The mean pre-operative BCVA was 0.6 LogMAR (6/24), which improved to a mean of 0.18 LogMAR (6/9) postoperatively.

Conclusions: Our study showed that good anatomical and visual outcomes are possible in LHEP post-surgery in most cases. However, pre-operative identification and patient counselling is important to avoid intraoperative surprises.

Translational and Visual Sciences Research

Poster No.: PO-233
Panel No.: 233, Session: PO

A Wearable Device for Glaucoma Risk Monitoringg

*First Author: Mayinuer **YUSUFU***
*Co-Author(s): Shuo **GAO**, Mengtian **KANG**, Wenjun **XU**, Chi **ZHANG***

Purpose: Ocular hemodynamic changes play an important role in the development of optic nerve damage in glaucoma. The current study aims to develop a smart wearable device to dynamically monitor cardiovascular-related physiological parameters for better prevention and treatment of glaucoma.

Methods: The device contains a baroreceptor, inertial measurement unit sensor module, photoelectric sensor module, and ambient light sensor module and monitors the physical activity, heart rate, blood oxygen, blood pressure, and ambient light in real-time.

Results: The device determined whether the device was worn tightly based on the value of the pressure obtained by the pressure sensor. The physical activities and postures were monitored by the nine-axis inertial measurement unit. The data on the heart rate and blood oxygen were generated by the photoplethysmogram sensor and the data on blood pressure were calculated based on pulse transit time. The information data on illumination were obtained with the ambient light sensor. The processed data on the postures, heart rate, blood oxygen, blood pressure, ambient light, and other related data were used to obtain the optimal hyperparameters of the neural network model through Bayes Search and Grid Search to create the risk assessment model for glaucoma disease.

Conclusions: By developing a wearable device that integrates and analyzes cardiovascular parameters through a glaucoma risk assessment model, we can enable real-time assessment of glaucoma risk and better monitor the disease progression.

Poster No.: PO-235
Panel No.: 235, Session: PO

Circulating miR-15a as a Potential Marker for Diabetic Retinopathy

*First Author: Nur Musfirah **MAHMUD***
*Co-Author(s): Samarjit **DAS**, Tengku **KAMALDEN**, Nurliza **KHALIDDIN***

Purpose: The prevalence of diabetes mellitus has been shown to be increased worldwide. Diabetic retinopathy, the leading cause of blindness, is one of many secondary complications resulting from uncontrolled diabetes. Currently, diabetic retinopathy can only be diagnosed by a trained specialist, and sometimes they were only detected at the very end stages of the disease. In order to enable better screening and treatment, it is important to identify a biological marker that can be used for early detection of the disease. Recently, specific microRNAs in blood serum/plasma has been shown to be able to distinguish diabetic patients with retinopathy from those without retinopathy and its progression respectively. Thus, we aim to investigate miR-15a, miR-24, and miR-451 as potential biomarkers for diabetic retinopathy in patients associated with type 2 diabetes.

Methods: A total of 42 serum samples were collected from three groups (1) non-diabetes, (2) diabetes patients without retinopathy, and (3) diabetes patients with retinopathy. MicroRNAs were isolated from these samples and analyzed by droplet digital polymerase chain reaction (ddPCR).

Results: Higher expression of miR-15a was observed in diabetes patients without retinopathy compared to the non-diabetes subject, but it is significantly decreased with diabetic retinopathy. No significant changes were observed in levels of miR-24 and miR-451 in any of the groups.

Conclusions: In conclusion, miR-15a may serve as a potential biomarker for early diagnosis of diabetic retinopathy associated with type 2 diabetes.

Poster No.: PO-236
Panel No.: 236, Session: PO

Increase Expression of Circulatory miR-15a in Diabetic Macular Oedema (GOAP Bayer Award 2018)

*First Author: Nur Musfirah **MAHMUD***
*Co-Author(s): Samarjit **DAS**, Tengku **KAMALDEN**, Nurliza **KHALIDDIN***

Purpose: Diabetic retinopathy is a significant debilitating complication of diabetes, causing permanent loss of vision in the eyes with severe disease because of delayed presentation and treatment. miRNA, a small non-coding RNAs, which inhibits the stability and/or translation of an mRNA by binding to the 3›-untranslated regions (3›-UTRs) of their target mRNA has been increasingly recognized as molecule with significant association with diabetes. MicroRNA-15a specifically is thought to be altered with diabetic retinopathy, both in humans as well as in animal and cell culture models. Hence, we aim to investigate the expression level of miRNA-15a as a potential biomarker of diabetic macular oedema, an advanced and progressive retinopathy which may occur at any stage of the disease.

Methods: A total of 117 plasma samples were collected from three groups (1) non-diabetes, (2) diabetes

without retinopathy, and (3) diabetes with diabetic macular oedema. MiRNAs were isolated from these samples and analyzed by droplet digital polymerase chain reaction (ddPCR).

Results: The miR-15a levels were significantly increased in both diabetes without retinopathy and diabetes with diabetic macular oedema compared to non-diabetes control. However, the relative expression level of miR-15a found no evident difference between DME and no DME.

Conclusions: In conclusion, plasma miR-15a is elevated in diabetes compared to controls, which concurred with our previous findings. This finding suggests that miR-15a may be involved in the mechanistic pathways leading to diabetic complications in the eye.

Poster No.: PO-232
Panel No.: 232, Session: PO

Novel Cyclic Nucleotide-Gated Channel, Beta-1 Gene Variants in Filipino Siblings With Retinitis Pigmentosa

*First Author: Marianne Grace **NAVARRETE***
*Co-Author(s): Manuel Benjamin **IBANEZ**, Tamilyn Chelsea **LADDARAN***

Purpose: To report a case of two siblings with retinitis pigmentosa associated with novel mutations in the Cyclic Nucleotide-Gated Channel, Beta-1 (CNGB1) gene.

Methods: We present a case of two Filipino male siblings with nyctalopia since childhood and progressive peripheral vision loss. They were subsequently diagnosed with retinitis pigmentosa following ophthalmologic consult. Both patients underwent thorough phenotyping with fundus photography, fundus autofluorescence, (FAF), macular optical coherence tomography (OCT) and visual field perimetry. Genetic testing through next generation sequencing (NGS) revealed both siblings to be compound heterozygous for two variants in the CNGB1 gene.

Results: Two missense mutations were found in the CNGB1 gene of both siblings: c.2302 A>C and c.2965 G>A. Phenotypic profile of both patients show typical RP appearance with evidence of peripheral visual field constriction.

Conclusions: To our knowledge, these two missense variants have not yet been reported in literature among individuals with CNGB1-related retinitis pigmentosa. This may also be the first reported case of genetically confirmed CNGB1 RP in the Philippines. Knowledge of these variants may aid in further understanding of the phenotypic profile and genetic mutation spectrum of retinitis pigmentosa.

Poster No.: PO-234
Panel No.: 234, Session: PO

Prevalence of Myopia in Adults With Previous Childhood Atropine Treatment

*First Author: Wen Pei Angeline **TOH***
*Co-Author(s): Marcus **ANG**, Joey **CHUNG**, Yong **LI***

Purpose: To evaluate the long-term safety and efficacy of different concentrations of atropine eyedrops in controlling myopia progression from childhood to early adulthood.

Methods: A group of children aged 6-12 years randomized to receive atropine 0.5%, 0.1%, or 0.01% once daily in both eyes. They received atropine treatment for 2-4 years during childhood. After over 10 years, they were recalled determining myopia progression and their current ocular status. Cycloplegic spherical equivalent (SE) and axial length (AL) were measured.

Results: A total of 136 patients were recalled and included for analysis. They had no significant differences in baseline SE or AL. Over 10 years, the mean myopia progression by SE was -2.50 ± 1.76, -2.33 ± 1.58, -1.98 ± 1.67 D in atropine 0.5%, 0.1%, 0.01% groups, respectively (p >0.05). The mean increase in AL was 1.28 ± 0.71, 1.24 ± 0.70, 1.16 ± 0.87 mm in atropine 0.5%, 0.1%, 0.01% groups, respectively (p >0.05). A total of 175 eyes (64.3%) were highly myopic (SE greater than -6.0 D). Compared with non-high myopes, high myopes were younger at baseline, with greater baseline SE, longer baseline AL, and greater overall myopia progression, but with no significant differences in the atropine treatment during childhood.

Conclusions: Over 10 years, atropine 0.5%, 0.1% and 0.01% eyedrops showed no significant differences in slowing myopia progression from childhood to early adulthood. Younger children with greater baseline SE and longer baseline AL were more likely to have greater myopia progression and develop high myopia in the adulthood.

E-POSTERS

Applying Big Data, Artificial Intelligence and Telemedicine in Ophthalmology

Accuracy of Wearable Device for Monitoring Light Exposure, Sleep Behavior, and Physical Activity

*First Author: Wenjun **XU***
*Co-Author(s): Junliang **CHEN**, Shuo **GAO**, Mengtian **KANG**, Mayinuer **YUSUFU***

Purpose: To objectively evaluate the accuracy of the wearable device which could assess light exposure, sleep behavior, and physical activity.

Methods: The device is an integration of an ambient light sensor, color sensor, and inertial measurement unit (IMU). The participant wore the device for 3 days. Sleep stages and bedtime were tested with IMU, and polysomnography (SOMNO HD, SOMNO medics, Germany) was used as the gold standard for sleep behavior monitoring. The actual outdoor time and the difference in optical parameters between outdoor and indoor illumination were used to assess the accuracy of the device.

Results: The device successfully grasped the characteristics of different movements, such as walking and stationary. Data on fluorescent light, outdoor and indoor natural light in different weather conditions revealed that the outdoor natural light intensity was higher than 1000 CODE while the indoor light was lower than that. The wavelength distribution ratio of natural light and indoor fluorescent light was significantly different, with the outdoor near infrared being 0.5% and fluorescent light being 7%. The device accurately identified the light characteristics and wavelength distribution and discriminated natural light from unnatural light with 100% accuracy. The sleep stages were identified using sleeping position information assessed with IMU. Because rapid and non-rapid eye movement sleep stages cannot be divided by sleeping posture information alone, the accuracy of sleep monitoring was only 83%.

Conclusions: The device accurately captured the characteristics of movements and discriminated natural light from unnatural light. However, the accuracy of sleep monitoring needs to be further improved.

Aldose Reductase Inhibitory Potential of Hybanthus Enneaspermus: Biological Importance in Medicine for Treatment of Diabetes Related Secondary Complication

*First Author: Dinesh **PATEL***

Purpose: Hybanthus enneaspermus has numerous pharmacological activities and has been used in the traditional medicine for the treatment of urinary calculi. Aldose reductase inhibitory (ARI) potential of pure phytoconstituents has been evaluated in the present investigation to know their therapeutic value of herbal medicine against diabetes and related secondary complications.

Methods: Hot extraction techniques have been used for the extraction of hybanthus enneaspermus using ethyl alcohol as solvent. Further, this crude extract has been fractionated into various phytoconstituents rich fractions using solvent of varying polarities. Phytochemical analysis has been performed to know the chemical composition of ethanol extract. Aldose reductase inhibitory potential of pure phytoconstituents has been investigated in vitro using rat lens. Adult Wistar albino rats weighting between 150-200 g have been taken in the present investigation. All the standard parameters such as 12 h light and 12 h dark cycle, 25-30 OC and 35-60% relative humidity were maintained during the study. Experimental protocol has been approved by the Institutional Animal Ethics Committee.

Results: Phytochemical analysis signified the presence of various types of phytoconstituents in the ethanol extract of hybanthus enneaspermus. Column chromatography separation of ethanol extract revealed the separation of pure phytochemical. TLC analysis confirmed the presence of numerous secondary phytochemicals in the ethanolic extract. Aldose reductase inhibitory potential of crude extract in rat lens signified the biological importance of hybanthus enneaspermus against diabetes and related secondary complication.

Conclusions: Hybanthus enneaspermus extract inhibit aldose reductase enzymes, which signified their role in the treatment of diabetes and related secondary complications.

Association of Retinal Age Gap With Arterial Stiffness and Incident Cardiovascular Disease

*First Author: Lisa **ZHU***
*Co-Author(s): Mingguang **HE***

Purpose: To investigate associations of retinal age gap with arterial stiffness index and incident cardiovascular disease (CVD).

Methods: A deep learning model was trained based on 19,200 fundus images of 11,052 participants without any medical history at baseline to predict the retinal age. Retinal age gap (retinal age predicted minus chronological age) was generated for the remaining 35,917 participants. Regression models were used to assess the association between retinal age gap and arterial stiffness index. Cox proportional hazards regression models and restricted cubic splines were used to explore the association between retinal age gap and incident CVD.

Results: We found each 1-year increase in retinal age gap was associated with increased arterial stiffness index (β=0.002 [95% CI, 0.001-0.003]; p <0.001). After a median follow-up of 5.83 years (interquartile range: 5.73-5.97), 675 (2.00%) developed CVD. In the fully adjusted model, each 1-year increase in retinal age gap was associated with a 3% increase in the risk of incident CVD (hazard ratio=1.03 [95% CI, 1.01-1.06]; p =0.014). In the restricted cubic splines analysis, the risk of incident CVD increased significantly when retinal age gap reached 1.21 (hazard ratio=1.05 [95% CI, 1.00-1.10]; p-overall <0.0001; p-nonlinear=0.0681).

Conclusions: We found that retinal age gap was significantly associated with arterial stiffness index and incident CVD events, supporting the potential of this novel biomarker in identifying individuals at high risk of future CVD events.

Automated Machine Learning Model for Optical Coherence Image Classification

*First Author: Suklengmung **BURAGOHAIN***
*Co-Author(s): Manabjyoti **BARMAN**, Harsha **BHATTACHARJEE**, Henal **JAVERI***

Purpose: To train an artificial intelligence (AI) model using automated machine learning in classifying OCT images.

Methods: Publicly available OCT datasets containing images of diabetic macular edema, drusens, choroidal neovascular membrane and normal scans were utilized to train an image classifier machine learning model using automated machine learning (AML) platforms from Google, Apple, among others.

Results: The AML-trained image classifier provided comparable results to traditional machine learning models. Precision, sensitivity, specificity, and receiver operator curve (ROC) were on par with conventional machine learning models. The AML-trained model was developed with no use of code and was simpler to create.

Conclusions: AML provides a simplified alternative to developing competent machine learning models, especially for researchers who are not experienced with coding.

Fast Detection of Ocular Image Features in Swept Source Optical Coherence Tomography Images Using a Deep-Learning Object Detection Algorithm

*First Author: Damon **WONG***
*Co-Author(s): Jacqueline **CHUA**, Shi Quan **ONG**, Ian **POEY**, Leopold **SCHEMETTERER***

Purpose: To evaluate the use of a deep-learning based object detection algorithm for detection of anatomical landmarks and imaging artefacts in swept source optical coherence tomography (SS-OCT) images.

Methods: A total of 749 enface images were acquired using a prototype SS-OCT system (Zeiss PlexElite SS-OCT) using an optic nerve head (ONH) centered 6mm x 6mm imaging protocol. Locations of the ONH and regions with signal strength reductions (SSR) not attributed to pathology were manually delineated by a human grader. Bounding boxes around each of the ONH and RSS regions were subsequently automatically defined using the extents of the manual delineations. Detection of the ONH and RSS was evaluated using the YOLOv7 object detection algorithm, which has demonstrated high accuracy in real-time robotic vision applications. The dataset was split into 565 images (75%) for training and 184 images (25%) for testing. Transfer learning from a pre-trained model was used by fine-tuning the model weights using the training data.

Results: On the testing subset, 98% of ONH locations were successfully detected. Performance of the algorithm for detecting SSR regions was comparatively lower, with only 50% being successfully detected. Visualization of the detection results showed that regions with greater RSS were better detected than regions where signal strength was less affected.

Conclusions: Detection of the ONH and regions with greater SSR show that deep learning-based object detection algorithms can be used to successfully track ocular features during image acquisition. Further development of the model is needed to improve detections of regions with milder SSR.

Role of Community Outreach in Assessment of Prevalence of Amblyopia

*First Author: Krati **GUPTA***
*Co-Author(s): Damaris **MAGDALENE***

Purpose: To study the prevalence, determine the magnitude, and the cause of amblyopia among the children aged 6 months to 16 years in Eastern India.

Methods: Among a total of 39,651 children between 6 months and 16 years of age, doortodoor screening was conducted by trained workers. For children above 5 years of age who failed to read the 6/9 line, camps were conducted in the nearby schools. Children below 5 years of age were directly referred to the tertiary eye care institute. After visual acuity assessment at the institute, cycloplegic refraction and complete ophthalmic examination were done to rule out other causes of diminution of vision. Axial length measurement and corneal topography were performed in children with high refractive errors.

Results: Of the total 39,651 children screened, 469 were diagnosed to have amblyopia at the camp and 223 were diagnosed at the institute. The prevalence of amblyopia was 1.75%. Amblyopia was more common among the males (52.50%) as compared to females. Maximum number of patients were found in the age group of 11–16 (63.58%). Refractive amblyopia was found to be the most common cause of amblyopia (45.29%). In children below 5 years, deprivation amblyopia and strabismic amblyopia were more common.

Conclusions: Awareness of amblyopia among the parents is essential for early detection and treatment of the disease, which will, in turn, reduce the burden of childhood visual impairment.

Systemtic Review on Blockchain Applications in Healthcare

First Author: Wei Yan ***NG***

Purpose: The coronavirus disease 2019 (COVID-19) pandemic has had a significant impacted on healthcare globally and greatly accelerated the adoption of digital technology. Blockchain has unique characteristics (immutability, decentralization and transparency) that may be useful in multiple domains.

Methods: We conducted a systematic review to address potential COVID-19- and non-COVID-19-related applications of blockchain in healthcare using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines for articles published in bibliographic databases Medline, SpringerLink, IEEE Xplore, ScienceDirect and arXiv. Search targeted at grey literature was performed using Google Scholar. Papers published up till July 29, 2021, were selected.

Results: A total of 85,375 articles were evaluated, with 415 full length reports (37 COVID-19 and 378 non-COVID-19) eventually included. The main COVID-19-related application was pandemic control and surveillance (28.9%, n = 11/38), followed by immunity or vaccine passports (23.7%, n = 9/38) and contact tracing (21.1%, n = 8/38). The top 3 non-COVID-19-related applications were EMR (47.2%, n = 185/392) followed by internet of things (IoT), such as remote monitoring or mobile health (21.2%, n = 83/392), and supply chain monitoring (6.9%, n = 27/392). The majority of reports detailed technical performance (66.7%, n = 277/415), while 9 (2.2%) studies showed "real-world" clinical application and adoption. The remaining studies (31.1%, n = 129/415) demonstrated technical design only. The most common platforms used were Ethereum (35.5%, n = 150/422) and Hyperledger (25.4%, n = 107/422).

Conclusions: This highlights the need for translating foundational blockchain technology into clinical use.

Tele-Ophthalmology and Artificial Intelligence in Developing Countries

First Author: Sanyam ***BAJIMAYA***

Purpose: The nationwide blindness survey in 1981 showed 0.84% of the population was blind. The survey in 2010 revealed prevalence of blindness 0.82% with significant reduction in cataract blindness but increasing pattern of blindness due to posterior segment diseases. The establishment of digital information system in rural community level and applying artificial intelligence as a major element for early diagnosis and referral system has enhanced the comprehensive eye care model in developing countries.

Methods: The «On Dream Blindness Prevention Program» has been started and screening done from January 2021 to March 2022. A cloud-based information management system is established to diagnose eye diseases at the community level at 3 districts of Nepal. Trained mid-level ophthalmic personals utilized portable fundus cameras and information is being graded by the base hospital at the capital city. Treatment regarding posterior segment diseases is referred to ophthalmologists at the base hospital.

Results: A total of 5,540 patients were examined during study period from January 2021 to March 2022 (sub-urban: 1,586, community eye hospital: 3,386 and rural eye center: 568 patients). Tele-ophthalmology with grading by 2 ophthalmologists done from two hospital and artificial intelligence were used for some posterior segment diseases. 535 patients diagnosed to have mature cataract and underwent cataract surgery. A total 230 eyes had sight threatening retinal diseases (diabetic retinopathy and neovascular AMD), out of which 124 eyes received intravitreal injection of Bevacizumab and 106 eyes received laser treatment.

Conclusions: Digital information network between rural eye centers with the base hospital and the establishment of tele-medicine system is important part for prevention of blindness in developing countries.

Transition to Subtenon's Anesthesia in Cataract Surgery: Have Block Related Complications Reduced?

*First Author: Basitali **LAKHANI***
*Co-Author(s): Balamurugan **S***

Purpose: To analyze complication rate following transition to Subtenon's Anesthesia (SA) in cataract surgery in consecutive 4 years in a tertiary eye care center.

Methods: Transition to SA in cataract surgery occurred in May 2016. The block related complication of the consecutive period from August 2012 to January 2020 were analyzed with the rates prior to transition period serving as historical controls.

Results: Pre Subtenon's period, the rate of repeat blocks, positive pressure, sub-conjunctival hemorrhage (SCH) , chemosis and perforation were 4%,2.5%,14%,18% and 0.015% respectively. After the transition the corresponding rates were 7%, 4.8%, 30%, 34% and 0% respectively ($p < 0.05$).

Conclusions: Subtenon's anaesthesia for cataract surgery has eliminated globe perforation. Despite a significant rise in SCH and chemosis, the increase in need of repeated blocks and positive pressure were not significant. Hence SA shows promising results in this era.

Cataract and Cataract Surgery

A Case Report of Isolated Bilateral Lens Coloboma

*First Author: Femin **TIDE***

Purpose: A 22-year-old male presented with history of blurring of vision both eyes. Visual acuity was 3/60 improving to 6/9 (right eye) and 3/60 improving to 6/36 (left eye) with glass correction. Near vision was N6 and N8 in the right eye and the left eye respectively.

Methods: A worth 4-dot test was performed which showed left eye suppression at distance, intermediate and fusion present for near vision. Ophthalmological examination after dilatation revealed bilateral inferior lens coloboma. The edge of coloboma was irregular and notched. IOP was normal. Left eye retina had an inferior hole which underwent barrage laser and right eye retina was normal. No history of trauma, family history of Marfan syndrome or other systemic conditions.

Results: A myopic correction of -12 spherical, -2 cylinder at 180 axis was given for the right eye, which improved to vision from 3/60 to 6/9 and -12 spherical, -3.25 cylinder at 170 axis was given for the left eye, which improved the vision from 3/60 to 6/36.

Conclusions: Any defects in closure of embryological fissures lead to coloboma. Lens coloboma usually occurs unilaterally; however, bilateral lens coloboma, which is associated with other ocular malformations, is also seen. In our case, apart from refractive error and retinal hole, we did not detect any ocular abnormalities.

A Difficult Case of Bilateral Dislocated Lens in Patient With Marfan Syndrome

*First Author: Devyntya **PUTRI***
*Co-Author(s): Nina **HANDAYANI***

Purpose: To report a difficult case of bilateral dislocated lens in patient with Marfan syndrome.

Methods: Diagnosis was made based on history taking, physical examination, ophthalmology examination and ancillary test.

Results: A 21-year-old female, presented with poor vision in both eyes since childhood. On ocular examination, her best-corrected visual acuity 1.00 logMAR in right eye with S - 9.00 and 0.48 logMAR in left eye with S – 7.00. On dilated examination, there was a presence of superonasal lens subluxation in both eyes. Funduscopy examination was within normal limits in both eyes. On general physical examination, patient was tall (height: 165 cm) with thin built. Patient used spectacle since childhood. There is no history of ocular trauma. History of similar findings was present in mother and sister as well. Chest x-ray showed cardiomegaly and dextroscoliosis thoracalis. Hence, the diagnosis of secondary lens dislocation to Marfan syndrome was made. Patient was managed with lensectomy. Post operatively patient had her best-corrected visual acuity 0.18 logMAR in right eye with S + 7.00 and 0.10 logMAR in left eye with S + 9.00. It is necessary to consider the possibility of amblyopia in this patient. Secondary lens implantation was planned for visual rehabilitation of this patient.

Conclusions: Management of lens dislocation in Marfan syndrome is risky and challenging due to zonular weakness. Timely diagnosis and management of refractive problems can help to preserve sight in patients with this syndrome.

A Flawless Lash

*First Author: Merlin **BENZY***

Purpose: We are reporting a case of a 59-year-old female who underwent uncomplicated manual small incision cataract surgery (MSICS) and presented on postoperative day one with cilium in anterior chamber.

Methods: To present a retrospective case review.

Results: On postoperative day one examination, uncorrected visual acuity in left eye was 6/12p and 6/9 on pinhole. Left eye intraocular pressure was 14mmHg

on Icare. Anterior chamber slit lamp examination showed a cilium in oblique orientation protruding externally through the preexisting paracentesis. There was minimal anterior chamber cell and flare consistent with uncomplicated MSICS. Patient was advised cilium removal under topical anesthesia under strict asepsis in operation theatre.

Conclusions: Several mechanisms of eyelash entry have been proposed. Eye rubbing may be able to distort the incision with significant manual pressure directly to the globe and allow the cilium to be entrapped in a corneal wound after uneventful manual small incision cataract surgery. Prompt removal may minimize the chance of infection or inflammation.

A Novel Slit Lamp Based Toric Marker (STORM): A Comparative Series of 60 Eyes with Results of New and Conventional Marking Techniques

*First Author: Neeraj **ISRANI***

Purpose: To compare a new slit lamp based toric marker (STORM) for corneal marking with conventional techniques of corneal marking.

Methods: We have designed a new slit lamp based toric marker (STORM) with novel applications to assist a handsfree access to the surgeon for accurate toric marking. Thirty consecutive eyes were marked using this new toric marker and another 30 consecutive eyes were marked using conventional (bubble) marker. The results were evaluated photographically using a digital planimetry software on pre- and postoperative photographs. Postoperative residual astigmatism was compared using these 2 markers, not only actual but also anticipated results between 2 groups were studied statistically.

Results: Software based analysis showed significantly more accurate placement of the corneal marks as well as IOL placement. Postoperative outcome at 6 months showed significantly better correlation with anticipated residual astigmatism in the group marked with our marker.

Conclusions: STORM was found to be more accurate and reproducible than currently used techniques. Surgeons found it easier to align the toric IOLs to the marks because of the accurate corneal centrations of the marks.

ADL Lens – A Novel Intraocular Lens Design to Prevent Negative Dysphotopsia

*First Author: Prabhakar **G V***

Purpose: To design and evaluate a new intraocular lens to prevent negative dysphotopsia in the form of temporal crescentric shadow post-cataract surgery. Regarding the methods, it is regarding the most accepted theory being gap between iris and optic leading to a grey shaded area formed between ray missing IOL and ray refracted by IOL causing a temporal crescentric shadow. Our concept was to give normal crystalline lens profile to IOL optic to eliminate gap between IOL and iris which simulates reverse optic capture or better. The new IOL is of hyperbola shape where optic comes in contact with pupil margin after implantation in the capsular bag there by eliminating the space that light rays can pass through and produce negative dysphotopsia.

Methods: The lens was implanted in 56 patients in whom the other operated eye had negative dysphotopsia and evaluated.

Results: None of the patients complained of any dysphotopsia in which ADL lens was implanted.

Conclusions: This study suggests that new IOL design is effective in eliminating negative dysphotopsia.

Alcon Panoptix Versus Vivity Intraocular Lens Retrospective Comparison

*First Author: Uday **BHATT***
*Co-Author(s): Lewis **LEVITZ***

Purpose: Numerous intraocular lens (IOLs), including trifocal and extended depth of focus (EDOF) IOLs have been introduced over the past decade with the aim of expanding postoperative independence from glasses across an increasing range of distances. This review was undertaken to understand the visual and refractive outcomes between two popular types of IOLs.

Methods: This was a retrospective, consecutive review of cases performed by two surgeons. The type of IOL implanted was patient choice after explanation of each IOL's Uniocular uncorrected and corrected visual acuity at far, intermediate and near distances and the mean absolute difference to refractive target values were analysed between 2-4 weeks postoperatively.

Results: A total of 220 eyes receiving Alcon PanOptix IOL and 217 eyes receiving Vivity IOL were included. Mean absolute difference from Spherical equivalent (SE) target was 0.18 ± 0.25Ds and 0.32 ± 0.26Ds with 96% and 76% of eyes were within ± 0.5D of SE target for the PanOptix and Vivity cohorts respectively. Postoperatively 78% vs 58% of eyes were 6/6 unaided for distance, 82% vs. 62% of eyes achieved unaided N8 or better for intermediate and 92% vs. 57% unaided for near vision for the PanOptix and Vivity IOL cohorts respectively.

Conclusions: Both IOLs provide optical independence at all distances for a significant portion of patients. The cohort of Vivity IOLs resulted in greater residual myopia which may have impacted visual outcomes. Overall, PanOptix IOLs appear to provide greater unaided reading vision. No IOLs were replaced due to visual disturbance.

Assessing Visual Acuity Improvement Between Optical Biometry and Ultrasound Biometry Examination of Phacoemulsification Cataract Surgery in Patient With Retinal Pathology

*First Author: Agung **NUGROHO***
*Co-Author(s): Retno **PUSPITANINGTYAS**, Supanji **SUPANJI**, Agus **SUPARTOTO***

Purpose: To compare visual acuity improvement post-phacoemulsification cataract surgery in eyes with retinal pathology between optical biometry and ultrasound biometry examination.

Methods: In this retrospective study, a single-surgeon series phacoemulsification was performed in 21 eyes that had retinal pathology between January 2020 and December 2021. Group 1 underwent optical biometry examination (n:7), and group 2 underwent ultrasound biometry examination (n:14) before phacoemulsification cataract surgery. Visual acuity in 4 weeks postoperatively results were analyzed.

Results: Postoperatively, visual acuity improved two Snellen lines or more in 5 eyes within Group 1 (71.43%), and 11 eyes within group 2 (78.57%). There was no statistically significant difference in visual acuity improvement between two groups (p:0.557).

Conclusions: There is no different visual acuity improvement between optical biometry and ultrasound biometry examination before phacoemulsification cataract surgery in eyes with retinal pathology.

Axial Misalignment After Implantation of Clareon Toric Intraocular Lenses

*First Author: Tomohisa **NISHIMURA***

Purpose: Toric intraocular lenses (IOLs) of hydrophobic acrylic AcrySof material (model: SN6AT3-T9, Alcon) had been used, and Clareon toric IOLs which use the same platform except for material with higher water content, have been available from 2021 in Japan. In this retrospective study, postoperative axial misalignment was evaluated after implantation of the new toric IOLs.

Methods: Clinical records reviewed 100 eyes who underwent cataract surgery following implantation of IOL CNW0T3-T9 (Alcon) , with an identical surgeon, surgical equipment, and surgical technique. Intraoperative axial alignment was guided using a surgical guidance (VERION, Alcon). Axial rotation on the next day after surgery was measured, and absolute difference of axial angles between right after surgery and after one day was calculated. Number of cases with misalignment of 10° or more was also counted.

Results: The mean axial misalignment was 2.69 ± 2.19°, and there was no axial misalignment of 10° or more.

Conclusions: Compared with our previous results from 70 eyes with AcrySof toric IOLs (2.36 ± 1.71°), the current results were well coincided. Thus, it was considered that axial misalignment was minimized in the use of Clareon toric IOLs.

Clinical Effects of AcrySof Toric Intraocular Lens Implantation for Correcting Cataract Patients With Low Corneal Astigmatism

*First Author: Yating Deng **YATING DENG***

Purpose: To compare the clinical effects of AcrySof toric intraocular lens (IOL) and the non-toric IOLs in cataract patients with low corneal astigmatism.

Methods: In this retrospective cohort study, a total of 82 eyes of 81 patients with age related cataract who were diagnosed as low regular corneal astigmatism(0.75D~1.5D) were enrolled. The patients were implanted with either the AcrySof IQ T2/T3 Toric IOLs (Toric group, n = 48) or the AcrySof IQ IOLs (IQ group, n = 34) after cataract phacoemulsification. Postoperative residual astigmatism, uncorrected and best corrected visual acuity (UCVA, BCVA) were evaluated in both groups. Data were statistically analyzed using the independent samples T-test, the Chi-squared test, and the non-parametric rank sum test.

Results: There was no statistically significant difference between the two groups in the age, sex, preoperative UCVA (logMAR), BCVA (logMAR), corneal astigmatism, spherical equivalent, and axial length ($p > 0.05$). The median absolute value of residual astigmatism was significantly lower in the toric group (0.50D) than the IQ group (1.00D) ($Z = -5.018$, $p = 0.000$). The proportion of eyes with residual astigmatism less than 0.25D was significantly higher in the toric group (37.50%) than the IQ group (11.76%) ($\chi2 = 6.715$, $p = 0.010$). The proportion of eyes with residual astigmatism less than 0.5D was also significantly higher in the toric group (70.83%) than the IQ group (14.71%) ($\chi2 = 25.139$, $p = 0.000$). The median axis deviation of toric IOL at 3 months after operation was 2 degrees.

Conclusions: Compared with non-toric IOLs, the use of toric IOLs effectively reduced postoperative residual astigmatism and improved patients' visual quality.

Clinical Outcomes of Diffractive Multifocal Extended Depth of Focus IOL: Artis Symbiose, Crystalens

*First Author: Seungjin **LEE***
*Co-Author(s): Jimyung **LEE***

Purpose: To evaluate the clinical outcomes of diffractive multifocal extended depth of focus IOL (Artis Symbiose, Crystalens).

Methods: Thirty-five patients were undergoing phacoemulsification and implanted with Artis Symbiose (Crystalens, France). Uncorrected and corrected distant, intermediate and near visual acuity were measured at 2, 6 months postoperatively. Patient satisfaction for dysphotopsia and spectacle independence was

assessed at 6 months postoperatively.

Results: Ninety-two percent of patients showed incorrected distance visual acuity of 20/20 or better at 2, 6 months. Mean uncorrected intermediate and near visual acuity (UIVA) was 0.03 LogMar and 0.02 respectively. 2 patients had complaints about dysphotopsia about halo and starburst at nights.

Conclusions: Phacoemulsification with artis symbiose results in good visual outcomes for far, intermediate, near vision with low incidence of dysphtopsia.

Clinical Presentation and Surgical Outcome of Hyper Mature Cataract in Tertiary Eye Center of Bangladesh

*First Author: Tanima **ROY***
*Co-Author(s): Kazi Tahmina **AKHTER***

Purpose: To evaluate the clinical presentation, surgical outcome, complications and causes of delayed presentation of hyper mature cataracts.

Methods: To present a hospital-based prospective interventional study among 202 patients with hyper mature cataracts in tertiary eye center of Bangladesh over 1 year. All patients underwent small incision cataract surgery.

Results: The age of most of the patients was more than 50 years (n-149, 73.76%). Good visual acuity (53.46%) in another eye, old age, females (45.04%), dependent people of family, lack of attendance, and fear of surgery were the main cause of delayed presentation. Difficulty in doing capsulorhexis (11.38%), anterior chamber inflammation, and corneal edema, were the most common intraoperative and postoperative complications. Postoperatively (96.91%, n-157), patients had visual acuity between 6/6-6/12 at final follow-up.

Conclusions: Small incision cataract surgery in hyper mature cataracts is satisfactory. Counseling the patients about the good visual outcomes of cataract surgery and developing painful loss of vision if left unoperated is important to reduce the incidence of hyper mature cataracts.

Comparison Of Efficacy of Anti-Inflammatory Effect After Small Incision Cataract Surgery

*First Author: Prateek **KOUL***
*Co-Author(s): Himani **JAILKHANI***

Purpose: The study aims to compare the efficacy of the anti-inflammatory effect of 0.1% dexamethasone sodium and 0.05% difluprednate eye drops after small incision cataract surgery (SICS) on the variety of parameters.

Methods: This study included two groups of 40 patients each (a total of 80 patients). The 40 patients in Group A were randomly started on 0.1% dexamethasone eye drops postoperatively and another 40 patients in Group B were randomly started on 0.05% difluprednate eye drops postoperatively. Response to the therapy was recorded on day 1, 7, and 40 on the parameters of postoperative anterior chamber reaction and postoperative visual acuity, and the results were compared.

Results: All results were correlated with final visual outcome, and postoperative flare, which showed 0.05% difluprednate, was clinically and statistically more effective in early postoperative period than 0.1% dexamethasone sodium to control inflammation in uneventful SICS.

Conclusions: After the comparison of the data in both the groups, the patients started on 0.05% difluprednate eye drops postoperatively showed better response to therapy ($p < 0.0001$) with respect to the parameters of best-corrected visual acuity and postoperative flare as compared to the patients started on 0.1% dexamethasone sodium eye drop therapy postoperatively, indicating that 0.05% difluprednate eye drops have a better anti-inflammatory effect.

Comparison of Manual Continuous Curvilinear Capsulorhexis and Precision Pulse Capsulotomy

*First Author: Yengwoo **SON***
*Co-Author(s): Joon Young **HYON**, Hyun Sun **JEON**, Minhwan **KIM***

Purpose: To compare manual continuous curvilinear capsulorhexis (CCC) and Precision Pulse Capsulotomy (PPC) in anterior capsulotomy size and shape, operation time, and endothelial cell change.

Methods: A retrospective chart review study was presented. The eccentricity and area of anterior capsulotomy during surgery were measured using Image J using a recorded cataract surgery video. The shape of anterior capsulotomy and the change of corneal endothelial cells was measured 1 month after the surgery. In addition, the operation time taken during each process of cataract surgery was measured.

Results: A total of 32 eyes (16 eyes in the PPC group, and 16 eyes in the CCC group) were included. At the time of surgery, the PPC group showed better results in the eccentricity but there was no statistical difference ($p = 0.241$). And after 1 month, the eccentricity of the PPC group increased ($p = 0.175$, repeated measures ANOVA: $p = 0.031$). At the time of surgery, the area (mm2) of anterior capsulotomy showed no difference between the two groups ($p = 0.136$), and showed no statistical significance in the change after one month ($p = 0.693$, repeated measures ANOVA: $p = 0.106$). The decentration of the anterior capsulotomy (mm) was 0.61 ± 0.24 in the PPC group and 0.40 ± 0.18 CCC group ($p = 0.009$).

Conclusions: During cataract surgery, PPC can offer stable anterior capsulotomy than manual CCC. But

manual CCC showed better centration of anterior capsulotomy. In addition, there was no significant difference in surgical time and corneal endothelial cells.

Comparison of Outcomes From Next-Generation Enhanced Monofocal and Extended Depth of Focus Intraocular Lenses Implanted by a Senior Trainee Surgeon

*First Author: Lauren **SARTOR***
*Co-Author(s): Christopher **GO**, Colin **KONG**, Tse Wing **YEUNG***

Purpose: To compare the clinical outcomes of the Tecnis Eyhance ICB00, a monofocal plus intraocular lens (IOL) with enhanced intermediate function, with the Lentis Comfort MF15 and ACUNEX Vario, extended depth of focus (EDOF) IOLs, following implantation by a trainee surgeon with no prior EDOF experience.

Methods: A single surgeon (CG) prospective, randomized case series of 56 eyes from 56 patients undergoing cataract surgery at a tertiary referral hospital in Sydney. Patients were randomized to receive either the ICB00, MF15 or ACUNEX Vario, aiming for emmetropia or the first minus target. Best corrected visual acuity (BCVA), uncorrected distance, intermediate and near visual acuity (UDVA, UIVA, UNVA respectively), as well as a quality-of-life satisfaction questionnaires were the main outcomes measured. Comparisons between eyes were also made in patients who have had previous conventional monofocal IOL implantation in the other eye.

Results: The mean pre-operative BCVA (logMAR) was 0.65 ± 0.55. The mean post-operative BCVA, UDVA, UIVA, and UNVA was -0.08 ± 0.06, 0.02 ± 0.13, 0.19 ± 0.16 and 0.54 ± 0.19 in the ICB00 group, respectively; -0.02 ± 0.10, 0.05 ± 0.14, 0.21 ± 0.17 and 0.45 ± 0.19 in the MF15 group, respectively; -0.02 ± 0.11, -0.02 ± 0.11, 0.22 ± 0.12 and 0.47 ± 0.14 in the AN6VT group, respectively. Quality of life outcomes were scored higher in the Eyhance group.

Conclusions: Standard monofocals, monofocal plus, and EDOF IOLs demonstrated comparable distance vision while the latter two groups outperform standard monofocals at intermediate and near distances.

Comparison of Visual Outcome and Intraocular Pressure Between Anterior Versus Retropupillary Iris-Claw of Aphakic Patients

*First Author: Jeffry **CAESAR***
*Co-Author(s): Wisnu **SADASIH***

Purpose: To compare the visual outcome and intraocular pressure (IOP) between anterior versus retropupillary iris-claw of aphakic patients.

Methods: This was an analytic observational study. Anterior and retropupillary iris-claw implantation was performed in 40 eyes of aphakic patient between July 2018 and July 2022. The outcome was compared by measuring best corrected visual acuity (BCVA) in minimum angle of resolution (logMAR), and intraocular pressure (IOP) on day 1, day 7 and 1 month postoperatively.

Results: Both anterior and retropupillary groups had increased BCVA. There was no significant difference in mean BCVA between two groups on day 1, day 7 and 1 month postoperatively. Meanwhile, the mean IOP on the retropupillary group was lower than the anterior group but there was no statistically significant difference between two groups on day 1 and day 7 postoperatively. There was a significant difference in IOP only on 1 month postoperatively ($p = 0.026$).

Conclusions: This study revealed that retropupillary iris-claw may achieve a better IOP on 1 month postoperatively. Further studies with longer follow-up are needed.

Cost Analysis of Upgrading a Phacoemulsification System From a US Provider Perspective

*First Author: Kevin **MILLER***
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Purpose: This analysis evaluated the cost impact of upgrading a gravity fluidics-based to an active fluidics-based phacoemulsification system from a US healthcare provider perspective.

Methods: Costs per procedure and per year (assuming 2,500 procedures annually) were estimated for the scenarios with and without upgrading a gravity fluidics-based phacoemulsification system to an active fluidics-based system. Costs for the system, fluidics packs, handpieces, labor, overhead, and complications (i.e., posterior capsule rupture, corneal burn, cystoid macular edema, corneal edema, and elevated intraocular pressure) were assessed. Costs and procedure times were estimated from published literature, where available. Interview responses from three US cataract surgeons were used to estimate complication rates and healthcare resource utilization for the treatment of complications. Treatment costs for each complication were then estimated based on published literature and costs/payments reported by the Centers for Medicare and Medicaid Services. Costs are reported in 2022 US dollars.

Results: Reduced costs for labor, overhead, and complications offset increased costs for the system, fluidics packs, and handpieces. The analysis estimated cost savings of 5.6% ($27 per procedure, or $68,541 per year).

Conclusions: While upfront device-related costs are higher with newer systems, upgrading from an older system may result in overall cost savings.

Evaluate the Outcome of Phacoemulsification Surgery in Patients with Previous Laser Refractive Surgery

*First Author: Khanh **TRAN***

Purpose: To evaluate visual acuity and refractive error after Phacoemulsification IOL of patients undergoing refractive Lasik surgery and propose some methods to calculate the appropriate intraocular lens power.

Methods: Prospective descriptive study on all patients with previous laser refractive surgery undergoing Phaco surgery with intraocular lenses from June 2015 to October 2021 at the on-demand department, VNIO. To compare formulas: Barrett, Shammas already integrated on LenSTAR LS 900, Wang formula combining Shammas' corneal power optimization plus 1.0 D, Shammas, SRKT.

Results: Twenty-six eyes of 19 patients were performed including 8 male eyes and 18 female eyes. The mean age was 43.38 ± 9.81. The average DVA log MAR at postoperative 3 months was 0.46 ± 0.19, CDVA log MAR was 0.23 ± 0.16 (20/30). Patient' satisfaction: 61.5% and very satisfied 15.4%. Barrett and Shammas (integrated on the LenSTAR) gave the lowest MAE results, followed by Wang combined Shammas, the highest MAE in SRKT.

Conclusions: The patient›s VA after surgery is quite good, the satisfaction rate is quite good. Recommended formulas - Barrett, Shammas already integrated on LenSTAR and Wang formula combining Shammas' corneal power optimization plus 1.0 D - have been a good alternative when LenSTAR is not available.

Fixing My Troubles: A New Technique of Scleral Fixation of Intraocular Lenses – A Retrospective Case Series

*First Author: Deepak **AGARWAL***

Purpose: To evaluate the outcome and viability of a modified self-sealing scleral pocket technique for scleral fixation of IOL.

Methods: An institutional, retrospective, interventional study done taking 26 eyes where this modified technique performed in the last year. Cases included in study were dislocated IOL, absent Posterior Capsule or subluxated cataract. Two diagonally opposite paralimbal curved scleral pockets made 3mm away from limbus along with vitrectomy. A multi-piece IOL was used and the haptics were fixed under the scleral pockets inside a linear scleral tunnel underneath the superficial scleral flap. The conjunctiva was opposed with cautery. Main outcomes measured: Mean pre- and post-operative BCVA are compared, postoperative astigmatism measured.

Results: Mean pre- and postoperative BCVA were Log MAR 0.73 ± 0.65 and Log MAR 0.42 ± 0.65 (p =0.013). Mean post-operative astigmatism was 1.00 ± 1.14 Dcyl.

Conclusions: This modified simple way of scleral fixation of IOL decreases the duration of surgery with minimal complication.

Hydro Jet Peeling vs Posterior Capsular Polish for removal of Lens Epithelial Cells

*First Author: Nikhil **BALAKRISHNAN***

Purpose: To compare the efficacy of a hydro jet peeling (HJP) with posterior capsular polish (PCP) in removing lens epithelial cells (LEC) in phacoemulsification.

Methods: This prospective nonrandomized study was conducted on 960 eyes, which alternatively underwent removal of LEC on the posterior capsule (PC) using either PCP (with a sandblasted ball polisher) or HJP (stream of irrigating fluid ejected from a 27G cannula attached to a 5cc syringe). Visual parameters were evaluated at 1 day, 1 week and 1-year post-op. posterior capsular opacification (PCO) (area %) & incidence of YAG capsulotomy (YC) were recorded at 1 year interval.

Results: PCP required 64.32 ± 14.5 seconds and HJP 29.2 ± 8.7 seconds ($p \leq 0.001$). 1-day post-op, HJP group had more desirable objective scattering index, and Strehl ratio (all $p < .05$). 1 year post-op, PCO area % did not differ between the groups (5.3% vs 3.2%, $p = .310$) but incidence of YC was lower in the fluid-jet group (2.9% vs 0.6%, $p = .021$).

Conclusions: HJP removal of LEC is a more effective technique with lower incidence of YC than PCP.

IOL Opacification – A Rare and Late Complication Following an Uneventful Cataract Surgery

*First Author: Rakshit **AGRAWAL***
*Co-Author(s): Shweta **WALIA***

Purpose: To report series of 13 cases of a rare complication of total IOL opacification of single-piece hydrophilic foldable PCIOL after an uneventful cataract surgery.

Methods: Patients who underwent uncomplicated phacoemulsification and IOL implantation for cataract between January 2017 and March 2022 were included. Patients were observed for postoperative IOL opacification, artificial crystal materials, causes of the opacification.

Results: Out of 5,500 phacoemulsification cataract surgery done between 2017-2022, 13 patients were found to have total IOL opacification. IOL in all these 13 cases was found to be Freedom Focus AFC 603SQ (Hydrophilic Acrylic 360° Square Edge Aspheric Foldable Intraocular Lens) (no financial interest). None of the patient had any concurrent ocular or systemic morbidity except 1 patient who had diabetes mellitus type 2 with tractional retinal detachment and vitreous hemorrhage who underwent IOL explant with VR

retinal surgery with final postop BCVA 6/36. The rest of all patients underwent IOL exchange with increase in BCVA to 6/6.

Conclusions: There are several reports of opacification of hydrophilic IOLs and IOL opacification rare but well-reported entity. To avoid misdiagnoses and unnecessary procedures like Nd: YAG capsulotomy and vitrectomy, always consider IOL opacification when a patient presents with visual loss after cataract surgery. Ophthalmologists must remain vigilant and report cases of IOL opacification so that research can be carried out to improve quality standards for and surveillance of new IOL materials, injectors and production processes.

Initial Experience With a Single-Piece Non-diffractive Extended Depth of Focus Intraocular Lens

*First Author: Fook-Meng **CHEONG***
*Co-Author(s): Eunice **HIEW POH SUM***

Purpose: To evaluate the visual and refractive outcomes of a single-piece acrylic non-diffractive extended depth of focus (EDOF) intraocular lens.

Methods: Prospective consecutive case series study. Inclusion criteria were eyes with visually significant cataracts and no pre-existing comorbidities. 12 patients with bilateral implantations were evaluated with all operations performed by a single surgeon in a standard manner. The dominant eye was targeted for emmetropia. Non-dominant eyes were targeted to be -0.50D postoperatively. Outcome measures at one month postoperatively were binocular visual acuities for distance, intermediate (66 cm) and near (at 40 cm), refractive predictability, defocus curves and reported dysphotopsia.

Results: All 12 patients achieved 20/30 or better for distance unaided, 8 patients (66.7%) managed 20/20. For intermediate vision at 66 cm, all patients could manage 20/30 or better, 11 patients (92%) could see 20/25 or better, and 4 patients (33%) 20/20. For near (40 cm), 10 patients (83%) could see 20/40 or better, 7 patients (58%) 20/30 or better, and 4 patients (33%) managed 20/25. Using the Barrett Universal II IOL formula with the manufacturer's recommended IOL constant without customization, 83% of eyes were within 0.75D of predicted postoperative refraction, 54% within 0.50D and 25% within 0.25D. No haloes or glare symptoms were reported by any patient.

Conclusions: This new non-diffractive EDOF IOL was found to provide good visual and relatively predictable refractive outcomes at one month postoperatively. Good binocular functional near vision was achieved by offsetting postoperative target by -0.50D in the non-dominant eye. The IOL was well-tolerated by patients, with minimal dysphotopsia reported.

Initial Experience with a Single-Piece Enhanced Monofocal Intraocular Lens Designed to Slightly Extend Depth of Focus

*First Author: Fook-Meng **CHEONG***
*Co-Author(s): Eunice **HIEW POH SUM**, Sharifah **SYED***

Purpose: To evaluate the visual and refractive outcomes of a single-piece acrylic enhanced monofocal intraocular lens.

Methods: This is a prospective consecutive case series study. Inclusion criteria were eyes with visually significant cataracts and pre-existing corneal astigmatism less than 0.75D. A total of 18 patients with bilateral implantations were evaluated with all operations performed by a single surgeon in a standard manner. Post-op refractive targeting objectives were based on a mini-monovision strategy. Outcome measures were binocular visual acuities for distance and near, refractive predictability, defocus curves and reported dysphotopsia.

Results: All 18 patients achieved 20/40 or better for distance, 17 patients (94%) 20/30, 15 (83%) 20/25 and 12 (67%) 20/20. For near, 17 (94%) patients could manage J3 binocularly, 13 (72%) patients J2 and 3 (17%) J1. All eyes with post- op refraction between -0.75D and -1.25D could see J3 or better when tested monocularly. Using the Barrett Universal II IOL formula, all 36 eyes were within 0.75D of predicted post-op refraction, 83.3% within 0.50D and 61.1% within 0.25D. On testing for defocus tolerance, logMAR vision of 0.2 (20/32) or better were obtained with ± 0.75D of defocus and logMAR 0.1 (20/25) or better was achieved within ± 0.50D of defocus. No haloes or glare symptoms were reported by any patient.

Conclusions: This enhanced monofocal IOL was found to provide good visual and predictable refractive outcomes at one-month post-op. Good binocular functional near vision was achieved by offsetting post-op refraction by -0.75D to -1.25D in the non-dominant eye. The IOL was well-tolerated by patients, with minimal dysphotopsia reported.

Intracameral Antibiotic Prophylaxis in Preventing Endophthalmitis After Cataract Surgery: A Systematic Review

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*Co-Author(s): Ajeng Kartika **AYU PUTRI**, Sarah **SHABRINA***

Purpose: To evaluate the safety and efficacy of intracameral antibiotics in preventing endophthalmitis after cataract surgery.

Methods: We performed a literature search of studies of intracameral antibiotics in preventing endophthalmitis after cataract surgery. Studies published in English between 2017 and 2022 were included. Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, and EBSCOhost databases from

August 2017 to August 2022 were searched. The study selection process will be presented according to the Preferred Reporting Items of Systematic reviews Meta-Analysis (PRISMA) 2020 flow diagram.

Results: Seven studies with a total of 416.195 eyes were included in this review. Commonly used intracameral antibiotics were cefazolin, moxifloxacin, and cefuroxime. Endophthalmitis incidence ranges from 0.025% to 0.08% and 0.126% to 0.38% in patients who received and did not receive intracameral antibiotic, respectively.

Conclusions: The use of intracameral antibiotics reduces the incidence of endophthalmitis after cataract surgery with no significant adverse effects.

Outcome and Predictive Factors of Immediate Pars Plana Vitrectomy in Posteriorly Dislocated Lens Fragments During Phacoemulsification

*First Author: Akshay **KOTHARI***
*Co-Author(s): Jai **KELKAR**, Aditya **KELKAR***

Purpose: To investigate the prognostic factors for visual outcomes in patients who undergo immediate pars plana vitrectomy (PPV) for posteriorly dislocated lens fragments during phacoemulsification cataract surgery.

Methods: This was a single-center study of 37 eyes of 37 patients undergoing immediate PPV for posteriorly dislocated lens fragments after complicated phacoemulsification surgery done between 2015 to 2021. The primary outcome measure was changes in the best-corrected visual acuity (BCVA). Additionally, we also analyzed the predictive factors for poor visual outcomes (BCVA < 20/40) and the perioperative complications.

Results: The mean (± standard deviation [SD]) age of the patients was 66.57(± 10.86) years with an almost identical gender profile (M: F = 18/19 [48.64% : 51.36%]). The median (interquartile range [IQR]) LogMAR BCVA improved significantly from the baseline (1[0.6–1.48]; ?20/200) to the final visit (0.3[0.2–0.6]; ?20/40; p < 0.0001) after a mean (± SD) follow-up of 6.35 (± 6.32) months. The final BCVA was 20/40 or better in 59.5% of the eyes. Poor final BCVA (<20/40) was associated with small intraoperative pupillary size (p = 0.02), presence of preoperative ocular pathology (p = 0.02) including uveitis, glaucoma, and clinically significant macular edema (CSME), intraoperative displacement of > 50% of lens matter into the vitreous (p < 0.001), use of iris-claw lens (p < 0.001), and postoperative cystoid macular edema (CME; p = 0.007). The post-operative complications included CME (13.51%), retinal detachment (10.81%), chronic uveitis (8.11%), glaucoma (8.11%), iritis (2.7%), PCIOL dislocation (2.7%), and vitreous hemorrhage (2.7%).

Conclusions: For retained lens fragments after a complicated phacoemulsification surgery, vitrectomy performed immediately after cataract surgery is a viable approach with the potential for a good visual outcome. The important predictors for poor visual outcomes include a small pupil, pre-existing ocular pathology, displacement of significant volume of lens matter (> 50%), use of an iris-claw lens, and CME.

Patient Satisfaction After Wavefront Shaping Presbyopia-Correcting IOL Implantation in a Large Cohort Analysis From a Multi-Country Registry Assessment of Real World

*First Author: Simran **MANGAT***
*Co-Author(s): Caridad **PEREZ-VIVES***

Purpose: To report real-world patient reported outcomes and visual performance in a large cohort implanted bilaterally with Acrysof IQ Vivity IOL.

Methods: Multicenter, ambispective registry study conducted in Europe, Australia and New Zealand evaluating the performance of AcrySof IQ Vivity IOL through routine clinical practice after ~3 months follow-up. Visual acuity at distance, intermediate and near are assessed, as well as subject satisfaction and spectacle independence recorded via validated questionnaires and patient reports of visual disturbances.

Results: To date, 757 subjects are enrolled. Overall, 91.5% of patients reported to be satisfied with their sight. More than 75% of patients reported no difficulty with activities that involves intermediate vision, such as seeing the prices of goods, reading TV in the subtitles and engaging in an activity or hobby. For near task, 59.1% of patients reported no difficulty reading the newspaper and 60.5% doing handicrafts or woodwork. The % of subjects reporting never/rarely needing to wear eyeglasses to see up-close was 59.4%, or at arm's length 88.7% or far away 92.9%. Subjects reporting "None" for halos was 91.8%, glare 92.1% or starbursts 94.9%. Binocular uncorrected distance visual acuity was 20/20 Snellen, ~ 20/25 for intermediate and ~20/32 for near.

Conclusions: In this large cohort real world study of patients bilaterally implanted with AcrySof IQ Vivity IOL, we have observed very high percentages of spectacle independence from distance to intermediate, great subjects' visual satisfaction with patients reporting none or low difficulty to perform daily activities as well as very low visual disturbances.

Perioperative Analysis of Mature Cataract Phacoemulsification in Kuching, Malaysia

*First Author: Mohd Asyraaf **ABDUL KADIR***
*Co-Author(s): Dennis **KONG**, Lik Thai **LIM***

Purpose: To analyze the perioperative complications of phacoemulsification in mature cataracts in Kuching, Malaysia.

Methods: This retrospective study recruited patients with mature cataracts consecutively at a single eye

center. All patients had phacoemulsification with continuous curvilinear capsulorhexis (CCC) and intraocular lens (IOL) implantation. Perioperative findings were analyzed as well as the postoperative outcomes.

Results: There were 105 patients with white cataracts included. The mean VA preoperatively was logMAR 1.92 and postoperatively was logMAR 0.16. Complete CCC was achieved in 88.1% of eyes while breaks in CCC were observed in 11.9% of eyes. Overall, PCR was documented in 5.94% of total eyes; 3 in each complete and incomplete CCC group. The scaffold technique was used to salvage the capsule which was not protected by the liquified cortex. There were 95 eyes with IOL implanted in the capsular bag while the remaining 4 eyes had IOL implantation in the sulcus and 2 eyes had primary Yamane scleral-fixated IOL. One eye had an Argentinean flag with no PCR and IOL was implanted in the bag. Postoperatively, corneal oedema was noted as mild (33 eyes), moderate (10 eyes) and severe cases (1 eye) and all corneal oedema except severe one resolved within one-week follow-up. Three eyes with raised intraocular pressure were medically controlled, one with pre-existing pseudoexfoliation and one eye each with phacomorphic and phacolytic glaucomas.

Conclusions: Capsular management in creating CCC is vitally essential to ensure a safe nucleus disassembly, resulting in a much lower risk of PCR during phacoemulsification of mature cataracts.

Phacoemulsification in Eyes with a Large Corneal Perforation - Tips and Tricks

First Author: Arjun ***SRIRAMPUR***

Purpose: To report successful outcomes of phacoemulsification and IOL implantation in 2 eyes with a large sealed corneal perforation.

Methods: Two patients with large para-central corneal perforation with iris prolapse were treated with tenon's patch graft and another patient underwent a patch graft with a left over DSEK anterior cap. After a few months, these eyes underwent phacoemulsification with foldable IOL implantation.

Results: Both eyes had a successful outcome in terms of a clear cornea, secure anterior chamber and intact tenon's and patch grafts. Both patients had a very good visual improvement with no complications.

Conclusions: Corneas with large perforation sealed with tenon's patch and discarded anterior DSEK cap can undergo phacoemulsification and IOL implantation by taking necessary pre -operative and intraoperative precautions and modifications in routine cataract steps.

Post-occlusion Surge Amplitude Analysis During Phacoemulsification With New Adaptive Infusion Algorithm in Experiment

First Author: Bulat ***AZNABAEV***
Co-Author(s): Tagir ***DIBAEV****, Timur* ***ISMAGILOV****, Timur* ***MUKHAMADEEV***

Purpose: Analysis of POS (post-occlusive surge) amplitude during phacoemulsification with a new infusion algorithm in an in vitro experiment.

Methods: New adaptive infusion algorithm for predictive calculation and compensation of POS during phacoemulsification, based on simultaneous ultrasonic analysis of both infusion and aspiration flow rates, vacuum level and phaco-needle conditions was developed. The algorithm was compared to two previously known infusion algorithms: classical gravity-based infusion and Active Fluidics forced infusion (Centurion Vision System, Alcon). POS modelling and IOP (intraocular pressure) measurements (3 series of 15 measurements for each infusion type) were performed in silicone test chamber using pressure sensor MPX 5010 DP (NXP Semiconductors) and oscilloscope AKIP-4108 (PicoTechnology). POS amplitude was calculated as a difference between IOP during full occlusion of the phaco-needle and after occlusion breakthrough.

Results: The average POS amplitude in the series with gravity infusion was 27.2 ± 2.5 mm Hg, in the series on the Centurion Vision System - 16.5 ± 1.6 mm Hg and in the series with the new algorithm - 14.7 ± 1.5 mm Hg.

Conclusions: The developed algorithm of adaptive infusion allowed to achieve a lower value of POS amplitude during experimental phacoemulsification. Further studies are planned to evaluate the efficacy and safety of the developed algorithm in vivo in rabbits with morphological study of corneal and retinal preparations.

Purple Fundal Reflex After Segment Removal During Phacoemulsification

First Author: Riskha ***PANGESTIKA***

Purpose: To determine the visual outcome after phacoemulsification with the incidence of trypan blue leakage during surgery. Unintentional staining of the posterior capsule and anterior vitreous is a uncommon occurrence.

Methods: A 54-year-old woman had visual acuity (VA) of counting finger in left eye and extensive corticonuclear cataract, no signs of zonular weakness on anterior segment examination. She had history of childhood ocular trauma and no prior eye surgery. The red reflex couldn't be observed. During phacoemulsification, 0.06% trypan blue was administered to the anterior chamber and was filled with a dispersive viscoelastic. A CCC technique was performed. No signs of zonular defect were encountered during the operative stages until the

segment removal stage. Purple fundal reflex is seen posteriorly when lens fragments are aspirated. One-piece IOL was inserted into the capsular bag. A possible posterior capsule staining mechanism was leakage of trypan blue through the compromised zonular apparatus.

Results: On the first postoperative day, VA was 20/80, red reflex was absent, and the patient complained blue-tinged vision. One week later, there was no sign of staining in the posterior segment and no sign of retinal toxicity, VA improved to 20/40.

Conclusions: This case showed infrequent accidental staining of the posterior capsule with trypan blue, possibly due to zonular weakness due to a history of ocular trauma and after the staining disappearance, the VA improved.

Recurrent Pupillary Capture After Yamane Intrascleral Haptic Fixation: Case Report and Literature Review

*First Author: Nur Ain Shafiyah **MOHD GHAZALI***
*Co-Author(s): Wen Jeat **ANG**, Wan Hazabbah **WAN HITAM***

Purpose: The aim of this report is to discuss the management of a patient with recurrent pupillary capture after Yamane flanged intrascleral haptic fixation accompanied by a brief up-to-date review of complications accompanying Yamane intrascleral haptic fixation (ISHF) technique.

Methods: A case report and a review of literature.

Results: A 52-year-old-lady had an antecedent history of a Yamane ISHF of a 3-piece intraocular lens (IOL) in her left eye for a subluxated cataract. The procedure was uneventful, and her visual acuity was 20/20 both eyes respectively. However, 2 months later she developed a reversed pupillary capture of the IOL optic. She then underwent IOL repositioning with an add on surgical peripheral iridectomy (PI). Unfortunately, after symptom free for two months, she presented again with the similar problem. At presentation, there was occasional pigmented cells in the anterior chamber, and an area of iris atrophy at the site of capture. The PI was patent with raised intraocular pressure. She underwent IOL repositioning, and a enlargement of the second surgical PI. She was put on 2% pilocarpine post-operatively to prevent recurrence. Other surgical options were discussed.

Conclusions: Optic capture is a potential complication of the Yamane flanged intrascleral haptic fixation technique. Nonetheless, there are several non- surgical and surgical options available to manage this problem thus optimizing visual outcomes.

Rescuing the Capsulorhexis – Argentinian Flag Sign by Beginner Surgeon: Case Review

*First Author: Ni Made Helen Virginia **JACOB***
*Co-Author(s): Rizal **FANANY**, Wisnu **SADASIH***

Purpose: To compare Argentinian flag complication surgery by Beginner Surgeon and management of each case.

Methods: First case, a 62-year-old man with diabetes was evaluated for decreased vision in his right eye (RE). On examination, the VA was 1/300 with a white cataract. During surgery, the initial puncture was made in the capsule with a cystotome and followed by an acute radial tear. Continued by the capsulorhexis after making a new flap and extended with capsulorhexis forceps. Another side finished the rhexis with can opener technique. Second case, a 32-year-old man with a complicated cataract had VA 1/300 in RE with a white cataract. After initial puncture with cystotome, followed by an acute radial tear that occurred due to the high intralenticular pressure. The capsular bag tear is maintained using a cohesive. The nucleus looks soft, we did careful phacoemulsification. IOL implantation has done in the bag, followed by a capsulorhexis procedure using Vannas.

Results: In the first case of ECCE operation, we have to finish the rhexis with can opener style or take back the tear after making a new flap. In the second case with the phacoemulsification technique, nuclear management was performed to avoid forces perpendicular to the capsule tear. Phacoemulsification was performed because the nucleus looks soft. After IOL implantation, capsulorhexis was performed using micro scissors to open the visual axis.

Conclusions: The Argentinian flag sign may occur during capsulotomy creation. The residents as beginner surgeon must be prepared to identify and manage this situation.

Results of Phacoemulsification Cataract Surgery in Previously Vitrectomized Eyes

*First Author: Agung **NUGROHO***
*Co-Author(s): Retno **PUSPITANINGTYAS**, Supanji **SUPANJI**, Agus **SUPARTOTO***

Purpose: To determine the results of phacoemulsification cataract surgery in previously vitrectomized eyes.

Methods: This is a retrospective study, a single-surgeon series phacoemulsification was performed in 9 eyes that had vitrectomy between January 2021 and December 2021. Visual acuity in 4 weeks› postoperative results were analyzed.

Results: Postoperatively, visual acuity improved two Snellen lines or more in 8 eyes (88.89%), did not change in 1 (11.11%). Visual acuity 4 weeks postoperative improved within 2 Snellen lines in 88.89% of eyes.

Preoperative visual acuity was varied from 1/300 to 2/60. Postoperative visual acuity increase become 3/60 to 6/9. One patient got excellent visual acuity increasing from 1/60 become 6/9. Data from this study was comparable to data in the recent literature.

Conclusions: Phacoemulsification in vitrectomized eyes improved visual acuity. Data from this study were comparable to data in the recent literature.

Sitting Phacoemulsification of Cataract and Intraocular Lens implantation: Special

First Author: Jebinth ***BRAYAN***
Co-Author(s): Prithvi ***CHANDRAKANTH***

Purpose: Phacoemulsification sx in patients who are unable to lie down flat (kyphosis, CNS abnormality, among others), the supine position may not be an option.

Methods: We assess the outcome of phaco with IOL Implantation in Sitting position- Hospital based Prospective study - 6 months. patient is seated upright 90deg on chair with the head kept on wall - surgeons chair faces the patient – phaco done by the same surgeon – analyzed in 27 patients.

Results: The number of males is more than females; statistics of BP, pulse, SPO2, IOP shows no statistically significant changes - stable vitals during the surgery. BCVA-significant improvement in POD1,30,60,90 days,88% patient with 6/6 on average LE sx took 9.8 minutes, CDE energy of 9.6 and RE took 11.4 minutes and 17.4 minutes respectively. Sx time in MC > IMC by 3 minutes and twice the phaco energy for MC than IMC. This proved to keep general condition stable during surgery with very less visual complication.

Conclusions: It might be the only option for some patients and only study with 90 deg sx being conducted on patients who cannot lie down supine for phaco sx. Phacosit is a frugal novel innovative phacoemulsification technique that can be carried out by any ophthalmic surgeon with ease and without sophisticated instruments. It requires step-by-step sitting phacoemulsification.

To Determine Astigmatic Changes of Intrastromal Limbal-Relaxing Incisions Performed During Femtosecond Laser-Assisted Cataract Surgery

First Author: Nitin ***DESHPANDE***

Purpose: To study efficacy of limbal releasing incisions (LRIs) performed during femtosecond laser assisted cataract surgery (FLACS).

Methods: This is a secondary data analysis of 103 eyes undergoing FLACS with adjunctive intrastromal LRIs. Intrastromal LRI nomogram of LENSAR-FLACS was used. Keratometry was measured using Sirius topography and IOL Master 700.

Results: The mean (SD) age was 64.1 (± 8.1) years. Median (IQR) preoperative Kcyl was - 0.68 (-0.83, -0.55), and post-operative subjective cylinder was 0 (0,0) ($p < 0.05$). Median (IQR) spherical equivalent was 0 (0, 0). Mean (SD) efficacy of LRIs was 82.1% (31.6%). Efficacy was lower in those with higher anterior eccentricity values at 8mm ($r = -0.410$, $p = 0.0006$).

Conclusions: Intrastromal LRIs can be conveniently performed during FLACS and are effective in reducing postoperative residual cylinder. Further studies are needed to devise a nomogram for correlation between corneal eccentricity and efficacy of LRIs.

To assess visual outcomes in 3 different extended depth of focus (EDOF) IOLs.

First Author: Nitin ***DESHPANDE***

Purpose: To assess visual outcome of 3 different extended depth of focus lenses Vivity,Miniwell and Oculentis comfort

Methods: This is a secondary data analysis of 231 eyes with phacoemulsification (Vivity:64;,Oculentis:106; and Miniwell:55). We assessed distance, intermediate & near visual acuity, near add,requirement and contrast sensitivity.

Results: There was significant reduction in median (IQR) pre & post sphere (1.0[0, 2.25] vs 0[0, 0]; $p < 0.001$), cylinder (0[0, 0.75] vs 0[0,0]; $p < 0.001$), and near add requirement (2.5[2.5, 2.5] vs 1.5[1.5,,2.0]; $p < 0.001$). There was significant improvement in best corrected distance and near vision, ($p < 0.001$). Median (IQR) post-operative intermediate vision was 0.40(0.40, 0.40) and contrast,sensitivity was 0.10(0.10, 0.10). There was no significant difference between IOLs for these

Conclusions: Vivity, Miniwell and Oculentis comfort lens are comparable EDOF IOLs, provide good,distance and intermediate visual acuity, contrast sensitivity, and require minimal near correction.

Visual Acuity and Traumatic Intraocular Pressure Outcomes after Penetrating Traumatic Cataracts Surgery

First Author: Hsu-Ying ***LIN***
Co-Author(s): Kuan-Jen ***CHEN****, Chiun-Ho* ***HOU****, Jiahn-Shing* ***LEE****, Ken-Kuo* ***LIN***

Purpose: To evaluate the visual outcomes and complication rates in patients with primary and secondary traumatic cataract extraction and intraocular lens (IOL) implantation with penetrating traumatic cataracts.

Methods: This retrospective case series reviewed the medical charts of patients who had penetrating traumatic cataracts and received open-globe injury repair and traumatic cataract extractions. Preoperative and surgery data, visual outcomes, and postoperative complications were recorded.

Results: A total of 86 patients were included, with 44.2% of patients achieved a final best corrected distance visual acuity (BCVA) of 20/40 or better. The prognostic factor found related to BCVA was the Zone 3 injuries. 72 eyes (83.7%) of patients had Zone 1 injuries, and in these patients, prognostic factors for BCVA were large corneal wound (≥ 5mm) and the presence of intraocular foreign body (p = 0.028 and 0.050). Primary and secondary cataract extraction and IOL implantation were not found significantly related to the BCVA. Logistic regression analysis showed primary cataract extraction as a protective factor (p = 0.023), and IOL positioned in the sulcus as a risk factor (p = 0.015) for developing traumatic IOP elevation. IOL positioned in the sulcus also had higher rates of developing traumatic glaucoma (p = 0.020).

Conclusions: The timing of cataract extraction and IOL implantation was not related to the final BCVA, but primary cataract extraction was found as a protective factor for developing traumatic IOP elevation. IOL positioned in the sulcus had higher rates of developing traumatic IOP elevation and glaucoma.

Visual Outcomes After Phacoemulsification With Monofocal Intraocular Lenses and Multifocal Intraocular Lenses at Tertiary Eye Hospital in South India: A Retrospective Observational Study

*First Author: Ravi **CHANDRA K***
*Co-Author(s): James Subrat Kumar **ADAMS**, Sowmya **PERI***

Purpose: To compare the visual outcomes after phacoemulsification surgery with monofocal intraocular lenses (IOL) and multifocal IOLs in respect to distant and near visual acuity (VA) contrast sensitivity, subjective symptoms and to assess functional status and quality of life.

Methods: A retrospective study was conducted on patients who underwent phacoemulsification surgery. Both groups were evaluated postoperatively after 3 weeks and 6 weeks for distant and near VA, contrast sensitivity for distance and subjective symptoms such as glare and halos and difficulty in night driving were noted.

Results: A total of 204 eyes of 204 patients, with 102 eyes in each group were included. At 6 weeks, distant VA was 6/6–6/9 in 80% and 95% of the patients of monofocal and multifocal groups, respectively, remaining patients had 6/12–6/18 vision.95% of multifocal group had N6–N8 vision(p < 0.0001).High contrast sensitivity for distance was similar in both groups, but low contrast was significantly reduced in multifocal group as compared to monofocal group(p =0.0023).18% of multifocal group had complained of glare and halos compared to monofocal group who never had these visual sensations. About 7% of patients in multifocal group had difficulty with nighttime driving. Nearly, 95% of patients in multifocal and 30% of patients in monofocal group had become spectacles independent for near.

Conclusions: Multifocal IOL group experienced reduced spectacle dependency for near vision and a higher level of patient satisfaction despite few complaints of halos, glare, and difficulty in night driving. Monofocal IOL group experienced spectacle dependency for near. Overall, multifocal IOLs offer better near VA, good distance VA, less limitation in visual function in selected and motivated individuals.

Cornea, External Eye Diseases and Eye Banking

A Case Series on Ocular Features of Gliptin Induced Bullous Pemphigoid

*First Author: Mariya **DOCTOR***
*Co-Author(s): Sayan **BASU**, Anahita **KATE***

Purpose: To highlight the clinical features, ocular involvement, and course of the disease in patients with gliptin induced bullous pemphigoid (BP).

Methods: A case series of four patients on treatment with gliptins for diabetes mellitus, who presented with ocular and systemic manifestations similar to that of classic BP. The diagnosis of BP was confirmed with conjunctival biopsy.

Results: Patients presented with tense, pruritic blisters similar to BP, with bilateral ocular involvement such as punctal stenosis and loss of medial canthal folds. Two patients had bulbar conjunctival cicatricial changes with inferior forniceal shortening and symblepharon. The suspected drug was discontinued, and patients were treated with topical lubricants and short course of topical steroids. An association between the clinical features of BP and use of gliptins was present, and there was resolution of these features on discontinuing the medications.

Conclusions: This case series shows the ocular adverse effects of the DPP-4i group of anti-diabetic medications which an ophthalmologist should be aware about.

A Comparison of Visual Outcomes of Deep Anterior Lamellar Keratoplasty Versus Penetrating Keratoplasty of Keratoconus Patients in Malaysia

*First Author: Lai **YIN PENG***
*Co-Author(s): Rohanah **ALIAS**, Shamala **RETNASABAPATHY***

Purpose: To compare refractive and visual outcomes including postoperative complications of penetrating keratoplasty (PKP) and deep anterior lamellar keratoplasty (DALK) for keratoconus patients.

Methods: A retrospective case-control study is presented.

Results: There were 22 female patients (42%) and 31 male patients (58%) in this study. The racial distribution was 55% Indians, 34% Malays, 7% Chinese and 4% others (Iban). The mean age was 27.03 ± 8.68 years old for the PKP group and 26.36 ± 7.26 years old for the DALK group (p =0.749). There were no statistically significant differences in pre-operative BCVA, post-operative unaided VA, refraction, and topography. However, there was statistically difference in post-operative BCVA between PKP (0.16 ± 0.16) and DALK (0.33 ± 0.17) (p =0.00). Graft rejection was a significant complication in PKP group, with 5 eyes (16%) resulting in two graft failure (6%). There was no graft rejection and graft failure reported in DALK group. Three patients developed cataract post-operatively; one in PKP group and 2 in DALK group with one DALK patient underwent cataract surgery. One patient from PKP group (3%) and 2 from DALK group (7%) developed glaucoma with one patient from each group requiring glaucoma surgery.

Conclusions: This present study revealed visual outcomes of BCVA for PKP were better than those for DALK. In respect of refractive and keratometry parameters, there were no significant difference between the two groups. DALK has lower rate of graft rejection and graft failure compared to PKP. In overall, we have a good graft survivability of 97% for keratoconus patients.

Acute Orbital Necrotizing Fasciitis: a Rare Case Report

*First Author: Calista **GUNAWAN***
*Co-Author(s): Rina La **NORA**, Nizma **PERMAISUARI***

Purpose: Necrotizing fasciitis is a rare and rapidly progressive disease that requires prompt surgical and medical management. We present a rare case of orbital necrotizing fasciitis in an 8-year-old girl.

Methods: An 8-year-old girl presented to our Emergency Room with progressive swelling of left eyelid and high-grade fever. Swelling, redness and necrotic lesion with purulent discharge appeared from her left ear extending to left cheek, eyelid, and forehead. Visual acuity was hard to be evaluated due to uncooperativeness. CT-scan suggested orbital cellulitis and abscess formation extending from left buccal region to nasopharynx and oropharynx and left superior mediastinum. Abdominal ultrasound suggested multiple abscess in the liver.

Results: Necrotomy and debridement was immediately planned. Intraoperatively, pus and necrotic tissue was found in upper and lower eyelid, post-septal and retro-orbital area. Her left orbit was exenterated as there was a very high risk of the infection spreading to the brain. Chromobacterium violaceum was isolated from the speciment culture. Intravenous ceftazidime was given empirically but was then switched to metronidazole and meropenem. Wound toilet was routinely performed after surgery. Antibiotics was then switched to oral after discharged.

Conclusions: Necrotizing fasciitis is a rare, serious and rapidly progressive disease of the subcutaneous tissue that carries a high mortality within hours to days without prompt medical surgial interventions. Chromobacterium violaceum was one of the causative agents found for necrotizing fasciitis. An emergency exenteration seemed to be an alternative management in necrotizing fasciitis as a lifesaving management.

Anti-scarring Effect of Lycium Barbarum Polysaccharide After Cornea Stromal Injury

*First Author: Ho Lam **WONG***
*Co-Author(s): Yau Kei **CHAN***

Purpose: Corneal scarring, as one of the complications of refractive surgery, is the fourth common cause of global blindness. Under the action of transforming growth factor-beta 1 (TGF-β1), corneal fibroblasts will differentiate into opaque myofibroblasts. The study is to assess if lycium barbarum polysaccharride (LBP) solution can be a pre-treatment therapy in modulating fibroblast differentiation after corneal injury.

Methods: A 3D in vitro microfluidic model is created to mimic the corneal stroma. The chip consists of a cell culture chamber and is connected to a perfusion channel. Primary human corneal fibroblasts are grown within a 3D collagen type I-hydrogel matrix. Fibroblast media or 2 mg/mL LBP is added for the first 24 hours of culture. TGF-β1 is used to induce scar at a concentration of 10 ng/mL, after 1 day of culturing.

Results: A lower amount of aSMA, a prominent marker found in myofibroblasts, was found in the LBP pre-treated group compared to the positive control TGF-β1 group (p <0.001). Similarly, the expressions of extracellular matrix proteins, including vimentin (p =0.03), collagen type III (p <0.001) and collagen type II (p =0.002) were all significantly lower in LBP pre-treated group. Fibroblast-laden hydrogel pre-treated with LBP revealed no significant contraction compared to that in normal control group (p =0.29) while the TGF-β1 group showed increased contraction by 17.3% in area (p <0.001). The hydrogel stiffness in TGF-β1 showed a significant increase (p =0.02) but that in the LBP group showed no significant difference (p =0.996).

Conclusions: LBP may potentially be a topical therapy to prevent corneal scarring prior to corneal refractive surgery.

Association Between Dupilumab and Conjunctivitis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

*First Author: Tzu-Yi **LIN***
*Co-Author(s): Yih-Shiou **HWANG**, Yu-Chuan **KANG**, Ching-Ya **WANG**, Fang-Ying **WANG***

Purpose: Dupilumab exhibits favorable efficacy for treating atopic dermatitis (AD). Higher incidence of conjunctivitis was reported in dupilumab users compared to placebo users. However, no study has compared the risk of conjunctivitis among patients with different indications so far. Therefore, this systematic review and meta-analysis was performed to investigate the association between dupilumab and conjunctivitis in various inflammatory diseases.

Methods: An electronic search of the PubMed, Embase, Cochrane Library, and ClinicalTrials.gov was conducted from inception to May 2022. No limitation was imposed for article language. Only placebo-controlled randomized controlled trials (RCTs) were included. The main outcome was the incidence of conjunctivitis during the study period. A subgroup analysis was performed for patients with an AD and non-AD indications, which included asthma, chronic rhinosinusitis with nasal polyps, and eosinophilic esophagitis.

Results: In total, 18 RCTs involving 7,797 patients, including 10 RCTs involving 3,687 patients with AD and 8 RCTs involving 4,110 patients with non-AD indications, were included for meta-analysis. Dupilumab users exhibited a significantly higher risk of conjunctivitis (risk ratio [RR], 1.79; 95% confidence interval [CI], 1.12–2.88) than placebo users. Notably, a significantly increased incidence of conjunctivitis was observed in the dupilumab group relative to the placebo group merely among patients with AD (RR, 2.60; 95% CI, 1.84–3.66), but not among patients with non-AD indications (RR, 0.70; 95% CI, 0.43–1.13).

Conclusions: Only dupilumab users with AD reported an elevated incidence of conjunctivitis, indicating that ophthalmic examinations before, during, and after dupilumab therapy are crucial for patients diagnosed with AD.

Atypical Presentation of Peripheral Ulcerative Keratitis Secondary to Phlyctenular Keratoconjunctivitis

*First Author: Nampi **TADU***
*Co-Author(s): Pranita **SAHAY**, Aarushi **SAINI***

Purpose: To describe an atypical case of peripheral ulcerative keratitis, secondary to phlyctenular keratoconjunctivitis.

Methods: A 37-year-old male presented with redness and pain in both eyes for 15 days, with worsening of symptoms associated with diminution in the left eye for 2 days. Patient had multiple recurrent episodes of pain and redness in both eyes, relieved on topical medications. Left eye had a 1X1mm paracentral circular perforation with iris prolapse and no infiltrates. Right eye had a temporal peripheral epithelial defect measuring 0.5 x 0.5mm. In both eyes, temporal limbal nodule with associated sectoral congestion and superficial vascularization and focal thinning over cornea was seen. Rest of the ocular and systemic examination was within normal limits. Mantoux test was positive measuring 24mm with reactive VDRL. Other tests done for any infective or immunological etiology were negative. The corneal perforation was repaired with cyanoacrylate glue and bandage contact lens (BCL), and started on topical and oral steroids, antibiotics, topical antiglaucoma medication and cycloplegics. The glue spontaneously dislodged on day 26, following which the BCL was removed. Corneal thickness at the site of perforation was 238 microns. The patient is on regular follow-up at present.

Results: A diagnosis of peripheral ulcerative keratitis secondary to phlyctenular keratoconjunctivitis, presenting with progressive thinning and perforation of paracentral cornea was made, which was managed adequately with glue and BCL with immunosuppression.

Conclusions: Phlyctenular keratoconjunctivitis, now, a rare entity, can present with peripheral ulcerative keratitis.

Autologous Tenon's Patch Graft: An Inexpensive and Effective technique to Manage Corneal Perforations

*First Author: Chaitali **PATEL***
*Co-Author(s): Kaustubh **HARSHEY***

Purpose: To describe the outcomes of autologous tenon›s patch graft (TPG) for managing corneal perforations.

Methods: Retrospective case series of four eyes of four patients with corneal perforations were studied. The technique involved, harvesting of autologous tenon›s tissue, freshening of wound edges, measurement of size of defect, trimming of tenon›s and anchoring the graft with 10-0 nylon sutures followed by placement of a bandage lens. Additional steps such as application of fibrin glue, amniotic membrane or tarsorrhaphy were performed as deemed necessary by the surgeon. The primary outcome measure was anatomical closure of the perforation, and the secondary outcome measure was improvement in best corrected visual acuity (BCVA) at three months postoperatively

Results: The mean age was 44.5 ± 7.79 years. There were two males and two females. The etiologies of corneal perforation were exposure keratopathy (n=1), herpes viral keratitis (n=1), neurotrophic keratitis (n=1) and rosacea with severe dry eye (n=1). Anatomical closure of the perforation was achieved in all eyes at

end of three months. The BCVA improved from 1.75 ± 0.47 to 0.71 ± 0.193 logarithm of minimum angle of resolution units at three months postoperatively (p <0.01). All eyes healed with formation of a macular-leukomatous scar. None of the eyes required any additional revision surgery or corneal transplantation.

Conclusions: The autologous TPG is a safe, inexpensive and effective method to manage corneal perforations.

Bacterial Endophthalmitis Following Descemet's Stripping Automated Endothelial Keratoplasty: A Case Series

*First Author: Prafulla **MAHARANA***
*Co-Author(s): Deepali **SINGHAL***

Purpose: To evaluate the risk factors, clinical characteristics, and management outcome in patients of post endothelial keratoplasty (EK) bacterial endophthalmitis following Descemet›s stripping automated endothelial keratoplasty (DSAEK).

Methods: Patients who developed post-EK bacterial endophthalmitis following DSAEK in a tertiary care institute from January 2018 to August 2020 were evaluated retrospectively. The various parameters that were recorded include preoperative factors (age, gender, eye, duration of symptoms, prior ocular surgery, compromised ocular surface, and bandage contact lens use), donor details, diagnosis, treatment, and clinical course of the recipient, details of the surgery, post-operative medications, microbiology reports of the donor, mate cornea, as well as the host cornea.

Results: A total of 58 patients underwent DSAEK from January 2018 to August 2020. Three patients (5.1%, 3/58) of post EK keratitis with endophthalmitis were identified. All patients had multiple ocular co-morbidities. The organisms isolated were Pseudomonas aeruginosa (n=2) and Staphylococcus epidermidis (n=1). All patients required therapeutic penetrating keratoplasty and pars plana vitrectomy within 24 hours of onset. The microbiological profile and sensitivity pattern of the host cornea (following therapeutic keratoplasty) and the donor rim culture sent during DSAEK were similar in all cases.

Conclusions: Ocular co-morbidities, duration of surgery, and systemic co-morbidities might be associated with post-EK bacterial endophthalmitis. Microbiology of donor rim may not always predict the risk of post-EK bacterial endophthalmitis. However, it may predict the microbiology and the resistance pattern in patients developing post-EK bacterial endophthalmitis.

Case Reports of Two Contrasting Presentations of Paecilomyces Fungal Keratitis

*First Author: Priyadarshini **K***

Purpose: To report the two contrasting presentations of Paecilomyces fungal keratitis which were resolved with medical management.

Methods: A 65-year-old female presented with recalcitrant keratitis after Small-incision cataract surgery, with pain, watering and diminution of vision with an epithelial defect of 3*4mm in the superior part of the corneal with deep infiltrate extending into the sclera involving the scleral tunnel and intense fibrinous anterior chamber reaction. Her presenting visual acuity was light perception with PR inaccurate in one quadrant. Her corneal scraping was positive for Paecilomyces lilacinus growth on fungal culture, was initially treated with topical (Voriconazole 1%) and oral antifungal (Tab Voriconazole 200 mg BD), later had to be given multiple intrastromal and intracameral injections of voriconazole (6 times every 3 days). In contrast, a 45-year-old male who presented with keratitis post-trauma, with a small epithelial defect of 2*2 mm and infiltrate involving 50% of corneal stroma with a surrounding stromal edema. His presenting visual acuity was 6/60 in Snellen visual acuity chart. He was also positive for Paecilomyces lilacinus growth on fungal culture could be treated with topical and oral antifungal drugs.

Results: Targeted therapy with repeated intrastromal and intracameral voriconazole injections were useful in the resolution of recalcitrant Paecilomyces keratitis in the 65-year-old female patient, whereas early presentation in the 45-year-old male could be managed with topical and oral antifungals.

Conclusions: Non-resolving Paecilomyces species fungal keratitis can be treated with a targeted therapy with repeated injections of intrastromal voriconazole before contemplating therapeutic keratoplasty.

Chronic Corneal Perforation Caused by Multiple Surgeries Successfully Treated with Adjusted Multilayer Amniotic Membrane Transplantation – A Case Report

*First Author: Liyi **CHIU***
*Co-Author(s): Shiuhliang **HSU***

Purpose: The cause of corneal perforation can be divided to infectious and non-infectious origin. There are several ways to treat corneal perforation depends on the size, depth, location and cause of the perforation. Cosmetic issue also plays an important role. It is an art to select appropriate method to treat the disease and cause less damage to the ocular surface. In this study, we present a case of chronic corneal perforation caused by multiple surgeries successfully treated with a novel method of adjusted multi-layer amniotic membrane transplantation

Methods: It is a retrospective case report. We recorded the patient's vision, intra-ocular pressure, corneal OCT and slit lamp color photo before and after the surgery.

Results: The 26-year-old had received several ocular

surgeries, including scleral buckle and pars plana vitrectomy. He visited our outpatient department due to white cornea and band keratopathy. However, we noticed a small seidel test positive corneal perforation over peripheral cornea with underlying 2.5mmx 2.5mm stromal defect, forming like a bleb (dome shape in corneal OCT). We performed adjusted multi-layer amniotic membrane transplantation for the wound by filling the stromal defect with two straw rolls like amniotic membrane and cover one more layer on the top. We cross sutured the wound with Nylon 10.0 as a mesh and covered with bandaged contact lens. The wound healed after removing the suture and contact lens gradually.

Conclusions: Amniotic membrane transplantation is a useful tool to treat small cornea perforation and may also compensate the stromal defect.

Clinical Characteristics of Corynebacterium Keratitis

*First Author: Hidenori **INOUE***
*Co-Author(s): Yuki **MORI**, Atsushhi **SHIRAISHI**, Koji **TORIYAMA***

Purpose: Corynebacterium species. are resident bacteria on the ocular surface and known to cause keratitis in some cases. This study aimed to analyze the clinical features of keratitis caused by Corynebacterium species.

Methods: We retrospectively reviewed 15 microbial keratitis in which Corynebacterium species. was detected alone in corneal scraping cultures at a single center between January 2010 and March 2021. The data about their clinical presentation, predisposing risk factors, bacterial species, antimicrobial susceptibility, and treatment were collected.

Results: The mean age of the patients was 54.7 ± 22.6 years (nine males and six females). Clinical types included adhesive type forming plaque-like deposits on the superficial corneal layer in 10 (66.7%) and infiltrative type forming abscesses in five cases (33.3%). Major predisposing risk factors were the use of topical fluoroquinolone (10 cases, 66.7%), topical steroid (seven cases, 46.7%), diabetes mellitus (five cases, 33.3%), and history of keratoplasty (four cases, 26.7%). Corynebacterium macginleyi (12 isolates) was the most common species identified from keratitis specimens. Fourteen Corynebacterium isolates were resistant to fluoroquinolone, but the susceptibility to other antibiotics was good. The mean duration of treatment was 23.5 days. In this study, there were no cases of corneal perforation and cases requiring therapeutic keratoplasty, but five adhesive type required frequent corneal scrapping.

Conclusions: Corynebacterium keratitis occurs in patients with topical fluoroquinolone, steroid, and diabetes mellitus. Clinical features could be classified into adhesive and infiltrative type. The adhesive type is resistant to topical antibiotics, and surgical removal of the plaque-like deposits was essential.

Clinical and Graft Survival Characteristics of Optical PK at Tertiary Care Center in Indonesia: A 4-Year Retrospective Study

*First Author: Syska **WIDYAWATI***
*Co-Author(s): Ivana **ALBERTA**, Tjahjono **GONDHOWIARDJO**, Yulika **HARNIZA**, Rina **LA DISTIA NORA**, Cut Putri **SAMIRA***

Purpose: To evaluate patient demographic characteristics, indications and variables related to penetrating keratoplasty (PK) survival.

Methods: This study was retrospective case series which trace all medical records of PK patients from 2015 to 2018 in Cipto Mangunkusumo Hospital Jakarta. The traced variables were indications of surgery, corneal vascularization, previous failed graft, glaucoma after PK, and other complication. PK survival rate is shown in the Kaplan Meier curve using SPSS v24.0.

Results: A total of 214 patients underwent PK (men 67.3%, woman 32.7%) with the mean age of 42.11 (0-85) years included in this study. Three most common indications of keratoplasty were corneal scar (32.7%), infectious corneal ulcer (25.5%), and failed graft (19.2%). The overall graft survival rate for PK is 61.7%. The mean graft survival time was 14.388 ± 0.580 months (95% CI; 13.252-15.524).

Conclusions: The survival rate is less than 70% than studies from developed countries. Establishing an appropriate early diagnosis, reasonable surgical procedures, close monitoring, and early detection of complications with proactive interventions lead to better outcomes. Further research is needed to determine the relationship between the risk factors for corneal graft failure.

Close Monitoring of Conjunctival Healing to Lower Pterygium Recurrence after Conjunctival Autograft

*First Author: Titiek **ERNAWATI***
*Co-Author(s): Wilson **KHUDRATI**, Okky Imanuel **SAMATHA**, Anggia Dwi Stephanie **TANDIPAYUK**, Audrey **FEDORA***

Purpose: To determine the postoperative pterygium recurrence after conjunctival autograft with close monitoring of the conjunctival healing.

Methods: Retrospective study with cross sectional study design conducted in Surabaya. The population was all patients diagnosed with pterygium who had undergone surgery with the conjunctival graft technique between 2017-2019. Data were collected from hospital electronic records, and the study protocol was approved by the Health Research Ethics Commission of Medical Faculty Widya Mandala Catholic University based on WHO-CIOMS International

Ethical Guidelines for Health-related Research Involving Humans.

Results: This study included 95 patients, 48 were male and 47 were female, with an age range from 38-84 years. Pterygium grades were dominated by grade III (56.8%), grade IV (37.9%), and grade II (5.3%). There are two patients (2.1%) that had recurrences. Based on the result of our study using Spearman's rho as a correlation test, there is no statistically significant difference between preoperative pterygium grade and recurrence rate ($p > 0.05$).

Conclusions: In conclusion, recurrence of pterygium within six months after surgery can be reduced by wearing an eye bandage with close monitoring of the conjunctival graft healing process for two weeks.

Complex Therapy of Dry Eye Disease and Intermediate Uveitis

First Author: Elena ***TATARNIKOVA***

Purpose: DryEyeWorkshop II considers inflammation as one of the key pathogenetic factors of dry eye disease (DED), contributing to the occurrence of pathological changes in the ocular surface and disruption of the homeostasis of the tear film. Intermediate uveitis (IU) is quite common in 28-57% of cases, accompanied by signs of irritation of the ocular surface and symptoms characteristic of DED. Aim: to study the clinical effectiveness of complex therapy of DED against the background of IU, including local tear replacement and anti-inflammatory therapy with retinal laser coagulation on the extreme periphery of the fundus

Methods: A total of 98 patients were examined: the main group - 78 patients, the comparison group - 20 patients. Patients of the main group were treated with a complex method of treatment, the comparison group received only local tear replacement and anti-inflammatory therapy. The follow-up period was 6 months.

Results: Against the background of the use of complex treatment of DED and IU there is a significant decrease in complaints according to the OSDI to 32.0% of the baseline level ($p < 0,05$), a decrease to 15.7% of the LIPCOF test ($p < 0,05$), an increase in the Norn test to 22.5% and total tear production by almost 2 times ($p < 0,05$). in the main group, there was a positive dynamic of the course of IU in the form of resorption of vitreous exudate, reduction of retinal edema.

Conclusions: The use of complex treatment of DED and IU promotes rapid and stable relief of inflammation of chorioretinal structures, provides a significant reduction in subjective and objective manifestations of DED.

Corneal Hysteresis in Adult Indian Population

First Author: Nayani Amrin ***HUSSAIN***
Co-Author(s): Siddharth ***AGRAWAL****, Rajat* ***SRIVASTAVA***

Purpose: To evaluate corneal hysteresis (CH) using ocular response analyser (ORA) among healthy adults in India and to study inter-ocular variability in mean CH.

Methods: This prospective, cross-sectional, observational study was conducted at a tertiary eye care center in a medical university in India. 300 healthy participants in age group between 18 to 60 years were recruited from amongst the residents, staff and patients coming for routine examination in Ophthalmology department. CH and corneal compensated intra-ocular pressure (IOP-cc) was assessed using ORA. Both eyes of participants were included in study. Statistical analysis was done to calculate mean CH in study population, males and females. Pearson correlation coefficient was calculated to study correlation between CH with age, gender, IOP-cc and central corneal thickness (CCT).

Results: The mean CH in overall study population, males and females were 10.57 ± 1.12, 10.25 ± 0.90, 10.96 ± 1.22 mm Hg. Weak negative correlation between CH and age ($r=-0.23$, $p <0.001$), CH and IOP-cc ($r=-0.24$, $p <0.001$) and weak positive correlation between CH and CCT ($r=0.10$, $p =0.08$) was observed. Mean CCT of the study population was 539 ± 24.17 µm. Females had slightly higher CCT compared to males (540.31 Vs 538, $p =0.49$). No significant difference in CH, IOP-cc and CCT was observed between eyes. A strong positive correlation was observed in CH between eyes ($r=0.75$, $p <0.001$).

Conclusions: Mean CH among healthy Indian adult is 10.57 ± 1.12 mm Hg. A positive correlation is present between CH and CCT whereas CH is negatively correlated with age and IOP-cc. CH values between the two eyes in normal individuals are coherent and positively correlated.

Correlation between Central Corneal Thickness and Intraocular Pressure: A Cross-sectional Study

First Author: Ivana ***ALBERTA***
Co-Author(s): Titiek ***ERNAWATI****, Rofiqi* ***ROFIQ***

Purpose: To evaluate the correlation between central corneal thickness (CCT) and intraocular pressure (IOP), measure its effect, and find the correlation of CCT and IOP between right and left eyes.

Methods: This was a cross-sectional study conducted in Surabaya from September 2021 until October 2021 with consecutive sampling. The statistic analyzed using Pearson correlation test, simple linear regression, and paired t-test in SPSS program version 24.0.

Results: A total 115 patients were included, 69 (60%) females and 46 (40.0%) males. The mean age was

35.78 ± 11.64 years old. The mean CCTs were 550.26 ± 31.66 and 551.43 ± 34.92 µm for right and left eyes, respectively. The mean IOPs were 16.06 ± 3.71 and 15.76 ± 3.52 mmHg for right and left eyes, respectively. A moderate positive correlation was found between CCT and IOP of the right eyes (R = 0.355, p = 0.000) and left eyes (R = 0.381, p = 0.000). Quantitatively, for every 100 µm increase in CCT, measured IOP increases by 0.042 mmHg (R2 = 0.126, p = 0.000) for right eyes and 0.038 mmHg (R2 = 0.145, p = 0.000) for the left eyes. In addition, CCT between right and left eyes were strongly and positively correlated (r = 0.856, p = 0.000). IOP between right and left eyes were strongly and positively correlated as well (r = 0.830, p = 0.000).

Conclusions: There was a moderate positive correlation between CCT and IOP which statistically significant (right eyes: R = 0.355, p = 0.000 and left eyes: R = 0.381, p = 0.000). Both CCT and IOP between right and left eyes also positively correlated (p = 0.000).

Development of Allergic Conjunctivitis Induced by Acanthamoeba Excretory-Secretory Protein and the Effect of Resolvin D1 on Treatment

*First Author: Jieun **LEE***
*Co-Author(s): Minseung **KANG***

Purpose: To evaluate whether allergic conjunctivitis (AC) could be induced by Acanthamoeba excretorysecretory protein (ESP) and analyze the therapeutic effect of resolvin (Rv) D1 and antiallergic agents.

Methods: Human conjunctival epithelial cells (HCVCs) were treated with 10 µg/well of ESP, and Th2 cytokines were measured using real-time PCR. C57BL/6 mice were treated with 10 µg/5 µL of ESP after sensitization, and conjunctivas isolated from the mice were stained with hematoxylin and eosin (H&E) for the analysis of eosinophils and periodic acid–Schiff (PAS) for the analysis of goblet cells. Cytokine levels in the eye-draining lymph nodes (dLNs) and spleens were measured using the enzyme-linked immunosorbent assay (ELISA). Then, the treatment effects of RvD1 and the antiallergic agents (olopatadine, bepotastine, and alcaftadine) on the HCVCs, mouse conjunctivas, dLNs, and spleens were assessed.

Results: Th2 cytokines were increased in the ESP-treated conjunctival cells. Mouse conjunctivas treated with ESP showed significant infiltration of eosinophils and goblet cells, and the dLN and spleen exhibited increased IL-4, IL-5 and IL-13 levels. All findings were significantly decreased upon treatment with RvD1 and the antiallergic agents.

Conclusions: Acanthamoeba could be used to establish an animal model of AC, which could be effectively treated with RvD1 or topical antiallergic agents.

Dry Eye Disease Induces by Poor Sleep Quality: A Systematic Literature Review

*First Author: Fatina **QONITA***
*Co-Author(s): Rahman **KARTIKO**, Aghnia Nafila **TSANIY***

Purpose: To make a systematic review that investigates the correlation between dry eye disease and sleep quality.

Methods: A structured literature search for cross-sectional was performed using Pubmed and Scopus based on our criteria. The inclusion criteria include studies that investigated the relationship between dry eye disease and sleep quality were just published in the past six years. The main outcome of the present study is the prevalence of DED associated with sleep quality evaluated by using Pittsburgh Sleep Quality Index (PSQI).

Results: A total of 5 studies consisting of 2076 males and females were included in this review. As many as 1176 patients, age ranging from 15-89, were diagnosed with DED (44%). We found that all of the studies that were included in this review demonstrated high Pittsburgh Sleep Quality Index (PSQI) (mean range 5.4 – 8.63) with 92% patients were diagnosed DED. The three main components of sleep deprivation were evaluated by using PSQI, namely: sleep efficiency (mean range 0.20-0.9), sleep duration (mean range 0.9-1.52), and sleep medication consumption (mean range 0.1-0.56).

Conclusions: Compared to healthy patients, patients with DED had higher risk of poor sleep quality. All components of sleep quality including subjective sleep quality, latency, duration, efficiency, disturbances, sleep medication usage, and daytime dysfunction were significantly derivated in participants with dry eye.

Effects of Corneal Tatooing on Patients with Leucomatous Corneal Opacity

*First Author: Himani **JAILKHANI***
*Co-Author(s): Prateek **KOUL**, Rangkynsai **MARNGAR***

Purpose: Corneal tattooing for patients with corneal leukomatous opacity for aesthetic purpose.

Methods: This study included a patient with corneal leukomatous opacity with band shaped keratopathy with history of trauma when she was 10 years old. She had a nil visual prognosis and hence an ideal candidate for cosmetic surgery. Right eye corneal tattooing under local anaesthesia with India ink was done after epithelial scraping and lamellar pocket procedure. The outcome was observed on intraoperative day, first postoperative follow-up day and 3 weeks postoperative follow-up day.

Results: There was a remarkable satisfying cosmetic change in the corneal appearance post corneal tattooing. Intraoperative outcome was satisfactory. Complication like acute attack of redness was observed

on the first postoperative follow-up day. Foreign body sensations and grittiness were present on the third week postoperative follow-up day which got resolved gradually. The pigment retention density over the cornea after 3 weeks postoperative day was long lasting and durable. Hence a permanent cosmetic result could be expected.

Conclusions: Corneal tattooing for esthetic purpose was successful in the blind eye proving as an alternative in the treatment of disfiguring corneal scar. It can also act as a substitute to cosmetic contact lens.

Ergonomically Designed Modified Busin Glide for DSAEK Tissue Insertion

*First Author: Bhupesh **SINGH***
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Purpose: To demonstrate the effectiveness of a novel modified Busin glide in Descemet stripping automated endothelial keratoplasty (DSAEK) surgery.

Methods: This innovative instrument is designed in such a way that it will work more effectively during DSAEK tissue insertion without causing anterior chamber collapse.

Results: All cases performed using this device went uneventful with ease of doing surgery.

Conclusions: This device was found to be effective in DSAEK graft tissue insertion.

Femtosecond Laser Assisted Deep Lamellar Endothelial Keratoplasty: Utilization of Liquid-Interfaced System

*First Author: Joshua **LIM***
*Co-Author(s): Jod **MEHTA***

Purpose: To review indications and results of femtosecond laser assisted deep lamellar endothelial keratoplasty (Femto-DLEK) using a liquid-interfaced femtosecond laser (FSL) system, in the treatment of deep posterior lamellar stromal scars.

Methods: We describe 3 consecutive patients from a tertiary referral corneal service. These patients developed pre-descematic posterior stromal scarring following deep anterior lamellar keratoplasty (DALK). Best corrected visual acuity, refractive status, endothelial cell counts, and anterior segment optical coherence tomography (AS-OCT) was recorded before, during and after the surgical procedure. Patients underwent Femto-DLEK assisted by the Femto LDV Z8 platform (Zeimer Ophthalmic Systems AG, Port, Switzerland). Following removal of the posterior lamellae, a Descemet membrane endothelial keratoplasty (DMEK) graft was subsequently transplanted.

Results: Clinical indications for the initial DALK included post infective, post herpetic and blepharokeratoconjunctivitis (BKC) related stromal scarring. Intraoperative real time AS-OCT on the LDV Z8 allowed for precise calibration of a vertical posterior trephination depth right up to the anterior edge of the pre-descematic scar. Dimensionality of the ablation was preserved due to a liquid-interface maintaining the corneal shape during trephination. All corneas were recorded as clear at the 6 months post-operative review. The mean post-operative follow-up duration after Femto-DLEK was 15 months. Median (Range) best corrected visual acuity was 6/120 (6/45 – 6/120) pre-operatively, improving to 6/12 (6/7.5 – 6/30) at the 1-year review.

Conclusions: A liquid-interfacing FSL with intraoperative AS-OCT can be a powerful tool when approaching challenging surgical cases. Further development in FSL technology is still required to optimize de novo deep lamellar host trephination.

Fusarium Keratitis in Taiwan: Clinical Features, Genotyping, and Antifungal Susceptibilities

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Purpose: To analyze the epidemiological pattern of Fusarium keratitis in Taiwan, including demographics, risk factors, genotyping of Fusarium species, anti-fungal susceptibilities, and treatment outcomes.

Methods: We recruited 43 cases of culture-proven Fusarium keratitis in single referral center from 2015 to 2020. Each Fusarium isolate underwent molecular diagnosis by translation elongation factor 1 α sequence and internal transcribed spacer region. All Fusarium isolates also underwent in vitro antifungal susceptibilities tests for amphotericin B, natamycin, voriconazole, chlorhexidine, efinaconazole, lanoconazole, and luliconazole by broth microdilution method. Furthermore, the antifungal susceptibility results and clinical outcomes were compared between Fusarium solani species complex (FSSC) and non-Fusarium solani species complex (non FSSC).

Results: Among all the 43 isolates, FSSC was the most common species complex (33 cases, 76.7%), followed by Fusarium dimerum SC (4, 9.3%), Fusarium oxysporum SC (2, 4.7%), Fusarium incarnatum-equiseti SC (2, 4.7%), and Fusarium fujikuroi SC (2, 4.7%). Among clinically used antifungal agents, amphotericin B registered the lowest minimal inhibitory concentration (MIC), and the new azoles efinaconazole, lanoconazole and luliconazole, demonstrated even lower MICs against Fusarium species. The MICs of natamycin, voriconazole, chlorhexidine, lanoconazole, and luliconazole were higher for the FSSC than the non-FSSC, but no significant differences were noted in clinical outcomes, including corneal perforation and final visual acuity.

Conclusions: In Taiwan, the FSSC was the most common complex in Fusarium keratitis; its MICs for

five tested antifungal agents were higher than those of non-FSSC, but the clinical outcomes did not differ significantly.

In Vitro Topical Fluoroquinolone Susceptibility of Common Bacterial Keratitis Standard Isolates

First Author: Arabella ***MENDOZA***

Purpose: This study aims to compare in vitro susceptibility of Pseudomonas aeruginosa, Staphylococcus aureus and Streptococcus pneumoniae to locally available topical fluoroquinolone: levofloxacin, ofloxacin, moxifloxacin, besifloxacin, ciprofloxacin and gatifloxacin as measured by their zones of inhibition. It also seeks to compare the antimicrobial efficacy of the generic topical fluoroquinolones with innovator fluoroquinolone brands.

Methods: This is a single blind controlled experimental study which compared the in vitro susceptibility of Staphylococcus aureus, Streptococcus pneumoniae and Pseudomonas aeruginosa to locally available fluoroquinolones specifically besifloxacin 0.6%, ciprofloxacin 0.3%, ofloxacin 0.3%, gatifloxacin 0.3%, moxifloxacin 0.5%. Zones of inhibition in mm for each bacterial isolate were recorded and tabulated. One way ANOVA and T-test were used to statistically analyze and interpret the data obtained.

Results: All three isolates were susceptible to all fluoroquinolones used in this study. Ciprofloxacin obtained the largest zone of inhibition (mm) when exposed to Pseudomonas aeruginosa isolates. On the other hand, moxifloxacin showed the greatest anti-microbial activity for Staphylococcus aureus and Streptococcus pneumoniae isolates. No statistically significant differences exist between generic topical fluoroquinolones with innovator fluoroquinolone.

Conclusions: The standard bacterial keratitis isolates were sensitive to all the fluoroquinolones tested. Ciprofloxacin demonstrated good in vitro activity for the gram-negative Pseudomonas aeruginosa. Moxifloxacin, on the other hand, had the highest microbial sensitivity for the gram-positive Staphylococcus aureus and Streptococcus pneumoniae. Topical fluoroquinolones that were considered as innovators had comparable in vitro anti-microbial efficacy with those generic brands, except for ciprofloxacin (Celsus and Ciloxan).

Indications of Keratoplasty in Yogyakarta, Indonesia: 2015 – 2020

First Author: Tri ***WINARTI***

Purpose: To find out the current indications of keratoplasty in Yogyakarta, Indonesia as a developing country.

Methods: A retrospective study of 201 keratoplasty surgeries that were conducted in Yogyakarta, Indonesia from January 2015 to March 2020.

Results: The most common indication of keratoplasty in Yogyakarta, Indonesia was corneal scar (83 eyes, 43%), followed by bullous keratopathy (30 eyes, 15.54%), graft failure (23 eyes, 11.91%), corneal dystrophy (15 eyes, 7.77%), descemetocele (12 eyes, 6.21%), active infectious keratitis (10 eyes, 5.18 %), corneal perforation (7 eyes, 3.62%), anterior staphyloma (6 eyes, 3.10%), persistent corneal oedema (5 eyes, 2.59%), and Steven-Johnson syndrome (2 eyes, 1.03%). The donor cornea was mostly from foreign countries, 66 (34.55%) from the United States, 60 (31.41%) from Nepal, 7 (3.66%) from Philippines, 1 (0.52%) from Sri Lanka, and only 57 (29.84%) from Indonesia. The recipient was commonly men (64.0 %) and women made up only 36.0 %. The mean age of recipient was 49.71 ± 19.9 years old.

Conclusions: Corneal scar is the most common indication of keratoplasty in Yogyakarta, Indonesia. Improving in primary eye health care and the availability of donor cornea are necessary to decrease the prevalence of corneal blindness in developing country.

Influence of Cataract Surgery on Meibomian Glands, Team Film and Ocular Surface in Diabetic and Non-diabetic Population: A Comparative Study

First Author: Lional Raj ***DANIEL PONNIAH***

Purpose: To evaluate and compare the morphological changes of meibomian glands and the functional changes of the tear-film and its impact on diabetic and non-diabetic subjects who underwent uneventful phacoemulsification procedures.

Methods: A prospective investigator masked comparative clinical trial. Cataracts with and without diabetes were recruited based on age and grouped as Group 1 (No DM and age < 60 years; N = 43) Group 2 (DM and age < 60 years; N = 39) Group 3 (No DM and age > 60 years; N=51), Group 4 (DM and age > 60 years; N = 67). Preoperative meibography and functional tear film assessments using quantitative measurements of tear meniscus studies, non-invasive tear break-up time (NIBUT), blink rate were analyzed & compared with 21 days and 3 months post-surgery. Ocular Protection Index (OPI) was calculated as a function of surface health by dividing tear break-up time by interblink interval. OPI < 1 is not favorable.

Results: NIBUT was 11.80, 9.50, 10.30 & 7.88 sec. across Gr1-4, reduced to 8.34, 7.31, 7.36, 6.11 by 21 days, restored at 3-mon. ANOVA for OPI had time effect, Wilk›s lambda = 0.813, p < 0.0001. Preop OPI was 1.88, 1.26, 1.67, 0.88 across Gr1-4, reduced to 1.68, 0.91, 1.03, 0.75 at 21 days, restored at 3-mon. Gr-4 had poor OPI at all times. DM influence on Meibomian-gland loss was 12.1% Vs non-DM 6.64%. Elderly, diabetics were 6.29 & 1.79 times more

susceptible to post-cataract surface damages.

Conclusions: Elderly age and diabetes influence post-cataract OSD. The ocular protection Index may be a better OSD predictor than break-up time alone. Diabetics over 60yrs require long-term surface protectors.

Management of Nocardia Interface keratitis after Descemet Membrane Endothelial Keratoplasty

*First Author: Arjun **SRIRAMPUR***

Purpose: To report the clinical course and management of graft host interface Nocardia keratitis after Descemet membrane endothelial keratoplasty (DMEK) in a 75-year-old patient.

Methods: Proper microbiological evaluation and intensive topical and systemic antibiotic therapy resulted in a complete resolution of the infection.

Results: Three months later, the patient underwent a repeated DMEK, which resulted in clearing of the corneal edema and improvement in the visual acuity

Conclusions: To the best of our knowledge, Nocardia interface infection after a DMEK not been reported. We report a rare case of Norcardia interface keratitis, after an uneventful DMEK which was managed successfully by intense antibiotic therapy and a repeated DMEK.

Mesenchymal Stem Cell-Derived Exosomes Modulate Inflammation and Promotes Wound Healing in Corneal Injuries

*First Author: Hon Shing **ONG***
*Co-Author(s): Ruenn Chai **LAI**, Sai Kiang **LIM**, Andri **RIAU**, Gary **YAM***

Purpose: With limitations of corneal transplantations, there is a need to explore alternative therapies for corneal scarring, the sequelae of cornea insults that result in visual loss. We investigated the potential wound healing effects of MSC-exosomes in a corneal injury model.

Methods: Conditioned media of human embryonic stem cells-derived MSC was concentrated and fractionated to obtain exosome-enriched fractions (80-150nm). Irregular phototherapeutic keratectomy (irr-PTK) was used to induce scarring (rat injury model). Topical exosomes or saline were applied to the injured rat corneas for 6 days or until the epithelium has healed, whichever is earlier. Corneal clarity was assessed using slit-lamp imaging and in-vivo confocal microscopy (IVCM). Stromal reflectivity was quantitatively analyzed. Histopathology and enzyme-linked immunosorbent assays (ELISA) of excised corneas were performed.

Results: Following irr-PTK, corneas that received topical exosomes had a significantly lower mean corneal haze score throughout the follow-up period compared to the corneas in the saline control group (p =0.002). Stromal reflectivity imaged using IVCM also showed significant reduction in haze intensity (p =0.004). Quantification of corneal vasculature showed significantly less corneal vascularization in the exosomes-treated corneas. In exosomes-treated corneas, there was lower expression of CD31(vascular endothelial marker), LYVE1 (lymphatic marker), fibronectin and Col3a1 (corneal fibrosis markers) on immunohistochemistry. Exosome-treated corneas also displayed a regenerative immune phenotype characterized by a higher infiltration of CD163/CD206 regenerative M2 macrophages over CD80 M1 macrophages. There was also a corresponding reduction in pro-inflammatory cytokines IL-1β and TNF-α.

Conclusions: Our findings demonstrated that MSC exosomes are potential regenerative therapies for corneal injuries, effected through anti-angiogenesis, anti-fibrosis, and immunomodulation.

Microbial Ingress Evaluation of NOVELIA Package for Systane Ultra MDPF and Systane Hydration MDPF

*First Author: John **BOULOS***
*Co-Author(s): Monica **CRARY**, Cindy **MCANALLY**, Brian **PATTERSON**, Paul **SHANNON***

Purpose: Mainstay treatment in dry eye disease (DED) management is artificial tear drops/lubricant eye drops that replenish the aqueous and/or lipid layer of the tear film. We aimed to review preclinical and clinical evidence of propylene glycol-hydroxypropyl guar (PG-HPG) nanoemulsion lubricant eye drops that is indicated for all major types of DEDS to provide symptomatic relief.

Methods: First, the tip was challenged daily with low levels (102 CFU) of Brevundimonas diminuta (ATCC 19146) after actuation to simulate the tip contacting a contaminated surface. After four days of dispensing, the tip was submerged in a high level (106 CFU/mL) susp. of B. diminuta and actuated to simulate routine use of the product. Finally, the air-intake vent was challenged by submerging the bottle beyond the air-intake filter into a high level (106 CFU/mL) susp. of B. diminuta. After 30-day simulation, internal contents of replicate samples were evaluated for sterility per USP<71>. A passing result indicates the packaging system was able to prevent microbial ingress into the bottle.

Results: For all simulations, a passing USP<71> sterility result was obtained following the 30-day use simulations and microbial challenges of the NOVELIA package.

Conclusions: Both Systane Ultra Preservative-Free and Systane Hydration Preservative-Free eye drops, when presented in the NOVELIA package with the PureFlowTM 200 nozzle, remains contaminate-free over a 30-day use period. The data were previously

presented at Netherlands Contact Lens Congress (NCC) June 26-27, 2022.

Neurotrophic Corneal Ulcer Following Microvascular Nerve Decompression for Trigeminal Neuralgia

*First Author: Srilathaa **GUNASEKARAN***

Purpose: To report the occurrence of neurotrophic corneal ulcer following microvascular decompression of trigeminal nerve for trigeminal neuralgia, with intact nerve.

Methods: A case report is presented.

Results: A 49-year-old female presented with complaints of pain in left upper and mid face for 2 years - very severe episodic current like pain, triggered by eating, drinking and rinsing with cold water. She was diagnosed as a case of left trigeminal neuralgia. MRI brain with contrast showed an arterial flow void coursing and compressing distal cisternal part of left 5th nerve from inferior aspect at level of its entry in left Meckel's cave. Patient underwent Left RMSO craniotomy and microvascular decompression of left trigeminal nerve. Patient had dimness of vision in left eye from POD2 with hypoesthesia on left half of face. On examination, she had visual acuity of LogMAR 0.2 in right eye and less than LogMAR 1 in left eye. Left eye showed a central epithelial defect of 4.5*3mm with stromal edema and folds in Descemet's membrane with absent corneal sensation. Diagnosis of left eye neurotrophic corneal ulcer was made, and patient was started on intensive preservative free lubricants and bandage contact lens. Patient responded with complete resolution of ulcer.

Conclusions: Early identification and appropriate management of neurotrophic corneal ulcer following trigeminal nerve decompression for neuralgia is crucial to prevent secondary complications and permanent vision loss. Confocal microscopy to identify the density of sub basal nerve plexus at baseline and follow up could show the actual anatomic changes.

Neurotrophic Keratitis: Does Afatinib the Culprit?

*First Author: Fathin Nabilah **ABDUL RASHID***
*Co-Author(s): Farah Nadia **FADZIL**, Mokhlisoh **MOHAMED APANDI**, Juliana **MOHD THANI***

Purpose: To report a case of rare degenerative corneal disease, Neurotrophic Keratitis (NK) in a patient with underlying metastatic brain cancer.

Methods: To present a case report.

Results: A 67-year-old lady with a history of brain cancer with lung metastasis, presented with left eye (LE) cornea opacity and blurring of vision (BOV) for the past 1 year. It was associated with LE redness. She had undergone brain surgery and completed multiple cycles of chemotherapy and radiotherapy. She is currently on T. Afatinib 40 mg daily. Upon presentation, visual acuity of LE was counting finger 2 feet (CF2FT) with normal intraocular pressure (IOP). Anterior segments showed generalized congested conjunctiva with a big paracentral epithelial defect, overlying infiltrates, and central area of thinning. There was also cornea vascularization with feeder vessels, streak of hypopyon, cells activity of 4+ in anterior chamber (AC) and absence of cornea sensation. Posterior segment was normal from B-scan, blood parameters and cornea swab culture and sensitivity (C&S) are unremarkable. She was then referred to cornea team for LE NK and started on antibiotics eye drops and underwent LE prophylactic gluing and Bandage Contact Lens (BCL). Good clinical response was observed in this case, and she is planned for BCL 2 weekly and reassessment.

Conclusions: A thorough history taking is detrimental in making the diagnosis of NK. Patients often did not complaint of pain as they had reduced cornea sensation. A prompt treatment should be initiated in order to prevent further complications such as cornea melting which lead to perforation.

Ocular Surface Analysis in Pterygium Eye Using Oculus Keratograph

*First Author: Kosol **KAMPITAK***

Purpose: To evaluate the ocular surface of a unilateral pterygium eye compared with the opposite normal eye by using Oculus Keratograph.

Methods: A total of 67 unilateral pterygium patients, aged between 31 and 79 years, were enrolled. Oculus Keratograph was used to obtain keratographic quantitative data of the ocular surface including tear meniscus height, tear break-up time, meibomian glands dysfunction and bulbar redness grading. Paired t-test was used to compare the value between pterygium and non-pterygium eye. A p-value less than 0.05 was considered statistically significant.

Results: The mean tear break-up time in pterygium eyes compared with those in the normal eyes were 6.76 ± 4.87 and 8.66 ± 5.13 seconds, respectively ($p = 0.001$), and bulbar redness grading were 1.98 ± 0.56 and 1.42 ± 0.44, respectively ($p < 0.001$). There were no significant differences for tear meniscus height (0.24 ± 0.10 and 0.24 ± 0.11, $p = 0.929$) and meibomian glands dysfunction grading (1.31 ± 0.67 and 1.38 ± 0.73, $p = 0.31$) between pterygium eyes and the opposite normal eyes.

Conclusions: Tear break-up time was decreased, and bulbar redness grading was high in pterygium eyes compared with contralateral normal eyes, while there were no differences in tear meniscus height and meibomian glands dysfunction grading.

Outcomes of Diamond Burr Delamination for Surgical Management of Recurrent Corneal Erosions

*First Author: Samruddhi **DANI***

Purpose: RCE causes severe ocular pain, resulting in significant disability. Medical management can only allow temporary resolution but does not control recurrence of episodes. This mandates a good surgical technique to ensure long term control of recurrent episodes. The aim of our study was to assess the efficacy in resolution of symptoms, recurrence rates and post-operative stromal haze of diamond burr delamination in the surgical management of recurrent corneal erosions (RCE).

Methods: A total of 18 eyes of 18 patients with RCE underwent treatment with diamond burr delamination. Patients were followed up for 3 years post-operatively to assess for resolution of symptoms, epithelial healing and recurrence episodes.

Results: All 18 (100%) eyes showed complete resolution of symptoms and healing of the surface with no recurrences of the erosion thereafter over the 3 year follow up period. None of the patients showed any post-operative stromal haze or refractive shift.

Conclusions: Diamond burr delamination is a safe and effective method for managing RCE with nil recurrence rates, as seen in our cohort. It does not cause any stromal haze and can be safely used in lesions involving the visual axis. The lack of inducing a refractive shift gives this technique an edge over the more commonly performed phototherapeutic keratectomy. The procedure is easy to perform with minimal surgical skills, does not require expensive equipment and is not time consuming.

Paradigm Shift in Cone Management: Z8 Femtolaser Customized CAIRS Outcomes in Keratoconus Patients

*First Author: Shivani **PATTNAIK***
*Co-Author(s): Sumer **DOCTOR**, Soosan **JACOB***

Purpose: To evaluate the outcome of Z8 Femtolaser customized corneal allogenic intrastromal ring segments (CAIRS) in patients with keratoconus followed up for a period of 6 months.

Methods: Z8 Femtolaser was successfully used in creating custom CAIRS from donor cornea which were then implanted into the host corneal recipient channels also made with the Z8 Femtolaser in the 6.5-mm optic zone, followed by accelerated corneal cross-linking.

Results: We performed the surgery for 5 patients (5 eyes) with stage 1 to stage 4 keratoconus (Amsler-Krumeich grading). The Z8 Femtolaser was used to custom cut the donor segments and make the recipient channels in the host cornea. Postoperative follow-up was maintained for 6 months. A statistically significant improvement was encountered in uncorrected and best corrected distance visual acuity, manifest and topographic astigmatism and improved best fit spheres on both surfaces from the very next day. The procedure was uneventful and there were no cases of donor graft rejection or unusual reaction. There were no cases that progressed during the follow up period.

Conclusions: Amalgamation of Z8 Femtolaser technology and science and customising the CAIRS donor tissue adds precision to a novel technique. Switching from conventional DALK and INTACS to CAIRS may be the paradigm shift that the protocol of surgical keratoconus management needs.

Prognosticating Value of Classification Tree and Regression Model on Patients With Open Globe Injuries

*First Author: Danica **TOMAS-ESTEBAN***
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Purpose: Prognosticating visual outcome is relevant for better planning and execution of management. This research is relevant as it highlights the role of classification tree and regression (CART) model in predicting vision survival in patients with open globe injuries (OGI).

Methods: Determined the prognosticating value of the CART model by comparing the actual final visual outcome to the predicted visual outcome using the tree. Retrospective review of 65 consecutive cases of open globe injuries during a two-year period was conducted at a tertiary hospital in the Philippines. Accuracy of CART prediction was determined by computing the sensitivity, specificity, positive and negative predictive values. Area under the Receiver Operating Curve (AUC) was provided to check its discriminatory capability.

Results: The sensitivity of the tree is at 100% (95% CI 93.6 to 100%) and specificity is at 77.8% (95% CI 40 to 97.2%). Overall accuracy was very high at 96.9% (95% CI 89.3 to 99.6%). AUC of 0.89 (95% CI 0.79 to 0.95) was significant, indicating that CART can significantly discriminate vision survival (hand movement or better) from no vision (no light perception and enucleation).

Conclusions: Results showed high accuracy in discriminating vision survival from no vision. CART model may be a helpful tool in the stratification of patient›s risk of losing vision and provides the patients and their families with valuable information regarding treatment decisions. Relative afferent pupillary defect, initial vision, presence of adnexal injury, and zone of injury are highly predictive of visual outcome in patients with open globe injuries.

Propylene Glycol and Hydroxypropyl Guar Nanoemulsion: Safe and Effective Lubricant Eye Drops in Management of Dry Eye Disease

*First Author: John **BOULOS***
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Purpose: Mainstay treatment in dry eye disease (DED) management is artificial tear drops/lubricant eye drops that replenish the aqueous and/or lipid layer of the tear film. We aimed to review preclinical and clinical evidence of propylene glycol-hydroxypropyl guar (PG-HPG) nanoemulsion lubricant eye drops that is indicated for all major types of DEDS to provide symptomatic relief.

Methods: We performed a literature search using PubMed database and Google Scholar. Preclinical and clinical studies published during January 2017-February 2022 in English language, and reporting efficacy/effectiveness and safety of PG-HPG nanoemulsion in the treatment of dry eye symptoms were included.

Results: In total, 236 articles were identified from PubMed, Clinical evidence suggests that PG-HPG nanoemulsion lubricant eye drops are well-tolerated and effective in improving dry eye symptoms and enhancing tear film stability in patients with DED, regardless of its subtypes. Further, the eye drops provide improvement of lipid layer grade in patients with evaporative dry eye due to tear lipid insufficiency. PG-HPG nanoemulsion lubricant eye drops also relieve ocular dryness and discomfort associated with contact lens wear.

Conclusions: Based on literature review, preclinical and clinical evidence demonstrate that PG-HPG nanoemulsion lubricant eye drops are safe and effective in the treatment of DED. The data were previously presented at the European Dry Eye Congress (EuDEC) during June 10-11, 2022.

Resolvin D1 Inhibits Corneal Inflammation in Staphylococcus Aureus Keratitis

*First Author: Jieun **LEE***
*Co-Author(s): Sangyoon **KIM***

Purpose: To investigate the role of lipid mediator, resolvin D1 (RvD1), in corneal inflammation.

Methods: The anti-inflammatory effect of RvD1 on stimulated human corneal epithelial cells (HCECs) was assessed. C57BL/6 mice corneas were abraded and treated with RvD1 after stimulation with Staphylococcus aureus. Cytokine levels in the corneas, cervical drainage lymph nodes (DLNs), and spleens were measured. Anterior segment photography and optical coherence tomography quantified the changes in corneal thickness and haziness. Neutrophil infiltration in the cornea was examined by hematoxylin and eosin (H&E) staining and immunohistochemistry.

Results: RvD1 significantly inhibited cytokine production in HCECs and mouse corneas, cervical DLNs, and spleens while stimulating interleukin-10 (IL-10) production. Corneal opacity development, thickening, and neutrophil infiltration significantly reduced in response to RvD1 stimulation in the S. aureus-infected mice corneas.

Conclusions: RvD1 inhibited S. aureus-induced corneal inflammation. These results potentiate RvD1 as an anti-inflammatory therapy for patients with corneal inflammation induced by bacterial keratitis.

Reticular Corneal Edema Following Ripasudil Use in Patients With Pseudophakic Corneal Edema

*First Author: Prafulla **MAHARANA***

Purpose: To describe risk factors and outcomes in cases of reticular corneal edema following Ripasudil use in patients with pseudophakic corneal edema (PCE).

Methods: Consecutive cases PCE on Ripasudil were evaluated. Various factors like demographic factors, corneal thickness, cause of corneal edema, and intraocular pressure were recorded.

Results: Five out of 31 cases of PCE prescribed with Ripasudil developed reticular corneal edema. The baseline characters were similar except for the age at presentation, which was higher in reticular edema cases (60.84, SD 6.44 vs. 37.8, SD 27, $p < 0.05$) and IOP, which was raised in all cases of reticular edema compared to those without reticular edema (27.8, SD 2.28 vs. 18.53, SD 3.81 mm of Hg). All cases had diffused conjunctival congestion and itching in the eyes. The edema resolved in 12.4 (SD= 12) days in all cases without any permanent sequelae.

Conclusions: Reticular edema following Ripasudil is not rare. All cases resolve by stopping the medication. Although the exact risk factors are unknown, increased IOP and young age could increase the risk of developing edema.

Risk-Factors Associated with Rejection of DALK at a Tertiary Care Hospital – a 15-Patient Case Study

*First Author: Rishi **SWARUP***
*Co-Author(s): Samip **MEHTA***

Purpose: To study the risk-factors associated with rejection after deep anterior lamellar keratoplasty (DALK) and also evaluate outcomes after treatment.

Methods: Retrospective chart analysis was done for all patients who presented with rejection after DALK at our tertiary care center to look for indications, intraoperative and postoperative complications, details of rejection, management and final outcome.

Results: Out of 412 DALKs performed at a tertiary private referral center between October 2008 and

February 2018, 16 graft rejections in 15 patients were noted. Keratoconus was the indication for DALK in all the cases except one case of post viral keratitis scar and one case of granular dystrophy each. Big-bubble DALK was the technique used in 4 cases whereas the rest were performed using the manual dissection method. Intraoperative perforation was noted in 5 cases. Mean duration of rejection was 16 months (ranging between 2 and 33 months) from the time of DALK. Three grafts had subepithelial rejection, 9 had stromal rejection and 4 had combined sub-epithelial and stromal rejection. Two cases had an episode of rejection within 2 weeks of receiving COVID-19 vaccination. All cases of rejection resolved with topical therapy except one which developed interface vascularization and lipid keratopathy. Eleven of the 16 eyes had final best spectacle corrected visual acuity of 6/12 or better. The follow-up range was 20-96 months.

Conclusions: Rejection episodes post-DALK are not uncommon, but almost always resolve completely without needing surgical intervention. Intraoperative perforation of the host's Descemet membrane, along with other risk factors already discussed, seems to be a significant risk factor for rejection.

Role of Wolfberry Polysaccharide Extract in Minimizing Corneal Opacification and Promoting Corneal Re-epithelialization After Alkali Injury

*First Author: Wang Yee **CHU***
*Co-Author(s): Yashan **BU**, Yau Kei **CHAN**, Kendrick **SHIH***

Purpose: Corneal opacification ranks fourth in causes of blindness, impeding quality-of-life; delayed corneal re-epithelialization induces pain. Currently, treatments including corticosteroids and Mitomycin-C entail serious side-effects, with limited clinical efficacy. Wolfberry extract Lycium barbarum polysaccharide (LBP) reduces in vitro corneal fibrosis, exemplified by our laboratory. Therefore, we hypothesize that LBP could ameliorate in vivo corneal opacification and promote corneal re-epithelialization.

Methods: An alkali-induced corneal injury mice model was utilized. Adult C57Bl/6J wild-type mice were topically treated with 2mg/mL or 20mg/mL LBP on right eye for 7 days pre-injury, or 14 days pre-and-post-injury. Control group received no treatment. Corneal alkali injury was induced with 0.5M NaOH-soaked filter paper for 45 seconds under anesthesia, then rinsed with filtered-water. On Day 0, 1, 2, 3, 7, 14, and 21, opacification was examined with slit-lamp microscopy, quantified by Fantes score (0 – 4). Fluorescein staining reflected epithelial damage.

Results: Noticeably, pre-and-post-injury treatment with 20mg/mL LBP reduced corneal opacification on Day 14, which is statistically significant (Fantes score of 3.17 for control and 2 for experimental group). No statistically significant difference was found for other groups (n=3 each). On healing, both 20mg/mL LBP pre-treatment and pre-post-treatment accelerated corneal re-epithelialization on Day 1, with statistically significant estimated corneal defect area decrease compared to control.

Conclusions: 20mg/mL LBP pre-post-treatment effectively reduced opacification on Day 14 and accelerated re-epithelialization on Day 1. Thus, LBP may serve as a promising therapeutic agent for corneal opacification and re-epithelialization after alkali-induced injury. Further investigations with larger sample size are needed to maximize study outcomes.

Safety, Effectiveness, and Economics of Preservative Free Eye-Drop Formulations: A Targeted Literature Review

*First Author: Richard **KARA***
*Co-Author(s): Margaret **AINSLIE-GARCIA**, Jonathon **BENCH**, Ibrahim **EMAM**, Elizabeth **PERSAUD***

Purpose: Preservative free (PF) artificial tear (AT) formulations are alternatives to preserved ATs for the treatment of dry eye disease (DED). A targeted literature search was completed to determine the safety, effectiveness, and economics of PF eye drops.

Methods: MEDLINE and Embase were searched for Jan-01-2010 to Dec-31-2021. Search terms included "artificial tear", "preservative free", and "dry eye". English-language studies that evaluated PF eye drops for the treatment of DED were included. Clinical, safety, economic, or patient-reported outcomes were extracted. Costs were inflated to 2021.

Results: Five studies evaluated safety and effectiveness, and 1 study analyzed economics of PF eye drops. Two randomized comparative studies identified no statistically significant difference between the preserved and PF eye drops in fluorescein staining or adverse events at 3 months. Of 3 PF treatments arms in two randomized studies, 3/3 demonstrated a statistically significant improvement in Ocular Surface Disease Index and 2/3 PF treatment arms demonstrated a significant improvement in tear break-up time at 1-3 months compared to baseline. A PF eye drop demonstrated patient tolerability, and symptom relief of DED for 8 hours post-instillation. A European economic analysis found a PF formulation was well within willingness to pay threshold, at < €386 per eye. The PF formulations dominated preserved formulations, demonstrating lower costs but higher efficacy in controlling DED.

Conclusions: The data indicates that PF eye drops are a safe and effective intervention for treating patients with DED. However, additional comparative studies are needed to establish the non-inferiority and benefits of PF formulations.

Scheimpflug-Based Corneal Tomography Parameters and Densitometry in Fuchs' Endothelial Corneal Dystrophy

First Author: Stanley ***POH***
Co-Author(s): Jodhbir ***MEHTA***

Purpose: To assess the correlation between the severity of Fuchs› Endothelial Corneal Dystrophy (FECD) with corneal pachymetry, maximal posterior elevation and densitometry.

Methods: This is a retrospective case study of 112 eyes with FECD. All patients underwent Scheimpflug-based Oculus Pentacam imaging, anterior segment sclerotic scatter and retro-illumination photography under high magnification. Disease severity was graded using Krachmer grading scale. Pachymetry values were extracted from the tomography module. A point of maximal posterior elevation within the central 6mm annulus was identified on the posterior float elevation map. The densitometry of different corneal layers within various annuli were recorded in greyscale unit (GSU).

Results: A total of 112 eyes were included in this study. Mean age was 68.3 ± 8.5 with majority females (76.8%). Seventeen eyes graded as 1, twenty-nine as 2, twenty-nine as 3, twenty-five as 4, and twelve as 5 on the Krachmer grading system. The mean pachymetry was 573.4 ± 43.8µm and mean maximum posterior elevation was -18.0 ± 8.3µm. Mean densitometry was 19.3 ± 6.5 GSU and 18.2 ± 4.9 GSU within the central 2mm and 6mm annuli respectively. The correlation between FECD severity and pachymetry was moderate ($r = 0.34$, $p < 0.001$) and weak for maximal posterior elevation ($r = 0.14$, $p = 0.14$). The correlation between Krachmer grading and densitometry within central 0-2mm annulus was moderate ($r = 0.45$, $p < 0.001$) and weak for central 2-6mm annulus ($r = 0.27$, $p = 0.005$).

Conclusions: The pachymetry and central 0-2mm annulus densitometry values have modest correlation with severity of FECD. Pentacam is a quick and non-invasive tool that can objectively assess and quantify severity of FECD.

Smoking and Dry Eye Risk – A Community Based Study in Taiwan

First Author: Liyi ***CHIU***
Co-Author(s): Shiuhliang ***HSU****, Po-Yen* ***LI***

Purpose: Dry eye is an emerging health issue and affects more and more people, causing great economic burden around the world. Smoking and dry eye were discussed for a long time. Some studies evaluated the relationship between smoking and dry eye risk, showing that smoking may increase the risk of dry eye. However, some studies had different and even opposite result. We use our Taiwan Biobank to collect community-based data and compare with other worldwide results and discussed the possible etiology.

Methods: It is a community-based study, we use Taiwan Biobank›s first available 5,000 data, analyzing dry eye and smoking related variables, including age, sex, current smoker, smoke frequency, smoke packs per day, smoking duration, and secondhand smokers. We used Chi-square test and T test to analyze the relationship between dry eye and smoking. We also added the frequency and duration data in smokers to run the logistic regression test

Results: The smoke is a protective factor for dry eye in our general group, the dry eye risk of current smokers was 3.30% (16/485), lower than average (10.32%, 516/5000), and it was statistically significant. The logistic regression test showed the same result. However, in gender adjusted analysis, we found that in male and female groups, dry eye risk was not significantly different from non-smokers.

Conclusions: Our database (n=5000) is the largest in case number compare with previous studies. If we adjust age and gender, smoking is not significantly related to dry eye risk in our study. Gender is a confounder in our study.

Study of Biomarkers Ki67, P53, Bcl-2 and VEGF in Pterygium

First Author: Shilpa ***GHOSH***
Co-Author(s): Ritu ***ARORA***

Purpose: To study the bio markers (P53, Bcl-2, VEGF and Ki67) expression in primary pterygium of Indian population.

Methods: Sixteen cases of primary pterygium and 16 normal conjunctivae from the unaffected quadrant of the same were taken to serve as controls. After taking informed consent, all cases of primary pterygium underwent pterygium excision under local anesthesia using the limbal conjunctival autograft technique (LCAT), taking all aseptic precautions. Immunohistochemical analysis was done on2x2 mm tissue harvested from pterygium and normal conjunctiva and were analyzed for Ki-67, P53, Bcl-2 and VEGF.

Results: Nine samples of primary pterygium and 9 samples of normal conjunctiva showed positivity for Ki6. Seven out of 16 samples each of primary pterygium and normal conjunctiva, tested negative. P53 expression was observed in 8 samples of primary pterygium and 5 samples of normal conjunctiva. Eight out of 16 samples of primary pterygium and 11of 16 samples of normal conjunctiva were negative for p53. Bcl-2 expression was noted in 10 samples of primary pterygium. Twelve samples of normal conjunctiva showed Bcl-2 staining. Six out of 16 samples of primary pterygium and 4 out of 16 samples of normal conjunctiva were negative for Bcl-2. VEGF expression was noted in 14 samples each of primary pterygium and normal conjunctiva. No staining observed in 2 samples each of primary pterygium and normal

conjunctiva.

Conclusions: No statistically significant difference observed on immunohistochemical staining between pterygium and normal conjunctiva which explains that pterygium is a global conjunctivital disease

Study of Corneal Topographic Changes Before and After Pterygium Surgery Using Corneal Tomography

*First Author: Darshini **JAYARAMAN***

Purpose: To study corneal astigmatism and higher order aberration (HOA) before and after pterygium surgery using the pentacam tomographer.

Methods: A prospective interventional comparative study conducted on 85 patients with unilateral nasal/temporal pterygium. Pre and 6 weeks post operative visual acuity, keratometric astigmatism and HOA were compared. Patients were divided into two groups, Group A (1mm, 2mm) and Group B (3mm, 4mm) based on size of pterygium measured from apex to limbus.

Results: The mean visual acuity was 0.12 ± 0.23 improved to 0.06 ± 0.16 post operatively. Statistically significant decrease in mean anterior corneal astigmatism and HOA from (1.77 ± 1.02D) (0.93 ± 0.60) to post operatively (0.61 ± 0.38D) (0.43 ± 0.23) (p value < 0.01). The mean pre-operative and postoperative anterior corneal surface astigmatism difference, HOA difference between group A (0.73 ± 0.30D), (0.31 ± 0.05) and Group B (2.23 ± 0.61D), (0.98 ± 0.54) showed statistically significant decrease in Group A (p < 0.01).

Conclusions: Successful early surgical excision of pterygium can lead to improvement in corneal topographic changes induced by pterygium with lesser residual post operative corneal astigmatism and HOA. Cataract or refractive surgery in a patient with pterygium should be planned after pterygium excision and stabilization of corneal topography. Corneal topography stabilizes by 6 weeks after excision of pterygium.

Successful Visual Rehabilitation With Penetrating Keratoplasty and Doughnut Amniotic Membrane Transplant for Corneal Scarring in Advanced Mooren's Ulcer

*First Author: Rakhi **DCRUZ***

Purpose: To report a novel technique for successful keratoplasty and visual rehabilitation in the debilitating disease of Mooren's ulcer.

Methods: A 37-year-old one-eyed woman presented with a 3-month history of active Mooren's ulcer in her right eye. Conjunctival resection with tissue adhesive and bandage contact lens was performed thrice, despite which the eye progressed to total vascularized corneal scarring. After control of inflammation with systemic corticosteroids and immunomodulators, she underwent penetrating doughnut keratoplasty with amniotic membrane transplant and tarsorrhaphy10 months later.

Results: At the 2-year follow-up, her BCVA improved to 20/50, N12, intraocular pressure was normal, graft was clear and tarsorrhaphy intact. She was advised to continue topical steroids with oral methotrexate 10 mg once a week (which had been switched from AZA due to the expense) along with folvite (5 mg/week). There is no evidence of recurrence and maintaining good vision till date.

Conclusions: In conclusion, modification of the technique under the cover of systemic immunosuppression appears to be a viable option for visual rehabilitation in Mooren's ulcer. The role of immunosuppressive therapy and frequent follow-ups cannot be over-emphasized.

Tick Infestation of Eyelids In Children: A Case Series And Literature Review

*First Author: Ker Hsin **NG***
*Co-Author(s): Ang **JEAT***

Purpose: To report a case series of three pediatric patients with hard tick infestation of the eyelids in rural areas of Malaysia, and to review the literature of tick infestation on eyelids.

Methods: We describe a case series of three young patients, aged below 12 years old, who presented to us with similar complaints of pain, localized redness, swelling and pruritus of the eyelids. We also thoroughly reviewed the literature of eyelid involvement cases that have been reported worldwide.

Results: Two patients had hard tick infestation of the upper eyelid, and in one case, the medial canthal region was affected. They all lived in rural areas, with one of them being in close proximity with dogs. Complete mechanical removal of ticks with blunt, non-toothed forceps on a slit lamp was done. All patients were treated with topical antibiotics and recovered well, with no adverse sequelae or systemic complications. Our thorough literature review revealed that there were 26 reported cases of eyelid involvement from 1963 to 2021. Most cases have been reported in tropical and subtropical countries, with age ranging from 11 months old to 79 years old.

Conclusions: Although tick bites on ocular tissues rarely occur, clinicians should maintain a high index of suspicion with ocular tick infestations when presented with symptoms of eye swelling, pruritus, redness, and pain in an endemic country like Malaysia. Detailed evaluation, careful examination and complete removal of ticks are essential to ensure a successful recovery with no sequelae.

Traumatic Lamellar Corneal Laceration with Interface Keratitis: A Report of Two Cases

First Author: Chaitali ***PATEL***
Co-Author(s): Kaustubh ***HARSHEY***

Purpose: To describe a rare presentation and the management of traumatic lamellar corneal laceration with interface keratitis.

Methods: Retrospective review of records. Two eyes of two patients were studied. Both patients presented with history of injury to the eye with fall on an iron rod (used for construction). Lamellar corneal laceration was noted in both eyes with a sequestered corneal infiltrate at the interface. Owing to poor response to topical antimicrobial therapy, surgical flap dissection was carried out in both patients with scraping of the infiltrate, irrigation with broad spectrum antibiotics and suturing of the reposited corneal flap with 10-0 nylon sutures. One patient also had an attendant conjunctival laceration which was repaired. Postoperatively, both patients received topical broad-spectrum antibiotics which were modified as per the microbiology results.

Results: The mean age was 10.5 ± 4.8 years. In both cases, the samples sent for microbiology did not show organisms on culture. In one patient few fungal filaments were seen on KOH mount. In both eyes complete resolution of keratitis was achieved at four weeks postoperatively. In one patient there was attendant deep stromal perforation with aqueous leak during surgery which was managed just by reposition of the anterior flap. The best corrected visual acuity improved in both eyes from baseline.

Conclusions: Interface keratitis following a lamellar corneal laceration has been rarely reported. Sequestration of organisms at the interface may lead to poor response to medication. Surgical dissection of the corneal flap and debulking of the interface infiltrate with concurrent antibiotics can improve the postoperative outcomes.

Ultra-Small Ce-MOF Nanoenzyme for Antioxidant Treatment of Dre Eye Disease

First Author: Jinhai ***HUANG***
Co-Author(s): Zhongxing ***CHEN****, Nan* ***TANG***

Purpose: The purpose of this study is to explore the ability of cerium-based metal-organic frameworks (Ce-MOFs) nanoparticles to scavenge ROS and its application prospect in dry eye diseases (DED).

Methods: Three kinds of Ce-MOFs with different particle sizes were prepared by hydrothermal method, which were labeled Ce-MOF 1, Ce-MOF 2 and Ce-MOF 3, respectively. The phase structure, functional groups, morphology, particle size, Zeta potential, element composition and ROS scavenging ability of Ce-MOFs were characterized. Subsequently, the CCK-8 and ocular irritation test were used to determine the cytotoxicity. In H2O2-induced ROS model, the ability of cleaning out intracellular ROS in human corneal epithelial cell (HCEC) was tested. Finally, the effect of CeMOF 3 on mouse DED was evaluated by slit lamp observation, corneal epithelial staining.

Results: Three kinds of Ce-MOFs were obtained: 500 nm, 50 nm and 3 nm. The phase structure, functional group and thermal stability in Ce-MOFs show no significant difference. CeMOFs showed the concentration-dependent SOD-like and ROS scavenging activities. The cellular and ocular compatibility were confirmed. In HCECs, Ce-MOF 3 show greater antioxidant capacity which reduced ROS level. In the DED treatment, corneal epithelial defect was significantly reduced by Ce-MOF 3.

Conclusions: We had successfully constructed three kinds of Ce-MOFs which own antioxidant enzyme and ROS scavenging activity in vitro. Further, the Ce-MOF 3 not only showed good biocompatibility, it also effectively alleviated DED. The new ultra-small Ce-MOF provides a new method for alleviating dry eye disease.

When Homework Goes Wrong: A Case of Pink Corneal Foreign Body

First Author: Suzanne ***SAW***
Co-Author(s): Tikambari A/p ***ETTHIRAJAN****, Lim* ***ING HONG***

Purpose: To report an unusual case of corneal foreign body caused by color pencil tip.

Methods: To present a case report.

Results: A 7-year-old boy presented with an acute left eye pain and foreign body sensation after an accidental injury by a color pencil in school. Examination revealed 6/6 visual acuity with no relative afferent pupillary defect. A pointed tip pink corneal foreign body embedded in stromal layer paracentrally at 8 o'clock location in a horizontal manner. Anterior chamber was deep with a negative Seidel's test. Crystalline lens and fundus examination were unremarkable. The tip was attempted to be removed with needle and forceps, however, was unsuccessful. Repeated irrigations were required to remove most of the foreign body. It was more challenging to remove the deeply embedded color pencil tip. Patient was started on topical antibiotic and intensive lubricant and noted foreign body shrunk and migrated to the superficial corneal layers within the same day. Irrigation was repeated and topical eye drop was continued. Within 48 hours the residual foreign body spontaneously dislodged, and early corneal scar formation seen without any evidence of corneal toxicity or infection.

Conclusions: Most of the color pencils are made of wax like material and color pigments which easily dissolved in water. Thus, management of corneal foreign body may not always be the same and should be evaluated. Treatment should be individualized for optimal patient outcome.

Evolving Academia, Research, Teaching and Education in Ophthalmology

ACIOL Rescue With Anterior Vitrectomy in Complicated Cataract Surgery

*First Author: Sania **SAYED***

Purpose: Evaluating long-term efficacy of a secondarily implanted anterior chamber (AC) intraocular lens (IOL) with vitrectomy (Anterior/posterior) in eyes with surgical/traumatic aphakia, and subluxated/dislocated lens.

Methods: Fifty-seven aphakic patients were recruited for this study over 3 years. We retrospectively evaluated patients who underwent pars plans vitrectomy with ACIOL implantation from April 2019 to March 2022. Patients with minimum follow-up period of 1 year, operated by single surgeon were included. Ophthalmic history, surgical indication, BCVA, IOP, slit-lamp examination, and fundus findings were noted. Postoperatively best-corrected visual acuity (BCVA), intraocular pressure (IOP) and complications if any were noted.

Results: Fifty-seven eyes of 55 patients were included. The mean age was 63 ± 10.2 yrs. 65.6% were females and 34.4% males. Indications for pars-plana vitrectomy with ACIOL implantation were nucleus drop in 14.6%, IOL drop in 24.5%, large posterior capsular rupture with vitreous disturbance or zonular dehiscence during surgery in 32.3%,>180° subluxation of lens in12% and traumatic lens/ intraocular lens drop in 14.4%. Pre & postoperative mean LogMAR visual acuity was 1.46 ± 0.44 and 0.33 ± 0.33 respectively, with few complications like cystoid macular edema in 5.8%, persistently raised IOP in 2.4%, persistent uveitis in 1.2%, retinal detachment in 1.2%, and tilted IOL in 1% of the cases.

Conclusions: In patients with poor capsular support or intraoperative complications ACIOL has the advantages of cost-effectiveness, small learning curve, faster surgical time with a lesser rate of complications (trainee cases) like IOL tilt, vitreous hemorrhage, and suture erosion as compared to scleral-fixated IOL. Comparable visual outcome can be obtained by proper patient selection in these cases.

Characteristics of Studies and Most Published Areas in Ophthalmology Literature From 2010 to 2022: A Bibliometric Analysis

*First Author: Anggraeni **PUSPITA***

Purpose: To describe characteristics of studies and the most pertinent areas in ophthalmology literature.

Methods: We performed a bibliometric analysis of all published articles available from PubMed and Web of Science Citation Index Expanded from 2010 to August 2022 using MeSH terms “Ophthalmology” OR “Eye”. A database of studies was created to include authors, affiliations, number of citations, study field, journal name, study types, and country of origin.

Results: There were 145,545 published articles collected. Nearly half of the literature was reports from experimental studies (47.5%), followed by reviews (11.4%) and retrospective studies (11.3%). The USA, China, and the UK led the number of publications with 43,793 (30.1%), 13,932 (9.6%) and 11,937 (8.2%) articles consecutively. The top three most published areas were vitreoretina (67.86%), cornea and external eye disease (EED) (15.7%), and reconstruction, oculoplasty, and oncology (ROO) (13.2%). Among the 100 most-cited articles, 75% of them originated from the USA. Johns Hopkins University and the University of California produced the greatest number of most-cited publications (12 each), followed by Udice French Research University (11). Tien Ying Wong had authored/co-authored the greatest number of publications (582), whilst David Brown had the greatest number of most-cited articles (8).

Conclusions: In the last 12 years, we found that there were a substantial number of experimental studies in ophthalmology literature. Vitreoretina, cornea and EED, and ROO were the three most pertinent study fields in Ophthalmology. The USA, including its institutions and experts, was leading the ophthalmology research world during the period.

Content Validation for Questionnaire on Impact of Novel Ophthalmology Teaching Modalities on Undergraduate Medical Students

*First Author: Kah Hie **WONG***
*Co-Author(s): Wan Haslina **WAN ABDUL HALIM**, Mohamad Nurman **YAMAN***

Purpose: To perform content validation for the questionnaire that evaluates the impact of novel ophthalmology teaching modalities on undergraduate medical students during the COVID-19 pandemic.

Methods: The questionnaire, which is targeted at the undergraduate medical students, has been designed based on the undergraduate standard of Malaysian Medical Council to assess the various level of understanding and knowledge application of the topics learnt during the ophthalmology posting. Content validation has been carried out in order to validate the questionnaire. Content validation index (CVI), such as item-level CVI (I-CVI) and scale-level CVI based on average method (S-CVI/Ave) are utilized.

Results: This questionnaire covers 55 ophthalmology topics. The content validation of this questionnaire was performed by 9 ophthalmology experts. For the 55 items, sum of I-CVI of all items is 44.33. For 67.3%

(37/55) of the items, I-CVI was at least 0.80. There were 4 items (7.3%) with I-CVI of 0.70 to 0.79. There were 14 items (25.5%) with I-CVI lower than 0.70. The S-CVI/Ave for all the 55 items was 0.81.

Conclusions: Overall, this questionnaire is considered as satisfactorily valid at the stage of content validation, in view of the S-CVI/Ave ≥ 0.78. However, the validation needs subsequent face validation and construct validation via exploratory factor analysis (EFA). This questionnaire will be used to assess the confidence level of medical students in the different level of knowledge applications of various ophthalmology topics, of which the results will undergo EFA.

Impact of COVID 19 on Ophthalmology Departments at Teaching Institutes: Training Personnel's Perspectives

*First Author: Syed **HUSSAIN***
*Co-Author(s): Varshav **GORE**, Reshma **RAMAKRISHNAN***

Purpose: The COVID-19 pandemic presented the world with a dire emergency in which personnel from elective branches like ophthalmology had to be utilized for critical care – but at what personal cost? Our study aims to answer these questions by documenting the experiences of the departmental personnel, including perspectives on administrative and social aspects, along with the approach to incorporate suggestions from ground level by probing the views of those directly involved in this crisis handling in different sectors of a developing country's tertiary health care.

Methods: Questionnaire-based cross sectional, observational study, catering to ophthalmology personnel perception with regards training during the COVID-19 pandemic, research activities being affected, academics in ophthalmology, including administrative and social aspects.

Results: The majority of responders felt that handling allocation of ophthalmology staff was difficult due to shortage of personnel or apprehension. More than three quarters of those assigned active COVID-19 pandemic work, no insurance was offered. Nearly two thirds of them were worried about their families' safety for which no insurance was provided. About use of ophthalmology personnel for COVID care duties most of them agreed that it was not recommended to use them for intensive care of critical patients, but in an emergency, were willing to work with due compensation and safety provisions.

Conclusions: Though dire situations demand special efforts, the adequate care of personnel is the need of the hour; the public as a whole and the management in specific are sensitized to these issues so that adequate steps be taken to mitigate these harmful effects, especially for budding specialists.

Impact of COVID-19 Pandemic on Ophthalmology Residency Training in Thailand

*First Author: Nichaphat **JINTABANDITWONG***
*Co-Author(s): Supharat **JARIYAKOSOL**, Pear **PONGSACHAREONNONT**, Thanapong **SOMKIJRUNGROJ***

Purpose: To find the impact of the coronavirus disease 2019 (COVID-19) pandemic on ophthalmology residency training in Thailand and find adapt education training during the COVID-19 pandemic.

Methods: An anonymous online survey was conducted to collect data from June 23 through August 23, 2022. The survey focused on the clinical and surgical parts of training and teaching methods.

Results: The completed responses were 49%, equal to 118 participants (response rates at 64.4%, 143 of 222 participants). The decreasing number of patients was 26-50% in both out-patient-department and in-patient-department. Residents' confidence was 59% to examine the out-patients. Number of cataract and pterygium excision surgery decreased by 50% and 53%, respectively. Residents' confidence of cataract and pterygium surgery was 50% and 75%. Surgical practicing preferred consisted of wet lab (62.2%), virtual discussion of edited surgical videos (32.2%), attending surgical conferences (30.8%), a simulation-based tool (29.4%), and observing in the operating room (28%). Online teaching showed different among training centers which resulted in 5-6 times per week (46%) and > 8 times per week (20%). Effective online teaching methods for residents were lectures (56.6%). Residents prefer hybrid teaching 68 of 117 participants (47.6%). Impact on decreasing number of out-patients showed no significant difference between residents inside and outside Bangkok. Each grade of residents was no significant difference in surgical practicing tools.

Conclusions: The study was about the COVID-19 pandemic impact on ophthalmology residency in training and teaching method. Clinical and surgical online teaching was a positive expression of residents. Hybrid teaching should be continued in the future and blended with medical education.

Interest, Knowledge and Attitude of General Practitioners in Singapore Towards Management of Dry Eye Disease

*First Author: Yuan Yuh **LEONG***
*Co-Author(s): Nathan **SIAW**, Louis **TONG***

Purpose: Dry eye disease (DED) is a multi-faceted condition of the tear and ocular surface which causes ocular irritation and can impair quality of life. DED is a prevalent condition and imposes significant economic burden to the healthcare system and society. Treatment of DED can be initiated in Primary health care setting, such as by General Practitioners (GP)

while more severe cases can be handled in tertiary specialized centers.

Methods: A survey was conducted on forty-four GPs in Singapore to assess their knowledge, interest and attitudes towards management of DED.

Results: Eighty percent of respondents had over 20 years of experience after graduation and 64% had post graduate degrees. The surveyed clinics were located in various locations throughout Singapore. Majority (64%) believe that DED is an increasing health issue and is worth treating and 96% showed interest in learning about DED and how it affects patients. 96% of GPs also showed interest in educating patients on DED if risk factors of developing the disease is present. However, 12% of those surveyed indicate that they would very routinely (1 every 10 patients or less) refer dry eye patients to specialist. Majority surveyed were also unaware that photophobia can be caused by DED.

Conclusions: There is significant interest in the management of DED in the primary care setting. Greater education of DED to GPs would be useful to address knowledge gaps and GPs can potentially play a bigger manage DED patients in the community. This can lead to cost savings and reduce healthcare burden in tertiary centers.

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Outcomes of Small Incisions Cataract Surgery Performed by Ophthalmology Residents in Yogyakarta

*First Author: Theresia **DWIAMELIA***
*Co-Author(s): Suhardjo **PRAWIRORANU**, Reny **SETYOWATI***

Purpose: Small incision cataract surgery (SICS) is a cataract surgery technique that is often used in cataract surgery programs. SICS technique was chosen as the first surgical technique performed by an ophthalmology resident. The purpose of this study was to compare the SICS performed by the ophthalmology residents at any semester in terms of their post operative clinical outcomes.

Methods: In this retrospective study, 281 patients who had SICS surgery from April 2018 until January 2021 in Yogyakarta, were performed by residents with supervision by senior ophthalmologists. The residents were divided into a group 1 for second and third semester resident, group 2 for fourth to fifth semester resident, and group 3 for sixth semester or more. Best Corrected Visual Acuity (BCVA) obtained on day 1, 14, and 28 after surgery. We also evaluate the IOL placement status and complications (if any) between the three groups.

Results: There was no significant difference for BCVA at day first ($p = 0.2900$), day 14th ($p = 0.1266$), and day 28th ($p = 0.4336$) between the three groups. There was also no significant difference in the IOL placement status ($p = 0.127$) and the rate of complication ($p = 0.204$) and between three groups.

Conclusions: In this study we found that the resident's academic semester was not correlated with BCVA, IOL placement status and complication rate in small incision cataract surgery. Therefore, we encourage all ophthalmology educational centers to give residents the opportunities to study SICS technique as soon as possible with supervision by senior ophthalmologists.

Therapeutic Benefit of Amarogentin on Diabetes and Associated Secondary Complications: An Active Phytochemical of Gentiana Lutea and Swertia Chirata

*First Author: Dinesh **PATEL***

Purpose: Herbal medicines have plentiful beneficial aspects in the modern medicine as it can treat numerous human health complications including some lifestyle disorders such as diabetes and associated

secondary complications. Amarogentin is an active phytochemical compound found to be present in the Gentiana lutea and Swertia chirata.

Methods: Here in the present investigation, we have analyzed the biological importance of amarogentin for the treatment of diabetes and associated secondary complication human being through scientific data analysis of different research work. Health beneficial aspects of amarogentin in the medicine for their effectiveness against diabetes and associated secondary complication have been investigated in the present work. Therapeutic effectiveness of amarogentin on hyperglycemia in diabetic rats has been investigated through scientific data analysis of various scientific research works in the medicine. Pharmacological activities of amarogentin in various enzymes in the diabetes and associated secondary complications for their beneficial aspects on diabetes have been investigated through scientific data analysis.

Results: Scientific data analysis of different research work signified the therapeutic effectiveness of amarogentin on metabolic disorders in the medicine. Scientific data analysis signified that amarogentin have significant antihyperglycemic activity in streptozotocin-induced type 1 diabetic rats. Scientific data analysis revealed that amarogentin attenuated hyperglycemia in diabetic rats, which was also supported by oral glucose tolerance test. Further, in another scientific research work, amarogentin prevents platelet activation through inhibition of MAPK pathway.

Conclusions: Scientific data analysis signified therapeutic effectiveness of amarogentin on diabetes and associated secondary complications.

Trainee Attitudes Towards Virtual Reality Simulation in Ophthalmology

*First Author: Callum **GIN***
*Co-Author(s): Rahul **CHAKRABARTI**, Santosh **KHANAL**, Jorge **REYNA***

Purpose: VRS is an established technology for training cataract surgery. It has been validated for numerous ophthalmic surgical modules. The learner's attitude towards its use has not been explored. This study has examined ophthalmology trainees' attitudes towards VRS at the commencement of their training, prior to undergoing live surgery.

Methods: In 2021, all Royal Australian and New Zealand College of Ophthalmologists (RANZCO) trainees commencing in 2022 were invited to participate voluntarily in the research. Trainees completed an online mixed-methods questionnaire containing items on simulators, surgical experience and confidence levels in their surgical skills using certainty-based questions. Trainee attitudes were gathered utilizing Likert scale items and open-ended questions. The data was analyzed by running basic descriptive statistics and frequencies utilizing SPSS. Thematic analysis was completed through utilizing inductive, reflexive thematic analysis.

Results: Ophthalmology trainees believe that VRS can improve some theatre skills, including reducing levels of complications in live surgery (91.7%), developing clinical decision making (83.3%) and enhancing patient safety (87.5%). It was clear that the trainees felt that VRS was able to increase pre-operative (91.7%) and intra-operative confidence (91.7%). It's role in future training was unclear, with 40% of the trainees disagreeing that VRS will be useful after they become an ophthalmologist.

Conclusions: Ophthalmology trainees at commencement of training highly value VRS, though they are unclear about its benefit in the later stages of training. They possibly perceive VRS as a bridge to live surgery, not realizing its full potential for practice. The authors recommend including in the VRS program standards a section highlighting its benefits post initial training.

Undergraduate Ophthalmology Course Makeover: From Didactic Teaching to Using Lateral Thinking Technique

*First Author: Jin Rong **LOW***
*Co-Author(s): Siew Leng **LIM**, Jing Liang **LOO**, Jayabaskar **THIYAGARAJAN***

Purpose: To trigger medical students to follow an expert's flow of thoughts and clinical process by transforming an undergraduate ophthalmology course using case studies to frame the teaching of theoretical concepts.

Methods: Learning from limitations encountered during the COVID-19 pandemic, the course comprising of eight modules was re-designed and developed for online delivery. These modules covered broadly on important ophthalmology curriculum with the aim to attract and retain undergraduate medical students to specialize in ophthalmology. A flipped classroom learning approach was applied where the learners complete these self-paced modules in a given duration of 4 weeks, leaving precious contact time for tutorials and clinical skill observation. Learners have unlimited tries to self-evaluate their understanding of the content in end-of-module quizzes before attending face-to-face tutorials to meet their module instructors to clarify any learning doubts. At the end of the course, a Likert-scale questionnaire with opened-ended comment space is used to gather feedback for quality of learning and teaching.

Results: The qualitative data reflected an overall improvement in learning experience. However, while some learners enjoyed such innovative teaching method, appreciated the flexibility and adequate preparation time to do self-paced learning, others indicated that the content is too detailed and complicated for their level of competency.

Conclusions: With the new normal, the trend towards blended learning is unavoidable. To differ from most online courses offering didactic way to teach complex medical courses, this creative method of designing learning enhances the learning experiences by actively engaging learners to generate ideas with case studies in mind.

Glaucoma and Glaucoma Surgery

A Curious Case of Retinitis Pigmentosa Presenting as Acute Angle Closure

*First Author: Yew Jen **GOH***
*Co-Author(s): Rohana **ABDUL RASHID**, Mohd Aziz **HUSNI**, Shakira **JEFFREY***

Purpose: To describe a case of a young female with acute angle closure attack as the presenting feature of retinitis pigmentosa.

Methods: To present a case report.

Results: A 29-year-old woman presented with right eye (RE) sudden onset blurred vision and headaches for 1 day. Further history revealed 6 months of RE painless progressive blurred vision. RE visual acuity (VA) was hand movement and left eye (LE) VA was 6/9. RE showed mid-dilated pupil, closed angles, white intumescent cataract with intraocular pressure (IOP) of 52mmHg. LE showed narrow angles, IOP of 18mmHg and cup-to-disc ratio (CDR) of 0.3. Patient was diagnosed as right acute angle closure (AAC) secondary to intumescent lens and left primary angle closure suspect (PACS). She was started on topical and oral antiglaucoma and scheduled for right cataract extraction. Post-surgery, symptoms resolved with RE IOP of 14mmHg and VA of 6/9. Posterior segment examination revealed bilateral bony spicules and attenuated vessels with CDR 0.3. Subsequently, she developed LE pain and blurred vision at low lights. LE IOP was 16mmHg and was scheduled for peripheral iridotomy. Following that, she received further counselling for clear lens extraction, family screening and lifestyle expectations with regards to retinitis pigmentosa (RP).

Conclusions: Retinitis pigmentosa typically presents with painless gradual loss of vision, nyctalopia and constricted visual fields. This case illustrates a young patient with AAC and intumescent cataract, which demonstrates a rare presentation of RP. Hence, it is important to be aware of a higher predisposition towards macula disorders, cataract formation and incidence of primary glaucoma in the setting of RP.

A Tale of a Terrible Pterygium

*First Author: Yew Jen **GOH***
*Co-Author(s): Mohd Aziz **HUSNI**, Shakira **JEFFREY***

Purpose: To highlight a case of binasal visual field defect caused by media obstruction.

Methods: To present a case report.

Results: A 58-year-old gentleman presented with bilateral gradual and painless blurred vision for 1 year. Visual acuity (VA) was 6/60 and 6/15 in the right and left eye, respectively. External eye examination revealed right and left nasal pterygium covering visual axis, 8 and 4 mm respectively. Further examination showed bilateral cup-to-disc ratio (CDR) of 0.8, intraocular pressure of 14mm Hg and open angles. Optical coherence tomography (OCT) showed bilateral superior and inferior retinal nerve fiber layer (RNFL) thinning. Two consecutive visual field (VF) examinations showed moderate to advanced nasal field defects. Patient was treated as bilateral normal tension glaucoma and started on topical Latanoprost. Post-pterygium removal, bilateral VA improved to 6/9 with absence of any significant nasal field defects. In view of his life expectancy, large CDR, bilateral RNFL thinning with a possible progression to glaucoma, he was continued on topical Latanoprost and monitored progressively with OCT and VF.

Conclusions: Any scotomata in the VF can either be caused by glaucoma, non-glaucoma or even both. Hence, the interpreter should be aware of causes of non-glaucomatous VF defects such as media obstruction. In cases where pre-perimetric glaucoma is diagnosed, decision to treat should be personalized based on presence of any risk factors with continuous assessment of structural and functional integrity.

Acute Primary Angle Closure: Outcome of Fellow Eye 3 Years After Prophylactic Laser Peripheral Iridotomy

*First Author: Faradatul Aisyah Bt **AZIZ***

Purpose: To study the 3-year clinical outcome of the fellow eye of patients presented with acute primary angle closure who underwent prophylactic laser peripheral iridotomy.

Methods: Retrospective study of 20 eyes (20 patients) with unilateral acute primary angle closure (APAC) and bilateral laser peripheral iridotomy (LPI) was conducted from January 2011 until January 2017. All patients had minimum of 3 years follow-up. The demographic and clinical data of the fellow eyes were recorded on presentation. Progression of the disease including visual acuity, intraocular pressure (IOP), and visual field changes were analyzed.

Results: Twenty patients (20 eyes) with a mean age of 64.7 years old ± 8.0 were enrolled. All patients involved were Malays. Females were more commonly affected

(13 patients, 65.0%) than males (7 patients, 35.0%). Nineteen eyes presented with vision better than 6/60 (95.0%) and only 1 eye had vision poorer than 6/60 (5.0%). The mean presenting IOP was 15.5mmHg ± 3.9. At 3 years follow up, 18 eyes (90.0%) had vision better than 6/60 and 2 eyes had vision worse than 6/60 (10.0%). The mean IOP was 13.6 ± 1.73mmHg. Sixteen eyes (80.0%) remained as primary angle closure suspect (PACS). Four eyes were treated as primary angle closure (PAC) whose required antiglaucoma (1 ± 0.4). None of the fellow eyes with APAC developed acute attack or glaucomatous changes after prophylactic LPI.

Conclusions: Prophylactic LPI showed to be effective to prevent APAC in the fellow eyes. As some patients required antiglaucoma along the course of the disease, close monitoring is crucial to prevent the progression of the disease.

Ahmed Valve Implantation in Pseudophakic Refractory Pediatric Glaucoma - A Case Report

*First Author: Umme Salma **AKBARP***
*Co-Author(s): Shally **BISWAS**, Shams **NOMAN***

Purpose: To report a case of Ahmed valve implantation in pseudophakic refractory pediatric glaucoma.

Methods: A 12-year-old boy came to the Glaucoma clinic of a tertiary eye care center in Chittagong with secondary glaucoma resistant to pharmacological treatment in his right eye. Five years before, he underwent cataract extraction with implantation of posterior chamber intraocular lens in his right eye. On ocular examination, his BCVA was 6/60 in the right eye and 6/6 in the left eye. His IOP was 50mmHg in the right eye and 16mmHg in the left eye on maximal anti-glaucoma medication. He then underwent Ahmed valve implantation in his right eye. Following the surgery, his visual acuity in the right eye was 6/36 and IOP was 12mmHg.

Results: Following the surgery, his visual acuity in the right eye was 6/36 and IOP was 12mmHg which was maintained for a yearlong follow-up.

Conclusions: Ahmed valve implantation is a safe and effective modality of treatment for refractory glaucoma. Proper diagnosis and timely intervention can save the eye.

Association of Inferonasal Versus Superior Laser Peripheral Iridotomy With Dysphotopsia

*First Author: Hiok Hong **CHAN***
*Co-Author(s): Ching Lin **HO**, Hla Myint **HTOON***

Purpose: To investigate the association of inferonasal versus superior Laser Peripheral Iridotomy (LPI) with dysphotopsia.

Methods: A retrospective comparative cohort study involving 169 eyes from 80 primary angle closure suspect (PACS) patients who underwent inferonasal (4 to 5 o'clock in the right eye; 7 to 8 o'clock in the left eye) or superior (11 to 1 o'clock in either eye) sequential argon-Nd:YAG LPI were recruited from a tertiary eye center within Singapore. Prospectively, a standardized interviewer-administered questionnaire was used, and an ophthalmologist performed slit-lamp examination. Primary outcome measure was post-operative dysphotopsia. Secondary outcome measure includes location and patency of LPI, extent of eyelid coverage over LPI and intra-operative or post-operative complications.

Results: Among the 80 patients, 45 patients underwent bilateral superior LPI while 34 patients underwent bilateral inferonasal LPI and 1 patient underwent unilateral inferonasal LPI. All superior LPI(s) were completely covered by the eyelid and all inferonasal LPI(s) were fully exposed. Comparing inferonasal versus superior LPI(s), there was no significant difference in intra-operative pain, intra-operative complications, or post-operative complications. After bilateral superior LPI, 9 patients reported post-operative dysphotopsia in both eyes while none of the patients with inferonasal LPI reported any post-operative dysphotopsia. Majority of the patients (n=6, 66.7%) with post-operative dysphotopsia had the symptoms transiently. The difference in post-operative dysphotopsia was significant when comparing difference in patients ($p = 0.004$) or eyes ($p < 0.001$) by location of LPI.

Conclusions: Fully exposed, inferonasal placement of LPI was safe, effective, and associated with reduced risk of post-operative dysphotopsia.

Bilateral Allergic Contact Dermatitis Due to Netarsudil

*First Author: Mithun **THULASIDAS***
*Co-Author(s): Tanvi **GUPTA**, Balam **PRADEEP**, Ajita **SASIDHARAN***

Purpose: To report a case of allergic contact dermatitis three months after initiating Netarsudil eye drops in a 78-year-old man

Methods: A 78-year-old man, who had undergone Descemet Membrane Endothelial Keratoplasty in left eye (LE) two years ago, was referred to us for control of raised intraocular pressure (IOP). He had been treated with glaucoma drugs in LE for last two years. Examination revealed a visual acuity of no light perception in the right eye (RE) and hand motion in LE. The IOP was 20mmHg in RE and 29mmHg in LE. The optic disc was pale in LE with an attached retina. Because of uncontrolled IOP, Netarsudil 0.02% once daily was added in LE. The IOP came down to 19 mmHg at 1 month follow-up. Three months later, itchy erythemas appeared on periocular region of his both eyes (BE). On history asking, it was found that he was using Netarsudil 0.02% eye drops in BE.

Results: A diagnosis of allergic contact dermatitis due to Netarsudil was suspected. The patient was asked to stop the medication and started on a topical corticosteroid. One week later, the erythema disappeared, and he was free of symptoms.

Conclusions: A diagnosis of allergic contact dermatitis due to Netarsudil was suspected. The patient was asked to stop the medication and started on a topical corticosteroid. One week later, the erythema disappeared, and he was free of symptoms.

Bleb Failure After Trabeculectomy With 5-Fluorouracil in Traumatic Angle Recession Glaucoma: A Case Report

First Author: Irwan ***NURDIANSYAH***
Co-Author(s): Maharani ***CAHYONO***

Purpose: Angle recession glaucoma (ARG) is an open-angle glaucoma brought on by ocular trauma. The majority of subjects with ARG were male and young, in their second to third decade. Sports and recreational injuries were the leading cause of injury in ARG. Trabeculectomy in ARG is more likely to fail even though the use of antimetobolites has supported the successful outcome of the operation. The purpose of this case report is to present a case of ARG in young male who was failure of trabeculectomy with 5-fluorouracil and underwent bleb needling to reduce the IOP.

Methods: A 34-year-old Asian male patient presented with blurred vision dan pain in right eye after shuttlecock blunt injury in the last 5 month. Visual acuity was 6/40 in RE with IOP 32 mmHg. Gonioscopy examination revealed a widening of the ciliary band at 360°. On fundus examination, CDR was found 0.4 with glaucomatous excavation and in OCT examination RNFL thinning was found in the inferior quadrant.

Results: The patient underwent trabeculectomy with 5-fluorouracil but at 1-month postoperative IOP elevated again. The patient was then performed bleb needling to revise the failed bleb. At 1-month follow-up after the second operation, IOP has decreased.

Conclusions: Trabeculectomy in ARG often fails despite antimetabolite administration due to the high risk of fibrotic formation in bleb. Bleb needling is an alternative to surgically revising the bleb despite repeating trabeculectomy or implanting a tube shunt.

Characteristics of Corvis ST Parameters in Subjects With Low Ocular Blood Flow

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Purpose: We investigated the characteristics of Corvis ST parameters in healthy subjects with low ocular blood flow.

Methods: Sixty healthy eyes were divided into four groups by interquartile range in order of increasing MT and compared between two groups of 15 eyes with highest MT group (High MT) and 15 eyes with lowest MT group (Low MT). Corvis ST parameters (A1/2 time, A1/2 velocity, A1/2 length, highest concavity deformation amplitude, whole eye movement, peak distance, radius, ARTh, IR, SP-A1, CBI, SSI) were compared between High MT and Low MT using Wilcoxon rank sum test. The significance level was set at $p = 0.05$. All tests were two-tailed, and a p value of < 0.05 was considered significant. Bonferroni correction was applied to p value to account for multiple comparisons. All statistical analyses were performed using Pythoon (version 3.10.4).

Results: A significant decrease in stiffness parameters at the first applanation (SP-A1) was observed in Low MT ($p = 0.034$).

Conclusions: SP-A1 is the corneal stiffness parameter at applanation 1. In healthy subjects with low ocular blood flow, it means that the cornea is less rigid and more prone to concavity.

Clinical Results of the Microhook Ab Interno Trabeculotomy for Uveitic Glaucoma With or Without Oral Prednisolone

First Author: Wakako ***MIYAZAKI***
Co-Author(s): Masashi ***FUJIHARA****, Yasuo* ***KURIMOTO****, Satoshi* ***YOKOTA****, Satoru* ***YOSHIMIZU***

Purpose: To evaluate the postoperative results of microhook trabeculotomy (µLOT) and the effects of short-term oral prednisolone administration for uveitic glaucoma (UG).

Methods: A total of 19 consecutive 21 eyes with UG underwent µLOT between February 2018 and April 2021. The oral prednisolone (10 mg for 1 day or 3 days) was postoperatively used in cases with prolonged mild inflammation. We excluded cases with preoperative use of either sub-Tenon's capsule triamcinolone acetonide, systemic steroids, or systemic immunosuppressants. We retrospectively compared intraocular pressure (IOP) and glaucoma drug score (GDS) between patients with and without the oral prednisolone at pre-operation, 3, 6, and 9 months postoperatively, and the last observation point (mean 12.2 ± 10.8 months).

Results: The mean IOP of the patients with and without oral prednisolone was significantly lower after surgery than before surgery ($p < 0.05$) (ANOVA). The mean IOP (GDS) in the oral group ($n = 10$) was 21.1 ± 10.2 mmHg (4.2 ± 1.5), 12.2 ± 2.4 mmHg (3.0 ± 1.8), 12.4 ± 1.0 mmHg (3.6 ± 1.0), 11.0 ± 1.3 mmHg (3.6 ± 1.0), and 13.8 ± 4.0mmHg (2.9 ± 1.9) at each observation point respectively, while the mean IOP (GDS) in the non-oral group ($n = 9$) was 25.7 ± 3.7 mmHg (4.6 ± 1.5), 15.7 ± 2.5mmHg (3.3 ± 0.9), 21.0 ± 6.6 mmHg (3.5 ± 1.0), 17.4 ± 4.1 mmHg (3.2 ± 0.7), and 23.1 ± 7.0mmHg (4.0 ± 1.3) at each observation point respectively. The IOP was

significantly lower in the oral group than in the non-oral group at each postoperative time point ($p < 0.05$) (t-test).

Conclusions: In UG patients with prolonged mild inflammation, µLOT was effective in decreasing IOP at each observation point. Add-on postoperative administration of oral prednisolone may be a useful adjunct treatment to reduce IOP in patients with uveitis in the short term.

Comparison of Intraocular Pressure Between Air Puff Tonometer and Goldmann Applanation Tonometer at Tertiary Eye Care Center

*First Author: Umme Salma **AKBAR***
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Purpose: The purpose of this study was to evaluate the role of air puff (AP) tonometer by comparing the measurements of intraocular pressure (IOP) made using this device with those made using a Goldmann applanation tonometer (GAT) at a tertiary eye care center in Chittagong.

Methods: An observational and comparative study was carried out at a tertiary eye care center in Chittagong from January 2016 to January 2017. Two techniques for IOP measurements using the standard GAT and the non-contact tonometer (NCT) were compared. A total of 400 eyes from 200 patients were included in the study.

Results: The mean IOP as measured by GAT in the right eye was 14.50 ± 5.59mmHg and in the left eye was 14.87 ± 7.03mmHg while that as measured by NCT in the right eye was 15.97 ± 6.12mmHg and in the left eye was 15.94 ± 6.98mmHg. The mean difference between the two methods of measurement in the right eye was 1.47 ± 0.53mmHg and the left eye was 1.07 ± 0.05mmHg. The readings obtained by NCT were higher than those obtained by GAT. There was no statistically significant difference found in IOP measurements between GAT and NCT according to the patient's age, gender or laterality of eyes.

Conclusions: There was a significant difference in the measurement of IOP between GAT and NCT. Goldmann applanation tonometry remains the most suitable and reliable method for measuring IOP.

Comparison of Peripapillary Vessel Density in Primary Angle Open and Closed Glaucoma Patients with Hemifield Visual Field Loss

*First Author: Hui-Chen **LIN***

Purpose: To evaluate peripapillary vessel density (VD) and retinal nerve fiber layer (RNFL) in the eyes with primary angle-open and angle-closure glaucoma (POAG & PACG) with hemifield visual field (VF) loss and compare these parameters with normal eyes.

Methods: RNFL and VD were measured by OCTA for participants.

Results: Twenty-five PACG, 32 POAG eyes with superior VF defect, and 7 PACG, 13 POAG eyes with inferior VF defect were included. When compared to the 47 normal eyes, PACG eyes with superior VF defect showed significantly reduced RNFL and VD in all 8 sectors. In POAG eyes with superior VF defect, RNFL and VD were also significantly decreased in all sectors except in the nasal sector. No significant difference in RNFL and VD was found between PACG and POAG eyes with superior VF defect except in the nasal sector ($p = 0.018$). When compared to the normal eyes, eyes with inferior VF defect showed significantly reduced RNFL and VD in the inferonasal sector in PACG eyes ($p = 0.017$ and $p = 0.023$; within the perimetrically intact regions). In POAG eyes with inferior VF defect, reduction of RNFL and VD was found in the inferonasal ($p < 0.001$ and $p = 0.002$) and inferior sector ($p = 0.001$ and $p < 0.001$).

Conclusions: RNFL thinning, and VD dropout appear to precede functional deficit in glaucoma eyes. PACG and POAG eyes seem to have sectoral difference in structural changes (RNFL and VD). The pathomechanism for this variance need more evidence to clarify.

Comparison of RNFL Thickness Using a New Spectral Domain Oct and Corresponding Octopus Perimetry Cluster Analysis in Normal and Glaucomatous Eyes

*First Author: Zain **KHATIB***

Purpose: To study the structure-function correlation between the Retinal Nerve Fiber Layer (RNFL) thickness on a new spectral domain OCT system and the corresponding visual field defects using the cluster analysis software on the Octopus perimeter.

Methods: In this retrospective study, patients (normal and glaucomatous) who underwent perimetry testing (Octopus 600) and OCT RNFL thickness analysis (Optopol Revo60) were included. The primary outcome was to see the correlation between thickness of each of the 10 OCT RNFL sectors and the visual field mean deviation (MD) in the corresponding 10 sectors of cluster analysis on Octopus perimeter. Using logistic regression analysis, the probability of each OCT RNFL sector to predict a corresponding field defect and the RNFL thickness below which a field defect is likely was determined, along with the ability of the OCT RNFL thickness to predict a presence or an absence of glaucoma.

Results: In 100 eyes of 62 patients, out of the 10 OCT RNFL-sectors analyzed, 4 sectors showed a significant correlation with their corresponding visual field cluster defects. These included the sectors that make up the supero-temporal arcuate fibers (Sector 3: Correlation Coefficient -0.59, Sector 4: Correlation Coefficient -0.62) and the infero-temporal arcuate fibers (Sector

7: Correlation Coefficient -0.51, Sector 8: Correlation Coefficient -0.40). The above 4 RNFL sectors were also able to predict the presence of glaucoma with sufficient sensitivity and specificity. The remaining 6 OCT RNFL sectors showed no significant correlation with visual fields.

Conclusions: RNFL analysis on the Revo60 OCT correlates well with Octopus perimetry and is capable of accurately predicting glaucomatous visual field defects.

Comparison of Structural Pattern Based on Optical Coherence Tomography and Optical Coherence Tomography Angiography Among Different Stages of Glaucoma Patients

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Purpose: This study aims to compare the structural pattern of optical coherence tomography (OCT) and optical coherence tomography angiography (OCTA) among different stages of glaucoma patients.

Methods: All samples underwent OCT and OCTA examination to assess BMO, ONH OCTA perfusion, macular vessel density and perfusion, RNFL thickness, GCIPL thickness, rim area. Glaucoma staging was based on Glaucoma Staging System (GSS) (Mills, 2006) measured by HFA Perimeter.

Results: All 148 glaucomatous eyes were divided by 4 groups of visual field severity: early, moderate, advanced, and severe. Mild vs moderate mean comparison and correlation with MD were significant for BMO (1.57 mm vs 1.62 mm) ($p = 0.015$) ($r2 = -0.389$, $p < 0.001$), ONH OCTA perfusion (46.06% vs 44.03%) ($p = 0.002$) ($r2 = 0.490$, $p < 0.001$), flux index 0.434 vs 0.406 ($p = 0.009$) ($r2 = 0.467$, $p < 0.001$), macular vessel density 16.79 mm/ mm2 vs 14.80 mm/ mm2 ($p = 0.002$) ($r2 = 0.443$, $p < 0.001$), perfusion density (40.61% vs 35.44%) ($p = 0.002$) ($r2 = 0.420$, $p < 0.001$), RNFL thickness (101 um vs 92 um) ($p = 0.003$) ($r2 = 0.549$, $p < 0.001$), rim area (1.33 um vs 1.11 um) ($p < 0.001$) ($r2 = 0.459$, $p < 0.001$), GCIPL thickness (82 um vs 74 um) ($p = 0.010$) ($r2 = 0.570$, $p < 0.001$). For moderate vs advanced group, significant mean difference appeared on BMO (1.62 mm vs 1.74 mm) ($p = 0.049$), flux index (0.405 vs 0.353) ($p = 0.036$), RNFL thickness (92 um vs 79 mm) ($p = 0.038$), GCIPL thickness (73.5 um vs 67.5 um) ($p = 0.037$). On advanced vs severe group, only rim area (1.01 um vs 0.69 um) ($p = 0.036$) that had significant difference.

Conclusions: Significantly different means of OCT and OCTA parameters appear on all 8 parameters for early vs moderate group, 4 parameters for moderate vs advance group, and only 1 parameter in advance vs severe group. OCT could assess glaucoma severity more accurately on early and moderate stages rather than at advanced and severe stages. All OCT and OCTA parameters have significant association with MD, with GCIPL as the strongest one.

Correlation Between Intraocular Pressure and Blood Pressure

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*Co-Author(s): Ivana **ALBERTA**, Titiek **ERNAWATI***

Purpose: The purpose of this study was to analyze the correlation between intraocular pressure (IOP) and blood pressure (BP).

Methods: This was a cross-sectional study. This study was conducted from September 2021 through October 2021 with consecutive sampling. The statistic was analyzed using Kruskal-Wallis test and Pearson correlation test in SPSS program version 24.0.

Results: A total of 115 patients were included, with 69 (60%) females and 46 (40.0%) males. The mean age was 35.78 ± 11.64 years old. This study revealed a significant difference in intraocular pressure in both eyes between subjects in four categories of BP ($p = 0.000$). Positive correlation was found between IOP and BP of the right eyes ($R = 0.393$, $p = 0.000$) and left eyes ($R = 0.363$, $p = 0.000$).

Conclusions: There was a statistically significant correlation between IOP and BP, which indicated higher BP is associated with higher IOP in both eyes.

Diagnosis and Management in Posner-Schlossman Syndrome

*First Author: Rizka **YUNANDA***
*Co-Author(s): Fidalia **KAMAL**, Prima Maya **SARI***

Purpose: To report diagnosis and management in Posner-Schlossman syndrome.

Methods: A 32-year-old female came with chief complaint of ocular pain in right eye (RE) for 2 hours before admitted to hospital. Worsening in a day accompanied by seeing “Halo,” and ocular pain in affected eye that resolve in a day. During the episode she got the VA was 1/300 with IOP 45mmHg. She had the same symptoms 5 years ago. On ophthalmology examination we got RE VA 6/30, IOP 38.5 mmHg without antiglaucoma agents, dilated and sluggish pupils, ciliary flush. On slit lamp examination, discrete, round, white KP on the endothelium with corneal epithelial edema, and +1 anterior chamber cells. We administered topical timolol, brinzolamide, and 500mg of oral acetazolamide and follow up the IOP.

Results: The IOP become 24.3 mmHg 2 hour after medication. On the follow up 1 weeks after the attacks we got the improved vision and normal IOP, with normal slit lamp examination. We found that reverse cupping on funduscopic examination. We stop the antiglaucoma agent and tapering topical fluorometholon.

Conclusions: Patients suffering from PSS may be

misdiagnosed, and this poses a challenge. Typically presents as a unilateral eye complaint involving pain due to mild anterior uveitis, blurred vision, a lack of visual field defects, normal optic discs, and an open angle. The attacks tend to be recurrent. While PSS is not a common ED presentation, its acute presentation is usually due to elevated IOP, which is an ophthalmic emergency. Management centers on decreasing the IOP and inflammation.

Differences in Applanation Tonometry Reading Depending Upon Eyepiece and Binocularity

*First Author: Anamika **PANDEY***
*Co-Author(s): Syed **HUSSAIN***

Purpose: Intraocular pressure being the only modifiable factor in glaucoma, its accurate measurements are necessary for management of glaucoma. A uniform method of measuring the IOP needs to be followed for each patient so that a better analysis of progression could be done. Applanation tonometry although considered the most accurate, differences, howsoever minute, may skew the consistent recordings and progression analysis. Observer based, instrument and machine based, patient-based factors have all been discussed in the literature at great length. This study was done to analyze a particular observer-based parameter, if it impacts the IOP recordings.

Methods: A prospective study to determine if there is a difference between applanation tonometry readings when observed using uniocular/binocular viewing with slit lamp mounted Zeiss GAT and to determine if there is a difference between applanation tonometry readings when observed using uniocular/ binocular viewing with Perkins tonometry.

Results: There was no statistically significant difference between the IOP measured by either uniocular or binocular viewing in either GAT or Perkin's tonometry.

Conclusions: IOP measurements are subject to innumerable sources of error which can include patient based, observer based, equipment-based errors. Applanation tonometry is the most reliable method of IOP measurement as per numerous studies and the ideal would be to avoid technical errors.

Drugs Maintenance in Patients with Acute Angle Closure Crisis After Cataract Extraction

*First Author: Fu-Chin **HUANG***
*Co-Author(s): Min-Hsiu **SHIH***

Purpose: To explore the impact of medication use of patients with acute angle closure crisis after cataract extraction.

Methods: We included the patients with history of acute angle closure crisis (AACC) who underwent phacoemulsification and intraocular lens implantation from January 2014 to December 2020. Patients were categorized as surgery performed under medically uncontrolled AACC, within 1 month, and 1 to 6 months after crisis resolved, respectively. The forth group were eyes under glaucoma medication and without AACC in preoperative 6 months. Data of IOP and medication were analyzed for 1 year postoperatively.

Results: A total of 144 eyes in 139 patients underwent surgery during acute attack (group A) and within 6 months after AACC resolution (groups B and C). Sixty eyes of 52 patients (Group D) had resolved AACC with the interval longer than 6 months (ranging 6.5 months to 6.2 years). In comparison of pre- and postoperative IOP, all groups showed significant decrease of IOP at 1 year. Decreased number of glaucoma medication ranged from 0.7 to 3.3. One-year reduction of IOP was significant in all groups (ranging from 23.7 to 0.7 mmHg) and no between-group different IOP was noted at last. Medication-free population was not significantly different among groups A to D (33%, 33%, 46%, and 27%, p =0.29).

Conclusions: Cataract extraction can rescue acute angle closure with decreasing IOP and usage of glaucoma medication in eyes with AACC.

Effect of Glaucoma Medication on Lipid Layer Thickness in Patients with Newly Diagnosed Glaucoma

*First Author: Balam **PRADEEP***
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Purpose: To know the effect of topical glaucoma medications on lipid layer thickness (LLT) in newly diagnosed glaucoma patients using LipiView ocular surface interferometer.

Methods: Patients attending glaucoma OPD were newly diagnosed with glaucoma and treated with topical glaucoma medications for 6 months were included in study. Three LLT parameters (maximum, average and minimum) were recorded before starting medications and after 6 months.

Results: A total of 38 eyes of 26 patients were included in study. Before starting treatment maximum, average and minimum LLT were 80.98 ± 16.50, 65.84 ± 16.73 and 55.55 ± 20.62. At the end of 6 months maximum, average and minimum LLT were 77.42 ± 14.34, 62.50 ± 15.57, 52.40 ± 18.24. A longer duration of glaucoma eye drops, and a greater number of glaucoma medications were associated with lower LLT.

Conclusions: Patients on long-term glaucoma medications should be assessed for lipid layer thickness to evaluate the ocular surface health.

Evaluation of Stability and Sterility of Extended Use of Single-Use, Preservative-Free 0.0015% Tafluprost Eye Drops: An In Vitro Study

*First Author: Abhibol **INOBHAS***

Purpose: During this COVID-19 crisis, some patients in our glaucoma clinic try to keep the remaining volume in the single-use units of preservative-free 0.0015% Tafluprost eye drops for the next day despite being critically informed of once daily use. This was done for the purpose of halving the medication expenses. Therefore, this study aims to evaluate the sterility and stability of that single-use units eye drops at 0, 1, and 2 days after they are opened in simulated real-life situation.

Methods: There were 5 samples in both sterility and stability test. Stability was determined by level of concentration using the spectrophotometry. The four-parameter logistic regression analysis was used fitting a standard curve which was used to assess the concentration for all samples. The bacterial culture results were used to evaluate the sterility.

Results: The means (SD) of predicted concentrations at day 0, 1, and 2 were 0.0146 (0.0002), 0.0145 (0.0002), 0.0148 (0.0002) mg/ mL, respectively. The repeated measures analysis of variance (ANOVA) demonstrated that there were no statistically significant differences between the concentrations at all time points ($F = 2.442$; $p = .149$). Culture results were negative for all samples throughout the study.

Conclusions: There were no differences in level of concentrations and bacterial culture results of open single-use units of preservative-free 0.0015% Tafluprost eye drops at all time points. However, we recommend prescribing this medication followng the prescribing information accordingly, because further prospective in vivo study with rigorous methodology in order to prove the authentic stability and sterility is necessary.

Evaluation of Surgical Outcomes of 360° Goniotomy in Primary Congenital Glaucomaa

*First Author: Kanchangouri **SATPUTE***
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Purpose: To evaluate the effect of 360-degree goniotomy on IOP reduction, change in cup to disc ratio and change in number of antiglaucoma medications in primary congenital glaucoma,

Methods: Thirty eyes of primary congenital glaucoma were analyzed at baseline timepoint and 3 and 6 months postoperatively. 360 goniotomy done with 24G needle. The examination under anesthesia (EUA) was done at 1 month, 3 months and 6 months. During EUA, Intra-ocular pressure (IOP), corneal diameter, axial length, fundus with cup to disc ratio (CDR) were noted.

Results: There was significant reduction in IOP at 3months ($p = 0.05$) and 6 months ($p = 0.03$), number of anti-glaucoma medications at 3 months ($p = 0.01$) and 6 months ($p = 0.01$) and cup to disc ratio at 6 months ($p = 0.01$).

Conclusions: The 360-degree goniotomy appears to be an effective surgery for children with primary congenital glaucoma. Goniotomy is ab interno procedure, being minimally invasive, it obviates the need for conjunctival and scleral dissection, and antifibrotic agents and carries no long-term risk of bleb-related complications.

Five-Year Incidence of Primary Glaucoma and Related Risk Factors — The Handan Eye Study

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*Co-Author(s): Ravi **THOMAS**, Ningli **WANG**, Qing **ZHANG***

Purpose: To determine the 5-year incidence of primary glaucoma and its associated risk factors in rural northern China.

Methods: This is a population-based cohort study. A total of 5,184 participants aged 30 years and older, without glaucoma at baseline, were subjected to comprehensive standardized interviews and ophthalmic and systemic examinations at baseline and after a 5-year interval in the Handan Eye Study. Incident glaucoma was diagnosed by a consensus panel of five senior glaucoma specialists. Univariate and multivariable logistic regression analyses were performed to identify the baseline risk factors that could predict the incidence of glaucoma.

Results: During the 5-year follow-up, incident primary glaucoma developed in 82 subjects (1.6%; 95% confidence interval (CI), 1.2%-1.9%). The age- and gender-standardized incidence of glaucoma among subjects ≥ 40 years old was 2.1% (0.4% annually), calculated according to the 2010 Chinese census. A higher age (odds ratio (OR), 1.06; 95% CI, 1.04-1.09; $p < 0.001$), higher intraocular pressure (IOP) (OR, 1.11; 95% CI, 1.02-1.20; $p = 0.017$), and vertical cup disc ratio (VCDR) ≥ 0.60 (OR, 5.30; 95% CI, 3.22-8.73; $p < 0.001$) were found to be associated with an increased risk of incident glaucoma. For each year older the age and each mmHg higher the IOP, the risks of primary glaucoma increased by 1.2% and 2.0% per year, respectively.

Conclusions: We reported the 5-year incidence of primary glaucoma in a rural Chinese population and found that older age, higher IOP, and VCDR ≥ 0.60 at baseline could help in identifying those at highest risk of disease development.

Functional Connectivity Changes in Cerebellum of Early Glaucoma Patients

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Purpose: Glaucoma patients often show a higher risk of falls than healthy old adults. Recent studies also suggested widespread brain changes in glaucoma beyond the visual pathway. Although the cerebellum plays an important role in motor control, it is unclear whether or not the cerebellum is involved in glaucoma. Here, we examined the functional brain connectivity changes in the cerebellum of early glaucoma patients.

Methods: Thirty-two early glaucoma subjects (age = 62.5 ± 1.5 years; mean ± standard error; 40.6% male) and 10 age-matched healthy control subjects (age = 64.5 ± 2.9 years; 30.0% male) underwent anatomical magnetic resonance imaging (MRI) and resting-state functional MRI at 3 Tesla. Functional connectivity within the cerebellum and between the cerebrum and cerebellum was computed using the CONN software after co-registrations between anatomical and functional MRI and compared between glaucoma and healthy control groups.

Results: Compared to the healthy control subjects, glaucoma patients presented weaker functional connectivity within the cerebellar lobules between right cerebellum crus 2 and left cerebellum 9, between left cerebellum 7b and left cerebellum 9, and between left cerebellum 7b and right cerebellum 9. For the cerebrum and cerebellum, functional connectivity in glaucoma patients was weaker than that in healthy subjects between left rostral prefrontal cortex in the salience network and left cerebellum crus 2.

Conclusions: As the cerebellar and cerebral brain regions involved may contribute to not only motor function but also high-level cognitive processes, our findings suggest that the functional changes in the cerebellum may affect both balance and cognitive functions in glaucoma.

Glaucoma Secondary to Sturge-Weber Syndrome

*First Author: Yoshiaki **KIUCHI***
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Purpose: To examine the difference between glaucoma and non-glaucoma groups in patients with Sturge-Weber syndrome (SWS).

Methods: From January 1992 to March 2021, 20 eyes of 17 patients diagnosed with Sturge-Weber syndrome (SWS) at the Hiroshima University Hospital Ophthalmology Department were included. We examined the intraocular pressure (IOP) at the first visit, IOP at the last visit, systemic and ocular complications, and the trigeminal innervation area of facial hemangioma.

Results: There were 9 patients with 12 eyes in the glaucoma group and 8 patients in the non-glaucoma group (8 eyes in 8 patients). The IOP at the first visit was 24.6 ± 7.75 mmHg in the glaucoma group and 13.9 ± 5.08 mmHg in the non-glaucoma group. The IOP at the last visit was 20.9 ± 3.32 mmHg in the glaucoma group and 16.6 ± 4.37 mmHg in the non-glaucoma group. Of the 9 patients in the glaucoma group, 6 had systemic complications, 5 (55.6%) with intracranial vascular abnormalities. Three of the eight patients (37.5%) in the non-glaucoma group had intracranial vascular anomalies. In the glaucoma group, all cases had hemangioma in the trigeminal nerve 1 + 2 branches, and in the non-glaucoma group, 6 (75%) cases in 1 branch + 2 branches. There were no cases with choroidal hemangioma in the non-glaucoma group, whereas there were 5 (55.6%) cases with choroidal hemangioma in the glaucoma group.

Conclusions: SWS patients with choroidal hemangioma were more likely to develop glaucoma.

Glaucoma in Pregnancy

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Purpose: To highlight the management of glaucoma during different stages of pregnancy and postpartum.

Methods: A 25-year-old female patient, k/c/o glaucoma, second trimester pregnancy has presented with complaints of pain and redness in right eye for 1 week. History of using Latanoprost and Brimonidine plus Timolol eye drops right eye for 3 years. Family history of glaucoma was present (mother), while history of wearing spectacle was the past 10 years. No history of DM, HTN, oral or topical steroids.

Results: BCVA of both eyes was 6/6, N6. IOP of 28mm of Hg was in both eyes. VH grade 4 AC depth with open angles was on gonioscopy. Fundus examination (RE-tilted optic disc with C:D ratio of 0.8, inferior notching and LE-normal disc with C:D of 0.4) was noted, while pachymetry of 515µ was in RE and 523µ in LE. Right eye visual field shows superior arcuate defect. Left eye visual field is within normal limits. Right eye OCT RNFL showed NRR thinning in superior and inferior quadrant. Left eye OCT RNFL was normal.

Conclusions: Dorzolamide plus Timolol eye drops (BD) were applied for right eye. Patient reviewed after a month had IOP reduction, with IOP of 12mm of Hg in both eyes.

Immediate Changes in Intraocular Pressure After Intravitreal Injections of Ranibizumab Compared to Aflibercept in Retinal Diseases

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Purpose: To evaluate the immediate changes of mean intraocular pressure (IOP) after intravitreal injection between ranibizumab and aflibercept.

Methods: This non-randomized interrupted time series clinical study comprised 85 participants, 40 in the ranibizumab group and 45 in the aflibercept group. Both groups are further divided into phakic and pseudophakic groups. Serial biometry measurement with IOL Master optical biometer and IOP measurement with Goldmann applanation tonometry were performed: immediately before, immediately within 5 (T5), 15 (T15), 30 (T30), and 60 (T60) minutes after the intravitreal injection. Parameters studied include anterior chamber depth (ACD), axial length (AL), and IOP.

Results: The mean IOP at baseline was 15.78 ± 3.32 mmHg in the ranibizumab group and 16.87 ± 3.12 mmHg in the aflibercept group. Differences between before and after intravitreal injection were statistically significant immediately within 5, 15, and 30 minutes in both groups. However, there was no statistically significant difference detected between baseline and 60 minutes after intravitreal injection. There was no statistically significant difference in IOP changes between ranibizumab and aflibercept. Phakic eyes have significantly higher IOP changes compared to pseudophakic eyes in both ranibizumab and aflibercept groups. Anterior chamber depth changes were significantly higher after intravitreal injections in the aflibercept group, while axial length changes were significantly higher after intravitreal injections in both aflibercept and ranibizumab groups.

Conclusions: Both ranibizumab and aflibercept produced significant IOP spikes after intravitreal injection which lasted for 30 minutes and normalized within an hour. There was no significant difference in the immediate IOP spikes between ranibizumab and aflibercept.

Innovative Use of Sibling Motivational Cards for Sibling Screening of Primary Open Angle Glaucoma Probands

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Purpose: To compare the impact of sibling motivational card (SMC) over oral counselling in screening siblings of primary open-angle glaucoma (POAG) probands.

Methods: Two hundred and thirty-four newly diagnosed POAG probands were randomized to receive either oral counselling or SMC to motivate their siblings for a glaucoma screening at a tertiary eye care hospital in South India from July 2015-June 2017. A total of 116 probands were orally counselled with a standard template of dialogues about the importance of family screening to motivate their siblings for a screening. One hundred and eighteen probands were randomized to receive SMC, bearing the details of the proband, sibling, and a message stressing the importance of family screening in addition to oral counselling. We assessed the response rate in each group. Also, we evaluated the prevalence of POAG in the siblings.

Results: A total of 95 siblings of 234 POAG probands were screened. The mean age distribution was 53.33 ± 10.9 years (ranged 28-79 years). The male to female ratio was 3:4. The percentage of siblings screened was more in the oral counselling group (63.2%) than in the SMC group (36.8). About 43 (45%) siblings had some form of glaucoma, and 13.6% had POAG. An additional 22.1% were disc suspects, and 5.2% had ocular hypertension.

Conclusions: SMC did not have an additional benefit over the standard oral counseling in promoting family screening. Our study stresses the importance of sibling screening in POAG probands. Targeting siblings of POAG probands with oral counseling may offer a relatively inexpensive way of detecting glaucoma.

Intraocular Pressure Control, Bleb Morphology and Adverse Effects After Trabeculectomy With Adjunctive Use of Mitomycin-C and Bevacizumab

*First Author: Pir Salim **MAHAR***

Purpose: To compare the control of intraocular pressure, bleb morphology and adverse effects after trabeculectomy with the adjunctive use of Mitomycin–C (MMC) and Bevacizumab.

Methods: One hundred and six patients of either gender with diagnosis of primary open angle glaucoma (POAG) were planned for trabeculectomy with adjunctive use of MMC or Bevacizumab. Each group consisted of 53 patients (53 eyes) having IOP of more than 21 mmHg.

Results: Mean preoperative IOP was 31.51 ± 9.66 mmHg in MMC group and 29.21 ± 7.69 mmHg in Bevacizumab group. At the one-year follow-up, mean IOP for MMC group was 11.26 ± 2.31 mmHg and in Bevacizumab group was 11.73 ± 2.12 mmHg (p-value 0.001) with 42 (79.24%) and 39 (73.58%) patients had elevated bleb in MMC and Bevacizumab groups and 8 (15.09%) and 15 (28.30%) patients had vascularized bleb for MMC and Bevacizumab group. At first day postoperatively, hyphema was observed in 2 (3.77%) eyes in MMC group and none in Bevacizumab group. Ten (18.8%) and four (7.54%) patients had flat anterior chamber for MMC and Bevacizumab group also. Two patients in MMC group developed hypotomy (IOP < 6

mmHg) after 3 months of surgery. One patient in each group had conjunctival leak postoperatively.

Conclusions: There was a reduction in IOP in both MMC and Bevacizumab groups. Bleb morphology was also found almost similar with significant difference between adverse effects of both drugs.

Late-Onset Hypotony Without Maculopathy After Trabeculectomy in a Case of Primary Open-Angle Glaucoma With Thinner Central Corneal Thickness

*First Author: Tutul **CHAKRAVARTI***

Purpose: To report a case of late-onset hypotony without maculopathy after trabeculectomy with antimetabolite in an elderly female with primary open-angle glaucoma (POAG) and having thinner central corneal thickness (CCT).

Methods: A 71-year-old woman with POAG underwent trabeculectomies with mitomycin C (2007) and cataract extraction (2009) on both eyes (BEs). Till 2016, her IOPs, in right eye (RE), ranged from 14-9 mm Hg and 10-6 mm Hg in the left eye (LE) without any anti-glaucoma medications. Her CCT was 501 and 491 µm in RE and LE respectively. Her corrected visual acuity in BEs was 20/20 in 2009 and 20/30 in 2013.

Results: In 2013, she developed a lamellar macular hole with epiretinal membrane in LE as evidenced by the appearance of the fovea via OCT images. In 2016, she presented with statistical hypotony in the LE as the IOP dropped to 4 mm Hg measured by the Goldmann Applanation Tonometer, and further lowered to 1 mm Hg in 2019. The thin avascular cystic blebs on BEs did not reveal a bleb leak. Further, the fundus examination did not show any sign of maculopathy in LE. However, her visual acuity and visual field examinations did not indicate any signs of deterioration in LE during the follow-up period from 2016 to 2019. LE MD slope was not significant [(-0.11 ± 0.48dB/year (95% confidence)]; VFI 93%, MD = -5.4dB, PSD = 3.1dB. However, the RE MD slope was significant (+0.10 ± 0.08dB/year).

Conclusions: Late-onset hypotony after trabeculectomy without a bleb leak can happen, but a thinner CCT may decrease the risk of maculopathy from long-term hypotony.

Long-term Effect of Laser Peripheral Iridotomy in Control of Intra Ocular Pressure in Patients With Angle Closure at Tertiary Care Hospital

*First Author: Shaukat **ALI***

Purpose: This study was conducted to assess the long-term intraocular pressure (IOP) outcome of patients presenting with primary angle-closure who were treated with laser peripheral iridotomy (LPI) and follow-up to 1 year.

Methods: All the patients who underwent LPI from January 2015 to December 2019 from hospital data system was recorded on Performa. Demographic data as, sex, age, and ophthalmic data as presentation date on which symptoms started, IOP at the time of presentation, involved eye, findings of gonioscopy, and the treatment instituted were recorded at initial visit. IOP and gonioscopy findings were also noted at 1 month, 6 months and 1 year. Data were entered and statistical analyses were performed using SPSS software (version 21). Qualitative data like gender and anterior chamber angle on gonioscopy was reported as frequency and percentage while quantitative data like age and intraocular pressure was presented as mean and standard deviation.

Results: The study enrolled 60 patients with the mean age of 53.13 years, 29 (48.3%) females and 31 (51.7%) were males. IOP was significantly decreased as compared to before LPI ($p < 0.05$). Intraocular pressure was lowered in all follow-up visits but highly statistically significant in first month follow-up, $p = 0.000$ ($p < 0.05$). Gonioscopy on initial visit and all follow-up visits were recoded and tabulated in frequency and percentages.

Conclusions: The long-term effect of laser peripheral iridotomy in control of Intra ocular Pressure is promising.

Long-term Effect of Phacoemulsification on Intraocular Pressure in Glaucoma Patients – A Retrospective Analysis From South India

*First Author: Ravi **CHANDRA K***
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Purpose: To examine effects of phacoemulsification on longer-term intraocular pressure (IOP) in patients with medically treated primary open-angle glaucoma (POAG), pseudoexfoliation glaucoma (PXG), or primary angle-closure glaucoma (PACG), without prior or concurrent incisional glaucoma surgery.

Methods: In this retrospective single-center study, we evaluated patients with medically controlled POAG, PXG and PACG, undergoing phacoemulsification by a single surgeon between June 2019 and May 2021. Preoperative IOP is the average IOP from the last three measurements prior to cataract surgery. A minimum follow-up of 1 year was followed. Patients were evaluated before surgery and at 7 days, 1 month, 3 months, 6 months and 1 year after surgery for IOP and the number of medications.

Results: A total of 154 eyes of 85 patients, who met the inclusion criteria were included. Out of these, 71 eyes had POAG, 26 eyes had PXG, and 57 eyes had PACG. Patients were using a mean of 1.5-1.9 glaucoma medications, before surgery among the different diagnoses. One year after phacoemulsification, there was a change of IOP by a mean -1.15 ± 3 mmHg ($p = 0.01$), -2.14 ± 3 mmHg ($p = 0.005$) and -4.2 ± 3

mmHg ($p < 0.001$) in patients of POAG, PXG and PACG respectively and a change in the number of glaucoma medications by a mean of -0.1 ± 0.43, -0.5 ± 0.48 and -1.1 ± 0.52 respectively in the three groups.

Conclusions: Phacoemulsification resulted in small, moderate, and marked reductions of IOP and medications for patients with POAG, PXG, and PACG, respectively, and using 1 to 2 medications before surgery.

Longitudinal Changes in Dark Room Prone Position Test in Eyes With Primary Angle Closure Disease

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*Co-Author(s): Masashi **FUJIHARA**, Fumitaka **HIROSE**, Yasuo **KURIMOTO**, Satoru **YOSHIMIZU***

Purpose: To examine the results of dark room prone position test (DRPPT) for primary angle closure disease (PACD).

Methods: We included 318 untreated PACD eyes that underwent DRPPT from January 2018 to March 2022. We examined the positive rate in DRPPT (≥8 mmHg intraocular pressure elevation) and central anterior chamber depth (ACD) measured by anterior segment optical coherence tomography.

Results: From 2018 to 2022 (only the first quarter in 2022), the annual rate of DRPPT positive cases was 5.3%, 5.3%, 6.7%, 11.5%, and 25.0%, respectively. The mean IOP before DRPPT in the positive group was 16.0 ± 3.7 mmHg, 17.8 ± 1.8 mmHg, 13.4 ± 2.2 mmHg, 16.2 ± 2.9 mmHg, and 15.5 ± 5.0 mmHg, respectively. The ACD of the positive group was 1.96 ± 0.14 mm, 1.95 ± 0.24 mm, 1.90 ± 0.07 mm, 2.17 ± 0.40 mm, and 2.04 ± 0.08 mm, respectively.

Conclusions: Although the rate of DRPPT-positive cases in the same medical treatment zone increased gradually, there was no clear decreasing in ACD. In some cases of appositional angle closure, IOP elevation is not observed at the time of presentation. Therefore, in eyes with normal IOP and DRPPT-positive, if DRPPT had not been performed, the condition of untreated PACD could have deteriorated. IOP elevation due to appositional angle closure was observed even in eyes with less shallow ACD. These findings may suggest the usefulness of the risk assessment of IOP elevation due to appositional angle closure, combined with provocation test in addition to anterior segment parameter imagings.

Neovascular Glaucoma in a Patient With Persistent Pupillary Membrane, Is It Related?

*First Author: Prasthiti Dewi **HASDINI***
*Co-Author(s): Retno **EKANTINI**, Tatang **TALKA GANI**, Krisna **PURNOMO JATI***

Purpose: To report a case of NVG in a patient with Persistent Pupillary Membrane (PPM).

Methods: A 54-year-old diabetic woman with bilateral PPM since birth complained of pain in her right eye. Visual acuities were no light perception on the right and 20/200 on the left eye. There was neovascularization in the right eye's iris and gonioscopy revealed a closed angle and neovascularization in the iridocorneal angle. Both eyes' funduscopy showed dots, blots, hard exudates, retinal fibrosis, and retinal neovascularization, as of she was diagnosed with proliferative diabetic retinopathy (PDR). The intraocular pressures (IOP) were 60 in the right and 20 in the left eye. She was treated conservatively with glaucoma medication and cycloplegic for the right eye, and panretinal photocoagulation for the left eye.

Results: Retinal ischemia in NVG triggered the accumulation of VEGF in aqueous humor, causing the fibrovascular membranes to grow over the trabecular meshwork, obstructing aqueous outflow. The iridocorneal angle would be open, but in the advanced stage, connective tissue myofibroblasts with new vessel growth contract causing progressive synechial closure of the angle. PPM is a rare congenital ocular anomaly that appears as fine iris strands along the pupil. They are remnants of anterior tunica vasculosa lentis that supply nutrition to the lens in the first 6 months of fetal life. Neovascularization and increased IOP are processes that do not occur in PPM.

Conclusions: The pathophysiology of PPM is not related to NVG. In this case, PDR is responsible for the neovascularization in the iridocorneal angle.

Neovascular Glaucoma in a Patient With Persistent Pupillary Membrane; Is It Related?

*First Author: Prasthiti Dewi **HASDINI***
*Co-Author(s): Retno **EKANTINI**, Tatang **TALKA GANI**, Krisna **PURNOMO JATI***

Purpose: To report a case of secondary angle-closure glaucoma after sympathetic ophthalmia.

Methods: A 53-year-old man complained of pain and decreased vision in his right eye after episodes of red eye. He had suffered unclear severe injury 2 years previously on his left eye, underwent enucleation and eye prosthesis. The right eye's visual acuity was counting fingers and intraocular pressure (IOP) was 38. The anterior segment was quiet with 180 degrees of posterior synechiae. The optic nerve head had a distinct margin, cup disc ratio was 0.9 with nasalization and bayonet sign. There was no sign of vitritis. Gonioscopy showed 360 degrees closed iridocorneal angle. The patient's history and laboratory examination excluded other ocular autoimmune diseases. He was treated with glaucoma medication, corticosteroid, and cycloplegic agent, then underwent trabeculectomy after 2 weeks of evaluation. The postoperative IOP was 7.

Results: Sympathetic ophthalmia is possibly a rare autoimmune disease caused by a hypersensitivity

response directed against exposed uveal tissue in the exciting eye, which is responsive to several chorioretinal antigens. After days to years, the sympathizing eye will develop uveitis. The iris will become thickened and immobile with posterior synechiae, leading to possible secondary glaucoma. Blockage of the angle by cellular debris or peripheral anterior synechiae leads to increased intraocular pressure and glaucomatous optic neuropathy. The diagnosis is based on the patient's history and clinical examination.

Conclusions: Secondary angle closure glaucoma after sympathetic ophthalmia can occur after ocular injury despite enucleation.

Ocular Hypotony Precipitated by Tube Trimming in a Uveitic Eye With Descemet Membrane Stripping Automated Endothelial Keratoplasty and Prior Tube Revision

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Purpose: To describe ocular hypotony precipitated by trimming of a glaucoma shunt tube in an eye with uveitic glaucoma, a failed descemet membrane stripping automated endothelial keratoplasty (DSAEK) and prior tube revisions.

Methods: Describing a clinical course with unexpected complication and diagnostic dilemma for a patient who developed ocular hypotony after ab interno tube trimming.

Results: A 33-year-old female with JIA-associated uveitis of the right eye had endothelial decompensation of a DSAEK graft associated with corneal endothelial touch from two glaucoma drainage implants. Ab-interno tube trimming was performed, and she developed postoperative hypotony with intraocular pressure (IOP) of 2 mm Hg. Trypan blue injected into the anterior chamber was effectively utilized to make the diagnosis of an over-filtering glaucoma drainage device, despite the presence of an intraluminal stent. Tube ligation was performed, and the IOP increased to 8 mm Hg. IOP has remained stable at a 6-month follow-up review and the patient remains on the waiting list for a redo DSAEK.

Conclusions: Glaucoma shunt tube trimming may be associated with development of ocular hypotony despite minimal manipulation or removal of the associated intraluminal stent in non-valved glaucoma drainage devices. Trypan blue may be considered as a useful diagnostic adjunct for determining the underlying cause of hypotony in such cases.

Optic Nerve Changes After Cataract Extraction for Primary Angle Closure Glaucoma

*First Author: Fu-Chin **HUANG***
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Purpose: To explore the impact of cataract extraction on optic nerve in the eyes of primary angle closure glaucoma (PACG).

Methods: We included 315 patients with PACG who underwent phacoemulsification and intraocular lens implantation from January 2014 to December 2020. Groups A-D were categorized as the surgery performed under medically uncontrolled acute angle closure crisis (AACC), or after the crisis resolved within 1 month, between 1 and 6 months, and longer than 6 months. The group E were those under glaucoma medication without any recorded AACC. Data of cup/disc ratio (C/D) and retinal nerve fiber layer (RNFL) thickness measured by optical coherence tomography were analyzed for 1 year postoperatively.

Results: Among groups A to E, C/D in operative eyes did not differ at 6 months ($p = .26$) and 1 year ($p = .78$). There were significantly greater C/Ds in the surgical eyes than those in their fellow eyes. The variance of C/D between surgical and fellow eyes was not different among groups A to E at 6 months ($p = .32$) and 1 year ($p = .09$). Significantly less RNFL thickness was present in surgical eyes than that in their fellow eyes in five groups ($p \leq .01$ at 1 year). No significant difference in RNFLs was revealed in surgical eyes at 1 year ($p = .35$) among the five groups.

Conclusions: Although cataract extraction rescued the eyes from PACG, between-eye variances in C/D and RNFL thickness were revealed in the patients with AACC.

Outcomes of Patients With Acute Angle Closure in a Tertiary Center

*First Author: Jie Jie **LIM***
*Co-Author(s): Kee **NG**, Ch'ng **TUN WANG***

Purpose: To determine final visual outcome of patients presented with acute angle closure (AAC).

Methods: A retrospective study including 12 eyes who presented with AAC in a tertiary center. Patients' baseline demographic, ophthalmic findings and treatment were included in the analysis.

Results: A total of 13 patients were admitted in 2020 to 2021 for acute angle closure (AAC), and one of the patients were presented as bilateral AAC. Two of the patients were excluded from the study due to defaulted follow up after initial treatment. Presenting visual acuity (VA) ranged from 6/12 to Hand Movement (HM). Almost all patients received laser peripheral iridotomy within 2 days of presentation, except for one patient who had primary phacoemulsification surgery

done in both eyes. One patient received combined cataract surgery and trabeculectomy surgery. After treatment, all patients' final VA were 6/18 and better. Intraocular pressure improved from 43.17 (SD9.99) to 13.0 (SD2.52), p <0.005. Final antiglaucoma eyedrops required by patients ranged from 0 to 2 groups. Group of patients with more advanced glaucoma and required antiglaucoma eyedrops had been associated with longer mean duration of presenting symptoms, 8 days (SD9.81) vs 3.75 days (SD 4.19), but the difference was not statistically significant.

Conclusions: Timely management and good IOP control may preserve vision in patients presented with AAC, as shown in our study.

Pediatric Ahmed Valve

*First Author: Pankaj **BENDALE***

Purpose: Neovascular glaucoma after coats disease. retinal cryopexy, anti-VEGF injection plus cataract surgery was done. Anterior segment neovascularization subsided but refractory glaucoma with broad PAS required Ahmed valve implant for IOP control.

Methods: The pediatric Ahmed valve was performed under GA. FP 8 model of Ahmed valve implanted in superotemporal quadrant.

Results: Ahmed valve gives good long term IOP control in pediatric glaucoma cases which are likely to not respond to trabeculectomy due to aggressive healing response in these patients.

Conclusions: Pediatric neovascular glaucoma responds best to Ahmed valve after control of ischemic retina and gives long term IOP control.

Periodontal Disease and Risk of Developing Glaucoma: Independent Association or Confounded Observation? Findings From Systematic Review and Meta-Analysis of 1,038,645 Patient Records

*First Author: Abdelaziz **ABDELAAL***
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Purpose: To determine the prevalence and risk of developing glaucoma in patients with periodontal disease (PD).

Methods: On August 1, 2022, PubMed, Scopus, Web of Science (WoS), and Google Scholar were searched for articles reporting the association between glaucoma and PD. A manual search of references and similar articles was conducted. The quality was assessed using the National Institute of Health tool. All analyses were conducted using STATA. The prevalence of glaucoma in PD was pooled using the metaprop command, and the risk of glaucoma was estimated by reporting the log odds ratio (logOR) and its corresponding 95% confidence interval (CI). Random-effects models were used due to the present heterogeneity. A leave-one-out sensitivity analysis was conducted to determine if the reported effect estimate was driven by a single study. The assessment of publication bias was not feasible.

Results: Five studies were included in the quantitative analysis. The prevalence of glaucoma in PD was reported in 5 studies (393567 patients) with an overall rate of 4% [95%CI: 3-5%]. No significant change was noted with sensitivity analysis. The meta-analysis of 5 studies (1,038,645 patients) revealed a significant increase in the risk of glaucoma [logOR = 0.84; 95%CI: 0.11-1.57] among PD patients when compared to healthy controls. This association was deemed insignificant following the exclusion of one study in the sensitivity analysis [logOR = 0.89; 95%CI: -0.08: 1.85]. The quality of included studies was fair; however, ascertainment bias was documented in 2 studies.

Conclusions: Available evidence does not support an independent association between PD and glaucoma.

Phacoemulsification With Mixed Mechanical and Visco-Goniosynechialysis in Refractory Angle Closure Glaucoma Eyes and Extensive Peripheral Anterior Synechiae

*First Author: Channdarith **KITH***
*Co-Author(s): Piseth **KONG**, Chukmol **KOSSAMA**, Bunseng **SEA***

Purpose: This report aims to describe a challenging narrative of phacoemulsification combined with mechanical-visco-goniosynechialysis in a middle-aged woman with refractory chronic angle closure glaucoma and a visually disabling cataract after three years of follow-up.

Methods: We analyzed pre-operative and post-operative intraocular pressure (IOP), anterior chamber depth (ACD), the number of pressure-lowering medications, the extent of peripheral anterior synechiae (PAS) and its recurrence, the visual acuity, subsequent complications, and other potential predictor variables. After surgery, the patient underwent routine follow-up visits every three months.

Results: After combining phacoemulsification and goniosynechialysis (Phaco-GSL), the intra-ocular pressure remained in the low teens and visual acuity was comparable to the baseline. Four months after surgery, no new synechiae was found, but the vision dropped, and pressure remained despite a worsening of the damaged optic disc and visual field. A mitomycin-C adjunctive trabeculectomy was performed. Later, the visual field stopped advancing. In order to maintain vision and prevent additional damage to the optic disc, Phaco-GSL was proceeded on the fellow eye a few months later the following trabeculectomy with mitomycin-C. The condition had stabilized, and the patient was no longer being treated with pressure-lowering medications.

Conclusions: Phaco-GSL can significantly reduce the intraocular pressure post-operatively, and the number of pressure-lowering medications, especially in patients with extensive PAS, and most importantly, reduce the recurrence of PAS and restore vision. Indeed, trabeculectomy remains a surgical solution before Phaco-GSL for patients with very high intraocular pressure in primary angle closure diseases and with no vision potential, even when their conditions have been maximally medically treated.

Post-operative Visual Outcomes and Satisfaction of Glaucoma Patients After Implantation of Monofocal Intraocular Lens With Enhanced Intermediate Vision

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Purpose: To evaluate post-operative uncorrected visual acuity of distance, near and intermediate vision and patients' post-operative visual satisfaction for glaucoma patients following phacoemulsification and implantation of monofocal intraocular lens (IOL) with enhanced intermediate vision.

Methods: This is a single-center, retrospective study. 18 patients with varying severity and types of glaucoma had undergone cataract surgery with monofocal IOL with enhanced intermediate vision by glaucoma surgeons. Post-operative uncorrected distance visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA) and uncorrected near visual acuity (UNVA) of the operated eye with best vision and overall post-operative visual satisfaction were recorded.

Results: Based on Hoddap-Parrish-Anderson criteria, 5% of the operated eyes are early glaucoma, 28% are moderate glaucoma, 28% are severe glaucoma and 39% of the eyes are not tested prior to surgery due to significant cataract. 39% of the operated eyes achieved UDVA of Logmar 0.30 (Snellen 6/12) or better. For UIVA, 22% of eyes achieved Logmar 0.00 (Snellen 6/6) and 45% of eyes achieved UNVA of N6 or better. All patients are satisfied with post-operative UDVA, while 89% and 83% are satisfied with post-operative UIVA and UNVA.

Conclusions: This study shows monofocal IOL with enhanced intermediate vision offer a better visual outcome specifically to near vision in the glaucomatous eye. However, the severity of glaucoma is still an important determining factor for post-operative visual outcomes and patients' satisfaction.

Reduced Intradisc Vessel Density Is Associated With Optic Disc Hemorrhage in Eyes With Primary Open-Angle Glaucoma

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*Co-Author(s): Joon Mo **KIM**, Joong Won **SHIN**, Woo Keun **SONG**, Kyung Rim **SUNG***

Purpose: To investigate the association between optic nerve head (ONH)/choroidal microvasculature perfusion and optic disc hemorrhage (ODH) in eyes with primary open-angle glaucoma (POAG) using swept-source optical coherence tomography angiography (SS-OCTA).

Methods: This retrospective study included 266 POAG eyes consists of 59 with a single instance of ODH, 40 with a history of recurrent ODH, and 167 eyes without ODH. Intradisc vessel density (VD), parapapillary choroidal VD, optic disc microvascular dropout (MvD), and choroidal microvascular dropout (CMvD), were evaluated on a 3 x 3 mm SS-OCTA image of ONH and compared between eyes with and without ODH. Univariate and multivariate logistic regression analyses were performed to investigate factors associated with ODH.

Results: The prevalence of CMvD, optic disc MvD, and β-peripapillary atrophy were not different among the no ODH, single ODH, and recurrent ODH groups. Eyes with ODH had lower intradisc VDs than those without ODH ($p = 0.021$), but no difference was found in intradisc VDs between the single and recurrent ODH groups ($p = 0.977$). Better VF MD at baseline (odds ratio [OR], 1.150; 95% confidence interval [CI], 1.055–1.254; $p = 0.002$) and lower intradisc VD (OR, 0.863; 95% CI, 0.812–0.918; $p < 0.001$) were associated with ODH occurrence.

Conclusions: Among POAG eyes, those with ODH had lower intradisc VDs than those without ODH. POAG eyes in an earlier disease stage or those with lower intradisc VDs should be monitored for the possibility of ODH occurrence.

Relative Anterior Microphthalmos Prevalence and Glaucoma Association in a Real-world Clinical Practice

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Purpose: To evaluate a prevalence, other associated ocular conditions, and cataract surgery outcomes in patients with relative anterior microphthalmos (RAM) in a real-world dataset.

Methods: This retrospective study was conducted at a tertiary eye care center. Enrolled patients whose ocular biometrics, obtained with IOLMASTER 700, were matched with RAM criteria, from May 2020 to March 2022. RAM was defined as a white-to-white corneal diameter 20 mm with no other ocular malformation. Medical records were reviewed for other associated

ocular conditions and cataract surgery outcomes.

Results: Prevalence of RAM was 1.8% (115 from 6,293 eyes). None of those eyes was diagnosed as RAM in their clinical records. 26.1% were associated with glaucoma; PACG 66.7%, POAG 23.3%, secondary glaucoma 6.6%, and NTG 3.3%. Of which, up to 20% required glaucoma surgery including GSL 16.7% and 83.3% trabeculectomy. 38.2% (44 eyes) of RAM patients underwent cataract surgeries. Complication was uncommon in those eyes, which only 2.2% (one eye) had ruptured posterior capsule. IOP was significantly decreased after cataract surgery, especially in glaucoma eyes (22.47 ± 11.70 mmHg to 13.40 ± 3.46 mmHg, p =0.009)

Conclusions: Even though the low prevalence of RAM in this large biometric dataset but approximately one-fourth were associated with glaucoma. Effortless data from IOLMASTER700 may rise our concerns on glaucoma association in this overlooked ocular condition.

Risk Factors for Tube Exposure as a Late Complication Following Glaucoma Drainage Devices Implantation

*First Author: Erin **ARSIANTI***

Purpose: Glaucoma drainage implant exposure is regarded as one of the serious complications arising after glaucoma drainage devices (GDD) surgery. This study aims to evaluate the risk factors for tube exposure after GDD implantation

Methods: This is a retrospective review of the medical record of all patients who underwent all types of GDD such as Ahmed, AADI and Virna implant with tubes covered by various types of patch graft materials between January 1, 2018 to December 31, 2021 with a six-months follow-up after surgery

Results: Nine out of 67 patients who received GDD surgery experienced exposure of tube devices. The average time of exposure was 11.78 ± 9.23 month. Of the patients with tube exposure, four patients had secondary glaucoma, one had congenital glaucoma and five had neovascular glaucoma. The mean age of patients with GDD was 51.82 ± 15.06 yo. No significant differences were found between the variants. In terms of gender, however, men were more likely to experience GDD exposure than women (OR 2.8 (95% CI 0.54 - 14.87). History of stroke was also associated with the increased risk of GDD exposure (OR 3.5 (95% CI 0.28-43.16). Furthermore, there was a significant difference between the number of surgery and the occurrence of GDD exposure ($p = 0.022$, $p < 0.05$)

Conclusions: This study revealed that men are two times more likely to experience GDD exposure than women. Stroke was also included as a risk factor for GDD tube exposure. Moreover, a significant difference was found between the number of surgery and the incidence of GDD exposure ($p = 0.022$, $p < 0.05$)

Safety and Effectiveness of the Preserflo Microshunt Device in Asian Patients With Primary Open Angle Glaucoma

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Purpose: This study aims to gather safety and effectiveness data on the Preserflo MicroShunt device in Asian patients with primary open angle glaucoma (POAG).

Methods: This was a prospective, single arm study of subjects receiving the Preserflo MicroShunt from November 2020 to July 2022 at a tertiary center in Singapore. Thirteen eyes were included. Surgical success for patients with baseline IOP ≥18 to ≤21 mmHg, was defined as an intraocular pressure (IOP) reduction of 20% or greater. For patients with baseline IOP >21 mmHg, success was measured as IOP < 21 mmHg and IOP reduction of 20% or greater. Complete success was defined as achieving the desired IOP target without supplemental medications and qualified success refers to that which requires medications.

Results: At 6 and 12 months, the complete success rate was 84.6% (11 out of 13 eyes) and 75% (6 out of 8 eyes) respectively. Qualified success at 6 and 12 months was 7.7% (1 out of 13 eyes) and 0% respectively. The reduction in median IOP was from 19mmHg to 13mmHg (11.0 to 14.0) ($p = 0.002$) at 6 months; 12mmHg (12.0 to 13.5) ($p = 0.176$) at 12 months. The reduction in median number of medications was from 3 to none at 6 and 12 months ($p <0.05$). There were no intra-operative complications reported. The failure rate at 12 months was 25% (2 out of 8 eyes required either trabeculectomy or bleb revision).

Conclusions: The Preserflo MicroShunt is a safe and effective device that reduces IOP and burden of glaucoma medications in Asian patients with POAG.

Safety and Efficacy of Ab-Interno Canaloplasty in Angle Closure Glaucoma: 12-Month Results

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Purpose: Report the safety and efficacy of Ab-interno canaloplasty (ABiC) using iTrack (Nova Eye Medical, Fremont, USA) minimally invasive glaucoma surgical device in patients with primary angle closure glaucoma (PACG) at 12 months.

Methods: Prospective multi-center case series of 29 eyes in 25 patients with PACG undergoing ABiC with or without cataract extraction. Data was retrieved from the International Glaucoma Surgery Registry. Outcome measures included visual acuity (VA), intraocular

pressure (IOP), number of glaucoma medications and adverse events.

Results: ABiC was combined with cataract surgery in 25 eyes and as standalone procedure in 4 eyes. 2 eyes had previous filtration surgery. Mean IOP and number of medications improved from 20.69 ± 6.11 mmHg and 2.03 ± 1.21 to 13.5 ± 2.94 mmHg (p <.001) and 0.67 ± 1.07 (p <.001) at 6m and 15.83 ± 5.0 mmHg (p = 0.03) and 0.33 ± 0.82 (p <.001) at 12m, respectively. 83% eyes were medication-free at 12 months. Mean VA at baseline was 0.63 ± 0.64 and improved to 0.10 ± 0.13 at 12 months. 6/29 eyes had hyphaema postop that resolved without intervention.

Conclusions: ABiC with or without phacoemulsification performed on PACG eyes resulted in significant and safe, IOP and medication reductions with most eyes medication-free at 12 months.

Safety and Efficacy of MicroPulse Transscleral Laser Therapy With Revised P3 Probe Over 160-Second Treatment

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Purpose: To evaluate the safety and impact of MicroPulse transscleral laser therapy (MP-TLT) with the revised P3 probe in the treatment of severe primary open-angle glaucoma (POAG).

Methods: Twenty-three eyes of 15 patients with severe POAG (mean age 71.9 ± 8.8 years) receiving MP-TLT between April and December 2021 were retrospectively reviewed. Eighty seconds of 4 sweeps were applied to the eye's inferior and superior hemispheres (sweep velocity of 1.1 mm/s per hemisphere). Intraocular pressure (IOP) and number of glaucoma medications were compared to baseline for up to 12-months follow-up using paired sample t-tests. Success was defined as an IOP < 21 mmHg and/or 20% reduction from baseline, with no supplemental medicinal therapy at the last follow-up. Eyes that did not meet the above criteria and/or required incisional glaucoma surgery were considered a failure.

Results: At last follow-up (mean 8 months), a baseline IOP of 23.2 ± 7.8 mmHg was reduced to 15.2 ± 3.7 mmHg (34.5% reduction; p <0.01), and medications were reduced from 1.8 ± 1.3 to 1.4 ± 1.1 (21.4% reduction; p <0.01). The success rate was 91.3%. No eyes required supplemental medicinal therapy, with 30.4% of eyes experiencing reduction by ≥1 medication. All eyes met an IOP ≤ 21 mmHg and 70% achieved ≥ 20% IOP reduction. Two eyes (8.7%) required incisional surgery at 2 months. No other adverse events were observed.

Conclusions: Through up to 12 months, MP-TLT resulted in significant decreases in IOP and medications. Overall, the procedure appears safe and beneficial in the treatment of severe POAG.

Safety and Efficacy of Posterior Scleral Application of Mitomycin C-Soaked Sponge in Trabeculectomy

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Purpose: To evaluate the safety and efficacy of posterior scleral application of antimetabolite mitomycin C (MMC)-soaked sponges in trabeculectomy for patients with glaucoma.

Methods: A total of 101 patients (115 eyes) with glaucoma, aged 12–83 years who underwent trabeculectomy using a modified MMC-soaked sponge placement method were enrolled. The sponges were placed vertically and posteriorly with the long side perpendicular to the limbus. The MMC concentration was 0.2–0.5 mg/mL and the exposure time was 1–5 min. The intraocular pressure (IOP), best-corrected visual acuity, and the number of hypotensive medications taken at baseline and at the final visit were recorded. Complications, interventions required, and bleb morphology were recorded postoperatively. Bleb morphology, including height, extent, vascularity, Seidel test, and width, was graded using the Indiana Bleb Appearance Grading Scale. The primary outcome was the safety of trabeculectomy including complications and bleb morphology. The secondary outcome was the success rate of trabeculectomy.

Results: The median follow-up period was 28 months. At the final follow-up, the qualified (cumulative) success rate was 93.0% and the complete success rate was 57.4%. The incidence of postoperative complications was 7.0%. The mean height was 0.6 ± 0.9. The mean extent was 1.2 ± 0.4. The mean vascularity was 2.4 ± 0.9. All Seidel tests were negative. The mean width was 0.8 ± 0.4.

Conclusions: Trabeculectomy with the long side of the MMC-soaked sponge placed perpendicular to the corneal limbus to maximize the exposure area is safe and effective.

Safety and Impact of Canaloplasty/Trabeculotomy With Phacoemulsification in Severe Open-Angle Glaucoma

*First Author: Isabella **WAGNER***
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Purpose: To evaluate the safety and benefit of combined phacoemulsification with canaloplasty/trabeculotomy with the OMNI® Surgical System (Phaco+OMNI) in the treatment of severe primary open-angle glaucoma (POAG).

Methods: Retrospectively reviewed 18 eyes with severe POAG (mean age 72.0 ± 7.5 years) receiving

Phaco+OMNI between April and November 2021. Primary outcomes included changes in intraocular pressure (IOP) and number of glaucoma medications from baseline through 6 months of follow-up, evaluated using paired sample t-tests. Secondary outcomes included the percentage of eyes with observed reduction in >1 medication, an IOP < 14 mmHg, and/or 20% IOP reduction from baseline at 6 months.

Results: At 3 months (n=8), IOP was observed to be reduced from 15.6 ± 5.4 mmHg to 14.1 ± 3.6 mmHg (9.6% reduction; p =0.26) and number of medications was reduced from 1.4 ± 0.5 to 0.6 ± 0.5 (55% reduction; p <0.05). At 6 months (n=13), IOP was reduced from 15.3 ± 4.5 mmHg to 12.4 ± 2.8 mmHg (19% reduction; p <0.05) and number of medications was reduced from 1.4 ± 0.4 to 0.4 ± 0.5 (72% reduction; p <0.05). Reduction by >1 medication, an IOP < 14 mmHg, and 20% IOP reduction from baseline were observed in 76.9%, 84.6%, and 69.2% of eyes, respectively. No vision-threatening complications or adverse effects were reported through 6 months.

Conclusions: Through 6 months, Phaco+OMNI demonstrates excellent safety and potential effectiveness in the treatment of severe POAG.

Secondary Glaucoma Associated Retinal Detachment (Schwartz-Matsuo Syndrome) : A Case Report

First Author: Daniel ***RANGGADWIPA***
Co-Author(s): Maharani ***CAHYONO****, Satya* ***PRAGNANDA***

Purpose: Schwartz-Matsuo syndrome is a condition characterized by rhegmatogenous retinal detachment, followed by an elevated intraocular pressure (IOP), and the presence of aqueous cells in the anterior chamber. Retinal photoreceptor outer segment blockage of the trabecular meshwork is hypothesized to be the mechanism of IOP elevation. Generally, IOP would return to normal limits after retinal detachment surgery. The purpose of this case report is to present a case of secondary glaucoma resulting from Schwartz-Matsuo syndrome.

Methods: A 30-year-old male presented with bilateral vision loss as the chief complaint. The patient had a history of floaters and myopia. The patient had no symptoms of pain, hypermia, nor photophobia. Visual acuity was 1/60 in the right eye and 6/75 in the left eye. The IOP of both eyes were 30mmHg and 18mmHg respectively. Aqueous cells 1+ were seen in the patient right eye's anterior chamber. Funduscopy of the right eye revealed superior to inferonasal retinal detachment, while the left eye showed superior retinal detachment.

Results: The patient underwent pars plana vitrectomy with endolaser and gas tamponade for both eyes. The IOP of the right eye returned to normal limits following the surgery.

Conclusions: Schwartz Matsuo syndrome is a rare case of secondary glaucoma. Complete history taking, ocular evaluation, and imaging are required to provide an appropriate diagnosis and treatment. Medical treatment and vitrectomy are performed in order to reduce IOP and prevent glaucoma-related nerve damage.

Severe Corneal Melt After Trans-scleral Cyclodiode Laser for Neovascular Coats Disease, Potentiated by Preservatives, Topical NSAID and Dexamethasone/ Neomycin Combination Therapy

First Author: Jackson ***LEE***
Co-Author(s): Geoffrey ***CHAN****, Humma* ***SHAHID***

Purpose: To describe a novel case of severe corneal melt secondary to trans-scleral cyclodiode photocoagulation for neovascular glaucoma secondary to Coats disease is presented. The presence of multiple risk factors potentiating the development of corneal ulceration and neurotrophic keratitis in this case is highlighted.

Methods: Describing the clinical course, management and complication of a patient who was treated with trans-scleral cyclodiode for secondary neovascular glaucoma.

Results: A 59-year-old Southeast Asian male developed neurotrophic keratitis and severe corneal melt one month post trans-scleral cyclodiode for the treatment of neovascular glaucoma secondary to Coats disease. Risk factors potentiating the development of neurotrophic corneal disease include a history of previous extra-capsular cataract surgery, the preoperative use of topical non-steroidal anti-inflammatories, postoperative dexamethasone/ neomycin combination therapy, as well as preservatives such as benzalkonium chloride present in the topical intraocular pressure lowering regime. The corneal ulceration failed to improve with initial conservative measures but responded well to further treatment.

Conclusions: This case demonstrates that although cyclodiode remains an effective treatment for refractory glaucoma, adverse complications such as the development of corneal melt and neurotrophic keratitis are possible. Meticulous consideration of perioperative eyedrop regimes and the use of preservative free topical regimes are recommended. Patients undergoing cyclodiode with risk factors for corneal neurotrophic disease may warrant closer follow-up in the postoperative setting, and we recommend the avoidance of NSAIDs and Maxitrol in this cohort due to the significant risks of potentiating the development of sight-threatening corneal complications.

Smartphone Aided Gonio Imaging: A Novel Cost-effective Angle Imaging Device

*First Author: Hirika **GOSALIA***
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Purpose: Gonioscopy is an important part of glaucoma diagnosis and management. Imaging and documentation of the anterior chamber angle has been previously performed using slit-lamp– assisted photography or using smartphones with or without an attached macro lens. Smartphones have transformed ophthalmic imaging by virtue of their availability, easy use, and portability. In this report, the authors aim to demonstrate gonio-imaging using a smartphone attached with an intraocular lens which behaves like a macro lens.

Methods: This retrospective study was conducted in a secondary eye care center located in an underserved area of South India. A total of 33 eyes of 20 patients were included in this study. With the patient in a sitting position or in the supine position, a gonio lens is placed on the patient's cornea. A smartphone with a 10D intraocular lens attachment over its camera is used to take images or videos of the anterior chamber angle with high magnification.

Results: Clear and magnified images utilizing our ASPI gonio imaging technique were obtained from 33 eyes of 20 patients in sitting position along with 10 eyes of 10 patients from the same cohort underwent imaging in the supine position.

Conclusions: To conclude, we broaden the use of ASPI as a cost-effective tool for screening, imaging, documenting as well as grading of the anterior chamber angle and thereby adding it in the armamentarium of smartphone gonio-imaging techniques.

Successful Treatment for Silicone Oil-Induced Secondary Glaucoma: A Case Report

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*Co-Author(s): Virna **ASRORY***

Purpose: We would like to present an approach in managing acute onset of secondary glaucoma in a 37-year-old male after scleral buckle, pars plana vitrectomy (PPV), and silicone oil endotamponade.

Methods: The patient was presented with pain, swelling and redness in his right eye 5 days after vitreo-retinal surgery. Visual acuity (VA) was light perception with intraocular pressure (IOP) of 28 mmHg on anti-glaucoma medication. Examination reveals signs of acute attack with irregular pupil, iris bombe and decreased light reflex. Peripheral iridectomy (PI) was done. Three weeks after PI and anti-glaucoma medication, the patient's IOP remained uncontrolled, and the Virna Glaucoma Implant was done. The patient's IOP remained controlled, and his VA improved after six weeks postoperatively.

Results: High IOP is a potential vision-threatening complication. In our case, patient underwent scleral buckle and SO endotamponade at the same time, early increased IOP may be due to the combination of two procedures. Patients showed an acute rise of IOP in the early post-operative period due to pupillary block. This condition may be due to the over filling of the silicone oil combine with scleral buckle. Medical treatment alone and face-down posturing do not tend to be effective. Immediate inferior surgical iridectomy to resolve pupillary block was done. The patient's IOP remains uncontrolled despite the patency of iridectomy and medical therapy, therefore a glaucoma drainage device implantation was done.

Conclusions: Prompt diagnosis and early treatment of elevated IOP after retinal surgery can prevent further ocular damage and improve patient outcomes.

Surgical Outcome of a Low-Cost Glaucoma Drainage Device Implantation in Refractory Glaucoma – A Prospective Longitudinal Study

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Purpose: To determine the outcome with efficacy and safety of a low-cost glaucoma drainage device implantation in refractory glaucoma.

Methods: In this prospective, longitudinal study 30 Patients of refractory glaucoma were studied who underwent non-valved glaucoma drainage device surgery between November 2021 to April 2022. Surgery was performed by a single fellowship-trained surgeon. The patients were followed up for 3 months postoperatively and data were recorded. Outcome measures were postoperative intraocular pressure (IOP), best corrected visual acuity (BCVA), number of anti-glaucoma medications and complication after surgery. Complete success was defined as an IOP ≥5 and ≤21 mm Hg, with no additional glaucoma medications.

Results: The mean age of the patient was 24.97 (± 16.5). There was significant decrease in mean preoperative IOP from 31.67 (± 9.8) mmHg to 12.7 (± 4.0) mmHg at 3 months follow up with mean percentage of reduction of 59.9% (p value < 0.001). Mean number of preoperative topical antiglaucoma medications (AGM) decreased from 3.17 (± 0.59) to 0.17 (± 0.53) at 3 months follow up. Visual acuity remains stable in 10 (33.3%) eyes, improved in 9 (30%) eyes and deteriorated in 11 (36.7%) eyes. Complications occurred in 4 patients (13.3 %), where hyphema in 1 (3.3%) patient, choroidal detachment (CD) in 1 (3.3 %) patient and choroidal detachment with retinal detachment in 2(6.6%) patients. The overall success rate was (96.6%).

Conclusions: Non-valved low-cost glaucoma drainage device is effective and safe for patients with refractory

glaucoma with good intraocular pressure control. Still further follow-up is recommended to see sustainability over time.

Surgical Outcomes of Sturge-Weber Syndrome With Secondary Glaucoma

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Purpose: To report surgical outcomes of 3 patients (3 eyes) of Sturge-Weber Syndrome (SWS) with secondary glaucoma in Hospital Kuala Lumpur.

Methods: Retrospective analysis of SWS patients with secondary glaucoma treated with filtration surgeries from 2018-2021.

Results: The first patient, who was 2 years 2 months old, presented with right-eye buphthalmos with congenital glaucoma. Her intraocular pressure (IOP) at presentation was 28 mmHG and cup-to-disc ratio (CDR) 0.7. Right eye visual acuity was 6/7.5. She underwent combined trabeculotomy and trabeculectomy. Post-operative IOP was well controlled within 10-14mmHg, with no antiglaucoma. Reversal of CDR of 0.6 was noted. Visual acuity remained unchanged. Second patient, presented at 4years 7 months old with right eye buphthalmos, IOP of 36mmHg and CDR of 0.8. Right eye visual acuity was 6/7.5. He underwent combined trabeculotomy and trabeculectomy after 3 months. Needling was done after 7 months of surgery as post-operative 6 months IOP was 22mmHg. CDR reversed to 0.5. Visual acuity was unaffected. He doesn't require anti-glaucoma eyedrops thereafter. Third patient, a 3-month-old, presented with left eye light perception due to cloudy cornea. Left eye was buphthalmic with IOP 33mmHg and CDR 0.6. He underwent transscleral cyclophotocoagulation after 1 month and trabeculotomy after 7 months. Postoperative IOP was in the range of 10-30mmHg. Reversal of CDR noted, and visual acuity improved to 6/18. Patient was on 2 anti-glaucoma drugs.

Conclusions: Early surgical intervention in congenital glaucoma secondary to SWS provides better outcome. In our series, combined angle and filtering surgery show good IOP control.

Ten-Year Outcomes of Cataract Surgery for Glaucoma Management in Patients With Primary Angle-Closure Disease

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Purpose: To investigate long-term outcomes of cataract surgery for glaucoma management in patients with primary angle-closure disease (PACD).

Methods: We retrospectively reviewed the medical records of 89 eyes of 89 patients with PACD who underwent uncomplicated cataract surgery alone at the Kobe City Medical Center General Hospital. Only patients with a minimum follow-up of 10 years were included. Patients were divided into PACD spectrum categories: primary angle-closure glaucoma (PACG), primary angle closure (PAC), and primary angle-closure suspect (PACS). The treatment outcomes were compared among the three groups. Main outcome measures including intraocular pressure (IOP), number of glaucoma eye drops, and requirement for additional glaucoma treatment during the follow-up period were collected.

Results: Among the 89 eyes, 40 had PACG, 27 had PAC, and 22 had PACS. Ten years after surgery, IOP had significantly decreased from baseline in all three groups, and no difference was found among the groups. A significantly higher rate of PACG required additional glaucoma treatment during the follow-up period than the others (PAC + PACS). Almost half of the eyes with PACG required additional glaucoma treatment, of which six eyes (15%) underwent glaucoma surgery. Four eyes (14.8%) with PAC required additional glaucoma treatment, including one eye underwent glaucoma surgery.

Conclusions: We confirmed that cataract surgery had a long-term (over 10 years) effect on IOP reduction in eyes with PACD. Early intervention with cataract surgery may be preferable for glaucoma management in patients with PACD.

The Relationship between Serous Choroidal Detachment and Ahmed Glaucoma Valve Failure; A Coarsened Exact Matched Study

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Purpose: To investigate the effect of choroidal detachment (CD) on the success duration of Ahmed Glaucoma Valve (AGV) implantation.

Methods: In this case-control study, patients who underwent AGV implantation and developed CD were compared to a control group undergoing AVG implantation but not developing CD, matched for age, sex, baseline intraocular pressure (IOP) and the number of previous glaucoma surgeries. The primary outcome was duration of AGV success defined as the duration of maintaining 5< IOP < 18 and 20 percent reduction from the baseline IOP.

Results: Seventeen patients as the case group and 38 patients as controls were included. The patients in the case group showed higher IOP in all time intervals. However, the mean IOP difference reached statistical significance only at month 3 (17.94 ± 6.78 vs. 13.39 ± 3.09, p = 0.003). Using the definition for success, the mean duration of AGV success was significantly shorter in patients with CD (10.4 ± 0.7 months vs. 11.7 ± 0.2 for

controls; Logrank= 4.1, p = 0.04).

Conclusions: The patients experiencing CD in the postoperative period had significantly lower AGV implantation success duration.

Three-Letter Short Codes for Visual Field Results for Glaucoma Patients to Facilitate Faster Documentation in Electronic Health Records

*First Author: Sriram **SONTY***

Purpose: To design three-letter short codes for visual field results for glaucoma patients to facilitate faster documentation in electronic health records.

Methods: Visual Field Defects on Humphrey Visual Fields (Perimetry) can be designated with Three Letter Codes NFD: No Field Defects EBS: Enlarged Blind Spot. SSS: Superior Seidel Scotoma, ISS: Inferior Seidel Scotoma, PCS : Para Central Scotoma SNS: Superior Nasal Step , INS : Inferior Nasal Step, SAS: Superior Visual field defects on Humphrey visual fields (HVFs, perimetry) can be designated with three-letter codes: NFD: No Field Defects, EBS: Enlarged Blind Spot, SSS: Superior Seidel Scotoma, ISS: Inferior Seidel Scotoma, PCS: Para Central Scotoma, SNS: Superior Nasal Step, INS: Inferior Nasal Step, SAS: Superior Arcuate Scotoma, IAS: Inferior Arcuate Scotoma, DAS: Double Arcuate Scotomas CIM/N: Central Island, RHH: Right Homonymous Hemianopia, LHH: Left Homonymous Hemianopia, BTH: Bitemporal Hemianopia, RSQ: Right Superior Quadrantinopsia, LSQ: Left Superior Quadrantinopsia, RIQ: Right Inferior Quadrantinopsia, LIQ: Left Inferior Quadrantinopsia, SAD/IAD: Superior/ Inferior Altitudinal Defect, NFL: No Field Left. A total of 100 HVFs at random of 50 points were analyzed.

Results: A total of 100 visual fields of 50 Pts were analyzed, generating NFD (16), DAS (14), IAS (12), PCS (9), SAS (8), CIN (7), INS (6), NFL (6), SNS (5), DNS (6), SAD (4), IAD (3), CIM (3) and ISS (1). The number of characters ranged from NFL (11) to RHH (26). Saved letters ranged from NFL (-8) to RHH (23). Total characters amounted to 1,719 (mean at 17) with 3 letters equivalent to 300 savings (1,419 letters). With 8 HVFs daily, making it to 224 and 1,120 (5 days) and 57,240 for a year.

Conclusions: Three-letter short codes for visual field results for glaucoma patients were to facilitate faster documentation in electronic health records.

Transscleral Cyclophotocoagulation Treatment in Neovascular Glaucoma: A Retrospective Review From Htar, Klang

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Purpose: To determine the efficacy of diode laser transscleral cyclophotocoagulation (TSCPC) for neovascular glaucoma (NVG) with uncontrolled intraocular pressure (IOP) among patients of Hospital Tengku Ampuan Rahimah, Klang (HTAR).

Methods: Twenty-nine eyes of 27 patients with NVG who had diode laser TSCPC performed between the year 2018 to 2021 were retrospectively studied. Subjects were further divided into limited TSCPC 180 degrees (18 eyes) and complete TSCPC 270 degrees (11 eyes) groups.

Results: For limited TSCPC, the mean pre-treatment and one-month post-procedure IOP were 44.17 mmHg and 29.29 mmHg. The mean pre-treatment and one-month post-procedure IOP for complete TSCPC were 45.57 mmHg and 28.92 mmHg. IOP reduction was significant at the first month post procedure in both groups. In limited TSCPC, mean IOP reduction was 33.9% ($p < 0.05$) and in complete TSCPC it was 34.3% ($p < 0.001$). 55.2% of all eyes were Diamox-dependent before procedure. 100% of our patients were Diamox-independent by 2 months post-procedure. Topical medication burden was also reduced in both groups post-procedure. Three eyes required a repeated complete TSCPC while 11 eyes underwent surgical treatment post-limited TSCPC. 77.8% of eyes post-limited TSCPC did not have any decline in their visual acuity following the procedure.

Conclusions: Overall, diode laser TSCPC is effective in lowering intraocular pressure, reducing medication burden and does not cause visual deterioration in patients with NVG. Limited TSCPC is a good option in NVG patients who have a better prognosis eye which allows ophthalmologists to temporarily lower intraocular pressure before referral to glaucoma specialists for further surgical treatment.

Variations in Refractive Error, Axial Length, Central Anterior Chamber Depth Following Nd:YAG Peripheral Iridotomy

*First Author: Surabhi **ABBAGANI***
*Co-Author(s): Ashish **RANDER***

Purpose: The purpose of this study is to assess the change in refractive error, axial length and central anterior chamber depth following Nd:YAG peripheral iridotomy (PI) in primary angle closure suspects (PACS) and Primary angle closure (PAC) patients.

Methods: A total of 100 eyes of 50 patients were included in the study conducted in a tertiary eye care hospital in Coimbatore. IOP was recorded using Goldmann applanation tonometer, AXL and CACD were recorded using Tomey OA2000. Gonioscopy was done using Goldmann 3 mirror lens. Changes in Best corrected visual acuity, IOP, axial length (AXL) and central anterior chamber depth (ACD) were analyzed, prior to and 1 week after the laser procedure.

Results: The mean age of the subjects was 54.62 years. A significant fall in mean IOP was noted following laser.

Significant increase in mean CACD, decrease in mean axial length and a small hyperopic shift in the refraction were noted.

Conclusions: LPI causes a fall in IOP and deepening of central anterior chamber depth but has no effect on the axial length and change in refractive error in PACS eyes.

Intraocular Inflammation, Uveitis and Scleritis

A Case of Keratitis Caused by Ochroconis Mirabilis After Cataract Surgery

*First Author: Yuki **MORI***
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Purpose: Ochroconis spp. are filamentous fungi that inhabit wet environments. To the best of our knowledge, there have been no reports about ocular infection caused by Ochroconis spp. We report a case of keratitis caused by Ochroconis mirabilis after cataract surgery.

Methods: To present a single case report.

Results: A 83-year-old male had cataract surgery in a previous clinic. Five months after the surgery, slit-lamp examination of the right eye revealed spotted endothelial plaque extended from the corneal incision of cataract surgery. Descemet's membrane peeling at the site of endothelial plaque was performed for the suspect of corneal epithelial ingrowth. However, endothelial plaque recurred in a few days, and he was referred to our hospital. Slit-lamp examination of the right eye revealed unclear deep stromal infiltrate with endothelial plaque and hypopyon. Since infectious keratitis was suspected from clinical presentation, anterior chamber irrigation and removal of endothelial plaque were performed for treatment and detection of causative organism. The direct smears of endothelial plaque showed filamentous fungi. After topical and systemic treatment with voriconazole and amphotericin B, there was no recurrence of fungal keratitis. Detected filamentous fungi grew well at 28□, but not at 37□. Ochroconis mirabilis was identified by sequence analysis of the internal transcribed spacer regions.

Conclusions: Ochroconis mirabilis could be a causative organism of infectious keratitis. We speculate that Ochroconis mirabilis migrated into the anterior chamber at the surgery, but keratitis developed slowly because the temperature of the anterior chamber was not optimal for the growth of Ochroconis mirabilis.

A Case of Recurrent Acute Anterior Uveitis Experienced Transient Myopic Shift Each Time After Inflammation Subside

*First Author: Chiamin **WU***

Purpose: To report a case which experienced transient myopic shift after acute anterior uveitis subsided.

Methods: A case report.

Results: A 35-year-old woman who had history of myopia (-5D in each eye) and HLA B27+acute anterior uveitis (AAU,od). After one attack of AAU (od), her myopia increased to -6.25D and she experienced still mild subjectively blurred vision although the corrected VA was 20/20 (od). Some disc edema left was also found.

Conclusions: Blurred vision after AAU attack may last one to two months. Myopic shift and disc edema may be the possible causes.

A Challenging Case of Acute Retinal Necrosis With Concurrent Ocular Tuberculosis Infection Complicated With Tractional Retinal Detachment

*First Author: Tze Huei **KEE***
*Co-Author(s): Roslin Azni **ABDUL AZIZ**, Muharliza **MUSA**, Khairuddin **OTHMAN**, Noor Khairul **RASID***

Purpose: To report a case of acute retinal necrosis (ARN) with subretinal mass due to Herpes simplex virus type 2 (HSV-2) with concurrent ocular tuberculosis infection, complicated with tractional retinal detachment (TRD).

Methods: To present a case report.

Results: A 34-year-old premorbidly healthy lady presented with 2 weeks history of right eye redness with floaters and blurred vision. Her right eye unaided visual acuity (VA) was 6/24, with pin hole 6/12. Examination of the right eye revealed panuveitis with optic disc swelling, perivascular sheathing of retinal vessels and a patch of retinitis at the periphery inferonasally. Her left eye examination was unremarkable. She was diagnosed with right eye ARN and responded well to initial antiviral treatment. However, 1 month after completing 6 weeks of antiviral therapy, she developed reactivation of panuveitis with inferonasal subretinal mass. Therefore, antiviral therapy was reinitiated. Her Mantoux test was 22mm, erythrocyte sedimentation rate was 67mm/hour, and other blood tests and chest X-ray were unremarkable. Vitreous tapping sent for polymerase chain reaction revealed HSV-2. Considering the possibility of concurrent ocular tuberculosis infection, she was covered with anti-tuberculosis therapy. Unfortunately, dense fibrosis developed over subretinal mass with tractional macular detachment, for which pars plana vitrectomy was done. She had responded well to both antiviral and anti-tuberculosis therapy with final VA of 6/18, leaving a chorioretinal scar inferonasally.

Conclusions: Early diagnosis, treatment and intervention is critical to prevent potentially devastating visual complications of ARN. Possibility of superimposed mycobacterium infection should always be considered in dual pathologies.

A Challenging Management of Necrotizing Anterior Scleritis With Lens Luxation

*First Author: Maya **SARI***
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Purpose: To present a case of necrotizing anterior scleritis with lens luxation as a difficult case and challenging management.

Methods: The case was reported from an outpatient clinic. Diagnosis was made based on history taking and ophthalmology examination.

Results: A 64-year-old male complained of sudden blurred vision on his right eye which had worsened for 11 months ago, while his left eye has been blurred since 27 years ago. Visual acuity was light perception with good projection on the right eye and hand movement on the left eye. In the right eye, there were conjunctival injection, scleromalacia in the superior conjunctiva with uveal prolapse, lens in the anterior chamber and normal intraocular pressure. In the left eye, there were scleromalacia in the superior conjunctiva with uveal prolapse, scar and neovascularization of the cornea and normal intraocular pressure. Laboratory examination revealed positive rheumatoid factor. The patient was consulted to rheumatology division, but the diagnosis of rheumatoid arthritis could not be established. Patients received high dose oral Prednisone that gradually tapered, Methotrexate 10 mg weekly dose, Betamethasone eye drop 6x1 both eyes. Patient underwent intracapsular cataract extraction and pericard graft as scleral grafting. At the 3-month follow-up, the visual acuity was hand movement in both eyes, no signs of scleral inflammation and attached pericard graft in the right eye.

Conclusions: The combination of steroid, immunomodulator, Intracapsular Cataract Extraction and pericard graft present a good outcome in managing necrotizing anterior scleritis patient with lens luxation.

A Healthy Man That Comes With a Surprise

*First Author: Noorshazana **WAN AZMY***
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Purpose: To report a case of newly diagnosed syphilis and HIV in herpetic uveitis and sixth nerve palsy.

Methods: To present a case report.

Results: A 27-year-old healthy and stylish man, presented with left eye redness and reduced vision for 6 days and associated with painful rashes over the left-sided forehead, eyelid, cheek and nose. His vision was 6/24 on the left and 6/18 on the right. On examination noted vesicular rash in left V1 and V2 distribution with extension to tip of the nose (Hutchinson's sign). The anterior segment examination revealed a left paracentral cornea epithelial defect featuring a dendritic lesion with multiple keratic precipitates at the central and associated with reduced cornea sensation. The anterior chamber was deep with cells 3+. The posterior segment findings were unremarkable in both eyes. There was a restriction of left eye abduction -3, which corresponds with the Hess chart finding. His basic blood laboratory results were within normal range, however surprisingly his syphilis and HIV antibody were positive. The computed tomography of the head and orbit did not show any abnormalities. He was referred to the infectious diseases team and showed complete resolution of his sign and symptoms upon completion of his treatment of a week of intravenous c-penicillin and Rocephin and a 5-week tapering dose of oral acyclovir.

Conclusions: A high index of suspicion of immunocompromise status should warrant attention in herpes zoster ophthalmicus and may require thorough investigation. Early diagnosis with treatment may improve overall prognosis and may benefit patients from prolonged neuralgia.

A Population-Based Cohort Study on the effect of Uveitis on the Development of Keratopathy

*First Author: Chan-Wei **NIEN***

Purpose: The purpose of this study was to evaluate the effect of uveitis on the development of various keratopathies via the use of the National Health Insurance Research Database (NHIRD) in Taiwan.

Methods: Approximately 1 million patients were randomly sampled from the registry of the NHIRD. Patients diagnosed with uveitis by ophthalmologists were enrolled in the study group after exclusion. Each individual in the study group was age and sex matched to four non-uveitis individuals who serve as the control group. In addition to keratopathy, other possible risk factors and medications were included in the multivariate model, and the effects of different subtypes of uveitis for developing keratopathies were also analyzed.

Results: A total of 4773 uveitis patients (2662 male and 2111 female) and 19,092 non-uveitis patients (10,648 male and 8444 female) were enrolled. There were 406 events of keratopathy in the study group, and another 764 events occurred in the control group. A higher incidence rate was found in the study group after adjustment (adjusted hazard ratio [aHR]: 1.772), with a greater cumulative probability ($p < 0.0001$). For the subgroup analysis, anterior uveitis (aHR = 1.765) and panuveitis (aHR = 3.386) increased the risk of developing keratopathies. Moreover, male sex

was associated with a higher aHR than female sex for developing keratopathies in the study group.

Conclusions: The presence of uveitis significantly elevates the risk for developing keratopathy.

A Rare Case of Uveitis Secondary to Avelumab and Pembrolizumab in a Patient with Metastatic Renal Cell Carcinoma

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Purpose: Monoclonal antibodies targeting programmed cell death protein 1 (PD- 1) and programmed death-ligand 1 (PD-L1) are FDA approved for the treatment of many kinds of metastatic or unresectable cancer including renal cell carcinoma. We hereby report a rare case of both avelumab and pembrolizumab-induced uveitis to increase practitioner awareness.

Methods: To present a case report and review the literature.

Results: A 39-year-old man presented with onset of bilateral panuveitis after initiation of the fourth avelumab therapy for metastatic renal cell carcinoma. Avelumab was discontinued and switched to pembrolizumab. This patient was treated with topical and systemic corticosteroids, and the intraocular inflammation improved gradually. Unfortunately, bilateral panuveitis recurred after initiation of the third pembrolizumab. He was treated with topical and systemic corticosteroids again. Pembrolizumab was not discontinued due to good response to therapy. Pembrolizumab has been associated with rapid onset of ocular inflammation and uveitis. Incidence of pembrolizumab-induced uveitis is reported to be approximately 1%. However, there is no case report regarding avelumab associated uveitis. Uveitis, if left untreated, it may lead to ocular damage and permanent vision loss. Oncologists and ophthalmologists should be aware of this complication.

Conclusions: To date, this is the first case report of both avelumab and pembrolizumab-induced uveitis in a patient with metastatic renal cell carcinoma. With the increasing targeted pharmaceuticals in oncology, effective management of adverse events is necessary to ensure patient safety and optimal outcomes.

Acute Retinal Necrosis Associated With Pseudorabies Virus Infection: A Case Report and Literature Review

*First Author: Guangcan **XU***
*Co-Author(s): Xin **JIN**, Li **ZHAOHUI***

Purpose: To describe a case of acute retinal necrosis (ARN) associated with pseudorabies virus (PRV) infection and discuss the clinical characteristics of PRV-induced ARN (PRV-ARN).

Methods: Case report and literature review of ocular features in PRV-ARN.

Results: A 52-year-old female came to our clinic with acute bilateral vision loss five days after the onset of encephalitis and presented with mild anterior uveitis, vitreous opacity, occlusive retinal vasculitis in bilateral eyes, and retinal detachment in the left eye. Metagenomic next-generation sequencing (mNGS) results showed both cerebrospinal fluids and vitreous fluids were positive for PRV, and finally diagnosed with ARN.

Conclusions: As a zoonosis, PRV can infect both humans and mammals. With high mortality and disability, patients could manifest severe encephalitis and oculopathy once affected with PRV. ARN is the primary ocular disease, which appears shortly after encephalitis, characterized by bilateral onset, rapid progress, severe visual impairment, poor response, and unfavorable prognosis.

Appearance of Optic Neuritis in Non-infectious Uveitis With Cystoid Macula Edema

*First Author: Chi-Hsien **PENG***
*Co-Author(s): Kuan-I **HUANG***

Purpose: To report two cases with non-infectious uveitis and cystoid macular edema developing optic neuritis which were treated with oral steroid successfully in a 23-year-old female and a 41-year-old male, respectively.

Methods: Retrospective case reports.

Results: Case 1 was a 23-year-old lady presenting with bilateral blurred vision, and bilateral fundoscopy revealed vitritis, cystoid macular edema, and optic disc edema. Case 2 was a 41-year-old male with a history of HLA-B27 anterior uveitis complaining of right blurred vision, and vitritis, cystoid macula edema and optic disc edema were shown in his right eve. This event occurred following MVC COVID-19 vaccine 1 day. All the infectious markers including QuantiFERON-TB assay were unremarkable in both cases. Cranial MRI revealed increasing enhancement of optic nerve compatible with optic neuritis. Both cases were undergoing topical and oral steroids and uveitis resolved gradually. Cystoid macula edema and optic disc edema improved without recurrence at 6 months follow-up.

Conclusions: Non-infectious uveitis such as pars planitis could occur with optic neuritis. A common immunogenetic predisposition to optic neuritis and pars planitis perhaps could be further determined such as HLA-DR15 allele.

Are We Dealing With Vogt-Koyanagi-Harada Disease?

*First Author: Preethi **HEGDE***
*Co-Author(s): Vidya **MOOSS**, Kalpana **MURTHY**, Krishna **MURTHY**, Dhwani **SHAH***

Purpose: To report an interesting presentation of bilateral papillitis, exudative retinal detachment and tinnitus in a young lady.

Methods: A 30-year-old lady presented with bilateral progressive loss of vision, headache, tinnitus and impaired hearing. Her Best corrected visual acuity (BCVA) was counting fingers at 2 meters (OD) and hand movements close to face (OS). Fundus examination showed papillitis and exudative retinal detachment (OU). Fundus fluorescein angiography showed numerous punctate hyperflourescent dots with pooling in late phases & Indocyanine green angiography showed choroidal granulomas. Enhanced depth imaging optical coherence tomography showed diffuse choroidal thickening (OU). VDRL was positive (RPR titer 1:2) and TPHA positive (1:80). Cerebrospinal fluid analysis showed negative results, VDRL and neurological & systemic examinations did not reveal any abnormality. She was treated with intramuscular injection of benzathine penicillin 2.4 million units and pulse doses of IV Methyl Prednisolone 1gm/day for 3 days followed by oral steroids (1mg/kg) and antibiotics.

Results: At last follow-up for her BCVA was 6/36 (OD) and 6/60(OS). Fundus examination now showed depigmentary alterations, subretinal fibrosis and pigmentation with resolving disc edema and exudative retinal detachment.

Conclusions: This case is puzzling as the presentation is like VKH and patient has been diagnosed with Syphilis without neurological involvement. Syphilis is a great masquerader in medicine and Ocular syphilis can mimic other ocular inflammatory diseases including VKH. Further treatment is definitely challenging and will be discussed.

Atypical Manifestation of Mycobacterium Fortuitum Infection Presenting as Ocular Sarcoidosis

*First Author: Preethi **HEGDE***
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Purpose: We report a rare presentation of Latent Mycobacterial fortuitum infection presenting as Ocular Sarcoidosis.

Methods: A 62-year-old lady presented with granulomatous uveitis and cystoid macular edema. On examination, best corrected visual acuity (BCVA) was 6/60 and 6/18 in the right and left eyes respectively (OU). Fluorescein angiography showed diffuse retinal vascular leakages with a petaloid pattern of fovea. Indocyanine green angiography did not show any choroidal granulomas. Optic coherence tomography showed cystoid macular edema. A diagnosis of ocular sarcoidosis was made (revised IWOS criteria) on the basis of lymphopenia, negative Mantoux and QuantiFERON TB gold tests. Enlarged mediastinal lymph nodes, subpleural nodules and nodular interstitial thickening were seen on HRCT thorax. Non-necrotizing granulomatous inflammation, negative for mycobacteria on staining and geneXpert were noted on Endobronchial ultrasound guided transbronchial lymph node aspiration (EBUS-TBNA). Culture grew Mycobacterium fortuitum after 3 weeks.

Results: She was treated with suitable antibiotics by the pulmonologist. At 5 months follow up, she is doing well with no recurrences of inflammation and BCVA is 6/9 (OU).

Conclusions: A rare presentation of latent mycobacterium fortuitum infection presenting as ocular sarcoid is highlighted speculating the coexistence of two diseases in an individual, one possibly triggering the other.

Bilateral Chemosis in Patient With Systemic Lupus Erythematosus and Severe Hypoalbuminemia: A Case Report

*First Author: Eduard Jordi **LUMINTA***
*Co-Author(s): Yulia **AZIZA**, Dearaini **DEARAINI**, Regina **IVANOVNA**, Irma **SADIKIN***

Purpose: Systemic lupus erythematosus (SLE) is a systemic, multi-organ disease with numerous clinical manifestations. We would like to report a case of acute severe bilateral chemosis in a patient diagnosed with SLE and severe hypoalbuminemia.

Methods: A 30-year-old patient came to the emergency department with generalized edema, dyspnea, and a history of malaise 2 months before admission and was subsequently diagnosed with SLE with severe hypoalbuminemia (0.90 g/dL). Ophthalmological examination of the right eye showed palpebral edema, chemosis, and lagophthalmos with 5mm conjunctival exposure. Examination of the left eye showed palpebral edema, chemosis, and lagophthalmos with 18mm conjunctival exposure. Due to severe chemosis, left eye movement was also restricted to the inferior and inferonasal direction. Bedside visual acuity of both eyes was more than 3/60 and the other anterior and posterior segment examinations revealed normal conditions. A computed tomography scan was carried out to eliminate the possibility of soft tissue infection.

Results: Chemosis of the eye is a rare early sign of lupus. Chemosis was severe in this case due to conjunctival prolapse, which impaired eyelid closure. One proposed mechanism is hypoalbuminemia caused by associated nephrotic syndrome, while another is SLE-related conjunctival inflammation. Blood workup and imaging modalities could aid in differentiating various etiologies of chemosis, such as infection, allergy, hypoalbuminemia, or systemic diseases.

Conclusions: Systemic involvement shall be considered in acute severe bilateral chemosis. Early comprehensive management will influence long-term patient survival, prevent further organ damage, and improve quality of life.

Case Report – Central Retinal Artery Occlusion, Multifocal Choroidal Hypoperfusion and Bilateral Optic Perineuritis After COVID-19 Vaccine

*First Author: Yunhua **LOO***

Purpose: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV2), the causative agent of the coronavirus 2019 (COVID-19) pandemic, has caused more than 6.49 million deaths worldwide. The rapid global spread of the virus made vaccine development one of the top global health priorities and to date, more than 12.6 billion vaccine doses have been administered worldwide. While the most common side effects after vaccination were local reactions, a wide range of systemic and ocular complications is increasingly being reported.

Methods: This is a case report of de novo systemic eosinophilic granulomatosis with polyangiitis (EGPA), presenting with multiple ocular manifestations, triggered after COVID-19 vaccination.

Results: A 61-year-old Chinese female, with no prior history of vasculitis, received 2 doses of Tozinameran COVID-19 vaccine and developed systemic EGPA with cilioretinal artery sparing central retinal artery occlusion, multifocal choroidal hypoperfusion and bilateral optic perineuritis. There were also multiple systemic manifestations, including eosinophilic cardiomyopathy, mononeuritis multiplex, sinusitis, and glomerulonephritis. The patient received intravenous methylprednisolone, followed by rituximab and cyclophosphamide and made good visual recovery. She was subsequently maintained on oral mycophenolate and low dose oral prednisolone.

Conclusions: The rapid and unprecedented timeline for the development of COVID-19 vaccines meant that long term safety data is still lacking, and the complete spectrum of adverse effects is yet to be fully understood. Our clinical case highlights the importance of continued surveillance and reporting of new adverse reactions. Further research into the mechanisms underlying vaccine-induced autoimmunity is warranted and will help to refine the technology for future vaccine development.

Choroidal Tuberculoma and Cytomegalovirus Retinitis Co-infection With Immune Reconstitution Inflammatory Syndrome in Patient With Human Immunodeficiency Virus

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*Co-Author(s): Hazirah **MARZUKI**, Rosiah **MUDA**, Julieana **MUHAMMED***

Purpose: To report a case of combined infection of choroidal tuberculoma and cytomegalovirus (CMV) retinitis with immune reconstitution inflammatory syndrome (IRIS) in patient with human immunodeficiency virus (HIV).

Methods: To present a case report.

Results: A 42-year-old lady with HIV infection for 20 years without regular follow-ups, presented with gradual, painless reduced vision in the left eye for 1 month associated with prolonged cough and significant weight loss. Her right visual acuity was 6/6 and 2/60 over left eye. Anterior segment examination was normal in both eyes. Fundus examination of the left eye showed presence of large choroidal granuloma along inferotemporal arcade measuring about three-disc diameter involving macula with subretinal hemorrhage. Mantoux test was positive (15 mm), but chest x-ray was normal. CD4 counts was 48 cell/mm3. Anti-tubercular treatment was started which led to improvement in vision and choroidal tuberculoma. However, five weeks later, she was noted to have concurrent CMV infection, hence required intravenous and multiple intravitreal injections of ganciclovir. Apart from that, she also developed recurrent episodes of worsening choroidal lesion due to IRIS following introduction of highly active anti-retroviral therapy (HAART) and interruption of anti-tuberculous treatment because of its side effect. Despite of multiple infections and treatments challenges, her left vision was gradually improved. During her last visit, her vision was 6/9 with reduction size of choroidal tuberculoma and resolving subretinal hemorrhage.

Conclusions: Concurrent opportunistic infections in the same eye are rare but possible in patient with severe immunodeficiency. In spite of challenges in managing these co-infections, the prognosis is good with rapid diagnosis, proper treatment and multidisciplinary approach.

Clinical Factors Affecting Elimination of Viral-DNA in Aqueous in Cytomegalovirus Anterior Uveitis

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Purpose: To analyze the factors that affect negative conversion of cytomegalovirus (CMV)-DNA in the aqueous in cytomegalovirus anterior uveitis.

Methods: We retrospectively reviewed 41 eyes of 40

patients with cytomegalovirus anterior uveitis who underwent more than half a year observation and at least twice real-time PCR of aqueous humor during follow-up period. Patients were classified into two groups according to whether negative conversion of CMV-DNA in the aqueous was confirmed or not after anti-viral treatment (NC and non-NC group) and compared background and clinical course.

Results: Thirty eyes were confirmed negative conversion of CMV-DNA in the aqueous during the follow-up period. The mean duration from diagnosis to negative conversion was 15.7 ± 21.1 months. The amount of CMV-DNA at the diagnosis of non-NC group was significantly higher than that of NC group (p =0.0059). Reduction of endothelial cell density during follow-up period was -75.1 ± 166.4 cells/mm2/year in NC group and -278.8 ± 261.8 cells/mm2/year in non-NC group respectively (p =0.022). Significant risk factors for inability of negative conversion were high copy number of CMV-DNA at diagnosis [>1.0×105 copies/ mL, Odds ratio (OR): 6.6 (95 % confidence interval (CI) 1.4-48.7)] and male [OR 7.6 (95 % CI 1.2-149.5)]. Seven eyes in NC group showed re-positive conversion. Six of 7 eyes were reduced or discontinued topical ganciclovir within 3 months before re-positive conversion.

Conclusions: Negative conversion of CMV-DNA was confirmed in over 70% of eyes with cytomegalovirus anterior uveitis after anti-viral treatment. The impeding factor for elimination of CMV-DNA could be high amount of DNA at diagnosis and male.

Clinical Manifestation and Management of Ocular Behcet's Disease

*First Author: Hartawan Tjahjadi **PUTRA***
*Co-Author(s): Ovi **SOFIA***

Purpose: The study aims to define the clinical manifestation and management of Ocular Behcet's Disease (BD) patients at Dr. Saiful Anwar General Hospital Malang.

Methods: A retrospective study of patient's medical records diagnosed with ocular BD was conducted from January 2016 to December 2020. The collected data were demographic, clinical manifestation and treatment until 12 months follow-up.

Results: There were 12 eyes of 6 ocular BD's patients. The mean age was 30-39 years, 83,3% were males. All patients complained blurred vision with glare, redness, or pain. They reported recurrent oral ulcers (100%), skin lesions (83,3%) and genital ulcer (16,6%). The visual acuity was improving in 50% patients. Anterior segment examination found transient mobile hypopion (1 patient) and Fine keratic precipitates (100%) which disappeared in follow-up (83,3%). Grading cells were 25% in grade <2+, 75% in grade >2+, which also improving in follow-up (75%). Vitreous cells grading was 16,6% in grade <2+, 83,3% in grade >2+, and 50% patients had improvement. Retinal vasculitis was found in all patients. The complications were cystoid macular edema (33,3%), complicated cataract (25%), retinal detachment (16,6%), and secondary glaucoma (8%). The therapy was either combination of steroid and azathioprine (83,3%) or combination of steroid and cyclosporine-A (16,6%).

Conclusions: Combination oral corticosteroid and immunomodulator treatment showed an improvement in ocular BD's patients. Cystoid macular edema is the most common complication.

Clinical Profile and Pattern of Uveitis in a Tertiary Care Hospital in Malaysia

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*Co-Author(s): Lee **FEI YEE**, Tajunisah **IQBAL**, Penny Pooi Wah **LOTT**, Sagili **REDDY***

Purpose: To determine the demographic pattern and clinical profile among uveitis patients in a tertiary care hospital.

Methods: This is a prospective cross-sectional study, in which clinical records of all patients with newly diagnosed uveitis over a 4-year period from January 1, 2017, until December 31, 2020, were analyzed.

Results: A total of 288 patients were recruited during the study period. The mean age at presentation was 48.7 years old. The male-to-female ratio was 1:1.2. Anterior uveitis was the most common anatomical diagnosis (50.3%) followed by panuveitis (25.0%), intermediate uveitis (4.5%), and posterior uveitis (4.5%). In 80 infectious uveitis cases, herpetic anterior uveitis was the most common cause, followed by endogenous bacterial endophthalmitis and toxoplasmosis. In 89 non-infectious uveitis cases, Vogt-Koyanagi-Harada (VKH) disease, sarcoidosis and HLA-B27-associated uveitis were the leading causes. Mostly presented with unilateral, non-granulomatous uveitis with an absence of hypopyon. Ocular complications were detected in 101 patients (35%).

Conclusions: About 60% of patients had an identifiable cause for the uveitis. Non-infectious causes (30.9%) were more than infectious causes (27.8%). The most common complication in our uveitis patients was glaucoma (16.7%), followed by cystoid macula edema (6.6%) and cataract (4.9%).

Diagnostic and Therapeutic Challenges in Managing Coats Disease with Presumed Ocular Toxocariasis – A Case Report

*First Author: Hui Gim **KHOR***
*Co-Author(s): Penny Pooi Wah **LOTT**, Azida Juana **WAN AB KADIR**, Nurliza **KHALIDDIN***

Purpose: To report a case of concurrent Coats disease with ocular toxocariasis in a child.

Methods: To present a case report.

Results: A seven-year-old, cat-loving-boy was noticed

by the teacher that he had difficulties seeing in class, without having other eye complaints. The right eye's visual acuity (VA) was 6/9, while the left eye (OS) was 6/36. The relative afferent pupillary defect was negative with normal anterior segment. Xanthocoria was noted over the OS. OS's fundus showed a one-disc diameter hypopigmented macula lesion surrounded by extensive hard exudates but no feeder's vessels or vitritis. Optical coherence tomography of the macula revealed a dome-shaped lesion without subretinal or intraretinal fluid. QuantiFERON-tuberculosis gold, toxoplasmosis and toxocariasis's serologies were negative. Magnetic resonance imaging of the orbit demonstrated an enhancing focus at the posterior wall of the OS. Amid investigation, he defaulted follow-up due to the COVID-19 pandemic and came back three months later with the worsening of OS's VA to 3/60. The macula lesion enlarged, resembling granuloma with the presence of the subretinal fluid. Fluorescein angiography portrayed light-bulb telangiectasia, perivascular leakages and capillary dropout areas at the temporal retina. The impression was OS Coats disease with presumed ocular toxocariasis. He was given albendazole, oral prednisolone and serials intravitreal anti-vascular endothelial growth factor (VEGF). Ablative laser was commenced over the capillary non-perfusion area. The final VA was 6/60, with neither worsening of macula lesion nor the emergence of neovascularization.

Conclusions: Prompt treatment to tackle these was crucial as they are sight-threatening. Anti-VEGF and laser therapy remain essential armamentariums in treating Coats disease.

Epidemiology of Posterior Segment Uveitis in Hong Kong

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Purpose: To evaluate the epidemiology and etiologies of posterior segment uveitis (PSU) in Hong Kong.

Methods: This was a retrospective cohort study in which a total of 279 consecutive patients presented with posterior, intermediate or panuveitis from January 2011 to December 2020 in the Uveitis and Medical Retina Clinic in a tertiary hospital in Hong Kong were reviewed. The most common disease entities, anatomical types and age distribution were measured.

Results: The mean age of patients at presentation was 46.2 ± 18.8 years (range from 4.1 to 89.5 years). There were 47% males and 53% female. The age distribution was similar between males and females. Posterior uveitis was the most common anatomic type of PSU (38%) followed by panuveitis (34%) and intermediate uveitis (28%). The causes were most commonly idiopathic (42%), followed by infectious (30%), systemic autoimmune mediated (26%) and neoplastic (2%). The five most common disease entities were idiopathic intermediate uveitis (24%), Vogt-Koyanagi-Harada disease (15%), cytomegalovirus retinitis (9%), Behcet's disease (8%) and endophthalmitis (5%). The most common disease entities for infectious PSU were cytomegalovirus retinitis (9.3%), endophthalmitis (5%), toxoplasmosis (4%) and tuberculosis (4%).

Conclusions: Idiopathic accounted for the most common cause for PSU in Hong Kong. The most common infectious disease entity was cytomegalovirus retinitis.

Exophytic Retinal Mass Lesion of Uncertain Etiology Secondary to Focal Retinitis – Diagnostic and Therapeutic Challenge

*First Author: Nagesha **CHOKKAHALLI***

Purpose: Reactive proliferation of retinal glial cells or adjacent vascular components develops secondary to focal retinitis, chorioretinitis and other uveitic conditions. Clinically many such lesions may mimic vasoproliferative tumors, astrocytomas and granulomas. Detailed clinical and systemic workup along with relevant imaging is necessary for correct diagnosis and management. However, some cases may remain challenging till the end. Herein, we discuss a rare case of exophytic retinal mass which progressed relentlessly despite all attempted treatments.

Methods: Exophytic retinal granulomas are rare presentations and are usually secondary to tuberculosis or sarcoidosis. A 24-year-old male was referred for persistent posterior uveitis refractory to steroids and immunosuppressives. The lesion began with, focal retinitis like lesion and gradually progressed to an exophytic mass with total retinal detachment.

Results: Histological sample from the mass lesion showed an early granuloma-like picture on cytology. Tests for chronic granulomatous diseases and malignancies were negative. Eventually, the eye developed neovascular glaucoma.

Conclusions: This case discusses the difficulty in ascertaining clinical and histological diagnosis in cases of retinal granulomas and the dilemmas in treatment options.

Infectious Endophthalmitis after Ahmed Glaucoma Valve Implant Surgery in South Korea : Single Center Cohort Study

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Purpose: To report the clinical features, microbiological laboratory results, and treatment outcomes of endophthalmitis after Ahmed glaucoma valve (AGV) implant surgery at a single tertiary referral center in South Korea.

Methods: We retrospectively reviewed the records of

290 consecutive patients who underwent AGV implant surgery from January 1, 2010, to May 31, 2022. Data on clinical course, microbiological laboratory results, and treatment were analyzed.

Results: Of 310 eyes that underwent AGV implant surgery, 9 eyes (2.90%) developed endophthalmitis. The mean time interval between AGV implant surgery and diagnosis of endophthalmitis was 3.59 years (range 33 days–9.90 years). For initial treatment, 8/9 eyes underwent injection of intravitreal antibiotics, and 4/9 eyes underwent primary pars plana vitrectomy. The implanted valve was removed in 7 cases. In four cases, organisms were found in the culture (Streptococcus pneumoniae, Mycobacterium abscessus, Staphylococcus capitis). 6 patients noticed symptoms prior to receiving the initial diagnosis of endophthalmitis and mean time from symptom onset to diagnosis is 1.8 days. Overall, only 2 patients achieved a final best-corrected visual acuity (BCVA) above 20/200 compared with other 5 patients who had a final BCVA of hand motion or worse.

Conclusions: AGV implant–related endophthalmitis is rare and often leads to poor visual outcome, and its onset is difficult to predict. Therefore, patients who undergo AGV implant surgery should be educated during regular follow-ups, and prompt evaluation and treatment is required for the patients who presented symptoms after the surgery.

Management of Active Ocular Toxoplasmosis in Pregnancy: A Case Series

*First Author: Jose Carlo **ARTIAGA***
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Purpose: Ocular toxoplasmosis is the most common cause of infectious posterior uveitis. Studies suggest that ocular toxoplasmosis may have increased incidence and severity during pregnancy. The classic treatment of pyrimethamine, sulfadiazine, prednisolone and folinic acid has known fetal side effects. This study intends to describe approaches in the management of ocular toxoplasmosis in pregnancy in a single institution, and to describe maternal outcomes of treatment.

Methods: Single-center, non-comparative, retrospective case series is presented. Patients with active toxoplasmosis during pregnancy were identified via electronic medical record search. Descriptive statistics were used to analyze baseline demographics and treatment outcomes. Patients were further divided into 3 groups: patients with completed follow-up, patients with incomplete follow-up, and patients who were on treatment upon discovery of pregnancy.

Results: A total of12 pregnancies from 11 patients were identified. Five patients completed the follow-up visits, 3 patients had incomplete follow-up visits, and 2 patients were on treatment upon discovery of pregnancy. One patient had 2 episodes of active toxoplasmosis. Ninety-two percent of patients received topical treatment. Eighteen percent received intravitreal medications. Thirty-six percent of patients were given oral antibiotics. Eighty-three percent of patients completing visits had visual improvement following treatment.

Conclusions: Patients with non-visual threatening ocular toxoplasmosis can be treated conservatively with topical steroids alone. Combined intravitreal antibiotic-steroid injections are potent options to prevent systemic fetal side effects. Pyrimethamine and cotrimoxazole should be avoided during the first trimester of pregnancy; spiramycin and atovaquone appear to be safe and effective alternatives. Pregnancy testing is suggested for women of childbearing age prior to starting anti toxoplasma medications.

Mycophenolate Mofetil As Second Line Agent in ANCA Associated Vasculitis: A Case Report

*First Author: Anis **AZMI***
*Co-Author(s): Mohd Faizal **HARON***

Purpose: A case report on the use of Mycophenolate mofetil in the treatment and for reducing relapse in antineutrophil cytoplasmic antibody, or ANCA-related granulomatosis with polyangiitis.

Methods: A 22-year-old-lady with recurrent episodes of ANCA positive anterior scleritis showed poor response to topical and systemic steroid treatment. A year later, she presented with epistaxis and proptosis secondary to orbital and sinonasal vasculitis. Sinonasal mucosal biopsy revealed ANCA–related Granulomatosis with polyangiitis. She was on multiple steroids sparing agent, however her symptoms continued to relapse until the initiation of Mycophenolate mofetil (MMF). ANCA-related GPA is a systemic autoimmune disease of unknown aetiology that is characterized by granulomatous inflammation, tissue necrosis, and vasculitis in small to medium sized vessels. MMF is a prodrug of Mycophenolic acid (MPA), an inhibitor of inosine monophosphate dehydrogenase (IMPDH) that prevents purine synthesis of B and T cells. T cells are the crucial and key players in GPA disease pathogenesis.

Results: Improvement of ocular symptoms after initiation of MMF.

Conclusions: MMF is a potent immunosuppressant and effective towards ANCA-related GPA.

Necrotizing Retinopathy in a Case of Geographic Helicoid Peripapillary Choroidopathy

*First Author: Amitabh **KUMAR***
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Purpose: To report a rare case of necrotizing retinopathy in a young immunocompetent patient with geographic helicoid peripapillary choroidopathy (GHPC)

in the same eye.

Methods: To present an observational case study.

Results: A 22-year-old male, immunocompetent patient had GHPC in both eyes along with a necrotizing retinitis in the posterior pole of the left eye. He had no history of any immunosuppressive therapy at the time of presentation. A polymerase chain reaction (PCR) from the vitreous sample detected herpes simplex virus-2 (HSV-2). The patient was treated with systemic antivirals and systemic steroids which led to the resolution of posterior segment inflammation and the retinitis lesion.

Conclusions: This association may represent a common viral aetiologic agent for both the diseases. This report also highlights the importance of aqueous or vitreous biopsy for detection of an aetiologic agent for appropriate therapy.

Optic Disc Edema Due to Inflammatory Peripapillary Subretinal Neovascularization Membrane Treated With Anti-VEGF Therapy in a Young Man With Atopic Dermatitis

*First Author: Chi-Hsien **PENG***
*Co-Author(s): Yi-Ting **LIANG***

Purpose: To present a rare case with unilateral optic disc edema due to peripapillary subretinal neovascularization membrane (PSRNVM) treated with intravitreal anti-VEGF injections successfully in a 31-year-old male with atopic dermatitis.

Methods: To present a retrospective case report.

Results: A 31-year-old male was a porter with multiple hand wounds due to atopic dermatitis. He complained of left blurred vision for several weeks presenting with optic disc edema, PSRNVM, and submacular hemorrhage in his left eye. His past history included oral doxycycline and azithromycin treatment because of suspected cat-scratch diseases from hand wounds. On examination, his vision was 6/6 in his right eye, and counting finger at 20cm in his left eye. Left fundoscopy revealed marked disc edema due to thick PSRNVM with surrounding submacular hemorrhage. A complete neovascularization membrane with subretinal fluid was visible obviously by OCTA as well as by FA.
All the infectious or non-infectious markers were unremarkable, and cat-scratch assay was unavailable in Taiwan. He was treated with three intravitreal injections of anti-VEGF agents and oral corticosteroid. His left vision improved to 6/12 with the disappearance of PSRNVM. His left optic disc edema with submacular hemorrhage improved gradually with regular follow-up for several months.

Conclusions: Optic disc edema due to PSRNVM was rare to be reported, and work-up with different modalities was extremely valuable. Anti-VEGF injections may help decrease optic disc edema and improve visual outcomes due to the disappearance of PSRNVM.

Plight of Pet Lovers: Bartonella Neuroretinitis Case Series

*First Author: Khadijah **MUSTAFA***
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Purpose: To report a case series of neuroretinis secondary to cat-scratch disease.

Methods: A case series.

Results: All three male patients aged between 21 and 32 years old were presented with sudden onset painless blurring of vision over the left eye (LE) for approximately 1 week and had history of fever prior to ocular symptoms with a positive history of contact with pet cats. They presented with LE poor vision with positive relative afferent pupillary defect over LE. Fundus examination for each patient showed neuroretinitis characterized by optic disc swelling with macula star except for one patient who had angiomatous proliferation over the optic disc with preretinal bleed over superior temporal region. Optical Coherence Tomography (OCT) macula of all cases showed exudative fovea detachment with surrounding retinal exudates. Bartonella henselae serology was positive in all three patients. Two cases were treated with oral Azithromycin and 1 was given oral Doxycycline and Rifampicin. Due to poor vision upon presentation, all three patients were started with oral prednisolone. Two patients attained good final vision, however 1 patient had poor final vision due to macula ischemia.

Conclusions: With a presentation of optic disc edema and a macular star, combined with a history of a cat scratch or contact with cats, cat scratch neuroretinitis should be considered in the differential diagnoses. Good vision can be achieved with systemic steroids and antibiotics.

Possible SARS Cov2 Related CMV Retinitis in a Young Immunocompetent Patient

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Purpose: To demonstrate a possible association between SARS Cov2 infection and CMV retinitis in a young Immunocompetent patient.

Methods: A 29-year-old male was presented with drop in vision in left eye for 5 days. His vision was counting finger 1½ mt., with fundus showing classical pizza pie retinopathy s/o CMV retinitis. There was no past history of any systemic illness. His viral profile came out negative for HIV, HBsAg and HCV. Since he presented during 2nd COVID wave & a lot of association b/w ocular inflammation and COVID was being made, he was asked for h/o COVID infection which he denied. Also, he was not vaccinated.

Results: To rule out past COVID, he was advised to get IgG antibodies for SARS-CoV-2 which came out positive. CMV retinitis was treated with intravitreal ganciclovir plus oral valgancyclovir and the retinitis resolved. At 2 months' follow-up, vision improved to 6/9.

Conclusions: CMV retinitis occurring in a young immunocompetent person possibly indicates a potential causal association b/w Sars-CoV-2 and CMV, which may result in potentially severe ocular disability if not diagnosed timely. Luckily, our patient had a good visual outcome.

Pre- and Post-treatment Correlation of Choroidal and Central Macular Thickness in Post-fever Retinitis

*First Author: Isha **ACHARYA***
*Co-Author(s): Ankush **KAWALI**, Padmamalini **MAHENDRADAS**, C.v Sai **PRASHANTI**, Sanjay **SRINIVASAN***

Purpose: To study the variability of the choroidal thickness (CT) and central macular thickness (CMT) in post-fever retinitis.

Methods: A retrospective, observational study was conducted including patients of post-fever retinitis with spectral domain optical coherence tomography (SD-OCT) -enhanced depth imaging (EDI) scans for measurement of CT and CMT at both presentation and final visit. CT was measured by two observers at subfoveal and at points 2000µm superior, inferior, medial, and lateral from the fovea. Patients were treated with doxycycline/ciprofloxacin and/or steroids.

Results: A total of 79 eyes of 65 patients with a mean age of 39.03 years with 53.16% females were included. Majority of the eyes presented with vitritis (n = 21 ,26.6%) and focal/ multifocal retinitis patches (n = 49 ,62.02%) predominantly in the posterior pole. The mean follow-up was 30 days. Mean CT/CMT at presentation and at follow-up were 254.12 µm and 241.51 and 454.8 µm and 223.7 µm respectively. The interobserver agreement CT and CMT calculation were significant (p - value < 0.05). CT was decreased in most eyes (67.1%, n = 53), on the final visit. Acute cystoid macular oedema was observed in 62.02% (n = 49) eyes and the majority showed a reduction in CMT (74.68%, n = 59) at the last visit. Visual acuity positively correlated with CMT (r = 0.340) and negligible correlation with CT. A significant decrease in mean CT was noted in patients who received doxycycline and/or steroids (p < 0.001).

Conclusions: CMT has a more significant role in determining visual outcomes than CT. CT can be reduced post-treatment with no effect on vision.

Protean Clinical Manifestations of Ocular Tuberculosis – A Case Series, Update on OTB Treatment Including Management of Recurrence

*First Author: Amit **DEB***
*Co-Author(s): Shreays **TEMKAR***

Purpose: Ocular tuberculosis (OTB) can affect any ocular tissue of the eye and manifests most commonly as TB uveitis. We, hereby, present a series of three cases of ocular TB with protean manifestations along with a literature review of various treatment options for OTB including management of recurrence.

Methods: There were three cases. First, a 35-year-old female presented with blurring of vision in LE. Fundus showed LE active multifocal choroiditis (MFC) while RE showed healed MFC scars. She was diagnosed with RE neuro-retinitis and probable ocular TB 4 years ago and treated with anti-tuberculosis therapy (ATT). This was followed 1 year later by RE MFC, and nodular LE scleritis another 1 year later. Second, a 55-year-old female presented with LE floaters. Fundus examination showed LE Vitreous snowball opacities along with retinal vasculitis. Lesions resolved within 2 months of starting ATT alone. Third, a 38-year-old female presented with LE pain and redness. She had LE nodular scleritis.

Results: All the three cases tested positive for Mantoux and were treated with ATT. The first case was treated with concomitant systemic steroids during the first episode, while the subsequent recurrent episodes were treated with steroids and immunosuppressants. The second case needed no concomitant systemic steroids while the third required concomitant systemic steroids. The last two cases completed 6 months of follow-up with no recurrence.

Conclusions: Protean clinical manifestations, a lack of consensus on the diagnosis, and an absence of standard guidelines on management potentiate the problem of ocular TB management. Recurrence is quite common in OTB, and the cases need long-term follow-up.

Pulmonary Metastasis Masquerading as an Iris Tumor

*First Author: Wan Hua **CHO***
*Co-Author(s): Shu-Chun **KUO***

Purpose: To report a case in which an iris lesion with anterior uveitis led to the detection of lung cancer.

Methods: A case report was presented.

Results: A 47-year-old male presented to our clinic with red eye (OD) for 1 week. Ocular examination revealed a best-corrected visual acuity (BCVA) of 0.8 (OD) using Landolt C chart. The ocular findings involved a translucent nodular lesion sized 0.5mm x 1mm with vessel ingrowth on inferior-nasal iris, and

cells in the anterior chamber (OD). Routine uveitis blood survey had no remarkable findings, while chest plain film showed left lower lung primary tumor 3.2cm with daughter nodules and metastatic subcarinal and left hilar lymph nodes. The iris tumor progressed rapidly as an enlarged vascularized mass with iris neovascularization despite the use of topical steroids, and BCVA decreased to only hand motion with elevated intraocular pressure (IOP) (OD) due to pupillary block detected. Intravitreal injection of Bevacizumab was given and a laser peripheral iridotomy was applied for IOP stabilization. On the same time, left lung CT guide biopsy was performed which revealed squamous cell carcinoma. He was now receiving chemotherapy and regular ophthalmic follow-up.

Conclusions: When evaluating patients with iris tumor or anterior uveitis that is refractory to topical steroid, masquerade syndromes like metastasis should be taken in to consideration. Treatments and outcomes of the cases reported in the previous literature were very individualized; each patient must be assessed on an individual basis, and a treatment plan must be tailored to fit the patient's and caregiver's goals.

Recalcitrant Bilateral Choroidal Tuberculomas in a Case of Disseminated TB: A Case Study in Holistic Management

*First Author: Kaustubh **HARSHEY***
*Co-Author(s): Harsh **SAXENA***

Purpose: To report a rare case of bilateral recalcitrant choroidal tuberculomas and the management in a patient with disseminated tuberculosis (TB).

Methods: To present a case report. A 23-year-old girl presented with decreased vision in right eye (RE) (best corrected visual acuity {BCVA} counting fingers at 1 meter) more than left eye (LE) (BCVA: 6/9) and was diagnosed to have bilateral large choroidal tuberculomas with subretinal fluid (SRF) involving the macula. The patient was also diagnosed to have disseminated pulmonary and cerebral TB elsewhere and was on antitubercular therapy (ATT) before, but supportive oral corticosteroid therapy was withheld by the primary physician. The patient was managed with bilateral weekly injections of intravitreal bevacizumab with intravitreal moxifloxacin along with concurrent oral corticosteroids.

Results: The patient achieved bilateral reduction in the size of the tuberculomas and resolution of SRF at 1 month post initiation of treatment. The BCVA at 1 month follow up was 6/18 in RE and 6/6 in LE. However, recurrence of SRF did occur later in the course of treatment which required repeated intravitreal bevacizumab for maintenance.

Conclusions: Progressive increase in the size of choroidal tuberculomas can occur in patients with disseminated TB with reduction in visual acuity due to subretinal fluid at the macula. Intravitreal anti-vascular endothelial growth factor agents are the treatment of choice along with concurrent oral ATT and corticosteroids, but multiple such injections maybe required.

Rising Trends of Ocular Syphilis at Tertiary Care Center in India: A Retrospective 7-Year Review

*First Author: Dipankar **DAS***

Purpose: To analyze trends and characteristics of ocular syphilis in patients presenting to a tertiary care center.

Methods: The data were retrospectively collected from 2015 to 2022. All the patients who presented with ocular complaints and later diagnosed to be suffering from syphilis based on the clinical presentation, reactive Venereal Disease Research Laboratory (VDRL) test and a Treponema pallidum hemagglutination assay (TPHA) test were included in the study.

Results: A total of 12 cases were documented from 2015 to 2022. The most common symptom these patients presented was a diminution of vision. Anterior chamber cells present in three cases, retinal vasculitis in two cases, optic atrophy in two cases, pan-uveitis in two cases, macular star formation in one patient and one patient did not show any signs of active ocular inflammation. HIV status was positive in four cases.

Conclusions: This study shows a rising trend of syphilis in our part of India.

Role of Interferon Alpha Therapy for Macular Oedema in Case of Bilateral Diffuse Uveal Melanocytic Proliferation

*First Author: Atul **THADANI***
*Co-Author(s): Poornachandra B. B **GOWDA**, Padmamalini **MAHENDRADAS**, Rohit **SHETTY***

Purpose: To highlight the role of Interferon Alpha (IFNα) therapy in refractory macular oedema in case of bilateral diffuse uveal melanocytic proliferation (BDUMP) secondary to metastatic lung Carcinoma.

Methods: A 75-year-old male with metastatic lung Carcinoma, developed blurring of vision after 2 weeks of immunotherapy. Multiple Neurosensory Detachments with pigment clumps were seen in both eyes on fundoscopy. OCT showed multiple diffuse Retinal Pigment epithelium (RPE) abnormalities and Fundus Autofluorescence showed scattered hypo with hyper autofluorescence spots (Giraffe Skin Pattern). AC tap cytology revealed pigmented melanocytic cells. Systemic chemotherapy & steroids were started, and immunotherapy was discontinued. Multiple Anti-VEGF injections were tried but failed to cause resolution. Hence, IFNα topical therapy was started.

Results: The patient showed complete resolution of NSDs with clinical resolution within 4 weeks of starting IFNα therapy. At presentation, tears showed high levels

of MMP-9, IL-1b, ICAM-1, IL-17A, and TNFα which were resolved following treatment.

Conclusions: The management of declining vision in BDUMP syndrome is challenging and controversial. The IFNα Topical therapy provided a potential vision-preserving effect in refractive macular oedema in BDUMP.

Solving Yet Another Ocular Sarcoid Puzzle

*First Author: Vidya **MOOSS***
*Co-Author(s): Preethi **HEGDE**, Kalpana **MURTHY***

Purpose: Hypopyon is observed in 0.86%-4.6% in anterior uveitis. Generally, it is seen with HLA-B27 positivity, spondyloarthropathies, Behcets disease, infections and drugs such as rifabutin. Very rarely it has been reported in juvenile idiopathic arthritis, inflammatory bowel disease and rheumatoid arthritis. We report an atypical and rare presentation of hypopyon uveitis in ocular sarcoidosis.

Methods: A 68-year-old lady was referred for evaluation of bilateral hypopyon uveitis. She had a history of bilateral cataract surgery 8 months ago and received intravitreal dexamethasone implants for recurrent bouts of anterior uveitis with Cystoid Macular Edema 4 months ago. Systemic history was significant for diabetes mellitus and recurrent skin lesions. Aqueous tap was negative for infection on culture and PCR. Skin biopsy showed non-necrotizing granulomas, negative for Tuberculosis bacilli and fungi, suggestive of sarcoidosis. She received oral steroids and methotrexate 15mg/week.

Results: There was complete resolution of skin and ocular lesions at 3 months follow up. This case highlights a rare presentation of hypopyon in ocular sarcoidosis.

Conclusions: We report a rare and unusual presentation of ocular sarcoidosis as hypopyon uveitis in this case report.

Treatment Challenge of Endogenous Fungal Endophthalmitis Followed by Choroidal Detachment: A Case Report

*First Author: Irma **SADIKIN***
*Co-Author(s): Yulia **AZIZA**, Dearaini **DEARAINI**, Regina **IVANOVNA**, Eduard Jordi **LUMINTA***

Purpose: Endogenous fungal endophthalmitis (EFE) is an uncommon disease that causes vision loss by the spread of fungal infection to the ocular posterior segment. The majority of patients have predisposing risk factors, such as immune system disorders. Here, we reported an unusual case of EFE in an immunocompetent patient complicated by choroidal detachment with vision improvement.

Methods: A 59-year-old woman complained of progressive blurry vision after exposing her left eye with floor cleaning solution two days prior to admission. She received oral and topical steroid, artificial tears and atropine sulfate 1%. The patient had history of uneventful left cataract surgery 2 months ago and denied any systemic problems. Presenting visual acuity was 6/21 with minimal conjunctival injection, anterior chamber inflammation and Ultrasonography revealed hazzines in posterior chamber. Microorganism culture results revealed Candida parapsilosis. Systemic and topical antifungal administration, irrigation and aspiration of fibrin with intravitreal and intracameral injection of antifungal were performed. One day after the surgery, visual acuity worsened. Ultrasonography revealed choroidal detachment that eventually improved with oral steroid administration.

Results: A diagnosis of EFE is challenging due to its late onset. EFE should be considered as a likely diagnosis when patients with predisposing characteristics, such as history of surgery, trauma, or hospitalization, come with uveitis, mainly if signs and symptoms develop despite empirical treatment. Identifying early signs with close follow-up may reduce the possibility of misdiagnosis.

Conclusions: This case highlights the importance of the combination of systemic and intravitreal antifungals, early vitrectomy, and vigilant monitoring for the favorable visual outcome of EFE.

Two Cases of Systemic Lupus Erythematosus Associated Retinopathy, One Presenting With Primary Ophthalmic Manifestations and Other Following Lupus Nephropathy

*First Author: Satabdi **NANDA***

Purpose: Systemic lupus erythematosus (SLE) is a chronic, autoimmune, connective tissue disorder with multisystemic involvement. Close to one third of SLE patients have ocular manifestations, of which retinal vasculitis and optic neuropathy are most vision threatening. We aim to showcase two such cases treated recently in our OPD

Methods: The first patient is a 33-year-old female presenting with sudden onset of diminution of vision in the left eye, presenting with hyperemic disc, cotton wool spots, perivascular exudation and hemorrhages and macular edema. She had patchy hair loss and hyperpigmentation above eyebrows and nose. The second case is a 16-year-old female, established case of renal biopsy-confirmed lupus nephritis on oral steroids and hydroxychloroquine, presenting with diminution of vision in her left eye. Clinically, she had disc pallor, cotton wool spots, macular exudates and ischemia with neovascularization of disc.

Results: On detailed investigations, the first patient was found to have raised ESR, decreased complement levels, positive ANA. FFA showed multiple arterial occlusions, flower petal pattern of leakage and perivascular leakage. FFA in the second case was

suggestive of vasculitis, severe macular ischemia, multiple collaterals and neovascularization of the disc. Both of them were put on two weekly intravenous injections of Cyclophosphamide along with systemic corticosteroids for adequate control of inflammation following with laser photocoagulation was planned to the ischemic retina.

Conclusions: Vascular reperfusion and visual recovery was noted in the first case. The second case is still being followed up. SLE associated retinal vasculitis is an indicator of active disease,may be associated with cerebral lupus and hence requires aggressive immunomodulation.

Typical and Atypical Presentation of Tubulointerstitial Nephritis and Uveitis (TINU) Syndrome

*First Author: Sumeet **LAHANE***
*Co-Author(s): Shruti **MARU***

Purpose: Tubulointerstitial nephritis and uveitis (TINU) syndrome is a rare form of ocular inflammation, with the only systemic manifestation being acute interstitial nephritis. We report a series of 2 cases with TINU from 2 centers, which presented with ocular abnormalities after being diagnosed with interstitial nephritis.

Methods: One patient underwent renal biopsy which confirmed acute interstitial nephritis (AIN), was thus diagnosed as having definite TINU syndrome. For the second patient, blood investigations revealed elevated creatinine, proteinuria and increased β2 microglobulin, following which they were diagnosed with possible TINU syndrome as per Mandeville's diagnostic criteria.

Results: It is important to have a high index of suspicion for TINU as patients, even in the absence of a renal biopsy, as they have an excellent prognosis with timely treatment.

Conclusions: To the best of our knowledge, this is the first series of TINU from the Indian sub-continent documenting treatment by an ophthalmologist.

Uncommon Presentation of Orbital Cellulitis With Orbital Apex Syndrome and Central Retinal Artery Occlusion: A Case Report

*First Author: Dearaini **DEARAINI***
*Co-Author(s): Regina **IVANOVNA**, Eduard Jordi **LUMINTA**, Irma **SADIKIN**, Made **SUSIYANTI***

Purpose: To present a case of Central Retinal Artery Occlusion (CRAO) due to OAS as sequelae in orbital cellulitis.

Methods: To present a case report.

Results: A 60-year-old male presented to emergency department with swollen, hyperemic left eye, periorbital pain and numbness for 2 days before admission. Ten hours prior, the swelling got enlarged with sudden visual loss. Physical examination of left eye showed no light perception, limited ocular motility, proptosis, and hyperemia of the eyelid with no direct and consensual. Fundus examination revealed pale optic disc and cherry red spot appearance. A computed tomography scan showed retro-orbital abscess compressing the left optic nerve. The patient was diagnosed with orbital cellulitis of left eye, and promptly treated with an intravenous antibiotic. On the last follow up, proptosis was not found but visual acuity and ocular motility didn't show progression. Orbital cellulitis may increase intraconal pressure thus resulting in OAS. The patient showed disease progression to OAS within 2 days after the onset and eventually followed by CRAO, which is an uncommon presentation in OAS. The rapid progression might be due to uncontrolled blood glucose in patient with diabetes mellitus type 2.

Conclusions: Prompt recognition and treatment of orbital cellulitis are important due to morbidity of the disease. Patients with advanced disease might suffer from devastating complications such as CRAO and OAS.

Unilateral Choroidal Granuloma: A Masquerade

*First Author: Sudhank **BHARTI***
*Co-Author(s): Bhuvan **CHANANA***

Purpose: To report a rare case of unilateral choroidal granuloma.

Methods: A 29-year-old African origin female presented to us with complaints of diminution of vision in right eye for 3 weeks. Her best corrected visual acuity (BCVA) was finger counting in the right eye and 20/20 in left eye. Her intraocular pressures were 18mmHg in both eyes. Anterior segment examination was normal in both eyes. Fundus examination showed vitreous inflammation with inferior exudative retinal detachment in the right eye. A yellowish-orange choroidal mass approximately 3-disc area in size, with surrounding exudative detachment, was observed below the infratemporal arcade in the right eye.

Results: Fundus fluorescein angiography and Indocyanine green angiography showed diffuse early hyperfluoresence which gradually increased in intensity suggesting possibility of a choroidal granuloma. Ultrasonography of the mass revealed a homogenous hyperechoic mass with an absence of underlying shadowing. Based on these clinical features a differential diagnosis of tubercular granuloma or sarcoidosis was made. Blood investigations were normal. However, Chest X-ray revealed a homogenous opacity with pleural effusion and underlying collapse of the middle and lower lobe of right lung. Further relevant investigations like HRCT chest, MRI brain and bronchial lavage were performed. The final diagnosis turned out to be moderately differentiated stage IV pulmonary adenocarcinoma with metastasis to brain, right eye and multiple organs.

Conclusions: Choroidal metastasis can be a rare presenting feature of lung adenocarcinoma. Atypical unilateral presentation in young female with secondaries from lung is not reported till now in world literature, which makes this case report unique.

Uveitis-Glaucoma-Hyphema Syndrome in a Case With In-the-Bag Placement of Intraocular Lens

*First Author: Chiamin **WU***

Purpose: To report a case of uveitis-glaucoma-hyphema syndrome with in-the-bag placement of intraocular lens.

Methods: A case report.

Results: A 75-year-old man who was diagnosed as glaucoma and received anti-glaucoma agents for years also experienced several times attacks of vitreous hemorrhage later. This gentleman had history of cataract surgery (with in-the-bag placement of intraocular lens) bilaterally. Uveitis-glaucoma-hyphema syndrome with in-the-bag placement of intraocular lens was diagnosed later.

Conclusions: The prevalence of uveitis-glaucoma-hyphema syndrome with in-the-bag placement of intraocular lens is rare. However, it should be kept in mind for cases with both glaucoma and recurrent ocular hemorrhage conditions.

When Your Cats Are Getting on Your Nerves

*First Author: Elaine Ju Yen **GAN***
*Co-Author(s): Shuaibah **AB. GHANI**, Mohamad Israk **MOHAMAD ISA***

Purpose: We report the first documented case of Bartonellosis with involvement of Abducens Nerve in Malaysia. To present a case report.

Methods: To present a case report.

Results: A previously healthy 5-year-old girl presented with fever for one week associated with cervical lymphadenopathy 2 days before presentation. On examination, she was noted to have left eye poor vision with neuroretinitis picture on the left fundus. There was also presence of left abducens nerve palsy. She has a pet cat at home. However, the parents were unsure whether she was scratched by it prior to presentation. A preliminary diagnosis of neuroretinitis secondary to infective cause was made, with differential diagnosis of Bartonella Henselae, mycobacteria tuberculosis, melioidosis and TORCHES. Contrasted CT brain and orbit were done which were unremarkable. Fine needle aspiration of the cervical lymph node was done, which shows granulomatous inflammation. Infective screening was taken which confirmed the diagnosis of Bartonellosis, as a strong positive Bartonella Henselae IgG level was seen. She was treated with 1 week of intravenous Ampicillin and 6 weeks of oral Rifampicin and Trimethoprim/sulfamethoxazole, with a tapering dose of prednisolone. Her abducens nerve palsy resolved after 2 weeks with gradual improvement of neuroretinitis.

Conclusions: This case highlighted Bartonellosis can be one of the causes of abducens nerve palsy in children.

Miscellaneous

A Clinical Study of Vitamin D Supplementation in Diabetic Retinopathy Patients With Type 2 Diabetes Milletus

First Author: Ranjitha

Purpose: To evaluate the effect of supplementation of vitamin D in delaying the progression, the association of serum 25 hydroxy vitamin D with the level of diabetic retinopathy, and it's use as a predictor of the severity of diabetic retinopathy.

Methods: One hundred patients with type 2 diabetes Milletus were included in a retrospective study. Inclusion criteria: Patients aged above 40 years and patients with non-proliferative or proliferative diabetic retinopathy. Exclusion criteria: Patients with type 1 diabetes patients previously on vitamin d supplementation Patients with vitreous hemorrhage, patients with diabetic retinopathy associated with Cnvm, and patients with known disorders of vitamin d metabolism including renal failure, hepatic dysfunction and musculoskeletal disorders.

Results: Among 100 patients total of 76 patients had vitamin D deficient <20ng/ mL,15 patients were found to be vitamin D insufficiency (20 -30 ng/ mL) and 9 patients were found normal vitamin D levels. At 3 month no progression noted in moderate, severe and very severe NPDR. Control group of 20% progression seen at 6 months progression to high-risk PDR noted that only in 2% of cases and 28% of progression were seen in control group.

Conclusions: Oral supplementation of vitamin D in addition to recommended treatment with photocoagulation delays the progression of severe, very severe and early PDR. It is also demonstrated that low levels of vitamin D is risk marker of development or progression of diabetic retinopathy.

A Unique Sight-Threatening Ocular Injury

*First Author: Gunjan **SALUJA***

Purpose: Pressure cookers are commonly used equipment in Indian and Asian kitchens. The pressure cooker is usually considered safe with rare explosion instances.

Methods: We hereby report a case of unique sight-threatening ocular injury.

Results: A 30-year-old female patient presented to the eye emergency of our center with complaints of a pressure cooker whistle being blown off to her right eye while cooking, following the incident the patient developed extensive pain and was unable to see. On examination, the pressure cooker whistle was visible from the outside and was embedded in the right eye of the patient. There were full thickness lacerations present in the right upper and lower lids and no other ocular structure was visible. Visual acuity was no perception of light. A non-contrast computed tomography was performed in an emergency that revealed that the pressure cooker whistle was embedded in the right eye with no other visible ocular structures. There were fractures present in the orbital floor and medial wall of the orbit. Intra-operatively the pressure cooker whistle was removed, following which we found that the intra-ocular contents and uveal tissue were completely lost with the visible bare sclera. The remaining ocular contents were removed, and an implant was placed. The upper lid and lower lid lacerations were repaired in layers. In the postoperative follow up prosthetic eye was placed.

Conclusions: Creating awareness regarding these injuries amongst the general population is the need of the hour to prevent such incidents in future.

Analysis of Hesitancy and Motivational Factors for COVID-19 Vaccination Among Patients Presenting to Eye Care Hospitals – A Multicenter Questionnaire-Based Survey

First Author: Kirandeep ***KAUR***
Co-Author(s): Annamalai ***ODAYAPPAN****, Rengaraj* ***VENKATESH***

Purpose: To analyze the hesitancy and motivational factors related to COVID-19 vaccination among patients who visited six tertiary eye care hospitals at Madurai, Pondicherry, Coimbatore, Tirunelveli, Tirupati, Chennai, and one secondary eye hospital at Kovilpatti.

Methods: This was a telephone-based survey conducted using questionnaires consisting of 36 questions in 5 sections from July 1 to July 31, 2021. Patients visiting the eye hospitals for an examination were contacted over their phones, and responses were directly entered onto the Google forms platform.

Results: A total of 5,033 individuals were included. The mean age was 49.0 ± 14.2 years. Around 563 (11.2%) patients reported that they either had symptoms or tested positive for COVID-19. In total, 2,225 (44.2%) individuals reported getting vaccinated against COVID-19. Around 2,883 (56%) patients knew that there is a chance of getting infected despite vaccination, and 4092 (81.3%) perceived that vaccination should be made compulsory. The main reason for hesitancy towards vaccination was the fear of side effects (n = 487, 17.3%). The fear of getting infected or infecting family members was the most common reason for vaccination (n = 911, 40.9%). Factors associated with a lower proportion of vaccinated individuals included younger age ($p < 0.001$), female gender ($p < 0.001$), lower education ($p < 0.001$), lower income ($p < 0.001$), and rural residence ($p = 0.33$).

Conclusions: Creating awareness about the usual minor side-effects and reassuring can allay an individual›s fears. The fear associated with an inevitable third wave needs to be utilized to increase the rate of vaccination. A targeted approach towards groups with poor uptake of vaccination is necessary.

Antifouling Studies of Lehfilcon a Silicone Hydrogel Contact Lens

First Author: Chalermchon ***SOMMANA***
Co-Author(s): Daniel ***CHUCK DUNBAR****, Vinay* ***SHARMA****, Charlie* ***SHI****, Shuang* ***LIANG****, Amamda* ***SHOWS***

Purpose: A new silicone hydrogel (SiHy) material, lehfilcon A (TOTAL30®) with surface modification of a 2-methacryloyloxyethyl phosphorylcholine (MPC) polymer, was recently developed. This study was designed to evaluate the in vitro surface biological interactions and tear film stability on the surface of lehfilcon A and other reusable SiHy materials.

Methods: The surface structures of lehfilcon A, comfilcon A, senofilcon A, senofilcon C, and samfilcon A contact lenses were imaged using Atomic Force Microscopy (AFM). After fouling in an artificial tear lipid solution, the distributions of fluorescently labeled non-polar lipids of these SiHy materials were visualized and quantified in three-dimensional (3D) via confocal laser scanning microscopy (CLSM). The in vitro tear film stability was assessed using a modified multifunctional topographer.

Results: Fluorescent intensity measurements of 3D CLSM images showed that lipid deposition on the lens surface was significantly less for lehfilcon A ($p < 0.05$ for all). Furthermore, lehfilcon A demonstrated a significantly longer surface moisture break up time than other tested contact lenses (19 s vs. <5 s, $p < 0.05$ for all).

Conclusions: The hydrophilic MPC polymer layer provided an antifouling surface for lehfilcon A contact lenses, which delivered greater in vitro tear film stability than other reusable SiHy contact lenses. These exceptional characteristics may help achieve outstanding on-eye performance.

Bilateral Cystoid Macular Edema With Oral Escitalopram

First Author: Nampi ***TADU***
Co-Author(s): Jolly ***ROHATGI****, Aarushi* ***SAINI***

Purpose: To describe a case of bilateral cystoid macular edema (CME) as an adverse effect of Escitalopram, an antidepressant.

Methods: A 26-year-old female presented with bilateral, painless, progressive, subacute onset of diminution of vision for 2 weeks. On examination, bilateral pupils were reactive. Fundus examination suggestive of bilateral cystoid macular edema, confirmed on ocular coherence tomography. Fluorescein angiography showed a typical petaloid pattern in the fovea with no vascular abnormalities. Rest of the ocular examination was within normal limits. Topical NSAID was prescribed but showed no improvement for 2 months. A diagnostic workup did not reveal any possible precipitating factor for CME. The patient was lost to follow-up for 6 months during the COVID-19 pandemic. After 6 months, her examination showed persistent CME. At this point, detailed clinical and drug history was taken which revealed she was on Escitalopram, an antidepressant for past 9 months. Keeping the drug use as a possible risk factor, she was advised to discontinue the drug after consultation with the treating psychiatrist. She returned after 4 months of discontinuation of the drug and on re-evaluation, her visual acuity was 6/6 in both eyes along with complete resolution of CME.

Results: A diagnosis of bilateral cystoid macular edema, secondary to Escitalopram use, was made.

Conclusions: Escitalopram, an antidepressant, is a rare cause of cystoid macular edema. To the best of our knowledge, there are only two such case reports in the literature.

Biomimetic Engineered Corneal Surface on Silicone Hydrogel Contact Lens

*First Author: Chalermchon **SOMMANA***
*Co-Author(s): David **CANTU-CROUCH**, Vinay **SHARMA**, Xinfeng **SHI**, James **WU**, George **YAO***

Purpose: A phospholipid polymer, poly(2-methacryloylethyl phosphorylcholine) (PMPC) was applied to create a biomimetic surface on the contact lens. The PMPC layer shows super-hydrophilicity, a low modulus and high lubricity. Therefore, we created a unique surface through biomimetic engineering that can be applied to an ophthalmic medical device.

Methods: The interface of the PMPC-modified silicone hydrogel contact lens was observed by an environmental scanning electron microscope, atomic force microscope (AFM), scanning transmission electron microscope (STEM). Also, the surface modulus was determined by AFM. All evaluations were done under 100% humidity or in water.

Results: It was confirmed that the surface of the silicone hydrogel contact lens was covered with a PMPC layer. A glycocalyx-like structure of PMPC was strongly immobilized to the silicone hydrogel substrate. A soft PMPC-modified surface like a natural cornea exhibited robustness and could not be removed by mechanical rubbing, surfactant cleaning, or high temperature treatment such as autoclave sterilization, the PMPC layer remained without change in the morphology on the contact lens surface.

Conclusions: It became clear that the mechanical properties are similar in the living environment and that they exhibit low modulus and frictional properties comparable to natural tissues. These results showed the validity of material creation by biomimetic methods. These analytical methodologies may contribute to future development of novel biomimetic engineered medical devices.

Bloody Cough: Vasalva Retinopathy With a Complete Resolution

*First Author: Zulfadli **MOHD ZAWAWI***

Purpose: To report a case of a young man with Vasalva retinopathy.

Methods: A case report.

Results: A 27-year-old man with unremarkable medical history presented with reduced vision of right eye (RE) with floaters for 1 day duration following bout of excessive cough prior to complaint. He had no other symptom. His vision was 6/24 on RE and 6/6 on left eye (LE). There was no relative afferent pupillary defect. Fundus examinations showed presence of subhyaloid hemorrhage on RE. LE fundus examination was unremarkable. Optical Coherence Tomography of macula showed LE preretinal hemorrhage. The condition was treated conservatively and the follow up review showed complete resolution on preretinal hemorrhage and improvement of RE vision.

Conclusions: Valsalva retinopathy is a specific form of retinopathy characterized by pre-retinal hemorrhage secondary to raised intracranial pressure. Patients present with sudden onset painless blurring of vision. Prognosis is usually good with the spontaneous clearing of hemorrhage within weeks to months.

Clinical Characteristics and Outcomes of Carotid Cavernous Fistula in a Tertiary Referral Center

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Purpose: To identify occurrence of Carotid Carvenous Fistula (CCF) in a tertiary center in Malaysia. We aim to describe demographic data, clinical presentation, and outcomes of CCF in a tertiary care center in Malaysia.

Methods: A retrospective review was performed in patients with confirmation diagnosis of CCF by radio-imaging who were admitted to hospital in between 2020 to 2021.

Results: A total of five patients fulfilling the diagnostic criteria for CCF were included. Majority of them are elderly (80.0%) age range from 58 to 69 years old, and

gender predominant are female (60.0%). Direct CCF with bilateral eye involvement were seen in two of them with preceding history of motor vehicle accident. While three elderly patients with multiple premorbid disease of hypetension, diabetic and hyperlipidemia had indirect CCF. Visual acuity at presentation is worse than 6/12 and high intraocular pressure more than 22 mmHg were identified in four patients (80.0%) require maximum intraocular pressure lowering agent. Good visual outcome VA better than 6/9 were regained by two patients and good intraocular pressure control in four patients IOP less than 20 mm Hg.

Conclusions: CCF is an abnormal communication between carvenous sinus and carotid artery either internal or external or both. Elderly female with multiple premorbid are more likely to have spontaneous, indirect CCF while direct CCF is more common in post trauma young male. Good visual and ocular prognosis are obtained in early identification and management of CCF.

Clinical Profile of Nonstrabismic Binocular Vision Anomalies in Patients with Asthenopia

*First Author: Krati **GUPTA***
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Purpose: To report the clinical profile of non-strabismic binocular vision anomalies (NSBVA) in patients with asthenopia in North-East India.

Methods: A hospital-based study was conducted on 131 patients from age group 10-40 years attending the vision therapy clinic. Patients were divided into the age groups 10-20 years, 21-30 years and 31-40 years. A detailed orthoptic evaluation was carried out including sensory and motor testing and a diagnosis was made comparing various orthoptic parameters of the particular patients.

Results: Of the 131 patients, 81 were female and 50 were male. The number of patients was 62 in the 10-20 years age group, 49 in 21-30 years age group and 20 in 31-40 years age group. The prevalence of NSBVA in age group 10-20 years was 69.35%, 21-30 years was 67.35% and 31-40 years was 50.00%. It was observed that the most common NSBVA was convergence insufficiency across all age groups followed by accommodative insufficiency and convergence excess.

Conclusions: Early detection of NSBVA is important because these deviations may decompensate without treatment and become strabismic resulting in loss of stereopsis and development of suppression. Early detection and treatment provide the best opportunity for academic success in school going age groups.

Closed Globe Injury – A Study of Anterior Segment Trauma and Efficacy of Diagnostic Aids

*First Author: Nampi **TADU***
*Co-Author(s): Jolly **ROHATGI**, Aarushi **SAINI***

Purpose: To compare the role of ultrasound microscopy (UBM) and gonioscopy in early detection of anterior segment trauma (AST).

Methods: Forty consecutive patients of closed globe injury (CGI) with anterior segment involvement were assessed by slit-lamp biomicroscopy, gonioscopy and UBM.

Results: Traumatic uveitis (52.5%), traumatic mydriasis (42.5%), sphincter tears (37.5%) and hyphema (32.5%) were common. Traumatic glaucoma (17.5%) significantly correlated with angle pigmentation and hyphema; but not with baseline IOP or traumatic uveitis. Detection rates were equal for Angle recession (5%), traumatic cataract(10%), iridodialysis (10%) and zonular dialysis(5%); while cyclodialysis (2.5%) was visualized on UBM only.

Conclusions: UBM was at par with gonioscopy for detection of angle recession, but assessment of circumferential extent was easier with gonioscopy and depth of involvement with UBM. In detection of cyclodialysis, UBM was superior. UBM, unaffected by any media opacity, notably aided in earlier intervention.

Correlation Between the Legibility Front Size of Traditional Chinese Characters and Early Treatment Diabetic Retinopathy Study in Low Vision

*First Author: Pin-Chun **WANG***
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Purpose: To investigate the correlation between the legibility front size of traditional Chinese (TC) characters and early treatment diabetic retinopathy study (ETDRS) in low vision.

Methods: A total of 2,818 commonly used TC characters were divided into five groups by perimetry complexity (PC) valve: TC 1 with <180 PC, TC 2 with 181-219 PC, TC 3 with 220-259 PC, TC 4 with 260-299 PC and TC 5 with >300 PC. We randomly chose 30 characters from each TC group as a new chart and compared with two commonly used charts (Snellen E and ETDRS). The post-cataract surgery cases, which without power of accommodation, by using optical defocus for stimulation in low vision were included. The smallest legible front size (SLFS) was recorded.

Results: The correlation between PC valve and SLFS has high positive correlation (R2=0.648). Twenty-six participants, which underwent cataract surgery, with best-corrected vision acuity (BCVA) logMAR 0.0, were included. The conversion formula of different

charts by using best fitting lines showed estimated logMAR VA (TC 1) = logMAR VA (Snellen E or ETDRS) + 0.15 logMAR, estimated logMAR VA (TC 2) = logMAR VA(Snellen E or ETDRS) + 0.3 logMAR and estimated logMAR VA (TC 5) = logMAR VA(Snellen E or ETDRS) + 0.45 logMAR.

Conclusions: We recommend perimetry complexity was an applicable method to classify the TC characters. Reading TC characters require a larger front size not only in healthy individuals but also in low vision. This conversion formula could be as a suggestion of the enlargement of the letter size.

Diagnosis of Rhino-Orbital Mucormycosis in a Diabetic Man: Misleading Clues Until Microbiologically Proven

First Author: Wan Azwani ***WAN MUHAMAD SALLEH***
Co-Author(s): Haslinda A ***RAHIM****, Rahimi* ***HANAFI***

Purpose: To report a case of rhino-orbital mucormycosis with diagnostic challenges

Methods: To present a case report.

Results: We report a case of 67-year-old diabetic male patient with unilateral, white-eyed proptosis and diplopia that posed diagnostic challenges due to several misleading clues from atypical clinical features, blood profile, imaging, nasal endoscopic histopathological report, and functional endoscopic sinus surgery (FESS) intraoperative findings. CT scans revealed homogenous soft tissue lesion at right medial wall of middle orbit along with medial and inferior rectus enlargement, and opacification of ipsilateral frontal, maxillary, ethmoid, and sphenoid sinuses, with no intracranial pathology. He was comanaged by Otorhinolaryngology Team and empirically treated for bacterial Right acute rhinosinusitis with orbital extension which he responded poorly by evidence of persistent leucocytosis and thrombocytosis. Malignancy was suspected. Nasal biopsy reported as cavernous hemangioma with thrombosis causing necrotic tissue which was supported by FESS findings except for copious of pus was drained from ethmoid and maxillary sinus. Urgent MRI was suggestive of subperiosteal collection instead. Fungal culture yielded Mucor. He was then started on intravenous amphotericin B by Infectious Disease Team. Repeated FESS revealed typical fungal invasion of ethmoid cavity. Necrotic tissue was debrided, pus was drained from sinuses, and prolapsing medial rectus muscle into ethmoid cavity. Patient showed clinical improvement. He also received Intraorbital amphotericin B twice. Latest nasal endoscopy showed no residual fungal invasion. He was discharged with oral isovuconazole and reviewed as outpatient.

Conclusions: Rhino-orbital mucormycosis carries significant vision and life-threatening risk. High index of suspicion is crucial for early detection and prognosis.

Effect of Macular Photocoagulation on Visual Field among Patients with Diabetic Macular Edema

First Author: Maryam ***YADGARI***
Co-Author(s): Mohammadreza ***ARZAGHI****, Sadra* ***ASHRAFI****, Naveed* ***NILFORUSHAN***

Purpose: To evaluate visual changes after macular photocoagulation in diabetic macular edema.

Methods: Twenty-six eyes with history of diabetes and clinically significant macular edema candidate for macular photocoagulation were included in this prospective interventional case series. All patients underwent 10-2 and 24-2 Humphrey Visual Field Test using Swedish Interactive Thresholding Algorithm (SITA) strategy and also optic nerve and macular optical coherence tomography (OCT), before and 6 months after macular laser photocoagulation. Then visual field of each eye was compared before and after photocoagulation.

Results: The mean age of patients was 57.60 ± 8.99 years. There were no statistically significant changes after photocoagulation compared to before the procedure regarding the mean deviation, pattern standard deviation and foveal threshold in visual field 10-2 and 24-2 tests except for pattern standard deviation in the 10-2 test.

Conclusions: Based on our results it seems that visual field is not affected by macular laser photocoagulation.

Efficacy of Eyelid Margin Cleaning Using a Modified Lid Hygiene Device: A Pilot Study

First Author: Cheau Wei ***CHIN***
Co-Author(s): Kiet Phang ***LING****, Francesca Martina* ***VENDARGON***

Purpose: To evaluate the efficacy of using a modified lid hygiene device by attaching a cotton bud on a manicure drill to clean the eyelid margins with baby shampoo in subjects with either meibomitis or blepharitis.

Methods: Photos of 44 eyes of 22 subjects were taken before and after cleaning the eyelid margin using the modified lid hygiene device and were evaluated by the same investigator, comparing the eyelash contamination, meibomian orifice obstruction, and plugging of gland orifice pre- and post-cleaning. The post-cleaning photos were also evaluated to look for any epithelial defects. The subjects were given a questionnaire to assess their subjective symptoms of eye dryness, soreness, fatigue pre- and post-cleaning, and discomfort and pain post-cleaning.

Results: Different categories of eyelash contamination ranging from slight to severe were able to be cleared using the modified lid hygiene device (p-value < 0.001). 20 eyes (45.5%) showed improvement in terms of meibomian obstruction (p-value < 0.001), and 26 eyes

(59.1%) showed improvement in terms of plugging of gland orifice (p-value < 0.001) post-cleaning. None of the subjects developed epithelial defect post-cleaning. Twenty subjects (91%) reported improvement regarding their symptoms on eye dryness (p-value < 0.001) post-cleaning, and 10 subjects (45.4%) noted lesser eye fatigue (p-value < 0.001) post-cleaning. Twenty subjects (91%) denied discomfort, and all the subjects denied pain during and post-cleaning. No adverse effects occurred during the cleaning.

Conclusions: Eyelid margin cleaning using the modified lid hygiene device appears to be an effective and safe alternative cleaning option for patients with meibomian gland dysfunction-associated dry eye.

Evaluation of Subfoveal Choroidal Thickness and Macular Ganglion Cell Complex Thickness in Hyperopic Anisometropic Amblyopic Patients

First Author: Nishi ***SATISH***
Co-Author(s): Anuj ***MEHTA***

Purpose: The purpose of this cross-sectional prospective study is to evaluate the effect of hyperopic anisometropic amblyopia on the subfoveal choroidal thickness and average macular ganglion cell complex thickness in hyperopic anisometropic amblyopic patients.

Methods: A total of 21 patients with hyperopic anisometropic amblyopia were taken in this study. These patients and their fellow emmetropic eyes were compared. The average macular ganglion cell complex thickness and subfoveal choroidal thickness were measured using the manual calliper of EDI OCT and automated segmentation in posterior pole analysis of SD OCT respectively. The results were tabulated and compared with paired t test; software of SPSS 21 was used to compare results.

Results: It was found that the subfoveal choroidal thickness and macular ganglion cell thickness was significantly higher in the hyperopic anisometropic amblyopic group with a p value of less than 0.0001 and 0.01 respectively.

Conclusions: According to our study, it can be proven that the subfoveal choroidal thickness and the average macular ganglion cell complex thickness in hyperopic anisometropic amblyopes is higher than their fellow emmetropic eyes.

Evolution of Optic Discs Tilt in Myopic Children

First Author: Wei Lin ***CHIA***

Purpose: Assessing factors that influence myopic optic disc tilt such as age, spherical equivalent (SE), axial length (AL) and atropine dose.

Methods: In the atropine in the treatment of myopia (ATOM2) study, fundal photos were taken at baseline and 2 years. Disc tilt was graded as being none, mild, moderate and severe at both time points. Effect of age, SE, AL and atropine eyedrop concentration were correlated with changes in myopic disc tilt.

Results: Many children (83%) already had tilted disc at baseline: 174 (51%), 89 (26%) and 26 (6%) with grade 1, 2 and 3, respectively. More tilt was noted in older children and higher myopia (p <0.05). At 2 years, tilt increased by 1 grade in 64 (18%) and 2 grades in 13 (4%). Multivariate analysis showed that increased disc tilt was associated with younger age and greater change in SE or AL, after controlling for race, gender, and atropine concentration.

Conclusions: Optic disc tilt occurred relatively early in myopia, and increased tilt over time was noted in younger children and those with more rapidly progressive myopia.

Ocular Symptoms in COVID-19 Patient in Selangor, Malaysia

First Author: Maimunah ***MUNA'AIM***
Co-Author(s): Azlina ***MOKHTAR***

Purpose: To determine the prevalence and factors associated with ocular symptoms among COVID-19 patients in Selangor, Malaysia

Methods: An online structured questionnaire obtained self-report data from people who had a confirmed diagnosis of COVID-19 in Selangor. The anonymous survey collected information on demographics, past ocular history, category of COVID-19 infection status and ocular symptoms.

Results: A total of 217 (18% (39) male and 82% (178) female, mean age 35.4 ± 18.9) survey responses were included. Ocular symptoms were reported by 36 participants. The most frequent ocular symptoms were tearing (31%), eye redness (27%), itchy eyes (22.9%), photophobia (4.0%),) and eye pain/discomfort (5.2%). Participants with ocular symptoms had a higher number in category 1 and 2 COVID-19 infection (71%) compared to 29% in category 3 and 4 with ocular symptoms. There was no statistically significant difference in the occurrence of ocular symptoms and patients' gender, comorbidities and vaccination status (p > .05). Additionally, the onset of ocular symptoms occurred bilaterally in all 36 participants and most frequently occur at the same time as systemic symptoms (67.5%). Lastly, 1.1% reported symptoms lasting ≥ 14 days.

Conclusions: The ocular symptoms were in the lower range in our patients compared to the literature. Further studies with more participants with ocular symptoms are necessary for final evidence.

Rigid Gas Permeable Contact Lens as Solution of Patient With Anisometropia

*First Author: Mutia Arnisa **PUTRI***
*Co-Author(s): Ani **ISMAIL***

Purpose: To report a case of an anisometropia patient who was treated with the use of rigid gas permeable (RGP) contact lenses.

Methods: A 23-year-old man with anisometropia came to the refraction, contact lens and low vision clinic of RSMH Palembang. The patient was identified holistically for his ophthalmological status, then maximally corrected for his refractive status, a complete pre-fitting examination of RGP was done, then contact lenses fitting and a post-fitting evaluation was also carried out.

Results: The ophthalmologic examination revealed that uncorrected visual acuity was 1/60 ph 6/60 for right eye and on left eye is 3/60 ph 6/30. Best corrected visual acuity was 6/6 using S-8.50 C-2.00 180o on the right eye and left eye was 6/6 using correction S -5.50 C -2.00 180o. The base-curve measurement of the RGP was taken to obtain 7.47mm for the right eye and 7.50mm for the left eye, performed with a set of RGP contact lens fittings with a power of 3.0 diopters and a diameter of 9.5mm. After the contact lenses attached, over-refraction was performed, obtained that S-6.00 D for the right eye and S-2.50 for the left eye could reach 6/6 in both eyes without any further astigmatism and patient feel comfortable.

Conclusions: Management of anisometropia can be done by giving RGP contact lenses to maintain binocular vision and minimalized the aniseiconia. The good RGP fitting resulting in comfortable and better vision for the patient.

To Determine Role of Transcutaneous Retrobulbar Amphotericin B in COVID-19 Related Rhino-Orbital-Cerebral Mucormycosis: A Two-Case Series

*First Author: Rajwinder **KAUR***

Purpose: To determine the effect of transcutaneous retrobulbar amphotericin B (TRAMB) injection on orbital manifestations in two cases of COVID- 19 related ROCM in a tertiary care center.

Methods: The retrospective analytical study was conducted in the department of ophthalmology, otorhinolaryngology and radiodiagnosis after the approval of research and ethics committee over a period of four months. Histologically and radiologically confirmed two in-patients of mucormycosis were considered for TRAMB after detailed ocular examination. The follow-up of patients was done daily and repeated TRAMB injections were considered accordingly.

Results: The age of patients ranged from 35-50 years and with history of COVID infection. Comorbidities noted were diabetes (n-1), and HTN (n-0). Both patients showing focal involvement of one or more extraocular muscles were given 0.3mg/ mL transcutaneous retrobulbar amphotericin B. Patients showed significant improvement with successive doses of TRAMB.

Conclusions: ROCM is best managed by a multidisciplinary team. Immediate initiation of intravenous antifungals, reversing the patient's immunocompromised state, and endoscopic surgical debridement are the basis of treatment. In the setting of progressive orbital disease, retrobulbar amphotericin B treatment should be considered.

Vision Loss as a Presenting Symptom of Von Hippel-Lindau Disease

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Purpose: To present a case of an adolescent male with bilateral Grade 4 hypertensive retinopathy as a presenting feature of pheochromocytoma related to Von Hippel–Lindau disease.

Methods: To present a case report.

Results: A 13-year-old male with underlying of bronchial asthma, presented with acute onset painless bilateral vision loss for 3 days associated with intermittent headache for past 3 months. Vision over the right eye (RE) was 6/24 and left eye (LE) 1/60. Fundus examination revealed bilateral optic discs swelling with extensive flame shaped hemorrhages, cotton wool spots and hard exudates. Blood pressure recorded immediately was 209/184 mmHg with heart rate of 100/min. A clinical diagnosis of Grade 4 hypertensive retinopathy was made. He was admitted immediately for investigation and management of hypertensive emergency. Computed tomography (CT) abdomen showed presence of right pheochromocytoma and pancreatic tumor. He was subsequently managed by endocrine and pediatric surgical team. Genetic testing revealed Von Hippel Lindau gene mutation. Patient underwent right adrenalectomy and pancreatic nodulectomy. Blood pressure was controlled without any anti-hypertensive medications. On follow-up at 2 months, his vision improved to 6/9 RE and 6/12 LE. Fundus examination showed resolving optic disc swelling bilaterally.

Conclusions: VHL syndrome is a complex disease, and a high index of suspicion could save the patient from life-threatening systemic and ocular complications.

Neuro-Ophthalmology

A Boy With Bizarre Eye Movements

*First Author: Suganthi **KUMAR***
*Co-Author(s): Ju Juen **CHIN**, Ng **SOK LIN**, Vigraman **SUNDARA MOORTHI**, Ong **ZHUAN***

Purpose: To report a case of abnormal tic-like, non-nystagmus eye movement secondary to cerebellar development venous anomaly (DVA) in a young boy.

Methods: To present a case report.

Results: A healthy seven-year-old Malay boy presented with a two-day history of sudden abnormal eye movement noticed by his parents. He was well with no history of seizures, limb weakness nor symptoms of increased intracranial pressure. Examination revealed brief, jerky and repetitive episodes of conjugate eye deviations upwards and to the left, occasionally to the right, and this was not associated with blinking or winking. There was no relative afferent pupillary defect, anisocoria nor abnormal head posture. Hirschberg test was center and symmetrical. Both eyes extraocular muscle movements were full in all gazes. Anterior and posterior segment examinations were unremarkable, and his vision was 6/6. Systemic neurological examination was normal. No tics were seen in other parts of his body. Contrast-enhanced computed tomography (CECT) brain/orbit revealed left cerebellar developmental venous anomalies (DVA). Ultrasound abdomen was normal and negative for occult neuroblastoma. He was planned for magnetic resonance venography (MRV) but unfortunately was lost to follow-up.

Conclusions: New onset of bizarre eye movements warrants urgent brain imaging especially in pediatric age group as it may be a tell-tale sign of serious intracranial pathology. Abnormal ocular movements which cannot be neurologically localized may be of cerebellar origin. Ocular tics which is an early sign of non-organic tic disorders remain a diagnosis of exclusion.

A Queer Case of the Stony-Eyed Hunchback

*First Author: James **WEN SIANG***
*Co-Author(s): Ju Juen **CHIN**, Khairuddin **OTHMAN**, Norlina **RAMLI**, Ng **SOK LIN***

Purpose: To report a rare case of horizontal gaze palsy with progressive scoliosis (HGPPS).

Methods: To present a case report.

Results: A 46-year-old man presented with right eye progressive blurring of vision for the past one year and painful right eye for a day. During slit lamp biomicroscopy, the clinician noticed that he could not move his eyes horizontally. Further enquiry revealed that he had a history of restriction of lateral eye movements and progressive scoliosis since childhood. One brother and one sister in his family also have similar hunchback features with eye findings. Other ocular examination showed right eye phacomorphic glaucoma. Extraocular movements showed conjugate horizontal gaze palsy with intact vertical gaze. General examination showed severe scoliosis. Neurological examination was normal. Magnetic resonance imaging (MRI) of the brain and orbit showed butterfly-like appearance of the medulla with a midline cleft, consistent with the absence of corticospinal tract fibers decussation. There was tenting of the floor of fourth ventricle with loss of normal facial colliculi appearance. This was consistent with HGPPS, and the diagnosis was made. He subsequently underwent successful right eye cataract extraction and intra ocular lens implantation.

Conclusions: HGPPS is a rare congenital autosomal recessive disorder clinically characterized by limitation in horizontal gaze movements and progressive scoliosis. Diagnosis is supported by classical MRI findings and the absence of corticospinal tract fibers decussation.

A Rare Case of Acute Disseminated Encephalomyelitis With Right Optic Neuritis

*First Author: Nur Hanna Illyana **MOHD ZULKIFLI***
*Co-Author(s): Ju Juen **CHIN**, Tze Heng **LOH**, Ng **SOK LIN***

Purpose: To report a rare case of acute disseminated encephalomyelitis (ADEM) with right optic neuritis.

Methods: A case report.

Results: A three-year-old healthy girl presented with progressively difficult ambulation over four days, preceded by one week of fever and upper respiratory tract infection. Examination revealed reduced power over all limbs (Medical Research Council Muscle Power Grade Three) with hypotonia. There was no clonus, Babinski's sign was negative and both lower limbs showed hyperreflexia. Ocular examination revealed right eye optic disc swelling (Modified Frisen Grade Three). There was no macula edema, vitritis or retinitis. Her left eye fundus was normal. There was no ophthalmoplegia. Visual acuity could not be assessed. Magnetic resonance imaging (MRI) of brain revealed numerous, ill-defined, non-symmetrical T2-weighted/FLAIR hyperintense foci at cortical and subcortical regions of bilateral cerebral hemispheres, basal ganglia and cerebellum, suggestive of ADEM. Myelin oligodendrocyte glycoprotein antibodies (MOG-abs) and aquaporin-4 antibody were negative in the serum. Mother did not consent for lumbar puncture procedure. Treatment with intravenous Immunoglobulin (IVIG) two gram/kilogram infusions over three days and intravenous (IV) methylprednisolone 30 milligram/kilogram/day for five days were given. Throughout admission, the right eye optic disc became less hyperemic and less swollen. Patient was discharged after one week with tapering dose of oral Prednisolone for one month.

Conclusions: Visual prognosis is generally good following ADEM recovery in children. ADEM-ON phenotype may carry a poorer visual prognosis especially in children less than five years old. We advocate long term ocular follow up to determine visual prognosis in this group.

A Rare Case of Concurrent Bilateral Non-arteritic Anterior Ischemic Optic Neuropathy in Patient With Pre-existing Optic Atrophy

First Author: Muhammad Firdhaus ***ZAINUDIN***

Purpose: Non-arteritic anterior ischemic optic neuropathy (NAION) causes sudden onset vision loss and visual field defect. It is the commonest type of ischemic optic neuropathy. Bilateral simultaneous NAION is extremely rare.

Methods: To present a case report.

Results: Madam M is a 32-year-old Malay lady with a known case of bilateral eye papilledema secondary to idiopathic intracranial hypertension (IIH) and end-stage renal failure (ESRF). She presented with 3 days history of BE sudden onset painless visual loss. Two months prior to current presentation, during her routine ophthalmology follow-up for her IIH, her optic nerve function was noted to be normal. She also denies any recent history of head or ocular trauma, headache, ocular pain or redness, fever nor any new neurological deficit. On examination her visual acuity (VA) was perception of light (PL) for right eye and counting finger (CF) for left eye. Relative afferent pupillary defect (RAPD) was positive for the right eye. Both eyes anterior segment examination was unremarkable. Both posterior segments showed pale optic disc with blurred disc margin. The retina and vitreous were normal. Blood investigation for infective, autoimmune, and demyelinating screening turned out to be negative. Magnetic resonance imaging (MRI) test(s) showed no significant changes. Lumbar puncture was also normal.

Conclusions: Patients› underlying systemic conditions may be a risk factor to develop acute NAION on top on their pre-existing ocular comorbid. There is no known effective therapy yet for NAION. Hence, it is important to identify and manage all possible contributing factors that may give rise to NAION.

A Rare Case of Miller Fisher Syndrome: A Diagnostic Challenge

*First Author: Sree Shantha S.****MAGENDRAN***
Co-Author(s): Ju Juen ***CHIN****, Nur Afifah* ***MOHD NOR****, Ng* ***SOK LIN****, Ong* ***ZHUAN***

Purpose: To report a rare case of Miller Fisher syndrome.

Methods: A case report.

Results: A healthy 63-year-old Malay lady presented with sudden onset left eye (LE) partial ptosis, painless binocular double vision, and unsteadiness for six days. This was preceded by headache and vomiting for three days. Examination revealed LE partial ptosis, LE mild exotropia and bilateral complete ophthalmoplegia. Both eyes had a visual acuity of 6/24. There was no relative afferent pupillary defect nor anisocoria. Anterior and posterior segment examination was unremarkable. Ice pack test was negative. Neurological examination showed areflexia and ataxia. She developed new sign of left facial nerve palsy after six days of admission. Serial computed tomography (CT) of brain done twice on admission and on day six did not show significant pathology. She did not consent for lumbar puncture procedure. Magnetic resonance angiogram (MRA) of brain showed chronic small vessel disease with no intracranial vasculopathy. Anti-acetylcholine receptor (AChR) antibody was negative while Anti-GQ1b antibody was not sent due to non-availability of the test. She was given supportive treatment and all symptoms remained status quo during her two weeks of admission. A delayed diagnosis of Miller Fisher (MF) syndrome was made and eventually she gained complete recovery over seven weeks.

Conclusions: Our case highlights the importance of clinical awareness of the classical triad of ataxia, areflexia and ophthalmoplegia together with the rarity of this disease entity. MF syndrome generally has a good prognosis with no treatment required.

An Atypical Ocular Bartonellosis Case in a Young Child

First Author: Nurul Nadiah ***WAHID ALI***
Co-Author(s): Rosniza ***AB RAZAK****, Aini Aniz Izzuani* ***ARIDAN****, Wan Mariny* ***KASIM****, Nadhir* ***NUWAIRI***

Purpose: To report an atypical case of cat-scratch disease neuroretinitis.

Methods: A case report.

Results: A 9-year-old girl with no known medical illness presented with bilateral eyes progressive painless blurring of vision for two weeks duration. The child recalled being scratch by a stray cat few weeks earlier. Otherwise, she did not develop other ocular or systemic complaints. On general examination, there were no skin lesions or lymphadenopathy. Visual acuity was 6/45 and 6/60 in the right and left eye respectively. Relative afferent pupillary defect (RAPD) was negative. Bilateral eyes anterior segment examinations were unremarkable. Fundus examination revealed bilateral optic disc swelling with macula striation. Bartonella IgG and IgM antibody showed positive results with elevated erythrocyte sedimentation rate (ESR) serology test. Otherwise, all other infective blood parameters and Mantoux test were normal. Chest x-ray and magnetic resonance imaging (MRI) scan of the brain and orbit showed no abnormalities. The case was co-managed with Pediatric team and was started on oral

Doxycycline for 6 weeks duration. Upon treatment completion, her vision improved to 6/12 and 6/9 in the right and left eye respectively. Fundus examination showed resolution of optic disc swelling and significant improvement of macula striation in both eyes.

Conclusions: Cat-scratch disease caused by Bartonella henselae remains the most common cause of neuroretinitis. In this atypical bartonella neuroretinitis presentation that are bilateral eyes involvement with no systemic manifestations, showed positive response towards systemic antibiotics alone with good visual outcome.

Atypical Bilateral Terson's Syndrome in an Adult Following Ventriculoperitoneal Shunt Dysfunction: A Novel Finding

*First Author: Shruti **MARU***
*Co-Author(s): Sumeet **LAHANE***

Purpose: At present there is one case report of Terson's syndrome following endoscopic third ventriculostomy, highlighting the role of raised ICP without intracranial hemorrhage in this condition. In our case the retinal changes occurred prior to the revision procedure, thus implicating the shunt dysfunction as the causative factor.

Methods: A 39-year-old male presented to a tertiary eye care setup with complaints of headache, blurring of vision and double vision for 3 weeks. He had a history of having undergone a VP shunt placement 36 years prior for obstructive hydrocephalus secondary to aqueductal stenosis, after which he had no complaints until 3 weeks ago. He underwent magnetic resonance imaging (MRI) of the brain which showed a well-placed VP shunt tube and moderately dilated bilateral lateral and third ventricles, confirming the possibility that there was blockage of the shunt.

Results: Ophthalmological examination revealed a best corrected vision of 20/20 in the right eye and 20/40 in the left eye. Anterior segment examination was unremarkable in both eyes. Fundus examination of both eyes revealed extensive preretinal, intraretinal and subretinal hemorrhages. He subsequently underwent an endoscopic third ventriculostomy (ETV) to restore the flow of cerebrospinal fluid (CSF) and the dysfunctional shunt was removed. At his 4-week follow-up, the vision improved.

Conclusions: To the best of our knowledge, this is the first report of bilateral retinal hemorrhages following ventriculoperitoneal shunt dysfunction. Patients with raised ICP should be examined by an ophthalmologist to rule out retinal pathology.

Bilateral Papillitis After COVID-19 Vaccination: Description of a Case

*First Author: Li-Wei **CHAN***

Purpose: The most commonly reported optic neuropathy following COVID-19 vaccination are optic neuritis and anterior ischemic optic neuropathy. We aim to report a rare case of bilateral papillitis closely following COVID-19 vaccination.

Methods: Description of clinical history, examination, neuroimaging, and treatment of a case of bilateral papillitis after Pfizer-BioNTech vaccine for COVID-19.

Results: The 53-year-old lady complained of bilateral painless blurry of vision two weeks after receiving the first dose of Pfizer-BioNTech vaccine for COVID-19. Ophthalmic examination showed circumferential swelling of the right disk and swelling of the left disk in the superior, temporal, and inferior portions. Perimetry showed enlarged blind spot in the right eye and scattered scotoma in inferior visual field in the left eye. Magnetic resonance imaging showed neither abnormal enhancement along the optic tract nor sign of elevated intracranial pressure. Subsequent workup for demyelinating disease, intracranial inflammatory disease and infection was unremarkable. Conservative management was applied. Four months after symptom onset, examination showed that disk swelling had resolved completely, and no significant thinning of peripapillary retinal nerve fiber layer was observed in both eyes. The patient reported improvement of vision in both eyes.

Conclusions: Bilateral papillitis could be a rare ocular adverse reaction to COVID-19 vaccination. We reported the first such case in the literature and presented the self-limited nature and good prognosis with conservative management alone in this case.

COVID-19 Associated Ischemic Stroke Leading to Bilateral Visual Field Defect: A Case Report

*First Author: Ferdinand **LUMINTA***
*Co-Author(s): Syntia **NUSANTI***

Purpose: Since the coronavirus disease 2019 (COVID-19) pandemic, a substantial proportion of COVID-19 patients had documented ischemic stroke and thrombotic complications. We described a case of bilateral visual field defect related to COVID-19 associated ischemic stroke.

Methods: A 60-year-old male came to neuroophthalmology outpatient clinic with blurry vision of both eyes for one month. He also complained of having a headache. Patient had a history of confirmed COVID-19 just before the symptoms started to appear. Best corrected visual acuity (BCVA) was 6/6 for both eyes with normal intraocular pressure. Slit lamp examination revealed normal findings for both eyes. Humphrey visual field test result was generalized depression of both eyes. Magnetic Resonance Imaging (MRI) was performed and showed subacute infarct at the left cortical occipital lobe.

Results: Ischemic stroke has been one of the most notable and devastating neurological complications

of COVID-19. A review by a panel of the World Health Organization (WHO) reported that the risk of ischemic stroke during COVID-19 is around 5% with median time from COVID-19 diagnosis to the event is 10 days. Mechanism is multifactorial, mainly due to hypercoagulability and endothelial activation. It is estimated 8-25% of patients with ischemic stroke will develop visual field defect; with homonymous hemianopia as the most common visual field defect found.

Conclusions: Visual field defect due to COVID-19 associated ischemic stroke may present in current daily practice. A rigorous examination is needed to determine the etiology of patient's complaint; and COVID-19 testing should be performed in patient with neuroophthalmology complaints.

Choroid Thickness in Eyes With Small Optic Disc

*First Author: Pai-Huei **PENG***

Purpose: Non-arteric anterior ischemic optic neuropathy (NAION) caused by compromised circulation of the optic disc, often results in severe visual loss. "Crowded" disc has been recognized as one important pathomechanism of NAION. Previous studies showed that patients with NAION had thicker peripapillary and fovea choroid. The aim of this study is to evaluate any association between choroidal thickness (CT) and optic disc size.

Methods: Subjects visited the eye clinic for refraction check were recruited. All participants underwent optical coherence tomography-angiography (OCT- A) scan. Measurement of CT was determined manually from the outer border of the hyperreflective line coincident to the retinal pigment epithelium to the inner surface of the sclera. This measurement was obtained from the central subfoveal area.

Results: Thirty subjects with normal disc size and 30 subjects with small disc were enrolled. The disc area in the normal and small disc groups were 2.00 ± 0.02 mm2 (mean ± standard error) and 1.67 ± 0.02 mm2, respectively. No statistical differences were found between the small and normal disc groups in age, gender, visual acuity, spherical equivalent, intraocular pressure, and retinal nerve fiber layer thickness. The choroid thickness of eyes with small disc was 260.68 ± 5.49 µm, which was not significantly different from that of eyes with normal disc size (264.30 ± 5.41 µm, p = 0.840)

Conclusions: Eyes with small optic disc size didn't show thicker CT in comparison with eyes with normal disc size.

Comparison of the Optical Coherence Tomography Angiographic Characteristics Between Patients With Compressive and Glaucomatous Optic Neuropathies

*First Author: Hyosook **AHN***
*Co-Author(s): Byung Joo **LEE**, Yeji **MOON***

Purpose: To compare the optical coherence tomography angiographic (OCTA) characteristics between patients with compressive (CON) and glaucomatous optic neuropathies (GON).

Methods: We retrospectively reviewed clinical data and OCTA images of 26 eyes diagnosed with CON. The eyes with GON (n=26) were matched for age, sex, refractive error, and mean deviation in the visual field test.

Results: The retinal nerve fiber layer (RNFL) thickness in the nasal and temporal quadrant was thinner in the CON group, whereas the inferior RNFL thickness was thinner in the GON group. Accordingly, pVD in nasal and temporal sectors was lower in the CON group, and pVD in the inferotemporal sector was lower in the GON group. The CON group had a thinner macular ganglion cell-inner plexiform layer (mGCIPL) in the superior, superonasal, and inferonasal sectors, whereas the GON group showed thinner mGCIPL only in the inferotemporal sector. However, there was no sector in which the CON group had lower macular VD than the GON group. The GON group showed lower superficial capillary plexus VD in superior, inferior, and temporal perifovea and temporal parafovea. Furthermore, the GON group had lower deep capillary plexus VD in temporal perifovea and parafovea.

Conclusions: The RNFL thickness and peripapillary VD were decreased in the nasal and temporal quadrant in the GON group, and in the inferior quadrant in the GON group. Compared to the GON group, the CON group showed a decrease in the superior and nasal mGCIPL thickness, but not in the macular VD in the corresponding area.

Conversion of Ocular Myasthenia Gravis in Taiwan

*First Author: Pai-Huei **PENG***

Purpose: To evaluate the conversion rate, timing of conversion from ocular to generalized myasthenia gravis (GMG), as well as the risk factors for conversion.

Methods: Ocular myasthenia gravis (OMG) patients (> 18 years old) with a minimum 2 years of follow-up were included in this retrospective study.

Results: Of the 258 OMG patients (mean follow-up 63 months), 52 (20%) converted to GMG. The conversion rate was 9.3% and 13.6% at 1 and 2 years, respectively. The median time for conversion was 13 months (ranging between 1 and 108 months). Positive repetitive nerve stimulation (RNS) test (p = 0.002) and

treatment with immunosuppressants (p = 0.021) were significant factors associated with conversion.

Conclusions: The conversion rate of OMG patients in Taiwan was not high. RNS positivity and treatment with immunosuppressants were predictive factors for generalization.

Cyst With a Twist

*First Author: Rakhi **DCRUZ***

Purpose: To report a rare case of internuclear ophthalmoplegia with upgaze palsy caused by cysticercosis.

Methods: A 31-year-old young man presented with acute onset of painless vertical diplopia for 15 days for both near and distance. A complete ophthalmic evaluation involving slit lamp evaluation, IOP, PBCT (prism bar cover test), diplopia evaluation, B-scan and MRI was done. He developed an episode of seizures followed by loss of consciousness for which he consulted nearby hospital. He was diagnosed as neurocysticercosis with multiple infarcts in thalami and midbrain supported by MRI. He was started on albenadazole, systemic steroids and antiepileptics. His general condition improved but diplopia persisted.

Results: Ocular examination revealed 10 PDXT with 14 PD LHoT on cover test, dextroversion was normal on levoversion. RE adduction -2 with LE ataxic nystagmus. Upgaze was limited in BE, pupil, and fundus – OU WNL BSCAN-showed evidence of cyst within SR muscle. A provisional diagnosis of right INO with upgaze palsy due to dorsal midbrain syndrome associated with neurocysticercosis and orbital cysticercosis affecting SR muscle was made. The patient was reassured and was asked to continue the medications and review in two weeks.

Conclusions: Cysticercosis has varied ophthalmic manifestations, but a presentation like this is very rare. A high index of suspicion along with characteristic features on imaging helps us to establish an accurate diagnosis and initiate appropriate treatment.

Dandy Walker Syndrome Malformation

*First Author: Ria **MUTIARA***

Purpose: To report a cases of dandy walker syndrome that occurred in a young adult without neuroophthalmological abnormalities

Methods: Dandy Walker syndrome is a rare disorder characterized by complete or partial agenesis of the vermis, cystic dilatation of fourth ventricle and enlarged posterior fossa. About 70-80% of patients experience hydrocephalus, which usually occurs after birth. The precise etiology is unknown, although there have been reports of associations with risk factors like maternal virus infections and alcohol consumption.

Results: A 25-year-old woman had 1year of headache without nausea or vomiting , associated with weakness of extremities. She was also hypertensive and ?hyperthyroid since 3 years ago due to suppression of the anterior and posterior pituitary. Color fundus photograph and visual field was normal. There was widening of the occipital bone. Head MRI revealed fluid collection with dilation of the posterior fossa with hypoplation vermis tentorium cerebell and suggestive scalloping of the occipital.

Conclusions: Conclusion, The diagnosis is based on the clinical symptoms of chronic headache, hydrocephalus, bulging in the occiput bone, suture widening and cranial MRI with two of the three typical features of MDW found, namely fourth ventricular cyst dilatation, and hydrocephalus. Management is in the form of surgery with the procedure of installing the Y shunt as an option.

Diagnostic Dilemma: Optic Neuritis Post-Adalimumab Versus Non-arteritic Anterior Ischaemic Optic Neuropathy?

*First Author: Chern Meng **TAN***
*Co-Author(s): Mohd Faizal **HARON***

Purpose: To present a case of right eye optic neuropathy one-month post-adalimumab initiation.

Methods: A case report.

Results: A 59-year-old man with underlying hypertension, diabetes mellitus and psoriatic arthritis presented to the eye casualty with right eye inferior half visual field scotoma for two weeks. On examination, right eye vision 6/9; left eye vision 6/9. Right eye optic nerve function test was deranged (RAPD positive, light and red saturation 90%). Bilateral eyes of anterior segment were unremarkable, intraocular pressure was normal. Right eye fundus showed a diffusely swollen optic disc, tortuous and dilated vessels, no diabetic retinopathy changes. Left eye fundus was unremarkable. His blood pressure and sugar were under control. Of note, he was started on adalimumab for psoriatic arthritis by rheumatologist one month prior to the onset of blurring of vision. This raised a suspicion of right eye optic neuritis post-adalimumab. However, Humphrey visual field (HVF) showed inferior altitudinal defect on the right eye, no visual field defect on the left eye. Pre-arterial phase of fundus fluorescein angiography (FFA) was delayed to 40 seconds. Magnetic resonance imaging of orbit was not performed at time of presentation due to limited resource. Diagnosis was revised to right eye non-arteritic anterior ischaemic optic neuropathy (NAION) based on the clinical presentation, findings of HVF and FFA.

Conclusions: Patients on adalimumab who presented with optic neuropathy should prompt the clinicians to think of drug-induced optic neuritis as one of the differential diagnoses and investigate accordingly when radiological imaging is not readily available.

Different Visual Outcomes in Similar Cases of Methanol Induced Toxic Optic Neuropathy

*First Author: I Nyoman Surya **WAHYUDI***
*Co-Author(s): Seskoati **PRAYITNANINGSIH**, Wino **VRIEDA VIERLIA***

Purpose: Reporting two similar cases of methanol-induced toxic optic neuropathy with different visual outcomes.

Methods: The prospective case report is based on the clinical condition, ophthalmology examination including visual acuity (VA), funduscopy, perimetry, contrast sensitivity, color blindness, Optical Coherence Tomography (OCT), and laboratory tests.

Results: The two cases in this report present manifestations of acute methanol intoxication with blurred vision. Both drank the same bootleg alcohol 3 days before admission. The first case presents a worse condition, where the initial VA was hand movement on both eyes, while the second case was >2/60 on both eyes. The first case patient also had worse optic nerve edema based on funduscopy and OCT. Further investigation revealed that the second case patient ingested ethanol 3 hours prior to the bootleg. Both were given the same initial treatment followed by hemodialysis, a high dose of intravenous methylprednisolone (1 gram/day divided into 4 doses in 500 mL of normal saline), and folic acid along with supportive therapies for 3 days. Then they were discharged to continue treatment in the outpatient clinic with oral prednisone at 1 milligram/kilogram body weight with a tapered dose every week. At the first month's follow-up, the VA of the first case's right eye was 1/300 and the left eye was 1/60, while the second case was 1.0 on both eyes.

Conclusions: The different visual outcomes in both patients may be caused by the types of alcohol consumed. The history of ethanol consumption prevented severe methanol toxicity, but further investigation may still be needed.

Dynamic Changes in Metabolic Status Associate With Risk of Ocular Motor Cranial Nerve Palsies

*First Author: Daye **CHOI***
*Co-Author(s): Sei Yeul **OH**, Kyung Ah **PARK***

Purpose: To investigate whether recovery from or development of metabolic syndrome (MetS) in a population is associated with an altered risk for ocular motor cranial nerve palsy (CNP).

Methods: This cohort study included 4,233,273 adults without a history of ocular motor cranial nerve palsy (ocular motor CNP) who underwent two consecutive biennial health screenings provided by the Korean National Health Insurance System between 2009 and 2011. They were followed up until December 31, 2018. Participants were categorized into a MetS-free, MetS-developed, MetS-recovered, or MetS-chronic group. Multivariable Cox proportional hazard regression model was used. Model 3 was adjusted for age, sex, smoking status, alcohol consumption, and physical activity.

Results: Compared with the MetS-free group, the MetS-chronic group had the highest risk of ocular motor CNP (hazard ratio [HR]: 1.424; 95% confidential interval [CI]: 1.294-1.567, model 3), followed by the MetS-developed group (HR: 1.198, 95% CI: 1.069-1.343, and the MetS-recovered group (HR: 1.168, 95% CI: 1.026-1.311) after adjusting for potential confounders. The hazard ratio of ocular motor CNP in males with chronic MetS was 1.566 (95% CI, 1.394-1.761), while that of females with chronic MetS was 1.191 (95% CI, 1.005-1.411). Among age groups, those in their 30s and 40s showed the highest association between dynamic MetS status and ocular motor CNP.

Conclusions: In our study, recovering from MetS was associated with a reduced risk of ocular motor CNP compared with chronic MetS, suggesting that ocular motor CNP risk could be managed by changing MetS status.

Hydrocephalus Presenting With Subtle Compressive Chiasmopathy

*First Author: Merrelynn **HONG***
*Co-Author(s): Shweta **SINGHAL**, Tien-En **TAN***

Purpose: To report a case of subtle, asymptomatic compressive chiasmopathy secondary to hydrocephalus.

Methods: A retrospective case report.

Results: A 67-year-old Chinese male was seen for routine diabetic retinopathy screening. He was asymptomatic, with visual acuity of 20/20 in both eyes, and ocular examination was unremarkable except for an incidental finding of subtle bitemporal disc pallor. Humphrey visual field testing showed only non-specific superior defects in both eyes. Optical coherence tomography (OCT) of the retinal nerve fiber layer (RNFL) showed subtle thinning temporal to the optic nerve in both eyes, while OCT of the ganglion cell-inner plexiform layer (GCIPL) revealed binasal perifoveal thinning. This pattern of OCT thinning was suggestive of chiasmal compression, and so the patient underwent neuroimaging, which showed chiasmal compression secondary to hydrocephalus.

Conclusions: To our knowledge, this is the first report of hydrocephalus presenting in an asymptomatic patient with subtle compressive chiasmopathy. This case highlights important educational points. First, subtle optic disc pallor can sometimes be the only clinical sign of significant intracranial pathology, and such patients may even be asymptomatic. Second, if in doubt about optic disc pallor or atrophy, OCT of the RNFL and GCIPL are useful non-invasive adjunct tools.

Patterns of OCT thinning can help to localize pathology and may be more sensitive than visual field testing in some cases. The addition of GCIPL OCT on top of RNFL OCT may have a greater sensitivity for detection of chiasmal pathology. Fourth, hydrocephalus is an unusual, but important cause of compressive chiasmopathy.

Idiopathic Intracranial Hypertension in Pediatric and Adolescent Age Group of Tertiary Eye-Care Center in Bangladesh

*First Author: Tanima **ROY***
*Co-Author(s): Aneeka Rahnuma **ISLAM***

Purpose: To describe the clinical presentation, treatment, and outcome of idiopathic intracranial hypertension (IIH) in pediatric and adolescent age groups.

Methods: It is a retrospective chart review of 17 patients, attended at the Neuro-Ophthalmology Department of a tertiary eye-care hospital in Bangladesh. Diagnostic criteria included the presence of papilledema, normal neurological examination, and normal neuroimaging. Patients were followed up for a period of 12 months.

Results: Seventeen patients had been diagnosed with IIH (2 males, 9 females). Headache, nausea and vomiting, inward deviation of the eyeball, and blurred vision in both eyes were the common presenting features. Overweight was found in 41.2% (n-7) patients. One patient had found obese. All patients were treated with Tab Acetazolamide. Optic nerve fenestration was done in two patients with progressive loss of vision. Resolution of papilledema and recovery of visual function occurred in most of the patients.

Conclusions: IIH is an uncommon differential diagnosis in children. Careful diagnosis is required to start treatment rapidly as it prevents permanent vision loss.

Intravenous Immunoglobulin Effective for Corticosteroid Refractory Anti-Aquaporin 4 Antibody Positive Optic Neuritis

*First Author: Yuki **OZAWA***
*Co-Author(s): Takahiro **MATSUOKA***

Purpose: We report a case of anti-aquaporin 4 (AQP4) antibody-positive optic neuritis that responded well to intravenous immunoglobulin (IVIG) treatment in an acute stage.

Methods: A retrospective chart review was conducted for this case.

Results: A 54-year-old woman with a history of Sjogren›s syndrome presented with blurred vision in the right eye that had persisted over the past 7 days. Corrected visual acuity was 0.01 in the right eye and 1.2 in the left. Pupillary light reflex was slow, and relative afferent pupillary defect was positive in the right eye. Critical fusion frequencies were 12.8 Hz and 42.8 Hz in the right and left eyes, respectively. No abnormality of the optic disc was found and there was severe constriction of the visual field in the right eye with only a partial visual field remaining on the peripheral ear side. Contrast-enhanced magnetic resonance imaging showed enhanced signals in the right optic nerve. Blood test results were positive for the anti-AQP4 antibody, leading to a diagnosis of anti-AQP4 antibody positive optic neuritis. As one course of steroid pulse therapy was ineffective, she received IVIG therapy for 5 days with oral steroid treatment. After IVIG therapy, the narrowing of the visual field was significantly improved, and corrected visual acuity recovered to 0.8 in the right eye without adverse effects. There has been no recurrence until 16 months later.

Conclusions: IVIG treatment is a non-invasive and useful treatment option for corticosteroid refractory anti-AQP4 antibody positive optic neuritis. Optimal treatment should be selected considering clinical findings and patient conditions.

It's a Miracle, I Can See Again!

*First Author: Vinoshini **KAILAIVASAN***
*Co-Author(s): Tikambari A/p **ETTHIRAJAN***

Purpose: This case report highlights isolated homonymous hemianopia secondary to hemorrhagic stroke in a young man and subsequent unexpected improvement of the visual field defect.

Methods: A case report is presented.

Results: A 24-year-old healthy man presented with sudden onset tension band-like bifrontal headache, associated with bilateral blurring of vision (BOV) for 2 days. He also had 2 episodes of projectile vomiting on the day of hospital visit. On examination bilateral visual acuity were 6/12 and 6/9 with pinhole. The intraocular pressure, optic nerve function tests, anterior segment and fundus examination were all normal in both eyes. Confrontation visual field test revealed left homonymous hemianopia, which was then confirmed by Humphrey Visual Field test. There was no other neurological deficit elicited on systemic examination. An urgent contrast enhanced computed tomography (CECT) of brain and angiography revealed ruptured cerebral arterio-venous malformation (CAVM) with large right temporo-parieto-occipital intraparenchymal bleed causing midline shift. The patient was managed conservatively with intravenous mannitol and prophylactic anti-convulsant by neurosurgical team for two weeks before he was discharged to receive further treatment at his home country. Three weeks later, there was improvement in visual acuity and visual field defect, corresponding with reduction in the size of blood clot as shown on the repeated CECT of the brain.

Conclusions: Early diagnosis and immediate management of hemorrhagic stroke promise an improvement of the neurological manifestation, a

better outcome as well as prognosis.

Leber Hereditary Optic Neuropathy With Underlying Juvenile Open Angle Glaucoma: A Diagnostic Challenge

*First Author: Muhammad **ABDULLAH***
*Co-Author(s): Hong Kee **NG**, Chng Tun **WANG***

Purpose: Leber hereditary optic neuropathy (LHON) is a maternally inherited recessive disease caused by mutation in mitochondrial DNA (mtDNA), characterized by subacute painless vision loss affecting both eyes. It usually manifests between the second and fourth decade of life and affects both eyes within weeks to months.

Methods: A case report is presented.

Results: A 48-year-old man with juvenile open angle glaucoma (JOAG) for 15 years old presented with subacute deterioration of vision within 2 months on both eyes. There was high fluctuation of intraocular pressure despite full anti-glaucoma medications. His vision was deteriorated fast from 6/12 to hand movement. Fundus examination revealed bilateral pale disc with CDR 0.8. OCT optic nerve head (ONH) show rim of retinal nerve fiber layer (RNFL) which is not consistent with severity of vision lost. Lumbar puncture showed high protein component. MRI demonstrated subtle peri optic nerve enhancement. An early high dose intravenous corticosteroid and plasmapheresis fail to recover the vision. His maternal uncle had loss of vision on both eye during young. Finally, his genetic testing revealed homoplasmic m.11778G>A LHON mutation.

Conclusions: Underlying juvenile open angle glaucoma may mask the onset LHON. It posts a challenge to diagnosis. Thus, detail clinical evaluation with highly suspicious is needed for early administration of treatment.

Linezolid Induced Bilateral Optic Neuropathy: A Case Series

*First Author: Ankit **AGRAWAL***
*Co-Author(s): Krishna Kumar **AGRAWAL**, Neelam Runda **RUNDA***

Purpose: Reporting a case series of five patients with linezolid induced bilateral optic neuropathy.

Methods: Five patients, aged between 20 to 32 years, 3 males and 2 females, on linezolid therapy for pulmonary TB for more than 12 months, presented with bilateral visual loss. The dosage in was more than 600 mg in all cases. Presenting BCVA was less than 3/60 both eyes in all patients with defective color vision with mild to moderate disc pallor. The dose of linezolid was reduced to 10 mg/kg/day as per body weight in four patients and was stopped in fifth patient. This resulted in significant visual improvement in all patients and also the color vision improved.

Results: Reducing the dosage of Linezolid to optimum levels also reduced the toxicity thereby reducing the neuropathy.

Conclusions: Linezolid induced optic neuropathy is a reversible cause of visual impairment which can be avoided by choosing proper doses in patients receiving long term linezolid therapy for MDR and XDR TB. The patient should be regularly monitored for any visual changes and doses adjusted according to the weight. A long term and large sample study is required, enrolling patients of MDR AND XDR TB who are on linezolid therapy to evaluate the clinical manifestations and dosing of the drug to avoid neurotoxicity.

Minor Head Trauma: A Rare Cause of Internuclear Ophthalmoplegia

*First Author: Wan Sin **GAN***
*Co-Author(s): Sylves **PATRICK***

Purpose: Internuclear ophthalmoplegia (INO) is the result of a lesion affecting the medial longitudinal fasciculus (MLF). The common causes of INO are multiple sclerosis in the young and stroke in the elderly. We herein report a rare case of unilateral internuclear ophthalmoplegia as a sequela of minor head trauma.

Methods: To present a case report.

Results: A 38-year-old man presented with sudden onset of binocular diplopia after a fall. He fell forward and his right cheek hit the concrete floor. There was no loss of consciousness, nausea, vomiting, limb weakness or numbness. Upon presentation, his visual acuity was 6/7.5 for bilateral eyes. The extraocular movement showed an isolated left adduction deficit, with horizontal nystagmus of the contralateral eye on the right gaze. The forced duction test was negative. Other central nervous system examinations were unremarkable. Computed tomography (CT) of the orbit and brain found no intracranial bleed and orbital wall fracture. The patient was planned for magnetic resonance imaging (MRI) of the orbit and brain. However, due to the presence of a pre-existing left maxillary implant of unknown material, the MRI could not proceed. A clinical diagnosis of left traumatic internuclear ophthalmoplegia was made. Subsequently, within a week, the extraocular movement deficit resolved completely without any active intervention.

Conclusions: Traumatic INO, although rare, should be one of the differential diagnoses of a sudden onset unilateral adduction deficit following minor head trauma. MRI if not contraindicated, could be performed to correlate the clinical findings with anatomical lesions.

Neuromyelitis Optica Spectrum Disorder: A Case Report of Rare Aquaporin-4 Antibody Seronegative Patient With Subsequent Serious Complication From Therapeutic Plasma Exchange

*First Author: Goh **HAN***
*Co-Author(s): Tajunisah **IQBAL**, Gowri **SUPRAMANIAM***

Purpose: Neuromyelitis Optica Spectrum Disorder (NMOSD) is a rare antibody mediated demyelinating disease of the central nervous system. The detection of Aquaporin-4 Antibody (AQP4-Abs) is crucial for diagnosis. Misclassification of NMOSD as classical optico-spinal multiple sclerosis may results in ineffective or even harmful treatment options and vice versa. However, serum AQP4-Abs may not be detected in up to 25% of NMOSD. To report a rare case of AQP4-Abs seronegative NMOSD focusing on diagnosis challenges and its implications.

Methods: To present a case report.

Results: A 17-year-old girl presented with acute episode of bilateral retrobulbar optic neuritis after five months history of transverse myelitis with spastic tetraplegia involving C2 to T2 and T5 to L4. Her best corrected visual acuity was 6/18 for right eye, and 6/30 for left eye. Optic nerve functions were affected in both eyes. Bilateral optic discs were appeared normal funduscopically. Visual evoked potential noted P100 was absent bilaterally. Serum AQP4-Abs and serum myelin oligodendrocyte glycoprotein antibody were negative. Cerebrospinal fluid analyses were normal. MRI documented patchy contrast enhancements at prechiasmatic and retrobulbar intra-orbital optic nerves. MRI of spine also noted C2 to T2 long segment T2W/STIR hyperintensities. Her visions improved drastically after a course of intravenous methylprednisolone. Catastrophically, she developed catheter related severe septicemia after subsequent therapeutic plasma exchanges targeted to treat the persistent transverse myelitis. Fortunately, she survived and attained bilateral 6/6 of visions upon discharged.

Conclusions: High index of suspicions with accurate diagnosis in differentiating NMOSD from other differential diagnoses are crucial before commencement of invasive or potentially risky treatment options.

Neurosyphilis: A Case Report

*First Author: Roxanne **APOSTOL***

Purpose: WHO 2020 reported an estimate of seven million people worldwide infected with syphilis with male-having-sex-with-male predominance. Diagnosis of neurosyphilis is challenging as it tends to mimic other ocular diseases. The psycho-social and financial burden can be challenging to Ophthalmologists in developing countries in managing the disease. This paper presents a case of neurosyphilis treated with an alternative regimen of IM benzathine penicillin G.

Methods: A 35-year-old homosexual male presented with a sub-acute, painless, progressive blurring of vision on both eyes with no other ocular symptoms. Patient consulted an Ophthalmologist and was diagnosed with bilateral disc edema, hence, referred to our institution. BCVA of the right and left eye upon presentation were 20/100 and CF at 1 ft. Bilateral central scotoma with marked color vision deficiency was noted on the left eye. Light-near dissociation was noted. On genitourinary examination, a 3-month history of a tender indurated ulcer around the anogenital region. Laboratory exams showed elevated ESR, reactive RPR, positive TP-PA quantitative, negative HIV panels. Fluorescein angiography exhibits bilateral retinal vasculitis.

Results: The patient was advised IV treatment Aqueous Pen G, but the patient was treated as outpatient with 3 doses of IM benzathine penicillin G with oral corticosteroids. BCVA improved to 20/50 OU after the treatment regimen. Five months after, BCVA improved to 20/50 and 20/20 on the right and left eye respectively.

Conclusions: Neurosyphilis is an emerging disease of concern in developing countries. Prompt treatment is needed because of a possible devastating clinical outcome. Psycho-social aspect should be taken into consideration in treating neurosyphilis patients.

Onodi Cell Mucocele-Associated Optic Neuropathy

*First Author: Li-Wei **CHAN***
*Co-Author(s): Wei-Cherng **HSU***

Purpose: The visual prognosis of rhinogenic optic neuropathy varies from permanent visual loss to complete recovery. Here we present a rare case of Onodi cell mucocele-associated optic neuropathy successfully treated with short-term intravenous steroid followed by emergent endoscopic sinus surgery.

Methods: This 73-year-old lady presented with decreased vision and dyschromatopsia of the right eye for three days. Ophthalmic examination of the right eye showed best corrected visual acuity 20/400, failed Ishihara color plates, and a prominent relative afferent pupillary defect. Slit-lamp biomicroscopy was unremarkable. Magnetic resonance imaging showed an ethmoidal Onodi cell mucocele compressing the intracanalicular portion of the right optic nerve. Intravenous steroid therapy was given, and emergent endoscopic sinus surgery for removal of the lesion was performed four days after the onset of symptoms. One month after the surgery, visual acuity of the right eye had improved to 20/32, color vision had recovered completely.

Results: The potential pathophysiological mechanism responsible for mucocele associated optic neuropathy

includes compartment effect causing compromised blood supply, local inflammatory reaction, and direct mechanical compression. In this case, intravenous steroid therapy acted to reduce inflammation and tissue swelling, whereas ultimate surgery removed the causative lesion and saved the most reversible optic nerve function.

Conclusions: Onodi cell mucocele-associated optic neuropathy is rare but potentially sight-threatening. Imaging techniques play an essential role in the diagnosis. Early surgical intervention might contribute to better visual prognosis.

Paracentral Scotoma in Cerebal Lupus Vasculitis

*First Author: Nurul Farahani **UMAR***
*Co-Author(s): Muharliza **MUSA***

Purpose: To report a rare case of homonymous central scotoma as the initial presentation of SLE cerebral vasculitis.

Methods: A case report is presented.

Results: A 33-year-old female presented with sudden central vision loss upon waking up from sleep. This is the first episode and no prior trauma. Both eyes visual acuity was 6/6 unaided with no relative afferent pupillary defect. Confrontation test revealed homonymous central scotoma confirmed by Humphrey visual field (HVF) test, which showed congruent pattern. Otherwise, anterior and posterior segment review were unremarkable. Her blood investigations positive for serum anti-nuclear antibody (ANA) and anti-double stranded DNA (anti-dsDNA) with low C3, C4 level and magnetic resonance imaging (MRI) of the brain revealed recent right occipital tip infarct with vasculitis changes.

Conclusions: The wide variety of eye manifestation in SLE presents a challenge in leading to a correct diagnosis. In case of isolated congruent homonymous central scotoma, an occipital lobe lesion should be suspected, and urgent brain imaging should be carried out to rule out life-threatening cerebral vasculitis.

Parinaud syndrome associated with acute intracerebral hemorrhage: A case report

*First Author: Pei-Jane **BAIR***
*Co-Author(s): Michael **CHOU***

Purpose: To report a case of Parinaud syndrome caused by intracerebral hemorrhage.

Methods: Case report and review of the literatures

Results: A 51- year- old female without previous systemic diseases such as hypertension or diabetes mellitus. Sudden onset binocular diplopia and left side hemiplegia was told by the patient. She was then brought to our emergency department for help. Visual acuity showed 20/40 at right eye and 20/25 at left eye. Primary position showed hypotropia on both eyes, and extraocular motility showed significant upward limitation (OU). Besides, convergence retraction nystagmus was also noted., The patient's history and results from slit lamp examination and fundus examination was normal. At the emergency department, computed tomography revealed acute right thalamic intracranial hemorrhage (ICH) (2.0x1.2x1.8 cm). Moreover, the magnetic resonance image exam also revealed hemorrhagic lesion over right thalamus with regional edema, which extended downward to the right midbrain. The mass effect was slightly increased and compressed upon adjacent cerebral aqueduct. Under the impression of acute intracerebral hemorrhage, she was then admitted to the intensive care unit for intensive care, and further rehabilitation program was arranged.

Conclusions: In conclusion, prompt diagnosis and treatment are imperative for patients with symptoms suggestive of PS to attain satisfactory outcomes.

Peripapillary Retinal Nerve Fiber Layer Thickness in Idiopathic Optic Neuritis and Neuromyelitis Optica Spectrum Disorder Associated Optic Neuritis

*First Author: Xiayin **YANG***
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Purpose: This research aimed to observe and monitor the progressive damage of peripapillary retinal nerve fiber layer (pRNFL) thickness in both idiopathic optic neuritis (IDON) and neuromyelitis optica spectrum disorder associated optic neuritis (NMOSD-ON) patients.

Methods: In total, 183 eyes (96 IDON eyes and 87 NMOSD-ON eyes) were included in our study. Visual acuity, symptoms, signs, optical coherence tomography reports (average pRNFL thickness, pRNFL thickness in different quadrants or sessions) were recorded and analyzed.

Results: Regarding the edematous-optic-disc eyes, no significant difference across durations was found in IDON eyes. But significant attenuations of average pRNFL thickness, nasal and superior thickness were revealed in NMOSD-ON eyes at 3-6 months Regarding the non-edematous-optic-disc-eyes, average pRNFL, inferior, nasal and superior pRNFL thickness experienced reducation at 1-3 months. Average pRNFL, inferior, nasal and superior quadrants progressed to thin at 3-6 months.

Conclusions: Our result indicated that IDON eyes suffered from more severe edematous optic disc. Thinning of pRNFL thickness occurred earlier in NMOSD-ON eyes.

Progressive Bitemporal Hemianopsia: An Unusual Presentation of Non-Organic Visual Field Loss

*First Author: Chaow **CHAROENKIJKAJORN***
*Co-Author(s): Andrew **LEE**, Peter W. **MORTENSEN**, Mohammad **PAKRAVAN**, Byoung **RYU***

Purpose: We report a case with functional, progressive, bitemporal hemianopsia, which is a very uncommon presentation of non-organic disease. Although patients with functional visual disorder (FVD) can present with any visual field defect (VFD) pattern, the most common is a constricted visual field (i.e., tunnel vision). Some VFD can be adjudicated with a binocular visual field test.

Methods: To present a case report.

Results: A 36-year-old female presented with bilateral, gradually progressive vision loss accompanied by worsening headache for 3 months. Past medical history included migraine, and depression. Visual acuity was 20/25 in both eyes. Automated perimetry testing with Humphrey visual field (HVF) 24-2 demonstrated denser-superiorly, bitemporal hemianopsia. MRI brain/orbit was unremarkable for sellar/suprasellar lesion. The pituitary hormones were within the normal range. On the follow-up visits, there was gradual worsening of the VFD (Figure-1). Optical coherence tomography (OCT) of the nerve fiber layer showed no thinning. Repeat testing (HVF) with both eyes open showed a persistent right hemianopic field defect which confirmed the diagnosis of FVD. Patient did report multiple, recent stressful life events which could contribute to the diagnosis.

Conclusions: Functional, progressive, bitemporal hemianopsia can be confirmed by the persistence of the hemianopic field defect with both eyes open. This is because the nasal hemifield of each eye corresponds to the temporal hemifield in the contralateral eye. In contrast, a homonymous hemianopsia will produce a hemianopic result on both eyes open testing. Clinicians should be aware which VFD can and cannot be confirmed as FVD with both eyes open testing.

Radiation Induced Optic Neuropathy: A Diagnostic Dilemma

*First Author: Udbuddha **DUTTA***
*Co-Author(s): Ambika **SELVAKUMAR***

Purpose: We describe a case of a 47-year-old female who presented with a progressive visual loss in the right eye since the last 6 months. She had been operated for a brain tumor 25 years back and had also undergone 2 rounds of radiotherapy. Her vision had dropped from a best corrected vision of 6/6 to hand movements close to face in the right eye.

Methods: It was a case study by design. Fundus examination revealed a pale disc in the right eye. A 30-2 Humphrey visual field test revealed superotemporal defects in the otherwise normal left eye. She was evaluated for atypical optic neuritis and an MRI Brain and Orbit with contrast was done to look for any new chiasmal lesion. An oncologist opinion was sought, and the patient was advised a trial of intravenous steroids followed by a tapering course of oral steroids.

Results: After ruling out atypical optic neuritis and any new space occupying lesion, we came to conclude that she had developed radiation induced optic neuropathy.

Conclusions: Radiation-induced optic neuropathy is a devastating late complication of radiotherapy to the anterior visual pathway resulting in profound, irreversible visual loss. It is thought to be a result of radiation necrosis of the anterior visual pathway. Visual loss may be unilateral or bilateral; simultaneous or sequential. It occurs commonly between 10-20 months, with an average of 18 months after treatment; but the onset may range from three months to 9 years. It requires a multidisciplinary approach to treat and diagnose.

Rapid Progression of Herpes Zoster Ophthalmicus Complicated With Optic Neuritis Leading to Severe Vision Loss

*First Author: Ko Jo **LIN***

Purpose: To report a case of a herpes zoster ophthalmicus (HZO) complication that gives rise to severe vision loss about two weeks after initial varicella-zoster virus (VZV) infection.

Methods: To present a case report.

Results: We report a case of HZO with severe vision loss about two weeks after VZV infection was noted, even though we give intravenous acyclovir immediately after the diagnosis was confirmed. On the T1-weighted post-contrast enhanced magnetic resonance Imaging (MRI) peripheral enhancement surrounding the left optic nerve was noted, acute infarction on optic nerve was also noted on the diffusion-weighted imaging (DWI) and apparent diffusion coefficient (ADC) sequence. The cerebrospinal fluid (CSF) study confirmed VZV meningitis. During the 8 months follow-up period, the visual acuity and visual field reveal no apparent improvement.

Conclusions: Our patient experienced profound visual loss during the first few days. Combination of virus infection and ischemic optic neuropathy might explain the poor prognosis. HZO needs early diagnosis for adequate systemic acyclovir treatment, so that would lead to a better outcome. Systemic steroid as combination treatment remained controversial.

Systematic Review of Efficacy, Safety, and Future Directions of Corneal Neurotization: An Emerging Surgical Technique for Neurotrophic Keratopathy

*First Author: Brendon **LEE***
*Co-Author(s): Muhammad **KHAN**, Quan **NGO**, Chameen **SAMARAWICKRAMA**, Krishna **TUMULURI***

Purpose: Neurotrophic keratopathy is an orphan disease (ORPHA137596) characterized by damage to the trigeminal corneal innervation resulting in diminished corneal reflexes and disruption to the complex neurotrophic homeostasis.

Methods: A critical appraisal of electronic searches of six databases identified 37 studies on corneal neurotization. The authors compare the direct technique (nerve transfer) with indirect (nerve grafting of an autograft or allograft) based on the selected nerves, and their corresponding advantages and disadvantages. The primary outcomes examined included corneal sensitivity, visual acuity, in-vivo confocal microscopy parameters, ocular surface parameters, and complication rate.

Results: In published studies, corneal sensation significantly improved and was objectively observed between 6 weeks and 4 years (mean maximal recovery 6-12 months). This improvement is more robust ($p < 0.011$) and rapid in younger patients (0-17 years) when compared with adults (18-82 years). There appeared to be no significant difference based on surgical technique, donor nerve choice or laterality. In-vivo confocal microscopy demonstrated corneal nerve regeneration in the sub-basal nerve plexus with reduction in dendritic cells. The safety profile is favorable with few self-limiting complications. Importantly, successful visual rehabilitation can be performed following corneal neurotization. The authors recommend the proximal supraorbital and supratrochlear nerves as the first and second choices for direct transfer or donor nerve grafting based on their high axon count and reliable dissection using anatomical landmarks.

Conclusions: Corneal neurotization represents an emerging and potentially curative option in the armamentarium for neurotrophic keratopathy, which is otherwise a lifelong condition with devastating adverse impacts on patients› quality of life and vision.

The Unlikely Thief of Sight

*First Author: Chang Feng **CHEW***
*Co-Author(s): M **KURSIAH**, Kaai Voon **TAN***

Purpose: To report a rare case of Leber's hereditary optic neuropathy (LHON).

Methods: To present a case report.

Results: An unfortunate 17-year-old male who presented with progressive, painless blurring of vision associated with central scotoma in his left eye for the past 1 year which later affected his right eye 1-month prior to presentation. He has no common symptoms of optic neuritis. Further history revealed both his maternal uncle and a male cousin have poor vision with unknown diagnosis. On presentation, his left eye was legally blind but anterior segment bilaterally were unremarkable, however dilated fundus examination showed left optic atrophy and his right eye had hyperemic swollen optic disc with telangiectatic microangiopathy. A series of blood workup and contrasted computerized tomography of the brain and orbit done were unremarkable. Magnetic resonance imaging of the brain and orbit revealed features of optic neuritis without any other lesions in the brain. Visual evoked potential was inconclusive. Despite commencing a trial of steroid therapy, his right eye vision continued to deteriorate. He was then tested for LHON and a mitochondrial DNA (mtDNA) m.11778G>A point mutation was detected.

Conclusions: LHON is a maternally inherited mitochondrial genetic disease which typically affects young male adults. It is a rare blinding condition, but it needs to be ruled out especially in young males. Although there is no effective treatment to date, genetic counselling and visual rehabilitation are mandatory.

Third Nerve Palsy, an Uncommon Presentation of Pituitary Macroadenoma

*First Author: Gaytry **SELVARAJAH***
*Co-Author(s): Zairah **ABIDIN**, Zalifa **ASNIR**, Azlina **MOKHTAR**, Vincent **NG ZHUO HUI**, Ng Chun **WAI***

Purpose: To report a case of pituitary macroadenoma.

Methods: To present a case report.

Results: A 79-year-old Chinese gentleman presented with right-eye complete ptosis and diplopia for 3 days with episodes of vomiting. There was no history of accompanying pain or visual loss. Head trauma was denied. Hypertension, diabetes mellitus and dyslipidemia has been present for 10 years. There were no clear symptoms of endocrine dysfunction. Visual acuity of both eyes was 6/24 with significant cataract. The pupil measured 5 mm on the RE and 3 mm on the LE with present of afferent pupillary defect on the RE. There was complete ptosis and paralysis of all muscles innervated by the right third nerve. The remainder of the ocular motility and the other cranial nerves were normal. Confrontation test showed bitemporal hemianopia which was also confirmed on Bjerrum testing. His funduscopic examinations were normal. An MRI scan of the brain revealed a sellar mass with suprasellar extension which was suggestive of a pituitary macroadenoma. Patient was co-managed with the endocrine team. A full hormonal assay was done and showed cortisol and testosterone were low and patient requires hydrocortisone supplementation.

A dilutional prolactin level was 29mIU/L. In keeping with the above results, a diagnosis of non-functioning pituitary macroadenoma was made which requires surgical resection.

Conclusions: To report a rare case of pituitary macroadenoma presenting as an isolated third cranial nerve palsy with ptosis.

Tolosa-Hunt Syndrome With Painful Ophthalmoplegia of Left Eye

First Author: Nurul Farahani ***UMAR***
Co-Author(s): Muharliza ***MUSA***

Purpose: To report a rare case of Tolosa-Hunt syndrome involving the left cavernous sinus.

Methods: A case report is presented.

Results: A 54-year-old healthy lady, presented with left periorbital pain, ipsilateral limited ocular movements, and complete ptosis for one week. Thorough neuro-ophthalmological examinations revealed 6/6 vision, left complete ptosis, paresis of the third, fourth and sixth left cranial nerves, and hypoesthesia over the first and second division of the left trigeminal nerve. The right eye and other neurological examination did not show any abnormalities and bilateral eye normal fundus. Her initial laboratory tests showed no abnormalities and excluded infections, vascular, thyroid, metabolic and neoplastic causes of painful ophthalmoplegia. Contrasted MRI brain and orbits showed a diffusely thickened left superior orbital fissure (SOF) extending into the left cavernous sinus. We started IV methylprednisolone 1g daily for three days, and noticed significant improvement of the left periorbital pain, ptosis and the ipsilateral ophthalmoplegia, followed by oral prednisolone 1mg/kg daily tapering dose every week. Six weeks later, she was asymptomatic, and her neuro-ophthalmological findings were completely normal.

Conclusions: Tolosa-Hunt syndrome essentially remains a diagnosis of exclusion. Steroid therapy remains the mainstay of treatment for rapid resolution of clinical symptoms.

Two Rare Cases of Sudden Bilateral Vision Loss in Systemic Lupus Erythematosus

First Author: Sarah ***SHABRINA***
Co-Author(s): Rona Ali ***BADJRAI****, Subandono* ***INDRASTO****, Arlin* ***CHYNTIA***

Purpose: To present rare cases of atypical optic neuritis in systemic lupus erythematosus (SLE) patients presented with sudden painless bilateral vision loss.

Methods: An observational retrospective case series of two patients diagnosed with optic neuritis in SLE.

Results: A 16-year-old girl and a 19-year-old girl presented with sudden painless bilateral vision loss. Both have a history of severe SLE with underlying systemic diseases. No other ocular symptoms were found in both patients. From initial ocular examination, visual acuity worsened to light perception (LP) and no light perception (NLP), respectively. Funduscopy examination revealed hyperaemia on the optic disc in both patients. As for the therapy, all patients were given steroids and underwent DSA. However, one patient had her visual acuity back to 6/6 in both eyes, while one patient only reached 0,5/60 on her right eye and 1/60 on her left eye.

Conclusions: Optic neuritis should be considered in SLE patients with sudden painless bilateral vision loss. This condition needs to be assessed as early as possible to provide precise treatment for better outcomes. Since these manifestations are potentially severe, efficient diagnostic approach and proper treatment are beneficial in order to inhibit visual sequelae.

Visual field defects associated with pituitary adenomas: A single-center cross-sectional study

First Author: Pei-Jane ***BAIR***

Purpose: To investigate the pattern of visual field defect in patients with pituitary adenomas and the correlation between the tumor size and severity of functional defect.

Methods: Eighteen patients with pituitary adenomas who received comprehensive ophthalmic examinations and standard automated perimetry (SAP) with 30-2 programs were included between 2018-2021 in a single center. We defined hemianopia or quadrantanopia as typical visual defects, while other patterns as atypical defects. The severity of functional defect was calculated by mean deviation (MD) of SAP. Tumor volume was measured from brain CT or MRI. Pearson correlation was used to investigate the relationship between both parameters.

Results: 16 of the 18 patients (88.9%) had visual field defects, including 12 patients (75%) with typical defects and 4 patients (25%) with atypical pattern. 1 patient (6.3%) had moderate visual field defect (6<md<md20). There was a significant correlation between mean deviation of SAP and tumor volume, with Pearson correlation coefficient r=0.87 (p =0.0001).

Conclusions: Most patients with pituitary macroadenoma have visual field defects. Due to the variant involvement in the visual pathway, atypical visual field defects may exist. Severity of visual field defects significantly correlates with tumor size </md.

Young Girl With Bilateral Idiopathic Optic Neuritis

First Author: Edwin ***PHENG CHIN MENG***
Co-Author(s): Wan Hazabbah ***WAN HITAM***

Purpose: Acute idiopathic optic neuritis is more prevalence among younger population. Treatment is

individualized and usually involved corticosteroids. We present a case of bilateral eye optic neuritis in a young patient presented with very poor vision and made a marked improve of vision after treatment with steroids

Methods: Optic neuritis treatment trial shows no significant different in visual acuity in treated group vs non treated group. However, treated group show short term accelerated recovery. In our patient, we decided to initiate steroid treatment as child is having poor vision in both eye and show no sign of improvement even after 3 weeks of poor vision.

Results: A 7-year-old girl was referred for bilateral eye gradual blurring of vision after 3 weeks. Parents only notice child having difficulty to see after child bumping into objects. Examination shows only perception to light in both eye with bilateral hyperemic optic disc. A diagnosis of bilateral eye optic neuritis was made, and intravenous steroid was given. The patient made a dramatic good recovery from a vision of only light perception to 6/24 during first clinic visit.

Conclusions: Optic neuritis treatment is always a dilemma as no prospective or controlled clinical study has been conducted to fully clarify the effects of corticosteroids in the treatment. Proper pretreatment investigation and counselling should be discussed with patient before initiation of treatment. In our case show a marked improvement in visual function after initiation of treatment.

Ocular Imaging

A Systematic Review and Meta-analysis of Optical Coherence Tomography Angiography Findings of Post-surgery Eyes With Rhegmatogenous Retinal Detachment

*First Author: Stephanie **CELUCIA***

Purpose: To compare the pre-operative and postoperative optical coherence tomography angiography findings in patients who underwent either pneumatic retinopexy, pars plana vitrectomy, or scleral buckling with or without gas or silicone oil tamponade.

Methods: Literature search was done on PubMed, Cochrane Controlled Trial Register, EMBASE, and Medline from the time of inception until August 2021. Outcome measures include superficial and deep foveal avascular zone (FAZ), superficial capillary plexus vessel density (SCPVD), deep capillary plexus vessel density (DCPVD), choriocapillary plexus vessel density (CCPVD), and central foveal thickness (CFT) in patients with macula-off (RRD-off) and macula-on RRD (RRD-on) compared with healthy eyes.

Results: The SCPVD is significantly lower in RRD-off group compared with control group, with mean difference of -2.45 [-3.13, -1.78]. The CCPVD is significantly lower in RRD-on group compared with control group, with mean difference of -0.19 [-0.31, -0.07]. There was no significant difference in the DCPVD and CCPVD between RRD-off and control, and in the SCPVD and DCPVD between RRD-on and control. There were no significant differences in the SCP FAZ, DCP FAZ, FAZ in general, and CFT between the two groups.

Conclusions: DCPVD, FAZ, and CFT levels will become comparable to that of the normal eye after three months of RRD repair.

Antiangiogenic Effects of Type 3 Neovascularization in Age-Related Macular Degeneration After Anti-VEGF Therapy With Serial Optical Coherence Tomography Angiography

*First Author: Cheng-Kuo **CHENG***
*Co-Author(s): Yen-Ju **CHEN**, Chi-Hsien **PENG***

Purpose: To show the complete type 3 neovascularization (NV) lesions and evaluate the treatment effects of anti-VEGF therapy using serial optical coherence tomography angiography (OCTA) imaging in patients with age-related macular degeneration (AMD).

Methods: Baseline and treated OCTA scans were acquired in 36 eyes of 27 patients with treatment naïve type 3 NV lesions secondary to AMD in the treatment of anti-VEGF therapy. Complete type 3 NV lesions were analyzed with several consecutive cross-sectional OCTA images to best visualize the NV complex at baseline and after treatment.

Results: Superimposing several consecutive cross-sectional OCTA imaging showed the complete retinal angiomatosis proliferation (RAP) lesion, which demonstrated significant change between baseline and post-treatment images. After anti-VEGF treatments, the RAP lesion showed resolved in 14% eyes, decreased in 61% eyes and increased in 22% eyes on abnormal blood flow changes on OCTA at 1-year follow-up. The difference between the BCVA at each follow-up and the baseline data was statistically significant ($p < 0.05$) except from 156-week follow up.

Conclusions: OCTA improves the detection of complete NV lesions at baseline and shows more significant vascular changes in type 3 NV lesions after treatment. OCTA imaging may prove useful in understanding the pathogenesis of RAP lesions and guiding the treatment of these lesions.

Changes in Macular Perfusion During Treatment of Diabetic Maculopathy

*First Author: Colin **TAN***

Purpose: To determine the changes in macular perfusion measured using optical coherence tomography angiography (OCTA) in eyes with center-

involving diabetic macular edema (DME) following treatment with intravitreal anti-vascular endothelial growth factor (anti-VEGF) agents.

Methods: In a prospective interventional cohort study, 50 patients with DME were enrolled. All patients received 3 consecutive monthly doses of intravitreal anti-VEGF injections. OCTA scans were performed at baseline and at month 3. The size of the fovea avascular zone (FAZ) and vessel density were assessed using the standard device software and after further image processing. Central subfield thickness (CST) was also evaluated. These imaging parameters were correlated with baseline patient demographics and disease parameters, including the severity of background diabetic retinopathy.

Results: The mean age was 62.1 years (range, 50-81 years). There were significant changes in vascular parameters on OCTA following treatment. Vessel complexity index decreased from 10,014 to 9,183 (p =0.03), while fractal dimension decreased from 1,852 to 1,847. At baseline, vessel density decreased progressively with increasing severity of diabetic retinopathy (p =0.049). In contrast, FAZ size increased with increasing severity (mild: 0.366 mm2, moderate: 0.392 mm2, severe: 04.03 mm2).

Conclusions: On presentation, there is an association between the vessel density and FAZ size with the severity of background retinopathy. Following treatment of DME with intravitreal anti-VEGF injections, there is significant decrease in vascularity parameters measured using OCTA. These may serve as important biomarkers for monitoring of DME treatment.

Diagnostic Approach Of Keratoconus Using Corneal Topography

*First Author: Muchammad **IRHAMSYAH***
*Co-Author(s): Nanda **ANANDITA**, Lely **WULANDARI***

Purpose: To show how to diagnose of keratoconus using corneal topography.

Methods: A case was reported from an outpatient clinic. Diagnosis was made based on history taking and ophthalmology examination.

Results: We report a case of a 16-year-old female with bilateral keratoconus who presented with decreased vision and a history of frequent prescription change for her eyeglasses. Slit-lamp biomicroscopy of both eyes revealed Vogt's striae, Fleisher's ring, and Munson's sign. Corneal topography imaging technique was performed to define the area of thinning and steepening of the cornea. The results showed that there are superior steepening of the right cornea and central steepening of the left cornea. in these patients, an abnormal index result was obtained with the conclusion that the patient had clinically interpreted keratoconus with KCI (Clinical Keratoconus Interpreted) of 95.0% similarity and 90.5% severity on the right eye, KCI of 95.0% similarity and 95.0% severity on the left eye. The next treatment was a rigid gas permeable fitting with the aim of getting the best visual correction. Fitting with the aim of getting the best visual correction. We give the RGP (Rigid Gas Permeable) contact lens in this patient for the therapy, The RGP sizes is S-4.00 with base curve 7.95 and diameter 14.5mm on the right eye got over correction S-1.00 à 6/6 f1 and RGP S-4.00 with base curve 8.00 and diameter 14.5mm got over correction S-1.00 à 6/9 on the left eye.

Conclusions: Corneal topography is a non-invasive examination to analyze the morphology of the cornea quantitatively and qualitatively.

Low-Cost Wide Field OCT

*First Author: Ankit **AGRAWAL***
*Co-Author(s): Krishna Kumar **AGRAWAL**, Sameeksha **AGRAWAL***

Purpose: To describe an innovative solution for obtaining wide field OCT images with a traditional OCT machine with minimal extra cost.

Methods: The study was conducted in a tertiary care Eye Hospital in North India. Ten patients with pre-existing diabetic macular edema were examined. A spectacle frame fitted with +20D lens in both the eyes was worn by the patients while undergoing OCT imaging. The image obtained was compared with the images obtained without wearing the spectacles.

Results: The scan area covered in the OCT images with the spectacles worn was much larger than the scan obtained without spectacles.

Conclusions: In patients with DR, the DME may be present in the region which may not be covered in a single OCT image of macula by traditional machine. The light rays from a wider region are converged by the +20D lens, thus giving a wider field of scan. This innovation increases the field of imaging and can help capture those areas which may be missed earlier due to machine limitations.

Optical Coherence Tomography Angiography Features of Diabetic Retinopathy and Maculopathy

*First Author: Isaac **CHAY***
*Co-Author(s): Colin **TAN***

Purpose: Optical Coherence Tomography Angiography (OCTA) produces high resolution imaging of the retinal microvasculature in vivo. We aimed to correlate the retinal vasculature parameters seen on OCTA with the clinical severity of diabetic retinopathy (DR).

Methods: A prospective cohort study involving 82 diabetics with mild to severe non-proliferative diabetic retinopathy (NPDR) were compared against 20 healthy controls. The foveal avascular zone (FAZ) and vessel

densities were measured for both superficial and deep capillary plexus and correlated with the severity of DR, graded using color fundus photography (CFP).

Results: Mean FAZ sizes were significantly larger in patients with DR compared to controls (0.47 mm2 vs 0.28 mm2, p <0.01). In those with DR, mean FAZ sizes increases with severity of DR. (mild: 0.36 mm2 vs moderate: 0.52 mm2 vs. severe: 0.56 mm2, p < 0.05). Vessel densities were lower in patients with DR compared to controls (44.2% vs. 51.3%, p <0.001). The vessel densities were also progressively lower with worsening severity of DR (mild: 46.5% vs. moderate: 43.9% vs. severe: 40.9%, p <0.005). No spatial predilection in Vessel Density reduction in relation to specific ETDRS subfields was observed.

Conclusions: Retinal microvascular parameters measured on OCTA varies according to the degree of severity of DR. This ability to differentiate DR severity is important in the clinical evaluation of DR. OCTA derived parameters may potentially be useful as a novel imaging biomarker for DR disease severity.

Ocular Oncology and Pathology

3 Roads Diverged in a Wood: Management of 3 Cases of Orbital Intraosseous Venous Malformation

*First Author: Obaidur **REHMAN***
*Co-Author(s): Kasturi **BHATTACHARJEE**, Dipankar **DAS**, Deepak **SONI**, Vatsalya **VENKATRAMAN***

Purpose: Venous malformation (VM) or cavernous hemangioma of the soft tissues in the orbit is quite common but intraosseous VM of orbital bones is exceptionally rare. The authors present 3 cases of orbital intraosseous venous malformation (IOVM), with their respective lines of management.

Methods: Details of 3 IOVM cases including clinical data, radiological features and tailored treatment strategies as per the individual case is described.

Results: All three patients were females (100%) and the mean age of presentation was 29.66 years. Two cases presented with proptosis and 1 case with lower lid swelling. Involvement of the maxilla was noted in 1 case while the other 2 cases involved multiple orbital bones. Complete excision of the mass was done in first case, partial excision in the second case and incision biopsy in the third case. Histopathology showed endothelium lined blood spaces within the bone in all 3 cases.

Conclusions: Although a rare entity, diagnosis of orbital intraosseous venous malformation needs to be kept in mind while dealing with slow growing orbital bony masses.

A Novel Germline RB1 Mutation in Filipino Identical Twins With Bilateral Retinoblastoma

*First Author: Josept Mari **POBLETE***
*Co-Author(s): Gary **MERCADO***

Purpose: Retinoblastoma (Rb) is considered the most common primary intraocular malignancy of childhood, but its occurrence in identical twins is very rare. We report the first case of Filipino identical twins with bilateral retinoblastoma having a novel germline mutation in their RB1 gene.

Methods: A pair of Filipino identical twins initially presented with leukocoria and buphthalmos at 4 months of age. Fundoscopy and ocular imaging studies were consistent with bilateral retinoblastoma. DNA samples isolated from peripheral blood were sent for mutational analysis of Rb1 gene through DNA sequencing.

Results: A pathogenic variant, c.607del (p.Glu204Lysfs*10), was identified in RB1 of the twins. This sequence change creates a premature translational stop signal in the RB1 gene, thus resulting in an absent or disrupted protein product. Algorithms developed to predict the effect of sequence changes on RNA splicing suggest that this variant may disrupt the consensus splice site. Interestingly, this variant is not present in population databases, making this mutation novel.

Conclusions: Mutational analysis of Rb1 gene in Filipino identical twins revealed a novel mutation seen for the first time in Rb patients. With the discovery of a novel mutation, this report motivates the need for identifying the molecular basis of retinoblastoma in Filipinos, as these mutations may be unique and highly heterogeneous. Identification of the RB1 gene pathogenic variants will allow for early diagnosis and improve management of retinoblastoma in the Philippines.

Bilateral Optic Neuritis With Maculopathy in a 9-Year-Boy: Infectious/Inflammatory?

*First Author: Sridhar **BARATAN***
*Co-Author(s): Archana N, Manoj **VASUDEVAN***

Purpose: This single patient report is to highlight the rare possibility of this bilateral simultaneous asymmetrical affection of both optic disc and macula during the pandemic of COVID-19.

Methods: A 9-year-boy came with redness of his eyes over 3 days by his mother, there was mild discomfort with tearing. On examination both his eyes had bulbar conjunctival injection and all other anterior segment details were well within normal limits except for a very minimal sluggish reaction of both pupils to light. He had a slight exotropia and on asking his mother there was no past history of squinting of his eyes. Visual acuity was 6/60 in his right eye and left eye

was 6/9. So, he underwent a detailed dilated fundus examination. His fundus showed right eye optic disc edema and elevation with macular edema. Left eye showed a very mild disc edema and minimal macular edema. All other parts of retina were normal. AVF was normal.

Results: A complete laboratory work up with serology and imaging with MRI Brain, OCT RNFL and Macula were done. Patient was treated with oral prednisolone 40 mg and tapered over 6 weeks with topical steroids. Right eye final best corrected visual acuity was 6/24 and left eye 6/6.

Conclusions: COVID-19 associated optic neuritis (neuropathy) with macular involvement is a newer entity but seen during the pandemic was a rare presentation and hence presented. All other suspected entities were excluded with a detailed laboratory work up and analysis and arrived at this possible diagnosis.

Biomarkers of Oxidative Stress in Primary Ocular Carcinoma Patient Treated with Systemic Chemotherapy

First Author: Asha
*Co-Author(s): Rajendra **MAURYA**, Manish Kumar **PRAJAPAT**, Satya **SINGH**, Virendra p **SINGH**, Shivangi **SINGH***

Purpose: To investigate the impact of level of serum Malondialdehyde (MDA), biomarker of oxidative stress before and after chemotherapy in various ocular malignancies and to correlate its significance with clinicopathological parameters of ocular malignancies.

Methods: A cross-sectional case-control study was conducted where 32 newly diagnosed and histologically confirmed patients with primary ocular malignancies along with 16 healthy patients were enrolled. Detailed clinicopathological features were assessed followed by conventional histopathological examination and finally estimation of serum malondialdehyde (nmol/mL) level before and after chemotherapy. Prognostic significance of MDA level with the outcomes of cases Vs control, age group, histopathological types, differentiation, and metastasis were analyzed.

Results: Eyelid malignancy (56.2%) was most common followed by retinoblastoma (18.8%) and ocular surface squamous neoplasia (18.8%). 18 (56.25%) had early-stage carcinoma at the time of presentation while,14(43.75%) patients had advanced stage disease. The tumor was histopathologically well differentiated in 20, (62.5%) cases. Among all eyelid malignancy sebaceous gland carcinoma (n=10, 55.5%) was most commonly observed. In biochemical assay analysis shows, malondialdehyde level was found decreased (4.5146 ± 0.23209) after chemotherapy but significantly more than control (p value <0.001). At different age group level of malondialdehyde after chemotherapy was significantly reduced (p value <0.001) than before chemotherapy linked oxidative stress in diseased condition. In different histopathological subtypes of ocular malignancy, malondialdehyde was maximum in cases of rhabdamyosarcoma (p =0.049) and retinoblastoma (p =<0.001) while minimum in OSSN (p =0.003).

Conclusions: Serum malondialdehyde level is a potential biomarker in primary ocular carcinoma to assess oxidative stress and its impact on response to chemotherapy.

Epibulbar Complex Choristoma and Choroidal Osteoma Associated With Epidermal Nevus Syndrome in an Adolescent Boy

*First Author: Herdina **RAMADHANI***
*Co-Author(s): Muhammad **FIRMANSJAH**, Rozalina **LOEBIS**, Delfitri **LUTFI***

Purpose: Epidermal Nevus Syndrome (ENS) is a rare disease, characterized by the presence of epidermal nevi in association with various developmental abnormalities of the skin, ocular, central nervous system, skeletal, cardiovascular, and urogenital system. We report a case of ocular abnormalities of ENS.

Methods: An 11-year-old boy presented with a mass in right eye. There was hyperpigmentation mass in right cheek, nasolabial, auricular, scalp, and neck since birth. He had epilepsy on treatment with antiepileptic drugs. Examination in right eye revealed VA was 6/30. A red mass found in lateral conjunctiva spreading to the cornea. Fundus examination revealed white retinal lesion suspicious of choroidal osteoma, which we need to distinguish clinically with malignancy. B-scan ultrasound showed high reflectivity lesion in choroid area, flat, adjacent to the disc. Incisional biopsy was performed and histopathology revealed the mass composed of fibrous connective, adipose, seromucous, and cartilage tissue confirmed complex choristoma. The patient was diagnosed with epibulbar complex choristoma and choroidal osteoma in right eye with epidermal nevi and epilepsy in correlation with ENS.

Results: Ocular abnormalities have been described in as many as 50% of the patients with ENS. Choristoma is histologically normal tissue in an abnormal location. Choroidal osteoma is a rare benign ossifying tumor characterized by mature cancellous bone involving the choroid, that is a rare ocular manifestation of ENS.

Conclusions: Epibulbar complex choristoma and choroidal osteoma associated with ENS is a rare case. Deep investigation and comprehensive multidisciplinary approach should be achieved to get better treatment and quality of life.

Eye as Window to Overall Health – Visual Disturbance as First Symptom in Chronic Myeloid Leukemia

*First Author: Sindhuja **MURUGESAN***

Purpose: Eye is the window to overall health as it can

reveal signs of systemic illnesses and the prognosis of the diseases. We report a case of chronic myeloid leukemia (CML) in which patient presented as visual disturbance as the first symptom.

Methods: The 32-year-old female presented with sudden painless loss of vision in the right eye for three weeks. The patient attributed this loss of vision after a history of trauma. Detailed ophthalmic examination was done including visual acuity, intraocular pressure measurement, anterior and fundus examination. Systemic work-up and blood investigations were done.

Results: The visual acuity examination revealed that her right eye had perception of light and left eye was 6/6. The anterior segment of both eyes was normal. The fundus examination revealed that her right eye had macular hemorrhage with bilateral multiple roth spots. This was not correlating with the history of trauma, therefore on further questioning she revealed the history of significant loss of weight and appetite, as well as the history of bleeding per rectum. Systemic examination revealed a massive splenomegaly and signs of anemia. Blood investigations showed that the myeloid shifted to left with myelocytes, metamyelocytes and myeloblasts, all of which were suggestive of CML in the accelerated phase. The patient was referred to an oncologist for further management.

Conclusions: This case highlights the ophthalmologist›s role as the first contact in diagnosis and the one who referred the patient promptly in life threatening but curable illness. It is important to recognize early fundus changes and do a proper diagnostic work-up for patients who do not present with usual signs and symptoms of CML.

Eyelid Schwannoma: A Rare Differential Diagnosis of Eyelid Mass

First Author: Anushinee ***ANNANTHA KRISHNAN***
Co-Author(s): Adeline ***KUEH MEI LING***

Purpose: Schwannoma, is a benign primary neurilemmal tumor that originates from Schwann cells that produce myelin sheath of the sensory nerve. Although schwannomas can arise from any nerve in the body, the most common areas include the nerves of head and neck, but rarely the ophthalmic ones. The aim of this study is to report an extremely uncommon eyelid schwannoma.

Methods: This is a case report of a histopathologically proven eyelid schwannoma.

Results: A 23-year-old Malay male with no comorbidities presented to the eye clinic with a painless, slow growing lesion of the right upper lid for 2 years. On ocular examination, his visual acuity was 6/6 for both eyes. Slit lamp examination and fundoscopy of both eyes were unremarkable. The swelling was located at the lateral third aspect of the right upper lid and it was firm, non-tender, non-mobile, with no overlying skin changes and measured 10mm in diameter. The mass did not affect the movement of the lid or cause any neurological deficits. The lesion was completely excised under local anesthesia. Intraoperatively, the lesion was a well encapsulated, whitish mass which could be clearly delineated and excised off. Histopathological examination revealed typical features of schwannoma and immunohistochemistry helped to confirm the diagnosis. There was no recurrence of the lesion observed at follow-up after surgery.

Conclusions: Although rare, an eyelid schwannoma should be considered as one of the differential diagnoses of an amelanotic, painless eyelid mass. Complete surgical excision is the treatment of choice.

Histopathologic Changes in Recurrent Solitary Fibrous Tumor of Orbit: A Report of 2 Cases

First Author: Ma Carmela ***GUEVARRA***

Purpose: To report the clinical presentations, imaging and histopathological features of two cases of solitary fibrous tumor (SFT) of the orbit.

Methods: A retrospective review of the clinical, imaging, and histopathological presentations of two patients with orbital SFT.

Results: Both cases are middle aged male with no family history of cancer. Common presentations include gradual proptosis, subcutaneous mass, and gradual blurring of vision. CT imaging showed homogenous well circumscribed orbital mass in both with no bony erosion to the surrounding orbital wall. Excision biopsy done showed SFT. Both patients underwent remission only to recur several years after at the same sites. Repeat imaging studies showed well circumscribed tumor with regressive remodeling of adjacent bone. Orbitotomy and excision biopsy showed rubbery to firm fleshy tan tissues with whitish cut surface. Microscopic evaluation discloses similar findings as to its previous biopsy showing non encapsulated tumor composed of round to spindle-shaped cells arranged in a storiform manner surrounded by prominent branching and anastomosing “staghorn” capillaries. Immunohistochemical stain showed strong positivity for CD34 and STAT-6. No anaplastic changes were observed.

Conclusions: SFTs are considered benign but may behave unpredictably, some may behave aggressively with local and distant recurrences. Malignant transformation may occur in some instances. Histologic characterization including presence of anaplasia, increase mitosis, nuclear atypia and pleomorphism, necrosis should be carefully evaluated especially in recurrent tumor. Immunohistochemistry plays a crucial role in the diagnosis and STAT-6 expression is highly sensitive and specific marker for SFT.

Histopathologic Changes in Recurrent Solitary Fibrous Tumor of the Orbit: A Report of 2 Cases

*First Author: Ma Carmela **GUEVARRA***
*Co-Author(s): Alex **SUA***

Purpose: To report the clinical presentations, imaging and histopathological features of two cases of SFT of the orbit.

Methods: A retrospective review of the clinical, imaging, and histopathological presentations of two patients with orbital SFT.

Results: Both cases are middle aged male with no family history of cancer. Common presentations include gradual proptosis, subcutaneous mass, and gradual blurring of vision. CT imaging showed homogenous well circumscribed orbital mass in both with no bony erosion to the surrounding orbital wall. Excision biopsy done showed solitary fibrous tumor. Both patients underwent remission only to recur several years after at the same sites. Repeat imaging studies showed well circumscribed tumor with regressive remodeling of adjacent bone. Orbitotomy and excision biopsy showed rubbery to firm fleshy tan tissues with whitish cut surface. Microscopic evaluation discloses similar findings as to its previous biopsy showing non encapsulated tumor composed of round to spindle-shaped cells arranged in a storiform manner surrounded by prominent branching and anastomosing “staghorn” capillaries. Immunohistochemical stain showed strong positivity for CD34 and STAT-6. No anaplastic changes were observed.

Conclusions: Solitary fibrous tumor are considered benign but may behave unpredictably, some may behave aggressively with local and distant recurrences. Malignant transformation may occur in some instances. Histologic characterization including presence of anaplasia, increase mitosis, nuclear atypia and pleomorphism, necrosis should be carefully evaluated especially in recurrent tumor. Immunohistochemistry plays a crucial role in the diagnosis and STAT-6 expression is highly sensitive and specific marker for solitary fibrous tumor.

Histopathological Evidence of Central Retinal Artery Occlusion Secondary to Mucor Infection

*First Author: Shruti **MARU***
*Co-Author(s): Neeraj **ISRANI***

Purpose: Rhino-Orbital-Cerebral Mucormycosis (ROCM) can present in various forms, the most common being ophthalmoplegia, with or without central retinal artery occlusion (CRAO). Mucor has a tendency for angioinvasion leading to thrombosis of blood vessels and resultant tissue necrosis. Patients with minimal to no evidence of orbital involvement by fungus on imaging also develop restrictions of ocular movement in all gazes. Lesions causing ophthalmoplegia usually involve the orbital apex and/or the cavernous sinus.

Methods: A 64-year-old known diabetic gentleman presented to us with loss of vision, absent ocular motility, and ptosis in the right eye after having recovered from COVID-19 infection 3 weeks prior. He was noted to have CRAO in the right eye and was subsequently diagnosed with ROCM. He underwent right orbital exenteration due to worsening of the disease. Histopathological examination (HPE) analysis of the right optic nerve stump of the exenterated specimen in our patient with ophthalmoplegia and CRAO was performed.

Results: HPE analysis of the right optic nerve stump of an exenterated specimen in a patient revealed occlusion of the central retinal artery secondary to invasion of its muscular coat by a fungus with aseptate hyphae. Endothelial cell damage and activation of coagulation cascade is the key pathophysiological mechanism for thrombus formation.

Conclusions: This is the first reported direct histopathological evidence of angioinvasion of the central retinal artery by Mucorales leading to vision loss in a case of ROCM.

Immunotherapy: Regression of Corneal OSSN Secondary to Vulval Squamous Cell Carcinoma in an Elderly Female

*First Author: Nishi **SATISH***

Purpose: The purpose of this case report is to document a rare case of corneal ocular surface squamous neoplasia (OSSN), which was most likely to be secondary to vulval squamous cell carcinoma in a 70-year-old patient.

Methods: This case report follows a 70-year-old patient with vulval carcinoma who presented to us with a painful fleshy mass of 6 months duration in her right eye. It had initially started on the nasal aspect of her right eye and had then spread to all four quadrants of her right eye and started to hamper her vision once the central cornea started to get involved. The patient also had documented spinal metastasis. A small sample of tissue was taken for histopathology from the temporal aspect of the affected eye, and it was confirmed to be squamous cell neoplasia. The patient was started on fortified interferon alpha 2b eye drops and was followed up weekly over a period of 4 months. The patient was also on chemotherapy during this period. In the subsequent follow-up a regression of tumor vascularity and size was grossly noted.

Results: A regression in tumor size and vascularity was noted. The patient›s vision improved with central clearing of the tumor.

Conclusions: Interferon alpha 2b may lead to inhibition of angiogenesis or direct inhibition of human papilloma virus replication which can be implicated in this case

of corneal OSSN. Through this mechanism the patient experienced beneficial results in terms of decreased foreign body sensation and increased vision after regression of the OSSN.

Impact of COVID-19 on Features and Management of 830 Consecutive Patients With Uveal Melanoma

*First Author: Mrittika **SEN***
*Co-Author(s): Kushal **AGRAWAL**, G.Brandon **CAUDILL**, Emily **DUFFNER**, Nicholas **KALAFATIS**, Carol **SHIELDS***

Purpose: To study the management and outcome of patients with uveal melanoma (UM) before and during alpha variant COVID-19 pandemic.

Methods: Retrospective study of UM patients treated with plaque radiotherapy or enucleation between January 2018-October 2021.

Results: There were 830 patients with UM treated in 2018 (235, 28%), 2019 (230, 28%), 2020 (205, 25%) and 2021 (160, 19%) (p =0.7). By comparison (2018 vs 2019 vs 2020 vs 2021), there was a sharp decline in number of patients with UM in 2020 in the months of April (18 vs 32 vs 13 vs 17), May (28 vs 25 vs 9 vs 14) and June (17 vs 13 vs 6 vs 24)(p <.05) and no difference in mean tumor thickness (5.9 ± 3.5 vs 5.3 ± 3.3 5.8 ± 3.6 5.7 ± 3.8mm, p =0.56). Comparison of 9 months from January to September, before vs. during (2019 vs. 2021) COVID-19 pandemic revealed tumors 2021 were significantly thicker (5.3 ± 3.0 vs 5.7 ± 3.8mm, p =0.006) more often required enucleation (9 (5%) vs. 19 (12%), p =0.03).

Conclusions: The alpha variant COVID-19 pandemic and related restrictions resulted in delayed presentation of UM patients with more advanced disease and led to late-pandemic increase in number of cases requiring enucleation.

Intraosseous Hemangioma of Frontal Bone

*First Author: Juhi **DAGA***
*Co-Author(s): Dilip **MISHRA**, Milind **NAIK***

Purpose: To report a case of intraosseous hemangioma of the frontal bone and its treatment outcome.

Methods: A 44-year-old female presented with 6-month history of painless, progressive non-axial proptosis of the left eye. There was no precedent history of trauma. Computed tomography scan showed well circumscribed radiopaque lesion isodense to surrounding bone with internal hypodensity within the roof of the orbit (frontal bone). The differential diagnoses considered were ossifying fibroma and fibrous dysplasia.

Results: Surgical debulking of the mass was undertaken. Significant intra-operative bleeding was noted. Histopathology revealed cystic dilated blood vessels lined by single layer of flattened endothelial cells interspersed between bony trabeculae and few giant osteoblastic cells.

Conclusions: Intraosseous hemangioma is a rare possible diagnosis in case of intraosseous frontal bone lesions.

Long-term Results of Laser Thermotherapy in Children With Retinoblastomaa

*First Author: Denis **VOLODIN***
*Co-Author(s): Andrey **YAROVOY***

Purpose: To evaluate the efficacy of transpupillary thermotherapy of retinoblastoma.

Methods: In a retrospective study, we reviewed the charts of 206 children with retinoblastoma (1,251 tumors in 266 eyes) treated with transpupillary thermotherapy at the S. Fyodorov Eye Microsurgery Federal State Institution in Moscow between October 2011 and December 2021. The median patient age at the time of treatment was 17 months. The mean tumor thickness was 1.1 mm (from 0.3 to 4.5), the mean basal diameter was 2.2 mm (from 0.3 to 13.4). Transpupillary thermotherapy was performed using a diode laser with the following parameters: wavelength-810 nm, spot diameter-1200 microns, power from 180 to 900 mW (mean - 430 mW), exposure-from 3 to 15 s in the application mode, and continuous in the scanning mode.

Results: Overall tumor control was achieved in 92% (1157 tumors). Tumor recurrence was observed in 8% (94 tumors). 249 eyes (94%) were preserved. 17 eyes (6%) were enucleated due to the tumor progression, total vitreous hemorrhage, total retinal detachment, or subatrophy of the eyeball. Complications were present in 8 eyes and included local vitreous hemorrhage, pretumoral hemorrhage, local vitreous opacities and iris atrophy.

Conclusions: Laser thermotherapy is a highly effective treatment for retinoblastoma with excellent local tumor control and few complications.

Neoadjuvant Chemotherapy for Eyelid Malignancy

*First Author: Shivangi **SINGH***
*Co-Author(s): Asha, Syeed **KADIR**, Eshwari **PATEL**, Meghna Roy **ROY***

Purpose: To determine the feasibility, clinicopathological response and toxicity of chemotherapy in patients of eyelid malignancies.

Methods: Sixty-six consecutive patients of eye malignancies were treated with systemic chemotherapy (CT) prior to surgery over a period of 5 years. There were two treatment regimens adopted. The first one was cis-platinum and 5FU for sebaceous gland carcinoma (SGC) and the second one was PMB regime (cis-platinum, methotrexate, bleomycin) for squamous

cell carcinoma (SCC) and basal cell carcinoma (BCC). Before starting CT, all patients underwent for detailed ocular and ENT examination with hematological, radiological, and pathological investigations. Tumor staging were established. Patients were evaluated for response of CT and drug toxicity after complete treatment. Patient were kept in regular follow up. Clinical responses were evaluated according to WHO criteria – complete response (CR), partial response (PR), no response (NR) and progressive disease (PD).

Results: Out of the 66 eyelid malignancies, the majority had SCC (20,31.8%), followed by BCC (20,30.3%) and SGC (25,37.9%). Of the total, 53.0 % of cases were in advanced stage. Cases were well differentiated (19.7%), moderately differentiated (21.2%) and poorly or undifferentiated (59.1%). The overall response (CR+PR) of CT was 48 72.7%, while 13.6 % cases received no response, and the rest of 28.8% had progressive disease. The majority (83.33%) of response came from the SGC patients. The maximum response was seen in poorly or moderately differentiated carcinoma. There was mild to moderate drug toxicities, with gastrointestinal (87.9%), hematological (59.1 %), and alopecia (59.1%) among the commonest noted in the cases.

Conclusions: Chemotherapy is better adjuvant to surgery and radiotherapy in advanced eyelid malignancies. Drug toxicity is temporary phenomenon.

Paraneoplastic Optic Neuropathy With Intracranial Hypertension Secondary to Lung Cancer

First Author: Muhammad Ikmal ***MOHAMAD KAMIL***
Co-Author(s): Nurul 'ain ***MASNON****, Adzleen* ***MOHMOOD****, Wan Hazabbah* ***WAN HITAM***

Purpose: To report a rare case of bilateral optic neuropathy with intracranial hypertension as the presenting manifestation of a distant tumor.

Methods: Case report

Results: A 57-year-old lady was presented with left isolated sixth cranial nerve palsy which subsequently developed a progressive bilateral painless reduced vision for two months. Examination revealed poor vision bilaterally with bilateral sixth cranial nerve palsy. MRI brain and orbit revealed normal study. Lumbar puncture opening pressure was 46 mmH2O and cerebrospinal fluid showed high protein with no evidence of infection or malignancy. Infective screening was negative. She was diagnosed with intracranial hypertension with bilateral sixth cranial nerve palsy and optic neuropathy and commenced on oral Acetazolamide 250 mg twice daily and IV Methylprednisolone 1g per day for three days and subsequent oral prednisolone. The sixth cranial nerve palsy resolved but visual acuity continue to deteriorate. A PET scan found a primary lung tumor with distant metastasis. Hence, the diagnosis of bilateral paraneoplastic optic neuropathy established. The patient passed away after one year.

Conclusions: Intracranial hypertension with optic neuropathy in a middle-aged lady must be investigated for a primary tumor when no intracranial mass is detected as it can be the presenting symptom of a remote malignancy.

Patients Presenting With Metastases: Stage IV Uveal Melanoma, an International Study

First Author: Gaurav ***GARG***
Co-Author(s): Paul ***FINGER****, Tero* ***KIVELA***

Purpose: To analyze ocular and systemic findings of patients presenting with systemic metastasis.

Methods: It is an international, multicenter, internet-enabled, registry-based retrospective data analysis. Patients were diagnosed between 2001 to 2011. Data included: primary tumor dimensions, extrascleral extension, ciliary body involvement, AJCC-TNM staging, characteristics of metastases.

Results: Of 3,610 patients with uveal melanoma, 69 (1.9%; 95%CI, 1.5-2.4) presented with clinical metastasis (Stage IV). These melanomas originated in the iris, ciliary body, and choroid in 4%, 16%, and 80% of eyes, respectively. Utilizing the eighth edition AJCC, 8 (11%), 20 (29%), 24 (35%), and 17 (25%) belonged to AJCC T- categories T1-T4. Risk of synchronous metastases increased from 0.7% (T1) to 1.5% (T2), 2.6% (T3) and 7.9% (T4). Regional lymph node metastases (N1a) were detected in 9 (13%) patients of whom 6 (67%) had extrascleral extension. Stage of systemic metastases (known for 40 (59%) Stage-IV patients) revealed 14 (35%), 25 (63%), and 1 (2%) had small (M1a), medium-sized (M1b) and large-sized (M1c) metastases, respectively. Location of metastases in Stage-IV patients were liver (91%), lung (16%), bone (9%), brain (6%), subcutaneous tissue (4%), and others (5%). Multiple sites of metastases were noted in 24%. Compared with the 98.1% of patients who did not present with metastases; those with synchronous metastases had larger intraocular tumors, more frequent extrascleral extension, ciliary body involvement and thus a higher AJCC T-category.

Conclusions: Though higher AJCC T-stage was associated with risk for metastases at diagnosis, even small T1 tumors were Stage-IV at initial presentation. The liver was the most common site of metastases; however, frequent multiorgan involvement supports initial whole-body staging.

Patients Presenting With Stage IV Uveal Melanoma: Lessons Learned

First Author: Gaurav ***GARG***
Co-Author(s): Paul ***FINGER****, Tero* ***KIVELA***

Purpose: Challenges persist in identifying patients with stage IV uveal melanoma. While clinical,

histopathologic, and genetic features of the primary tumor have been shown to provide prognostic value for assessing metastatic risk, biopsy-related genetic analyses are expensive and not universally available. Therefore, this review will focus on clinical characteristics in patients presenting with Stage 4 UM.

Methods: The previously published literature in PubMed and MEDLINE was reviewed. The studies, focusing on UM metastasis are limited moreover including the ones identifying the high-risk clinical factors. Their importance was also highlighted by the AJCC and was incorporated into 8th edition.

Results: Initial staging and follow-up screening protocols have evolved for patients with UM. COMS required a physical examination, chest x-ray, and LFTs. Though they had high specificity, but it was typically found in late stage. More recently, protocols have concentrated on liver imaging. Though hepatic imaging is more likely to reveal earlier metastatic UM, by definition it cannot detect extrahepatic and multiorgan metastases. An international multicenter registry study recently focused on stage IV uveal melanoma, reported that utilizing center-specific diagnostic methods, stage IV was found to occur in about 2% of patients. However, subgroup analysis found that a disproportionate number of multi-organ metastases were discovered with PET/CT.

Conclusions: Uveal melanomas with larger Tumor dimensions, ciliary body involvement, and extrascleral extension and, thus, one with a higher T-category and sub-category and, consequently, higher initial stage was more likely to be diagnosed with or to progress to stage IV.

Primary Neuroendocrine Carcinoma of Orbit

*First Author: Mutmainah **MAHYUDDIN***

Purpose: To report a rare case of neuroendocrine carcinoma of the orbit.

Methods: A 5-year-old boy presented with proptosis, red eye, and eyelid swelling for a month. Patient had history of trauma 4 months ago. Visual acuity of the left eye was 1/300. Examination of the left eye found a solid mass with smooth surface on the upper eyelid, non-axial proptosis towards the inferior, restricted motility in all direction of gaze, total ocular prolapsed out from the left orbital fissure, and shallow anterior chamber in temporal side. The right eye was unremarkable.

Results: MRI showed a mass in intraconal retrobulbar of the left orbital, measuring 2.8 x 2.1 x 2.2 cm, with hemorrhagic component. Biopsy result with immunohistochemistry staining revealed malignant neuroendocrine tumor with moderate proliferation. The patient underwent orbitotomy and tumor excision. After surgery, chemotherapy is administered with doxorubicin for nine cycles. The mass was recurrent two times in 11 months and 33 months of follow up in the different location. Patient got the same regiment of chemotherapy after his second excision and external radiotherapy after his third excision. The MRI after two years showed that the mass became smaller to 0.8 x 0.9 x 0.7 mm.

Conclusions: Primary neuroendocrine carcinoma of the orbit was an extremely rare case and tends to be recurrent easily. it's important to raise awareness of neuroendocrine carcinoma to wisely treat the patient. A routine MRI follow up in patients with neuroendocrine malignancy also is important.

Primary Tumor Versus Metastasis: A Case Report of an Orbital Apex Neoplasm

*First Author: Zoe Alethinos **DOROY***
*Co-Author(s): Franklin **KLEINER**, Alex **SUA***

Purpose: We report a case of orbital apex neoplasm presenting with typical clinical and radiologic findings of a primary orbital tumor but with unexpected histopathologic findings.

Methods: A case report.

Results: This is a case of a 59-year-old Filipino female who presented with progressive visual loss and ophthalmoplegia of the right eye with persistent right orbital pain of two-year duration. Past medical history revealed that she had a breast mass on the right and underwent mastectomy but was subsequently lost to follow-up. Examination of the right eye revealed a visual acuity of no light perception, positive RAPD, decreased corneal sensation, and limited extraocular muscle movement. Imaging revealed an enhancing homogenous mass in the right orbital apex compressing the right optic nerve. Immunochemical staining of the excised mass revealed positive for GATA 3, Estrogen Receptor/Progesterone Receptor, and Ki67 (mildly positive). HER2/Neu was negative. These support the diagnosis of metastatic breast carcinoma.

Conclusions: Metastatic breast carcinoma is rare in the orbit and can present solely as an enhancing tumor at the orbital apex without regional extension and bone involvement. Imaging studies are essential in localizing and determining the extent of the tumor. Histopathology still remains the gold standard in the confirmation of the diagnosis.

Retinal Thickness Changes in Post COVID-19 Patients

*First Author: Zen Kuang **THAM***
*Co-Author(s): Wen Yee **LEE**, Norlina **RAMLI***

Purpose: The main purpose of this study was to describe the changes in total macular thickness and ganglion cell layer thickness in post COVID-19 patients using spectral-domain optical coherence tomography (SD-OCT).

Methods: This observational, cross-sectional study was conducted in a tertiary center in 2020. Demographic and medical history of recovered COVID-19 patients were taken. All patients underwent eye examination and multimodal imaging, including color fundus photography and SD-OCT. Total macular thickness (TMT) and ganglion cell layer (GCL) thickness in three areas: fovea, inner ring and outer ring subfields were recorded. These were then compared to a database of healthy age-matched controls. Welch's t-test was utilized to assess the statistical significance ($p < 0.05$) between the two groups.

Results: A total of 245 eyes (40 controls and 205 COVID-19 patients) were included in this study. No significant difference in TMT thickness (such as fovea, inner ring and outer ring subfields) were observed between controls and COVID-19 patients. Similarly, GCL thickness of both control and COVID-19 patients showed no significant differences with two exceptions. COVID-19 patients demonstrated significantly thicker nasal outer quadrant of GCL ($p = 0.04$) compared to the controls. In addition, COVID-19 patients had thinner foveal GCL compared to controls ($p < 0.0001$).

Conclusions: Post COVID-19 patients demonstrate foveal GCL thinning compared to healthy controls. This demonstrates an anatomical but not functional change. Further long-term studies are required to determine if these changes remain or translates into functional change with time.

Role of Optical Coherence Tomography in Retinocytoma

*First Author: Ipsita **BARMAN***

Purpose: To look for the optical coherence tomography features in retinocytoma.

Methods: A 3-year-old female child presented to our center with outward deviation in the right eye since birth. Parents started noticing an intermittent white reflex for 1 year of age. No history of ocular trauma or significant family history. On examination best corrected visual acuity in right eye was 3/60 and in left eye was 6/6. Clinical findings to be mentioned Intraocular pressure and anterior segment was normal. Optical coherence tomography (SS-OCT) was done.

Results: Optical coherence tomography (SS-OCT) was suggestive of thickening, loss of normal architecture of retina, a large cystic space in the lesion. Examinations were done at repeated intervals, but no change in lesion was noticed till 6 years of age.

Conclusions: OCT can be an useful investigation in addition to clinical examination for diagnosing retinocytoma. All children with suspected lesion should be kept under close follow-up.

Secondary Triple Drug Super-selective Ophthalmic Artery Intra-arterial Chemotherapy in Advanced and Refractory Retinoblastoma

*First Author: Rolika **BANSAL***
*Co-Author(s): Santosh **HONAVAR**, Vijay Anand **REDDY***

Purpose: To assess the efficacy and outcomes of secondary triple drug super-selective ophthalmic artery intra-arterial chemotherapy (IAC) in advanced and refractory intraocular retinoblastoma.

Methods: A retrospective, consecutive, case series of advanced and refractory retinoblastoma undergoing IAC

Results: A total of 61 eyes of 58 patients received secondary IAC (mean number of cycles 2.5), primarily treated with intra-venous chemotherapy (IVC) and/or focal treatment. Baseline grouping was group D 16 (26%), group E 28 (46%) and 17 (28%) were indeterminate. Globe salvage was achieved in 33 (54%) [group D 10 (62%, n=16), group E 13 (46%, n=28), indeterminate 10(59%, n=17] at a follow up of 40.3+25.4 months (range 7-84 months) with life salvage in 60 (98%) patients while one succumbed to non-treatment related causes.

Conclusions: Secondary IAC following primary IVC and/or focal treatment has significant globe salvage and life salvage rates. In developing countries, secondary IAC can be practiced instead of primary IAC to make the treatment cost-effective along with ensuring a good prognosis.

Wide Excision With Deeper Sclerectomy and Keratectomy With Cryotherapy, Mitomycin-C and Membrane Amnion Transplant As Management of Recurrent Squamous Cell Carcinoma of Ocular Surface: A Case Report

*First Author: Stefani **KARINA***
*Co-Author(s): Banu **DIBYASAKTI**, Reny **SETYOWATI**, Agus **SUPARTOTO**, Purjanto **UTOMO**, Irene **DARAJATI***

Purpose: To report the management of a case of recurrent squamous cell carcinoma of the ocular surface.

Methods: A 47-year-old male patient with history of reddish mass on the right conjunctiva for four years prior was studied. The mass increased in size, causing discomfort and visual impairment, presenting visual acuity was light perception. A reddish mass measuring ± 12x8mm on the nasal side of the conjunctiva with corneal infiltration, slightly elevated with indistinct margin and presence of feeding vessels was observed. Wide excision with cryotherapy, mitomycin-c, membrane amnion transplant was done. Biopsy results revealed poorly differentiated squamous cell carcinoma. Patient was started on topical chemotherapy with 5-fluorouracil four times

daily, 4 days on, 4 days off regimen for a month. On 6th month follow-up, clinical examination and anterior optical coherence tomography showed recurrence of tumor on the same area measuring ± 7x6mm. Wide excision with deeper sclerectomy and keratectomy with cryotherapy, mitomycin-c, membrane amnion transplant was done. Biopsy revealed moderately differentiated squamous cell carcinoma in situ. He was given topical 5-fluorouracil four times daily, 4 days on, 4 days off regimen for a month.

Results: Follow up eighth month post second surgery showed satisfactory results with no signs of recurrence. Visual acuity was at hand movement as cornea was hazy due to tumor infiltration into the corneal stroma.

Conclusions: Wide excision and deeper sclerectomy and keratectomy of tumor ensures complete excision. Cryotherapy, topical chemotherapy and close patient follow-up plays an important role in preventing recurrence.

Ophthalmic Epidemiology and Prevention of Blindness

A Study on Preoperative Xylocaine Sensitivity Test in Patients Undergoing Ocular Surgeries

*First Author: Syed **HUSSAIN***
*Co-Author(s): Varshav **GORE***

Purpose: The aim of our study is to assess the benefit of XST preoperatively and it's effect on the management of intra ocular surgeries performed under local anesthesia.

Methods: The study comprised of 400 patients (204 females and 196 males) aged 18 and above over a period of 2 years. Patients who were previously documented allergic reaction to Xylocaine were excluded from the stud. Preoperatively Inj. XST 0.5 mL intradermal injection was given to all patients and the site of injection was marked with a 1 CM circle. The injection site was examined for erythema/ wheal and itching after 10 min, 30 min and 24 hours. Intraoperatively reaction to LA was observed for local and systemic reactions following peribulbar/ retrobulbar block given with 8-10 mL injection of 6:4 combination of lignocaine and bupivacaine with hyaluronidase.

Results: XST was performed for all 400 patients included in the group and reaction was recorded on the basis of local reaction at injection site. However, none of the patients actually showed any reaction to XST and no correlation was noted intraoperatively.

Conclusions: It has been recommended since decades that sensitivity testing before cataract surgery under LA should be undertaken as a routine precautionary measure. With changing paradigms in the type of anesthesia (topical becoming prevalent in advanced nations as well as urban centers in developing world) there is a need to review the established protocols. With due precautions and resuscitation measures available in standby, it is theorized that routine testing for LA sensitivity may be skipped.

A Study on Refractive Error and Visual Impairment Among School-age Children With Presenting Vision Problems in South Jakarta

*First Author: Zoraya **FERANTHY***
*Co-Author(s): Kianti **DARUSMAN**, Rizki **NAULI**, Sri Hudaya **WIDIHASTHA**, Antonius Dwi **JUNIARTO**, Sandraningrum **TRIPUTRANTI***

Purpose: This study aims to determine the pattern of refractive errors and visual impairment with presenting vision problems among school-age children.

Methods: This is a cross-sectional study which was carried out in South Jakarta, Indonesia. Students with presenting vision problem that has been reported by the teacher were selected from 61 schools around South Jakarta, Indonesia.

Results: The total subjects in the study were 240 students, consisting of 128 (53.33%) girls and 112 (46.67%) boys. The range of age were from 6 years old to 15 years old. There were 31 (12.92%) students who were emmetropia and 209 (87.08%) students who had any kind of refractive errors. Among the 209 students, there was 411 eyes with refractive errors. While most of the participants had no visual impairment after correction, there were mild, moderate, and severe visual impairment reported in 13, 10 and 1 participants, respectively. There was a significant increase of participants who had visual acuity > 6/18 before and after correction from 110 (26.76%) to 379 (92.21%). most participants had astigmatism and myopia in 321 (78.10%) and 90 (21.90%) participants, respectively. There were no hypermetropia found in the participants. The most common type of astigmatism was compound myopic astigmatism reported in 236 (57.42%) participants.

Conclusions: This study showed that most common refractive error in school-aged children in South Jakarta was astigmatism, with the most common type was compound myopic astigmatism. There were mild moderate and severe visual impairment reported in 13 (6.22%), 10 (4.79%) and 1 (0.47%) participant, respectively.

Attitudes and Perceptions of Students, Parents, Teachers, and School Principals Towards Myopia, Glasses Wear, and Their Impact on Children's Academic Performance in Rural China

*First Author: Dongfeng **LI***
*Co-Author(s): Ving Fai **CHAN**, Nathan **CONGDON**, Lynne **LOHFELD**, Huan **WANG***

Purpose: To understand the attitudes and perceptions of students, parents, teachers and school principals regarding myopia, glasses wear and their impact on academic performance in Northwestern rural China.

Methods: We conducted semi-structured interviews with 130 participants (40 each for middle school students, parents, teachers, and 10 school principals) affiliated with 10 rural secondary schools in Ningxia Hui Autonomous Region. The interviews were audio-recorded, transcribed, and coded for inductive and deductive thematic analysis.

Results: All four groups of participants had limited knowledge about myopia and usually acquired eye health information from non-healthcare personnel. Periorbital massage and wearing glasses were the most frequently mentioned ways to prevent and correct myopia, respectively. Participants noted that the benefit of wearing glasses was limited to helping students see clearly. Moreover, parents and teachers discouraged the children to wear their glasses because they believed that glasses could weaken the eyes. "Academic high school" is the most common education aspiration after secondary school for students and their parents. All participant groups believed that academic performance and progress largely depended on students› motivation to learn rather than good vision. Teachers and principals also believed that wearing glasses could limit certain career options, such as joining the military.

Conclusions: Residents in rural Northwestern China did not favor children wearing glasses to correct myopia and did not associate the benefits of glasses with academic performance and future career options. Public information campaigns are needed to address prevailing beliefs about myopia to promote glasses wear in school children.

Causes of Myopic Astigmatism Especially in Young and Adult in Local Hospital of East Timor

*First Author: Lilia **AMARAL***

Purpose: To assess and to determine frequent etiologies of myopic patients and vision impairment in school-age and young adults in local hospital of Timor-Leste.

Methods: Selection of medical status of patients to define children, young and adults. All the patients were come to eye clinic for eye consultations. Visual acuity measurements, cycloplegic retinoscopy, cycloplegic autorefraction, ocular motility evaluation, and examination of the external eye, anterior segment, media, and fundus.

Results: A retrospective study was conducted during one year of 132 eyes with pathologic myopia obtained from 66 patients (2 (2%) cases are post-cataract surgery; 130 (98%) cases are by congenital and others chronic eye diseases). Those patients are more common between 17-25 years old, and they are students in secondary school and university. 41 (31%) cases are myopic astigmatism with the rule; 36 (27%) cases myopic astigmatism against the rule; 22 (16%) cases are myopic with astigmatism oblique; 22 (16%) cases are myopic simple and 11 (8%) cases with high myopic. Visual acuity of these patients is between 6/18 and 6/60. The hospital does not have any gratuity glasses and also non-government partnership to provide the glasses to the patients. The income of the patients also one of the reasons.

Conclusions: A refractive error, associated primarily with myopia, is a major cause of reduced vision in school-age in the local hospital. More causes of myopic astigmatism are by congenital and chronic aye disease. Efforts are needed to make existing programs like school screening and home visit to take more data for farther treatment.

Exfoliation Syndrome in a Large Vietnamese Clinic Population: Clinical Characteristics Including Glaucoma Status and Angle Closure Risk

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Purpose: To determine the proportion of exfoliation (EXF) among a clinic population of Vietnamese patients, and to assess their clinical and demographic characteristics.

Methods: Clinical and demographic data were collected for Vietnamese patients in a single physician clinic in San Jose, California, the United States, which has a dense Vietnamese demographic. Data was collected through electronic health records between August 2019 and December 2021. All patients included in the study received at least one dilated eye examination by a glaucoma fellowship-trained specialist in order to detect exfoliation.

Results: Among the 4,860 Vietnamese patients examined within the study period, 91 (1.8%) were found to have EXF. The average age of the EXF patients was 81 (± 8, ranging 66-99) years. Gender distribution showed that it affected both males and females equally (45 females, 46 males). Among the eyes with EXF, 45% of them had either narrow or closed angles. Of the 91 patients with exfoliation syndrome, 59 (65%) of these

patients had glaucoma in one or both eyes.

Conclusions: In a primarily Vietnamese ophthalmic clinic, a significant portion of the Vietnamese patients were found to have exfoliation syndrome. Among the EXF cases, there were substantial numbers with narrow/closed angles and glaucoma.

Longitudinal Analysis of the Eye Health Inequality at the Global Level: 1990–2019

*First Author: Koichi **ONO***
*Co-Author(s): Akira **MURAKAMI***

Purpose: To assess the change of the eye health disparity using the longitudinal data (1990-2019) from the global burden of disease study in 2019.

Methods: We estimated the burden of eye disease by calculating the sum of disability-adjusted life years (DALY) due to onchocerciasis, trachoma, vitamin A deficiency, glaucoma, cataract, age-related macular degeneration, foreign body, refraction disorders, near vision loss, and others. Using the open source of the demography, the eye health disparity in relation to economic status (high-income vs middle-and-low-income states) was investigated by calculating the Gini coefficient.

Results: The DALY per population due to eye disease increased by over 50% from 1990 to 2019 regardless of economic status. At the global level the Gini coefficient continued to decline until the year 2004 but has been on the rise after that. The smallest Gini coefficient was observed in the year 2000 (Gini: 0.106) and 2004 (Gini: 0.124) for high-income states and middle-& low-income, respectively.

Conclusions: Our study has shown the growing eye health inequality in the last two decades regardless of economic status. We need to ensure equitable, appropriate, effective, safe, and high quality of care for all, with no gaps in eye care service.

Needs and Views on Eye Health and Women's Empowerment and Theory of Change Map: Addressing Women's Eye Health and Gender Equality Through Women-Targeted Program in Zanzibar

*First Author: Ving Fai **CHAN***
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Purpose: To assess craftswomen's perceived needs and views regarding eye health and empowerment.

Methods: A two-day consultation workshop was conducted in Zanzibar, Tanzania. Eighteen stakeholders (divided into 3 groups) were strategically selected to participate in group discussions. The composition was ii) sex: women (n = 15) and men (n = 3); ii) location: Unguja (n = 8), Pemba (n = 6) and Tanzania mainland (n = 4); and (iii) roles: craftswomen (n = 14) and governmental stakeholders (n = 4). Inputs, activities, outputs, outcomes, and impact to develop the Theory of Change map for a women-targeted eye health program evaluation; craftswomen perceived needs and views regarding eye health and empowerment. Thematic analyses were used.

Results: Craftswomen were most affected by eye irritation caused by foreign bodies and were advised to visit eye health centers for treatment. However, the main barriers to accessing services are the preference for traditional medicines over clinical treatments and a lack of eye health knowledge. Nineteen sub-themes on women empowerment (economic n = 4, social n = 4, psychological n = 6, education n = 2 and political n = 3) were obtained. We created a Theory of Change (ToC) to define the key components of the WE-ZACE to achieve economic, social, psychological, education and political empowerment among Zanzibari craftswomen.

Conclusions: The findings helped us understand the local needs, the barriers to accessing eye health services, and the perceived approach to achieving women's empowerment among craftswomen. The developed ToC can guide the design, implementation, and evaluation of the WE-ZACE program.

Perspectives on Provision of Diabetic Retinopathy Screening: Survey of Eye Health Care Professionals in Haryana

*First Author: Sumit **GROVER***
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Purpose: To examine the current provision and practice patterns of diabetic retinopathy screening (DRS) in Haryana state of North India.

Methods: This was a descriptive cross-sectional survey in Haryana. All ophthalmologists registered with Haryana Ophthalmological Society in Haryana state were invited to participate on an online survey comprised of 20 questions exploring diabetic retinopathy screening provision and barriers to screening services in Haryana.

Results: The response rate was 82% (153/186). The majority (84%) of the eye care providers practiced in urban areas. Most ophthalmologists, 89% (136/153), considered diabetic retinopathy screening by non-ophthalmic human resource inappropriate because of technical feasibility issues (62%) followed by non-availability of trained staff (33%). Only half (54%) of the respondents had access to written protocols for the diagnosis and management of diabetic retinopathy in their practice. Barriers to optimize diabetic retinopathy screening were lack of knowledge or awareness among patients (95.5%), perception that eye complications were unlikely (76%) and cost of care (30%).

Conclusions: DRS practices are mainly opportunistic and urban centric likely delivering inequitable services

for the rural populations in the state. The inclusion of other personnel in screening will require stakeholder engagement from all health professions and changing the perceptions of the ophthalmologists about task shifting.

Predictors of Myopic Macular Degeneration in a 12-year Longitudinal Study of Singapore Adults with Myopia

*First Author: Li Lian **FOO***

Purpose: To investigate the predictive factors for myopic macular degeneration (MMD) and progression in adults with myopia.

Methods: We examined 828 Malay and Indian adults (1579 myopic eyes) with myopia (spherical equivalent (SE) ≤–0.5 dioptres) at baseline who participated in both baseline and 12-year follow-up visits of the Singapore Malay Eye Study and the Singapore Indian Eye Study. The predictive factors for MMD development and progression were assessed as risk ratios (RR) using multivariable modified Poisson regression models. The receiver operating characteristic curve was used to visualize the performance of the predictive models for the development of MMD.

Results: The 12-year cumulative MMD incidence was 10.3% (95% CI 8.9% to 12.0%) among 1504 myopic eyes without MMD at baseline. Tessellated fundus was a major predictor of MMD (RR=2.50, p <0.001), among other factors including age, worse SE and longer AL (all p <0.001). The AUC for prediction of MMD development was found to be 0.78 (95% CI 0.76 to 0.80) for tessellated fundus and increased significantly to an AUC of 0.86 (95% CI 0.84 to 0.88) with the combination of tessellated fundus with age, race, gender and SE (p <0.001). Older age (p =0.02), worse SE (p <0.001) and longer AL (p <0.001) were found to be predictors of MMD progression.

Conclusions: In adults with myopia without MMD, tessellated fundus, age, SE and AL had good predictive value for incident MMD. In adults with MMD, 1 in 10 eyes experienced progression over the same period. Older age, more severe myopia and longer AL were independent risk factors for progression.

Prevalence and Risk Factors for Occupational Eye Diseases in Rural Sri Lanka: A Hospital Based Study

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Purpose: Occupational eye injuries cause significant ocular morbidity with possibly devastating social and economic consequences. However, the simple use of personal protective eyewear during exposure to hazards during work can reduce the injury burden and its sequelae. This study was done to describe the prevalence of occupational eye injuries and associated factors in a hospital-based study sample.

Methods: A cross-sectional descriptive study was carried out among 438 patients admitted to the eye ward at a secondary level healthcare institution in rural central Sri Lanka over a one-year period. Data was collected using a participant administered structured questionnaire on the types of injuries, risk factors and use of protective eyewear.

Results: The prevalence of eye injuries among the study sample was 543 per 1,000 population. The injury burden predominantly affected young working age males who are the primary income earners of their family. Projectile injuries from foreign bodies constituted the main cause for occupational eye injuries (55.46%) with chemical injuries also being a significant cause (7.14%). Lack of usage of personal protective eyewear during occupational exposure (80.3%) was a significant risk factor. The average delay in presentation for medical treatment was 1.48 days (SD 2.69) with lack of significant symptoms being the major cause for delay (54.79%).

Conclusions: Occupational eye injuries are a common cause of presentation for specialized eye care with a significant socioeconomic impact to the individual as well as to the society.

Prevalence of Pseudoexfoliation in an Urban and Socioeconomically Disadvantaged Population in Bronx, New York

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Purpose: Pseudoexfoliation (PXF) syndrome increases the likelihood of development of glaucoma, cataracts, hypertension, and other systemic disorders. Herein we report PXF patient demographics and presence of concurrent systemic PXF-associated disorders in the Bronx, New York, a cohort with a racially diverse population and low socioeconomic status.

Methods: A retrospective chart review was used to identify all patients with diagnosis of PXF from 2016-2022, along with other concurrent disorders of interest. Demographic data along with ocular and systemic medical history were recorded.

Results: A total of 815 patients with PXF were identified with the mean age of 78.0 ± 13.3; 37.7% were male and 62.3% were female, while 18.4% were white, 37.7% were black, 2.2% were Asian, and 41.7% were identified as others or declined to respond, and 31.2% were identified as Hispanic/Latinx. In the cohort, 71.1% patients had hypertension, 50.9% had glaucoma, and 94.0% had cataracts. PXF-related comorbidities yielded the following: 6.9% experienced angina, 4.9% had a previous MI, 20.0% had coronary artery disease, 11.8% had prior stroke, 2.5% had an abdominal aortic aneurysm, 2.6% had retinal vein thrombosis, 7.6%

had a venous embolism and 13.4% had sensorineural hearing loss.

Conclusions: Our population in the Bronx has high rates of PXF-related comorbidities. Once detected, patients should be counseled on the potential risks of PXF and importance of follow-up with appropriate medical specialities.

Rapid Assessment of Avoidable Blindness in Sikkim - Survey Findings From Northeast India

*First Author: Praveen **VASHIST***
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Purpose: To determine the prevalence of visual impairment (including avoidable visual impairment) among the population with age of 40 years or above. To identify the major causes of visual impairment (including avoidable visual impairment).

Methods: This was a cross-sectional, population-based survey conducted in the east district of Sikkim among age 40 years and above population as per modified rapid assessment of avoidable blindness (RAAB) methodology. Presenting and pinhole visual acuity and near visual acuity was taken for each eye. Details about cataract surgery and spectacle use were also recorded for each individual. Overall, 2,173 individuals aged 40 years and above were enumerated, of whom 2,068 (95.20%) were examined.

Results: Prevalence of VI including blindness in population aged ≥ 40 years (PVA <6/12 in better eye) was 11.36%. The major cause of blindness and VI were cataract (50%) and refractive errors (53.62%) respectively. The cataract surgical coverage among people with pinhole visual acuity < 3/60, <6/60 and <6/18 were 93.7%, 81.00%, and 60.5 % respectively. Effective cataract surgical coverage (eCSC) in population ≥ 40 years was 36.1%. The effective refractive error coverage (eREC) for distance and near was 42.74% and 29.4% respectively.

Conclusions: The prevalence of blindness (presenting visual acuity <3/60 in better eye) was 0.68%, which was much less than the national average of 1.99% (RAAB 2015-19). The prevalence of VI was 11.36%. The majority visual outcome after cataract surgery were good.

Significant Progression in Astigmatism in Children After School Lockdown and Home Education During the COVID-19 Pandemic

*First Author: Ru Jian Jonathan **TEOH***
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Purpose: School lockdown and home education were enforced by the Malaysian Government during the COVID-19 pandemic from March 2020 to March 2022. This observational study was conducted to evaluate the effects of the school lockdown and home education during the COVID-19 pandemic on refractive astigmatism and myopia progression.

Methods: A total of 248 children aged 5-17 years with refractive astigmatism who had been followed-up for at least two years were included in this single-center study. Changes in refractive astigmatism and myopia in these children were recorded. A questionnaire focusing on demographic data, digital screen time, daytime outdoor activities duration, daily online classes duration, type of digital devices used during home education (smartphone, tablet, computer), and type of light source used during screen time was administered.

Results: The median age was 9.0 years (5, 17). While there were no significant differences in gender, ethnicity, family income, family history of refractive error, types of digital device, and types of light source, the median cylindrical power and spherical equivalent worsened after home education (p = .011 and p = <.001 respectively). There was a positive correlation between astigmatism and myopia progression (p = .003). Digital screen time and daily online classes duration increased, while daily outdoor activity duration reduced.

Conclusions: Significant worsening of astigmatism and myopia were found during school lockdown. Further studies are required to investigate the aetiology of the astigmatism and myopia progression.

Six Elements of an Effective Strategy Community Engagement Program in 6 Years of KLiP Mobile Experience

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Purpose: To propose a strategy on how to develop, organize and sustain an outreach community engagement program based on a mobile ophthalmology community program.

Methods: The model, implementation and data of the community engagement program from 2016 until 2022 were recorded as a database, meeting minutes and photographs. A qualitative and descriptive analysis of the documentation is presented.

Results: KLiP Mobile is an outreach community engagement model that serves the rural community specifically for eye diseases. Based on the six years' experience, a strategy containing six elements to develop, organize and implement the program were identified: (1) A clear objective of the program, (2) Good internal organization, (3) An inclusive approach, (4) 2-way communication, (5) Action plan and (6) successful collaboration. From 2016 until 2022 we managed to organize 52 events for outreach community eye programs to reach the rural community

in Negeri Sembilan Malaysia. Apart from the health eye program, we managed to enhance our program with an education program and research outcome to strengthen the program. The public-private partnership was introduced to ensure financial support and coverage and ensure that no one is left behind.

Conclusions: A comprehensive and systematic strategy to is required for an eye community engagement program to achieve sustainable development goals (SGD3) on health and wellbeing and promote universal health coverage (UHC).

Spectrum of Ocular Manifestations in Tuberculosis Patients at a Tertiary Care Center

*First Author: Ayushi **OJHA***
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Purpose: Tuberculosis, a disease caused by the bacterium Mycobacterium tuberculosis, has been a bane in the developing countries like India since a very long time. We did this study with the aim of finding a profile of ophthalmic involvement in tuberculosis at a tertiary care center and the objective of studying the burden of visual impairment in tuberculosis.

Methods: A retrospective, cross-sectional study was done for one year, September 2019 to September 2020, at a tertiary care center. All patients diagnosed with presumed ocular tuberculosis in ophthalmology OPD and referred to physician for further detailed evaluation and patients diagnosed with tuberculosis and referred to ophthalmology OPD for pre-ATT evaluation were included while patients already on ATT and the ones having other ophthalmic diseases were excluded.

Results: A total of 240 eyes of 120 patients were analyzed, with 58.3% being males. The majority (36%) of the patients were in the age group of 31-40, while 73.3% of the patients were from a rural area. Out of the 15.4% patients with anterior segment pathology, anterior uveitis was the most common with 10% patients having it. Out of the 16.25% patients with posterior segment pathology, choroidal tubercles were the most common and 4.5% patients had it.

Conclusions: Ocular manifestations of the disease are innumerable and range from anterior to posterior segment and can be a cause of great distress to the patient and in severe cases can be sight threatening. However, the follow up evaluation and an awareness in the patient regarding the ophthalmic manifestations still has a long way to go.

Understanding Real Scenario and Causes of Surgical Delay of Pediatric Cataract in North Indian Population

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Purpose: To describe the pattern of clinical presentation of pediatric cataracts and factors leading to delay in surgery at a tertiary care center in North India.

Methods: A cross-sectional, interview-based study was conducted from January 2020 to October 2020, that included pediatric patients <12 years, with unilateral or bilateral congenital or developmental cataract. A pre-validated questionnaire was used to record data. The parameters recorded were the first symptom and the age at which started, age at diagnosis, age at surgery and cause(s) of delay, laterality and morphology of cataract, first symptom, association of perinatal and family history, and systemic diseases.

Results: A total of 89 patients were included. The mean age of subjects was 4.75(± 3.51) years. A central white opacity was the most common symptom (64.04%) and appeared in infancy in 30.3% of cases. Parents first detected the problem in 60.67%, and the pediatrician was the first medical contact in 11.23% of cases. The median (IQR) delay period between diagnosis of cataract and cataract surgery was 4 (3-6) months, the major causes were long GA waiting time at hospitals (30.33%) and delay due to systemic ill health (14.61%).

Conclusions: Parental education on cataract detection is recommended to help in the timely detection and hence, improved outcomes of pediatric cataract surgery. Pediatricians, consulted for any systemic illness, have the role of the second most important contact in the detection of pediatric cataract.

Understanding Uptake and Barriers to Current Eye Care Among Jakun Sub-Ethnic Group Of Indigenous People In Kuantan, Malaysia

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Purpose: To investigate the uptake of eye care among Orang Asli and their awareness of common eye diseases in improving the provision of accessible, acceptable, and affordable eye care.

Methods: A cross-sectional study was conducted by employing convenient sampling in Sungai Soi Village, Kuala Kuantan, Pahang. A total of 154 participants who are Orang Asli adults from the Jakun sub-ethnic completed a questionnaire on the uptake of eye care and awareness of common eye diseases.

Results: The current eye care uptake among the participants was low (28.5%) but significantly higher in

the group with awareness of eye diseases, had religious beliefs, and had higher income ($p < 0.05$). In identifying the obstacles to receiving eye care, 27.4% felt "no need", 15.5% claimed "no money to pay" and 11.9% did not know the place for a checkup. For routine eye screening, 31.2% declined eye checks as they could see well and 19.4% stated they "do not have serious eye problems". The overall uptake of eye diseases was moderate (47.4%); specifically, cataracts (21.4%), and myopia (40.9%) which were higher compared to diabetic retinopathy, glaucoma, hyperopia, and presbyopia. The odds of overall awareness of eye diseases, cataracts, and myopia were significantly lower for participants with low level of education and poor economic status.

Conclusions: These results show that more comprehensive health education is required to raise awareness of and understanding of the eye diseases in the study area. The Jakun sub-ethnic group may have a better attitude toward preventing blindness if these limiting factors are addressed.

Visual Outcome of Cataract Surgery among Underserved Population at a Tertiary Eye-care Institute in Northern India

*First Author: Souvik **MANNA***
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Purpose: In India, untreated cataract is the leading cause of blindness which accounts for 66.2% of the 4.8 million blind population. The patients' postoperative quality of life depends mainly on the visual outcome, measured immediately after the surgery as well as after 4-6 weeks. However, there are limited data on the visual outcome of cataract surgeries in India. Therefore, the current study intended to evaluate the postoperative level of visual acuity in an apex eye care tertiary hospital in Northern India.

Methods: A hospital-based cross-sectional study was conducted at a Tertiary Eye Care Hospital which provided free cataract surgeries to underserved population. Chart review of cataract surgical data was done from June 2016 to May 2022 (6 years) to document the pre- and post-operative visual acuity of the patients.

Results: This study consisted of 8,000 eyes of patients who underwent cataract surgery. The median age of the participants was 55 years with an interquartile range of 20 years. Out of 8,000 cataract-operated visually impaired eyes, 88.6% achieved good visual acuity (≥ 6/18), 6.6% had borderline acuity (< 6/18–6/60), and the remaining 4.9% had poor visual acuity (<6/60). It has been observed that the postoperative visual acuity had an association with female gender and older age groups.

Conclusions: The study highlighted the good visual outcome of free cataract surgeries in a premiere eye institute in India, according to World Health Organization's recommendations. Further, it was found that there was significant improvement in visual acuity in the weeks succeeding the cataract surgery.

Orbital and Oculoplastic Surgery

A Bizarre Early Presentation of Carotid Cavernous Fistula

*First Author: Woan Shian **SEE***
*Co-Author(s): Caroline **BINSON**, Hanida **HANAFI***

Purpose: To report a case of indirect carotid cavernous fistula (CCF) presented with isolated third nerve palsy.

Methods: To present a case report.

Results: A 58-year-old gentleman with uncontrolled hypertension and diabetes mellitus presented with one-month history of diplopia and partial left eye ptosis. On examination, there was left mydriasis with partial third cranial nerve palsy. No relative afferent pupillary defect noted. The rest of ophthalmic and cranial nerve findings were normal. Computed tomography angiography (CTA) was normal. His medical conditions were stabilized. Two months later, his left visual acuity reduced to 6/24 associated with pulsatile proptosis with bruit, conjunctival congestions, raised intraocular pressure (IOP) and limitation of extraocular movement in all gazes. Cranial nerve examinations revealed reduced sensation in ophthalmic branch of trigeminal nerve. Other neurological examinations were normal. Repeated CTA, venography demonstrates dilated left superior ophthalmic vein and digital subtraction angiography confirmed a left indirect (Barrow type D) CCF feeders from left cavernous internal carotid artery and maxillary arteries which drain into left orbital veins, left facial vein and inferior petrous sinus. Coil embolization was carried out successfully. Five months later, his visual acuity, IOP, conjunctival congestion and extraocular eye movements have improved substantially.

Conclusions: Isolated third nerve palsy without significant ocular congestion has been reported as early sign of posterior/inferior draining CCF. Diagnosis and hence treatment is usually delayed due to the unapparent clinical signs. Awareness of such scenario is crucial as early treatment will result in favorable prognosis.

A Case of Implant Extrusion in a Post Enucleated Eye With Primary Implantation for Panophthalmitis Secondary to Traumatic Globe Rupture

*First Author: Angelica Aja **ALCOREZA***

Purpose: Possible risks, complications, and, in

developing countries like the Philippines, financial constraints, have deemed placing a primary implant post-enucleation of panophthalmitis cases controversial.

Methods: We present a case of a 68-year-old diabetic female who had implant extrusion 2 weeks post-enucleation for panophthalmitis secondary to trauma.

Results: A 68-year-old diabetic Filipino female with a 2-week history of left eye trauma presented with pain, blurring of vision, redness, and headache. Pertinent findings on the left eye showed no light perception with findings of proptosis, swollen and erythematous lids, chemotic and hyperemic conjunctiva with diffuse purulent discharge, and thinned out, hazy cornea with fibrin material on the anterior chamber. Other structures cannot be visualized. Bscan ultrasound showed vitreous hemorrhage with multiple areas of hemorrhagic choroidal and retinal detachment and retino-choroidal and scleral thickening. Extreme limitation on all gazes was also noted. A diagnosis of panophthalmitis secondary to Traumatic Globe Rupture was made and enucleation with placement of a size-22 nonporous polymethylmethacrylate (PMMA) implant was done. Culture revealed Klebsiella pneumoniae, and IV Ertapenem was started, as patient is resistant to most beta-lactam antibiotics on sensitivity test. Findings of increased mucopurulent discharge, areas of necrosis overlying the conjunctival wound, and visualization of the extruded implant two weeks post-surgery prompted implant removal and resuturing.

Conclusions: Close monitoring and prompt management is recommended post-enucleation of panophthalmitis patients. The decision to place an implant as a primary or secondary procedure, as well as the timing, is dependent on the surgeon's discretion, patient risk factors and financial capabilities.

A Rare Case of Idiopathic Lipogranulomatous Orbital Inflammation Mimicking Orbital Abscess

*First Author: Nurul Ain **RAHIM***
*Co-Author(s): Wan Mariny **KASIM**, Nadhir **NUWAIRI**, Amizatul Aini **SALLEH***

Purpose: To report a rare case of idiopathic lipogranulomatous orbital inflammation.

Methods: A case report.

Results: A 65-year-old Malay man with underlying renal failure presented with acute episode of right upper lid swelling associated with eye redness, pain, proptosis and double vision for 8 days duration. This was the first episode and was not preceded by any recent trauma or previous ocular procedure. Visual acuity was 6/12 pinhole (ph) 6/9 and 6/6 in the right and left eye respectively. Relative afferent pupillary defect (RAPD) was negative. On anterior segment examination, right upper eyelid was swollen, tender superomedially with injected conjunctiva and chemosis. Hertels showed proptosis of right eye with measurement of 23mm compared to left eye which was 17mm. Some limitation present in extraocular muscle movement. His optic nerve function test was mildly affected. CT reported presence of superomedial orbital abscess. He underwent incisional and drainage via anterior orbitotomy. Surprisingly, intraoperatively there was presence of superomedial, firm, whitish orbital mass with absence of orbital abscess. The orbital mass was debulked and sent for HPE. Histopathology reported as lipogranulomatous inflammation with presence of touton giant cell. He was started on prednisolone 1mg/kg/day; however, he was not able to tolerate prednisolone as he developed fluid retention. There was no recurrent of lesion for a total follow-up of 9 months.

Conclusions: Lipogranulomatous orbital inflammation can be one of differential diagnoses when the patient presented with features of orbital infection. Multidisciplinary management which involves ophthalmologist, radiologist and pathologist is very important to achieve correct diagnosis.

Anatomy of Lacrimal Sac Fossa Affecting Success Rate in Endoscopic and External Dacryocystorhinostomy Surgery in Mongolians

*First Author: Bayasgalan **PUREVDORJ***
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Purpose: To study the effect of anatomy of lacrimal sac fossa and intranasal structures adjacent to it on dacryocystorhinostomy (DCR) performed by the traditional external approach or an endoscopic endonasal approach.

Methods: Two hundred and ninety-two consecutive patients who had a primary acquired NLDO cases' orbital CT scans were studied. We measured morphometry of lacrimal sac fossa and anatomical variations around this structure. All patients under study had thin section CT sections obtained in the transverse, axial and coronal planes throughout the orbits and nasal structures.

Results: In total, 292 participants were enrolled in DCR surgery group (146 EX-DCR, 146 EN-DCR group; ratio = 1:1). Average thickness of frontal process of maxilla is thicker in failed group ($p < 0.05$). The UP was attached to the lacrimal sac fossa in 79.0% of successful surgery group but 100% in failed surgery group ($p < 0.05$). The AN cell is adjacent to the lacrimal sac fossa in 79.1% of successful cases and 100% in failed group.

Conclusions: Mongolians have a thicker lacrimal fossa bone comparing to Caucasian population. Thus, special surgical techniques and instruments, such as surgical drills, need to be equipped for the Mongolian patients. The UP can be a surgical landmark to define the lower

part of the lacrimal fossa. The OMT was positioned dominantly relative to the lacrimal sac fossa. The variation of AN cell that is adjacent to the lacrimal sac fossa was predominantly observed in Mongolians. As a result, these structures can be preferred to be removed more frequently in Mongolians than in Caucasians.

Anterior Lamellar Excision for Extensive Trichiasis – A Case Series

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Purpose: To describe the successful technique of anterior lamellar excision (ALE) in treating extensive trichiasis without compromising eyelid function.

Methods: Retrospective interventional case series showcasing three patients who underwent ALE. Considering the array of treatment modalities available, employment of this technique is tailored individually in concordance with severity, etiological causes, patients' profiles and healthcare accessibility. During post-operative visits, the anatomical, functional, and aesthetic results were evaluated.

Results: Five eyes in 3 patients with extensive trichiasis underwent ALE. All patients had undergone previous interventions for misdirected lashes. The mean follow-up period was 7 months. Of the three patients, one was an elderly with bilateral cicatricial upper lid entropion with misdirected lashes threatening corneal integrity. After careful deliberation of patient's pre-surgical parameters including atrophic skin and anti-coagulant therapy, the options of skin and tarsal grafts were deemed unviable, hence meriting anterior lamellar resection. Similar technique was performed on an elderly residing in remote area who suffered chronic irritation from left lower lid trichiasis. Compounded by limited healthcare access, regular epilation of lashes was for him exasperating. Another patient who underwent ALE had bilateral lower lid trichiasis with early entropion. In all cases, a novel modification was applied whereby skin edges were sutured to tarsal plates to prevent recurrence of misdirected lashes. During follow-up, satisfactory functional and aesthetic results were achieved for all patients. Improvement of corneal surface was noted. No recurrent cases were reported.

Conclusions: Anterior lamellar excision is a simple technique with promising results for the treatment of extensive trichiasis.

Case Series: Alarming Huge Orbital Mass

*First Author: Yen E **TEO***

Purpose: To report 3 case series of visual threatening orbital mass.

Methods: Retrospective case series.

Results: Case 1: A 49-year-old man presented with painless left eye (LE) swelling for one year. On examination, LE vision was no perception of light (NPL). There was a huge left orbital mass with severe proptosis. Computed tomography (CT) of the orbit revealed large orbital mass and stretched left optic nerve. LE exenteration was performed. Histopathology examination (HPE) reported reactive lymphoid follicular hyperplasia of orbit. However, no evidence of malignancy. Patient recovered well with prosthesis eye. Casa 2: A 16-year-old man with nasopharyngeal carcinoma presented with painless right eye (RE) mass for 6 months. The mass progressively increased in size associated with constitutional symptoms. RE visual acuity was NPL. CT brain and orbit revealed right maxillary carcinoma with local extension reported as spindle cell carcinoma. Patient's family decided conservative management due to poor prognosis. Case 3: A 46-year-old lady presented with large fungating mass covering the whole right eyeball with NPL vision. She has been diagnosed with right upper lid squamous cell carcinoma (SCC) 3 years ago yet defaulted treatment. CT orbit demonstrated a large mass with orbital involvement. RE exenteration was done. HPE was SCC. Patient is currently still under regular follow-up.

Conclusions: Orbital mass can link with various pathologies in origin and require various modality of treatment. Our case series showed the importance of early treatment to prevent devastating complications such as permanent vision loss and life-threatening complications.

Challenges In Management of Rare Case of Orbital Hydatid Cyst

*First Author: Rajendra **MAURYA***
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Purpose: To report two rare and challenging cases of huge unilateral orbital hydatid cyst.

Methods: One young Hindu female (left eye) and one Muslim male (right eye) patients presented with complaints of painless, gradually progressive forward protrusion of eyeball and loss of vision for 3-6 months. On examination there was inferomedial non-axial proptosis with mechanical ptosis and exposure keratopathy. Painless restricted EOM present. BCVA: No PL in female patient and 6/36 in male patient.

Results: CT scan revealed well defined hypo attenuated thick-walled cystic lesion medial orbit causing anterolateral displacement of globe. Cyst was excised through transconjunctival approach with eyelid split technique followed by custom fit prosthesis. No recurrence was observed after 6 months.

Conclusions: Diagnostic possibility of hydatid cyst has to be kept in case of unilateral painless proptosis. CT scan helps in diagnosis.

Comparison of Eyelid Crease, Upper Eyelid Sulcus/Margin - Superior Eyebrow Distance in Congenital Ptosis and Blepharoptosis Associated with Hard Contact Lens

*First Author: Ryo **KIKUCHI***
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Purpose: Frequent and severe blepharoptosis includes congenital ptosis and blepharoptosis associated with hard contact lens ptosis (hereafter, HCL ptosis). The purpose is to determine which is more likely to occur when severe ptosis is encountered.

Methods: We compared the results of 12 patients with congenital ptosis and 18 eyes (7 males and five females, mean age 41.5 ± 21.2 years old) and 57 patients with HCL ptosis (HCL use for more than ten years) and 114 eyes (6 males and 51 females, mean age 53.9 ± 11.3 years). Upper eyelid margin-superior eyebrow distance, presence of eyelid crease, and upper eyelid sulcus were measured and compared.

Results: The upper eyelid margin to eyebrow distance was 29.9 ± 6.1 mm in the congenital ptosis group and 27.0 ± 4.9 mm in the HCL ptosis group, with no significant difference ($p = 0.081$). In the congenital ptosis group, 3 out of 12 patients had the eyelid crease, and 6 out of 12 (50.0%) had the upper eyelid sulcus. In the HCL ptosis group, 51 out of 57 patients had eyelid crease, and 45 out of 57 patients (78.9%) had upper eyelid sulcus, a statistically significant difference (independent t-test, $p < 0.0001$, $p = 0.038$).

Conclusions: In the case of congenital ptosis, the muscular function of the levator muscle is impaired, resulting in weak retraction of the upper eyelid sulcus, whereas, in the case of HCL ptosis, the muscular function of the levator muscle is preserved, resulting in strong retraction of the upper eyelid sulcus and the levator muscle.

Comparison of Outcome, Patient Satisfaction of External vs Endonasal DCR Surgical Procedures

*First Author: Himani **JAILKHANI***
*Co-Author(s): Prateek **KOUL***

Purpose: This study was to compare the surgical outcome, quality of life and patients satisfaction of external versus endonasal dacryocystorhinostomy (DCR) surgical procedure of patients with nasolacrimal duct obstruction in a tertiary care center.

Methods: The external DCR surgery was performed by the standard technique. The mechanical endoscopic endonasal approach included enlargement of the bony ostium using a diamond burr, full length opening of the lacrimal sac and approximation of nasal and lacrimal sac mucosal edges. No sutures were used. Silicone intubation with internal silicone bolster was performed in all external and endonasal DCR cases.

Results: Average surgical time of external DCR and endonasal DCR were 57 minutes and 49 minutes, respectively. Fluorescein in nose (functional success) was seen in 91% external DCR and 91.6% cases of endonasal DCR. Intraoperative hemorrhage was seen in 19% cases of external DCR and 91.6% cases of endonasal DCR. Postoperative hemorrhage was seen in 7.8% cases of external DCR and 7.2% patients of endonasal DCR. Infection was seen in 4.7% patients of external DCR. Average duration of follow-up of external DCR patients was 9.1 months and endonasal DCR was 9.4 months. Patient satisfaction was greater in endonasal DCR (average score: 9.2 out of 10) as compared to external DCR (average score: 8.7).

Conclusions: Both surgical procedures (external DCR and endonasal DCR) have a high degree of success. But the endonasal DCR surgical procedure is the most common choice of the patients due to its minimally invasive nature, high patient satisfaction and high success rates.

Different Methods for Cicatrical Ectropion Correction: A Case Report

*First Author: Anditta **SYIFARAHMAH***
*Co-Author(s): A Kentar Arimadyo **SULAKSO***

Purpose: Medial spindle procedure combined with lateral tarsal strip technique is a common procedure used to correct lower eyelid ectropion. Lateral spindle procedure is an unusual method to correct lower eyelid ectropion. Combination of lateral tarsal strip and lateral spindle procedures were applied in this case to treat cicatrical ectropion.

Methods: A 39-year-old male patient presented with right lower eyelid cicatrical ectropion with an everted punctum. He complained of tearing and redness in the eye. The patient had a previous history of infection of the lower eyelid, subsequently the eyelid became ectropion. In examination, we found horizontal eyelid laxity such as eyelid distraction test, snap test, and also punctal eversion. Durante operation, we performed lower eyelid stretched laterally, yet it did not correct lateral eyelid eversion. Thus, a lateral spindle procedure used in combination with a lateral tarsal strip procedure to address both the cicatrical ectropion and punctal eversion. In a lateral spindle procedure, the lateral posterior lamella is shortened vertically and pulled inwards to evert the eyelid back into globe apposition.

Results: Good apposition of lower eyelid were found one week after procedure. Within one month, ectropion was significantly improved. The eyelid snap test was repeated and exhibited improved lid laxity. The patient no longer feels tearing and redness in the eye. The patient was satisfied with both cosmetic and functional results.

Conclusions: The lateral tarsal strip procedure combined with the lateral spindle procedure has a

good outcome in patients with cicatricial ectropion.

Effect of Hotz Operation for Involutional Entropion

*First Author: Sun Young **JANG***
*Co-Author(s): Jong Jin **JUNG***

Purpose: To determine the effect of Hotz operation for involutional entropion.

Methods: This is a retrospective interventional case series. We recruited patients suffering from involutional entropion who were treated with Hotz operation during the period from May 2018 to December 2020. Preoperative clinical characteristics and surgical outcomes including recurrence at 1, 3, and 6 months were investigated by reviewing the medical charts.

Results: Of the 21 patients (28 lids), all of them attended each follow-up visit and were included in the analysis. The recurrence rate was 2 of 28 (7.11%). The overcorrection rate was 0.

Conclusions: Hotz operation is an effective surgery for correction of involutional entropion. Hotz operation could be a favorable treatment option.

Efficacy of 3D-Printed Customized Orbital Implant for Orbital Wall Fracture Repair

*First Author: Ho-Seok **SA***

Purpose: This study aimed to evaluate the efficacy of a customized three-dimensional (3D) orbital implant directly printed for orbital wall fracture repair.

Methods: We reviewed 18 consecutive patients who underwent surgical repair for unilateral orbital wall fracture using a customized 3D orbital implant. Orbital implant was directly printed using polycaprolactone based on a 3D fracture model derived from computed tomography (CT) scans. Follow-up clinical examinations and CT scans were performed at 3 and 6 months postoperatively. The outcomes were analyzed quantitatively by comparing the orbital tissue volumes and the morphological similarity (Hausdorff distance calculation) between unaffected and affected orbits.

Results: All 18 orbital fracture reconstructions (inferior wall, 8; medial wall, 5; and combined inferior and medial walls, 5) were successful with no postoperative complications. The mean time for implant insertion during surgery was 29 seconds (range, 3–60). The mean preoperative orbital volume ratio (OVR) of the affected orbit was 111.5%, while the mean postoperative OVR at 3 and 6 months were 101.1% and 101.5%, respectively (each $p < 0.001$). The mean Hausdorff distance between unaffected and affected orbital tissue models was 0.52 mm preoperatively, and it was significantly improved to 0.11mm and 0.14mm at 3 and 6 months postoperatively, respectively (each $p < 0.001$).

Conclusions: The use of a 3D-printed customized orbital implant for orbital wall fracture repair effectively restores the original volume and shape of the orbit.

Evaluation of Patient Motivation, Pre-operative Concerns and Level of Satisfaction in Dacryocystorhinostomy

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Purpose: Dacryocystorhinostomy is one of the most commonly performed lacrimal procedures among oculoplastic surgeons. This pilot study aimed to evaluate pre-operative concerns, motivation for choice of surgical approach and level of satisfaction among patients undergoing dacryocystorhinostomy.

Methods: This was a cross-sectional study involving patients who underwent dacryocystorhinostomy in a single center. Data was collected via a questionnaire administered during a face-to-face interview. Patients were asked to rate their level of concern about the surgery and satisfaction on a 5-point Likert scale. Motivation for choice of surgical approach was assessed via open-ended questions.

Results: A total of 27 patients with epiphora were included in this study. Thirteen underwent external dacryocystorhinostomy while fourteen had endoscopic dacrocystorhinostomy. The majority (10 patients) confessed to being 'quite worried' about the surgery, followed by those who felt 'neutral' (6 patients) or 'not very worried' (6 patients). The most common concerns were failure of surgery (12 patients), complications of general anaesthesia (5 patients) and blindness (4 patients). The motivation for choice of approach was scar awareness in 10 patients who had endoscopic dacrocystorhinostomy, followed by surgeon preference. Satisfaction with the surgery was overwhelmingly positive, with 85 % 'satisfied' or 'very satisfied'. The main reasons for satisfaction were symptom resolution (21 patients, 77.8%) and absence of postoperative pain (5 patients, 18.5%).

Conclusions: Surgical satisfaction in DCR is high. Patients are mainly concerned about surgical failure. Avoidance of the scar is the main motivation for patients selecting an endoscopic approach.

Full Thickness Laceration of Superior Palpebra With Punctum Avulsion Superior Lacrimal: A Case Report

*First Author: Muhammad Cakrasada **HARAHAP***
*Co-Author(s): Agus **SUPARTOTO**, Purjanto **UTOMO**, Irene **DARAJATI***

Purpose: To report a case of full thickness laceration of superior palpebra with punctum avulsion superior lacrimal unilateral on a 21-month-old female.

Methods: We handle an emergency case of patient with full thickness laceration of superior palpebra with punctum avulsion superior lacrimal. From the history taking and clinical presentation we diagnosed patient with full thickness laceration palpebral superior and accompanied by punctum avulsion superior lacrimal. It was an emergency condition, and it was happened under 3 hours before the surgery done. The patient underwent the palpebral and punctum lacrimal reconstruction.

Results: From the post-surgery result the condition was better. The palpebra superior from the full-thickness laceration has been repaired into the good condition such as the proper position and structure for adequate tear film, tear drainage, protection of ocular surface and cosmesis. The complication post-surgery was not found such as infection, wound dehiscence, entropion, and hemorrhage. For punctum avulsion superior lacrimal complication such as epiphora, stent migration and epistaxis are not happened.

Conclusions: Laceration of eyelid refer to partial- or full-thickness defects is an emergency case. It should be repaired otherwise deformities would be developed. It would be affecting the normal function of palpebra such as maintaining the tear film and tear drainage, protection of ocular surface and cosmesis.

Hooks – 'The Little Round Mishaps' – Preventable Agonies

*First Author: Asma **KHAN***
*Co-Author(s): Dr.Viji **RANGARAJAN***

Purpose: We report a case series of 15 patients with canalicular lacerations due to injury with various kinds of hooks, commonly used in daily lives, such as, 2-wheeler handle-bar hook, cradle hook, blouse hook, among others. We evaluated the surgical outcomes of these laceration repairs with self-retaining monocanalicular intubation system.

Methods: A total of 15 patients, ranging from 2 to 45 years of age were included in the series between the period of March 2019 to March 2022. The patients underwent lid repairs with monocanalicular stent placement. The parameters recorded were-mode of injury, time interval between injury and repair, time of stent removal, lacrimal patency after stent removal and associated ocular injuries.

Results: The mean age of patients was 17 years (range from 2-45 years). Out of the 15 patients ,12 (80%) were males, the most common type of hook injury was with 2-wheeler handle-bar hook, followed by cradle hook. All repairs were done within 24- 48 hours of the injuries. The follow-up period was 6 months. We got 2 cases of stent extrusion and in 1 case, lacrimal system was not found to be patent. Other associated ocular injuries were tarsal plate fracture, extraocular muscle injury, conjunctival tear, and wound site granuloma.

Conclusions: Canalicular lacerations due to hook injuries are more common in young males. The monocanalicular stents are easy to insert and remove and they yield excellent anatomical and functional outcome if repaired in time. Moreover, these agonies are preventable. A little alertness and awareness among people can prevent such atrocious consequences.

Intralesional Bleomycin for Management of Conjunctival Vascular Malformation

*First Author: Gunjan **SALUJA***

Purpose: Anterior segment Arterio-Vascular Malformations (AVM) occur very infrequently despite the orbit being a common site of AVMs Bleomycin is an antineoplastic agent, now being used as a sclero-therapeutic agent in such arteriovenous malformations.

Methods: We report a case of isolated conjunctival vascular malformation that was treated conservatively with intralesional bleomycin only, without surgical excision.

Results: A 21-year-old female presented to the outpatient department of our center with complaints of redness localized in the lower fornix. The patient reported that the lesion was presented since early childhood however a recent increase in the redness was noted. On clinical examination, an elevated lesion was seen in the left eye in the inferior fornix with surrounding subconjunctival hemorrhage. Anterior segment and fundus evaluation were unremarkable. The right eye was within normal limits. Anterior segment OCT further showed multiple cysts, not invading the sclera. The patient was planned for intralesional bleomycin injection 2 I.U bleomycin was injected intralesionally. The patient was advised on topical steroids and antibiotics during the postoperative period. At 1-month complete resolution of the lesion was noted clinically and on anterior segment OCT.

Conclusions: Intralesional bleomycin is an efficient alternative to surgical excision in cases of surface vascular malformations. The procedure can be easily performed and is less invasive. It can also be used as an adjunct therapy to surgical debulking in large lesions

Intralesional Triamcinolone Injection in the Management of Orbital Eosinophilic Granuloma

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Purpose: To describe the outcome of orbital eosinophilic granuloma (EG) following incisional biopsy, rapid intra-operative diagnosis and intra-lesional triamcinolone acetate (ITA).

Methods: Consecutive patients with histopathologically confirmed EG, treated by a single surgeon in South India were reviewed retrospectively.

Results: Eight patients, who constituted 0.5% of 1582 orbital biopsies performed, were reviewed. Seven were males, mean age was 8.9 ± 11.1 years and mean duration of symptoms was 61.8 ± 51.4 days. Most common symptom and sign were eyelid swelling (87.5%) and palpable mass (87.5%) respectively. Computerised tomography showed bone erosion in all, most commonly of frontal bone, dural involvement in 50% and intracranial extension (ICE) in one. Following the procedure, complete bone remodelling was noted at 7.9 ± 6.0 months. All achieved complete disease control with no recurrences. Mean follow-up duration was 60.9 ± 64.2 months. The patient with ICE, subsequently developed diabetes insipidus.

Conclusions: EG is amenable to ITA. Aggressive surgery and dural breach can be avoided. Monitoring systemic associations is essential.

Intraorbital Foreign Body Due to Airgun Injury: Take It or Leave It?

*First Author: Annisa **PERMADI***
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Purpose: Orbital and periorbital trauma are commonly encountered in clinical settings. However, retained intraorbital foreign body (IOrFB) may have unusual presentations and are often a conundrum for most ophthalmologists. We present a case with conservative management due to its clinical presentation, nature, and location of IOrFB.

Methods: A 17-year-old boy presented with penetrating injury caused by air gun on his right maxilla 2.5 cm from right inferior eyelid margin 2 days before admission. Lead pellet was 4.5 mm in caliber. Physical examination revealed right inferior palpebral hematoma with vulnus sclopetorum diameter 0.5 cm and subconjunctival bleeding on temporal side. Eye movement remained good to all direction with 20/20 vision. CT Scan showed multiple metallic IOrFB size 0.7 x 0.5 cm on right orbital cavity scattered to orbital apex and posterolateral maxillary sinus fracture. Surgical removal of IOrFB was deferred due to its posterior location and risk of iatrogenic damage potentially outweighs the benefit. Ceftriaxone intravenously and anti-tetanus injection was given. Close monitoring was maintained initially to see any deteriorations. Six months later, visual acuity remained the same with good ocular motility, healed wound and no pain felt.

Results: The nature and location of IOrFB are important factors to determine approach to IOrFB. Inorganic material can be left observed when it doesn't cause persistent inflammation or injury to the optic nerve, especially posterior location like in this study.

Conclusions: Management strategies of IOrFB should stress on weighting the risk and benefit of surgical and conservative management according to principle of primum non nocere.

Langerhans Cell Histiocytosis of Bilateral Eyelids: A Rare Case Report

*First Author: Nur Hanis **YUSRI***
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Purpose: To highlight the unusual presentation of Langerhans cell histiocytosis masquerading as bilateral eyelid chalazion.

Methods: This is a case report of a 2-year-old boy with bilateral upper and lower eyelid swelling due to Langerhans cell histiocytosis.

Results: A 2-year-old boy with no known medical illness presented with painless bilateral upper eyelid swelling of 4 months duration. Despite conservative treatment for chalazion, the lesions worsened and ruptured resulting in upper lid defects. Incisional biopsy of both upper and lower lids confirmed the diagnosis of Langerhans cell histiocytosis.

Conclusions: Langerhans cell histiocytosis of the eyelid should be included in the differential diagnoses of eyelid lesions. An eyelid biopsy is imperative in patients with apparent chalazion who fail to respond to standard therapy.

Lower Eyelid Blepharoplasty: Effects on Functional Epiphora

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Purpose: Functional epiphora, a subjective symptom of overflow tears, is a major determinant of quality of life. Lower lid blepharoplasty leads to alteration in orbito-malar vectors along with improved eyelid contour and eyelash position, reduction of the excessive skin fold, and strengthening of lateral canthal ligament hence resulting in a refined blink mechanism and a significant improvement in epiphora. The study aims to assess the effect of lower lid blepharoplasty with the superficial muscular aponeurotic system (SMAS) and orbicularis oculi lift on quality-of-life parameters.

Methods: In this study, 18 patients following inclusion criteria underwent lower lid blepharoplasty with SMAS and orbicularis oculi lift. A pre-operative and post-operative assessment at 1 month and 6 months were performed for the MUNK score and quality of life questionnaire.

Results: The results showed a statistically significant decrease in MUNK score compared to the baseline ($p < 0.001$) at 1 month and 6 months. A significant improvement in quality-of-life parameters was also observed at 6 months follow-up.

Conclusions: The results highlight lower lid blepharoplasty involving SMAS orbicularis lift as one of the techniques which reduce the bothersome functional epiphora and improve the quality of life hence putting forward it as a promising surgical

modality in the management of functional epiphora.

Management of Orbital Paranasal Sinus Mucocele by External Approach Surgery With 35 Case Reviews

First Author: Mukti ***MITRA***
Co-Author(s): Md.Alauddin ***AL AZAD***

Purpose: To describe the management strategies of paranasal sinus mucosal cysts of orbit by external approach and to see their outcome.

Methods: Thirty-five cases of orbital paranasal sinus mucosal cystic lesions were reviewed from 2008 to June 2022. The age range was 8 to 65 years, with 17 males and 18 females. Frontal sinus mucocele was found in 5 cases, ethmoidal sinus mucocele was in 20 cases, fronto-ethmoid mucocele was in 10 cases. Bilateral involvement was found in one child of 8 years old. Horizontal dystopia was the presenting complaint in all of the ethmoid mucocele. Proptosis with inferolateral displacement was the presenting feature in fronto-ethmoid mucocele. Visual acuity was unaffected despite significant proptosis with dysopia.

Results: Surgical intervention was done in all patients except one in which cystic content was found absorbed and patient was unwilling to do any intervention. Lynch incision was used in ethmoid and fronto-ethmoid mucocele and subbrow incision was used in frontal mucoceles. During surgical intervention all the mucosal contents were aspirated, and mucosal wall was removed completely. Recurrence was observed in 3 cases among which several times recurrence was found in one. Cosmetically significant postoperative enophthalmos was found in two patients.

Conclusions: Though orbital paranasal sinus mucoceles are benign lesions, their managements are sometimes very challenging. Endoscopic sinus surgery is the gold standard, but external approach surgery by orbital surgeons can give satisfactory result if done meticulously.

Massive Orbital Squamous Cell Carcinoma in a Healthy 68-Year-Old Asian: A Case Report

First Author: Maria Christine ***DY***
Co-Author(s): Mariel Angelou ***PARULAN***

Purpose: To report an elderly female with no comorbidities and risk factors presenting with a massive tumor invading the entire left orbit.

Methods: A 68-year-old Asian female presented with a one-year history of progressive enlargement of a left upper lid mass that started as an isolated pimple-like lesion. Her medical, family, and social histories were unremarkable. With observable pain, vision, and eyelid function abnormalities, she sought consult with an ophthalmologist wherein orbital CT scan revealed a neoplastic extraconal mass with ipsilateral globe rupture. MRI suggested a possible adenoid cystic carcinoma. Clinically, the mass was 6.8 x 6.5 x 5.6 cm with active bleeding from florid feeding vessels with no other visible ocular structures. Histologic examination of the incision biopsy showed a moderately-differentiated squamous cell carcinoma (SCC). Further laboratory workup was negative for metastasis.

Results: The patient underwent total orbital exenteration and given the size of the tumor, debulking was done with the aid of a Ligasure which facilitated better dissection and bleeding control. The specimens sent for histopathology confirmed the diagnosis. On follow-up, the patient was systemically well on radiotherapy with a healthy surgical site.

Conclusions: Orbital SCC is the second most common eyelid malignancy and is aggressive with the ability of orbital and intracranial invasion and distant metastasis. It may resemble other malignant tumors so high clinical suspicion and histologic diagnosis are warranted. Surgical excision is curative, but exenteration is necessary with orbital invasion. Not all patients have identifiable risk factors so prompt and aggressive management should minimize ocular morbidity and mortality.

Metastatic Orbital Undifferentiated Pleomorphic Sarcoma – A Case Report

First Author: Pei-Shin ***HU***
Co-Author(s): Cheng-Hsien ***CHANG***

Purpose: Undifferentiated pleomorphic sarcoma (UPS) is a malignancy of mesenchymal origin, that has no distinct line of differentiation. UPS was previously known as malignant fibrous histiocytoma (MFH). UPS comprises about 5% of all sarcomas, and most commonly involves the extremities and retroperitoneum. It is relatively rare in the head and neck regions, accounting for 1 to 3% of UPS cases. Metastasis occurs most frequently in the lungs (90%), bones (8%), and liver (1%). We report a rare case of metastatic orbital UPS from the chest wall.

Methods: To present a case report.

Results: A 58-year-old male suffered from blurred, proptosis and ptosis in the left eye for several months. He had UPS on the chest wall and received operation combined with chemotherapy and radiation therapy 2 years ago. No evidence of local recurrence of chest wall was found during the follow-up period. Ocular examination showed complete ptosis, upper gaze limitation, exophthalmos and a relative afferent pupillary defect with vision of 20/1000 in the left eye. Orbital CT scan showed an oval-shaped tumor (31 x 20 x 18 mm) occupied left superior intraconal orbital space with left optic nerve compression. We removed the tumor completely from orbitotomy operation. Immunohistochemical confirmed the diagnosis of orbital metastatic UPS. Further chemotherapy and radiation therapy were administered, and the condition was stationary.

Conclusions: Undifferentiated pleomorphic sarcoma is a highly aggressive tumor with a high incidence of recurrence and metastasis. Although orbital metastatic UPS is rare, the ophthalmologist should alert about the possibility of orbital metastasis if the patient had UPS history.

Minimally Invasive Technique for Cicatricial Ectropion Correction – A Pilot Study

*First Author: Vinit **TANWAR***
*Co-Author(s): Sahil **AGRAWAL**, Neelam **PUSHKER***

Purpose: Cicatricial ectropion (CE) mostly requires invasive surgical modalities such as full-thickness skin graft, lateral tarsal strip procedure, among others, associated with donor site morbidity and additional scars. To the best of knowledge, this is the first study on use of autologous fat graft (AFG) for correction of CE of lower lid with a video-based demonstration of the procedure.

Methods: This was a prospective, interventional pilot study that included 5 patients with CE (grade I-III). Fat was harvested from abdomen using Coleman liposuction method and injected in cicatricial lid. All these patients underwent a pre-injection workup to assess anatomical outcomes (grade of ectropion, vertical palpebral aperture (VPA), lagophthalmos, and eyelid retraction), functional outcomes (dry eye status) and aesthetic outcome (change of scar color, thickness, pain, and consistency).

Results: At 6-months, all patients had improvement in grade of ectropion, vertical palpebral aperture, eyelid retraction, and almost complete resolution of lagophthalmos. There was a significant improvement in scar color, thickness and consistency on Visual Analogue Score with no donor site complications. Surgery was avoided in 4 out of 5 patients.

Conclusions: AFG transfer for CE not only eludes need for invasive surgery but provides satisfactory correction with stable outcome and an improved texture of scar and has low risk.

Minimally Invasive Transconjunctival Orbitotomy- Anatomical, Functional and Aesthetical Approach

*First Author: Gaurav **GARG***
*Co-Author(s): Raksha **RAO***

Purpose: Orbitotomy conventionally involves a skin approach and often osteotomy and entails prolonged surgical time and postoperative morbidity. The minimally invasive transconjunctival approach, in contrast, offers a scar-free outcome with minimal complications. We evaluated our results of the transconjunctival approach to orbital lesions.

Methods: It was a retrospective interventional case series and analysis of 102 consecutive cases of transconjunctival orbitotomy from January 2001 to April 2018. All patients were followed for one year.

Results: Of 102 patients, 63 were males with a mean age of 46 years (ranging 6 weeks to 82 years). All the patients manifested proptosis, 22 -extraocular motility restriction, 16 - diplopia, 8 - disc edema, and 3 - disc pallor. The lesion was located predominantly in the mid and posterior orbit in a majority (92) of patients; it was intraconal in 52, extraconal in 22, and both intra- and extraconal in 28. Maximum tumor diameter ranged from 12 - 58 mm. The conjunctival incision was transcaruncular in 12, inferior fornicial in 32, inferior fornicial with transcaruncular extension in 18, and inferior fornicial with lateral canthotomy and inferior cantholysis in 40. Duration of surgery ranged from 20-120 (mean 70) minutes. In all, 90% of patients experienced recovery in 1 week (range, 1-4). Three patients had postoperative secondary bleeding that resolved with conservative measures. None of the patients had new-onset functional problems. All the patients had aesthetically satisfactory outcome.

Conclusions: Transconjunctival orbitotomy provides excellent access to most orbital lesions with faster surgery, quick postoperative recovery, minimal morbidity, and excellent aesthetic outcome.

Orbital Cavernous Venous Malformation – A Large Case Series

*First Author: Subhav **PERSHAD***
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Purpose: Orbital cavernous venous malformation (OCVM) is a common benign primary orbital tumor in adults. We report the demography, clinico-radiological findings, surgical technique and outcome.

Methods: A retrospective, interventional, consecutive case series with 80 patients of histopathologically confirmed OCVM.

Results: OCVM constituted 5.4% of operated orbital tumors in the study period. The median age was 44years (range 3-65years). Of the 70(87.5%) symptomatic patients, with a mean duration of 2years (range, 5days to 10years), protrusion of eyeball 54(67.5%) and diminished vision 29(36.2%) were predominant. Signs were proptosis 59(73.8%), diminished vision 39(48.8%), palpable mass 36(45%), disc edema 20(25%), choroidal folds 13(16.3%), strabismus 11(13.8%), and ptosis 6(7.5%). CT-scan showed a well-circumscribed, homogenous mass, hyperdense, with bone remodeling, with mild contrast enhancement. MRI showed a heterogenous mass with flow void. Location was intraconal 53(66.2%), with extraconal extension 15(18,7%) or extraconal 10(12.5%). The most common intraconal location was supero-temporal 15(18.7%). There was extraocular-muscle involvement in 37(46.2%) and optic nerve in 14(17.5%). Excisional biopsy was performed with lateral orbitotomy in 41(51.3%), anterior orbitotomy 21(26.3%), or transconjunctival 18(22.5%) patients.

Transient complications included ptosis 8(10.26%), ocular-muscle restriction 5(6.41%), visual-loss 1(1.28%) and diplopia 1(1.28%). At the final follow up of 12.2+1.8 years (range, 1.5 to 25 years), all the patients had local tumor control and none had a permanent functional deficit.

Conclusions: Considering the common and variable presentation of OCVM, emphasis should be laid on accurate preoperative clinico-radiological diagnosis and tailoring of surgical technique. Meticulous surgery with minimal disturbance of vital orbital structures yields gratifying outcome.

Orbital Cellulitis With Subperiosteal Abscess in a Child

*First Author: Heng **YONG LER***
*Co-Author(s): Farah Nadia **FADZIL**, Yap **SIN ROY**, Wan Radziah **WAN NAWANG***

Purpose: Orbital cellulitis is a condition that may rapidly progress and cause complications, especially in the pediatric population. This case report is to demonstrate a case of orbital cellulitis that deteriorated into subperiosteal abscess in a child, which was then timely treated with systemic antibiotic and surgical intervention.

Methods: Case report

Results: A 9-year-old girl presented with acute onset of unilateral eyelid swelling, redness and blurring of vision, which had rapidly worsened over the period of four days. At presentation, her visual acuity was 6/36 in the left eye. There was presence of relative afferent pupillary defect, axial proptosis, conjunctiva chemosis, and limitation of extraocular muscle movements in the affected eye. The upper and lower eyelids were tender, swollen and erythematous. Topical and systemic antibiotics were initiated. Urgent CT scan was done which showed orbital cellulitis with subperiosteal abscess of the superior orbital wall and pansinusitis. She was referred to the oculoplastic team and underwent emergency left anterior orbitotomy and incision and drainage of the subperiosteal abscess. Her ocular condition improved after the surgery and was discharged well after the completion of intravenous ceftriaxone and metronidazole.

Conclusions: Prompt diagnosis and timely management of orbital cellulitis are crucial due to the risk of rapid progression and development of serious complications. Systemic antibiotic is the mainstay of treatment. Surgical intervention is required in the presence of subperiosteal abscess.

Orbital Schwannoma: A Case Series at a Tertiary Center

*First Author: Anushinee **ANNANTHA KRISHNAN***
*Co-Author(s): Amalina **JUARES RIZAL**, Adeline **KUEH MEI LING**, Norlaila **TALIB***

Purpose: Orbital schwannomas are rare neoplasms of the orbit. Schwannomas are benign, well-encapsulated, slow growing nerve sheath tumors that are composed exclusively of Schwann cells. The aim of this study is to report seven cases of primary orbital schwannomas so as to discuss its clinical presentation, diagnosis and treatment.

Methods: This is a retrospective study of histologically proven cases reported at a tertiary center between March 2017 and August 2022.

Results: Seven cases of orbital schwannomas were identified. They comprised of four females and three males aged between 34 to 73 years. The median duration of symptoms was ten months. Out of the seven cases, five were extraconal and two were intraconal. They all shared the similar clinical presentation of painless proptosis associated with restricted extraocular movement and diplopia. Computed tomography findings commonly showed a minimally enhancing hypodense or hyperdense lesion that displaced adjacent structures without any direct invasion. In all cases, treatment modality was complete surgical excision. The surgical approach was dictated by tumor site. Malignant transformation is prone in lesions containing epithelioid cells which were absent in all seven cases that depicted the classical schwannoma features histologically. Outcomes during follow up were favorable without recurrence.

Conclusions: Orbital schwannomas typically are benign; however, in rare cases, it can undergo malignant transformation. Hence, it should be considered as a differential in patients presenting with painless progressive proptosis with mass effect. Computed tomography scan aids in localizing the lesion preoperatively while histopathological examination confirms the diagnosis. Complete surgical excision is the treatment of choice.

Outcome of Combined Modified Müller's Muscle Conjunctival Resection With Dermatochalasis Correction for Ptosis Surgery

*First Author: Chih-Chung **LIN***

Purpose: To evaluate the long-term outcome of concurrent blepharoplasty and Müller's muscle conjunctival resection (MMCR) with tarsectomy for the correction of upper eyelid ptosis.

Methods: Retrospectively medical data were reviewed for 60 eyes that underwent combining modified MMCR with dermatochalasis correction for upper eyelid ptosis surgery. All met the criteria of levator muscle function

> 4mm and pre-operative margin reflex distance 1 (MRD1) decrease > 1 mm. Modified MMCR with tarsectomy procedure and concurrent dermatochalasis correction were performed for all eyes. In this study dermatochalasis surgery consisted of skin and fat removal. Follow-up periods were 5 years. Outcome measures were post-operative MRD1, complications, eyelid symmetry and patient satisfaction.

Results: In 30 patients who underwent 60 concurrent modified MMCR with dermatochalasis correction for upper eyelid ptosis surgery, MRD1 increased on average by 2.5 mm ($p < 0.05$). In 28 patients (93%), eyelid symmetry equal to or less than 1 mm was achieved ($p < 0.01$). At 5-year follow-up period, average post-operative MRD1 decreased to 3.1 mm and 97% of them were satisfied with the operative results. Among them, no eyes suffered from post-operative complication.

Conclusions: Concurrent modified müller's muscle conjunctival resection with blepharoplasty is an effective and quick procedure for ptosis and dermatochalasis correction in patients with good levator muscle function. Good eyelid symmetry and post-operative satisfaction are achieved in most patients.

Outcome of Posterior Lamellar Replacement With Buccal Mucous Membrane Graft in Lid Margin Sequalae of Stevens Johnson Syndrome

*First Author: Farzana **AFZAL***
*Co-Author(s): Farhana **NIPA**, Riffat **RASHID**, Sadia **SULTANA***

Purpose: To address lid margin sequalae and to evaluate the efficacy of posterior lamellar replacement with buccal mucous membrane graft in Stevens Johnson syndrome.

Methods: In this single center retrospective interventional study, total 44 patients of Stevens Johnson syndrome presented with lid margin sequalae during the period of January 2019 to December 2021 were included. patients with other cicatrizing disease like ocular cicatrizing pemphigoid, chemical burn were excluded. Surgery was performed by a small group of competent surgeons. Demographic profile, presenting lid margin sequalae, outcome of surgery and complication after intervention were properly assessed and recorded.

Results: The mean age of presentation was 27.09 ± 14.33 years (range 6 – 70 years). Male to female ratio was 1:1.8. Common lid margin sequalae was distichiasis (84.09%), lid margin keratinization (56.81%), trichiasis (15.9%) and cicatrizing entropion (6.81%). Posterior lamellar replacement with buccal mucous membrane graft resulted in successful correction of all lid margin defects. During the 6 months postoperative follow-up, all patients attained symptomatic relief from epiphora, foreign body sensation and photophobia. Visual acuity was improved in 25% cases. There were marked reduction of conjunctival inflammation (76.3%) and persistent corneal epithelial defect (53.45%). Common post operative complications were misdirected lashes (21.03%), dislodgement of graft (10.52%), and granuloma formation (6.81%), which were successfully managed through appropriate second procedure.

Conclusions: Posterior lamellar replacement with buccal mucous membrane graft demonstrated promising result in correction of lid margin sequalae and thereby contributes effectively to reducing the progressive and permanent damage of cornea and ocular surface in Stevens Johnson syndrome.

Outcome of Revision External Dacryocystorhinostomy With or Without Mitomycin C: A Single Center Experience

*First Author: Farhana **NIPA***
*Co-Author(s): Farzana **AFZAL**, Riffat **RASHID**, Sadia **SULTANA***

Purpose: To compare the outcome of revision external dacryocystorhinostomy with or without mitomycin C.

Methods: A single-center, prospective, interventional study was conducted over 30 diagnosed patients with failed external dacryocystorhinostomy from July 2019 to June 2020.Surgery was performed as per standard revision external dacryocystorhinostomy protocols. Data collected include demographics, clinical presentations, primary diagnosis, associated systemic anomalies, past interventions, indications for the surgery, use of adjuvants, intraoperative and post-operative complications.

Results: In 30 diagnosed patients with failed external dacryocystorhinostomy, Group A underwent revision external dacryocystorhinostomy with Mitomycin–C and Group B without mitomycin–C. The mean age was 40.3 ± 9.3 and 41.5 ± 10.3 years in Group A and Group B respectively ($p = 0.824$). The maximum (40.0%) of the patients were in the 41–50 age group in Group A (Mitomycin C) and 40.0% in 41-50 age group in Group B (without Mitomycin C). There were 7 (46.7%) males and 8 (53.3%) females in Group A, 6 (40.0%) males and 9 (60.0%) females in Group B. Eighteen (60%) patients underwent left sided and 12 (40%) patients had right sided revision dacryocystorhinostomy respectively. In the present study, most of the patients had no complications in both groups. Only one patient had resolving corneal epithelia defect in mitomycin C group. After six months' follow-up, 93.3% success rate was seen in revision external dacryocystorhinostomy with mitomycin C group and 66.7% in revision external dacryocystorhinostomy without mitomycin C group.

Conclusions: Mitomycin C has beneficial effect in preventing reclosure of the dacryocystorhinostomy stoma after revision external dacryocystorhinostomy and no significant complications resulted from its use.

Paranasal Sinus Mucoceles With Orbital Complications

*First Author: Nur Hanis **YUSRI***
*Co-Author(s): Fazliana **ISMAIL**, Evelyn **TAI**, Norlaila **TALIB***

Purpose: To describe the various presentations of paranasal sinus mucoceles with orbital involvement.

Methods: A case series of patients presenting with orbital complications due to paranasal sinus mucoceles.

Results: A 56-year-old lady presented with painless left central scotoma and a positive relative afferent pupillary defect. Computed tomography (CT) of the orbit, brain and paranasal sinuses showed a left sphenoid mucocele with local expansion, resulting in narrowing of the left optic canal and optic nerve impingement. Post functional endoscopic sinus surgery and sphenoidectomy surgery, the left eye vision normalized. A 21-year-old male presented with recurrent right preseptal cellulitis. Examination showed a right superomedial orbital mass. Magnetic resonance imaging of the orbit, brain and paranasal sinuses was suggestive of bilateral frontal mucopyocele, with right preseptal and orbital cellulitis. Patient was treated with a course of intravenous ceftriaxone and underwent bilateral uncinectomy and medial maxillary anthrostomy, right anterior ethmoidectomy and right frontal sinusotomy. Post-op, the clinical condition resolved, with no further recurrences. A 15-year-old male presented with painless right non-axial proptosis associated with limited extraocular movements. CT scan of the orbit, brain and paranasal sinuses showed a soft tissue mass suggestive of an ethmoid mucocele, with extension into the extraconal intra-orbital region, causing a mass effect. Post functional endoscopic sinus surgery and anterior ethmoidectomy, the proptosis resolved.

Conclusions: Paranasal sinus mucoceles may cause severe orbital complications. Radiological imaging is imperative in all patients presenting with clinical features of orbital involvement. Early diagnosis and surgical removal of the mucocele has a good prognosis.

Reconstruction of Orbital Floor Fractures Using Silicone Block Implant

*First Author: Syukriyah **SOFYAN***
*Co-Author(s): Hisar **DANIEL**, Yunia **IRAWATI***

Purpose: It has long been a controversial-both the materials for orbital floor reconstruction and the timing of surgery. Silicone block implant is affordable and readily available especially in developing countries. Due to its complications and the development of other materials, silicone block implant has rarely been used. This study aims to evaluate the outcomes of timing of surgery and the use of silicone block implant in orbital floor fractures reconstruction.

Methods: We conducted a retrospective review of patients who had orbital floor fractures and undergone reconstruction surgery using silicone block implant in our center from January 2017 to December 2021. These patients then divided into three groups based on their surgery interval time. Outpatient notes, Computed Tomography (CT) reports, surgical admission notes, records and complications were recorded. Patients with follow-up less than three months were excluded.

Results: Thirty-one patients were included (23 males, 8 females) with age 18-60 years old being dominant. Thirty (96.8%) patients had unilateral fractures, 23 patients (74.2%) came with impure fractures, and fractures mostly caused by traffic accidents (83.9%). Subconjunctival bleeding and eyelid abnormalities were found as the majority of ocular involvement. Symptoms with the greatest improvement were different between three groups based on surgery interval time. Besides, only one extruded implant was found.

Conclusions: Silicone block implant provides good outcomes with minimal complications even after late surgical repair of orbital floor fractures.

Repair of Full-Thickness Eyelid Laceration With Concomitant Canalicular Avulsion: A Case Report

*First Author: Meta **AN NAZZILA***
*Co-Author(s): Banu **DIBYASAKTI**, Agus **SUPARTOTO***

Purpose: To report surgical management of a patient with full-thickness lower eyelid laceration with concomitant canalicular avulsion.

Methods: We evaluate the clinical diagnostic findings of a patient with eyelid lacerations and canalicular avulsion which led to early surgical management.

Results: A 65-year-old male was brought to the emergency department after his left eye was cut by a wire. The patient complained torn left eyelid, difficulty opening the eyelid, and epiphora. No visual disturbance was reported. Clinical findings include full-thickness lower and upper eyelid laceration extending to the supraorbital area with concomitant upper canalicular avulsion. Patient were given anti-tetanus and analgetic injections then planned for immediate palpebral laceration and canalicular avulsion repair. The superior canaliculus was reconstructed by making a “bridge” from the lacrimal punctum to the proximal and distal cut using a silicon tube as a monocanalicular stent secured on the eyelid. After aligning the margin precisely, the lacerated margin was repaired with resorbable mattress sutures along the conjunctival line, grey line, and lash line. Skin closure was done using simple interrupted sutures. Routine evaluation was planned until the stent was ready to be removed in the sixth week.

Conclusions: Full-thickness eyelid laceration repair, which the margin involved, and reconstruction of

canalicular avulsion should be done immediately to achieve better anatomical and functional outcomes.

Serum Microrna as a Potential Biomarker for the Activity of Thyroid Eye Disease

*First Author: Bo Sook **HAN***
*Co-Author(s): Ho-Kyung **CHOUNG**, Sang In **KHWARG**, Namju **KIM**, Min Joung **LEE***

Purpose: To characterize the microRNA (miRNA) expression signatures in patients with thyroid eye disease (TED) and identify miRNA biomarkers of activity.

Methods: Total RNA was isolated from the sera of patients with TED (n=10) and healthy controls (HC, n=5) using the miRNeasy Serum/Plasma Kit. The NanoString assay was used for comprehensive analysis of 798 miRNA expression profiles. Specific miRNA signatures, mRNA target pathway analysis, and network analysis were performed. TED patients were divided into two groups according to disease activity: active and inactive TED groups. Differentially expressed circulating miRNAs were identified and tested using quantitative reverse transcription-polymerase chain reaction (qRT-PCR) tests in the validation cohort.

Results: Among the 798 miRNAs analyzed, 173 differentially downregulated miRNAs were identified in TED patients compared to HCs. Ten circulating miRNAs were differentially expressed between active and inactive TED groups and regarded as candidate biomarkers for TED activity (one upregulated miRNA: miR-29c-3p; nine downregulated miRNAs: miR-4286, miR-941, miR-571, miR-129-2-3p, miR-484, miR-192-5p, miR-502-3p, miR-597-5p, and miR-296-3p). In the validation cohort, miR-484 and miR-192-5p showed significantly lower expression in the active TED group than in the inactive TED group.

Conclusions: The expressions of miR-484 and miR-192-5p were significantly different between the active and inactive TED groups, suggesting that these miRNAs could be circulating biomarkers of TED activity, but they need to be validated in further studies.

Severe Conjunctival Chemosis Can Be Visual Threatening

*First Author: Kevin **KWAN***

Purpose: To report two cases of visual threatening conjunctival chemosis.

Methods: Retrospective case reports.

Results: Both cases presented with main symptom of unilateral conjunctival chemosis associated with binocular diplopia. Examination of both cases showed limitations of eye movement in all gazes except upward gaze. The affected eyes were proptosed with raised intraocular pressure (IOP). Optic nerve function tests were normal. The only difference was in the first case, where the fundus examination of the affected eye showed inferonasal choroidal mass from 7-9 o'clock with surrounding choroidal striation. However, in the second case, the fundus examination of both eyes was normal. Contrast enhanced computer tomography (CECT) of the brain and orbit of the first case was suggestive of malignant sinonasal tumor over the left side of the face with extension into the surrounding structures. CECT of the brain and orbit in the second case showed nonspecific orbital inflammation with ill-defined heterogeneously enhancing soft tissue at the inferomedial aspect of the right orbit involving the right inferior rectus muscle as well as the tendinous insertion. The first case was diagnosed with left maxillary sinonasal carcinoma. Biopsy showed non keratinizing squamous cell carcinoma. She is subjected for palliative radiotherapy in view of metastasis. The second case was diagnosed with idiopathic orbital inflammatory disease (IOID) which responded well with systemic steroids.

Conclusions: In this report, both cases had similar presentation of visual threatening condition. However, with detailed examinations, investigations, and proper diagnosis, both patients were well managed.

Subperiosteal Abscess in a Child With Crao

*First Author: Nur Hafizah **MAFFAR***
*Co-Author(s): Azhany **YAAKUB***

Purpose: The most common form of suppurative postseptal orbital complication of rhinosinusitis was subperiosteal abscess. Untreated SPA or orbital complication of rhinosinusitis can lead to serious complication including permanent blindness and even death.

Methods: To present a case report.

Results: A case of superior subperiosteal abscess with impending central retinal artery occlusion (CRAO) is reported here. A 14-year-old Indian boy, with underlying chronic rhinosinusitis presented with right eye proptosis for 1 week. The proptosis worsened and was associated with throbbing pain, headache and profound reduced vision over the right eye. He was afebrile. The right eye examination showed presence of relative afferent pupil defect, impaired optic nerve function test with severely proptosed eye. There was presence of complete ophthalmoplegia with exposure keratopathy. Fundus examination of right eye showed present of cherry red spot and tortuous vessels inferiorly. He had raised total white blood cell with predominant neutrophils. An urgent computed topography of brain/paranasal sinuses/orbit showed right paranasal sinusitis with right orbital cellulitis and subperiosteal abscess involving roof of right orbit, no intracranial extension. He was started on broad spectrum intravenous ceftriaxone and metronidazole. He underwent a functional endoscopic sinus surgery (FESS) and right superior orbital abscess drainage

via anterior orbitotomy. He was reviewed two weeks post operatively and the proptosis had improved tremendously, and the visual acuity had improved to 6/36. The ophthalmoplegia and optic nerve functions resolved.

Conclusions: Orbital complications from rhinosinusitis are uncommon but required prompt and efficient treatment in order to prevent disastrous consequences such as permanent blindness and even death.

Surgical Challenges on Managing Chronic Ocular Stevens-Johnson Syndrome in Children: A Case Series

*First Author: Dewinta **KURNIAWARDHANI***
*Co-Author(s): Yunia **IRAWATI***

Purpose: Chronic ocular sequelae secondary to Stevens-Johnson syndrome (SJS) account for almost 30% of pediatric cases. If not appropriately managed in the acute phase, it will lead to corneal neovascularization and conjunctivalization, persistent epithelial defects, and keratinization of the whole ocular surface in the chronic phase. This case series is to report the surgical challenges and outcome on treating chronic ocular complications of SJS in children, with eyelid and ocular abnormalities correction and amniotic membrane transplant (AMT) application.

Methods: A case series.

Results: Three cases of children of less than 5 years old with a history of SJS and presented with chronic phase ocular complications. All cases had moderate to severe symblepharon formation, ankyloblepharon, and corneal involvement (opacification, conjunctivalization, and neovascularization). We conducted surgical intervention of released ankyloblepharon and symblepharon, corrected any eyelid malposition and misdirected lashes, and applied dehydrated AMT dressing which has 50 to 150 microns tissue thickness on affected eyes. Immunosuppressive eyedrop and systemic were given continuously with tapering the dose. After 1 month of observation, all patients showed dissolved AMT, and conjunctival epithelium recovered without the presence of remaining symblepharon. They achieved good cosmetic results and improved visual function.

Conclusions: AMT dressing might be successfully utilized to reduce ocular inflammation, promote epithelialization, and prevent ocular cicatrization. In conjunction with reconstructing the eyelid will lead to satisfying visual function and aesthetic results.

The Great Mimicker: Orbital Nodular Fasciitis

*First Author: Caroline **MCBURNEY***

Purpose: To raise awareness of nodular fasciitis as a differential diagnosis in rapidly growing solitary soft tissue lesions and optimize the diagnosis and management of this uncommon condition. Nodular fasciitis is a rare benign self-limiting myofibroblastic proliferative solitary tumor that can be found in orbital soft tissues. Due to its rapid growth, infiltrative growth pattern, high cellularity and increased mitotic activity it can often be misdiagnosed as more sinister pathology such as malignant sarcoma and result in more invasive surgical procedures being performed.

Methods: Case presentation and literature review of the clinical presentation, evaluation, diagnosis and management of nodular fasciitis of the orbit.

Results: Review of the clinical presentation, differential diagnosis and investigations are required when approaching soft tissue lesions. With particular focus on the diagnostic and treatment gold standard for orbital nodular fasciitis.

Conclusions: Nodular fasciitis of the orbit accounts for less than 1% of all orbital lesions, however, it is important to consider this in the differential of orbital lesions. Further investigations such as imaging and excisional biopsy should be considered in the workup of these patients as there is the potential it could alter clinical management and prevent misdiagnosis of more sinister pathology, thus preventing the inappropriate use of more radical surgical procedures being performed on a potentially benign lesion.

The Importance of Closure: A Case of Penetrating Ocular Trauma with a Wooden Stick

*First Author: Nishi **SATISH***
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Purpose: The purpose of this case report is to highlight the need for a multidisciplinary approach in the case of ocular trauma, and the importance of proper wound closure to prevent the dreaded neurological complications that may further follow such cases.

Methods: Our case report follows the journey of a young man who had sustained a penetrating ocular injury with a wooden stick to his left eye, after which the patient presented with pain, proptosis and restriction of depression and abduction on movements. The foreign body did not perforate the globe and was lodged in the left extraconal space extending till the basi-frontal lobe after creating a bony defect in the cribriform plate. This case needed a multidisciplinary approach due to the risk of CSF leak on removal and a hybrid team was formed to surgically remove the wooden foreign body. The tract of the penetrating trauma was then cleaned and debrided of any necrotic tissue and wooden fragments, and the end of this tract was sealed using fibrin glue to prevent CSF leak. The patient recovered well and is currently devoid of any ocular or neurological symptoms.

Results: After a period of 4 weeks in recovery, and after developing dreaded features of meningitis during this recovery as a complication, the patient is currently

completely healed with no residual neurological deficits or ocular symptoms.

Conclusions: In any case of ocular trauma where the direction of the penetrating object is not in clear view, a multidisciplinary approach is necessary.

Three-Wall Orbital Decompression and Eyelid Reconstruction in Patient With Graves Ophthalmopathy: A Case Report

First Author: Meuthia Rana Amira ***PRIMAPUTRI***
Co-Author(s): Yunia ***IRAWATI****, Nizma* ***PERMAISUARI***

Purpose: Graves ophthalmopathy is a potentially sight-threatening ocular disease. This case report demonstrates an example of a young woman with graves ophthalmopathy receiving successful orbital decompression surgery with multidisciplinary team approach.

Methods: A 39-year-old woman presented with double vision and severe proptosis of both eyes for 3 years. There was history of palpitation, tremor, and weight loss.

Results: On examination the patient was conscious, oriented, and her vitals and general examination were normal. Best-corrected visual acuity was 6/6 on both eyes with restricted eye movements, upper and lower eyelid retraction and lagophthalmos. Hertel exophthalmometer of right eye 24 mm and left eye 26 mm. There was no relative afferent pupillary defect, and fundal and disc examinations were normal. According to the Graves Orbitopathy Severity Assessment, the patient had inactive moderate-severe grade (CAS score 0). Serum total T3, T4, and TSHs levels were as 0.9 ng/dl, 110.04 nmol/L, and 0.0287 mU/mL, respectively. Computed tomography of the orbits revealed signs of GO, including enlarged bilateral intra-orbital muscles. According to the Graves Orbitopathy Severity Assessment, the patient had the moderate-severe grade. Successful orbital decompression surgery that involved three walls can be achieved trans-nasally and trans-orbitally in collaboration with ENT consultant. Two months after, patient underwent levator aponeurosis recession and blepharotomy to correct upper eyelid retraction.

Conclusions: Orbital decompression following with levator aponeurosis recession and blepharotomy were an effective and safe operation aimed at decreasing proptosis and lid retraction manifestation in graves ophthalmopathy patient.

Topography of Orbital Part of Lacrimal Gland for Treating Epiphora Using Botulinum Toxin Injection

First Author: Hyun Jin ***SHIN***

Purpose: To identify the location of the orbital part of the lacrimal gland using external landmarks to facilitate effective botulinum toxin A (BTX-A) injections for epiphora treatment.

Methods: Dissections were performed on 45 hemifaces from 27 cadavers. The length, anterior protrusion, and thickness of the orbital part of the lacrimal gland were measured directly. The midpoint of the line running horizontal through the medial and lateral canthus was used as the horizontal reference point. Vertical lines perpendicular to the midpoint of the horizontal reference line were the vertical reference lines. The angles from the horizontal reference line to the lacrimal gland center and to the frontal tubercle were also measured.

Results: The length and thickness of the lacrimal gland were 12.8 mm and 2.4 mm, respectively. The lacrimal gland had an anterior protrusion of 4.1 mm from the superolateral orbital margin. The superior and inferior margins of the lacrimal gland were located 35.7 degrees and 15.8 degrees from the two reference lines, respectively. The angle from the horizontal reference line to the lacrimal gland center was 35.1 degrees, which was similar to that to the frontal tubercle (34.4 degrees).

Conclusions: The orbital part of the lacrimal gland was more inferior in elderly subjects and the angle between the horizontal reference line and its center was 35.1 degrees, which was similar to the location of the frontal tubercle. The location of this tubercle can help clinicians to perform BTX-A injections into the lacrimal gland, thereby enhancing the effectiveness of epiphora treatment.

Transorbital Penetrating Intracranial Injury by a Motorcycle Side Mirror: Challenges in Management

First Author: Kia Charisse ***DE ASIS***
Co-Author(s): Mark Anthony ***IMPERIAL***

Purpose: To present a case of transorbital penetrating intracranial injury managed using an immediate, stepwise multispecialty approach, leading to a favorable outcome. Images of pre-operative, intraoperative and closed-circuit television (CCTV) footage of the incident are included.

Methods: A 26-year-old male presented at the emergency room with a motorcycle side mirror metal bar, still attached to throttle and brake lever, impaled into his right orbit. Computed tomography (CT) scan revealed a metal bar piercing the right lateral orbital wall extending to the right frontal lobe. There were multiple right orbital and facial fractures. His Glasgow Coma Scale (GCS) 12: E4V3M5. Complete pre-operative ophthalmological examination was not possible due to the nature of the injury.

Results: Despite the severity of injury, the right globe was found to be intact intraoperatively. The right pupil was 5 mm dilated and non-reactive to light. Intracranial removal of the penetrating object was avoided to

minimize damage to the surrounding tissues, hence, a transorbital approach was done. This was followed by full thickness eyelid laceration and lateral canthal repair. Subsequently, the neurosurgery service performed a right pterional craniotomy, debridement and duraplasty. Upon discharge, the patient's best corrected visual acuity was 20/50 with improved GCS score.

Conclusions: Transorbital penetrating intracranial injuries are rare and result to visual loss and life-threatening complications. A transorbital approach in removing a penetrating foreign body can be adopted when injury to cerebral tissues is imminent. Individualizing the management and employing a multispecialty approach can lead to favorable outcomes.

Treatment of Lacrimal sac Rhinosporidiosis, with or without Systemic Dapsone

*First Author: Mukti **MITRA***
*Co-Author(s): Md.Alauddin **AL AZAD**, Golam **HAIDER***

Purpose: To observe the outcome of surgical treatment of lacrimal sac rhinosporidiosis with or without systemic dapsone and also to see the recurrence.

Methods: Twenty-seven patients of lacrimal sac rhinosporidiosis had been operated between 2010 and May 2022. Age range was 6 years to 65 years. Among them, 9 were female and 18 were male. Two female patients had previous dacryocystorhinostomy operations and presented with mucocele. All the patients used to take pond water bath. Complete excision of lacrimal sac was done in all the patients. Reconstructive surgery with buccal mucosal graft was done in 21 patients to relieve epiphora. Ten patients have been treated with postoperative oral dapsone (1.4 mg /kg bod weight for 6 months) to prevent recurrence and spread to opposite site from any residual lesion in the nose.

Results: All the surgeries were done by single surgeon. No recurrence was seen in with or without dapsone treated patients. Persistent epiphora was observed in 3 patients received reconstructive surgery. No dapsone related side effects were seen.

Conclusions: Recurrence is very common in rhinosporidiosis and dapsone is the treatment of choice to prevent. But no difference was observed in both the groups in this study. Total excision of lacrimal sac with all the residue in the nose is the key to prevent recurrence. Further large-scale study is conclusive.

Why Am I Seeing Double?

*First Author: Noorshazana **WAN AZMY***
*Co-Author(s): Zairah **ABIDIN**, Zalifa **ASNIR**, Azlina **MOKHTAR**, Carynn Ng **MAE LI**, Sharan A/p **SILVARAJOO***

Purpose: To report a rare complication of open reduction and internal fixation of pan facial fracture.

Methods: A case report.

Results: A 23-year-old male had an alleged motor vehicle accident and sustained a right multiple orbital wall fracture with infraorbital paraesthesia. His best-corrected vision was 6/6 in both eyes, and extraocular movement was full. He underwent open reduction and internal fixation due to his pan facial fracture. Subsequently, post-surgery on day 2, he developed diplopia. On examination, his right eye vision was 6/60. There is a mark right eye relative afferent pupillary defect with right eye ptosis and restriction of extraocular muscle movement with limitation of abduction, elevation, depression and adduction. The patient also had reduced right-sided facial sensation over V1 distribution, loss of forehead wrinkling, lagophthalmos, and loss of nasolabial fold. This concluded he had orbital apex syndrome due to involvement of 2, 3, 4, 5, 6 together with 7th cranial nerve palsy. Otherwise, his anterior and posterior segment finding was unremarkable. Contrast-enhanced computed tomography and venogram of the brain showed a lateral wall of the right optic canal fracture abuts onto the right optic nerve at the orbital apex causing soft tissue swelling around the region evidenced by streakiness. Intravenous Methylprednisolone 250 mg QID for 3 days was given and noted the patient vision with extraocular muscle movement improved.

Conclusions: Orbital apex syndrome is a rare but rather sight-threatening devastating ocular complication post craniofacial surgery. Early diagnosis with prompt treatment by a multidisciplinary team can result in a better prognosis for the patient.

Pediatric Ophthalmology and Strabismus

A Case of Pediatric Marfan Syndrome Diagnosed by Lens Deviation in Both Eyes and FBN1 Gene Mutation Testing

*First Author: Shuhei **NOMURA***
*Co-Author(s): Akiko **HIKOYA**, Yoshihiro **HOTTA**, Miwa **KOMORI**, Miho **SATO***

Purpose: Marfan syndrome (MFS), a systemic connective tissue disease secondary to an abnormality in the FBN1 gene is characterized by tall stature, long extremities, aortic lesions, and lens deviation. We report a case of bilateral lens deviation and FBN1 variant expression in a child without cardiovascular, skeletal, pulmonary, cutaneous, or dural findings and no family history of MFS, in whom genetic testing was useful for early diagnostic confirmation.

Methods: To present a retrospective chart review.

Results: A 23-month-old infant was referred to

our department for evaluation of lens deviation. Ophthalmological evaluation showed bilateral high hyperopia with superior subluxation of the lens. Using Teller Acuity Cards, his visual acuity was 1.3 cy/cm (0.03) in the right and 1.6 cy/cm (0.037) in the left eye. He was diagnosed with mental retardation and autism spectrum disorder at 24 months of age and underwent bilateral lensectomy and vitrectomy at 27 months of age. Genetic testing revealed a de novo variant (c.184C > T) in the FBN1 gene at 41 months of age, and diagnosis of MFS was confirmed based on the revised Ghent criteria (2010).

Conclusions: A phenotype-alone approach may not adequately meet diagnostic criteria, and genetic testing is useful for diagnosis in pediatric patients with MFS. Genetic testing is covered by insurance in Japan since April 2016, which is likely to facilitate early diagnosis of this disorder.

A Nightmare in Strabismus Surgery

First Author: Guan Hui ***YAP***
Co-Author(s): Sonal ***FARZAVANDI***

Purpose: To share how strabismus surgery can take a turn for the worse, resulting in potentially life-threatening complication.

Methods: A case report on a patient with strabismus fixus who underwent strabismus surgery under general anesthesia and developed malignant hyperthermia.

Results: A 64-year-old lady presented with strabismus fixus (heavy eye syndrome) due to high myopia. Cover test revealed left esotropia of 133 prism diopters for distance and near. She had right abduction deficit -3, elevation deficit -1, and left abduction deficit -6 and elevation deficit -4. Rest of extraocular motility was full. She was scheduled for left eye Yokoyama procedure under general anesthesia. Intra-operatively, propofol and atracurium were used for induction, intubation was uneventful, and inhalation sevoflurane was used for maintenance. Intramuscular pethidine was given for analgesia. 1.5 hours into surgery, end tidal CO2 (ETCO2) was elevated from 40 to 70 mmHg, and heart rate was elevated at 120 bpm. Malignant hyperthermia was suspected, skin probe was attached, which showed temperature of 38.9 Celsius. Immediately, IV dantrolene 3mg/kg was instituted, and ETCO2 normalized after 100 mg of dantrolene. After aggressive intervention requiring 9 vials of dantrolene, the patient stabilized with drop in temperature from 38.9 to 31.7 Celsius. Her wounds were closed up, and she was transferred to the intensive care unit, where she remained stable. She was discharged 3 days post-surgery. Subsequently, patient was referred to the neurologist to rule out myopathies and genetic testing.

Conclusions: Malignant hyperthermia is a life-threatening condition; pre-operatively vigilance and counselling is necessary to avoid a life-threatening situation.

Aggressive Posterior Retinopathy of Prematurity in Low-Risk Intrauterine Growth Retardation, a Diagnostic Dilemma

First Author: Wan Mohd Aiman ***WAN ABDUL RAHMAN***
Co-Author(s): Nurliza ***KHALIDDIN***

Purpose: Intrauterine growth retardation (IUGR) is associated with worse retinopathy of prematurity (ROP) disease. We report a case of aggressive posterior retinopathy of prematurity (APROP) in an IUGR with low risk factor which regresses after treatment.

Methods: To present a case report.

Results: A 30-week gestational age premature boy with birth weight of 1,055 grams was born via emergency caesarian section due to maternal severe pre-eclampsia and IUGR. He required ventilation for one day only and was subsequently on room air. ROP screening was done at 34 weeks. Both fundi showed vascularization in zone 1 only. There were dilated tortuous vessels forming loops at the edge of the vascularized retina. No ridge or fibrovascular proliferation seen. Since his risk factors for APROP was low, he was investigated for other possible causes of retinopathies. TORCHES screening shows cytomegaly IgG and rubella IgG was positive. Blood culture and herpes simplex IgG were negative. After one week the vessels progresses to posterior zone 2, but the vessels became more tortuous and loopy forming arcades were at the edge of the vascularized retina. No line or ridge was present. We decided to treat it as APROP. Both eyes intravitreal anti-VEGF was given. By using smartphone, fundoscopy pictures of pre- and five days post-intravitreal injection was taken for comparison which showed regression in the tortuosity and the looping of vessels. A discussion of the diagnostic dilemma will also be highlighted.

Conclusions: APROP can present in premature baby with IUGR with low risk factor. It requires urgent treatment, and intravitreal vascular endothelial factor (anti-VEGF) such as bevacizumab is an option.

An Unusual Case of Nasolacrimal Duct Obstruction in a Child

First Author: Su Ann ***TAY***

Purpose: We report a case of a maxillary odontogenic cyst presenting as nasolacrimal duct obstruction in a child.

Methods: A 5-year-old girl presented to the eye clinic for a history of discharge and tearing in both eyes over the course of 6 months. She was treated for allergic conjunctivitis with some improvement in her symptoms though tearing in the right eye still persisted. A clinical diagnosis of nasolacrimal duct obstruction was though the child was also noted to have hyperglobus of the right eye with fullness of the cheek on that side.

Results: CT orbits showed an expansile cystic lesion in the right maxillary sinus. Enucleation of the cyst

with teeth removal was performed and histology was consistent with a odontogenic keratocyst.

Conclusions: It is important to exclude secondary causes of naso-lacrimal duct obstruction in an older child, especially if the history suggests that it is acquired.

Assessment of Satisfaction, Compliance and Side Effects Among Long-Term Orthokeratology Wearers

*First Author: Fang-Ling **CHANG***
*Co-Author(s): Cheng Jen **CHIU**, Shang-Yen **WU***

Purpose: To evaluate the satisfaction, compliance, and side effects among the long-term orthokeratology (Ortho-K) users in a tertiary hospital and analyzed the side effects and associated risk factors.

Methods: Myopic children with Ortho-K treatment for at least 6 months were invited to participate in this study. Children and their guardians were evaluated using a structured questionnaire comprised background information, wearing behaviors, daily activities, satisfaction, and associated concerns. Clinical information, including refractive data and side effects, was obtained through patient medical files.

Results: A total of 305 Ortho-K wearers were enrolled, and the average age was 13.15 years, with an average wearing period of 17.1 months. Over 83% of the subjects had a clear daytime vision all day, around 88% felt satisfied or very satisfied with the results, and 98% exhibited a willingness to continue wearing the Ortho-K lenses. Most parents (83%) were pleased with the controlling effect of myopic progression. Initial spherical equivalent and regular cleaning of the lens protein significantly correlated with good daytime vision (unaided vision ≥0.8). Besides, wearing ≥6 days/week correlated with less risk of lens binding. The main reasons for using Ortho-K were effectiveness, safety, and practicality, while the major concerns were discomfort, harmful to the eyes, and no effect.

Conclusions: This study revealed a high degree of satisfaction with relatively good compliance among the Ortho-K uses in a Taiwan tertiary hospital. With comprehensive care program from practitioner and good compliance of user, Ortho-K might be the most effective and satisfied option for myopic children.

Cerebral Vision Impairment With Peripheral Field Riddoch Phenomenon in a 14-Year-Old Girl: Clinical Manifestation and Vision Rehabilitation

*First Author: Chin-Tzu **KUO***
*Co-Author(s): Chung **HUI-CHUAN**, Tsai **I-LUN***

Purpose: To present the clinical investigation of a pediatric patient with cerebral vision impairment (CVI) and the visual rehabilitation strategies.

Methods: Retrospective case report

Results: A 14-year-old girl with histories of seizures, a head injury, and attention deficit hyperactive disorder had blurred vision coupled with recurrent falling in unfamiliar settings. She was able to catch a ball thrown toward her, but she was unable to detect fixed obstacles on the floor or at her sides. She also had major difficulty reading. At the time of the visit, the both eyes were highly hyperoptic (-6D), and her best-corrected visual acuity was 20/20 bilaterally. Visual field test revealed a severe defect outside 10 degrees in all directions in both eyes. Other ophthalmic tests and the brain MRI were unremarkable. Kinetic objects could be detected in her peripheral fields but not immobile objects, which may indicate Riddoch Phenomenon. Functional vision evaluations were performed as required during a six-year follow-up. There are no cognitive deficits. Vision rehabilitation such as visual aids, orientation, and mobility training were introduced, and were modified according to changes in her needs. The patient also developed compensating strategies for her loss of fields. As a result, improvement in both reading and ambulation were observed.

Conclusions: Cerebral visual impairment is difficult to determine in pediatric patients, especially in patients with a normal central vision. However, with proper vision rehabilitation, such patients may achieve improvements in daily activities.

Clinical Audit on Childhood Myopia Progression During COVID-19 Pandemic in a Tertiary Hospital Center in Kuala Lumpur

*First Author: Siti Nur Amira **ABU KASSIM***
*Co-Author(s): Siti Maryam **AYOB**, Nurulwahida **JASMAN**, Safinaz **MOHD KHIALDIN**, Othmaliza **OTHMAN***

Purpose: This clinical audit was performed to present data on the progression of childhood myopia during the COVID-19 pandemic in a tertiary hospital center.

Methods: We included all children who attended our ophthalmology clinic in the year 2022 for refractive assessment. Children with spherical equivalent of more than -0.5 Diopter(D) were categorized as myopia. The myopia progression rates were calculated from the data.

Results: One-third of total patients attending the clinic in 2022 are found to be myopic and one-third of this myopic group are showing myopia progression of at least -0.50D. The progression rate per patient per year during the pandemic had shown increase in value. The age group that shows the most progression is the primary school group (7 to 12 years old).

Conclusions: Childhood myopia progression was associated with the COVID-19 pandemic.

Clinical Visual Outcome of Cataract Surgery in Infants in Hospital Kuala Lumpur – 5 Years' Review

*First Author: Siew Yuen **GOH***

Purpose: To determine the clinical visual outcome of cataract surgery in infants in Hospital Kuala Lumpur.

Methods: A retrospective cohort study reviewing all the case notes of congenital cataract, who underwent cataract surgery during the first year of life from January 2013 to December 2016 in Hospital Kuala Lumpur.

Results: In terms of visual acuity and spherical equivalence post operation, our result showed significant improvement in both aphakia and pseudophakia groups from 3-months up to 60 months post operation. Bilateral pseudophakia groups achieved the best vision with 13.3% in mild amblyopia category (LogMar ≤ 0.3), moderate amblyopia of 33.3% and severe amblyopia of 53.3% at the end of 60months. In our results of unilateral pseudophakia, the visual acuity outcome was reported worse with median LogMar 1.60(IQR 0.65) at 60 months, whereas bilateral pseudophakia at 60 months achieved better vision with median LogMar 0.88(IQR 0.7-0.9). Analyzing the visual outcome in aphakia did not show promising results as there were no significant improvement in unilateral or bilateral cataract.

Conclusions: Implantation of IOLs in children do better in final visual outcome as compared to aphakia, especially for bilateral cataract patients.

Comparison Between Horizontal Muscle Transposition and Oblique Muscle Weakening for Correction of V-Pattern Strabismus: A Literature Review

*First Author: Nur **RAHMAWATI***
*Co-Author(s): Anna **BANI***

Purpose: This literature review aims to compare the efficacy of horizontal muscle transposition and oblique muscle weakening in managing V-pattern strabismus. By analyzing what factors influence the success rate among the two groups, there could be a better understanding of applying these different surgery methods to the most appropriate situation.

Methods: Literature searching was conducted using keywords and MeSH headings specifically chosen to identify published articles on CENTRAL, MEDLINE, ScienceDirect, SCOPUS, and Google Scholar. Articles included were full-text studies written in English within the last ten years.

Results: Six cohort studies were included in this review. Two articles are comparative studies of both procedures, while four articles only reviewed one type of surgery. Vertical transposition of horizontal muscles can be used for V-pattern strabismus with no or minimal inferior oblique overaction (grade less than +2). Half tendon-width vertical transpositions correct 13-14 PD, while full-tendon width corrects larger patterns. However, cases with minimal inferior oblique overaction (IOOA) can also be addressed by graded anterior transposition technique, since it carries less complication than self-adjusting techniques such as myectomy and tenotomy. For cases with larger IOOA, graded anterior transposition, myectomy, and tenotomy can be used with a similar success rate. The most common complication for both horizontal transpositions and oblique weakening procedures is either under or overcorrection.

Conclusions: All horizontal muscle transposition and oblique muscle weakening procedures can correct V-pattern strabismus with a similar high overall success and low complication rate, as long as it applies appropriately to the specific conditions of patterns.

Eccentricity of Fixation: Attempting Switch to Better Seeing Eye

*First Author: Anamika **PANDEY***
*Co-Author(s): Kashyap **THAKKER***

Purpose: Eccentric fixation is found in some cases of strabismus with deep amblyopia. We report a case of 50/M who presented with gradual right eye (RE) visual loss with progressive increase of myopia and left eye (LE) having strabismic amblyopia with esotropia.

Methods: On examination RE fundal coloboma with staphyloma having scarred CNVM with FC vision. While LE showed eccentric fixation with ET of 70 PD but having better vision 6/36. Patient however was fixating with RE and had to assume head turn to shift to better eye fixation.

Results: We operated the patient for strabismus (LE: MR marginal myotomy with LR plication) with the aim of shifting the fixation to the now better seeing LE and reducing his AHP. Postoperatively, the patient had reduced abnormal head posture and was able to better fixate with LE in primary and reading positions.

Conclusions: There are several functional benefits of strabismus surgery in the adult patient including unexpected re-establishment of sensory fusion and expansion of the binocular visual field in patients with esotropia. The presence of strabismus has been found to have a profound effect on the psychosocial aspects of the adult patient's life and the perception of others who interact with the patient.

Effect of Bimedial Recession on Near Distance Disparity in Esotropia

*First Author: Surinder **DOSANJH***
*Co-Author(s): Rohit **JOLLY**, Alasdair **KENNEDY**, Fabian **LENGWILER**, Jain **SAURABH***

Purpose: Esotropia may be associated with a difference in the deviation at near and distance fixation termed

near-distance disparity (NDD). Convention suggests patients with NDD may benefit more from bilateral medial rectus recessions (BMR) as opposed to a unilateral recession/resection (RR). The aim of this study is to establish the effect of BMR for treatment of esotropia on both the near and distance deviation and NDD.

Methods: Retrospective patient records search from 2011 to 2021. Inclusion criteria: comitant esotropia, first surgery, equal and normal vision with free alternation. Exclusion criteria: incomitant, neurological or restrictive strabismus, previous surgery, clinically significant amblyopia.

Results: Forty-nine patients met the inclusion criteria. 19 patients were female; the average age was 17 years old. Following the surgery, the average near deviation reduced from 39PD base out (BO) to 11PD BO. The average distance deviation reduced from 33PD to 9PD. NDD resolved in 15 out of 18 patients with NDD (83%). The average PD gain per mm of recession was 2.7 for near and 2.2 for distance.

Conclusions: BMR is an effective surgical treatment for esotropia and has a greater effect on near deviation than distance. It is also effective at reducing NDD. BMR has several advantages over RR: No tissue loss, readily reversible, the scars are easier to hide, and it avoids potential mobility limitations due to leash effects following resection. BMR is an effective operation for the treatment of esotropia and reduction in NDD which is considered significant if the near deviation measures 10 prism diopters (PD) more than the distance deviation.

Effect of Prism Optical Neutralization of Vertical Deviation on Measuring Angle of Horizontal Heterotropia in Patients With Intermittent Exotropia With Small Vertical Deviation

*First Author: Hyosook **AHN***
*Co-Author(s): Byung Joo **LEE**, Yeji **MOON***

Purpose: Small angle vertical deviation is frequently accompanied in patients with Intermittent exotropia. In this study, we aimed to evaluate the effect of prism optical neutralization of vertical deviation on measuring the angle of horizontal heterotropia in patients with intermittent exotropia with small vertical deviation.

Methods: Intermittent exotropes with vertical deviation of 4 PD (prism diopter) or less were included. First, the angle of horizontal deviation was measured without neutralizing vertical deviation using prism alternate cover test. Then, the angle of horizontal deviation was reassessed with optical neutralization of vertical deviation.

Results: Overall, 20 patients were included and the mean age at examination was 10.7 ± 5.5 years. The mean angles of horizontal deviation measured with and without neutralizing vertical deviation were 23.7 ± 6.0 PD and 25.9 ± 7.3 PD, respectively. There was significant difference between the two values ($p < 0.01$). In 14 patients (70%), the angle of horizontal deviation was diminished after optical neutralization of vertical deviation and mean change in the angle of horizontal deviation was 3.1 ± 1.8 PD. In contrast, prism optical neutralization of vertical deviation did not affect the angle of horizontal deviation in 6 patients (30%).

Conclusions: In intermittent exotropia patients with small vertical deviation, prism alternate cover test without optical neutralization of vertical deviation could lead to an overestimation of the angle of exodeviation.

Efficacy of Bevacizumab in Patients With Type 1 Retinopathy of Prematurity in Surabaya, Indonesia

*First Author: Bambang **ZULKARNAIN***
*Co-Author(s): Rozalina **LOEBIS***

Purpose: Retinopathy of prematurity (ROP), a vascular disease of the retina of preterm infants, remains a leading cause of childhood blindness. In ROP, neovascularization occurs due to retinal immaturity, mainly caused by VEGF. Bevacizumab is the least expensive anti-VEGF therapy and the most commonly used at Surabaya. It binds to VEGF and inhibits the binding of VEGF molecules to their receptors on the surface of vascular endothelial cells. Therefore, inhibition of VEGF activity can inhibit abnormal angiogenesis in the retina. The aim of the study is to describe the risk factors and therapeutic outcomes of bevacizumab.

Methods: A retrospective and prospective observational study with time-limited sampling from January 1, 2015, to April 30, 2018 was used. All data were analyzed descriptively.

Results: A total of 35 eyes from 20 patients (11 male and 9 female) were included in the study. Most patients were 36 and 38 weeks of gestational age when they received bevacizumab therapy. The main risk factors in ROP patients are low gestational age (90.0%), low birth weight (60.0%) and subsequent oxygen therapy (55.0%). Patients with ROP stage III+ (76.0%) were the most commonly diagnosed ROP who received bevacizumab injection. The dose used for intravitreal injection of bevacizumab in ROP patients is 0.625 mg/0.025 mL once during the hospital stay. About 88 0% of the eyes showed positive results, while 6,0% worsened after bevacizumab injection.

Conclusions: Bevacizumab intravitreal injection is effective for ROP patients with plus disease that are BEAT-ROP compliant.

Epidemiology, Risk Factors, and Screening Guidelines of Retinopathy of Prematurity in Southeast Asian Countries

*First Author: Marcelius **PRABANISWARA***
*Co-Author(s): Rita S **SITORUS***

Purpose: Retinopathy of Prematurity (ROP) is one of the leading causes of childhood blindness, however, the epidemiological data in Southeast Asia (SEA) had been less reported. This study intends to explore the epidemiology, screening guidelines, and risk factors of ROP in SEA countries.

Methods: Literature review was conducted including the following keywords: Retinopathy of prematurity, screening, guidelines, Indonesia, Brunei, Cambodia, Laos, Malaysia, Myanmar, Philippines, Thailand, East Timor, and Vietnam. Data from 2002 to 2021 on ROP prevalence, ROP requiring treatment, risk factors, the availability of national screening guidelines were collected and analyzed.

Results: Sixteen publications met the inclusion criteria from 7 of 10 SEA countries. The prevalence of ROP ranges from 9.8% to 58.6% which was reported from Philippines and Malaysia consecutively. ROP requiring treatment ranges from 5.64% (Indonesia) to 32.9% (Malaysia). Based on the existing national guidelines, ROP babies were still identified with BW and GA above the criteria; with the prevalence range from 2.23% (the Philippines) - 8.02% (Thailand). All SEA countries have national guidelines except Laos, Cambodia, and Myanmar. Most of them adopt their own birthweight, gestational-age, and neonatology factors as the screening criteria. Common neonatal risk factors were unstable conditions, septicemia, prolonged ventilation, respiratory distress syndrome, and repeated blood transfusion

Conclusions: There are differences in ROP screening guidelines and the prevalence among SEA countries. ROP babies above the existing screening criteria was still found in all participating SEA countries, highlighting the importance of managing the associated neonatology risk factors such as, septicemia, oxygen supplementation, and others.

Evaluation of Anatomical and Functional Features of the Eyes in Children With Second Degree of Cicatricial Retinopathy of Prematurity

*First Author: Maxim **PSHENICHNOV***
*Co-Author(s): Oleg **KOLENKO***

Purpose: To assess the anatamo-functional features of the eyes in 18 children with the 2 degrees of cicatricial retinopathy of prematurity (CROP) in the long-term period who underwent retinal laser coagulation in 2008-2009 at threshold stages of ROP.

Methods: The selection criterion was the absence of traction changes in the macular area (main group). Healthy children of the same age group were control. The depth of the anterior chamber in the main group was on average 2.38 ± 0.19 mm, in the comparison group – on average 2.78 ± 0.18 mm ($p \leq 0.03$). A sharper angle of the anterior chamber on average 24.3 ± 1.1˚ in comparison with the control 29.8 ± 2.3˚ ($p \leq 0.04$).

Results: Increase in the thickness of the fovea in the main group – 279.5 ± 17.9 versus 239.2 ± 9.2 µm in the control ($p \leq 0.01$). Decrease in the thickness of the retina in all sectors of the macular map in the main group, in the internal temporal (282.2 ± 36.1 versus 312.1 ± 11.5 µm) and upper sectors (301.1 ± 18.9 versus 321.5 ± 11.6 µm) ($p \leq 0.01$). In the main group, despite the visually intact optic nerve and macula, pathological changes in VEP were observed in 89% of cases.

Conclusions: The peculiarities of the eyes in the main group: a statistically significant increase in the thickness of the retina in the fovea, a uniform decrease in the thickness of the retina in other sectors of the macula, a smaller anterior chamber, and an acute angle of the anterior chamber of the eyeball than in healthy peers, the presence of pathological changes in VEP.

Expect the Unexpected (During Rop Surveillance)

*First Author: Li Yen **CHAN***
*Co-Author(s): Shuan **DAI***

Purpose: To report non-retinopathy conditions in 2 premature infants during retinopathy of prematurity (ROP) screening using wide-field imaging in the neonatal intensive care unit (NICU).

Methods: During routine ROP screening, we detected incidentally two premature infants with cytomegalovirus (CMV) chorioretinitis and anemia of prematurity respectively. The gestational age, birth weight, post menstrual age (PMA) at first examination and significant perinatal events were noted. photos from each eye were taken using a RetCam 3 (Clarity Medical Systems, Inc., Pleasanton, CA, USA).

Results: The first baby was born at 26 weeks› gestation and 737g. First 2 ROP screening at PMA 32 and 33 weeks showed retinopathy in zone II. At PMA 35 weeks, multiple, round and discrete retinal and choroidal lesions in both eyes were seen. A subsequent diagnosis of CMV chorioretinitis was made. There were not concerns of disseminated disease and the retinitis resolved after having six weeks of valganciclovir. The second baby was born at 24 weeks' gestation and 632g. First ROP screening was performed at PMA 32 weeks with her twin brother. Findings were incomplete vascularization within zone II. Interestingly, both retinae were pale with attenuated blood vessels when compared with her twin brother. A diagnosis of anemia of prematurity was made and blood transfusion was given. Both had ROP that regressed spontaneously.

Conclusions: This shows us wide-field imaging used for ROP screening has helped diagnose and manage other non-retinopathy conditions in preterm infants and that wider use of screening for ocular pathologies is useful in preterm infants.

Familiar Congenital Cataract From Glucosaminyl (N-Acetyl) Transferase 2 Gene Mutation

*First Author: Min-Hsiu **SHIH***
*Co-Author(s): Fu-Chin **HUANG***

Purpose: To report the clinical features and genetically analyze a family of non-syndromic congenital cataracts.

Methods: To present case reports of three siblings in a family.

Results: A 2-month-old girl presented with leukocoria and poor vision (OU) for 1 month. Ophthalmic examination revealed cataract (OU), alternative exotropia, and nystagmus. Cataract extraction without intraocular lens implantation (OU) was performed to prevent amblyopia. She wore glasses after that. Visual acuity achieved 20/60 (OU) when she was 5 years old. Then, we performed secondary intraocular lens implantation (OU). Tracing her family history, her elder sister (7 years old) and her younger brother (3 months old) also had congenital cataracts (OU). During operation, posterior circular capsulotomy occurred spontaneously, and persistent fetal vasculature was observed in both eyes of the youngest brother. Genetic analysis by whole exome sequence revealed compound heterozygous mutations c.1049G>A (p.Gly350Glu) and c.1062dupA (p.Trp356ValfsTer4) in the transferase 2 gene (GCNT2). Further segregation of her parents confirmed the heterozygous mutations. I/i blood group typing was not performed.

Conclusions: Homozygous or compound heterozygous mutations in GCNT2 caused cataracts. A small insertion of GCNT2 caused a novel mutation of c.1064upA of the mother and resulted in cataracts in three siblings in combination with c.1049G>A of the father. Genetic analysis provides significant diagnostic information for children with congenital cataracts, especially in the non-syndromic familiar cases.

Flicker, Flicker Toxicity Speaker

*First Author: Suruthi **NAGARAJAN***
*Co-Author(s): Rajesh **PRABU***

Purpose: To assess vigabatrin (VGB) induced retinal toxicity in children with infantile spasms (IS).

Methods: An observational study of 21 children with infantile spasms on treatment with VGB was performed. A 30 Hz Flicker potential ERG using REtEval was done at baseline before starting VGB, at 6 months, and at 1 year where amplitudes were recorded.

Results: The mean age of the children was 18 months. Eleven children showed reduced amplitudes, and all these eleven children were on VGB for more than 6 months.

Conclusions: ERG can be used as a tool for VGB toxicity monitoring.

Functional and Anatomical Results After Surgery for Retinopathy of Prematurity

*First Author: Dian **YULIA***

Purpose: To report the clinical results of vitrectomy surgery for stage 4 retinopathy of prematurity (ROP).

Methods: This is a case report of a baby boy who was referred from previous hospital because of ROP at 41 weeks of postmenstrual age (PMA). He was delivered at 29 weeks of gestational age with birth weight of 1300 grams. Retinal camera examination revealed that she had stage 3 ROP on the right eye and stage 4A ROP on the left eye. Blinking reflect was positive on both eyes. Vitrectomy and endolaser was performed for the baby's left eye, meanwhile laser indirect ophthalmoscopy was done for the infant's right eye.

Results: After surgery, the infant underwent examination under anesthesia (EUA) which showed that the retina on the left eye was reattached with no vitreous hemorrhage and the intraocular pressure measurement result was 7 mmHg, meanwhile laser scar was positive on the right eye. Visual acuity examination result at the clinic on both eyes was 6/60 using Cardiff acuity cards. Followed up EUA reported that refraction test result on both eyes was S-8.00.

Conclusions: Retinal reattachment and moderate visual outcome were achieved by performing vitrectomy and endolaser in this case. Followed-up periodically is necessary to monitor visual acuity and assess retinal condition postoperatively.

Hospital-Prepared Low-Dose Atropine Eye Drops for Myopia Progression Control Using Atropine Sulfate Injection Diluted in Normal Saline and Lubricants

*First Author: Nuthida **WONGWIRAWAT***
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Purpose: As commercial low-dose atropine eye drops for myopia progression control are available in some countries, in-house preparation by diluting the 1% atropine eye drop with sterile water or normal saline has been a common practice. Atropine injection is readily available and could be a more feasible alternative. To assess the properties of the in-house low-dose atropine eye drops prepared by diluting the atropine injection in two solvents and tested in two temperature conditions.

Methods: The 0.01% atropine eye-drops (15ml) were prepared by diluting atropine sulfate injection with

normal saline and lubricant eye-drops and stored at room temperature and in a refrigerator. All samples were daily dropped for 12 weeks to mimic real-life use, one of which was assessed every two weeks for the biological contamination and chemical properties. The active substance was compared with freshly prepared samples at the twelfth week.

Results: The 0.01% atropine eye drop contains no bacteria, fungi, or particulate matter. The levels of atropine sulfate on all samples were comparable to the freshly prepared samples at the 12th week, regardless of the solvents used or storage conditions.

Conclusions: The low-dose atropine eye-drops prepared from readily available atropine sulfate injection at healthcare facilities could be an alternative to commercial products.

IAC for Retinoblastoma: Experience from a Retinoblastoma Referral Center in Malaysia

*First Author: Yong Zheng **WAI***
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Purpose: To evaluate the outcomes and safety profile of intra-arterial chemotherapy (IAC) for intraocular retinoblastoma in the Malaysian population.

Methods: A retrospective, non-comparative case series of retinoblastoma patients received IAC from a retinoblastoma referral center. Tumor response, globe salvage, mortality and safety profile of IAC were compared based on the International Classification of Retinoblastoma (ICRB).

Results: A total of 20 patients with 22 eyes were included. The success rate for IAC cannulation was 89.1%. An overall good initial tumor response was 77.3% and more specifically, 100% for group A, 75% for groups B and C, 83.3% (group D) and 71.4% (group E). Overall globe salvage rate was 63.6%. Specifically, globe salvage for group A (100%), group B (75%), group C (75%), group D (66.7%) and group E (42.9%). Poor tumor response after IAC was significantly associated with a lesser chance of globe salvage (p =0.045). Complications (per-catheterization) included cerebral infarct (2.2%), oxygen desaturation (2.2%), vomiting (26.1%), periorbital oedema (8.8%), ptosis (6.5%), fever, femoral hematoma and hyperpigmentation over lid (4.4% each). The mortality rate was 5%.

Conclusions: IAC is a safe and effective method for retinoblastoma management. Patients with a poor response after IAC may have a lower chance for globe salvage. A careful patient selection is of utmost importance to achieve the best outcome in a setting of limited healthcare resources.

Impact of COVID-19 on Progression of Myopia in School-aged Children in Taiwan

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*Co-Author(s): Shiow-Wen **LIOU***

Purpose: Due to the changing of learning methods during the COVID-19 pandemic, the myopia progression is thought to be faster than before. In Taiwan, we have the annual vision check-up for school-aged children. In this study, we will focus on the impact of COVID-19 for the rate of myopia progression comparing to the last 3-years without home confinement.

Methods: We use the national database, which record the poor-vision check-up rate among school-aged children from 2007 to 2021. The children were from elementary school to high school, aged from 6 to 18. In addition, 2021 was used as the base year for the COVID-19 pandemic with changing life habits, and the previous three years' average for comparison. We use the failed school-based vision ratio and rate change per year as the calculation points.

Results: The failed school-based vision ratio change per year from elementary school to high school were 7.64, 8.95, 8.51, 7.82, 6.33, 6.2, 4.99, 3.59, 3.88, 0.25, and 0.81. The difference of failed school-based vision ratio during the COVID-19 pandemic in 2021 and the previous three years were 0.78, 0.32, 0.44, 0.05, 0.13, 0.48, -0.31, -0.23, 0.26, -0.05, and 0.08. The three age-groups with the most increasing rates were the elementary first grade, the elementary sixth grade, and the elementary third grade. The impact was very small in the junior and senior high school.

Conclusions: The change of different learning methods has an impact on myopia progression during the COVID-19 pandemic. Younger children have more severe progression on the myopia than before, comparing to the older ones.

Influence of 0.01% Atropine on Corneal Biomechanical Properties in Myopia Children Measured by Corvis ST

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Purpose: To evaluate the change of corneal biomechanics characteristics in myopic children using 0.01% atropine for myopia control.

Methods: A prospective study consecutively records visual performance, axial length progression and corneal biomechanical properties (CBPs) of myopic children using 0.01% atropine for myopia control. Corneal biomechanics were measured through Corvis ST at baseline and 1 week, 1 month and every 3 months. The axial length was measured at baseline, 1 month and every 6 months. Ocular biometry variables of biomechanical intraocular pressure (bIOP), central corneal thickness (CCT), axial length (AL), corneal biomechanical index (CBI) and stress-strain index

(SSI) were used as covariates. Influence of corneal biomechanical properties and their changes on myopia reduction and axial elongation were evaluated.

Results: Forty-five myopic children were enrolled, and 30 subjects (14 boys and 16 girls) completed one year study. The average age was 11.17 ± 2.53 years old and mean sphere equivalent was -1.76 ± 1.32D. At baseline, the mean bIOP was 16.67 ± 3.87 mmHg and CCT was 558.30 ± 30.67 µm. The mean SSI and CBI was 0.90 ± 0.13 and 0.27 ± 0.24, respectively. CCT was significantly associated with bIOP, and SSI was independent with other CBPs. CBI had significantly negative correlation with CCT and bIOP. There was no significant difference in CBPs during the study period. AL has no correlation with CBPs change.

Conclusions: The study concludes that 0.01 % atropine instillation does not lead to significant changes in the corneal biomechanical properties of myopic children. The myopic progression is also not associated with CBPs change.

Influence of Atropine on Ocular Parameters in Myopic Children

*First Author: Kai-Shin **LUO***
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Purpose: To compare ocular parameters by OCT in myopic children treated with various doses of atropine.

Methods: One hundred and sixty-six eyes of 83 participants were enrolled in our study prospectively. Their mean age was 8.23 years. The participants were divided into 4 groups: 0.125% atropine group, 0.01% atropine group, 0.4% tropicamide group and group without any medical treatment except optical correction such as glasses. We estimated spherical equivalent of refractive error (SER), axial length (AL), corneal curvature (CC), anterior chamber depth (ACD) and many OCT parameters, before and after 30 minutes and 6 months after the treatment.

Results: The relationship of axial length and choroid thickness changes during short interval (30mins) and long-term (6 months) were compared by multiple regression analysis. There's significant correlation between axial length and choroid thickness in the 0.125% Atropine group after 6 months treatment. Choroid thickening is related to the decrease of myopia in long-term use, but no significant differences in short-term data among all our participants. The more SER increases, the thicker the choroid is, especially after 0.125 % atropine treatment. The myopia control ability is better in 0.125% atropine group than the 0.01% atropine group.

Conclusions: Our study indicated that atropine in myopic control is a safe treatment in children with no significant change in ocular parameters in OCT. Choroid thickening is related to the decrease of myopia among children treated with atropine. This may be the mechanism of how the atropine slows the myopia progression.

Influence of Coronavirus Disease 2019 on Myopic Progression in Children Treated With Low-Concentration Atropine

*First Author: Hae Ri **YUM***

Purpose: The outbreak of coronavirus disease 2019 (COVID-19) has caused many children to stay indoors. Increased near work and insufficient outdoor activities are considered important risk factors for myopic progression. This study aimed to compare the changes in myopic progression before and after COVID-19 in children treated with low-concentration atropine.

Methods: The records of 103 eyes of 103 children who were treated with low-concentration atropine eye drops were retrospectively reviewed. We classified children according to the concentration of atropine eye drops and children›s age. We evaluated the questionnaires administered to children›s parents.

Results: A significant myopic progression was observed in the post-COVID-19 period compared to the pre-COVID-19 period in the 0.05% and 0.025% atropine groups. For children aged 5 to 7 and 8 to 10 years, the axial elongations were significantly faster in the post-COVID-19 period than in the pre-COVID-19 period. However, the rates of axial elongation and myopic progression were not significantly different between pre- and post-COVID-19 in children aged 11 to 15 years. The average time spent using computers and smartphones and reading time were significantly increased, and the times of physical and outdoor activity were significantly decreased in the post-COVID-19 period compared to the pre-COVID-19 period.

Conclusions: The rates of myopic progression have increased substantially after the spread of COVID-19 with an increase in the home confinement of children. Therefore, it is necessary to control the environmental risk factors for myopia, even in children undergoing treatment for the inhibition of myopic progression.

Large A-pattern Exotropia with Moderate Superior Oblique Overaction Response to Transposition Surgery

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Purpose: A-pattern exotropia (A-XT) management has been known to be challenging, even more for large patterns. A-XT with severe superior oblique overaction (SOOA) can be addressed by bilateral lateral rectus recession and half-width infraplacement plus superior oblique (SO) weakening, while infraplacements without SO weakening are sufficient for A-patterns with mild to moderate SOOA involvement. We present a patient showing large A-XT, however with moderate

SOOA, managed by bilateral recession and full-width infraplacement of lateral recti.

Methods: A case report is presented.

Results: A 35-year-old female presented with a large A-XT and bilateral grade II SOOA, with an unclear onset of strabismus. On examination, the A-pattern was as large as 65Δ with 50Δ XT on primary position. Visual acuity was 20/20 on both eyes. The disc-center–fovea angle was 1.8° and 0.2° for the right and left eye, respectively. The very large angle made stereoscopy examination difficult. Considering the adult age and risk of post-operative torsional diplopia, SO weakening was not performed, instead it was decided to do a bilateral recession of the lateral recti by 8 mm and full-tendon-width infraplacement added by 5.5 mm resection of the medial rectus. Two weeks post-operatively, the primary position was orthophoric and the 65Δ A-pattern collapsed to 15Δ without any clinical diplopia, but with excyclotorsion of both fundus of 6.9° (right eye) and 8.7° (left eye).

Conclusions: Bilateral lateral recti recession with full-tendon-width infraplacement without SO weakening could be an effective surgery for large A-XT with moderate bilateral SOOA, especially in adult patients where risk of post-operative torsional diplopia is high.

Management of Bilateral Retinoblastoma: What Should We Do?

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*Co-Author(s): Haridini Intan **MAHDI**, Widiarti **RIONO**, Julie Dewi Barliana **WINARTO***

Purpose: Patients with bilateral retinoblastoma are at risk for potentially losing their vision in both eyes. They are at higher risk for second primary malignancies. This article was aimed to report challenging management of patient with bilateral retinoblastoma.

Methods: To present a case report.

Results: Our patient was a 2-year-old boy with hyphema in his left eye (LE) without any history of trauma and blood-related disease. Leukocoria was denied. Following and fixation to object was found in the RE, and no light perception in LE. Anterior segment in RE was normal, but there was whitish mass in inferior retina. Hyphema was found around 4mm in LE. Posterior segment in LE was hard to be evaluated. Orbital ultrasound showed bilateral mass in both eyes, with calcification and shadowing sign in LE. Orbital CT scan revealed bilateral calcified mass in posterior segment in both eyes, with infiltration in left optic nerve. No pathologic condition found in pineal gland. We diagnosed this patient as group B retinoblastoma in RE and group E in LE. Vincristine, etoposide and cyclophosphamide was given for neo adjuvant chemotherapy. Lumbar puncture and bone marrow biopsy was performed. He was planned to undergo enucleation for his LE and focal therapy for his RE. His blood was examined for RB-1 mutation, and he was scheduled for brain MRI.

Conclusions: Management for retinoblastoma with infiltration to optic nerve is quite challenging. Enucleation remains the definite therapy of advance stage intraocular retinoblastoma. Systemic chemotherapy is given along with focal therapy using laser, cryotherapy, and/or thermotherapy for bilateral retinoblastoma.

Management of Glaucoma in a Child With Phakomatosis Pigmentovascularis: A Case Report

*First Author: Christella **CAROLINE***
*Co-Author(s): Tsania Rachmah **RAHAYU**, Dian **YULIA***

Purpose: Phakomatosis pigmentovascularis (PPV) is a rare congenital syndrome marked by the presence of capillary malformation and pigmentary nevi. We present a case of glaucoma in a child with PPV.

Methods: To present a case report.

Results: A three-month-old boy came with grayish and hazy cornea of both eyes for one month ago. From ophthalmological examination, the intraocular pressure (IOP) was above 50 mmHg of both eyes, with corneal edema and scleral melanocytosis. The systemic examination showed tricuspid regurgitation and the brain MRI showed leptomeningeal enhancement and cerebral atrophy with dilatation of the left posterior horn choroid plexus. Other systemic complaints were not remarkable. The patient was given topical antiglaucoma medication for both eyes, but the IOP was uncontrolled. Trabeculectomy and trabeculotomy surgery with antimetabolite agent was done on the right eye. The IOP was controlled to 13 mmHg at one week after surgery and 20 mmHg at two months postoperatively. The same surgery will be performed on the following eye.

Conclusions: Once the PPV is clinically suspected, complete investigations of the brain, heart, eye, and skeletal should be performed. The most common type of PPV is phacomatosis cesioflammea, manifests as a Mongolian spot and nevus flammeus, also may be associated with glaucoma, nevus anemicus, and ungueal hypoplasia. Glaucoma in PPV happens because of vascular malformations and pigmentary alterations. The management is complex, and the assessment is essential to classify the type and select the most appropriate management.

Myopic Strabismus Fixus Presented as Sensory Esotropia

*First Author: Chih Yu **CHEN***
*Co-Author(s): Chun Hao **HUANG**, Wen-Yu **SHU**, Yi Cheng **TING***

Purpose: To discuss a patient presented as sensory esotropia and managed as myopic strabismus fixus.

Methods: A case report.

Results: A 58-year-old female patient was referred to our outpatient department due to left sensory esotropia. She had trauma history of her left eye at aged 5, resulting in cornea opacity and poor vision. Recently, she underwent the triple procedure (combined penetrating keratoplasty, extracapsular cataract extraction, and intraocular lens implantation) for her left eye. Her best corrected visual acuity of left eye improved from hand motion at 10cm to 0.05 after the triple procedure. However, left esotropia with 50-55 prism diopters (PD) was noted by Krimsy test, accompanied with left hypotropia and limited abduction of the left medial rectus muscle (MR). Fundus of the left eye showed pathologic myopic retinopathy. Posterior staphyloma was recognized via optical coherence tomography (OCT). The axial length was 27.37 mm of her left eye. Computed tomography (CT) showed posterior pole of the globe of left eye protruding towards the superior-temporal aspect of the orbit. Due to the fact that the current clinical features mimic the myopic strabismus fixus, we performed loop myopexy of the left superior rectus muscle (SR) and the left lateral rectus muscle (LR) instead of the traditional large muscle recession and resection. Left MR recession was not performed due to negative forced duction test. The postoperative eye position was satisfactory.

Conclusions: Some patients presented with sensory esotropia had clinical features of myopic strabismus fixus. In this condition, we may achieve a good result with the more simplified loop myopexy.

Orbital Abscess Secondary to Odontogenic Infection in Children

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Purpose: To report a rare case of orbital abscess secondary to odontogenic infection in children.

Methods: A case report.

Results: A 13-year-old boy presented with right eyelid swelling for one week, associated with a fever. Patient had history of treated dental caries one week before the onset. He was on oral antibiotic for 3 days, but the swelling still worsened. Visual acuity was 6/24 for right eye and 6/9 for left eye. The right eye was severely proptosed with complete ptosis, erythematous, warm and tender on palpation. Conjunctiva was injected and chemosed. Intraocular pressure was 25mmHg for the right eye. Patient was admitted and started on intravenous amoxicillin/clavulanic acid. Contrast-enhanced computed tomography of the brain, orbit and paranasal sinus showed large multiseptated abscess at right superior extraconal with right paranasal sinusitis. Dental examination showed apical periodontitis of tooth 16, thus emergency pulp extirpation was done. Emergency wound exploration, incision and drainage was done over the right eye and 8 mL of thick pus was aspirated. Culture revealed gram positive cocci, Streptococcus intermedius. Patient's condition improved postoperatively, and oral antibiotic was completed for 1 week.

Conclusions: Orbital abscess can be a complication of dental infection especially in children. It can be visual and even life threatening if not treated promptly. Early antibiotic treatment and a timely surgical intervention can prevent further complication.

Plasma Level of Apelin as a Promising Factor for Retinopathy of Prematurity

*First Author: Jing **FENG***
*Co-Author(s): Yong **TAO***

Purpose: To investigate the relevance of plasma levels of apelin and other risk factors in infants with retinopathy of prematurity (ROP).

Methods: This was a single-center cross-sectional study. Fifty preterm infants with ROP and 50 preterm infants without ROP were enrolled. The analysis included evaluation of gestational age, birth weight, and measurement of plasma concentrations of apelin, vascular endothelial growth factor (VEGF), erythropoietin (EPO), and insulin-like growth factor (IGF-1) using enzyme-linked immunosorbent assay.

Results: The mean BW and GA of babies with ROP were considerably lower than those without ROP ($p < 0.001$, $p = 0.003$, respectively). Plasma levels of VEGF, EPO, and IGF-1 were all lower in babies with ROP (all $p < 0.001$), while plasma apelin levels were greater ($p < 0.001$). We compared the sensitivity and selected the best cut-offs while keeping the specificity constant (80.0%). Among all the criteria, plasma apelin levels had the best sensitivity (72%), with the cut-off of 21.08 pg/mL. Multivariable logistic regression analyses showed that the plasma level of apelin was the only parameter associated with ROP ($p = 0.02$, OR = 16, CI = 95%: 1.54-166.53). The AUC of the multivariable regression model that comprised GA, BW alone was 0.67, while the model that included apelin was 0.90.

Conclusions: Plasma apelin level demonstrated good sensitivity and specificity with regard to the association of ROP, the inclusion of apelin may be a promising factor to include in screening criteria.

Retinal Occlusive Vasculitis in Pediatric Autoimmune Diseases

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Purpose: To describe two cases of retinal occlusive vasculitis in infants with autoimmune diseases.

Methods: Two case series of occlusive vasculitis presented in infants. Ocular examination was

performed with a binocular indirect ophthalmoscope.

Results: The first case is a 6-month-old girl who presented with fever for two months, diarrhea for two days with focal seizure lasting more than an hour. Ocular examination revealed both eyes to have frosted branch angiitis. Systemic examination showed splenomegaly, and laboratory examination revealed pancytopenia. Brain magnetic resonance imaging (MRI) showed cerebral vasculitis, and bone marrow aspiration revealed hemophagocytosis, confirming the diagnosis of hemophagocytic lymphohistiocytosis (HLH). She was treated with high-dose intravenous steroids and chemotherapy agents based on HLH protocol, and retinal occlusive vasculitis improved. Unfortunately, patient succumbed to death due to septicaemic shock. The second case is a 6-month-old girl with a history of upgaze palsy at two months old who had right eye superotemporal retinal artery occlusion on fundus examination. Her laboratory investigations showed raised erythrocyte sedimentation rate and c-reactive protein. Her brain MRI showed multifocal brain stem infarcts and vasculitis. Her echocardiogram revealed a saccular aneurysm of the left main coronary artery (LMCA). She was initially started on intravenous monoclonal antibody bi-monthly, then monthly, oral antirheumatic weekly, and steroids daily. Her systemic condition and upgaze palsy improved. Genetic studies confirmed the diagnosis of deficiency of adenosine deaminase 2 (DADA2).

Conclusions: Retinal occlusive vasculitis is a rare ocular feature for autoimmune diseases and should be considered in the differential diagnosis.

Screening of Retinopathy of Prematurity in Late Preterm Infants by Novel Taiwan Screening Guidelines (TWROP): a 12-Year Single-Center Experience

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Purpose: To show the screening outcome of TWROP, a novel screening guideline to screen for retinopathy of prematurity (ROP) of at-risk moderate to late preterm infants (GA = 32 to 36 + 6 weeks).

Methods: This retrospective case series was conducted in a single medical center from 2009 to 2021. We used TWROP to screen treatment-requiring ROP in our moderate to late preterm infants and compared it with other ROP screening protocols to ensure that all treatment-requiring populations have been adequately covered.

Results: During the 12 years of TWROP screening, up to 13 moderate-to-late preterm infants were detected with treatment-requiring ROP. Of 13 infants, stage 3 and stage 5 with plus signs were shown in 12 (92.3%) and 1 (7.7%) infant, respectively. Upon diagnosis, 24 (92.3%) of eyes were affected in zone 3, 1 (3.85%) in zone 2, and 1 (3.85%) in zone 1. Among stage 3 ROP patients, Laser photocoagulation, intravitreal anti-VEGF injections and combination treatment were performed in 9 (75%), 2 (16.7%) and 1 patient (8.3%), respectively. Bilateral scleral buckling was performed in patients with stage 5 ROP. When utilizing other ROP guidelines to screen our treatment-requiring cases, GROP, WINROP, RCPCH ROP, CO-ROP, CHOP, PINT-ROP, and ROPScore screening protocols would fail to screen almost all patients, and AAP screening guidelines would miss one treatment-requiring patient with ROP.

Conclusions: A significant proportion of moderate to late preterm infant populations would develop treatment-requiring ROP. The novel TWROP screening guidelines demonstrated accurate ROP screening outcomes with adequately covering treatment-requiring ROP in moderate to late preterm infants.

Severe Traumatic Globe Rupture Teenager with Successful Visual Acuity Reconstruction: A Case Report

*First Author: Yen Ta **CHEN***
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Purpose: Ocular trauma is a common cause of monocular visual impairment worldwide especially in pediatrics and teenagers. The Ocular Trauma Score uses variables at presentation, such as visual acuity, injury mechanism, retinal detachment, endophthalmitis, and relative afferent pupillary defect to determine the prognosis. This case report presents a traumatic globe rupture teenager which avoid from enucleation and achieve a surprising visual outcome.

Methods: To present a case report.

Results: This case is a 17-year-old female with ocular trauma of left eye by motorcycle crashing. A 12mm corneal-scleral laceration wound which extended to the insertion of superior rectus muscle, lens dislocation, vitreous hemorrhage and iridodialysis were noted at emergency room. Enucleation of eyeball was suggested at other hospital and then the patient was transferred to us for second opinion. Surgical primary repair was done and pneumopexy with C3F8 1 month after for delayed retinal detachment. We performed with scleral fixated intraocular lens 6 months after the trauma event. In the latest ophthalmology clinic visit, best corrected visual acuity of the patient improved to 20/25 in the Snellen chart.

Conclusions: In pediatric open globe injury cases, the rate of having a final VA of 20/40 or better is between 54% and 56.5% in industrialized countries. Initial visual acuity, wound size, wound location, and the involvement of ocular tissue will affect the outcome. We could use the OTS and other prognosis factors to help us decide the next step. These might prevent from cosmetic and visual impairment sequelae due to enucleation.

Slanted Lateral Rectus Recession for Exotropia With Convergence Insufficiency In Children

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Purpose: We evaluated the efficacy and safety of slanted recession of bilateral lateral rectus (SBLRc) for the treatment of exotropia with convergence insufficiency in children.

Methods: Patients diagnosed with convergence insufficiency-type intermittent exotropia (CI-IXT) between August 2019 and July 2021, who underwent SBLRc and were followed up for at least 6 months after surgery, were included in the study. The slanted group consisted of 14 patients <16 years of age. The standard group comprised of 12 patients who underwent equal length recession of the upper and lower horn of the lateral rectus muscle between August 2016 and July 2019.

Results: In the slanted and standard groups, the preoperative distance exodeviation was 27.9 ± 5.5 and 30.8 ± 10.0 prism diopter (PD), respectively (p =0.63), and that for near exodeviation was 41.1 ± 5.6 and 42.9 ± 9.2 PD, respectively (p =0.75). The difference between the near and distance deviation (Near-distance difference; NDD) was 13.2 ± 3.2 PD and 12.1 ± 3.3 PD (p =0.31), respectively. After 6 months postoperatively, in the slanted and standard groups, the distance exodeviation was 5.7 ± 6.0 and 13.6 ± 10.9 PD, respectively (p =0.04), and that for near exodeviation was 8.7 ± 8.7 and 23.4 ± 10.2 PD, respectively (p <0.01). NDD were 5.9 ± 3.1 PD and 9.8 ± 2.7 PD (p <0.01), respectively.

Conclusions: In comparison to the standard group, the slanted group exhibited a significantly larger reduction in NDD. SBLRc surgery for CI-IXT is potentially a useful surgical procedure to reduce NDD in CI-IXT.

Surgical Outcome of Trabeculotomy in Pediatric Glaucoma Patients in Hospital Kuala Lumpur

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Purpose: To evaluate surgical success rate of trabeculotomy in pediatric glaucoma patients.

Methods: A total of 44 eyes of 26 patients with pediatric glaucoma either primary or secondary causes, who underwent trabeculotomy in Hospital Kuala Lumpur between January 2012 and July 2019 were retrospectively studied. Preoperative and postoperative intraocular pressure (IOP), corneal clarity and diameter, optic disc cupping, visual acuity and postoperative refractive error, success rate and complications were evaluated. Kaplan-Meier survival analysis was applied to evaluate surgical success rate at 1 year and 2 years postoperatively.

Results: Twenty-seven (61.4%) eyes were diagnosed as primary congenital glaucoma and 17 (38.6%) eyes were secondary glaucoma. The median age of trabeculotomy was 3.9 months (IQR: 4.5 months). Cumulative surgical success rate at 1 year and 2 years postoperative was 72.7% and 50% respectively. At final visit, the mean IOP was significantly reduced to 18.2 ± 8.3 mmHg (p < 0.001). Mean number of antiglaucoma medication was also reduced to 0.9 ± 1.0 (p = 0.001), with 21 (47.7%) eyes free of medication. Mean visual acuity was improved to 1.3 ± 1.0 LogMAR (p < 0.001). There was no severe intraoperative or postoperative complication seen. We observed 5 (11.4%) eyes developed glaucomatous optic neuropathy and 10 (22.7%) eyes developed high myopia at the end of follow-up.

Conclusions: Trabeculotomy is a safe and effective procedure for pediatric glaucoma patients.

Tackling Pediatric Orbital Floor Fracture

*First Author: Deepti **JOSHI***

Purpose: To study the unique aspects of pediatric orbital floor fracture (POFF) and to determine the relationship between outcomes and management strategy (conservative versus surgical).

Methods: Records of 34 children presenting with POFF were reviewed retrospectively including clinical features, management and outcomes. Patients with trap door fracture and white eyed blow out fracture were managed surgically; rest were managed conservatively for 6 weeks. They were managed surgically only in presence of progressive enophthalmos, or persistent primary diplopia.

Results: Of 34 children, 23 (67.64%) were managed conservatively and 11 (32.35%) underwent surgical exploration via extraperiosteal approach. Eight cases had trapdoor fracture of which 5were white eyed blow out fracture (WEBOF) requiring immediate surgery. Of 23children managed conservatively, 21 (91.30%) recovered motility restriction, two had persistent diplopia in downgaze, though it was inconsequential.

Conclusions: POFF behaves differently in view of distinct healing response with most cases showing a gratifying response to conservative management. Muscle entrapment and oculocardiac reflex warrants urgent surgery. The present study proves that delaying surgery upto two weeks after orbital floor fracture may avoid unnecessary surgical risks and inconvenience in many children with orbital floor fractures.

Tissue Is Issue – Malignant Rhabdoid Tumor of Orbit in an Infant

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Purpose: Malignant rhabdoid tumor (MRT) is an aggressive soft-tissue lesion and an important differential diagnosis for orbital lesions in infancy. Our paper highlights the importance of a tissue diagnosis in cases of orbital lesions with diagnostic uncertainty and introduces the use of the apparent diffusion coefficient (ADC) ratio in determining likelihood of an orbital lesion being malignant.

Methods: Systematic review of the literature of primary orbital malignant rhabdoid tumors and presentation of an illustrative case, including MRI, CT and histopathology images.

Results: Primary orbital MRT was first described in 1989, with only 10 cases of primary orbital MRT in children ever published. The ADC of our lesion at presentation was similar to the mean ADC reported for rhabdomyosarcoma and had a similar ratio to the ADC of the medulla in the study by Kralik et al. Rhabdomyosarcoma ADC values and the ratio of ADC values compared to the medulla were significantly different to those of orbital capillary hemangiomas.

Conclusions: Prognosis in MRT is poor with early diagnosis and hence timely intervention, prior to metastasis, the key to prolonging survival times. MRT is part of a rhabdoid tumor predisposition syndrome (RTPS) in 30% of cases, further highlighting the importance of correct diagnosis of MRT to ensure adequate suspicion of future malignant lesions. Our case emphasizes the importance of a tissue diagnosis as well as including MRT in the differential diagnoses for such lesions. The use of ADC and comparison to the medullary ADC is a promising option as a non-invasive diagnostic tool.

True Muscle Transplantation in Adult Large Angle Esotropia: A Case Report

*First Author: Jermaine **CHENG***
*Co-Author(s): Fay Charmaine **CRUZ***

Purpose: To present a case of true muscle transplantation as an alternative procedure for management of large angle esotropia in adults.

Methods: To present a case report.

Results: We report a case of a 23-year-old female with multiple congenital anomalies (cleft palate, hypodontia, misaligned teeth, hypoplastic digits of both extremities and short stature) who presented with esotropia. Uncorrected visual acuity was 20/63 on right eye and hand movement on left eye which did not improve with pinhole. She had left microphthalmia and band keratopathy. Hirschberg reflex was greater than 60° esotropia and Krimsky showed 90 PD esotropia. There was an abduction deficit of -7 on right eye and -5 on left eye. Orbital MRI showed bilateral, thin lateral rectus muscles, likely from congenital hypoplasia. Upon using Kushner's conversion table, the extrapolated esotropic deviation was at 113 PD. A true muscle transplantation was performed by resecting 7 mm of the left lateral rectus and was transplanted to the 6 mm recessed left medial rectus. A 6 mm medial recession was done on the right eye. Post-operatively, patient had a deviation of 30 PD from a pre-op measurement of 113 PD. There was an improvement in abduction deficit from -7 to -5 on right eye and -5 to +1 on left eye.

Conclusions: True muscle transplantation provides a muscle-lengthening alternative for large angle esotropia because it increases the arc of contact of the extraocular muscles to the globe leading to a better post-operative outcome. The management using three muscle surgery procedure augmented with true muscle transplantation showed favorable results.

Validation of Weight-Gain Based Prediction Models for Retinopathy of Prematurity in an Australian Population

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Purpose: Validate in an Australian cohort four different weight-gain based algorithms for the prediction of Type 1 ROP; Weight, insulin like growth factor neonatal retinopathy of prematurity algorithm (WINROP), the Children's Hospital of Philadelphia retinopathy of prematurity (CHOPROP), he Colorado retinopathy of prematurity algorithm (CO-ROP), and the postnatal growth, retinopathy of prematurity (G-ROP) algorithm.

Methods: This was a four-year retrospective cohort analysis of infants screened for ROP in a tertiary hospital in Australia. Main outcomes measure were sensitivities, specificities, positive and negative predictive values.

Results: A total of 594 infants were reviewed, with 531 eligible infants and 24 infants developed Type 1 ROP. The sensitivities and specificities for Type 1 ROP respectively (95% confidence intervals) were for WINROP 83.3% (61.1-93.3%), 52.3 % (47.8-56.7%); For CHOPROP 100% (86.2-100%), 46.0% (41.7- 50,3%); for CO-ROP 100% (86.2-100%), 32.0% (28.0%-36.1%); and for G-ROP 100% (86.2-100%), 28.2% (24.5-32.3%).

Conclusions: The CHOPROP, CO-ROP and G-ROP algorithms were validated in an Australian population. WINROP has been superseded by DIGIROP. However, not all infants with persisting Type 2 ROP that required treatment were detected, so the clinical application of weight-gain based algorithms are questionable. Future studies should include predictive values and likelihood ratios in the calculations as these measures can aid

clinical decision making if these algorithms are deemed suitable for clinical practice.

Virtual Reality Vivid Vision in Children With Failed TNO Test

*First Author: Min-Hsiu **SHIH***
*Co-Author(s): Fu-Chin **HUANG***

Purpose: To evaluate the effect of virtual reality (VR) head-mounted display software Vivid Vision in non-amblyopic children who failed in TNO test.

Methods: Strabismic or amblyopic children followed at our OPD were included from 2018 to Aug 2022. Best corrected visual acuity (BCVA), refractive errors, strabismus, and stereoacuity (TNO test) were recorded. After treatment of strabismus or amblyopia, those who had insignificant strabismus and no amblyopia but failed in TNO test were included. Computer-based application run in the Oculus Rift OC DK2 virtual reality head-mounted display (Oculus VR) were used. In stereobubble test of VR (like Titmus circle test), the setting of difficulty was easy with bubble size of 4 and disparity (depth between bubbles) scale of 9. Higher levels produce more bubbles and with less disparity.

Results: A total of 68 subjects (32 boys, 36 girls) with a mean age of 8.6 years (range, 5–17 years) were enrolled. All participants achieved BCVA of 0.9 or better. Most (56 patients, 82.4%) had esotropia, especially accommodative origin (44 persons, 64.7%). The mean spherical equivalent was 3.3 ± .025 diopters. The mean best disparity was 2899 arc sec (from 1119 to 8456 arcsec) and the average highest level was 3.18 (2 to 5), which were significantly different from controls.

Conclusions: Virtual reality equipment plays a role in evaluating binocular function in amblyopic and strabismic patients. For patients who fail in traditional stereoacuity test, VR provides an interesting alternative to present and monitor binocular vision.

Young Pediatric Retinitis Pigmentosa in Kuantan: A Case Series

*First Author: Mohd Asyraaf **ABDUL KADIR***
*Co-Author(s): Adzura **SALAM***

Purpose: To report a series of pediatric retinitis pigmentosa (RP) in Kuantan, Pahang.

Methods: A case series.

Results: We presented a series of pediatric patients with RP aged 5, 7 and 10 years old and all are female Malay. RP is a part of inherited retinal disorders characterized by early diffuse rod dysfunctions with the primary complaint as night blindness and it has a variable age of onset. The visual symptoms that were reported were low visual acuity, amblyopia, peripheral vision restriction (mild and severe), difficulty completing tasks at school by teachers, and exotropia. In the affected eye, the best corrected visual acuity (BCVA) ranged from 6/6 to 6/60. One case was RP secondary to Kearnes-Sayre syndrome. The relevant family history identified among the cases were maternal Stargardt disease and maternal strabismus. Even though RP is a symmetric disease, 1 patient had unilateral RP with no history of hereditary ocular diseases. All patients had bone spicules peripherally in their fundus in the affected eyes. All were referred to a low vision clinic for early intervention to support their learning processes at school.

Conclusions: RP can present as early as 5 years old with severe peripheral visual loss and highlighted the importance of thorough ocular examination in children with low visual acuity. As RP still lacks definitive treatment, its management focuses on long-term holistic supportive care and its complications.

Refractive Surgery

Alcon Vivity Intraocular Lens Used in Mini-Monovision Format as Refractive Lens Procedure: A Single Surgeon Experience

*First Author: Ravi **SINGH***

Purpose: To assess the safety and efficacy of Alcon Vivity intraocular lens (IOL) for refractive and presbyopia correction using mini-monovision.

Methods: The prospective analysis involved 180 eyes of 90 patients without comorbidity. Pre- and postoperative uncorrected vision distance (BUDVA), intermediate (BUIVA) and near (BUNVA), were assessed. Glare and halo incidence was recorded. Subjective quality of vision questionnaire was recorded.

Results: Fifty (55%) of them were female. The mean age was 64 ± 8.5 years. To note, the preop sphere/cyl was +1.25D ± -0.53D, -0.91D ± -0.86D, SE+0.86D ± -1.63D. In addition, 61% of patients BUDVA was > 6/6 and 100% > 6/9. BUIDVA was 6/7.5 or better in 76% of patients and 6/12 or better in 100% of patients. BUNVA was N5 or better in 14.5%, N6 or better in 49%, N8 or better in 88% and N10 or better in 100% of patients. Subjective patient satisfaction for distance, intermediate and near vision was 99%, 100% and 97% respectively. Spectacle independence was reported for distance, intermediate and near vision in 98.8%, 98.8% and 82.2 % respectively. Also, 12.2% required readers rarely, 4.4% moderately and 1.1% frequently. Glare and halos were noted in 25% and 15% of cases. Trans PRK surgery enhancement was required for 6% of patients and YAG PC at 3 months for 9% of patients.

Conclusions: Alcon Vivity IOL in mini-monovision configuration delivered high level of spectacle independence over a large range of distances – "functional vision" photic phenomena, while the report did not materially affect patients' satisfaction with the

lens requirement for reading glasses low to nil.

All CLEAR From A to Z8: Visual Outcomes in Lenticule Based Refractive Surgery

*First Author: Shivani **PATTNAIK***
*Co-Author(s): Sumer **DOCTOR***

Purpose: To evaluate the visual outcomes and efficacy of flapless corneal lenticule extraction for advanced refractive correction (CLEAR) on the Z8 Femtolaser platform.

Methods: This prospective study included 20 patients aged 19-28 years (40eyes) with a mean pachymetry of 555 ± 10 µm who underwent CLEAR on the Z8 Femtolaser device in 2022. The lenticule and two entry planes of 2.5 mm each were cut with the Z8 Femtolaser, and the lenticule extracted leaving a flapless cornea and corrected myopia.

Results: Twenty patients with moderate to high simple myopia (-1 to -7 Dioptre spherical) and a minimum central corneal thickness of 540 microns were included and one patient was corrected by the principle of mono vision using the Ziemer LDV Z8 device. A follow up was maintained for 6 months. All patients included in this prospective study showed stable improvement in visual acuity which progressed to 6/6, N6 unaided by the seventh post operative day. At the 15-day mark patients maintained clear vision at 6/6, N6. Patients operated on the Ziemer LDV Z8 platform had no intra- or postoperative complications. The central corneal pachymetry before surgery was 555 ± 10 µm, it significantly decreased to an average value of 470 ± 8 µm one week after surgery ($p < 0.05$).

Conclusions: The results are conclusive of the successful myopic correction with the flapless lenticule extraction based reftractive surgery and yield a structurally more stable cornea minimising chances of post refractive ectasia.

Bimanual Technique for Placement of Footplates of Phakic Intra-ocular Lens in Eyes With Intra-operative Miosis

*First Author: Rajesh **SINHA***

Purpose: To describe a surgical technique for the implantation of posterior chamber phakic intra-ocular lens in eyes with intra-operative miosis or poorly dilating pupil

Methods: The technique employed bimanual approach of placing the plate haptics of Implantable Collamer Lens (ICL) under the iris. ICL was injected and placed above the iris plane. Sinskey hook and ICL manipulator were inserted through paracentesis ports, nasal peri-optic hole was engaged with Sinskey hook and pulled slightly back temporally, and both nasal footplates were tucked under iris using ICL manipulator. Similar method of engaging and pulling with Sinskey hook and placing footplate in sulcus with ICL manipulator was done on the temporal side. The ICL was finally placed under iris in sulcus.

Results: The technique was performed in 12 eyes of 10 patients of which five eyes had pre-operative insufficient mydriasis while seven eyes noted to have intraoperative pupillary miosis during tucking of ICL footplates in sulcus, due to mechanical stimulation of iris tissue. No intraoperative complication was noted. Postoperative UDVA was 0.05 ± 0.07 (logMAR) and -0.01 ± 0.04 (logMAR) with mean IOP of 18.5 ± 2.73 and 15.55 ± 1.21 mmHg on day 1 and 1 month. Mean vault was 606.17 ± 108.33 micron at 1 month. No cataractous change was observed in any of the eyes.

Conclusions: Bimanual technique of placement of ICL footplates is a safe and effective technique in poorly dilated pupil and intra-operative pupillary miosis and is particularly useful for surgeons who are in their initial learning curve.

Clinical Outcomes of Artificial Tears With Hyaluronic Acid 0.3% Concentration Versus 0.1% Concentration in Promoting Epithelial Healing After Photorefractive Keratectomy

*First Author: Seungjin **LEE***
*Co-Author(s): Jimyung **LEE***

Purpose: To evaluate outcomes of applying artificial tears with hyaluronic acid 0.3% concentration after transepithelial photorefractive keratectomy (tPRK).

Methods: A total of 45 patients (90 eyes) were performed with tPRK on both eyes, while 22 patients were administered with preservative free hyaluronic acid with concentration 0.1% and 23 patients were with 0.3%. Epithelial healing process was assessed at day 2, and 4 postoperatively. Uncorrected distant visual acuity (UDVA) was measured at day 4, day 7 and 2 month postoperatively.

Results: Complete epithelial healing time for bandage contact lens removal were same in both groups. In eyes receiving hyaluronic acid 0.3% eyedrops, eminent central raphe significantly shows lower incidence. (8% versus 22%). Study group shows better UDVA at the fourth day postoperatively, but no difference at the seventh day, and 2 months. Study group and control group reported the same pain score.

Conclusions: After tPRK, applying artificial tear with hyaluronic acid 0.3% concentration yields slightly better visual recovery versus with 0.1% concentration with same subjective pain score.

Comparison of Astigmatic Correction With and Without Cross-Axis Alignment During Small Incision Lenticule Extraction

*First Author: Fen-Fen **LI***
*Co-Author(s): Yi-Zeng **YANG**, Yufeng **YE***

Purpose: To compare clinical outcomes after

astigmatism correction via small incision lenticule extraction (SMILE) with and without cross-axis alignment.

Methods: This prospective study included patients who underwent SMILE with astigmatism >0.75 diopters (D). This prospective study included patients who underwent SMILE with astigmatism > 0.75 diopters (D). In alignment group, head position was readjusted by cross-axis alignment before the standard SMILE procedure. First, align cross-axis to corresponding green lines on the headrest. Then, adjust patient›s head to align the horizontal line to outer canthus of both eyes, and align the vertical line connecting the midpoints of the eyebrows and the bridge of the nose. Changes in ocular parameters, and vector analysis were assessed 6 months postoperatively.

Results: The alignment and control groups included 61 and 54 eyes, respectively. Postoperatively, the safety and efficacy indices were comparable between two groups. Notably, refractive cylinder differed significantly in the alignment group (-0.23 ± 0.26D) compared to the control group (-0.36 ± 0.26D; p = 0.007). Forty-eight (78.7%) and 32 (59.3%) eyes in the alignment and control groups (p = 0.03) achieved an angle of error within ± 5°, respectively. Vector analysis showed a significantly lower difference vector and a significantly better index of success in the alignment group than that in the control group (0.24 ± 0.25 versus 0.35 ± 0.24, p = 0.003 and 0.20 ± 0.22 versus 0.29 ± 0.22, p = 0.02, respectively). Moreover, the change in corneal trefoil differed significantly between the groups (p < 0.001).

Conclusions: Cross-axis alignment for head positioning in SMILE significantly minimizes axis misalignment and reduces under-correction astigmatism in myopic astigmatism correction. This technique is a non-invasive and effective method, especially for beginners.

Comparison of Femtosecond Laser-Assisted Corneal Relaxing Incisions and Toric Implantable Collamer Lens for Low-to-Moderate Myopic Astigmatism

*First Author: Fan **ZHANG***
*Co-Author(s): Shaowei **LI**, Nuan **PENG**, Wenjuan **WANG**, Jihong **ZHOU**, Qiu **PANZI***

Purpose: To compare the clinical efficacy of femtosecond laser-assisted corneal relaxing incisions (FS-CRIs) with that of toric implantable collamer lens (TICL) for low-to-moderate myopic astigmatism.

Methods: This retrospective study included patients who underwent FS-CRIs combined with ICL implantation or TICL implantation alone between March 2021 and December 2022. FS-CRIs were made using the LenSX platform. Study parameters included uncorrected (UDVA) and corrected (CDVA) distance visual acuity, refractive astigmatism, total wavefront aberration and retinal image quality parameters, and any surgery-related complications. Vector analysis of astigmatism was performed using the Alpins method.

Results: The FS-CRI and TICL group included 35 (56 eyes) and 36 (55 eyes) patients, respectively. There was no significant between-group in the proportion of UDVA reaching 20/20 at 3 months postoperatively (FS-CRI group: 98% and vs TICL group: 100%). Both groups achieved comparable postoperative residual refractive astigmatism, and the mean correction index was 0.80 in FS-CRI group and 0.82 in TICL group. The total spherical aberration, coma, and high-order aberration were comparable between the two groups, but the postoperative total trefoil was significantly higher in the FS-CRI group (p =0.022). There was also no significant between-group difference in retinal image quality parameters.

Conclusions: The astigmatism correction efficacy and postoperative visual quality of FS-CRIs combined with ICL implantation are similar to those of TICL implantation. Thus, this surgical method is also a good choice for patients with low-to-moderate myopic astigmatism.

Comparison of Long-Term Outcomes and Refractive Stability Following SMILE versus SMILE Combined with Accelerated Cross Linking (SMILE Xtra)

*First Author: Smith **SUTE***
*Co-Author(s): Sheetal **BRAR**, Skanda Sri **GANESH**, Sri **GANESH***

Purpose: To compare the long-term safety, efficacy, predictability, and refractive stability following SMILE versus SMILE combined with accelerated cross linking (SMILE Xtra), and to specifically study the regression patterns following the two procedures.

Methods: This retrospective study included 54 eyes of SMILE and 54 eyes of SMILE Xtra treated for normal and borderline cases of myopia/myopic astigmatism respectively, based upon certain pre-defined topographic features and risk factors. Patients in both the groups were matched for age and refractive error. The mean post-operative follow-up for the SMILE group was 22.18 ± 10.41 months and SMILE Xtra group was 21.81 ± 10.19 months.

Results: The results at the end of follow-up, the mean sphere, cylinder, and SE reduced to -0.03, -0.09 and -0.08D in SMILE and -0.06, -0.15, and -0.13D in the SMILE Xtra group. Ninety-six percent and 93% of eyes remained within ± 0.50D in SMILE and SMILE Xtra groups respectively and 94% eyes maintained an UDVA of 20/20 or better in SMILE as well as SMILE Xtra groups. The respective safety and efficacy indices for SMILE group were 1.004 and 0.99 and for the SMILE Xtra group were 1.036 and 1.006.

Conclusions: Both SMILE and SMILE Xtra resulted in comparable visual outcomes, safety and efficacy. Contrary to the belief, combination of prophylactic

CXL with SMILE did not result in a hyperopic shift in the long-term. No eye in either group encountered post-operative ectasia, however, further follow-up is suggested to establish the long-term safety, efficacy and effects on corneal stabilization.

Comparison of Visual and Refractive Outcomes of ICL, SMILE and LASIK for Correction of Myopia and Myopic Astigmatism

*First Author: Mahziba **CHOWDHURY***
*Co-Author(s): Mehraj **CHOWDHURY**, Ava **HOSSAIN**, Sharah **RAHMAN**, Ashraful **RIDOY***

Purpose: To compare the visual and refractive outcomes of Myopia and Myopic Astigmatism following surgical corrections by ICL, SMILE and LASIK.

Methods: Primary outcome measured where efficacy, safety, stability and accuracy of refractive correction. The correction of Myopia was between 3-10 diapers spherical equivalent. Patients were followed up at the first day, seventh day, first month, sixth months and first year. Measured parameters included uncorrected distance visual acuity, corrected distance visual acuity, manifest refraction.

Results: Out of 350 eyes involved in the study 56% (196 eyes) underwent LASIK, 24% (84 eyes) underwent SMILE, 20% (70 eyes) underwent ICL surgery were included. At the end of one year, a total of 97% of eyes in SMILE achieved an uncorrected distance visual acuity of 20/20, compared to Femto-LASIK (95%) and ICL (93%).

Conclusions: All three platforms analyzed in the study has excellent efficacy, safety, stability and accuracy at the end of one year.

Comparison on Outcomes of 3 Different Multifocal Intraocular Lenses Implanted by a Trainee in Public Sector in Sydney, Australia

*First Author: Christopher **GO***
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Purpose: To investigate and compare the outcomes and performance of three different multifocal intraocular lenses (mIOL) with different design features implanted by a trainee with no prior mIOL experience.

Methods: A single surgeon (CG), prospective randomized case series of 60 eyes from 30 patients undergoing cataract surgery and mIOL implantation at a tertiary referral hospital in Australia. The surgeon had no prior experience with mIOL. Patients' visual outcomes including unaided distance, intermediate and near visual acuity, HOA RMS and quality-of-life satisfaction questionnaire (NAVQ and Catquest) were recorded. Patients were randomized to receive one of 3 mIOLs with different design features AT LISA Tri (Carl Zeiss Meditec, Jena, Germany), Tecnis Synergy (Johnson and Johnson Vision, Santa Ana, Ca) and Lentis Mplus MF30 (Oculentis GmbH, Berlin, Germany) where both eyes received the same mIOL.

Results: The results were excellent with 96.4% of patients achieving uncorrected distance visual acuity (UCDVA) of 0.2 logMAR or better, 85.5% of eyes achieving post-operative refraction within 0.5 D of target refraction and 98.2% of eyes within 1.0 D of target refraction. Importantly, 88.9% of patients were "moderately" or "highly" satisfied with their overall vision without spectacle correction and 100% of patients reported "very" or "completely" satisfied with their near vision without spectacles.

Conclusions: Whilst further adjustments and refinements may be required to further improve and enhance the outcomes of mIOLs in the public sector, there is good grounds for implementation of a special pathway for selected eligible patients to have mIOLs implantation.

Correlation Between Change in Biomechanical Parameters and Corneal Thickness After SMILE and LASIK

*First Author: Manpreet **KAUR***
*Co-Author(s): Sridevi **NAIR**, Jeewan **TITIYAL**, Vimal **VASHISTHA***

Purpose: To correlate the change in biomechanical parameters (Corvis-ST) with corneal thickness after myopic SMILE and LASIK.

Methods: Prospective interventional study enrolled 100 eyes undergoing myopic LASIK (n = 50) or SMILE (n = 50). Change in corneal biomechanical parameters and its correlation with change in pachymetry was assessed at 6 months.

Results: Biomechanical parameters were comparable after LASIK and SMILE at 6 months. Change in pachymetry was higher in SMILE ($p = 0.01$) and correlated significantly with change in deformation amplitude ($r = -0.16, -0.53$; $p = 0.04, 0.01$), deformation amplitude ratio ($r = -0.43, -0.51$; $p = 0.02, 0.01$), integrated radius ($r = -0.63, -0.63$; $p < 0.001, 0.001$), stiffness parameter-A1 ($r = 0.55, 0.53$; $p = 0.003, 0.01$) and bIOP ($r = 0.68, 0.72$; $p = 0.001, 0.001$) in both groups. Change in stress strain index (SSI) did not correlate with change in pachymetry.

Conclusions: Biomechanical outcomes after SMILE and LASIK were comparable. SSI was the only parameter that did not correlate with change in pachymetry highlighting its potential to predict corneal biomechanics independent of corneal thickness.

Enigma of Central Toxic Keratopathy

*First Author: Srilathaa **GUNASEKARAN***
*Co-Author(s): Kiran **KUMAR***

Purpose: To describe case series of a rare complication after FemtoLASIK and corneal collagen crosslinking (CXL) procedure and its successful management.

Methods: Observational case series of 5 patients.

Results: Five patients (3 patients after uneventful CXL and 2 patients with unilateral presentation after uneventful wavefront optimized FemtoLASIK) were noted to have CTK in the postoperative period. All eyes had presented with stromal haze between day 2 to day 5 after the procedure. The post LASIK central toxic keratopathy (CTK) patients presented with sudden onset diminution of vision on day 5. Slit lamp evaluation showing a discrete area of corneal haze with early "mud crack appearance" in the central 2.5*3 mm cornea involving the interface and the posterior stroma and surrounding clear cornea. No anterior segment inflammation was noted. Presumptive diagnosis of CTK was made and were started on topical prednisolone acetate eyedrops. Clinical response was noted in the form of decrease in intensity of haze and complete resolution with restoration of vision was noted by two months. The other 3 CTK patients post CXL had presented on day 1 postoperative period with moderate to dense haze in the paracentral cornea Treatment was modified by changing steroids from Fluorometholone eyedrops 4 times a day to prednisolone acetate two hourly. Clinical response was noted by near complete improvement in corneal haze.

Conclusions: Central toxic keratopathy is a rare complication and we describe successful management of 5 cases with topical steroids. Most of the published literature point towards controversial role of steroids while our cases have shown complete resolution.

Enigma of Corneal Epithelium

*First Author: Ruchika **PATTANAIK***
*Co-Author(s): Gaurav **LUTHRA***

Purpose: To present a case of silent epithelial basement membrane dystrophy (EBMD), which was diagnosed following intraoperative bilateral spontaneous epithelial sloughing during Femto-LASIK surgery in clinically normal appearing eyes

Methods: Femto-LASIK surgery was planned in a 33-year old female with stable myopia of -2.50 D sphere in both eyes, with normal slit lamp examination and preoperative investigations like corneal topography and epithelial mapping on OCT.

Results: Bilateral spontaneous epithelial sloughing was noted during flap lift and repositioning, for which bandage contact lens was placed. Blurring of vision in the early post operative period, progressive regression in refractive error due to irregular epithelial healing and epithelial edema led to the diagnosis of silent epithelial basement membrane dystrophy. Addition of topical hyperosmotics to the postoperative medications based on the clinical diagnosis led to resolution of clinical signs and symptoms.

Conclusions: Spontaneous intraoperative epithelial sloughing during LASIK surgery may be the first sign of silent EBMD in previously asymptomatic and clinically normal appearing eyes. These cases need be managed appropriately and followed closely for complications like DLK, epithelial ingrowth and flap melt.

High Astigmatism Induced by Phaco-Wound in a Post-LASIK Patient - A Case Report

*First Author: Shiuhliang **HSU***
*Co-Author(s): Liyi **CHIU***

Purpose: To report a post-LASIK case whose refraction gained astigmatism of 2.25D after receiving an uneventful phaco-cataract surgery.

Methods: A 62-year-old male received LASIK surgery years ago, and the original myopia was -8.00D. His visual acuity was 20/20 after surgery, and emmetropia was noted. Then he received cataract surgery with phacoemulsification method of a clear corneal wound of 2.75mm located at 180° in his right eye. The surgery induced astigmatism (SIA) of the operator was 0.25D in the same phaco-cataract surgery.

Results: The phaco-cataract surgery was uneventful. The patient's post-op best corrected visual acuity (BCVA) was 20/20. But the refraction showed with-the-rule astigmatism of 2.25D. A main wound tunnel was under the LASIK flap edge in slit-lamp examination. The keratometry showed 38.75D and 36.50D, at 99° and 9°, respectively. To make the other similar clear corneal wound 90° away for counterforce was suggested to the patient. But the patient refused.

Conclusions: Corneal stromal thickness decreases and biomechanics changes after the LASIK surgery. We report a rare condition that a usual phaco-wound can induce high astigmatism in a post-LASIK eye.

Late-Onset Non-tuberculous Mycobacterial Keratitis After Small Incision Lenticule Extraction

*First Author: Kelvin **WAN***
*Co-Author(s): Vanissa **CHOW**, Julia **LAM**, Nai Man **LAM***

Purpose: Infectious keratitis following refractive surgery is a visually devastating complication. Non-tuberculous mycobacterium (NTM) is the commonest causative organism of infectious keratitis after LASIK. Reports on infectious keratitis following small incision lenticule extraction (SMILE) are scarce. We report a case of late-onset, culture-proven Mycobacterium chelonae keratitis following SMILE.

Methods: To present a case report and literature

review.

Results: A 27-year-old woman presented with Mycobacterium chelonae keratitis 3 weeks after uncomplicated SMILE with a solitary interface infiltrate. The keratitis worsened after an initial response to topical fortified and interface antibiotic irrigation. Despite repeated interface irrigation and topical and oral antibiotics, progressive, diffuse stromal infiltrates followed by melting of the cap ensued over the next 6 weeks. Cap amputation and intrastromal antibiotic injection followed by prolonged topical and oral antibiotics usage for the following 5 weeks led to infiltrate resolution and re-epithelization of the residual stromal bed. All medications were tapered off over 6 months after initial presentation without recurrence, but anterior stromal scarring and corneal neovascularization persisted. We identified 5 cases of culture-proven infectious keratitis after SMILE in literature. Clinical features, treatment options and their consideration, and outcomes are discussed.

Conclusions: Prompt interface scraping, and irrigation are recommended for all suspected post-SMILE infectious keratitis. A high degree of suspicion for NTM infection is necessary in late-onset infectious keratitis after SMILE and should be managed by early initiation of anti-NTM treatment. Cap amputation and intrastromal antibiotic injection for intractable post-SMILE keratitis can prevent the need for therapeutic keratoplasty.

To Assess Outcomes of Laser Assisted Sub-epithelial Keratomileus Performed as a Treatment for Mild to Moderate Degrees of Myopia

First Author: Sumit ***VARSHNEY***
Co-Author(s): Laxman ***JHALA***

Purpose: To study the post-operative efficacy, predictability, and safety of laser-assisted sub-epithelial keratomileus (LASEK). To compare the visual outcomes in low to moderate degrees of myopia. To study various complications after LASEK in myopia patients. To study the patient's comfort and satisfaction post LASEK

Methods: A total of 60 eyes of 30 patients of myopia between -1DS to -6DS were included for a time period of 6 months after taking informed consent. Surgeries were performed by Schwind Esiris laser machine. Patients were examined on post-operatively Day 1,7 then at 3 months and 6 months. Findings were recorded in study proformas. All eyes were treated with Mitomycin C intraoperatively.

Results: Overall postoperative vision kept increasing in subsequent follow-up visits which suggests the safety of LASEK, there was no significant difference in intraocular pressure during the study. At 6 months, corneal thickness was well within the safe limits. There was no pain in any of the patients after 3months. None of the eyes developed haze in early follow-ups except 2 after 2 months. Ten eyes had residual refractive error of -0.25D, 2hd -0.75D, 2 had -1.0D and rest 45 had no residual refractive error.

Conclusions: LASEK is a safe and effective and comfortable method to deal with mild to moderate myopia with minimum post operative complications along with added advantages of no flap related complications.

To Study Ablation Pattern in Hyperopic Eyes Treated With Femtosecond LASIK

First Author: Priyadarshini ***K***
Co-Author(s): Prafulla ***MAHARANA***

Purpose: To study the ablation pattern in patients who underwent Femtosecond LASIK using Zeiss VisuMax femtosecond and MEL 90 excimer laser (Carl Zeiss Meditec, Jena, Germany).

Methods: The ablation pattern at the flap hinge was observed in 10 eyes of 5 consecutive patients who underwent femtosecond LASIK for hyperopic refractive correction (Preoperative Mean refractive spherical equivalent + 4DS) with a flap diameter of 8.9 mm. This observation was also correlated with serial anterior segment optical coherence tomography (ASOCT) examination and serial clinical photographs post-operatively.

Results: It was found that the excimer laser firing created an ablative pattern that included the hinge region of the flap partially, hence, resulting in a step-pattern of ablation at the hinge region in these eyes, causing a localized thinning of the flap at this region. This pattern could also be documented better with an ASOCT, showing, a slight trough-like depression at the region of the hinge, which gradually regressed in subsequent post-operative examinations at 1 week and 1 month. This also had an effect on the mean best corrected visual acuity (Snellen chart) on the first postoperative day (0.6 LogMAR), which improved gradually to at 1 month post-operatively (0.2 LogMAR), with the regressing step- configuration.

Conclusions: Thus, hyperopic laser ablation might involve the hinge region which might result in suboptimal visual outcomes initially. However, this regresses with time, improving visual outcomes.

Validation of a New Software for Topography-Guided LASIK Planning: Preliminary Results

First Author: Zain ***KHATIB***

Purpose: To test the accuracy, safety and reliability of a new software which uses vector mathematics and geometric analysis to plan topography-guided LASIK.

Methods: This was a prospective study conducted in a tertiary care eye hospital. In total, 48 eyes of 24 patients with myopia/myopic astigmatism planned for Contoura topo-guided LASIK were included. All eyes

underwent pre-op topolyzer testing, following which the final treatment refraction was entered from the iSMART software, which uses vector mathematics to modify the cylinder and sphere based on lens and corneal higher order aberrations. The primary outcome was to analyze residual cylinder 3 months post-op. Secondary outcomes were to study the post-op UCVA, percentage of eyes gaining/retaining/losing lines post-op, astigmatism vector analysis (Alpins method) and study the correlation of post-op residual cylinder with various pre-op variables.

Results: The mean age of study population was 25 ± 4 years. 67% eyes and 97% eyes were within 0.25DC and 0.5DC post-op respectively. To note, 75% eyes had 6/6 or better and 44% eyes had 6/5 or better post-op unaided vision, and 56% eyes gained one or more lines following surgery. No eyes had >0.75D residual cylinder, and no eyes had lost more than 1 line of vision post-op. Astigmatism analysis using Alpins vector calculators showed a mean difference vector (DV) of 0.26, and mean Correction Index (CI) of 1.04, indicating fairly accurate astigmatism correction using the iSMART software. Linear regression analysis showed that the only factor which affected the post-op residual cylinder was pre-op astigmatism.

Conclusions: The iSMART software is a safe, accurate and reliable Contoura LASIK planning software.

Visual Outcome, Satisfaction and Safety After Toric Implantable Collamer Lens Surgery

*First Author: Ashraful **RIDOY***
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Purpose: To evaluate the visual outcome, satisfaction and safety after toric implantable collamer lens (ICL) surgery in high myopic astigmatism patients.

Methods: Fifty patients with spherical equivalent of -7.0D to -25.0 diopters underwent toric ICL surgery in both eyes were evaluated for post-operative visual outcome for both distance and near, complications and satisfaction after surgery. We followed up patients at post operative day-1, day-7, 1 month and 3 months after surgery.

Results: Among 50 patients, 27 (54%) were female and 23 (46%) were male. 96% (48 patients) got the targeted visual acuity, 6/6 to 6/12. 4% (2 patients) needed residual astigmatism correction with glasses after surgery. 10% (5 patients) had immediate raised IOP, which came to normal level with IOP lowering drop and were normal after stopping the steroid drop without IOP lowering drop. An angle was open in all patients after surgery. Three patients (6%) complained about mild glare and haloes after surgery. Forty-nine patients (98%) were satisfied after getting freedom from glasses.

Conclusions: The toric ICL surgery is very effective in high myopic astigmatism patients. Accuracy, safety and satisfaction are very high after the surgery.

Visual and Refractive Outcomes with Eyecryl™ Phakic Toric IOL vs Visian® Toric Implantable Collamer Lens

*First Author: Smith **SUTE***
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Purpose: To compare the 2-year visual and refractive outcomes with Eyecryl™ Phakic Toric IOLs (EP TIOL) and Visian® Toric ICL (TICL) for correction of high myopic astigmatism.

Methods: This prospective, interventional, non-randomized comparison study included eligible patients who underwent toric PIOL surgery in one or both eyes with either the EP TIOL or TICL for myopic astigmatism. After two years, both lenses were compared for their safety, efficacy, stability and patient satisfaction. Vector analysis of astigmatism was performed using Alpins method with the ASSORT software.

Results: A total of 50 eyes were included, of which 25 eyes received EP TIOL and the remaining 25 received TICL implantation. Pre-op SE and cylinder in EP TIOL group was –10.15±4.04D and -2.08±0.86D, and in the TICL group was -10.21±3.97D and – 2.17±0.95D respectively. At 2 years follow-up, there was no significant difference between the mean UDVA, CDVA, SE and residual astigmatism between the two groups (p >0.05 for all the parameters). Vector analysis of astigmatism showed comparable Correction Index (CI) of 0.98 for EP TIOL and 0.94 in TICL group, signifying a mild under-correction of 2% and 6% respectively. Two eyes in the TICL group underwent exchange for high vault and one eye required re-alignment due to significant post-op rotation.

Conclusions: At least for the first two years, both toric PIOLs were safe and effective in managing high myopic astigmatism with comparable visual results and patient satisfaction.

Retina (Medical)

A Quality Improvement Project to Reduce the No-show Rate in an Intravitreal Clinic: Pearls from A Tertiary Center

*First Author: Wen Yee **LEE***
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Purpose: No-show appointments have clinical implications on patients and result in under-utilized clinic resources. We evaluated the no-show rate and assessed the impact of interventions on the attendance rate in our intravitreal clinic.

Methods: The baseline no-show rate was identified

as 18.5% between September to December 2021. The quality improvement project (QIP) was implemented over 2 months by introducing the online appointment scheduling system. Injection dates were planned for the following three to six months and documented in an injection booklet designed in-house so that patients were aware of their treatment plan. The clinic phone number was included in the booklet and patients were advised to call if rescheduling was needed. Empty slots will be replaced by other needed patients. We also practiced same-day injections to reduce patients' visits to the clinic and improve patients' compliance.

Results: Improved appointment scheduling had optimized the clinic capacity while benefiting more patients. After QIP implementation, 1,350 patients were listed for injection from March to June 2022 compared to 1,171 patients listed over 4 months pre-intervention period. No-show rate has dropped to 14.2%, and medical issues were the most common reason for missed visits. The proportion of patients receiving injections had improved from 78.1% to 80.2%. The number of injections per day has increased from 11 to 14 over 120 minutes procedure sessions. These have helped to reduce waiting times while allowing patients to receive on-schedule treatment.

Conclusions: Our paper will be of great interest to practitioners who want to improve patient service and their intravitreal clinic performance.

A Rare Cause of Unilateral Vitreous Hemorrhage in a Young Female

*First Author: Ann Ting **TAN***
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Purpose: To report a case of Familial Exudative Vitreoretinopathy (FEVR) presenting with unilateral vitreous hemorrhage in a young female.

Methods: A case report of a teenager presenting with a rare cause of vitreous hemorrhage elucidated with multimodal imaging. Snellen visual acuity at presentation and follow up and clinical examination findings from patient records were collected. Multimodal imaging was analyzed including swept source optical coherence tomography, Optos widefield fundus photographs and widefield fundus fluorescein angiography (FFA).

Results: A 16-year-old girl presented with a 3-day history of floaters in her right eye (RE). She also had a history of depression and was on anti-depressants. There was no other medical history of note and was born full-term. Visual acuity in the RE was 6/7.6 and left eye (LE) was 6/12 at the first presentation. A mild vitreous hemorrhage secondary to a superonasal subretinal hemorrhage in the RE was noted. At the following visit, a superotemporal aborted neovascular outgrowth was noted in the LE periphery as well. A widefield fundus fluorescein angiography (FFA) revealed mild peripheral leakage in the temporal periphery in both eyes (BE). The vessels also demonstrated features of straightening, blind vascular loops and mild peripheral avascularity. Sectoral fluorescein-guided panretinal photocoagulation (PRP) laser was performed in BE and the patient had gradual spontaneous resolution of her vitreous hemorrhage.

Conclusions: This case illustrates the possibility of Familial Exudative Vitreoretinopathy as a differential diagnosis which can present in teenagers with acute floaters. Detection of early peripheral retinal pathology with widefield FFA can direct early prophylactic treatment.

A Retrospective Study on Pneumatic Displacement for Submacular Hemorrhage in a Tertiary Eye Center

*First Author: Hiok Hong **CHAN***
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Purpose: To investigate the efficacy of pneumatic displacement in patients with submacular hemorrhage.

Methods: A retrospective study involving patients who underwent pneumatic displacement for submacular hemorrhage were recruited from a tertiary eye center within Singapore.

Results: In 2021, 22 patients underwent pneumatic displacement for submacular hemorrhage in a tertiary eye hospital. The mean age was 68.3 (SD 12.3). The mean period from initial symptoms to presentation to the clinic was 6.5 days (SD 5.5). The causes of submacular hemorrhage were: polypoidal choroidal vasculopathy (73%), occult choroidal neovascularization (13.5%) and retinal arterial macroaneurysm (13.5%). Pneumatic displacements were done with C3F8 (86.4%), SF6 (9.1%) and Air (4.5%). 21 out of 22 had intravitreal anti-VEGF agents after pneumatic displacement. The mean LogMAR visual acuity (VA) at presentation was 1.43. 3 months after the pneumatic displacement, the mean VA was 1.01 ($p = 0.011$). The cohort ($n = 11$) with worse vision than LogMAR 1.0 (Snellen 6/60) had a mean presenting VA of LogMar 2.07 and vision 3 months after the procedure was 1.30 ($p = 0.003$). The other cohort ($n = 11$) with vision equal to or better than LogMAR 1.0 had a mean presenting VA of LogMAR 0.79 and vision 3 months after the procedure was 0.72 ($p = 0.682$).

Conclusions: Pneumatic displacement is an effective treatment for submacular hemorrhage in eyes with poor vision at presentation.

Acute Foveolitis in a Teenager Following mRNA COVID-19 Vaccination

*First Author: Chung **HUI-CHUAN***
*Co-Author(s): I-mo **FANG***

Purpose: To report a case of unilateral acute foveolitis following COVID-19 vaccination.

Methods: To present a case report.

Results: A 17-year-old boy had presented with sudden onset of blurred vision in the left eye 4 days after receiving the second dose of COVID-19 vaccine (BNT162b2). On examination, the best corrected visual acuity was 20/120 in the left eye. Fundus showed a subtle yellowish subretinal lesion at the fovea of the left eye. Fluorescein angiography revealed mild leakage over the fovea in the left eye. Optical coherence tomography of the left macula demonstrated disruption of the ellipsoid zone and external limiting membrane, numerous pinpoint hyperreflective lesions assembling a conical subfoveal lesion lying on the retinal pigment epithelium. He was treated with oral prednisolone with subsequent functional and anatomic recovery.

Conclusions: This is the first case of acute foveolitis following COVID-19 vaccination in a teenager. Foveolitis may be a rare complication of mRNA COVID-19 vaccination which was postulated vaccine-induced inflammation.

Analysis of the Pachychoroid Phenotype in an Asian Population: Methodology and Baseline Study Population Characteristics

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Purpose: To investigate the association of epidemiologic and ocular risk factors with disease progression in the pachychoroid disease spectrum.

Methods: This prospective observational study included subjects with a subfoveal choroidal thickness ≥300µm on spectral-domain optical coherence tomography (OCT). Multi-modal imaging was used to classify eyes as uncomplicated pachychoroid (UP) or pachychoroid disease with pachychoroid pigment epitheliopathy (PPE), central serous chorioretinopathy (CSC) or pachychoroid neovasculopathy (PNV) subtypes.

Results: Among 181 eyes of 109 participants (mean age 60.6 years; 33 [30.3%] female; 95 [87.2%] Chinese), 38 eyes (21.0%) had UP. Of 143 eyes [79.0%] with pachychoroid disease, 82 [45.3%], 41 [22.7%] and 20 [11.0%] had PPE, CSC and PNV, respectively. Utilization of autofluorescence and OCT-angiography led to re-classification of 31 eyes to a more severe category: 11 UP to PPE, 2 UP to PNV, 8 PPE to PNV and 10 CSC to PNV. The systemic and ocular factors evaluated were not associated with disease severity. Comparison of PPE, CSC and PNV eyes showed no significant difference in OCT features of retinal pigment epithelial dysfunction, but disruption of the ellipsoid zone (PPE 30.5% vs CSC 70.7% vs PNV 60%, $p < 0.001$) and thinning of inner nuclear/inner plexiform layers (PPE 7.3% vs CSC 36.6% vs PNV 35%, $p < 0.001$) were more frequent in CSC and PNV eyes.

Conclusions: These cross-sectional associations support the hypothesis that pachychoroid disease manifestations may result from progressive decompensation from the choroid, to the RPE then the retinal layers. Planned longitudinal follow-up of this cohort will facilitate ascertainment of a temporal or causal relationship.

Association of Intravitreal Anti-vascular Endothelial Growth Factor Injection, Systemic Biomarkers, Outcome

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Purpose: This study aimed to assess the systemic association of three anti-VEGF agents in patients with diabetes mellitus taken from a multi-institutional database in Taiwan.

Methods: This retrospective cohort study included patient data sourced from the multi-institutional Chang Gung Research Database in Taiwan. Participants were divided into three groups based on treatment with bevacizumab, ranibizumab, and aflibercept. The incidence rate of outcome events was calculated as the number of events divided by the follow-up of 100 person-years. The cumulative incidence function was used to estimate the incidence rate of outcome events among groups, and the systemic adverse events and biomarkers were measured.

Results: A total of 3,040 diabetic participants receiving the first treatment intravitreal injections of anti-VEGF agents between 2016 and 2019, were assessed. From the outcome analysis, the incidence of ischemic stroke was higher in the ranibizumab group (1.65 per 100 person-years). The incidence of major adverse lower-limb events was higher in the bevacizumab group (2.95), followed by ranibizumab (2.00) and aflibercept (0.74). Major bleeding is relatively higher in bevacizumab (12.1) compared to ranibizumab (4.3) and aflibercept (3.8). All-cause death was higher for both bevacizumab (3.26) and aflibercept (2.61) when compared to ranibizumab (0.55), and all-cause admission was found to be highest with bevacizumab (58.6), followed by aflibercept (30.2), and ranibizumab (27.6).

Conclusions: The main findings of this study suggest that different anti-VEGF agents may be associated with different systemic adverse events. It is possible that these findings are related to different baseline characteristics or the differences in anti-VEGF entering systemic circulation.

Atypical Choroidal Neovascular Membrane in a Young Eye

*First Author: Chaitanya **SHUKLA***

Purpose: A description of course and treatment

response of a patient with atypical choroidal neovascular membrane (CNVM) having waxing-waning course.

Methods: A 27-year-old male presented with decreased vision in left eye in November 2015, was treated and followed up for a period of 7 years up to March 2022. During this time frame, he was given intravitreal injection therapy using bevacizumab, ranibizumab and aflibercept. Serial imaging study, clinical documentation of best corrected visual acuity (BCVA) and thorough systemic workup was done.

Results: At presentation, ocular examination revealed decreased BCVA at 0.60 logMAR (logarithm of minimal angle of resolution) units (20/80) in left eye and 0.0 logMAR units (20/20) in the right. Fundus of left eye showed an irregular shaped lesion of 0.75-disc diameters at the macula impinging on fovea and extending infero-nasally. Optical Coherence Tomography showed presence of subfoveal fluid and disruption of Bruch's-RPE complex. Fundus Fluorescein Angiogram revealed late phase pooling and leakage. After a normal systemic workup, intravitreal bevacizumab injections were given at monthly intervals twice. The patient regained BCVA of 20/20 with improvement on OCT. A recurrence of symptoms occurred in June 2017 with drop of BCVA to 20/60. A single dose of ranibizumab was given. Subsequently, after a three-year symptom-free period, massive fluid and blood were noted in November 2021 with BCVA of 20/200. Two doses of Aflibercept at monthly intervals improved BCVA to 20/60. A large pigment epithelium detachment prevailed. The macula continues to remain dry till date with sustained BCVA of 20/60.

Conclusions: Prompt treatment of atypical CNVM is quintessential.

Augmenting Referral Pathway for Retinal Services Among Diabetic Patients

First Author: Ruchi ***SHRESTHA***

Purpose: To provide health education to health personnel, establish a referral pathway, and measure the effect of this intervention on the attendance of diabetic patients for retinal screening at an Eye Hospital, Nepal.

Methods: This is a non-randomized, pre-post intervention study design. Total of three health education sessions were provided on diabetic retinopathy to selected health personnel of a general hospital. Information education and communication materials in the form of Power Point presentations, posters, pamphlets, videos, were used. Pre and post evaluation was undertaken during the study period of one and a half years. Protocol of the same was published on August 21, 2021, in JMIR Publications. Data was analyzed using Excel and Epi Info 7. The ethical approval for this study was obtained from the Ethical Review Board of Nepal Health Research Council (ERB Protocol Registration Number # 582/2020P).

Results: Pre-intervention attendance among referral was 50% and post intervention attendance was 95%. The overall mean score at pre and post intervention was 6 ± 1.52 and 8.07 ± 1.73 respectively. The mean score of knowledge gained by physicians on diabetic retinopathy awareness were more at post intervention (8.8 ± 1.32) than pre intervention (6.4 ± 1.51). It was statistically significant ($p < 0.001$).

Conclusions: A well-planned health education intervention increases knowledge in physicians about DR. With the increase in knowledge and basic set up for referral mechanism, there is significant increase in the number of referrals and attendance of patients for eye checkup.

Bilateral Necrotizing Retinitis in a Patient with Dermatomyositis Under Immunomodulatory Therapy: A Case Report

First Author: Shih-Hao ***TZENG***

Purpose: To report a case of bilateral necrotizing retinitis in a patient with dermatomyositis under immunomodulatory therapy.

Methods: To present a case report and review the associated literature.

Results: A 67-year-old Asian man with history of dermatomyositis under medical control complained of progressive blurred vision of both eyes for 2 weeks. The patient has a long-term history of dermatomyositis under oral corticosteroid and immunomodulatory therapy with azathioprine. Oral immunomodulatory therapy with hydroxychloroquine 200mg BID and mycophenolic acid 360 mg TID added for about 1 month before the onset of visual symptoms. The patient noted marked deterioration of vision for about 1 week after addition of the above medications. Ophthalmic examination disclosed the best corrected visual acuity 20/60 of the right eye and 20/400 for the left eye. Slit lamp examination of the anterior segment revealed no obvious anterior chamber inflammation, with moderate nuclear sclerosis with posterior sub capsular opacity of lens. Dilated fundus examination revealed whitish exudative lesion at posterior pole in both eyes, one large lesion of about 3-to-4-disc size at lateral inferior arcade in the right eye, and two lesions about 0.5- and 1-disc size at the macula in the left eye. The patient was admitted under the impression of acute necrotizing retinitis. Serology was negative for HZV, VZV, toxoplasma, and syphilis. Polymerase chain reaction of the aqueous and vitreous humors performed in the right eye was negative for cytomegalovirus.

Conclusions: CMV retinitis is rare in non-HIV infected patients. However, patients with chronic use of systemic corticosteroids and immunosuppressant therapy are at higher risk.

Brain Fog and Vessel Clogs – A Unique Syndromic Presentation

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Purpose: Reporting a unique syndrome - Susac Syndrome.

Methods: A 36-year-old female who presented with sudden onset bilateral diminution of vision for 6 weeks along with significant bilateral sensorineural hearing loss and history of altered sensorium 2 weeks prior to visual symptoms. Her presenting BCVA was 1/60 in right eye and 6/36 in left eye. Fundus examination was suggestive of bilateral combined vascular occlusion like picture in both eyes with multiple retinal hemorrhages in all quadrants, along with sclerosed vessels and multiple small yellow refractile deposits at posterior pole and along arterioles. FFA showed striking non perfusion of retina in both eyes just beyond the disc margin and segmental arteriolar wall hyperfluorescence.

Results: The brain magnetic resonance imaging (MRI) scan showed focal white matter lesions and audiometry confirmed bilateral hearing loss. After performing extensive systemic investigations, patient was diagnosed to have Susac's syndrome and was further managed with the team of neurologist, otorhinolaryngologist and ophthalmologist.

Conclusions: Bilateral combined vascular occlusion has not been previously reported in Susac's syndrome. Hence reporting a unique case of Susac's syndrome.

COVID-19 Pandemic and Acute Macular Neuropathy

*First Author: Faruque **GHANCHI***
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Purpose: To describe a case series of acute macular neuropathy in patients with history of COVID-19 infection.

Methods: Consecutive case series of patients presenting with acute loss of vision and clinical diagnosis of acute macular neuropathy (AMN) with history of COVID-19 infection. Details of patient history, clinical features and findings on retinal imaging of AMN is described.

Results: The presenting symptom was sudden blurring of central vision (bilateral in one and unilateral in two patients). Onset of visual symptoms was within few days of COVID-19 illness. Visual acuity in affected eyes ranged from hand movements to 6/7.5. In acute stages, the affected eyes had wedge shaped, dark intra retinal lesions in para foveal regions. This was associated with hyper reflectivity in outer retina (Outer nuclear/plexiform layer). There was improvement in visual function with time, visual acuity in affected eyes ranged from 6/24 to 6/6 at the final follow-up.

Conclusions: AMN can occur after COVID-19 infection. COVID related microvasculopathy may be a factor leading to AMN. The majority of the eyes recover good visual acuity with conservative management.

Cat Scratch Disease Neuroretinitis: A Case Report

*First Author: Shamim Afiqah **ZULKIFLI***
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Purpose: To report a case of unilateral neuroretinitis associated to Bartonella henselae infection with optimal response to antibiotic concurrent with steroid treatment.

Methods: A case report is presented.

Results: A 30-year-old man with no known illness, presented with sudden onset painless blurring of vision of the right eye associated with metamorphopsia for 3 days duration. He has history of fever 1 week prior to onset of symptoms. His right eye vision was 6/30 with optic disc swelling and macula edema, and an incomplete macula star exudates appeared 4 days after initial examination. Left eye vision was 6/6 with unremarkable findings. Serologic test for Bartonella henselae revealed highly positive for Immunoglobulin G (IgG) at 1:8192 titer. He completed 6 weeks of oral Doxycycline and oral Prednisolone was started at 1mg/kg initially and tapered off in 6 weeks. At the seventh week, his right eye vision improved to 6/9 with resolved disc swelling and improved macula star exudates.

Conclusions: Although infectious neuroretinitis can be self-limiting, concurrent treatment with antibiotic and steroid can be given to hasten recovery with optimum visual outcome.

Central Retinal Vein Occlusion Following Sarscov2 Vaccination – A Case Series

*First Author: Tariq **ALI***
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Purpose: To report 3 cases of central retinal vein occlusion following COVID-19 vaccines.

Methods: Retrospectively we reviewed 3 cases of central retinal vein occlusion who had no other mentionable medical history other than recent history of taking COVID-19 vaccines.

Results: Our first case was a 15-year-old schoolboy who complained of sudden reduction of vision in his left eye. He had history of taking the first dose of Pfizer (mRNA- BNT162b2-Comirnaty) vaccine 7 days before the incidence. After ocular examination and investigations, he was diagnosed with central retinal vein occlusion with cystoid macular edema in left eye.

After receiving 3 doses of intravitreal ranibizumab, his vision improved dramatically. The second case was a 57-year-old male with well controlled hypertension who complained of seeing of floaters in his right eye for 2 days. The third case was a 29-year-old lady who complained of defective vision and floaters in both eyes. Both of them had history of getting vaccinated with COVISHEILD (ChAdOx1-S-AZD1222), 13 days and 7 days before reporting to us. Both were diagnosed with central retinal vein occlusion with no cystoid macular edema. They are being followed up and have developed no complication of central retinal vein occlusion till date. All cases went through extensive systemic evaluation to exclude any other cause or risk factors for central retinal vein occlusion.

Conclusions: Post-vaccination immunological response may be responsible to develop a thrombotic event leading to central retinal vein occlusion in these cases.

Changes in Inner and Outer Layers of Retina on Anti VEGF Therapy in Diabetic Macular Edema

*First Author: Nibha **MISHRA***
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Purpose: To study the effect of intravitreal anti-VEGF therapy on inner and outer retinal layers of retina in diabetic macular edema (DMO).

Methods: Sixty consecutive patients aged 40-65 years having type 2 diabetes mellitus (DM) with DMO were prospectively recruited for intravitreal bevacizumab (IVB) therapy. Three doses (1.25 mg in 0.05 mL) of IVB at monthly intervals were given. Patients with other ocular and systemic diseases affecting retinal vasculature and with earlier ophthalmological interventions were excluded. Visual acuity (logMAR VA) was recorded. SD-OCT was performed pre and post IVB. Central sub-foveal thickness (CST) and grades of disorganization of retinal inner layers (DRIL), external limiting membrane (ELM) and EZ were assessed. Data were statistically analysed.

Results: The mean logMAR VA decreased after IVB therapy from 1.8 ± 0.1pre-intervention to 0.4 ± 0.1 post intervention ($p < 0.001$). Similarly, CST reduced from 354.2 ± 15.0 µm pre-intervention to 233.2 ± 7.88 µm post intervention ($p < 0.001$). Among qualitative variables, DRIL decreased from 94% pre-intervention to 14% post intervention. Likewise, global ELM disruption reduced from 82 to 10 and global EZ disruption reduced from 80 to 12%. ELM restoration preceded EZ restoration.

Conclusions: Anti-VEGF therapy effects both outer and inner retinal layers- DRIL decreases with restoration of the barrier effect of ELM. It causes ELM to restore first followed by EZ restoration in DMO.

Characteristics of Retinopathy-Related Visually Impaired Patients and Low Vision Rehabilitation Services in Taipei

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Purpose: To investigate the use of low vision aids or additional strategies in the patients with retinopathy-related visual impairment in Taipei.

Methods: The patients of retinopathy attending the low vision rehabilitation services in Taipei were enrolled from January 2017 to December 2021. Collected information included age, distance best-corrected visual acuity, major cause of visual impairment, prescribed low vision aids or additional strategies.

Results: A total of 142 patients with retinopathy-related visual impairment were assessed. The mean age was 70.82 years (range 7-95). Most participants were in the 61-90 years age group (69%). 65.5% of participants had distance best-corrected visual acuity worse than 6/60. The major cause of visual impairment was age-related macular degeneration (39.4%), followed by retinitis pigmentosa (23.9%). Most popular low vision aid was colored filters, followed by video magnifiers. Most need of additional strategies was mobility and orientation training.

Conclusions: As increasing life expectancy, the demand for low vision services must be increasing. The study demonstrates that the major retinopathies of visual impairment in hospital-based low vision service in Taipei were age-related macular degeneration and retinitis pigmentosa. This helps us plan more appropriate low vision rehabilitation services in the future.

Choroidal Tuberculoma Resembling Choroidal Melanoma

*First Author: Daniel Sen Kai **PHANG***
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Purpose: Choroidal tuberculoma is a rare form of extrapulmonary tuberculosis that poses a diagnostic challenge. We herein report a rare presentation of choroidal tuberculoma mimicking choroidal melanoma which was successfully treated with anti-tuberculosis.

Methods: To present a case report.

Results: A 37-year-old lady presented with a right superotemporal field defect of 1-month duration. On examination, the best corrected right visual acuity was 6/9. The anterior segment and intraocular pressure were normal. Fundus examination showed the presence of hypopigmented subretinal mass measuring 7-disc diameter at the inferior temporal arcade with the presence of surrounding subretinal fluid and

pigmentary changes. Systemic examination was unremarkable. B-scan was done and revealed choroidal excavation with low internal reflectivity. Magnetic resonance imaging was done and showed features suggestive of choroidal melanoma. Blood investigations revealed raised erythrocyte sedimentation. Mantoux tuberculin skin test was measuring 19mm and Quantiferon-TB (QFT) test was positive. Other blood investigations were within normal limits for infective and tumor screening. Hence a revised diagnosis of right choroidal tuberculoma was made. She was started on solely anti-tuberculosis for 9 months and choroidal tuberculoma subsequently improve without corticosteroid.

Conclusions: Quantiferon-TB plays an essential role in the diagnosis and treatment of patient with suspected ocular tuberculosis.

Clinical Characteristics of Adult-Onset Cone Dystrophy in Korean Patients

*First Author: Dong Ju **KIM***
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Purpose: To investigate the clinical characteristics and genetic spectrum of adult-onset cone dystrophy (ACD) in Korean patients

Methods: Medical records of ACD patients were collected. A total 20 patients with ACD were clinically evaluated by slit lamp examination, fundus photography, spectral-domain optical coherence tomography (SD-OCT), visual field and electroretinogram (ERG). To identify pathogenic genes, the next-generation sequencing strategy (gene panel) was applied, and if necessary, Sanger sequencing was additionally used.

Results: The median age was 51 (35~76) years old at the initial visit. Most common initial symptom was decreased visual acuity. And fundus photography showed bull's eye pattern with foveal sparing, which is consistency with perifoveal photoreceptor loss of SD-OCT's findings. This study identified 7 potentially pathogenic genes; 9/20 in RP1, 5/20 in CRX, 1/15 in SAMD11, 1/15 in GUCY2D, 2/15 in CDHR1, 1/20 in CRB1 and 1/20 in CNGB1. RP1 gene was the most common causative gene associated with ACD and CRX gene was the second most causative genes. RP1 related ACD showed preserved scotopic ERG, while photopic ERG was relatively more decreased. In CRX related ACD patients, scotopic and photopic ERG were decreased equivocally.

Conclusions: Patients with adult-onset cone dystrophy complained of decreased visual acuity and showed bull's eye pattern on the fundus examination and perifoveal photoreceptor loss on OCT. Identified genes associated with adult-onset cone dystrophy in this study were RP1, CRX, SAMD11, GUCY2D and CDHR. In middle and later aged patients with these clinical manifestation, genetic screening should be considered.

Combined Cilioretinal Artery Occlusion and Central Retinal Vein Occlusion as Ocular Manifestation of Iron-Deficiency Anemia

*First Author: Weng Cheong **THO***
*Co-Author(s): Vyping **ANG**, Hun Heng **TAN**, Rohana **TAHARIN***

Purpose: To share a rare case of combined cilioretinal artery occlusion (CLRAO) and central retinal vein occlusion (CRVO) with good visual outcome.

Methods: To present a case report.

Results: We herein report a rare presentation in a 44-year-old Chinese lady who presented with sudden onset of left eye painless visual loss to best corrected visual acuity (BCVA) of 4/60 three days prior to clinic visit. Left eye fundus examination revealed edematous optic disc with surrounding flame-shaped hemorrhage, dilated and tortuous major vessel arcades and pale macula only sparing supero-temporal portion alongside with preretinal hemorrhage temporal to fovea. Fluorescein Angiography noted enlarged fovea avascular zone and cilioretinal artery without filling defect. Patient has underlying chronic menorrhagia. Blood workout revealed severe iron-deficiency anemia (IDA) and mild thrombocytopenia while ultrasound abdomen detected leiomyoma. The patient was treated as central retinal artery occlusion (CRAO) and given 2 pints packed cell transfusion to correct for her underlying anemia. Her hemoglobin returned to normal level. One week later, she felt left eye vision improved significantly. One month later her left eye BCVA was 6/24 with well-defined optic disc, normal vessels, pink macula without opacity, resolving blot hemorrhage and pre-retinal hemorrhage. At 1 year 2 months, her left eye BCVA improved to 6/12.

Conclusions: Our case has demonstrated that anemic retinopathy could induce both CLRAO and CRVO simultaneously. With early detection and rescue measures, it is possible to improve retinal ischemia should the patient seek medical treatment earlier.

Comparative Evaluation of Retinal Findings in Patient With Diabetic and Non-diabetic Renal Failure

*First Author: Altantsetseg **ALTANSUKH***
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Purpose: To assess the retinal findings in patient with diabetic renal failure and in non-diabetic renal failure.

Methods: In each of two groups, 20 participants referring to Central Hospitals, Mongolia between November 2018 and May 2019 were included in this study. Data were collected using a questionnaire after an interview and ocular examination. Demographic variables, diabetic retinopathy, ocular examination data, and renal functional findings such as serum creatinine, eGFR were analyzed. The International

Council of Ophthalmology grading system was used for assessing the retinopathy.

Results: For case (diabetic) group, n = 20 participants (mean age 56.80 ± 11.4 years) for control group, n=20 participants (mean age 47.95 ± 8.08 years) were enrolled in this study, the mean age is significantly lower in control group (P value - 0.001). BCVA was 0.53 ± 0.35 in case group, wherein 0.95 ± 0.19 in control group. There is significant difference between in 2 groups. (P value - 0.001). Our findings show that, 17 (92.5%) patients with diabetic renal failure had DR and no one has DR among non-diabetic patients.

Conclusions: Our study demonstrates a strong association between retinopathy and diabetic nephropathy, highlighting the need for renal evaluations in patients with DR and consistent with the hypothesis that retinovascular pathology may reflect renal vascular pathology.

Comparing Functional and Vascular Layer Outcomes of Conventional Laser Photocoagulation Versus Subthreshold Micropulse Laser for Diabetic Macular Edema: An OCT-Angiography Study

*First Author: Ka Hin Gabriel **LI***
*Co-Author(s): Marten **BRELEN**, Li Jia **CHEN**, Mary **HO**, Alvin **YOUNG***

Purpose: To compare the efficacy of conventional laser (CL) and subthreshold micropulse laser (SML) for treating diabetic macular edema in terms of functional outcomes and changes in quantitative metrics for the retinal capillary and choriocapillary vascular layers.

Methods: Fifty-two eyes from 52 patients with treatment-naïve clinically significant macular edema were randomly assigned to the CL or SML group in a 1:1 ratio. Best-corrected visual acuity, central macular thickness (CMT) and optical coherence tomography angiography (OCT-A) scans were measured at baseline, 1-, 3- and 6-months post-treatment.

Results: The SML group showed rapid visual recovery at 1-month (0.320 ± 0.31 to 0.270 ± 0.22 logMAR, p = 0.038) and significant improvements in CMT at 6-months post-treatment (353.88 to 301.00µm, p = 0.005). Statistically significant changes were detected across all OCT-A metrics, including vessel density (VD), vessel length density (VLD), vessel diameter index (VDI) and fractal dimension (FD), at 6 months for both groups in the deep capillary plexus (DCP) and choriocapillary plexus (CCP).

Conclusions: SML resulted in early visual recovery and sustained macular thickness improvement in the treatment of DME. Microvascular perfusion parameters, including VD, VLD and FD, improved in the DCP and CCP for both treatment groups at 6-months post-treatment.

Complete Resolution of Presumed Diffuse Unilateral Subacute Neuroretinitis With Early Treatment of Albendazole

*First Author: Sharon Yet **XUE ER***
*Co-Author(s): Sangeeta **KUGANASAN**, Sujaya **SINGH**, Nandini **VIJAYA SINGHAM***

Purpose: To report a case of presumed left eye diffuse unilateral subacute neuroretinitis (DUSN) in a healthy young individual who presented with sudden onset unilateral visual loss.

Methods: Case study

Results: A 23-year-old lady presented with 1-week history of painless progressive vision loss and metamorphopsia over left eye. Significant social history includes her housing location in a rural forestry area and daily farming activities without any footwear. She has exposure to stray cats at home. On examination, her visual acuity was 6/18 over left eye; 6/6 for her right. Examination on her left eye revealed reduction of light intensity and red saturation 70%. Anterior segment was normal. There are multiple patches of choroiditis over foveal area, with a decreased macular reflex. Right eye was normal. Optical coherence tomography revealed multiple area of subretinal fluid (SRF), intraretinal fluid (IRF) and retinal exudates over sub-foveal region. Fundus fluorescence angiography revealed choroiditis confined to posterior pole with no hot disc. ESR was raised with normal eosinophil count. Due to her higher exposure risk of nematode, she was treated as presumed left eye DUSN with negative Toxocariasis serology. She was started on high dose oral albendazole followed by systemic steroids for 4 weeks. Patient showed remarkable improvement with normalization of visual acuity to 6/6, disappearance of choroiditis patches, resolution of SRF and IRF.

Conclusions: Treatment of presumed DUSN case with albendazole has shown favorable visual improvement. Thus, early suspicion of DUSN especially in case of healthy young individuals experiencing unilateral visual loss, thus enabling early commencement of treatment.

Eales Disease in a Young Girl: A Case Report

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*Co-Author(s): Norshamsiah Md **DIN**, Sangeeta **KUGANASAN**, Noram **MAT SAAD***

Purpose: To report a case of a young teenage girl with Eales disease.

Methods: To present a case report.

Results: A 13-year-old girl with myopia presented with sudden onset blurring of vision associated with floaters in left eye (LE) for 3 days duration. LE vision was hand movement and right eye (RE) vision was 6/12 unaided. There was no history of trauma. On examination she had LE dense vitreous hemorrhage (VH). RE examination was normal. B-scan ultrasonography of

LE showed flat retina with vitreous opacity. She was treated as LE VH secondary to Posterior Vitreous Detachment. Her VH improved with positioning and completely resolved in 8 weeks. She presented again after 6 months with LE recurrent VH. Her LE vision dropped to light perception. Tuberculosis QuantiFERON GOLD test was negative and other paraclinical studies were normal. Fundus Fluorescein Angiography done after 2 months showed LE hot disc with capillary fall out at superotemporal and inferior retina. LE pan retinal photocoagulation was given. The diagnosis of LE recurrent VH secondary to Eales disease was made by exclusion and she was started on oral Prednisolone 50mg with slow tapering dose for 6 months and topical Dexamethasone 6 hourly. After completion of treatment, her LE vision improved to 6/24 with pinhole 6/9.

Conclusions: Eales disease is a diagnosis of exclusion of occlusive vasculopathies that is usually associated with Tuberculosis. It usually affects healthy young males between 20-40 years old. Significant improvement in visual acuity is observed in the majority of stages of Eales disease following treatment.

Effect of Anti-VEGF on Retinal Blood Flow in Diabetic Mice using Laser Speckle Flowgraphy

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Purpose: To evaluate the effect of intravitreal Aflibercept on retinal blood flow (RBF) in the optic nerve head (ONH) region in Ins2 (Akita) diabetic mice using laser speckle flowgraphy (LSFG).

Methods: Intravitreal Aflibercept (1 µg) was administered to 14 eyes of 8 Akita mice. Intraocular pressure (IOP) was measured using a handheld tonometer and RBF was measured in mean blur rate (MBR). Measurements were taken at baseline and at Day 7, 14, 21 and 28 post-injections. MBR was measured for superior, inferior, nasal and temporal quadrants of ONH region and the changes in MBR of tissue (MT) were analyzed at each timepoint, adjusting for bilaterality and repeated measurements over time. Hurvich and Tsai's criterion was chosen as information criterion due to the small sample size.

Results: The age of the mice ranged from 12 to 19 weeks. IOP increased in all eyes at Day 28 post-injection compared to baseline, but this change was not significant ($p > 0.05$). There was a statistically significant increase in RBF in all quadrants of the MT region of ONH at Day 28 post-injection compared to baseline ($p < 0.05$).

Conclusions: Intravitreal Aflibercept injection results in a significant increase in the MT at the ONH regions in Ins2 (Akita) diabetic mice, up to 28 days post-injection. There was no significant increase in IOP throughout the follow-up period.

Effect of IOP in Intravitreal Injection of Anti-VEGF Using Topical Beta Blocker or Prostaglandin Inhibitor – A Double Blinded, Randomized Three Arm Cross Over Study

*First Author: Stephanie **POON***
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Purpose: Transient rise in intraocular pressure (IOP) is a known adverse effect of intravitreal anti-VEGF injections. We aim to compare the effectiveness of topical beta blockers and prostaglandin inhibitors against placebo in managing the increase in IOP after anti-VEGF injection.

Methods: This is a randomized, double-blinded, prospective three-arm crossover study. Consecutive patients requiring at least 3 injections were recruited. Every patient was randomized to receive either topical hypromellose, timolol, or travatan in the first visit, then crossing over to the other two treatment drug for each of the following visits. These were administered 1 hour prior to the injection, and IOP was measured before eye drops (T0), immediately before (T1), immediately after (T2), and 30 minutes post-injection (T3).

Results: A total of 61 eyes from 61 patients were included (183 visits). There was no carryover effect in all groups compared ($F = 0.14$, $p = 0.87$). At T1 and T3, timolol demonstrated the lowest IOP ($p < 0.001$). The IOP did not decrease back to baseline value in any of the treatment groups ($p < 0.05$), however, all three did result in significant reduction in IOP at T3 compared with T2 ($p < 0.001$).

Conclusions: Travatan showed IOP lowering effects compared to placebo, however, timolol was the only drug to demonstrate significant effects. Therefore, the reduced aqueous production may be more important than increased aqueous outflow for patients undergoing intravitreal injections.

Epidemiology of Diabetic Retinopathy of Southern Part of Bangladesh

*First Author: Md.shafiqul **ISLAM***

Purpose: To assess the prevalence and risk factors related with diabetic retinopathy (DR).

Methods: We reviewed records of 3,299 patients with diabetes mellitus (DM) attended in retina clinic of eye department of Sher-e-Bangla Medical College Hospital, Barishal, Bangladesh from 2017-2021. Age, sex, education, occupation, registration history, current treatment protocol was taken from the patients. After initial history taking, anthropometric and ophthalmic examination followed by blood pressure and blood sugar measurement were done. We performed color fundus photograph to diagnose DR as the outcome

variable.

Results: The prevalence of DR was 32.37 (95% CI: 30.78-33.97%). Out of this, 3.6% were proliferative DR (PDR), 10.1% were mild Non-PDR (NPDR), 11.2% were moderate NPDR and 7.4% were severe NPDR. Logistic regression shows middle age in their 4th, 5th (p <0.001) and 6th decade (p =0.007), males (p =0.02), illiterate and low educated people (p <0.001), unemployed (p <0.001), not registered to diabetic association of Bangladesh (DAB) (p <0.001), patients on insulin (p <0.001), positive family history of DM (p <0.001), longer duration of DM (p <0.001), high random blood sugar (p =0.009), high systolic blood pressure (p <0.001), low BMI (p =0.002) were more suffering from different types of DR compared to their corresponding counterparts.

Conclusions: DR is highly prevalent in Bangladeshi population. Health education, provision of employment, registry and regular follow up with DAB, controlling blood sugar and blood pressure and improving BMI could alleviate this important public health burden in our country.

Ethnic Differences on Long-term Outcomes of Polypoidal Choroidal Vasculopathy After Predominantly Bevacizumab Monotherapy

*First Author: Aaron **YAP***
*Co-Author(s): David **SQUIRRELL**, Nancy **WANG***

Purpose: To describe the long-term outcomes of treatment-naïve, Caucasian and non-Caucasian eyes with polypoidal choroidal vasculopathy (PCV) after treatment with predominantly Bevacizumab monotherapy or in combination with rescue photodynamic therapy (PDT).

Methods: Demographics, visual outcomes, optical coherence tomography (OCT) and treatment data were collected up to 3 years after the first visit. Stratified analysis according to ethnicity and baseline vision was performed to identify factors predictive of long-term visual improvement and maintenance.

Results: A total of 89 eyes with PCV were identified, of which 14 received rescue verteporfin PDT. There was an equal distribution between Caucasian and non-Caucasian individuals. Non-Caucasians present at a younger age (67.3 vs. 76.0 years, p = 0.002), have a higher proportion of foveal involvement (80.9%, vs.54.2% p = 0.007), choroidal hyperpermeability (50% vs 25.8%, p = 0.013) and lower baseline visual acuity (53.1 vs. 63.3 letters, p = 0.008). Mean visual acuity (VA) gain was + 8.9 letters and + 5.0 letters at 1 and 3 years of follow-up, respectively. Non-Caucasian individuals had a lower mean final visual acuity (VA) (54.7 vs. 70.5, respectively; p < 0.001) and net gain in VA (+ 2.0 vs. + 7.6 letters, p = 0.581) compared to Caucasian individuals. The mean total number of injections given over 3 years was 14.

Conclusions: Most patients treated with predominantly Bevacizumab anti-vascular endothelial growth factor (VEGF) monotherapy achieved sustained visual acuity gains out to 3 years. Due to ethnic-specific differences in presenting PCV phenotypes, non-Caucasians presented with lower baseline VA and had poorer long-term visual outcomes.

Evaluation of Optical Coherence Tomography Morphological Features and Its Association With Visual Acuity Among Diabetic Patients With Clinically Significant Macular Oedema

*First Author: Zunaina **EMBONG***
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Purpose: To identify the optical coherence tomography (OCT) features and its association with visual acuity among diabetic patients with clinically significant macular oedema (CSMO).

Methods: A cross-sectional study was conducted from January 2020 to November 2021 among diabetic patients with CSMO. OCT was performed to identify the OCT morphological features and to measure the central macular thickness (CMT).

Results: A total of 140 diabetic patients with CSMO were recruited for this study. The types of OCT morphological features were sponge-like diffuse retina thickness (SLDRT) (39.3%), cystoid macular oedema (CMO) (25.0%), subretinal fluid (SRF) (5.7%), and mixed-type (30.0%). A small number of patients had epiretinal membrane (ERM; 19.3%) and vitreomacular traction (VMT; 1.4%). CMT was significantly increased in SRF type (517.8 SD 141.0 µm) than SLDRT type (365.6 SD 82.2 µm), CMO type (425.1 SD 108.8 µm) and mixed type (509.9 SD 145.8 µm) (p < 0.001). Better visual acuity was observed in the SLDRT type. SRF type and CMT had a significant linear relationship with visual acuity.

Conclusions: Diabetic patients with CSMO demonstrated that SLDRT type was the most common OCT morphological feature and presented with better visual acuity. SRF and CMT had a significant association with visual acuity.

Evaluation of Risk Factors of Diabetic Retinopathy Among Diabetic Patients Attending a Tertiary Eye Care Center

*First Author: Shaila **SHARMIN***
*Co-Author(s): Syed **JABED***

Purpose: To study the epidemiological and clinical factors influencing the presence and severity of diabetic retinopathy.

Methods: It was an observational cross-sectional study. The study was conducted among patients attended in “Diabetic Retinopathy Education Treatment Trial” (DRETT), a digital screening program at retina clinic of

a tertiary eye care center during the period of study between March 2015 to January 2016. A total of 300 diabetic patients were included in the study, either known or newly diagnosed according to ADA criteria. Patients fulfilling inclusion criteria were enrolled and epidemiological data and other information had been recorded in the predesigned case record form. All data were documented in the case record form and analyzed using SPSS 16.

Results: Among the 300 diabetic patients enrolled in the study majority were male (54%) middle aged (53.41 ± 8.86) sedentary workers (90%) with a positive family history of DM (61.3%). Retinopathy was present in 57.3% patients and more common in smoker (66.67%). While duration of diabetes were among major risk factors for the development of retinopathy ($p < 0.001$) as well as high serum cholesterol and LDL level, HbA1c was found to be the most important factor for the presence ($p < 0.001$) and severity of retinopathy ($p < 0.001$) and maculopathy ($p < 0.01$).

Conclusions: In conclusion we can say that diabetic retinopathy is more common in male smoker with uncontrolled blood sugar and lipid level. So a healthy life style with good control of diabetes and lipid can prevent the development as well as the progression of retinopathy.

Evaluation of VEGF Levels in Tears and Aqueous Among Diabetes Mellitus

First Author: Zunaina ***EMBONG***
Co-Author(s): Azima ***AHMAD-SHAHRUDIN****, Mahaneem* ***MOHAMAD****, T* ***NORINA***

Purpose: To evaluate the level of vascular endothelial growth factor (VEGF) in tears and aqueous among diabetes mellitus (DM) patients with non-proliferative diabetic retinopathy (NPDR) and no diabetic retinopathy (DR).

Methods: A cross-sectional study was conducted from July 2019 until November 2021. Forty-five NPDR, 51 no DR, and 54 non-DM (control) were enrolled in this study. Tears were collected using a Schirmer strip before the operation and aqueous were collected via cornea paracentesis during cataract surgery. The concentration of VEGF was determined using an ELISA kit test.

Results: The mean VEGF concentration in tears was 46.9 ± 18.7 pg/ mL in NPDR, 46.7 ± 23.3 pg/ mL in no DR, and 40.1 ± 20.6 pg/ mL in non-DM. There was no significant difference in mean VEGF level in tears between the three groups before and after adjusting for covariates ($p = 0.180$ and $p = 0.155$ respectively). The mean VEGF concentration in aqueous was 217.5 ± 89.2 pg/ mL in NPDR, 174.3 ± 75.1 pg/ mL in no DR group, and 140.7 ± 41.9 pg/ mL in non-DM. There was a significant difference in mean VEGF level in aqueous between the three groups before and after adjusting for covariates ($p < 0.001$ and $p = 0.004$, respectively). Post hoc analysis showed VEGF level in NPDR was significantly higher than in no DR ($p = 0.012$) and non-DM ($p = 0.033$). There was a significant weak correlation of VEGF levels between tears and aqueous among diabetic patients ($r = 0.201$, $p = 0.049$).

Conclusions: Aqueous VEGF level may reflect the DR status. The level of VEGF in tears has little or no relationship to the level of VEGF in aqueous.

Evolution and Resolution of Foveal Detachment in Myopic Traction Maculopathy: A Case Report

First Author: Reshma ***PADMARAM***
Co-Author(s): Monika ***KAPOOR****, Mahesh* ***KUMAR****, Manjushree* ***SUNDI***

Purpose: To report the evolution and stages of Myopic traction maculopathy in a patient with six-year follow-up.

Methods: We report a case of 74-year-old lady with high myopia, with contralateral scarred choroidal neovascular membrane who was under our follow-up since 2015. Case Description: The visual acuity of the above said eye on presentation was 6/24, N10. Examination showed Myopic fundus, foveal schisis with epiretinal membrane which later progressed to foveal detachment. Surgical option of pars plana vitrectomy with macular buckling was given to the patient, however she chose observation and was under regular follow-ups.

Results: In November 2021, that is 6 years later, the regular follow-up OCT revealed a pleasant surprise for the patient and the treating doctor, that is complete resolution of foveal detachment was noted.

Conclusions: We would like to highlight the pathogenesis of myopic traction maculopathy and we state that it is important to decide carefully in such cases whether surgery is required or whether the patient should be observed.

Factors Influencing Episode Duration, Anatomical and Functional Outcome Acute Central Serous Chorioretinopathy Cases

First Author: Anil ***PARAJULI***
Co-Author(s): Purushottam ***JOSHI***

Purpose: To investigate the factors affecting the duration of subretinal fluid (SRF) resolution and their correlation with the final anatomical and functional outcome in cases of treatment naïve acute central serous chorioretinopathy (CSCR).

Methods: We retrospectively studied 93 eyes of 93 patients diagnosed with treatment naïve acute CSCR presenting within 30 days of onset of symptoms. The eyes were divided into two groups based on the duration of SRF resolution: group 1 (≤ 3 months) and group 2 (> 3 months). Demographic and medical

history, and spectral domain optical coherence tomography features were noted and their association with duration for SRF resolution, final central macular thickness (CMT) and final best-corrected visual acuity (BCVA) were studied. All the patients were prescribed topical non-steroidal anti- inflammatory drug for 1 month at the diagnosis of CSCR.

Results: Longer duration of symptoms, female gender and baseline OCT factors like hyper-reflective dots and retinal pigment epithelial bumps were associated with longer duration for SRF resolution ($p < 0.001$, $p = 0.04$, $p = 0.001$ and $p = 0.01$, respectively). The SRF resolution time had strong correlations with the final CMT ($r = -0.589$, $p < 0.001$) and final BCVA in logarithm of minimum angle of resolution (LogMAR) ($r = +0.599$, $p < 0.001$). Group 2 eyes had worse final BCVA and thinner final CMT than Group 1 (both $p < 0.001$). The final CMT of the patients of Group 1 was statistically thinner than the normal population ($p < 0.001$).

Conclusions: Patient's baseline clinicodemographic and OCT features can be used to predict the course and visual outcome in cases of treatment naïve acute idiopathic CSCR.

Faricimab as a New Treatment for Age-Related Macular Degeneration Patients: A Systematic Review

*First Author: Jovita **JUTAMULIA***
*Co-Author(s): Dewa Ayu Anggi **PARAMITHA**, Sarah **SHABRINA**, Arlin **CHYNTIA***

Purpose: To evaluate the efficacy of a recent anti-vascular endothelial growth factor (VEGF) therapy, Faricimab, in treating neovascular age-related macular degeneration (nAMD)

Methods: A comprehensive literature search was performed using keywords to identify published articles on Medline/PubMed, Cochrane Library (CENTRAL), ProQuest, Google Scholar, and Hand Searching. The inclusion criteria are nAMD patients given Faricimab injection as the key anti-VEGF therapy with full text journals available. The primary outcome measurements for this review are mean best corrected visual acuity (BCVA) changes using Early Treatment Diabetic Retinopathy (ETDRS) letters and the secondary outcomes are mean central subfoveal thickness (CST) changes.

Results: Four randomized controlled trials (RCTs) from three clinical studies were reviewed. A total of 1668 adults were evaluated. Faricimab was compared to aflibercept in two RCTs and ranibizumab in others. Faricimab showed visual improvement in mean BCVA changes from baseline (5,8, 6.6, 10.9, and 12.5 ETDRS letters) and anatomical improvement in adjusted mean CST change from baseline (-136,8; -137,1; −152,2; -121,3 µm) in all studies.

Conclusions: Compared to the available anti-VEGF therapy, Faricimab shows promising results in treating nAMD patients with extended injection intervals, thus reducing treatment burden in nAMD patients. However, further studies are needed to evaluate the efficacy of this new treatment.

Faricimab in Treatment of Age-Related Macular Degeneration and Diabetic Macular Oedema

*First Author: Faruque **GHANCHI***
*Co-Author(s): Sridevi **RAJASEKARAN***

Purpose: To describe real life clinical experience of Faricimab in treatment of patients with neovascular macular degeneration and diabetic macular oedema.

Methods: A prospective real world patient cohort diagnosed with neovascular macular degeneration (nAMD) and diabetic macular edema (DME) who receive first Faricimab injection treatment from 1August 22 onwards and completing a minimum of 3 months follow up is included in the study. 10 consecutive patients for each of the conditions will be part of the study. Patients assessments include ETDRS best recorded visual acuity (BRVA), OCT scans of macula at baseline and every month up to month 4 as standard of care. Anonymized data will be collected for pooled analysis for mean change in visual acuity, mean change in central macular thickness (CMT) from baseline to month 4, and any treatment emergent adverse event.

Results: Faricimab has recently recevied FDA and EMA approval for application in clinical practice for treatment of nAMD and DMO. An early experience of Faricimab in clinical practice has shown good treatment response. This study will report primary outcome of total of 20 patients treated with Faricimab. Mean change in BRVA form baseline to month 4 and mean change in CMT from baseline to month 4 will be presented.

Conclusions: Real life early clinical efficacy and safety of Faricimab in treatment of nAMD and DMO will be compared with the published clinical trials.

Gene Correction of the PRPF6 Mutation in Patient-Derived Induced Pluripotent Stem Cells Using CRISPR/Cas9

*First Author: Yuqin **LIANG***
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Purpose: To correct the PRPF6 mutation genetically in patient-derived induced pluripotent stem cells (iPSCs) using CRISPR/Cas9 technology can provide a valuable resource for retinitis pigmentosa (RP) research.

Methods: We previously generated an iPSC line from the peripheral blood mononuclear cells of a RP patient carrying the heterozygous PRPF6 c.2699 G > A (p.R900H) mutation. We designed a targeted single-guide RNA (sgRNA) and a total length of 100

nt single-strand donor oligonucleotides (ssODN). Human iPSCs were harvested and co-transfected with ribonucleoprotein complex and ssODN by electroporation. About two weeks later, gene-corrected clones and mutant uncorrected clones were identified by sanger sequencing. Then, karyotype detection and STR analysis were conducted. The pluripotency assay was performed by qPCR and immunofluorescence (IF). The differentiation in vitro was performed by a commercialized kit.

Results: We corrected the PRPF6 c.2699 G > A (p.R900H) mutation which was guided by targeted sgRNA. The gene-corrected iPSC line showed a typical clonal morphology and a normal karyotype. IF showed the positive expressions of pluripotency markers SSEA4 and SOX2. Then, qPCR results revealed that the expression levels of pluripotency genes KLF4, NANOG and SOX2 were similar to those of the original mutant iPSC line. STR analysis confirmed a complete match in both cell lines by detecting 21 loci. The expressions of differentiation markers AFP (endoderm), SMA (mesoderm) and PAX6 (ectoderm) were positive.

Conclusions: The gene-corrected iPSC line was generated by CRISPR/Cas9, which can be combined with the patient iPSC line to investigate the pathogenesis of the PRPF6 mutation.

Genotypic Profile and Clinical Characteristics of CRX-Associated Retinopathy in Koreans

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Purpose: This study was conducted to investigate the clinical characteristics associated with the pathogenic variants of CRX in Korean patients with inherited retinal dystrophies (IRDs).

Methods: We enrolled patients with IRDS who visited two tertiary referral hospitals and identified the pathogenic variants of CRX through targeted gene panel sequencing. We analyzed the clinical features and phenotypic spectrum according to genotype.

Results: Eleven patients with ten pathogenic variants in CRX were included. Six patients with cone-rod dystrophy (CRD), two with macular dystrophy (MD), two with Leber congenital amaurosis (LCA), and one with retinitis pigmentosa (RP) were included. All mutations were heterozygosity, and one patient showed severe clinical features of LCA with compound heterozygosity. Two novel pathogenic variants, c.101-1G>A and c.898T>C (p. Ter300Glnext*118), were identified. Analyzing with the previous studies on CRX-associated retinal disease (CRX-RD), most of the hot spots were observed within the homeodomain. Also, mutations within the homeodomain appear frequently as clinical features of CRD or MD.

Conclusions: Various pathogenic variants of CRX, including two novel variants, were identified. CRX-RD manifested various phenotypes in a Korean patient. These results will be helpful for further understanding the functions of CRX and clinical features of CRX-RD.

Incidence of Retinal Vascular Occlusion After COVID-19 Infection

*First Author: Sameeksha **AGRAWAL***
*Co-Author(s): Ankit **AGRAWAL***

Purpose: To look for incidence of retinal vascular occlusion after COVID-19 infection as compared to pre-COVID era.

Methods: Retrospective cohort study with history of retinal vascular occlusion who were diagnosed with COVID-19 infection between January 20, 2020, and May 31, 2022. The average biweekly incidence of new retinal vascular occlusions (RAO or RVO) was compared between the pre–COVID-19 infection period (26 to 2 weeks before diagnosis) and the post-infection period (2 weeks before to 26 weeks after diagnosis). A total of 500 patients with history of COVID-19 infection were included.

Results: The incidence of new RVOs was higher in the 6 months after COVID-19 infection compared with the 6 months before infection. There was increase in the incidence of RAOs after COVID-19 diagnosis. The peak incidence of RVOs occurred 6 to 8 weeks after COVID-19 diagnosis.

Conclusions: Evidence of increased risk for retinal vascular occlusion associated with COVID-19 infection,due to combination of vascular damage and risk of higher embolism formation. Clinicians need to consider this factor when evaluating these patients.

Incomplete Bitemporal Hemianopia as an Atypical Presentation of Susac Syndrome

*First Author: Cadric **GUNARATNAM***
*Co-Author(s): Mike **BOGGILD**, Todd **GOODWIN**, Thomas **MOLONEY***

Purpose: Susac syndrome (SS) is a rare microangiopathy affecting precapillary arterioles of the brain, inner ear, and retina. Current literature describes over 400 cases worldwide. SS is clinically characterized by a triad of encephalopathy, sensorineural hearing loss and branch retinal artery occlusion (BRAO). This poster aims to present a unique Australian case of SS presenting as incomplete bitemporal hemianopia, and the diagnostic and treatment challenges associated.

Methods: To present a case report and a review of literature.

Results: A 39-year-old female presents with incomplete bitemporal hemianopia. Initial ophthalmology examination demonstrated bilateral macular thinning on optical coherence tomography but was otherwise unremarkable. Multiple sclerosis and compressive

chiasmal lesions were considered, however lumbar puncture and MR brain were negative. Six months later the patient reported gradual hearing loss, memory impairment, as well as intermittent tinnitus. Repeated MR brain, eight months after presentation, revealed several small T2 hyperintense foci in the corpus collosum and cerebral hemispheres. Fundus fluorescein angiography demonstrated BRAO, arteriolar wall hyperfluorescence and Gass plaques in the right eye, and no significant findings of Susac's in the left. Audiometry confirmed sensorineural hearing loss bilaterally. Diagnosis of SS was given, and the patient was commenced on IVIg and rituximab.

Conclusions: To the extent of our knowledge, this is the first case described in literature of bitemporal hemianopia presenting as SS in an otherwise young, healthy female. It highlights the importance of early consideration and evaluation of SS in individuals presenting with atypical ocular disturbances, where no clear cause can be elicited, to limit the sequelae of disease.

Influence Of Glycemic Status on Progression of Diabetic Retinopathy in Pregnant Women With Diabetes Mellitus

*First Author: Natalia **POMYTKINA***
*Co-Author(s): Oleg **KOLENKO**, Evgenii **SOROKIN***

Purpose: To investigate the effect of glycemic status on the occurrence and progression of diabetic retinopathy (DR) in pregnant women with diabetes mellitus (DM).

Methods: Twenty-four pregnant women with DM type 1 were examined in each trimester and 3 months after delivery. The mean age: 29.1 ± 4.7 years, the mean duration of DM: 11.1 ± 8.4 years. Compensation for glycemic status in the first trimester and throughout pregnancy occurred in 15 pregnant women (63%) - the average value of HvA1c was 5.3 ± 0.2%. In 9 patients, the mean HvA1c was 8.1 ± 1.5%. All pregnant women received intensive insulin therapy. During pregnancy, no DR was detected in 10 patients with compensated DM. Fourteen pregnant women (58%) were diagnosed with DR: in 5 patients – in pregestational period; in 9 patients – during gestation.

Results: Fourteen pregnant women with DR: 5 patients had a stable course against the background of glycemic compensation. DR progression during pregnancy was detected in 9 patients (64%) – 4 with severe non-proliferative and 5 with proliferative retinopathy. They were included in group with decompensated glycemic status – in the first trimester, the HbA1c was above the norm and during gestation it decreased by more than 0.5% per month. In postpartum period of 3 patients, the progression of retinopathy continued, requiring laser coagulation.

Conclusions: First, progression of DR was noted in 64% of pregnant women against the background of unstable glycemia. Second, high level of glycemia at the beginning of pregnancy and its intensive decrease during pregnancy contributes to manifestation and progression of DR.

Inter and Intra-observer Variability of Laser Speckle Flowgraphy for Retinal Blood Flow Measurements in Wild Type C57BL/6J Mice

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Purpose: To assess intra- and inter-observer variability of laser speckle flowgraphy (LSFG) measurements for retinal blood flow in wild type C57BL/6J mice.

Methods: LSFG was used to measure retinal blood flow in 20 dilated eyes of 10 anesthetized, wild type, 2-month-old C57BL/6J mice. "Mean blur rate (MBR)" was measured for tissue area (MT), vessel (MV) and total area (MA) of the optic nerve head (ONH) region. Intra-observer repeatability of LSFG was evaluated by measuring MBR variability without changing mouse head position, by same operator. Inter-observer reproducibility was evaluated by another operator measuring MBR variability, after resetting mouse head position. Coefficient of repeatability (CR) through Bland-Altman plot method coefficient of variation (COV) and Intraclass correlation coefficient (ICC) were calculated.

Results: Ten mice were used to assess repeatability and 8 mice for reproducibility. The CR values of intra and inter-observer variation for superior, inferior, nasal, and temporal quadrants of MT, MV and MA of ONH region in both eyes of the mice were present within the limits of agreement. The COV of intra-observer variability was 4.4 to 6.59%, 6.1 to 6.51% and 4.14 to 4.65% in MT, MV and MA respectively. The COV of inter-observer variability was 16.26 to 23.05%, 11.82 to 16.58% and 13.27 to 41.07% in MT, MV and MA respectively. The level of reliability was excellent in intra-observer variability (ICC values 0.98-0.99) and moderate to excellent in inter-observer variability (ICC values 0.64-0.96).

Conclusions: LSFG demonstrates excellent intra-observer repeatability and moderate to excellent inter-observer reproducibility in measuring retinal blood flow in wild-type C57BL/6J mice.

Invasive Breast Carcinoma With Branch Retinal Vein Occlusion: A Rare Association

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Purpose: Ocular manifestations of breast carcinoma may present as metastatic eye disease or carcinoma associated retinopathy. Occurrence of branch retinal vein occlusion in breast carcinoma was uncommon. We report a patient with such rare association.

Methods: To present a case report.

Results: A 68-year-old Chinese lady with underlying diabetes mellitus was diagnosed to have right superotemporal ischaemic branch retinal vein occlusion with macula oedema, after presented with three months history of unilateral painless reduced vision. At presentation, her visual acuity in the right eye was counting finger at one foot. There was presence of flame-shaped hemorrhages at superotemporal quadrant of right eye with neovascularization, and macula oedema. There were no diabetic retinopathy changes in the fellow eye. The patient was subsequently treated with sectoral pan-retinal photocoagulation laser and intravitreal Ranibizumab injection. Further history noted she had painful, enlarging mass on the left breast. Urgent referral to Surgical team was done. Biopsy confirmed presence of invasive carcinoma on left breast. She was then referred to Oncology team and underwent six cycles of neoadjuvant chemotherapy. Left mastectomy with axillary clearance was performed after completion of chemotherapy. Latest ocular review showed slight improvement of visual acuity to 6/60, resolution of flamed shaped hemorrhages in left eye with minimal residual intraretinal fluid.

Conclusions: This case report demonstrates the rare association between breast malignancy and retinal vein occlusion. Mechanism for development of retinal vein occlusion in breast carcinoma is multifactorial and presumed to be due to dynamic interactions between the tumor cells, vascular endothelium, blood coagulation system, leucocytes and platelets.

Macular Branch Retinal Vein Occlusion

*First Author: Jard Evans **GARCIA***

Purpose: To present a case of a 45-year-old female with unilateral macular branch retinal vein occlusion.

Methods: A complete ophthalmologic examination, complete medical work-up, Optical Coherence tomography macula, and Fundus fluorescein angiography were done.

Results: On examination, her right eye visual acuity was 6/24 and Amsler chart drawing revealed wavy lines on the upper central area. Dilated fundus examination revealed marked flame-shaped retinal hemorrhages with cotton wool spot over the inferior macular area bounded inferiorly by inferior arcade and macular thickening. An optical coherence tomography revealed cystoid macular edema; and fundus angiography showed occlusion of a small venous branch draining the inferior part of macula to the inferior temporal venous arcade. A complete medical work-up found that she has hypertension, hypertriglyceridemia, and hypercholesterolemia and she was managed accordingly. She was advised to undergo intravitreal anti-VEGF injection.

Conclusions: In patients with macular BRVO, visual recovery after macular edema resolution is less favorable than in patients with major BRVO because of a higher risk of macular ischemia. Although some patients may recover spontaneously, intravitreal anti-VEGF medication should be considered, especially for patients with poor visual acuity.

Macular and Optic Disc Drusenoid Deposits With Hemifield Defects in a Patient With IgA Nephropathy

*First Author: Priyamvada p **V***

Purpose: To report new OCT and Humphrey field findings.

Methods: A 20-year-female patient reported with blurred vision in right eye for 1 week. The patient admitted for skin rashes, hematuria and pain abdomen 8 months ago. Skin biopsy showed leokocytoclastic vasculitis. Renal biopsy showed glomerular mesangial cell hyperplasia. Prednisolone 50mg/day given and tapered over 8 months. Proteinuria appeared 1 month later. Vision 6/9 in RE and 6/6 in LE with normal color vision. fundus showed signs of early papilledema. OCT showed inferior NRR thinning and disc elevation with parafoveal thickening. Inferior hemifield defect noted more in right eye.

Results: TLC 11720cells/cu mm and ESR 60mm/hr. urine revealed albumin, RBC, pus cells with positive occult stool blood. C3, c4 and ANCA panel negative. USG abdomen showed fatty liver and mesenteric nodes.

Conclusions: Patients with disc and macular drusenoid changes with hemifield defects could be having early fundal signs of IgA nephropathy.

Massive Increase in Subretinal Bleed After Intravitreal Anti-VEGF Injections in Polypoidal Choroidal Vasculopathy

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Purpose: To describe a rare occurrence of repeat massive subretinal bleed in 2 cases of polypoidal choroidal vasculopathy (PCV) within few days of initial treatment with anti-VEGF agents.

Methods: This is a retrospective case series of 2 eyes of 2 patients that presented with complaints of sudden onset loss of vision in one eye. Both were noted to have central submacular bleed that showed presence of “thumb” like pigment epithelial detachment (PED) on optical coherence tomography (OCT) pointing towards a diagnosis of PCV. Coincidentally, both patients were known diabetic and hypertensive for long duration. The first patient received intravitreal bevacizumab 1.25 mg and the second patient received intravitreal Brolucizumab 6 mg along with 0.3 mL 100% C3F8 gas as initial treatment. Both patients presented

three days later with increase in the size of the central scotoma and were noted to have a massive increase in subretinal bleed that went beyond the arcades. The first patient underwent a pars plana vitrectomy, subretinal tissue plasminogen activator (TPA) injection and air and intravitreal SF6 tamponade. The second patient was being closely monitored however he developed a dense vitreous hemorrhage 2 weeks later that required a pars plana vitrectomy, repeat injection of brolucizumab 6 mg and partial intravitreal SF6 tamponade.

Results: Both patients showed displacement of central submacular bleed and gain in visual acuity after surgical intervention.

Conclusions: An increase in subretinal bleeding after intravitreal anti-VEGF therapy is a rare event. However, its occurrence and possible surgical management should be explained to the patient while counseling.

Mystery of Mass-Choroidal Granuloma as First Sign of Disseminated Tuberculosis

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Purpose: To report an interesting case of choroidal granuloma presenting as the first sign of disseminated tuberculosis (TB).

Methods: To present an interventional case report.

Results: A 26-year-old young lady presented with complaints of distortion in superotemporal field of vision in her left eye. She had a 6/6 central vision, quiet anterior chamber and clear vitreous with fundus showing a creamy choroidal mass with subretinal fluid in the inferonasal quadrant. Optical coherence tomography showed a smooth elevated choroidal mass with SRF & contact sign. Lesion on B scan ultrasonography showed medium internal reflectivity with no excavation. Lesion was progressively hyperfluorescent on fundus fluorescein angiography, with margin showing pinpoint leakage. Examination of right eye was normal. Both lung fields showed multiple small non calcified non cavitating nodules. MRI brain showed enhancing lesions in left cerebellum and right frontal lobe and left globe suggestive of multiple brain and choroidal metastasis. PET CT showed hypermetabolic cavitary nodule in upper lobe of left lung with hypermetabolic hilar lymph node and multiple scattered bilateral pulmonary nodules with few brain lesions and thickened choroid in left eye leading to a dilemma between inflammatory granuloma and choroidal metastasis. CT guided biopsy showed organizing pneumonia favoring TB with negative acid-fast bacilli. Patient was started on antitubercular therapy and oral steroids helping in resolution of lesions improving vision with no recurrence on 1-year follow-up.

Conclusions: This case is unique as choroidal granuloma here presented as the first sign of disseminated TB. The meticulous workup has gone an extra mile - histopathological examination helped crack the conundrum of choroidal granuloma masquerading as metastasis.

Nightmares in A Young Girl

*First Author: Abdul **MAIMUNAH***
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Purpose: To report a case of bilateral neuroretinitis with peripapillary serous retinal detachment and subretinal lesions, in a 10-year-old healthy girl.

Methods: A case report is presented.

Results: We report a case of a10-year old girl presented with bilateral visual loss for 2 weeks duration, more severe on her right eye. She experienced of fever prior to the eye symptoms. Parents complained she became so quiet and refused to go to school. She had a closed contact with her father who was confirmed COVID-19 positive one week prior to it. On examination, visual acuity was 6/120 OD and 6/60 OS. Posterior segment examination showed a papilloedema with macular star and peripapillary serous retinal detachment over her right eye. There was no evidence of anterior uveitis or posterior vitreous cells. No evidence of a cranial nerve 6th palsy in either eye. CT scan of brain revealed normal finding. A full workup for infectious disease including COVID-19 were done for the patient. Her results came back as positive IgM and IgG for Bartonella henselae. The patient showed improvement in her visual acuity, and peripapillary serous retinal detachment in response to doxycycline and corticosteroids. The peripapillary serous retinal detachment and macula star resolved within four weeks.

Conclusions: Severe visual loss from Bartonella henselae neuroretinitis can be nightmares to young patient. The disease can be presented with peripapillary serous retinal detachment with subretinal lesions and came with markedly reduced vision in young healthy patient. Significant visual acuity improvement can be achieved with prompt treatment of systemic antibiotics and corticosteroids.

Ocular Parasitic Infestation Secondary to Raw Fish Consumption

*First Author: Yap **JIN YI***
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Purpose: We report a case of ocular parasitic infestation involving anterior chamber and bilateral retina in a patient who enjoys consuming raw fish regularly.

Methods: To present a case report.

Results: We report a healthy 62-year-old gentleman, presented with one-month progressive right eye reduced vision. On examination, his right eye visual acuity was 6/12 and left eye was 6/6. Right eye anterior chamber was quiet but noted two thread-like tapeworms hanging over the pupillary edge at 3 and 5 o'clock. Upon dilated fundus examination, the presence of parasite inferior to the macula was found in both eyes. Optical coherence tomography (OCT) macular showed right eye epiretinal membrane. The left eye OCT macular was normal. There was no intraretinal or subretinal fluid observed in both eyes. Bilateral eyes laser photocoagulation surrounding the parasite was performed. He was started on oral albendazole 400mg once daily for 2 months. Topical steroid 4 times a day over his right eye was prescribed for 2 months as well. He was advised to stop consuming raw fish. After completing the treatment, his vision remained the same. Anterior chamber tapeworms resolved, and no new parasitic lesions were seen in the retina. The epiretinal membrane on the retina persisted, however, patient refused any intervention for now.

Conclusions: One of the risks associated with consuming raw fish is parasitic infestation in the eye. Public education and prompt treatment should be given to prevent blindness that could be resulted from ocular parasitic infestation.

Optical Coherence Tomography Angiography Microvascular Findings in Retinal Vein Occlusion

*First Author: Neenet **EDASSERY***

Purpose: First, to quantify the changes in vessel density of superficial and deep retinal vascular networks. Second, to assess the size of foveal avascular zone (FAZ) at the superficial and deep vascular layers of retina. Third, to compare the changes in vessel density and the area of FAZ with unaffected eye and the unaffected sector of the same eye in patients with branch retinal vein occlusion (BRVO). Fourth, to correlate visual acuity with optical coherence tomography angiography (OCTA) macular indices.

Methods: Fifty-four patients with BRVO were included in the study. OCTA scan slabs were acquired in 6x6 mm cube, and the superficial and deep slabs were analyzed.

Results: First, BRVO eyes had decreased overall vascular densities in both superficial capillary plexus (SCP) and deep capillary plexus (DCP) compared to the fellow eye. Second, the foveal vessel density was relatively less affected. Third, the vessel density in both superficial and deep networks of the affected sector were also decreased compared to the unaffected sector. Fourth, area of FAZ was significantly increased in both superficial and deep vascular networks as compared to that of the fellow eye. Fifth, the LogMAR visual acuity correlated negatively with vessel densities of both SCP and DCP.

Conclusions: Our study demonstrates the utility of OCTA in quantification of vascular density and FAZ area in eyes with BRVO. OCTA allows to detect FAZ enlargement, increased parafoveal capillary nonperfusion, and decreased parafoveal vessel density in eyes with BRVO. Given the non-invasive nature and detailed depth-resolved vascular mapping, OCTA may become a preferred tool for diagnosis and longitudinal evaluation of BRVO.

Outcome of Half-Fluence Photodynamic Therapy for Treatment of Central Serous Chorioretinopathy

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Purpose: To report outcome of half-fluence photodynamic therapy (HF-PDT) in treatment of acute and chronic central serous chorioretinopathy (CSCR).

Methods: A retrospective record review study was conducted among 15 eyes with CSCR that underwent HF-PDT in our center. Patients who presented between year 2016 and 2020 who completed at least 1-year follow-up were included in the study.

Results: There were 15 eyes studied with 13 males (86.7%) and 2 females (13.3%). The patient's age ranges from 33 to 55 years with a mean of 41.1 years. Duration of symptoms ranges from 1 week to 2 years, with average of 5 months. The risk factors identified were smoking (40.0%), stressful nature of work (33.3%) and traditional medications (20.0%). Mean best corrected visual acuity (BCVA) at baseline was 0.56 ± 0.41 logMAR, at 3 months was 0.49 ± 0.45 and at 12 months was 0.40 ± 0.31. There were 15 eyes studied with 13 males (86.7%) and 2 females (13.3%). The patient's age ranges from 33 to 55 years with a mean of 41.1 years. Duration of symptoms ranges from 1 week to 2 years, with an average of 5 months. The risk factors identified were smoking (40.0%), stressful nature of work (33.3%) and traditional medications (20.0%). The mean best corrected visual acuity (BCVA) at baseline was 0.56 ± 0.41 logMAR, at 3 months was 0.49 ± 0.45 and at 12 months was 0.40 ± 0.31. There was improvement in the mean BCVA after 12 months (p-value = 0.017, Wilcoxon test). The mean central retinal thickness (CRT) at baseline was 453 ± 110 µm, at 1 month was 315 ± 122 µm and after 12 months was 275 ± 113 µm. A significant reduction in the mean CRT was observed at end of 12 months follow up (p <0.001, Wilcoxon test). Foveal atrophy was observed in 2 eyes (13.3%) with poor baseline visual acuity resulting in poor visual outcome.

Conclusions: Half-fluence PDT is effective in improvement of BCVA and CRT in the treatment of CSCR. Poor visual acuity at baseline leads to poor visual outcome.

Polypoidal Choroidal Vasculopathy in Sector Retinitis Pigmentosa

First Author: Ramya ***APPANRAJ***
Co-Author(s): Venkatapathy ***NARENDRAN***

Purpose: To present a case of polypoidal choroidal vasculopathy associated with sector retinitis pigmentosa.

Methods: A 63-year-old female presented to the retina clinic with complaints of painless progressive reduction of vision in the left eye (LE) for the past 6 months. On examination her best corrected visual acuity (BCVA) was 20/20 in the right eye (RE) and 20/125 in the LE. Based on fundus examination and multimodal imaging findings, both eyes (BE) were diagnosed to have sector retinitis pigmentosa and an associated active extramacular polypoidal choroidal vasculopathy (PCV) was seen in the LE. Spectral domain optical coherence tomography (SD-OCT) also revealed choroidal thinning in BE.

Results: Patient underwent bevacizumab injection in the LE. At one-month post treatment, her BCVA remained stable in the LE and SD-OCT showed reduction of subretinal fluid and size of the polyp.

Conclusions: This case highlights, PCV a pachychoroid disease, could occur in association with RP, in the setting of thin choroids and multimodal imaging is important to differentiate from CNV.

Population-Based Cohort Study on Correlation of CSC and Subsequent CVDs

First Author: Yen-Bo ***YAO***

Purpose: The aim of the present study was to survey the relationship between central serous chorioretinopathy (CSC) and several cardiovascular diseases (CVDs) with different severities using the National Health Insurance Research Database.

Methods: Subjects with CSC were enrolled according to the relevant diagnostic codes, and an age- and gender-matched population was used as the control group with a 1:4 ratio. The main outcome being considered was the development of CVD after CSC exposure.

Results: A total of 2,865 patients that were diagnosed with CSC were enrolled in the study group, while another 11,460 non-CSC subjects were selected as the control group. There were 171 events of CVD which occurred in the study group, while another 557 cases were found in the control group. No significant differences were observed among the CVD cases between the study and control group, whether they had an acute or chronic form, according to the aHR. In the subgroup analysis, there was a significantly higher risk of CVD development in the male population aged from 40 to 59 years (aHR: 1.351, confidence interval (CI): 1.063–1.716), which was mainly due to the higher risk of mild CVD (aHR: 1.391, CI: 1.062–1.822). On the contrary, there was no significant difference in CVD development in any of the age subgroups of the female population.

Conclusions: In conclusion, the existence of CSC is correlated with a higher rate of chronic CVD occurrence in the middle-aged male population.

Post-COVID Vaccine Retinal Vascular Occlusion – Consequence or Co-incidence?

First Author: Sneha ***BATRA***
Co-Author(s): Deepak ***AGARWAL***

Purpose: There are 47,42,761 lives lost due to the COVID-19 pandemic. COVID vaccine will probably save millions of lives. We report three cases of retinal vascular occlusions after taking COVID vaccine.

Methods: Case 1: A 59-year-old diabetic and hypertensive male presented with dimness of vision (DOV) in RE for 7 days. Patient received Covishield vaccine 8 days before symptom onset. BCVA was 6/9 (RE) and 6/6 (LE). Fundus RE showed central retinal vein occlusion with superior branch retinal artery occlusion. Case 2: 65-year-old diabetic and hypertensive male presented with DOV in LE for 3 days. Patient received Covishield vaccine 5 days before symptom onset. BCVA was 6/9 RE and HMCF (LE). LE IOP was 26 mmHg. LE fundus examination revealed central retinal vein occlusion. Case 3: 86-year-old female presented with sudden onset DOV in RE for 3 days. She had received booster dose of Covishield vaccine 10 days ago. Vision was HM in the RE. Fundus examination showed cilioretinal artery occlusion.

Results: Covishield is a recombinant adenovirus vector encoding the SARS-CoV-2 Spike(S) glycoprotein. This S protein may induce procoagulant response or endothelial cell injury. Causal relationship between vaccine and ocular events is hard to establish.

Conclusions: Cases of retinal vascular occlusion need to be reported after COVID vaccine, and high-risk individuals should be screened.

Purtscher's Retinopathy: A Diagnosis Not to Be Neglected

First Author: Dharshini ***BALASUBARAMANIAM***
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Purpose: Purtscher's retinopathy is a rare retinal angiopathy reported in patients with a history of severe trauma and other systemic diseases. The diagnosis is made on clinical grounds and the severity varies.

Methods: A case report.

Results: A 41-year-old gentleman with underlying poorly controlled diabetes mellitus and dyslipidemia was referred to the ophthalmology department for diabetic retinopathy screening. He denied visual complains. Ocular examination revealed a negative relative afferent pupillary defect with visual acuity

of 6/6 bilaterally. Anterior segment examination was unremarkable. Both eye fundus revealed a pink disc with cup disc ratio of 0.4, and peripapillary flame shape hemorrhages. Right eye also showed multiple cotton wool spots along the superotemporal arcade involving zone 1 and 2 of the retina while left eye showed single cotton wool spot along the superotemporal arcade at zone 1 of the retina. Otherwise, there was no visible retinal emboli, dot hemorrhages or hard exudates and macula was normal. The retinal features were not characteristic of diabetic retinopathy. It mimicked hypertensive retinopathy however patient was normotensive. The absence of inner retinal thickening and hyperreflectivity on optical coherence tomography macula excluded retinal ischemia secondary to retinal vein occlusion. This prompted us to elicit further history and patient disclosed a recent admission for myocardial infarction in which he received cardiopulmonary resuscitation with chest compressions for 7 minutes. Hence, the diagnosis of both eye purtscher's retinopathy was made and patient was monitored closely in the clinic.

Conclusions: Purtscher's retinopathy remains a diagnostic dilemma and should not be neglected in complex clinical contexts.

Retinopathy of Prematurity Screening - A Report From a Tertiary Eye Care Center

*First Author: Shaila **SHARMIN***
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Purpose: To evaluate the incidence and severity of ROP and its association with perinatal risk factors.

Methods: A cross-sectional observational study of infants born ≤ 37 weeks gestational age and birth weight ≤ 2,500 grams, who were screened for ROP between December 2019 to November 2020. ROP screening examination was done with an indirect ophthalmoscope by a trained ophthalmologist. Data regarding demography and risk factors were collected from patient referral notes or from interviewing caregivers.

Results: A total of 428 eyes of 214 infants were screened. The mean gestational age was 33.8 ± 2.43 weeks, and the mean birth weight was 1,590 ± 0.36 grams. The incidence of ROP was 25.47%. The incidence of ROP increased as gestational age and birth weight decreased. Multiple births, oxygen therapy, sepsis, and respiratory distress syndrome had a significant association with ROP.

Conclusions: This is the first study that evaluates the incidence of ROP at the medical retina department of a tertiary eye care center of a developing country and the incidence is not less. So, early prediction with risk factor analysis and appropriate screening can prevent ROP related morbidity and blindness.

Retrospective Cohort Study on Concurrent Injection of DEX Implant and Anti-Angiogenic Agent in Patients with Macular Edema

*First Author: Shih-Hao **TZENG***

Purpose: The purpose of our study is to evaluate the safety and efficiency in patients with macular edema that received a single injection of dexamethasone intravitreal implant (DEX implant) and an anti-angiogenic agent concurrently.

Methods: Medical records from 2012-2016 were reviewed. Patients who received concurrent DEX and ranibizumab injections with a follow-up period of at least three months were enrolled into the study group. An age- and gender-matched population received ranibizumab injections and was set as the control group.

Results: The BCVA (p =.03) and CMT (p <.01) were significantly improved in two months after the simultaneously injections in the study group. The IOP significantly increased two months later but also significantly decreased three months later in the study group (p =.01 and .04, sequentially). For SIOH, one patient in the study group had an elevated IOP of 10mmHg at two months postoperatively. Five patients (38.5%) in the study group received medical treatment that successfully retarded IOP elevation. In the control group, there were no significant fluctuations concerning BCVA, CMT, and IOP and no ocular hypertension was observed. By the inter-group analysis, CMT and BCVA had significantly recovered in the study group than the control group after the follow-up period while the IOP showed higher value in the study group.

Conclusions: Concurrent injection of DEX and ranibizumab is a preliminary method that shows effectiveness in treating ME. Furthermore, safety is also guaranteed with moderate levels of severity and transient IOP elevation. Further large-scale study to evaluate the long-term effect and safety of this combined treatment is mandatory.

Risk of Second Eye Conversion and Recommendations for Monitoring in Patients With Unilateral Neovascular Age Related Macular Degeneration in the Asian Patient

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Purpose: Fellow eye conversion to neovascular age-related macular degeneration (nAMD) in patients with unilateral disease is a devastating consequence and can severely impact quality of life. The optimal monitoring strategy has not been established and routine monitoring may add pressure to healthcare systems. This review aims to summarize current evidence and recommend strategies for the early detection of fellow eye conversion using imaging and new technologies

specifically focusing on the Asian patient.

Methods: A review of the literature on prevalence, incidence, imaging, and monitoring of the fellow eye in nAMD was performed. Recommendations were proposed based on best available evidence.

Results: The incidence of fellow eye conversion is lower in Asian compared to non-Asian populations, due to the differences in phenotypes of AMD. Hence, currently published strategies based on Caucasians populations are less relevant in Asia. As risk factors may differ in different population, the authors recommend risk stratification with appropriate monitoring options. This can be divided into home based or hospital-based strategies for fellow eye surveillance.

Conclusions: Appropriate risk stratification and monitoring strategies of the fellow eye in patients with unilateral nAMD is crucial in preventing vision loss and maintain quality of life. Patients should have initial risk assessed and follow up monitoring can either be home based or hospital based.

Role of Blood Cells Associated Inflammatory Indices in Early Screening of Diabetic Retinopathy

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Purpose: To assess the role of inflammation in the pathogenesis of diabetic retinopathy using the neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), and mean platelet volume (MPV).

Methods: A cross-sectional study was conducted among 60 patients with definite diagnosis of type 2 DM attending Ophthalmology OPD of a tertiary care hospital. We obtained blood samples from all patients who participated in the study to investigate these parameters.

Results: A total of 60 subjects were included in this study: 30 in the DR group and 30 in the NDR group. The mean NLR, PLR, and MPV levels were higher in DR group than in NDR group (NLR: 2.49 + 0.82 in DR group versus 1.94+0.75 in NDR group, p = 0.003; PLR: 114.88 + 5.48 in DR group versus 104.5 + 6.73 in NDR group, p = 0.01; MPV: 11.08 + 1.21 in DR group versus 9.92 + 1.62 in NDR group, p = 0.003).

Conclusions: The higher NLR, PLR, and MPV levels found in patients with DR may indicate that subclinical systemic inflammation may be associated with DR.

Role of Intravitreal Triamcinolone Acetonide for Hypertensive Retinopathy-Related Macular Edema

*First Author: Chitaranjan Mishra **MISHRA***
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Purpose: To study the role of intravitreal triamcinolone acetonide (IVTA) for hypertensive retinopathy (HTR)-related macular edema (ME).

Methods: A hospital-based retrospective interventional comparative study. Ninteen patients with 37 eyes having HTR and ME were included. Eight (15 eyes) and 11 (22 eyes) patients were segregated into treatment (IVTA injection OU at an interval of 3 days + control of hypertension) and control group (control of hypertension) respectively. Concurrent other retinopathy (e.g., diabetic retinopathy), loss of follow-up, and poor OCT image quality were excluded from the study. The ophthalmic investigation included vision, intraocular pressure, fundus examination, grade of HTR, and OCT macula. Data was documented initial visit, 1 month, and 3 months.

Results: There was no difference in the CFT between the treatment and control groups at 1 month. However, the CFT was lower in the treatment group (median 152, IQR 130-205) than in the control group (median 207.5, IQR 165-227) p =0.021 at 3 months. Compared to the baseline, there was an improvement in the vision in follow-up 3 months, which was significant both in the treatment (6/60 to 6/12) and the control groups (6/15 to 6/9). p =0.014 and p =0. 004.The overall increase in the vision taking all the eyes was significant. p <0.001.

Conclusions: A decrease in the CFT and an increase in the vision occurred in both groups at 1 month and 3 months. IVTA resulted in a lesser CFT than the control arm at 3 months.

Same-Day Bilateral Intravitreal Dexamethasone Implants for Treatment of Diabetic Macular Edema

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Purpose: To evaluate the outcomes and complications associated with the use of same-day bilateral intravitreal dexamethasone (DEX) implants for the treatment of diabetic macular edema (DME).

Methods: This retrospective analysis of an open-label, multicenter, consecutive case series included 130 eyes of 65 patients with bilateral DME who were treated with intravitreal DEX implants. The patients were divided into two groups: a control group (comprising 40 eyes treated with an alternating unilateral regimen) and a study group (comprising 90 eyes treated with concomitant bilateral DEX implants). All patients were followed up monthly after implantation. The changes in best-corrected visual acuity (BCVA) and central retinal

thickness (CRT) from the baseline to the third month after implantation, and ocular adverse effects such as intraocular pressure (IOP), cataract, and tolerability of bilateral implantation were reviewed.

Results: After 3 months of the implantation, the mean BCVA increased, and CRT decreased in both groups. Moreover, no serious ocular adverse effects were observed. In addition, no differences were observed between the two groups in the number of patients who required extra follow-up visits, or the number of extra visits made in addition to the treatment schedule.

Conclusions: Same-day bilateral intravitreal DEX implants are associated with a low complication rate and are well tolerated by patients. This safe practice may reduce the burden on both the health-care system and patients, when it is used to treat bilateral DME in the era of COVID-19 pandemic.

Solar Eclipse Induced Retinopathy: A Case Report

*First Author: Shally **BISWAS***

Purpose: To report a case of solar eclipse induced retinopathy.

Methods: A 19-year old male presented to Chittagong Eye Infirmary and Training Complex with a 4-day history of bilateral central scotoma following 10-15 minutes of direct sun-gazing during the solar eclipse on December 26, 2019. On general examination, he was of normal built and height for his age. Upon ocular examination, his BCVA was 6/9 in both eyes. Slit-lamp microscopic examination showed clear cornea in both eyes. Pupils of both eyes were round, regular and reacting. Lens was clear in both eyes. Fundus examination revealed discrete yellow lesions at the fovea of both eyes. Optical coherence tomography scanning showed corresponding retinal pigment epithelial defects in both eyes.

Results: The patient was managed conservatively with regular follow-up and counseling was done regarding guarded visual prognosis.

Conclusions: Observing a solar eclipse directly can cause permanent eye damage, hence, public awareness of the dangers should be encouraged.

Spontaneously Resolving Choroidal Granuloma

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Purpose: To present an unusual case of spontaneously resolving choroidal granuloma.

Methods: We present a case of a choroidal tubercular granuloma which showed spontaneous resolution without any active treatment.

Results: A 32-year-old male presented with left eye photopsia and diminution of vision for 1 week. On examination, visual acuity was counting fingers at 1 meter in the left eye. The posterior segment had a localized choroidal granuloma with subretinal fluid and few specks of retinal hemorrhage. After considering the serological investigations it was diagnosed as choroidal tubercular granuloma. However, in the meantime, the granuloma showed considerable resolution with the best corrected visual acuity improving to 6/24 and thus it was decided to observe the patient instead of seeking active treatment.

Conclusions: In general, choroidal granulomas need prompt work-up so as to initiate the appropriate treatment in time to prevent permanent vision loss. However, in certain cases, spontaneous resolution of the granuloma can be observed with time.

Sudden Aggravation of Polypoidal Choroidal Vasculopathy After Intravitreal Injection of Brolucizumab

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Purpose: To report a case of sudden aggravation of polypoidal choroidal vasculopathy (PCV) after intravitreal injection of brolucizumab.

Methods: A 84-year-old man was receiving anti-vascular endothelial growth factor (VEGF) agents for treatment of PCV in his right eye. He had repeated intravitreal injections of bevacizumab and aflibercept for refractory PCV which was unresponsive to the anti-VEGF agents. The anti-VEGF agent was then switched to brolucizumab. Ten weeks after the first injection of brolucizumab, the size of the pigment epithelial detachment (PED) was significantly reduced on optical coherence tomography (OCT) and the patient›s response to treatment seemed favorable. 4 weeks later, the size of PED was increased to receive a second injection of brolucizumab. 4 weeks after the second injection of brolucizumab, subretinal hemorrhage (SRH) at the initial PED site was noticed. 8 weeks after the second treatment, newly developed huge PED with massive SRH nearby the initial PED lesion was noticed. The patient received a third injection of brolucizumab and 4 weeks later, his visual acuity had dropped to hand movement due to progression of vitreous hemorrhage in his right eye.

Results: Pars plana vitrectomy was performed in his right eye to restore his vision and additional injections of brolucizumab was performed since PCV was refractory to other anti-VEGF agents.

Conclusions: Brolucizmab is reported to be a better treatment option in PCV cases, but careful monitoring would be necessary since complications of sudden aggravation of PCV may also be possible.

Terson Syndrome in Traumatic Head Injury: A Case Report

*First Author: Tsania **RAHAYU***
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Purpose: To present the case of Terson Syndrome associated with traumatic head injury.

Methods: A case report is presented.

Results: A 51-year-old man was hit by a car while walking. The mechanism of the accident was unknown. He was unconscious after the accident. He had a traumatic head injury and a leg fracture. The Glasgow Coma Scale (GCS) was E3M4V3, but the vital signs were within the normal limit. The ocular examination revealed anisocoria pupil, dilated pupil of the left eye with no light reflex and no consensual reflex. The fundoscopy examination of both eyes showed vitreous hemorrhage, preretinal hemorrhage around the optic nerve head, decreased macular reflex, and the other details were difficult to evaluate. The brain CT scan showed contusio cerebri with subdural hemorrhage, subarachnoid hemorrhage, and subfalcine herniation. Due to the worsening of brain hemorrhage, the patient underwent an emergency decompressive craniectomy. Two months after the surgery, the patient was still under sedation and supported by a ventilator. The visual acuity examination was still difficult to evaluate. On the other hand, the vitreous and preretinal hemorrhage had already subsided.

Conclusions: As the prognostic factor, it is important to recognize Terson Syndrome in case of traumatic head injury.

Therapeutic Dilemma of Juxtapapillary Retinal Capillary Haemangioma

*First Author: Nurul Munirah **MOHAMAD***
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Purpose: To report a case of juxtapapillary retinal capillary hemangioma with a therapeutic dilemma in a healthy middle-aged gentleman leading to significant visual impairment.

Methods: To present a case report.

Results: A 50-year-old Malay gentleman with underlying diabetes mellitus presented with his left eye (LE) non-progressive superior visual field defect for 3 months. Visual acuity at the presentation on the right eye was 6/9 and LE 3/60 pin hole 6/60, with positive relative afferent pupillary defect. LE anterior segment examination was unremarkable and dilated fundoscopy showed focal, raised reddish mass adjacent nasal to optic disc measuring a size of 2-disc diameter and a large amount of exudate in the macula. No other hemangiomatous lesions were presented elsewhere. Optical coherence tomography (OCT) macula showed the presence of cystoid macula edema. Fundus fluorescence angiography (FFA) of LE showed short feeder vessels and draining vessels from the lesion with adjacent small vessel vasculitis, and late leakage from the lesion. Otherwise, no peripheral capillary falls out, vasculitis or choroiditis. Other systemic workups included CT brain, Mantoux test, and normal urine and blood analysis. The patient proceeded with photodynamic therapy (PDT) laser and serial intravitreal ranibizumab injection. Despite all the management, his vision continues to worsen.

Conclusions: Juxtapapillary retinal capillary hemangioma (JRCH) is a rare variant of retinal capillary hemangioma. This report describes a case of JCH that posed a therapeutic dilemma and challenges which lead to significant visual impairment.

To Study Correlation Between the Severity of Diabetic Retinopathy With Control and Duration of Diabetes

*First Author: Anurag **NARULA***
*Co-Author(s): Shilpa **SINGH***

Purpose: First, to study correlation between the severity of diabetic retinopathy and control of diabetes. Second, to study correlation between the severity of diabetic retinopathy and duration of diabetes.

Methods: A total of 1,200 patients with diabetes mellitus attending the diabetic clinic in medicine and retina clinic in ophthalmology were enrolled in the study. A detailed fundus examination was performed wherever possible under full mydriasis by direct and in direct ophthalmoscope. All definitive sign and pathology in fundoscopy that affects visual function was observed.

Results: Statistical methods concluded that diabetic retinopathy was more likely to occur in uncontrolled rather than controlled diabetics and the severity of retinopathy is more in the uncontrolled diabetics. Out of 982 controlled diabetics 82.18% had no retinopathy compared to just 16.51% of uncontrolled diabetics who had no retinopathy. Occurrence of moderate and severe diabetic retinopathy was significantly higher in uncontrolled diabetics, 43.12% and 20.64%, respectively as compared with 5.29% and 2.14% in controlled diabetics. All 10 cases of proliferative retinopathy were found in uncontrolled diabetics. Though no studies are available showing correlation of diabetic retinopathy with control of diabetes in North Indian population few international and studies done in south India are available.

Conclusions: The need of the hour is therefore to control diabetes with appropriate treatment as early as possible. Also patients with longer duration of diabetes require appropriate treatment and regular examination to prevent and detect retinopathy at the earliest so that morbidity related to it can be avoided/managed at the earliest and in the most appropriate way.

To Study Visual Outcome in Patients With Diabetic Retinopathy Post Retinal Laser Photocoagulation

*First Author: Drushya **REDDY***

Purpose: To report the visual outcome in patients with diabetic retinopathy post retinal laser photocoagulation.

Methods: A pool of 100 patients (100 eyes), known cases of type 2 diabetes mellitus, willing to undergo laser therapy, over a period of 1 year (observational longitudinal study), subjected to retinal laser were enrolled in the study. Visual acuity was recorded by Snellen›s chart (best corrected visual acuity) post laser therapy at 1 week, 3 weeks and 6 weeks. Visual outcome under subgroups like baseline vision (<6/60-6/60,6/36-6/18,6/12-6/6), type of retinal photocoagulation (focal, grid, panretinal, and combination), duration of diabetes mellitus, were also studied.

Results: Pearson's ChiSquare test was used. Probability of < 0.05 is statistically significant, with 33.33%, 29.82%, 15.15 % eyes improved in < 5 years, 6-10 years, 11 to 15 years duration respectively. Relation found to be non-significant (p > 0.05) with 70.83% and 75.56% of eyes in patients undergoing Panretinal photocoagulation and combined procedure (Focal + Mac Grid/ PRP + Mac Grid) respectively, which showed no change in maintaining the pre-laser vision. Comparison of baseline with final visual outcome showed statistical significance (p < 0.05). The eyes with baseline visual acuity of ≤ 6/60, 20.97% showed improvement,79.03% eyes showed no change, association being statistically significant.

Conclusions: Retinal laser photocoagulation stands to be the "gold standard" in the treatment of patients with diabetic retinopathy. No association was found between final visual outcome and duration of diabetes mellitus. Statistically significant association was found between the final and baseline visual outcome, as well as between retinal visual outcome and the type of retinal laser. Worsening of visual acuity being attributed to natural progression of disease course or complication of laser.

Treatment Outcome of Intravitreal Ranibizumab Injection in Myopic Choroidal Neovascularization: A Case Series From a Tertiary Referral Center

*First Author: Choon Khim **TEH***
*Co-Author(s): Roslin Azni **ABDUL AZIZ**, Liza Sharmini **AHMAD TAJUDIN**, Nor Fariza **NGAH**, Shelina **OLI MOHAMED**, Khay Wei **POH***

Purpose: To evaluate the mean changes of best corrected visual acuity (BCVA) and central retinal thickness (CRT) from baseline and at month 12 in patient with myopic choroidal neovascularization (CNV) and the total number of intravitreal ranibizumab injection given to stabilize the disease.

Methods: A total of 14 eyes of 14 patients with untreated myopic CNV, were retrospectively recruited from January 2018 to December 2020. They were treated with pro-re-nata regime of intravitreal injection of ranibizumab 0.5 mg. The changes of BCVA and CRT from baseline were the main outcome measures.

Results: The mean age of patients was 42.6 ± 18.5 years old, and the mean refractive error was -6.8 ± 1.0 diopters. The mean logMAR BCVA at presentation was 1.0 ± 0.2 while at month 12 was 0.5 ± 0.1. The mean CRT on SD-OCT reduced from 388.9 ± 25.6 at presentation to 301.4 ± 17.8 at month 12. There was significant improvement of BVCA and CRT at the study end point (p = 0.017, p = 0.0013, respectively). The mean number of intravitreal ranibizumab injection required within 12 months was 2 ± 1. 12 patients showed resolution of disease after 1-2 intravitreal ranibizumab injections within 3 months while 2 patients had recurrence of disease.

Conclusions: Ranibizumab as a first line therapy has been shown to be an effective treatment modality to improve the visual acuity and reduce CRT thickness in patients with myopic CNV.

Utility of Humphrey 24–2C Faster Visual Field Exam in Diagnosis of Hydroxychloroquine Retinopathy in South Korean Population

*First Author: Hae Min **PARK***
*Co-Author(s): Seong Joon **AHN***

Purpose: To investigate diagnostic ability and patterns of SITA 24-2C faster with hydroxychloroquine retinopathy screening patients.

Methods: Patients were screened for hydroxychloroquine retinopathy using optical coherence tomography (OCT), fundus autofluorescence (FAF), Humphrey VF tests. Standard automated perimetry (SAP) was performed by SITA 24-2C faster strategy, and diagnosis of hydroxychloroquine retinopathy was made based on characteristic OCT findings, as confirmed by corresponding FAF. Sensitivity, specificity and patterns of VF defects in SITA 24-2C faster were analyzed, and were compared with traditional VF strategies (10-2, 30-2).

Results: Eyes with hydroxychloroquine retinopathy generally exhibited specific scotoma patterns; however, early cases demonstrated nonpatterned or no scotoma more frequently than advanced cases. The most common VF defect patterns were parafoveal ring scotoma in patients with hydroxychloroquine retinopathy in all VF strategies. Diagnostic ability of 24-2C faster was comparable to that of traditional testing strategies (10-2, 30-2).

Conclusions: Our results suggest nonpatterned VF patterns can be the earliest VF finding in early

hydroxychloroquine retinopathy. For earlier detection, even a nonpatterned VF defect should be interpreted cautiously, and an appropriate VF strategy should be carefully selected in accordance with retinopathy patterns for effective screening of hydroxychloroquine retinopathy.

VKH Syndrome: A Pandora's box!

*First Author: Yogya **REDDY***
*Co-Author(s): Varshav **GORE**, Ayushi **OJHA***

Purpose: To describe 4 cases who presented with different clinical backgrounds and were diagnosed as VKH syndrome on examination and to highlight the variable etiology of VKH syndrome.

Methods: All the 4 patients presented to the OPD with variable complaints. First case was a 34y, M presented with a 3-month history of DOV with headache and tinnitus. Second case was a 21y, F presented with a 1 day history of sudden DOV associated with headache on day 2 post LSCS. Third case was a 45y, F who presented to us with a history of left sided temporal headache and giddiness for 3 days followed by sudden and painful diminution of vision in left eye. Fourth case was a 30 yr/F, who presented to us 7 days post vaccination with a 5-day history of sudden diminution of vision in both eyes. All the patients had signs suggestive of complete or partial VKH syndrome regardless of the variable presenting complaints and history.

Results: None of the patients had any underlying systemic disease. On examination, all the patients had signs of choroidal detachment and exudative retinal detachment in addition to anterior segment signs which was also confirmed on OCT.

Conclusions: This case series throws light on variable etiology and multisystem involvement of VKH syndrome. VKH syndrome should be considered as an important differential diagnosis in all patients' presenting with sudden blurring of vision with headache.

Vascular Retinal Pathology in Women After Preeclampsia and in Its Combination With Chronic Arterial Hypertension

*First Author: Oleg **KOLENKO***
*Co-Author(s): Evgenii **SOROKIN***

Purpose: To study the frequency and structure of vascular retinal pathology (VRP) in women after preeclampsia (PE) and in its combination with chronic arterial hypertension.

Methods: VRP was examined in 231 women (mean age 39 ± 6.2 years) after 6–12 years after childbirth. Forty-seven people were in the first main group - PE against the background of chronic hypertension. Forty-eight people were in the second main group – pregnancy complicated by PE. Fifty people were in the first comparison group – pregnancy complicated by gestational hypertension. Thirty-six people were in the second comparison group – edema and proteinuria without hypertension. The control group had 50 women with physiological pregnancy. The formation of VRP in 19 out of 28 women in the general population occurred at the age of 38–40 years (68%).

Results: Frequency of VRP in the first and second main groups was the highest - 21% and 25% (10 and 12 women, respectively). In the first main group: 6 people – occlusion of the branch of central retinal vein (OBCRV), 3 people – OBCRV was complicated by proliferative retinopathy, 1 woman – occlusion of the central retinal artery. In the second main group: 7 people – OBCRV, 5 women – OBCRV, were complicated by proliferative retinopathy. In the control group, the first and second comparison groups – there were 2 cases of OBCRV.

Conclusions: Indicators of VRP in first and second main groups were statistically significantly higher relative to control group, the first and second comparison groups ($p < 0.01$). Priority role of PE and PE due to chronic hypertension was identified in VRP formation in long-term postnatal period.

Retina (Surgical)

25-Gauge Pars Plana Vitrectomy, Gas Tamponade, Supine Postoperative Positioning for Simple Rhegmatogenous Retinal Detachment

*First Author: Ruchir **TEWARI***

Purpose: To describe the results of 25-gauge pars plana vitrectomy, 100% pure gas tamponade and supine postoperative positioning in cases with simple rhegmatogenous retinal detachment (PVR < C).

Methods: The study was conducted at a tertiary eye care institute in north India. Retrospective data was collected from consecutive cases of retinal detachment, operated between January 2021 to December 2021. A total of 40 patients (42 eyes) with simple rhegmatogenous retinal detachment.

Results: The final retinal reattachment rate was 97.6% (41/42 eyes) after single surgery and 100% after repeat surgeries with postoperative visual gain in all cases. No patients suffered from any sight-threatening complications. Of the 12 phakic eyes, 8 were documented to have a cataract during their six-month postoperative follow-up. Eight patients were documented to have increased intraocular pressure, which was controllable during the early postoperative days with medications. One patient developed an early postoperative vitreous hemorrhage that did not require any intervention. No patient reported any discomfort while maintaining a postoperative position.

Conclusions: The 25-gauge vitrectomy, pure gas tamponade, and supine position is effective for managing simple rhegmatogenous retinal detachment albeit with significant cataract progression in phakic eyes.

A Case of Silicon Oil Opacification: A Rare Complication Following Prolonged Oil Retention

*First Author: Parshant **SINGLA***
*Co-Author(s): Ashish **MARKAN**, Ramandeep **SINGH***

Purpose: A 24-year-old male presented to with DOV in left eye (LE) from last 2 years. He had history of coloboma retinal detachment for which he underwent LE PPV with silicon oil (SO) tamponade 4 years back. Fundus examination revealed dense oil opacification with no view of retina. He was planned for SO removal and SO chemical analysis.

Methods: Apart from the removed oil (sample 1), normal SO and emulsified SO were sent as controls. All oil samples were subjected to Fourier Transform Infrared Spectroscopy (FTIR), Thermogravimetric analysis (TGA) and mass spectrometry analysis to ascertain the cause of oil opacification.

Results: FTIR analysis was carried out in the range of 4,000 cm-1 to 450 cm-1. The pure and emulsified oil samples showed a typical spectrum of oil composition, i.e. polydimethyl siloxane (PDMS), without any impurities. However, sample 1 showed some additional peaks at 3758 and 3702 cm-1 indicating the presence of the Si-OH group, which was further supported on TGA. Lastly, the samples were subjected to advanced high-resolution mass spectrometer to investigate the reason for extra functional groups found on FTIR analysis. Opacified oil sample showed four extra peaks at m/z 289, 235, 140 and 86, which corresponded to presence of Lidocaine and Bupivacaine.

Conclusions: We report a very rare complication with prolonged oil retention leading to oil opacification. Opacification of the oil is primarily attributed to Si-OH bonds due to prolonged contact with the aqueous humor. Additionally, presence of lidocaine and bupivacaine acted as impurities resuting in oil opacification.

Amniotic Membrane Versus Posterior Lens Capsule in Managing Refractory Macular Hole

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Purpose: We report the surgical techniques and outcome of two refractory full thickness macular holes (MH) treated with an amniotic membrane and posterior lens capsule respectively in a Malaysian center.

Methods: Case series

Results: Case 1: A 68-year-old pseudophakic gentleman presented with refractory MH after a standard vitrectomy and inverted internal limiting membrane (ILM) peeling with gas tamponade. A posterior lens capsular free graft was harvested and placed over the macular hole under heavy liquid. Autologous blood was then placed on the posterior lens capsule graft under gas tamponade. 3-months after surgery, optical coherence tomography (OCT) revealed closure of the MH. The flap was visible on OCT and had closed the MH with best-corrected visual acuity (BCVA) improving from counting finger preoperatively to 5/60 postoperatively. Case 2: A 60-year-old pseudophakic lady with high myopia presented with left eye refractory MH. She also underwent a standard vitrectomy and inverted ILM flap with gas tamponade which failed to close the MH. A different surgical technique was then employed whereby an amniotic membrane graft was placed over the macular hole. Autologous blood was subsequently used as an adhesive to fix the free flap. A review 2-months post operation revealed successful anatomical closure of the MH with BCVA of 6/60 preoperatively to 6/24 postoperatively. OCT revealed subfoveal lucency with visible amniotic membrane lying on the surface of MH.

Conclusions: Both techniques are effective for the closure of refractory MH. Modifications of conventional techniques have led to increase in successful hole closure rates.

Analysis of Peripapillary Retinal Nerve Fiber Layer Changes Post-Retinal Detachment Surgery

*First Author: Femin **TIDE***

Purpose: To analyze peripapillary retinal nerve fiber layer (RNFL) thickness following successful pars plana vitrectomy surgery with silicone oil tamponade by using OCT ONH RNFL. Secondary objective: first, to compare RNFL thickness with the fellow eye; second, to evaluate the RNFL changes during a follow-up period of 1 week and 3 months post-silicone oil removal (SOR).

Methods: It was a prospective observational study with a sample size of 36 patients. Patients underwent OCT ONH RNFL cube analysis at 1 week and 3 months post-SOR. Similar examinations were performed for the fellow eye.

Results: The mean RNFL thickness in the normal eye was 87.67+_11.67. The mean RNFL thickness of the RRD eye was 93.39+_9.34 at the 1 week and 94.64+_9.84 at the 3-month post-SOR visits.

Conclusions: There is an increase in RNFL thickness compared to the normal eye during the 1-week and the third month visits post-SOR. We could conclude that the peripapillary RNFL was significantly thicker in the RD eye post PPV using silicone oil tamponade

compared with fellow unoperated eyes.

Clinical Outcomes of Complex RRD Treated with Beveled-Tip Cutter Probe

*First Author: Chunhui **JIANG***
*Co-Author(s): Ruiping **GU***

Purpose: To investigate the clinical outcomes when a 25-gauge, 10,000 cuts-per-minute (cpm), beveled-tip cutter probe (BTCP) was used to treat complex rhegmatogenous retinal detachment (RRD).

Methods: The final visual and anatomic outcomes of a prospective case series of 60 eyes that underwent primary pars plana vitrectomy (PPV) for complex RRD between March and October 2021 were recorded and analyzed.

Results: Sixty patients (25 females) with primary complex RRD were included. The mean total surgical time was 59.22 ± 14.85 min, the mean core vitrectomy time was 0.99 ± 0.25 min, the mean peripheral vitreous shaving time was 22.02 ± 9.69 min, and the average number of surgical steps was 5.22 ± 1.17. Iatrogenic breaks occurred in 15 eyes. Silicone oil was used as tamponade in 55 eyes, and air was used in 5 eyes. The total surgical time correlated with the severity of PVR ($p < 0.05$). Iatrogenic breaks were detected in eyes with severe PVR and those that underwent longer operations. The intraocular pressure (IOP) was high in 19 eyes postoperatively, and redetachment occurred in 6 eyes, which were retreated. After a mean follow-up period of 6.31 ± 2.24 months, the retina was attached in all 60 eyes (including 13 still with silicone oil tamponades). The best correct visual acuity (BCVA) improved from the preoperative level ($p < 0.001$) in all eyes.

Conclusions: The primary results demonstrate that 10,000 cpm BTCP is safe and effective for complex RRD surgery.

Clinical and Therapeutic Aspects of Maculopathy Associated With Optic Disc Pit: A Case Report, Literature Review

*First Author: Chenda **KIM***
*Co-Author(s): Piseth **KONG**, Un **LENG***

Purpose: To report the clinical and management outcomes of unilateral optic disc pit involved with maculopathy (ODP-M) on the early 3rd - decade woman.

Methods: A 33-years-old female experienced with right eye blurry of vision for four months. Amsler's grid test revealed metamorphopsia. The fundus examination showed a pit at the optic nerve head margin's temporal side with a well-demarcated circular ring reflex at the macula. Optical Coherence Tomography (OCT) demonstrated subretinal-filled fluid, retinoschisis along with serous macular detachment. Thus, the surgical approach has been made purposely to resolve the patient's vision.

Results: Optic Disc Pit-Maculopathy (ODP-M) was reported. Postoperatively, the vision had improved, negative of metamorphopsia and the macular was flat.

Conclusions: Optic disc pit maculopathy encompasses retinoschisis and serous macular detachment. There is no guideline reported on the management of ODP-M. However, various techniques have been approved. Since this surgical technique has achieved the optimal outcome and anatomically restored structure.

Comparing Outcome of Scleral Buckling Alone and Combined Band Buckle With Pars Plana Vitrectomy for Treatment of Rhegmatogenous Retinal Detachment With Inferior Retinal Breaks

*First Author: Aparajita **RAIHAN***
*Co-Author(s): Shally **BISWAS***

Purpose: To compare the anatomic and visual outcomes of scleral buckling (SB) alone and combined band buckle (BB) with Pars Plana Vitrectomy (PPV) for the treatment of rhegmatogenous retinal detachment (RRD) with inferior Retinal break.

Methods: A prospective, non-randomized, comparative, and interventional study was conducted on 90 patients of RRD with inferior Retinal break. Treated with Scleral Buckling and combined Band Buckle with Pars Plana Vitrectomy. Best corrected visual acuity (BCVA) on Log MAR, intraocular pressure in mmHg and anatomical outcome was assessed by reattachment of retina by indirect ophthalmoscopy in each visit.

Results: A total of 90 eyes of 90 patients were included in this study. The primary anatomic success rate was 85.7% in group A and 97.6% in group B. Statistical analysis demonstrate a significant difference between the 2 techniques in terms of anatomic success or achieving a Log Mar BCVA of 0.86 ± 0.49 or better at final follow up. Patients with multiple breaks in 2 or more quadrants with inferior breaks were more likely to undergo SB/PPV, whereas patients with breaks confined to 1 quadrant were more likely to undergo SB.

Conclusions: There was significant improvement in mean BCVA and anatomical outcome within the group in each follow-up. At final follow-up, Combination of BB and PPV shows better improvement.

Correlation of Macular Perfusion With Visual Outcomes Post-retinal Detachment Surgery

*First Author: Femin **TIDE***

Purpose: To present the correlation of macular perfusion changes post-retinal detachment surgery with visual outcomes using OCTA. To evaluate the difference in macular perfusion with the fellow normal eye. To evaluate changes in the indices during the

follow up period of 3 months.

Methods: Prospective observational study with sample size of 36 patients was adopted. Patients undergoing PPV with gas tamponade for macula off rhegmatogenous retinal detachment (RRD) were included. The first assessment was performed following complete disappearance of gas for best corrected visual acuity for distance, intraocular pressure. 6x6 mm OCTA scans of retina centered on the fovea was done at 1 month and 3 months post-surgery.

Results: There were 22 males and 14 females. LogMAR BCVA in RRD eye at 1 month follow-up was significantly less compared to normal eye. During the follow-up period there was a significant improvement in visual acuity in the RRD eye. Superficial perfusion density was lower in RD eye compared to normal eyes. The perfusion density in deep capillary plexus was less compared to normal eye and was statistically significant.

Conclusions: After successful anatomical repair of RD, the microvascular change is a major factor in determining the visual outcome. Statistically significant reduction in perfusion density of deep capillary plexus. Worse visual outcomes were noted in eyes that had reduced perfusion density in deep capillary plexus. Only a small reduction in perfusion density of superficial capillary plexus which did not reach statistical significance. Positive statistical correlation between final BCVA and perfusion density of superficial and deep capillary plexus.

Effect of Mean Ocular Perfusion Pressure During Pars Plana Vitrectomy on Foveal Avascular Zone in Successful Rhegmatogenous Retinal Detachment Repair

*First Author: Amer **AWAN***
*Co-Author(s): Farooq **AFZAL**, Fiza **SHAHEEN***

Purpose: To measure mean ocular perfusion pressure (MOPP) during pars plana vitrectomy (PPV) and correlate it with the postoperative foveal avascular zone (FAZ) changes using optical coherence tomography angiography (OCT-A) in successful rhegmatogenous retinal detachment (RRD) repair using gas tamponade.

Methods: A prospective case-control pilot study, conducted from April 2020 to December 2020. Patients with unilateral primary, noncomplicated RRD planned for PPV with gas tamponade were included. Patients who had a successful RRD repair with a single procedure (PPV) then underwent OCT-A for FAZ measurement after complete absorption of the respective gas. A single masked OCT-A grader manually measured FAZ diameter and area.

Results: Mean MOPP was calculated to be 54.6 ± 5.58 mmHg. OCT-A of eight patients after the successful RRD repair revealed a statistically insignificant difference in both the mean superficial FAZ area [Cases: 0.374 ± 0.158; Controls: 0.297 ± 0.083 mm2; (p = 0.2)] as well as mean deep FAZ area [Cases: 0.557 ± 0.309; Controls: 0.428 ± 0.245 mm2; (p = 0.3)]. The per-operative MOPP had a moderate negative correlation with the post-operative deep FAZ area (Pearson correlation coefficient = -6.87, p = 0.03) while with the superficial FAZ area, the correlation was statistically insignificant (Pearson correlation coefficient = -5.23, p = 0.09).

Conclusions: The per-operative MOPP had a moderate negative correlation with the post-operative deep FAZ area. Our study adds this unique correlation in PPV surgery to be wary of fluctuations of the infusion pressures per-operatively and keenly observe the systemic BP.

Evaluation of Minimally Invasive Vitrectomy for Treatment of Severe PDR With Advanced Ultravit Beveled Probe: An Exploratory Pilot Study

*First Author: Xiao-Rong **LI***
*Co-Author(s): Jingjie **LIU**, Yan **SHAO***

Purpose: To describe a novel minimally invasive vitrectomy for complicated proliferative diabetic retinopathy (PDR) by using Advanced ULTRAVIT® 27-gauge probe and determine the short-term efficacy and safety.

Methods: A prospective observational descriptive case series study was designed. Patients who had proliferative diabetic retinopathy with traction retinal detachment were enrolled in the study. All of them underwent minimally invasive vitrectomy and proliferative membrane peeling with the beveled probe. The primary outcome measures included the number of ancillary instruments used, the rate of peeling membrane, and intraoperative complications. Secondary outcomes included postoperative best corrected visual acuity (BCVA), intraocular pressure, and postoperative complications.

Results: Twenty-six eyes were enrolled. Seven eyes were followed up for 6 months, 11 eyes for 3 months, and 8 eyes for 1 month. The average rate of peeling membrane was 2.64 ± 2.33 times optic disc area per minute. There were 10 cases replaced probes with ancillary instruments (38.5%) and 9 cases formed latrogenic retinal hole (34.6%) in surgery. The mean preoperative BCVA was 1.26 ± 0.76 logMAR. The postoperative BCVA at 1, 3 and 6 months was 1.30 ± 0.47 logMAR (p =0.858), 0.88 ± 0.95 logMAR (p =0.028) and 1.04 ± 0.57 logMAR (p =0.045) respectively. One had high ocular pressure in the first month, which was normalized after 3 months. A case had postoperative vitreous hemorrhage (3.85%) and received vitreous lavage.

Conclusions: The Advanced ULTRAVIT® 27-gauge probe offers an efficient and safe treatment for patients with severe proliferative diabetic retinopathy. However, the

number of cases and follow-up time are limited, so we will continue to observe these patients in clinic.

Final Outcome of Recurrent Rhegmatogenous Retinal Detachment in Hospital Selayang

*First Author: Alisa **KOH***

Purpose: To evaluate the anatomical and functional visual outcome of recurrent rhegmatogenous retinal detachment (re-RRD) following pars plana vitrectomy.

Methods: A retrospective analysis was performed on 124 primary rhegmatogenous retinal detachment (RRD) cases with re-RRD. The patients' demographic, baseline clinical characteristics at presentation of primary RRD and clinico-surgical parameters pre and post re-RRD were recorded. The final outcomes were analysed in association with the risk factors of re-RRD.

Results: The anatomical success rate post re-RRD surgeries was 38.7%. The better final Best Corrective Visual Acuity (BCVA) (logMAR) post re-RRD surgery [OR=0.07(95%CI=0.01,0.55)] (p <0.001) was statistically significant towards anatomical success. Anatomical success [OR=8.75(95%CI=2.89,26.52)] (p <0.001) was an indicator of better functional visual outcome (Snellen acuity 6/60 and better). On the contrary, in the cases with PVR ≥ C post re-RRD [OR=0.26(95%CI=0.08,0.89)] (p =0.031), it was less likely to have a better functional visual outcome.

Conclusions: Our study showed that anatomical success in recurrent rhegmatogenous retinal detachment is necessary to improve the functional visual outcome and better visual outcome implies good anatomical reattachment. The presence of PVR ≥ C at the time of recurrence of RRD is the indicator of a poor functional visual outcome.

Hemorrhagic Occlusive Retinal Vasculitis Post Pars Plana Vitrectomy

*First Author: Priya **BAJGAI***
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Purpose: To describe a case of Hemorrhagic occlusive retinal vasculitis (HORV) after seemingly uncomplicated pars plana vitrectomy (PPV).

Methods: We present a case of a 16-year-old male patient who underwent right eye PPV for traumatic vitreous haemorrhage (VH).

Results: The patient underwent uneventful PPV for post-traumatic VH. One-week post- PPV, he presented with the best corrected visual acuity (BCVA) of 6/60 in the right eye with a quiet anterior chamber and multiple hemorrhages in the retina, mainly along the superior arcade. The left eye was normal. Angiography showed an area of ischemia in the superior quadrant with macular oedema. We kept the possibility of HORV. He underwent routine laboratory examination to rule out any associated systemic vasculitis. He received intravitreal anti-vascular endothelial growth factor and sectoral laser of the involved quadrant. The patient had a BCVA of 6/6 at six months of follow-up.

Conclusions: Postoperative HORV is an exceedingly rare and potentially devastating condition that can occur after otherwise uncomplicated ocular surgery. We presume subconjunctival gentamycin given at the end of surgery as a culprit, which may have seeped through the ports.

Long-Term Follow-Up of Refractory Large Macular Hole with Autologous Neurosensory Retinal Free Flap Transplantation

*First Author: Yo-Chen **CHANG***
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Purpose: To evaluate the long-term anatomic and functional outcomes of autologous neurosensory retinal free flap transplantation (ART) for patients with refractory large macular hole (MH).

Methods: This is a retrospective interventional case series. We reviewed 9 patients who underwent ART for their refractory large MH. In this extended follow-up study, postoperative assessment including spectral-domain optical coherence tomography and best-corrected visual acuity (BCVA) were recorded at 12, 15, 18, 21, and 24 months after surgery.

Results: The macular hole of all patients appeared successfully closed during the whole follow-up period. The mean logMAR BCVA improved from 1.61 ± 0.44 (preoperative) to 0.72 ± 0.30 (12 months after surgery) (p < 0.001). Thereafter, the mean BCVA remained stable at each follow-up. At the mean 16.0 ± 0.8 months postoperatively, inner retinal cystic changes were observed in 4 eyes (44.4%), but these did not significantly affect vision.

Conclusions: ART is a good alternative technique for closing large refractory macular holes. Although inner retinal cystic changes were observed in 4 eyes (44.4%), this phenomenon did not significantly affect visual acuity. It provides long-term good anatomical and functional results, especially in cases where insufficient ILM or lens capsule are left.

Objective Assessment of Continuous Spectrum of Plus Disease in Retinopathy of Prematurity

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Purpose: To establish an objective assessment of the continuous spectrum of plus disease in retinopathy of prematurity (ROP).

Methods: Six sequential color-coded images of severity of plus disease described in the International Classification of ROP, third edition (ICROP) were taken for analysis. These images were individually processed,

and a best fit curve (BFC) and vessel (VC) course in zone 1 was obtained using ImageJ software. The tortuosity index (TI) was obtained by dividing the VC by BFC of the major vessel in the temporal quadrants.

Results: There was an incremental increase in the TI of arteries, veins, sum of both arteries and vein and the artery/vein (A/V) ratio from grade 1-6. The overall trend showed that arterial tortuosity increased more than venous tortuosity. Venous tortuosity was similar in grades 3-5 with sudden increase in venous tortuosity noted in grade 6. A/V ratio shows an increase from grades 1-3, then stabilization from grades 3-5 and reached maximum in grade 6.

Conclusions: Establishing objectivity in the spectrum of plus disease provides insight into possible pathophysiology in progression of plus disease. Arterial tortuosity is objectively greater than venous tortuosity and venous features appear starker in severe stages, obscuring the constantly worsening arterial tortuosity.

Optical Coherence Tomography as a Screening Tool for Retinal Tears

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Purpose: To analyze the association between the presence of vitreous opacities on optical coherence tomography (OCT) and retinal tears

Methods: Patients with complaints of floaters were evaluated with spectral domain OCT macula for the presence of vitreous opacities (stardust sign). They were divided into two groups, one with vitreous opacities on OCT and one without. Both groups were studied for the presence of retinal tears. It was also analyzed whether there was any association between the number of vitreous opacities on OCT and the presence of retinal tears.

Results: The group with vitreous opacities had a higher occurrence of retinal tears than those without vitreous opacities. A greater quantity of vitreous opacities positively correlated with the presence of retinal tears.

Conclusions: The presence of vitreous opacities on OCT can be a predictor of retinal tears and thus can be used as a screening tool in patients with complaints of floaters.

Outcome of Macula Hole Surgery in a Peripheral Eyecare Facility in Nepal

*First Author: Nitin **TULSYAN***
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Purpose: To demonstrate the surgical success and safety in a peripheral eye center setting.

Methods: This is a hospital-based retrospective study. Data of all the patients underwent macular hole surgery was reviewed from 2019 to 2020. Macular hole was associated with other pathology limiting visual acuity, like non-proliferative or proliferative diabetic retinopathy, ARMD, previous retinal detachment surgery or concomitant retinal detachment, and cases with vitritis, posterior uveitis, retinal vein occlusion were excluded. Patients who were lost to follow up was not included in the study.

Results: A total of 29 patients underwent the macular hole surgery procedure with 51.72% male and 48.27% female. The mean age was 54.24 years. Anatomical hole closure rate was 86.20%. Visual acuity improved in 44.80% of patients. The only complicated notable issue was development of cataract. Out of the 16 phakic patients, 4 developed cataracts postoperatively.

Conclusions: Pars plana 23'G' vitrectomy, with ILM peeling for macular hole was found to be a safe procedure even when done in a peripheral setting with limited resources. Most patients had successful anatomical closure and about half of the eyes achieved visual success i.e., improvement in vision of ≥ 2 lines after macular hole surgery. Complication post macular hole surgery was progression of cataract only.

Outcomes of Retinal Detachment Surgery in patients with Phakic ICLs

*First Author: Manjushree **SUNDI***
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Purpose: The primary focus is to determine the visual outcome. The secondary focus is to present the mean number of surgeries for retinal detachment and the removal of ICL. The third focus is to present complications in postoperative rhegmatogenous retinal detachment (RRD).

Methods: EMR of patients who underwent RD surgery with ICL implants from April 2017 to March 2022 were analyzed for best corrected visual acuity, IOP, gonioscopy, anterior segment and fundus charts.

Results: Eleven eyes in 10 patients developed RRD, all patients were male with average age of 31 years. Eight out of 11 eyes had undergone prophylactic laser photocoagulation prior to ICL. Mean time of development of RRD was 34.2 months after the ICL implantation. 6 eyes were managed with Primary pars plana vitrectomy and silicone oil injection and additional 360-degree band support was done in 4 cases and primary scleral buckling was done for 1 patient. 72% patients achieved anatomical success with primary surgery and 28% required second intervention. Oil removal was done at average of 2-2.5 months. The mean postoperative BCVA at 6 months was 0.55 log MAR.

Conclusions: Cataract surgery rate was 90.9% at an mean interval of 48.5 months post RD surgery. Even though patients required multiple interventions the overall anatomical success rate was 100%.

Pars Plana Vitrectomy With Transscleral Aspiration in Coat's Disease Exudative Retinal Detachment: A Case Report

*First Author: Talita **ISMA***
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Purpose: Coat's Disease is a retinal telangiectasis caused by idiopathic etiology that often present in young male unilaterally. Grades of Coat's disease ranging from only telangiectasis, partial exudative retinal detachment through total retinal detachment. Management of the disease could be varied in each grade.

Methods: A 16-year-old Asian male patient presented with sudden visual loss in the last 2 months prior the admission to the hospital. Preoperative examination was found normal in both eyes anterior segment. From dilated fundus examination of left eye were revealed atrophy of the left optic nerve, multiple telangiectasis in superotemporal, inferotemporal and superonasal quadrant with extensive exudative retinal detachment concentrating in inferior quadrant. The fundus of right eye was within normal limits. Pars plana vitrectomy was performed with membrane peeling procedure. To evacuate subretinal exudates, trochar was introduced transscleral under the insertion of medial rectus muscle to reach subretinal space. Using extrusion tube, subretinal exudates were aspirated and endolaser photocoagulation was applied on the area of telangiectasis. After the retina attached, 5,000 cs silicon oil was placed as the tamponade.

Results: Seven days post-surgery, fundus dilated examination revealed an attached retina with 5000 cs silicon oil tamponade, optic nerve atrophy, no progression of telangiectasis and no recurrent subretinal exudates.

Conclusions: Early pars-plana vitrectomy with transscleral aspiration of subretinal exudates is an option to treat extensive exudative retinal detachment in Coat's disease.

Performance Comparison of 25 Gauge 20,000 cpm HYPERVIT Dual Blade Versus 10,000 cpm ULTRAVIT Vitrectomy Cutter

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Purpose: The dual blade cutter design for vitrectomy allows cutting rate of 20,000 cuts per minute (cpm), twice of current systems of 10,000 cpm. The faster cutting rate enables less vitreous traction generated during vitrectomy. Our purpose of the study is to compare the efficiency and safety of 20,000 cpm versus 10,000 cpm 25-gauge vitrectomy probe.

Methods: This is a prospective randomized controlled trial. Eyes operated with HYPERVIT high speed (20,000 cpm) 25-gauge vitrectomy were compared with those operated with ULTRAVIT high speed (10,000 cpm) 25-gauge vitrectomy. Duration of core vitrectomy, intraoperative and post-operative complications were recorded for all eyes. Patients were followed up at 3 months post-operatively.

Results: A total of 72 eyes were recruited, with 36 in each group. Duration of core vitrectomy was shorter for the 20,000 cpm group compared with 10,000 cpm group (269.28s vs 289.44s), albeit statistically insignificant (p = 0.347). For the 20,000 cpm group, there were 2 intraoperative retinal tears, 2 post-operative retinal tears, mild corneal edema, macular hole with rhegmatogenous retinal detachment, and vitreous hemorrhage. For the 10,000 cpm group, there were 3 eyes with high intraocular pressure, one post-operative epiretinal membrane, and one extensive submacular hemorrhage, all post-operatively.

Conclusions: The 20,000 cpm cutter reduces cutting time by 20s compared with the 10,000 cpm, although statistically insignificant. There were more retinal tears for the former group compared with the latter group, although it could be related to patient and disease factors since the severity of conditions indicated for vitrectomy was variable.

Safety and Outcomes of 27-Gauge Pars Plana Vitrectomy in Diabetic Tractional Retinal Detachment

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Purpose: To state the clinical and surgical outcomes in diabetic tractional retinal detachment patients undergoing 27-gauge pars plana vitrectomy.

Methods: In this retrospective cohort study, a total of 196 eyes of 176 patients were reviewed, who had 27-gauge pars plana vitrectomy for diabetic tractional retinal detachment, over five years between July 1, 2015, and June 30, 2019. All these procedures were done at the same hospital and in all cases tamponade agents used were air, sulfur hexafluoride, hexafluorethane, perfluoropropane and silicone oil. The primary outcomes of this study were best corrected visual acuity at 3 months follow-ups, the anatomical success of surgery, and post-operative complications. SPSS 21 was used to evaluate the data.

Results: The mean age of the patients in this study was 55.3 ± 11.3 years. Out of 196 eyes, there were 104 (53.1%) male and 92 (46.9%) female eyes. 126 (64.3%) eyes had combined phacoemulsification and lens implantation along with vitrectomy. Internal limiting membrane peeling was done in 46 (23.4%) surgeries. The mean operating time was 90 ± 36min (range 22- 170 min). 192 eyes (98%) achieved primary retinal attachment. At 3 months follow up mean BCVA was remarkably improved from the logarithm of the minimal angle of resolution preoperatively 1.86 ± 0.59 to 0.54 ± 0.32 postoperatively. (p-value <0.001). Postoperatively only one eye developed suprachoroidal

oil migration that was successfully managed.

Conclusions: This study strongly suggests that the 27-gauge vitrectomy system offers successful repair of eyes with diabetic tractional retinal detachment with good safety outcome.

Scleral Buckle in a Case of Morning Glory Syndrome With Retinal Detachment

First Author: Priya ***BAJGAI***
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Purpose: To describe a case of morning glory syndrome (MGS) with retinal detachment (RD) managed with scleral buckle (SB).

Methods: We present a single case of an 18-year-old girl of MGS with RD managed with SB.

Results: The patient presented with a vision of 1/60 in the left eye and a subtotal retinal detachment involving the macula. She underwent segmental buckling with a 276 tire in the inferior quadrant. The subretinal fluid was drained, and a small atrophic hole was cryoed in the inferior quadrant identified intra-operatively. She underwent laser photocoagulation of the disc margin at 1-month postoperative day after the fluid resolution. She had a best corrected visual acuity of 6/60 at six months of follow-up post-operatively with buckle effect at the periphery with adequate laser uptake at the disc margin. This case demonstrates successful repair of retinal detachment in a case of morning glory syndrome with the adequate placement of buckle and subretinal fluid drainage.

Conclusions: The decision to carry out surgical therapy in retinal detachment of morning glory syndrome is difficult and depends on various factors. In this case, SB successfully resulted in attachment of the retina.

Take It Out or Leave Alone? Tell Tale of a Metallic Foreign Body Within Retrobulbar Optic Nerve Following a Penetrating and Perforating Ocular Injury

First Author: Thushara Sanjeewa ***KALUARACHCHIGE***
Co-Author(s): Wathsala ***EKANAYAKE****, Sampath* ***JAYAWICKRAMA****, Shehan* ***MADURANGA***

Purpose: To report management and follow up of a case with metallic foreign body within retrobulbar optic nerve presented with a penetrating ocular injury.

Methods: A 35-year-old male patient presented with a right eye penetrating ocular injury to eye unit of teaching hospital Kurunegala on February 19, 2022, was investigated to rule out an intraocular foreign body (IOFB). Visual acuity and details of slit lamp bio microscopy recorded. He was started on hourly G. Moxifloxacin and G. Natamycin 4 hourly to prevent infections. X-ray sinus view followed by non-contrast CT (NCCT) scan orbit with coronal, axial and sagittal cuts performed to rule out an IOFB. Phacolensectomy with pars planar vitrectomy (TPPV) with 1000cst Silicone oil performed on February 21, 2022 and followed up for 6 months. Second NCCT scan, and visual evoked potential (VEP) were done. Fundus photograph with an OCT macula, RNFL and ONH performed.

Results: His vision was perception of light with a cataract and a sealed corneal entry wound. Attached retina with some mid vitreous opacities noted in the B scan corresponding to the trajectory. A radio opaque dot in the middle of right orbit seen in X-ray sinus view (AP view). NCCT scan showed a hyper dense foreign body within the retrobulbar optic nerve just posterior to globe. After repeating NCCT scan at 6 months, there was no change in the size and position of the foreign body and the corrected vision was 6/60. No optic atrophies.

Conclusions: The decision to leave the foreign body with in the retrobulbar optic nerve and early vitreoretinal intervention and regular follow-up preserved the vision.

Vanishing and Resurfacing Secondary Full-Thickness Macular Holes

First Author: Sriharanathan ***POOPALARATNAM***

Purpose: To report unusual behavior of secondary macular holes with OCT evidence.

Methods: Three case reports of secondary macular holes presented.

Results: Three patients underwent 23 G vitrectomy for different indications and ended up full-thickness macular holes. During the course of medical treatment and observation, their behaviour was observed without surgical intervention.

Conclusions: Secondary full-thickness macular holes behave differently from primary idiopathic macular holes. Our case reports portray that without surgical intervention, even large holes close with the caveat of reopening. It is imperative to study different behavior of various secondary macular holes to avoid surgery.

Vitreoretinal Surgery Practice During COVID-19 Pandemic

First Author: Tiara Putri ***UTAMI***
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Purpose: To describe vitreoretinal elective surgery practices before and during the COVID-19 pandemic in Yogyakarta, Indonesia.

Methods: This cross-sectional study observed the vitreoretinal elective surgeries before and during the COVID-19 pandemic in Yogyakarta from 2019 to 2022. The waves of the COVID-19 pandemic were categorized into three groups based on the highest number of new cases on each wave: the first (January 2021), the

second (August 2021), and the third wave (February 2022). The data of vitreoretinal elective surgeries before the COVID-19 pandemic was collected from the same months of the COVID-19 waves (January, February, and August 2019). The number of elective surgeries, the most common diagnosis, and the type of anesthesia from the selected months were observed.

Results: There were 107 elective surgeries before and 127 elective surgeries during the pandemic. The number of elective surgeries before and during the pandemic was 41 versus 66 (January 2019 versus 2021), 40 versus 11 (August 2019 versus 2021), and 27 versus 50 (February 2019 versus 2022). Vitrectomy with silicone oil filling and rhegmatogenous retinal detachment was the most common surgical procedure and diagnosis before and during all waves of the COVID-19 pandemic. The ratio of local anesthesia (LA) and general anesthesia (GA) was 5:7 before and 3:1 during the pandemic.

Conclusions: The number of vitreoretinal elective surgeries during the pandemic was higher than before the pandemic except for the second wave. The ratio of GA decreased during the pandemic. Further study was needed to observe the risk of transmission of COVID-19 in Vitreoretinal elective surgeries.

Vitreoretinal Surgery in Myopic Eyes – An Overview

*First Author: Ramya **APPANRAJ***
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Purpose: The aim of this presentation is to give a complete overview about vitreoretinal surgeries in myopic eyes.

Methods: Myopic eyes are more prone for retinal diseases like retinal detachment, myopic macular hole, vitreoretinal interface abnormalities like vitreomacular traction and schisis. All these conditions warrant surgical management. Though vitreoretinal surgery is commonly performed surgery , performing vitreoretinal surgery in myopic eyes are quiet challenging due to long axial length, posterior staphyloma, vitreoschisis and foveal schisis and needs few modifications like planning the position of trocar insertion more towards horizontal plane and more posterior and need of few special instruments like myopic forceps and special staining like ICG due to poor contrast due to underlying chorioretinal atrophy to increase anatomical and surgical outcome.

Results: Myopic RD secondary to macular macular hole is yet another challenging situation and the need of free flap and hinged ILM flap, lens capsule implantation and neuro sensory retinal autograft are other options available.

Conclusions: Understanding the anatomy of myopic eyes and modifications of surgical techniques favors better outcome.

Translational and Visual Sciences Research

Comparison of Different Rose Bengal Formulas on the Effect of Green Light Corneal Cross-Linking

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Purpose: To explore central corneal thickness (CCT) changes during in vivo rose bengal-green light corneal cross-linking (RGX) and compare the cross-linking efficacy of new rose bengal (RB) formulations.

Methods: After epithelium removal, the right eyes of rabbits were immersed in RB solution for 2 or 20 minutes, then the RB distribution in the corneal stroma was analyzed by confocal fluorescence detection. During the RGX process, the CCT was measured at 7 time points. The left eyes served as untreated control group. Corneal enzymatic resistance and corneal biomechanics were tested to compare the RGX efficacy.

Results: The RB infiltration depths were about 100 µm and 200 µm for the 2-minute and the 20-minute groups, respectively. CCT increased significantly after infiltration, then decreased significantly in the first 200 seconds of irradiation and decreased slowly for the next 400 seconds. The CCT of the 20 min groups was significantly higher than that of the 2 min groups ($p < 0.0001$). All the RGX treatments improved the corneal enzymatic resistance and corneal biomechanics, with the effects being greater in the 20 min groups. The inclusion of 1.1% hydroxypropyl methylcellulose (HPMC) in the RB formulation helped to maintain CCT during irradiation, whilst not affecting either the infiltration of RB or the efficacy of RGX.

Conclusions: Within the range studied, RGX effectiveness increase with instillation time. The incorporation of a 20-minute instillation of 0.1% RB-1.1% HPMC into the RGX procedure may further improve the safety of the treatment and its prospects for clinical use.

Detect and Record Metamorphopsia of Cellophane Maculopathy Patients With a Virtual Reality Device

*First Author: Po-Kang **LIN***

Purpose: No appropriate methods to detect and record metamorphopsia of patients exist yet. We then developed a virtual reality metamorphopsia (VRM) device with novel algorithms.

Methods: A graph with sets of horizontal, vertical, and diagonal lines was developed as the visual target. The patient wore a VR mask, with a display panel in front of each eye. The patient must focus on the center of the

panel, marked by an augmentation dot. Serial straight lines in different orientation were shown on the panel one by one. Normal people may see these straight lines as straight lines; however, the patients may see these straight lines as distorted lines. The distortion perception comes from the patient's abnormal vision by cellophane maculopathy. The patient must correct the distorted line back to a straight line, while kept focusing on the center. The patient manipulated a hand-grip to carry out the correction. Then the corrected lines were put together to form a correction graph (CG). Further, the CG was mirrored back to form a metamorphopsia graph (MG). The patient saw the MG as a normal image, while normal people saw the MG as a distorted image. Therefore, the distortion pattern of the MG was the metamorphopsia of the patient.

Results: Forty patients of cellophane maculopathy complaining of metamorphopsia were enrolled. The detection rate of this VRM was about 90%. The distortion pattern could reflect the distribution of cellophane on the fundus picture.

Conclusions: The VRM to detect and record metamorphopsia was successfully developed.

Effect of Curcumin Through NLRP3-Inflammasome Pathway Inhibition on Oxidative Stress-Injured Retinal Pigment Epithelial Cells

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Purpose: Oxidative stress is the major cause of retinal pigment epithelial (RPE) cell death. Among the inflammatory mechanisms triggered by oxidative stress, the activation of the NLRP3 inflammasome pathway has been known to be associated with the pathogenesis of age-related macular degeneration (AMD). We used oxidative stress-injured RPE cells to investigate the effects of the curcumin, a strong antioxidant, on the NLRP3 inflammasome pathway.

Methods: ARPE-19 cells were treated with several concentrations of curcumin and 300μM hydrogen peroxide (H2O2). Cell viability was measured with cell counting kit-8, MTT (3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) and lactate dehydrogenase assay. To evaluate the effect of curcumin on ARPE-19 proliferation, we performed wound healing assay. The activity of reactive oxygen species (ROS) was also evaluated. Intracellular NLRP3 inflammasome protein levels in various concentration of curcumin treatment were compared using western blotting and Immunocytochemistry.

Results: 300μM H2O2 reduced the viability of ARPE-19 cells. However, when treated with 7.5μM curcumin, ARPE-19 cells showed increased viability and decreased cell toxicity. Curcumin also reduced free radical in the H2O2-induced damaged cells, promoted the expression of survival-related proteins and attenuated H2O2 dependent expression of the NLRP3 inflammasome and its related signaling proteins.

Conclusions: Taken together, these results suggest that curcumin has protective effects on oxidative-stress in RPE cells by attenuating the activation of the NLRP3 inflammasome. Although further researches may be needed, curcumin may have potential therapeutic or protective effect on the pathogenesis of AMD.

Ethambutol-Induced Autophagy Dysfunction in Human Müller Glia Cell

*First Author: Hui-Chen **CHENG***
*Co-Author(s): An-Guor **WANG**, Jenn-Yah **YU***

Purpose: Ethambutol (EMB) is the first-line antibiotics for treatment of tuberculosis and Mycobacterium avium complex, with optic neuropathy as a major possible adverse event. In this study, we aimed to investigate the impact of EMB on Müller glial cell, the most abundant retinal macroglia, with a focus on autophagy pathway.

Methods: A spontaneously immortalized human Müller glia cell line, Moorfields/Institute of Ophthalmology-Müller 1 (MIO-M1), was used as our model. First, we used CCK-8 assay to check the cell viability of MIO-M1 cells after different concentrations of EMB treatment. The changes of cellular morphology were also observed. Second, we evaluate the physiological marker in EMB-treated MIO-M1 cells by immunocytochemistry, western blot, and quantitative PCR. Finally, autophagy alterations in EMB-treated MIO-M1 cells were checked by western blot.

Results: We found that EMB was cytotoxic to MIO-M1 cells and can induce cytoplasmic vacuoles in a dose-dependent relationship. After EMB treatment, MIO-M1 cells may have functional alteration, such as increased glutamine synthetase (GS) and glutamate aspartate transporter (GLAST) expression. Regarding autophagy pathway, we found that there was no significant change of PIK3C3 and Beclin-1after EMB treatment in MIO-M1 cells. However, both of the LC3 II/LC3 I and p62 increased in an EMB dose-dependent manner. The results implied that autophagosome accumulation and impaired autophagosome/autophagolysosome degradation after EMB treatment in MIO-M1 cells, which indicated impaired autophagy flux in this condition.

Conclusions: Our results suggested that EMB may induce functional alteration and autophagy dysregulation in a human Müller glia cell line.

Higher Order Aberrations and Visual Function in an Asian Population of High Myopes

*First Author: Bryan **ANG***
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Purpose: To examine the associations between higher order aberrations (HOAs), visual performance, demographics, and ocular characteristics in a young Asian population with high myopia.

Methods: This was a retrospective review of military pre-enlistees conducted between March 2014 to September 2018. Visual acuity and contrast sensitivity were tested under photopic, mesopic and simulated night conditions. Ocular, corneal and internal HOAs were measured with a Hartmann–Shack wavefront aberrometer (KR-1W, Topcon Co., Tokyo, Japan).

Results: In total, 522 eyes of 263 consecutive subjects with severe high myopia (defined as spherical equivalent refraction [SER] ≤ -10.00D) in at least one eye, and high myopia (SER ≤ -6.00D) in the fellow eye (mean SER -11.85 ± 2.03D) were analyzed. The mean age of subjects was 18.5 ± 1.6 years. Chinese eyes had significantly greater internal total HOA root-mean-square (RMS) compared to Malay eyes (mean difference 0.0246 ± 0.007µm, p <0.001). More negative SER was associated with greater ocular total HOA (p = 0.038), primary coma (p = 0.003) and tetrafoil (p = 0.025) RMS, as well as more positive ocular (p = 0.003) and internal primary spherical aberration (p = 0.009). Greater ocular total HOAs were associated with reduced visual acuity in simulated night conditions and low contrast, decreased contrast sensitivity under mesopic and simulated night conditions (all p <0.05).

Conclusions: Greater HOAs were associated with Chinese ethnicity and more negative SER in a young Asian population with high myopia. Greater HOAs were associated with poorer visual performance in low luminance and reduced contrast conditions.

Identifying Content for an Item Bank to Measure Quality-of-Life Impact of Myopia Interventions

*First Author: Ryan **MAN***
*Co-Author(s): Eva **FENWICK**, Kodi **GOH**, Ecosse **LAMOUREUX***

Purpose: To develop a myopia intervention-specific quality of life (QoL) item bank (IB) that will be operationalised using a computerized adaptive testing (CAT) system to optimize administration and scoring. We report on the content generation and item refinement phases of this myopia intervention specific IB and compare it with existing questionnaires.

Methods: Myopia intervention-specific QoL domains and items were generated from: (1) existing visual and refractive-error specific questionnaires; (2) published articles; and (3) semi-structured interviews with patients with myopia (n=39); and healthcare practitioners (clinicians, optometrists, psychologists, and researchers; n=9) recruited from the Singapore National Eye Centre between 2020 and 2021. Following thematic analysis, items were systematically refined and subsequently tested using cognitive interviews with 24 additional patients across the range of myopia interventions.

Results: Of the 39 participants with myopia (mean ± standard deviation age: 41.4 ± 16.3 years; 76.9% female), 16 (41.0%) were spectacle wearers, 10 (25.6%) wore contact lenses regularly, 18 (46.1%) had undergone myopic refractive surgery, and 7 (17.9%) had undergone surgical repair and intravitreal injections for pathologic myopia (PM). We identified several novel intervention-specific QoL issues, including work anxiety, refractive surgery and intravitreal treatment-related challenges. Following refinement, 249 of 912 items within seven independent QoL domains were retained: Activity Limitation, Emotional, Mobility, Management Comfort, Management Convenience, Management Concern, and Work. During cognitive interviews, 16 items underwent amendment to improve clarity.

Conclusions: Our myopia specific IB, comprising 7 QoL domains and 249 items, will now undergo rigorous psychometric testing to generate item calibrations for the validation of a novel myopic intervention CAT.

RNA Base Editing as a Therapeutic for Inherited Retinal Degeneration

*First Author: Satheesh **KUMAR***
*Co-Author(s): Guei-Sheung **LIU***

Purpose: Evaluate two all-in-one AAV RNA base editors in targeting significant IRD genes (Rpe65, Ush2a).

Methods: HEK293FT cells stably expressing target mutations with a dual-luciferase reporter were engineered. To screen for optimal guide RNAs, three 50nt gRNAs with mismatches placed at the 5’ 22nd, 24th or 26th position was designed (50-22, 50-24 and 50-26). Cells were transfected with Cas13X.1-ADAR2DD or CIRTS-ADAR2DD carrying the different gRNAs. On-target RNA editing rates were analysed by restoration of firefly luciferase. Sanger sequencing was performed to determine on-target and off-target editing efficiency in gRNA binding region.

Results: From the screen of three guide RNAs with dCas13X.1-ADAR2DD, 50-24 and 50-26 showed significant recovery of firefly luciferase when targeting Rpe65, while all three gRNAs showed significant activity when targeting Ush2a. CIRTS-ADAR2DD did not produce any significant firefly luciferase activity with Rpe65, but with Ush2a, the 50-26 gRNA produced significant luciferase activity. Sanger sequencing revealed 30-36% on-target editing of Ush2a with dCas13X.1-ADAR2DD and no off-target activity.

Conclusions: The luciferase assay allows evaluation

of optimal gRNAs for RNA base editing. RNA base editing with dCas13X.1-ADAR2DD efficiently corrects G>A mutations in Ush2a, but not Rpe65. Extended gRNA screening might reveal efficient CIRTS-ADAR2DD editing.

VIDEOS

Applying Big Data, Artificial Intelligence and Telemedicine in Ophthalmology

Make Your Own Free Eye AI to Analyze Retinal Fundus Photos

*First Author: Anju **KURIAKOSE***
*Co-Author(s): John **AKKARA***

Purpose: To build an artificial intelligence (AI) algorithm using freely available tools to analyze retinal fundus photographs and train it to differentiate between them.

Methods: The authors used Google Teachable Machine, a service to build AI algorithms to create an AI algorithm trained on fundus photographs of various retinal diseases. This was then tested on test images to see how well the algorithm could identify these diseases. The authors also review the role of AI and machine learning in ophthalmology.

Results: The initial algorithm did not do well, but after some modifications, the algorithm was able to identify the retinal diseases with good sensitivity and specificity.

Conclusions: The role of AI and machine learning in ophthalmology is growing rapidly in the fourth Industrial Revolution. Even though AI systems are complicated, it is very much possible to build your own AI for free using the simple approach taught in this video.

Cataract and Cataract Surgery

A New Method for Nucleus Extraction in Complicated Cataract Surgery

*First Author: Nader **NASSIRI***
*Co-Author(s): Nariman **NASSIRI**, Saman **NASSIRI**, Kavousnezhad **SARA**, Kourosh **SHEIBANI***

Purpose: To introduce a new method of nucleus extraction to reduce the chance of vitreous loss.

Methods: In patients undergoing phacoemulsification as well as intracapsular and extracapsular cataract extraction in a 0.5 mm distance from the anterior limbus a large keratotomy is performed using a three-step method. After performing the capsulotomy, a preplaced suture is made using 7-0 silk and the surgical assistant lifts the anterior corneal lip using this preplaced suture to exposes the anterior chamber. At this point the surgeon inserts two 23-gauge needles from opposite directions into the nucleus body, and slowly extracts the nucleus upward.

Results: In classic method of nucleus extraction the surgeon tries to extract the nucleus by pushing it from superior limbus using a loop and from inferior limbus using a muscle hook, which may cause vitreous loss. Our new method for nucleus extraction only uses two 23-gauge needles and we have conducted many nucleus extractions using this method with rare complications.

Conclusions: We have devised a simple and easy to learn method to extract the nucleus with less chance of vitreous loss.

A “Hammock” for the IOL Tuck

*First Author: Aishwarya **RATHOD***
*Co-Author(s): Saumya ., Sudarshan **KHOKHAR**, Deeksha **RANI***

Purpose: To describe a new technique, the «Hammock,» to fixate a dislocated single-pieced, non-foldable intraocular lens (IOL).

Methods: We operated on 7 cases of IOL dislocation. The steps for this surgical technique are as follows. After the usual preparation, anterior chamber was filled with cohesive viscoelastic. A Sinsky hook was used to dial the IOL to a central position. The haptics were dialed in the sulcus. A bimanual 23 G vitrectomy cutter was used for limited anterior vitrectomy along with membranectomy. Following this, the optic was thrusted posteriorly, and the inferior half of the optic was captured below the peripheral fibrotic membrane. The optic was gently nudged posteriorly to check its stability.

Results: The 3-month follow-up of these cases revealed a stable IOL without a significant tilt on clinical examination as well as the anterior segment optical coherence tomography (ASOCT).

Conclusions: The «Hammock» technique stabilizes the IOL and prevents any further destabilization because of gravity in upright position. It also prevents the

complications associated with scleral/iris fixation of IOL, its explant and exchange.

Application of Intraoperative Optical Coherence Tomography in Demonstrating "Flap Motility" Sign

*First Author: Amogh **KITTUR***
*Co-Author(s): Namrata **SHARMA***

Purpose: To demonstrate the "flap motility" sign on intraoperative optical coherence tomography.

Methods: Intraoperative optical coherence tomography (iOCT) guided cataract surgeries involving phacoemulsification and posterior chamber intraocular lens (IOL) implantation is done routinely at our center. During one such case, we noted an inadvertent tear in the anterior capsulorhexis margin during IOL manipulation. The radial extension in the tear was clearly demonstrated on the iOCT as fluttering, and everted flaps. The haptics of the single-piece, hydrophobic IOL were oriented perpendicular to the torn edge subsequently.

Results: Application of iOCT in demonstration of flap motility and orientation of flap edge, helped in understanding the fact that the torn edge had not extended beyond the equator. Hence, it provided reassurance to continue with the single piece IOL implantation in the bag. This surgical video supports the findings proposed by Rohit Om Prakash et al, in cases of peripherally extended anterior capsular tears.

Conclusions: 1) Intraoperative OCT is a useful tool in demonstrating the "flap motility" sign. 2) iOCT aids in clear visualization of orientation of torn flaps and guides on-table surgical decisions. 3) iOCT could be used as a tool to understand morphology of cataract, wound architecture, integrity, and several other steps in cataract surgery.

Bug Buster - The Story of Intracameral Moxifloxacin

*First Author: Snigdha **MISHRA***
*Co-Author(s): Rengaraj **VENKATESH***

Purpose: To highlight the role of intracameral moxifloxacin in reducing the incidence of postoperative endophthalmitis rate.

Methods: Patients were divided into two groups and postoperative endophthalmitis rate was compared with and without the use of Intracameral Moxifloxacin.

Results: Historically, most options for antibiotic prophylaxis against bacterial endophthalmitis have been topical and subconjunctival. However, the administration of antibiotics into the anterior chamber after surgery is the most direct method of antibiotic prophylaxis. Cefuroxime and Vancomycin were routinely used intracamerally. Although intracameral vancomycin was the most popular antibiotic in different surveys, its association with hemorrhagic occlusive retinal vasculitis led to many surgeons seeking alternative drugs. Moxifloxacin, being a fourth-generation fluoroquinolone has a broad-spectrum coverage that includes both gram-positive, gram-negative, and anaerobic bacteria. Thus, Moxifloxacin was preferred against the other available antibiotics, both because of its commercial availability in India and because of the evidence supporting its safety when injected as an intracameral preparation. It was observed that the rate of Postoperative Endophthalmitis without intracameral Moxifloxacin was 0.08% whereas it was just 0.02% with its use.

Conclusions: With the huge reduction in Postoperative Endophthalmitis rate, there's also a reduction in the extra cost which gets borne by the provider and the patient. The extra expense of Intravitreal injections, vitreo-retina surgeries, multiple investigations, frequent hospital visits and the loss of daily jobs or wages, would be much more than the total cost borne by the hospital in their routine IC Moxifloxacin prophylaxis and thus offsets the total cost involved in managing postoperative endophthalmitis cases.

Chop and Tumble Nucleotomy - A Technique for Safe Nuclear Emulsification in Posterior Polar Cataracts

*First Author: Jeewan **TITIYAL***
*Co-Author(s): Manpreet **KAUR**, Sridevi **NAIR***

Purpose: Conventionally, hydrodissection and nuclear rotation are avoided in posterior polar cataracts (PPC) which makes nuclear emulsification in these cases challenging. In this Video we demonstrate a modified trench and chop technique, the "Chop and Tumble Nucleotomy" as a safe and effective method for nuclear emulsification in PPC.

Methods: A central chop is first performed to divide the nucleus, followed by the creation of 2 relatively large pie shaped segments on its either side, which are tumbled towards the center and emulsified. The remaining nuclear segments are then tumbled towards the center using the second instrument, chopped into smaller fragments and emulsified, without any rotational maneuvers. In PPC, where rotation of nucleus is often not possible, the technique allows the surgeon to successfully emulsify the nucleus within the intact epinuclear cushion, that safeguards the weak posterior capsule.

Results: The technique was successfully performed in 62 eyes of 54 patients with posterior polar cataract and grade II-IV nuclear sclerosis. No case developed intraoperative posterior capsular dehiscence.

Conclusions: The chop and tumble nucleotomy is a safe and effective technique for phacoemulsification in posterior polar cataracts with nuclear sclerosis where hydrodissection and nuclear rotation are typically avoided.

Double Bubble Solving the Trouble!

First Author: Amogh ***KITTUR***
Co-Author(s): Prafulla ***MAHARANA****, Aishwarya* ***RATHOD***

Purpose: To describe a novel sign of using double bubbles as a marker for posterior capsular integrity during lens aspiration of a traumatic subluxated cataract

Methods: The anterior capsulorhexis was followed by capsular tension ring (CTR) implantation by Sinsky hook assisted bimanual technique. Following lens aspiration, a cohesive viscoelastic was injected into the capsular bag. At this point, the posterior capsule appeared very lax, and it was difficult to assess its integrity. Also, in this case the spider web sign was difficult to elicit as the capsule was extremely fragile and thin. We observed an air-bubble under the viscoelastic, that had traversed from the anterior chamber through the deficient zonules and migrated to a potential space (Berger's space). The bubble was neither able to travel anteriorly, nor able to coalesce with the bubble in anterior chamber (AC), hence emphasizing the presence of a membrane between the posterior bubble and the anterior bubble. Also, the 2 bubbles were observed to displace peripherally in different directions on injecting more viscoelastic inside the bag, proving the integrity of posterior capsule. Hence, the IOL was subsequently implanted in bag.

Results: The postoperative follow up revealed a stable and centered IOL in the bag with CTR in situ.

Conclusions: In cases with zonular deficiency with thin posterior capsule, the movement of a posterior displaced bubble during lens aspiration can be used as a marker for posterior capsular integrity.

Dumbbell Technique – An Excellent Option for Aphakia and Subluxated Cataract

First Author: Jeyaprakash ***BALASUBRAMANIAN***
Co-Author(s): Kalaimamani ***EZHILVENDHAN****, Rajesh* ***KANNAN***

Purpose: To evaluate the safety, efficacy, short term complications and visual outcome of a newer technique (Dumbbell technique) in aphakia and traumatic/ subluxated cataract.

Methods: Initially, 2 nos. of 30-gauge needle is threaded with 3-4 cms of 6-0 polyprolene sutures and kept aside. Superior sclero-corneal tunnel is made, and AC is entered. Suture threaded 30-gauge needle is inserted 1.75 mm away from limbus at 3 o'clock and 9 o'clock (exactly 180* apart). Sutures are externalized through the sclero corneal tunnel, and the 30-gauge needle are withdrawn from both side. Externalized suture end is threaded into the eyelets of the SFIOL and the end is cauterized (thermal) to form a flange under the haptics. Suture ends at 3 & 9 o'clock are pulled to center the IOL. Rest of the suture are cut with leaving around 4-5 mm and that is cauterized to form a flange. These two flanges form a shape of a dumbbell.

Results: Evaluation and assessment of Dumbbell technique showed good visual outcome with minimal self-resolvable complications in aphakia and traumatic/ subluxaed IOL implantation.

Conclusions: This could well be an excellent option for intra scleral fixation of IOL. This technique is quiet easy and the learning is not steep n long. It can be performed by an Anterior segment surgeon. Further prospective clinical trials with longer follow-up may help to evaluate the long-term visual outcomes and complication of this technique.

Feel the Cataract Phacoemulsification

First Author: Muhammad ***MOIN***

Purpose: Feeling the grade of cataract and choosing the phacoemulsification technique accordingly gives the most comfortable surgical experience.

Methods: In this video easy techniques for soft, medium, hard, and white cataracts will be demonstrated. Soft cataract can be dealt with nucleus prolapse, chip and flip or divide and conquer technique. Medium cataract requires divide or conquer or phaco chop which can be done as 2, 3 or 4 quadrant chops. Hard cataract requires a multiple segment phaco chop. While a white cataract needs a spiraling CCC and phaco technique according to the hardness of the cataract

Results: Soft cataract was found to be very easy to manage with nuclear prolapse compared to divide and conquer technique with minimal complications. Medium cataracts were easily managed by either divide or conquer or phaco chop. Hard nucleus was best managed by multi segment phaco chop with considerably less phaco energy compared to divide and conquer technique. White was also managed most easily with phaco chop.

Conclusions: Choosing the most appropriate technique for different grades of cataracts is essential for consistent results in phacoemulsification.

Gupta Ring Pupil Expander in Small Pupil Phacoemulsification

First Author: Rashid ***OMAR***
Co-Author(s): Rimsha ***SAROSH***

Purpose: To evaluate the utility of Gupta ring pupil expander in a case of small pupil with chronic angle closure glaucoma phacoemulsification.

Methods: Phacoemulsification was done utilizing Gupta ring for pupillary expansion.

Results: The device could be easily injected via a 2.8 mm incision engaging three out of fours flanges. It provided adequate pupillary dilatation with minimal impedance to the procedure. Removal was simple and

easy

Conclusions: Gupta ring is a useful means of dilating a small pupil.

Hang Back Technique for Repair of Traumatic Iridodialysis With Cataract: A Novel Approach

*First Author: Sidratul **NAZNIN***
*Co-Author(s): Quazi **IFTEKHAR**, Mohammad **MOSTAFA HOSSAIN**, Tamanna **SWEETY***

Purpose: To report a novel, safe, effective and easy technique of iridodialysis repair with very short learning curve.

Methods: This technique was demonstrated in a patient with traumatic cataract surgery and iridodialysis repair. At first the phacoemulsification was done to remove the cataractous lens and foldable intraocular lens was implanted in the capsular bag. To repair the iridodialysis, a prolene suture was inserted through the scleral tunnel catching the periphery of iris and bring it out through the main tunnel with the help of ophthalmic viscosurgical devices (OVD) cannula. Again, the needle was inserted through the main wound catching the periphery of iris and bring it out through the scleral tunnel with the help of 26 G needle by railroad technique. Same procedure was carried out to repair the remaining iridodialysis.

Results: Traumatic dialysis of iris was returned to the normal position after repair and postoperative visual acuity was regained to 6/6.This patient showed good cosmetic and visual outcome in postoperative follow up.

Conclusions: This novel and minimally invasive technique is simple enough to be performed safely by surgeons of varying skill with good cosmetic and good visual outcome.

How “Safe” Is “Safe”?

*First Author: Mrinmoy Das **DAS***
*Co-Author(s): Arijit **MITRA***

Purpose: IOL implantation is considered one of the easiest steps in cataract surgery. After phacoemulsification is complete surgeons tends to relax and let their guard down. But truly how “safe” is this “easy” step?

Methods: An analysis of the recordings of our surgeries have revealed a different story.

Results: There may be a lot of hiccups during this relatively simple and easy maneuver. The wound assisted implantation technique may sometimes cause the IOL to get stuck at the entry point. The single piece hydrophilic acrylic IOL’s have a tendency to be sticky causing either the haptics or the optic and haptic to stick to each other. We have also noticed a strange phenomenon of plastic like material sticking to the optics in these lenses. The multi piece IOL’s have their own set of problems ranging from broken haptics to flipping of the IOL

Conclusions: This presentation takes an in-depth look into the finer nuances of IOL implantation to make this step safer and more predictable.

Hydroexpression – A Novel Technique to Deliver Nucleus in Small Incision Cataract Surgery

*First Author: Sumit **VARSHNEY***
*Co-Author(s): Laxman **JHALA***

Purpose: Nucleus delivery is still considered as one of the tough steps in SICS among fresh surgeons, leading to various complications at the verge of completion of surgery which further decreases the confidence and elongates the learning curve among the residents, trainees and fellows.

Methods: As for nuclear prolapse in AC, and filling the AC with fluid, the surgeon has to place cannula (broad gauge: 23 G) with 5 mL Saline under the nucleus, and after engorgement of nucleus in tunnel with simultaneously pushing the piston of syringe and depressing the lower lip of tunnel, with the help of same cannula.

Results: Our new technique “Hydroexpression” utilizes minimal manipulation and minimal instrumentation to express the nucleus with only hydrocannula without even use of OVD in AC. Proper tunnel construction and sufficient capsulorrhexis are the prerequisites for this technique.

Conclusions: “Hydroexpression” is a safe and effective technique to deliver nucleus in Small Incision cataract Surgery without damaging corneal endothelium with clear cornea postoperatively.

Magic of Terminator the Wedge Tool: A Modified Classical Simple Machine to Crack and Break Hard Cataract

*First Author: Rajendra **PRASAD***

Purpose: We describe an efficient new device “Terminator” the wedge tool to crack and break mature hard cataracts. It functions by converting a force applied to its blunt end into forces perpendicular to its inclined surfaces. Terminator when pushed or driven into a solid hard cataract, generates inside out dispersive mechanical force and causes them to crack and split in tension.

Methods: Wedges have been successfully used in rock excavation system to crack and break solid hard rocks. It functions by converting a force applied to its blunt end (base) into forces perpendicular (normal) to its inclined surfaces. Wedges when pushed or driven into a solid hard substance, generates inside out dispersive mechanical force which overcomes the tensile resistance of solid materials and causes them to crack

and split in tension

Results: We designed a new wedge device to induce inside out dispersive cracking force to crack and break, mature hard cataracts. The tip of the terminator is incorporated with triangular wedge design in which pointed apex of wedge is the inner edge of the tip while flat base of wedge is at the posterior surface of the tip. Simply drawing the tip within the equator of the nucleus generate full thickness crack.

Conclusions: The wedge device makes surgical maneuvers much easier and facilitates the overall procedure with higher level of efficiency and safety.

Management of Anterior Persistent Fetal Vasculature With Cataract and Microphthalmia

*First Author: Amer **AWAN***

Purpose: To present a surgical management of anterior persistent fatal vasculature with associated cataract in microphthalmia.

Methods: A 27-gauge vitrectomy with 10000 cuts per minute (27G + 10K) was utilized by using anterior chamber maintainer. An experienced surgeon performed the surgery and successfully managed it. Adjuncts such as tryptan blue was used to stain the anterior capsule and 27G cautery to coagulate the vessels.

Results: A 5-month-old baby presented with microphthalmia, cataract and vascularized lesion behind the lens with elongation of ciliary processes. Cataract extraction, posterior capsulotomy and removal of this lesion was performed with 27G+ 10K cutter through corneal incision successfully. Tryptan blue was used to stain the anterior capsule and central curvilinear capsulorrhexis was performed. After cataract extraction, posterior capsulotomy was done. The vessels were cauterized, and lesion was cut with vitrectomy cutter. The elongated ciliary processes were relaxed and there was no intraocular bleed. After surgery there is normal growth of the eye, and we are planning secondary lens implantation. In the meantime, we have prescribed glasses to improve vision.

Conclusions: Timely management of cataract and anterior persistent fatal vasculature can lead to normal growth of the eye and visual rehabilitation in microphthalmic eye.

MasterChef Eye Surgeon

*First Author: Anju **KURIAKOSE***

Purpose: To practice ophthalmic surgical skills when routine surgeries have been stopped, ophthalmic surgical residents can practice their skills in the kitchen at home. All types of ocular surgeries can potentially be emulated including cataract, glaucoma, pupilloplasty, cornea transplant, iridodialysis repair and so on.

Methods: The kitchen can be converted into a surgical wet lab with some imagination. Dedicated to young ophthalmologists in training, we show the various thing we can use to convert a kitchen into an ophthalmic surgical wet lab. There is a method to simulate looking through a microscope. Practice superior rectus suture, incision, tunneling, capsulorrhexis, nucleus delivery, trenching, chopping, cortex aspiration & IOL placement using kitchen items. Glaucoma, squint, oculoplasty and cornea surgeries can be practiced using things found in the house. Single Pass Four Throw pupilloplasty and iridodialysis repair and other complex techniques can be easily learnt. These tips and tricks will help to make skillful, confident surgeons who take every opportunity to learn.

Results: These techniques demonstrated in the video can be used to practice MSICS, phacoemulsification, trabeculectomy, keratoplasty, pupilloplasty and iridodialysis repair.

Conclusions: This video will be useful for all ophthalmic surgical trainees all over the world especially in times where access to the hospital surgical wet lab is difficult or impossible.

Minimum Hydrodissection Technique for Management of Posterior Polar Cataract

*First Author: Nitin **DESHPANDE***

Purpose: To demonstrate minimum hydrodissection technique to prevent break in posterior capsule while doing hydrodessection in posterior polar cataract surgeries.

Methods: While doing hydrodissection, fluid is injected in such controlled fashion that fluid wave stops short of margin of posterior polar cataract preventing breach in posterior capsule.

Results: Good success was achieved doing minimum hydrodissection technique while doing hydrodissection for posterior polar cataract cases in preventing posterior capsular rupture.

Conclusions: Minimum hydrodissection technique is effective in preventing posterior capsular rupture while doing cataract surgery for posterior polar cataract cases.

PHACOSIT: An Innovative Sitting Phacoemulsification Technique

*First Author: Jebinth **BRAYAN***

Purpose: To describe step by step how to perform phacoemulsification with minimum resources required.

Methods: An 80-year-old female with both eye visual acuity of light perception - with systemic complications of uncontrolled diabetes - hypertension, CVA with hemiplegia, breathing difficulty unable to lie down

presented to us for cataract surgery. She had been rejected by all the previous ophthalmologist for cataract surgery as she has high risk comorbidities even to undergo the surgery under general anesthesia. She was taken up for surgery with a new innovative surgical technique for sitting phacoemulsification where both-eye surgery was performed on the wheelchair itself under local anesthesia with aseptic precautions, vitals were monitored throughout the surgery with standby anesthetist.

Results: The surgery was uneventful with BCVA pod30 - 6/6 in both eyes. The video describes the step-by-step technique of how the patient is being positioned & how the phacoemulsification was performed in both eyes.

Conclusions: This is the first 90 deg frugal novel innovative cat surgery done using a surgical microscope with patient on a wheelchair.

Practical Tips for a Successful Implantation of a 3-Piece Intraocular Lens in the Ciliary Sulcus

*First Author: Hung Da **CHOU***

Purpose: In the era of small-incision phacoemulsification, the younger generation is less familiar with implantation of a 3-piece intraocular lens (IOL). The aim of this video is to demonstrate the techniques of implanting a 3-piece IOL in the ciliary sulcus.

Methods: To present a a surgical video case series.

Results: This video reviewed the complications of implanting an acrylic single-piece IOL in the ciliary sulcus, which included iris chafing, pigment dispersion, and pigmentary glaucoma, and emphasized that a surgeon should never do so. There are numerous options for a safe IOL implantation without adequate support of a capsular bag. However, if the decision is to put an IOL in the sulcus, a surgeon should choose a 3-piece IOL with a thin and anteriorly angulated haptic. The tips for a successful 3-piece IOL implantation in the sulcus are: 1) Do not fold the haptics; 2) use the right-sized cartilage; 3) enlarge the corneal main incision; 4) rotate the handpiece during implantation; 5) Aim at insertion in the anterior chamber first. This video also demonstrated the possible complications that a surgeon may encounter without using the proper techniques.

Conclusions: Young surgeons are less experienced with 3-piece IOL implantation, therefore it is useful to review the practical tips and know the possible complications.

RRR: Rhexis Runaway Rescue

*First Author: Zain **KHATIB***

Purpose: To demonstrate the correct techniques needed to complete a continuous capsulorhexis every single time by understanding the principles of vector forces.

Methods: The invention of the CCC by Gimbel and Neuhan way back in 1979 is the reason why Phaco is so popular today. Phaco would not be possible without CCC, since it is the strength of the bag created by CCC that allows us to use fluidics and manipulation of the nuclear pieces within the bag. Hence, to achieve a successful phaco every time, it is essential that CCC must be completed in 100% of cases. Cuts/Nicks/Tears in the anterior capsular margins are recipes of disaster as they can anytime extend to the PC during Phaco.

Results: This video demonstrates the essential techniques necessary to ensure that the rhexis is always completed, even when it goes to the periphery. The video shows the application of vector mathematics to real life surgical cases using animated graphics and diagrams.

Conclusions: The take home message is that by using the right techniques, the CCC can always be completed in all situations, even if it has gone all the way to zonules. Whatever the situation, it can be revived and must be completed.

Rescuing Possible Catastrophic Complications in Referred Unfinished Cataract Surgery: A Case Report

*First Author: Nabila **ALJUFRI***
*Co-Author(s): Rio **RHENDY**, Syska **WIDYAWATI***

Purpose: We report a case of a referred patient from previous cataract surgery with several problems that need careful exploration to choose proper management to avoid further complications.

Methods: A 59-year-old male was referred from another hospital after a complicated cataract surgery. We found IOL with a full lens mass mimicking white cataract behind it. On the evaluation of the lens stability, we suspected more than one quadrant zonulysis from 7 to 11 o'clock. We explanted IOL, aspirated the lens mass using a bimanual handpiece and found a posterior capsule rupture. We finished the management by fixating the capsular bag with a capsular tension segment (CTS) and implanting three-piece IOL in the sulcus.

Results: One week after surgery, the VA improves, IOL central and cornea clear with minimal inflammation. Posterior capsule rupture is the most frequent complication in Phaco surgery, further problems may lead to severe inflammation and unideal IOL placement. Careful examination is needed to decide the next management and determine the best technique to remove the remaining lens mass as well as implanting IOL securely. We should use low parameters to prevent excessive fluid turbulation. Zonular dialysis can simply be fixated using CTS with flanged technique, thus the

IOL can still be implanted in the sulcus with the optic captured technique. The IOL can be centrally stabilized and preventing vitreous prolaps.

Conclusions: Surgeons must be wary in treating patients with previous phacoemulsification procedure and remaining lens cases especially with zonulysis. A combination of proficient skills and surgical instruments can improve outcome.

SFIOL Simplified - Aphakia Management for All

*First Author: Vivekanandan **V R***

Purpose: Aphakia management in developing countries is being done by specialist surgeons, it either requires specially designed IOLs or special instruments or a special surgical setup to perform these complex surgeries. Here we show a technique which is a simplification of an existing technique and can be performed by all anterior segment surgeons. Can be done as a primary and secondary procedure through a sclero-corneal tunnel.

Methods: In our technique we use regular PMMA IOL›s along with a 7-0 polypropylene suture attached to a long 15mm needle, 26-gauge needle and a portable cautery for flanging. Can be performed with a sclerosis corneal tunnel. We increase the IOL power by 0.5 D as it a posterior fixation. This technique is much easier and faster compared to the existing techniques, with less learning curve

Results: We have more than 1 year follow up and have performed over 100 surgeries so far. The spherical correction postoperatively has been less than 1 diopter. Less post-operative iritis and inflammation. Eight patients had epithelial edema on post-day 1 and 3 patients had vitreous hemorrhage on 1 day postoperatively, which resolved within a month.

Conclusions: This modified technique of SFIOL has an easier learning curve and is less time consuming with quick postoperative recovery.

Safety First: Management of Any Cataract Without Sharp Chopper

*First Author: Anuj **KODNANI***

Purpose: To portray a reproducible and safe vertical chopping technique using a blunt chopper in different case scenarios.

Methods: Vertical chopping using a “central well” can be performed in any cataract having more than or equal to a grade 2 nuclear density. We take advantage of the lamellar orientation of the lens fibers which allows easy manual separation of natural fracture planes in a dense nucleus. It is a novel technique which is independent of pupil size, has minimal zonular stress, safeguards the surgery by restricting phaco probe as well as the second instrument movements inside the central safe zone and when performed using a blunt chopper it substantially reduces the chances of complications. We demonstrate this technique in different case scenarios and grades of cataract where successful vertical chopping maneuvers were performed.

Results: Vertical chop technique with the «central well» and blunt chopper provides safe cataract extraction in most different kinds and grades of cataract.

Conclusions: Vertical chop using a blunt chopper is an effective technique to provide maximal safety in harder grade of cataracts.

Signs of Complications in Phacoemulsification Surgery

*First Author: Sharah **RAHMAN***
*Co-Author(s): Jalal **AHMED**, Mahziba **CHOWDHURY**, Ava **HOSSAIN**, Ashraful **RIDOY**, Tarzia **ZAFRULLAH***

Purpose: 1) Early identification of the signs of complications in phacoemulsification surgery. 2) To prevent further complication and manage the case safely.

Methods: It was a retrospective study. A total of 3,236 cases of phacoemulsification surgeries were performed at a tertiary eye hospital of Bangladesh in between 2018 to 2021. All the surgical videos were kept recorded. The various signs of surgical complications were documented and compiled from the recorded video.

Results: After analyzing all the videos, six important signs were selected for this study. These are 1) Argentinian Flag sign, 2) Snap sign, 3) Sunset sign, 4) Wind Shield Wiper sign, 5) Bubble Trouble sign and 6) Crescent Moon sign.

Conclusions: Phacoemulsification surgery has a challenging learning curve. If a surgeon can identify the signs of complications earlier, he or she may prevent further complications. This video will assist young surgeons in recognizing the 6 classic signs of phacoemulsification surgery and will alert any Phaco surgeons to ensure a safe surgery.

Three Essential Tools for Management of IFIS

*First Author: Sudhank **BHARTI***

Purpose: To demonstrate the successful management of Intraoperative floppy iris syndrome for achieving cataract surgery without complications.

Methods: In a case of severe IFIS where the previous surgeon had created iris atrophy and could not start the cataract surgery, this video demonstrates the successful management with use of pharmacological agent, pupillary dilator device along with high density and cohesive viscoelastic.

Results: The video demonstrates the successful

management of IFIS with the 3 tools.

Conclusions: The vision threatening condition of IFIS can be managed with the 3 steps shown in the video with excellent results.

Use of Toric IOL With Surgically Induced Astigmatism SIA Manipulation Using Small Incision Cataract Surgery for Optimal Outcome in Developing Countries as an Alternative to Phacoemulsification Surgery

*First Author: Ronak **SOLANKI***

Purpose: To show the use of toric IOL with surgically induced astigmatism (SIA) manipulation using small incision cataract surgery (SICS) for optimal outcome in developing countries as an alternative to phacoemulsification surgery in harder cataracts.

Methods: We manipulated the SIA using custom incision size shape and location to induce astigmatism and then use toric IOL using SICS for a safe surgery with optimal results having UCDVA = BCDVA in a one-eyed patient.

Results: Preoperative astigmatism magnitude of 2D was changed to 3.25D and a toric IOL gave us an UCDVA 20/30 = BCDVA 20/30 at 6 months postoperative period using custom nomogram for SICS with an 8mm incision and 1mm anterior incision into clear cornea.

Conclusions: Use of toric IOL with SIA manipulation using SICS for optimal outcome is a wonderful tool for an experienced SICS surgeon in hard cataracts along with a safer surgery in developing countries where the cost of multiple procedures and retinal interventions may not be a good idea if any complications arise.

White Knuckle Ride

*First Author: Tushya **OM PARKASH***
*Co-Author(s): Rohit **PARKASH***

Purpose: To manage cases with white cataract by developing a management protocol that can minimize complications and maximise outcomes.

Methods: White cataract can present as intumescent, Morgagnian, black in white, traumatic, with zonulopathy and/or with small pupil. Video will discuss preoperative evaluation, capsular staining, fibrosed and calcified anterior capsules, Argentinean flag sign prevention and management, Flap Motility sign & end point of safe Phaco, role of FLACS & I-OCT, use of scaffolds to prevent and manage PCR.

Results: All the cases were managed without compromising visual outcomes.

Conclusions: White cataract is a surgical challenge for surgeons with varied level of expertise. This video will help the surgeon deal these intra-operative challenges with confidence.

"Hold the Door" for the Capsule: My Technique of Capsulorrhexis in Intumescent Cataracts

*First Author: Reena **SETHI***
*Co-Author(s): Sahebaan **SABHARWAL**, Arun **SETHI**, Aditya **SETHI***

Purpose: Capsulorrhexis in Intumescent cataracts have been much talked about in ophthalmic advances, with newer technologies coming in to provide better results. We present a simpler, less glorified way of "Holding the Door" of the capsule for a precise, safe and complete CCC in these cases.

Methods: Retrospective analysis of multiple cases of intumescent cataracts and also in special situations were documented, video studied and later surgically performed with great repeatability, success and results by our chief surgeon, who invented and documented this pinch, grasp and hold technique. This was later repeated by 8 more cataract surgeons of varied experience from novices (students) to experts in the field of cataract surgery with equal ease, success and results, reconfirming its validity, safety and repeatability.

Results: About 300 eyes with Intumescent cataract over the last 3 years were documented with this technique with a staggering complication rate of less than 2%, which were rhexis run out, incomplete rhexis or tear. This was reputable in all cases and also a success in all types of cataracts including special cataracts like loose zonules, hypermature and traumatic cataracts.

Conclusions: This is a safe, repeatable, cheap method which is often less glorified than its competitors like FLACS, Zepto, which give same or inferior results to this so called "manual" safe method of CCC. A simple technique resulting in greater results. In short: Do less, Achieve More.

Cornea, External Eye Diseases and Eye Banking

Bursting My Bubble More Than Once!

*First Author: Ruchika **PATTANAIK***

Purpose: To present a case of successful deep anterior lamellar keratoplasty (DALK) in a case of advanced keratoconus despite perforating the Descemet›s membrane (DM) twice during surgery

Methods: DALK was planned in the left eye of a 13-year-old boy with advanced Keratoconus. Type 1 big bubble was successfully achieved; however the DM was perforated during the braves strike. Further dissection was carried out manually to bare the DM. Dissection was very challenging due to DM perforation in the very early stage and repeated collapse of anterior chamber.

Nearing completion, the DM was perforated yet again, but sealed with air injection in anterior chamber and graft sutured to the host bed.

Results: DALK was successfully completed despite perforating the DM twice, first one being in the very initial stage of surgery . Postoperative best corrected visual acuity at 1 year was 6/9 .

Conclusions: Not all cases of DM perforation in DALK need conversion to penetrating keratoplasty (PK) and a good postoperative outcome can be achieved in these cases.

Challenging Case Scenarios in the Life of a Corneal Surgeon

*First Author: Bhupesh **SINGH***
*Co-Author(s): Sudhank **BHARTI**, Neha **BHARTI***

Purpose: This video demonstrates the different unexpected surgical situations faced in the operation room. managing such challenges is shown in this video.

Methods: Multiple cases are included in this video to depict the complications that happened and were managed by a cornea surgeon.

Results: Outcomes of these surgical challenges are shown.

Conclusions: This video emphasizes the importance of managing unexpected surgical situations calmly and scientifically.

Crepe on the Menu, Roll on the PlatterR

*First Author: Ruchika **PATTANAIK***
*Co-Author(s): Gaurav **LUTHRA***

Purpose: To highlight the challenges in the handling and unfolding of an inadvertent nanothin graft in a case planned for Descemet's stripping endothelial keratoplasty (DSEK) for pseudophakic bullous keratopathy (PBK).

Methods: DSEK was planned for PBK in a 59-year-old male patient after thorough preoperative evaluation. Donor cornea of a 14-year-old was used for surgery and manual dissection technique was used for graft preparation.

Results: Deeper plane of lamellar dissection during manual preparation of graft led to inadvertent creation of nanothin graft. This was noted during separation of the donor lenticule from cap, following which the graft was marked gently to aid orientation. Needle push through technique was used for graft insertion as planned originally, for lack of availability of glide or endoserter, better suited to handle a thin graft. The extremely thin graft and tight scroll resulting from young donor cornea made graft handling and unscrolling very challenging in this case.

Conclusions: Graft unrolling techniques used in Descemet›s membrane endothelial keratoplasty (DMEK) surgery and orientation P-mark on the graft helped in graft handling, successful unfolding and good surgical outcome in the unexpected situation.

Foreign Body Scaffold

*First Author: Aditya **PRADHAN***
*Co-Author(s): Tuhin **CHOWDHURY***

Purpose: To demonstrate a safe method for removal of a deep intra-stromal corneal foreign body.

Methods: A lamellar intra-stromal pocket was made over the area of the foreign body with the help of a guarded diamond knife and crescent. Careful dissection was done to achieve adequate exposure and stromal fibers over the foreign body were incised with a cystitome using the foreign body itself as a scaffold to ensure safe removal.

Results: The foreign body was safely removed without any entry into the anterior chamber. Visual recovery was uneventful. No infection was noted in the postoperative period.

Conclusions: Foreign Body Scaffold is a safe technique to ensure the removal of a deep seated intra-stromal corneal foreign body.

Management of a Complicated Case of Chemical Injury Due to Retained Lime Plaque

*First Author: Mariya **DOCTOR***
*Co-Author(s): Sayan **BASU***

Purpose: Here, we present a case to portray the importance of a thorough ocular irrigation in the acute phase, consequences of inadequate management, and treatment method in the late stage.

Methods: A 6-year-old male child had fall of lime in the left eye 2 months back. Ocular irrigation was performed locally. However, when he presented to us, he had a large plaque of lime retained superiorly underneath the upper eyelid. He was initially planned for plaque removal with Simple limbal epithelial transplantation. However, during the surgery, the plaque was noted to be adhered to the underlying scleral tissue, with scleral necrosis and prolapse of uveal content. Hence a corneal patch graft with conjunctival autograft was performed.

Results: The graft was well attached in place, and there was no recurrence of symblepharon on the last follow-up of 5 months.

Conclusions: Even though ocular irrigation is a simple procedure whose significance is often forgotten; however it cannot be stressed enough that it is the most important management step in acute phase which can help change the prognosis. Late phase management requires challenging surgical interventions, which if well performed, can help improve the visual outcome.

Rescuing the Crumbling Cornea- a Story of Successful Rescue of Melting Cornea in SJS Patient

*First Author: Jitender **JINAGAL***
*Co-Author(s): Arun Kumar **JAIN***

Purpose: To show the management of corneal melt in chronic SJS sequel

Methods: A surgical and medical management of rescuing a melting cornea in Steven Johnson syndrome.

Results: A 38-year-old female was presented with low vision, inability to open and severe dryness in both eyes. She was a diagnosed case of chronic ocular Steven Johnson syndrome. Visual acuity was hand motion and 6/36. Ocular surface examination showed severe lid margin keratinization, distichiasis, severe conjunctival congestion. Her right eye was in stage of corneal melt with diffuse thinning over 8x9 mm of cornea and impending perforation. Left eye was having persistent epithelial defect. As prognosis of full thickness graft survival in SJS patient are bleak, we planned to rescue the melting cornea with a novel idea. Under sub tenons anesthesia, we cleaned the area of impending perforation and placed SMILE lenticule over it with fibrin glue, followed by figure of 8 - over pass - criss-cross corneal suturing covering the lenticule. Amniotic membrane graft was secured followed by a conjunctival pedicle graft in nasal paracentral cornea to enhance healing. Postoperative ASOCT showed successful outcomes.

Conclusions: Chronic ocular surface diseases can lead to corneal melting and perforation but can be managed with help of appropriate surgical and medical intervention, as we know penetrating keratoplasties does not perform well in such decompensated ocular surface diseases.

Rotational Flap for Pterygium Surgery

*First Author: Sumit **VARSHNEY***
*Co-Author(s): Laxman **JHALA***

Purpose: To cover the bare area after pterygium excision with the rotational conjunctival flap from superior quadrant for better graft survival.

Methods: Rotational conjunctival flap harvested from superior quadrant to cover the bare area left after pterygium excision. The superior graft area is covered with the adjacent superior conjunctiva.

Results: Rotational conjunctival flap provides better graft survival and covering of graft area with the nearby superior conjunctiva helps in performing trabeculectomy superiorly in future which is not possible in routine pterygium excision with conjunctival autologous graft.

Conclusions: Rotational conjunctival flap with covering of superior area with adjacent conjunctiva is a safe and effective method of managing a case of pterygium. It is also a safer technique to manage pterygium in glaucomatous patient who may need filtration surgery like trabeculectomy in future.

When the Going Gets Tough, the Tough Gets Going: Intraocular Lens Repositioning With Anterior Vitrectomy With DSEK for a Case of Pseudophakic Bullous Keratopathy

*First Author: Aarti **HEDA***
*Co-Author(s): Shilpa **JOSHI***

Purpose: Pseudophakic bullous keratopathy is an undesirable complication of cataract surgery. This video demonstrates the surgical steps of Intraocular lens repositioning with anterior vitrectomy with Descemet's stripping endothelial keratoplasty (DSEK) for a case of pseudophakic bullous keratopathy.

Methods: A 69-year-old female presented with complains of poor vision in Left eye following cataract surgery. The patient underwent lens repositioning with anterior vitrectomy with DSEK.

Results: Postoperatively graft was well opposed, and cornea was relatively clear. The patient has vision of 6/12.

Conclusions: Even a difficult case can be managed well with proper preoperative, intraoperative and postoperative planning and preparedness.

Evolving Academia, Research, Teaching and Education in Ophthalmology

A Comprehensive Guide To Safe Cataract Surgery

*First Author: Samina **ZAMINDAR***
*Co-Author(s): Shravya **DEVASANI**, Pradnya **SRIRAM**, Hiba **ZAMINDAR***

Purpose: This comprehensive video empowers the cataract surgery team with a stepwise approach to peri operative safety measures before, during and after cataract surgery. The emphasis is on standardization using checklists, effective communication and incident reporting culture. While we found several resources on safety culture with regard to General surgery, the resources with regard to cataract surgery were extremely limited.

Methods: The goals for safe surgery- including safety of the patient and safety of the organization are presented in 4 phases- preoperative, immediate preoperative, per-operative and postoperative goals. Preoperative risk assessment, measures to optimize comorbidities and medical and surgical safety factors including robust infection control are delved into. The use of the surgical

safety checklists in order to prevent the occurrence of surgical never events is demonstrated and the importance of monitored anesthesia care during the surgery is highlighted. Postoperative assessment and discharge protocols are shown.

Results: Effective implementation of standard operating procedures using checklists and communication tools, readiness to tackle medical emergencies, continuous training and monitoring and reporting/analysis of adverse events is required to ensure that safe surgery is the standard of care.

Conclusions: The patients' perception of safety is an important parameter for patient satisfaction and growth of practice. The video demonstrates ways of building safety into the system and highlights the importance of each and every member of the cataract surgery team in not only ensuring that every surgery is safe but also ensuring that patients feel safe at every step.

Comparison of Learning Curve of Steps of MSICS Between Simulator-Based Training and Conventional Wet Lab Training

*First Author: Sankarananthan **R***
*Co-Author(s): Ashish **BACCHAV***

Purpose: To evaluate and compare the surgical outcomes of manual small incision cataract surgery (MSICS) performed by resident trainee surgeons trained on conventional wet lab training and trainee surgeons trained in augmented reality surgical simulator (HelpMeSee Inc).

Methods: Ophthalmology resident trainee surgeons who did not have any prior surgical experience were divided into two groups of four surgeons each and were trained in ophthalmic microsurgery for MSICS. Trainee surgeons in group A received training on augmented reality surgical simulator while surgeons in group B received conventional wet lab training using either cadaver or goat's eye. Intraoperative grading of each surgical step was graded objectively on ICO-Ophthalmology Surgical Competency Assessment Rubric-SICS.

Results: The mean overall score in group A and group B were 31.65 (±14.57) and 32.23 (±13.71) respectively (p=0.743). The difference in proportion of low scores (0,2,3) and high scores (4,5) were analyzed for each surgical step and found to be similar between the groups. Group A surgeons performed better nucleus delivery in the later 10 cases (p=0.03) while surgeons in group B fared better in scleral success and cauterization for initial 10 cases and viscoelastic insertion (p value 0.025 and <0.001 respectively). Complication rates between the groups were comparable.

Conclusions: Trainee resident surgeons trained in either curriculum performed surgeries similarly implying that that simulation-based training can be as effective as conventional wet lab training. This offers advantage particularly during this pandemic era as remote training is possible and it obliviates the practical difficulties in procuring cadaver eye balls.

Do It Yourself: Suprachoroidal Needle for Suprachoroidal Injections

*First Author: Aayesha **KHANUM***
*Co-Author(s): Thirumalesh **M B***

Purpose: To present a very simplified model for suprachoroidal needle which is cost effective and easily accessible to all practicing ophthalmologists.

Methods: Materials required: 26G needle, 22G Venflon intravenous cannula, bard parker blade with 15 no. blade.

Results: This model of injection was used in 10 patients. In our video we demonstrate how to use a 26-gauge needle along with an innovative guard and injection technique, which helps in delivering the drug (Triamcinolone Acetonide in our cases) into the suprachoroidal space, we also use Swept-source OCT images to prove the presence of the drug in the suprachoroidal space, post-injection. None of the patient had inadvertent entry to the vitreous cavity. Most common complication noted was subconjunctival hemorrhage in 3 patients.

Conclusions: Suprachoroidal injection is an evolving technique and newer mode of delivery for drugs for treating retinal and macular pathology as well as has utilization in various upcoming cell and cell-based therapies. We demonstrate a technique which is safe, economical, easily replicable for delivering drugs in the suprachoroidal space and adds as an additional skill to the armamentarium of VR surgeons.

How We Created a 4-Dimensional Holographic Diagnostic Tool in Ophthalmology: An Augmented Reality Metaverse With Patient's Own Real-time Images

*First Author: Prasanna **RAMESH***

Purpose: The use of extended reality technology especially in ophthalmic diagnostics and counselling will revolutionize the face of diagnostics and counselling on a whole new level. We have used this novel technology and have created a holographic museum of various anatomical and pathological structures of the eyeball, cerebral venous system, cerebral arterial system, cranial nerves, and various parts of the brain in fine detail. These four-dimensional (4D) ophthalmic holograms created by us (patent pending) are costeffectively constructed with TrueColor confocal images, to serve as a newage immersive 4D diagnostic and counselling tool.

Methods: This translational software (Eye_MG) innovated by us, brings life to the 2D scan images of

corneal topography, specular microscopy, ultrasound biomicroscopy, optical coherence tomography (OCT), scheimpflug imaging, fundus capture device and anterior segment optical coherence tomography. Once the imaging is done, Eye_MG software converts the 2D images to 4D holograms in less than 60 seconds instantaneously with no chair time; and all dimensions of the eye from all the slices can be accessed.

Results: In this video, we have also highlighted why we are unique among competitors and how different ophthalmic companies can benefit by working with us. We have also shared our business plan with the relevance of reimbursement codes and regulatory paths involved.

Conclusions: We intend to revolutionize 4D diagnostics, low vision rehabilitation, 4D telemedicine, 4D artificial intelligence, multimodal imaging and neuro-ophthalmic pedagogy with this 4D tool.

HulaHoop in Zonular Dialysis

*First Author: Merlin **BENZY***
*Co-Author(s): Vivekanandan **V R***

Purpose: To learn and understand the art of placement of capsular tension ring and novel technique of capsular tension segment placement using flanged prolene suture.

Methods: This video contains educational content regarding performing a phacoemulsification in an eye with 6 clock hours of zonular dialysis (ZD) and placement of capsular tension ring and capsular tension segment. This is a case of 55-year-old female diagnosed with traumatic cataract and 6 clock hours of zonular dialysis who underwent phacoemulsification of cataract with implantation of foldable intraocular lens (IOL) with capsular tension ring and segment support to bag complex. We also present steps involved in the new technique double flanged capsular tension segment Fixation in a microspherophakia.

Results: In both the cases cataract was extracted and intraocular lens placement was centered using additional devices like capsular tension ring and capsular tension segment.

Conclusions: The new technique of placement of capsular tension segment using flanged prolene is a simple and less time-consuming procedure with good postoperative outcome and stable bag-IOL complex.

Make in India: Normative Data for Automated Perimetry in Indian Population

*First Author: Neeraj **ISRANI***

Purpose: To formulate normative data and to increase domain knowledge of normative values for automated perimetry in Indian population of different age groups.

Methods: Cross-sectional study conducted on patients receiving outpatient care in a span of 3 years, which included 6,586 healthy normal patients (13,172 eyes) with vision 6/6 unaided or after refractive correction. The patients were tested with 30-2 SITA FAST threshold algorithm on Humphrey Field Analyzer Model no: 745i. Normative data was calculated on basis of age group ranging from 19-75 years in every decade. Normal values were formulated on basis of perimetry performed on normal patients.

Results: The right eye foveal fixation in patients of all age groups in our study was 30.84 dB ± 3.34 and the left eye was 30.72 dB ± 3.13. The right eye mean deviation of the entire sample size showed a median of -2.4 and the left eye mean deviation of the entire sample size showed a median of -2.32. The right eye pattern standard deviation in patients of all age groups was 1.82 ± 0.57 dB and the left eye was 1.78 ± 0.49 dB.

Conclusions: To our knowledge, this is the first study to formulate normative data for automated perimetry in Indian population. This is an attempt to create a normative data which can then be fed in our machines on the basis of data formulated in Indian population as the existing data are only from European population. This will add value as well as increase the accuracy of perimetry in Indian eyes.

Ten Commandments for Biometry in Tricky Situations

*First Author: Shruti **MARU***
*Co-Author(s): Neeraj **ISRANI***

Purpose: To an ophthalmologist the fruits of a good surgery are dependent largely on the skills. However, more importantly the roots of good result of a surgery are laid by a perfect IOL (Intra ocular lens) power calculation. Inaccurate biometry is one of the major reasons for unhappy patients, especially in some challenging scenarios.

Methods: To hit the bull›s eye as far as target refraction is concerned, it is necessary to understand the benefits and limitations of currently available cutting-edge technology and formulae and apply them to the cataract surgery practice. The aim of the video is to familiarize modern day ophthalmologists to these situations to achieve a perfect IOL power calculation.

Results: Using a step-by-step approach we decoded, biometry in special scenarios like poor cornea, ocular surface disorders, dry eyes, toric IOL calculation, cases with posterior corneal astigmatism, irregular corneas like keratoconus, pellucid marginal degeneration, post Lasik ectasia and penetrating keratoplasty. In this video we tried to address the solution to these special conditions and how to get target refraction in such cases. Few more issues are addressed like biometry post retina surgery, very dense cataract where it's difficult to obtain axial length, and cases with extreme axial lengths.

Conclusions: In this case-based approach, with relevant

example we tried to give solutions for biometry in tricky scenarios like poor cornea, biometry post refractive surgery, dense cataracts, and cataract post retinal surgery. On following these commandments, not only will the litigations stop but also our patients will be happier.

Tinkles for Capsular Wrinkles - Demystifying Zonular Support

*First Author: Kumar **DOCTOR***
*Co-Author(s): Bhavin Shah **SHAH***

Purpose: The purpose of this video is to demonstrate and discuss the intra operative signs of selective anterior, equatorial and posterior zonular weakness, especially the novel "Radial PC sign" and its management.

Methods: It also presents selective zonular weakness in cadaveric eyes studied using the Apple Miyake view. If the anterior zonular support is weak, one may not notice phacodonesis but the radial wrinkles can be noted on anterior capsule while doing capsulorhexis as there is no counteraction from anterior zonules.

Results: If the posterior capsule follows the cortex, it indicates weak posterior zonular traction and hence PC Radial sign.

Conclusions: Timely detection and appropriate management of selective anterior, equatorial and posterior zonular weakness can help to prevent complications and optimize anatomical and visual outcomes in cataract surgery section.

"Do It Yourself" Wet Lab for Surgical Training of Residents: Going "Vegan" Way

*First Author: Deepti **JOSHI***

Purpose: Ophthalmology is a medical and surgical specialty that requires one to have good exposure in both fields to achieve competency. However, in most of the residency programs, surgical skill training is challenging because of multiple factors. Limited resources, high patient expectancy and financial crunches are few to be named. Modifying residency curriculum to include simple do it yourself wet labs, the technical skills and clinical judgment can be taught and assessed without exposing the patient to extra risk. Through this video we would like to highlight do it yourself simple wet lab techniques to master Ophthalmic surgery in a easy and cost effective way.

Methods: Phacoemulsification, scleral tunnel making and suturing techniques which are all an essential part of training, can be comfortably taught using common vegetables. Potato nucleus baked for an optimum time can act as a substrate for phaco wet lab. Onion peels dried appropriately mimics scleral tissue for suturing and fresh lemon skin can be used for tunnel making.

Results: The vegetable substitute for Animal tissues excellently giving the exact feel and are lot easier to procure and dispose. Through these do it yourself wet lab training residents did have a successful surgical training with reduced complications in real time.

Conclusions: Difficult times demand different thinking. The need, lateral thinking, ordeals of experimentation and optimizing these innovative methods with success has been depicted in this video.

Glaucoma and Glaucoma Surgery

360-Degree Goniotomy in Primary Congenital Glaucoma: Surgical Technique and Complications

*First Author: Kanchangouri **SATPUTE***
*Co-Author(s): Dewang **ANGMO**, Tanuj **DADA**, Saurabh **VERMA***

Purpose: The video discusses all the steps of 360-degree goniotomy in children having primary congenital glaucoma. It focuses on angle anatomy in Infants with PCG with no visible scleral spur because of high insertion of peripheral iris.

Methods: Video shows technique of 360degree goniotomy in single operative session avoiding damage to lens, cornea, and iris. Various complications noticed during surgery and subsequent examinations under anesthesia (EUA) are also discussed here.

Results: With conventional angle surgery, approximately one-third of the chamber angle is "opened" in each procedure but 360-degree goniotomy opens the entire angle in a single session with significant reduction in intra-ocular pressure postoperatively.

Conclusions: The 360-degree goniotomy opens the entire angle in a single session with significant reduction in intra-ocular pressure. Goniotomy being minimally invasive, it obviates the need for conjunctival and scleral dissection, and antifibrotic agents and carries no long-term risk of bleb-related complications.

Bleb troubles! No troubles!

*First Author: Tripti **JOHRI***
*Co-Author(s): Julie Pegu **PEGU***

Purpose: To demonstrate appropriate surgical management of three cases of bleb related complications following trabeculectomy surgery.

Methods: A total of 3 cases of bleb related complication were identified on regular outpatient visit check-up. Bleb leakage with hypotony and shallow anterior chamber depth was found in two cases. The third case was a case of failed trabeculectomy surgery

with scarred bleb and raised intraocular pressure.

Results: The first case had a thin and cystic bleb with hypotony, shallow anterior chamber and positive Seidel test. This was managed by anterior chamber reformation with viscoelastic, bleb excision followed by advancement and resuturing of conjunctiva. The second case had a defect in the conjunctiva at the limbus leading to bleb leakage which was repaired surgically by bleb forming sutures. The third case had an encysted bleb and raised intraocular pressure which was managed by bleb needling with mitomycin-C.

Conclusions: Bleb related complications following trabeculectomy can adversely impact the success of the surgery. Early detection and appropriate surgical management is essential to manage such complications and ensure the success of the glaucoma filtration surgery.

Challenging Scenario in AGV Implantation

*First Author: Dewang **ANGMO***
*Co-Author(s): Tanuj **DADA**, Kanchangouri **SATPUTE**, Sai **VINEETH***

Purpose: A video bouquet showcasing the difficult case scenarios and its management a surgeon encounters while decision making and intra-operatively during AGV implantation.

Methods: A video bouquet showcasing the difficult case scenarios and its management a surgeon encounters while decision making and intra-operatively during AGV implantation.

Results: A video bouquet showcasing the difficult case scenarios and its management a surgeon encounters while decision making and intra-operatively during AGV implantation.

Conclusions: AGV implantation in difficult cases can have good outcomes by taking care of all the nuances.

Designing and Making 3D printed Glaucoma Drainage Devices

*First Author: John **AKKARA***
*Co-Author(s): Anju **KURIAKOSE***

Purpose: To design in CAD and 3D print glaucoma drainage devices and test their working.

Methods: The authors ideated some designs for glaucoma drainage devices (GDDs) and modeled them in computer aided design (CAD). These designs were then 3D printed using stereo litho graphy (SLA). These were also implanted in an animal cadaver eye in wet lab under surgical microscope. The flow pattern in the various GDDs were also visualized using fluorescein dye injected via the tube of the GDD and observed under cobalt blue illumination under a surgical microscope.

Results: The various 3D models were designed, and 3D printed. One was implanted in a cadaver goat eye under surgical microscope in a wet lab setting. The flow was also studied using fluorescein dye. The implantation practiced with this implant helped the authors when they implanted GDDs in regular clinical setting in human patients. The designs for these GDDs are uploaded open source by us in our Thingiverse account and submitted to NIBH 3D print exchange as well.

Conclusions: The technology of 3D printing can be used for designing and making prototypes of even small medical devices like Glaucoma Drainage Devices. This can be used for wet lab training as well as for designing new models of GDDs. Websites like Thingiverse and NIH 3D print exchange are useful websites where such 3D medical models can be exchanged to those who are interested. We have uploaded our designs for free in these websites.

Malignant Glaucoma: A Management Quandary

*First Author: Varsha **BELAMGI***
*Co-Author(s): Gowri **MURTHY***

Purpose: There are many theories attempting to describe the pathophysiology of this rare sight threatening disease which is often difficult to diagnose. Quigley etal's theory of poor vitreous conductivity leading to choroidal expansion in small eyes is by far the most plausible one. Shaffer and Hoskins theory of posterior pooling of aqueous, Epsteins theory of breaks in the anterior hyaloid phase or Chandlers theory of slack zonules and concurrent anterior movement of iris lens diaphragm may contribute to aqueous misdirection. Deducing the possible mechanisms in play and managing them accordingly in two unique cases is being described.

Methods: Two different mechanisms causing raised pressure and tackling each cause in a step wise manner is discussed in the first case. Whereas second case is a classic example of malignant glaucoma after incisional surgery for angle closure glaucoma in one eye and the same ensuing in the other eye with minimal intervention sufficing the management.

Results: Postoperatively both the patients had good vision and stable intra ocular pressure (IOP) with minimal IOP fluctuations in the follow up period. Though malignant glaucoma is a potentially blinding disease, timely diagnosis and management can help preserve vision.

Conclusions: It is important to consider all the possible operative mechanisms for elevated IOP in a patient and tailor the management approach appropriately. Surgical treatment aiming at making the eye unicameral is proven to be successful as documented in the literature.

Novel Use of Intraoperative Optical Coherence Tomography in Trabecular Bypass Minimally Invasive Glaucoma Surgery

*First Author: Bryan **ANG***
*Co-Author(s): Bjorn Kaijun **BETZLER**, Sheng Yang **LIM***

Purpose: The use of intraoperative optical coherence tomography (iOCT) has been gaining popularity in glaucoma surgery and more recently, in minimally invasive glaucoma surgery (MIGS), with the aim of improving intra-operative visualization and achieving better post-operative outcomes. In angle based MIGS, precision is critical yet challenging, given the difficulty of visualization within the small space of the angle.

Methods: This video uses real-life case examples to demonstrate how the iOCT may aid in ensuring optimal placement of two trabecular bypass MIGS devices – the iStent inject W and the Hydrus Microstent.

Results: A good understanding of the anatomical correlation between MIGS devices and their appearance on iOCT images is critical in enhancing the utility of the iOCT in trabecular bypass MIGS. The iOCT aids the surgeon in identifying inadvertent under-implantation of the iStent inject W, which may be occasionally missed due to the larger-diameter flange of this latest-generation iStent obscuring the exposed thorax of an under-implanted stent. The iOCT also aids the surgeon in ensuring optimal placement of the Hydrus Microstent in the Schlemm's canal, particularly where the microstent windows cannot be visualized behind a heavily pigmented trabecular meshwork or dense iris processes.

Conclusions: The iOCT may be a feasible and useful adjunct to MIGS, particularly in ensuring the optimal placement of trabecular bypass MIGS devices. The iOCT may aid in identifying an under-implanted iStent inject W, and in ensuring optimal placement of the Hydrus Microstent in the Schlemm's canal despite challenging visualization of the microstent windows through heavy angle pigmentation or dense iris processes.

Trabeculectomy With Help of Artevo 800 Microscope and Intraoperative OCT Guiding Subconjunctival Dissection and Wound Closure

*First Author: Pankaj **BENDALE***
*Co-Author(s): Jai **KELKAR**, Aditya **KELKAR***

Purpose: To have bloodless subconjunctival dissection during trabeculectomy and watertight closure of conjunctival flap with the help of intraoperative OCT.

Methods: Trabeculectomy with MMC under on Artevo 800 microscope.

Results: Intraoperative OCT guides best for sub-Tenon›s dissection and watertight wound closure.

Conclusions: Trabeculectomy with the help of Artevo 800 microscope and intraoperative OCT guides best for subconjunctival dissection and watertight wound closure.

Unilateral Congenital Glaucoma Operated for Trabeculotomy With Trabeculetomy Under GA

*First Author: Pankaj **BENDALE***
*Co-Author(s): Jai **KELKAR**, Aditya **KELKAR***

Purpose: To discuss about unilateral congenital glaucoma operated for trabeculotomy with trabeculetomy under GA.

Methods: The patient was presented at 6 months of age with hazy cornea. After EUA, trabeculotomy with trabeculectomy was planned and done. Although collapsed Schlemm's canal trabeculotomy was challenging, good trabeculectomy gave good outcome with partial clearing of cornea on table at the end of surgery.

Results: Trabeculectomy with trabeculotomy is good option for late presented congenital glaucoma cases.

Conclusions: Trabeculectomy with trabeculotomy is good option for late presented congenital glaucoma cases.

Intraocular Inflammation, Uveitis and Scleritis

Surgical Removal of Live Free-floating Parasite in Anterior Chamber

*First Author: Krati **GUPTA***
*Co-Author(s): Manshu **DESHMUKH**, Saurabh **DESHMUKH**, Surpriya **HAWAIBAM***

Purpose: To report 2 cases of intracameral live parasite and their successful surgical management.

Methods: Both the patient was prepared for surgery under peribulbar anesthesia. Surgical steps were followed - post painting and draping, two 2.8 mm clear corneal incisions were made. Pilocarpine nitrate 0.5% was injected into the anterior chamber to achieve miosis of the pupil aiding the decreased movement of the worm. Anterior chamber was filled with ocular viscoelastic device (VSD) from the corneal port to push the worm. The worm was viscoexpulsed in toto using the no-touch technique.

Results: The worm was then transferred into a bottle containing normal saline and transferred to the microbiology and parasitology department for identification. In both cases it was found to be Loa loa.

Conclusions: Surgical removal of the live parasite is the mainstay of management. A thorough examination of the central nervous system must be carried out in consultation with a neurologist and systemic

management should be considered.

Miscellaneous

3D Printing Ophthalmology Related Models for Enhancing Learning Through Concept of Puzzle Assembly: A Comprehensive Self-learning Tactile Tool Kit

*First Author: Prasanna **RAMESH***

Purpose: Practical sessions facilitate teaching, critical thinking, and coping skills, especially among medical students and professionals. Currently, in ophthalmology, virtual and augmented reality are employed for surgical training by using threedimensional (3D) eyeball models.

Methods: These 3D models when printed can be used not only for surgical training but also in teaching ophthalmic residents and fellows for concept learning through tactile 3D puzzle assembly. 3D printing is perfectly suited for the creation of complex bespoke items in a costeffective manner, making it ideal for rapid prototyping.

Results: Puzzle making, when combined with 3D printing, can evolve into a different level of learning in the field of ophthalmology. Though various 3D eyeball models are currently available, complex structures such as the cerebral venous system and the circle of Willis have never been 3D printed and presented as 3D puzzles for assembling and learning.

Conclusions: According to our knowledge, this concept of ophthalmic pedagogy has never been reported. In this video, we discuss in detail the 3D models created by us (patent pending), for printing into multiple puzzle pieces for effective tactile learning by cognitive assembling.

CM T Flex IOL - A New Option for Aphakia With TRAB

*First Author: Nivean **MADHIVANAN***
*Co-Author(s): Siva Mohan **HALAHARVI**, Archana N, Mohan **RAJAN**, Manoj **VASUDEVAN***

Purpose: This is a case of 37-year-old male who presented to our department with complaints of DV in the RE for past 10 years. He had H/O stick injury in the RE 10 yrs back and was on medical management for secondary glaucoma. He was planned for Right eye Trabeculectomy with Vitrectomy and secondary CM T-Flex IOL under LA under GVP.

Methods: TRAB was done. 0 and 180 degrees are marked and 2.5 x 2.5mm scleral flaps are made, 23 G cutter used through the sideport, anterior vitrectomy is done. Using the 23 G needle, 1.5mm away from the limbus, sclerostomies are created on either side. The new CM T flex foldable IOL is injected. The head of the T- junction is grasped with the forceps and brought out of the sclerostomy the special T- design prevents it from slipping back inside which is the hallmark of the intra ocular lens. The second T haptic is also brought out similarly. We have a stable, well-centered IOL. AC is filled with air and scleral flaps and conjunctiva are glued.

Results: On 1-month PO visit, BCVA in RE was 6/24 and left eye was 6/6. On examination RE, a good filtering bleb superiorly. Cornea was clear, AC was normal and CM T-Flex IOL was in place and Retina-on. IOP in the right eye was 8 and left eye 14.

Conclusions: This is a good alternative for secondary aphakia and also can be combined with other procedures easily, reducing the surgical time and intra operative complications.

CSI Heidelberg: A View From Inside

*First Author: Gerd **AUFFARTH***
*Co-Author(s): Patrick **MERZ**, Sonja **SCHICKHARDT**, Weijia **YANG**, Timur **YILDIRIM***

Purpose: Complex optics or optical systems are sometimes difficult to implant. How does it look from the inside of the eye using the Myaki Apple technique and other techniques at the D. J. Apple International Laboratory for Ocular Pathology.

Methods: We look at the performance of the new system such the Samsara Implantable Miniature Telescope (IMT) for AMD, and duet implantations and other specific optics, and analyze the performance in the capsular bag.

Results: The video analysis shows what implants are easy and what implants are difficult to implant, what structures can be altered or how secure and safe these implantations are.

Conclusions: The video analysis shows what implants are easy and what implants are difficult to implant, what structures can be altered or how secure and safe these implantations are.

Novel New Age Slit Lamp-Based Toric Marker

*First Author: Neeraj **ISRANI***
*Co-Author(s): Shruti **MARU**, Shreya **SHAH***

Purpose: To compare a new slit lamp based toric marker for corneal marking prior to toric IOL implantation with conventional techniques of corneal marking.

Methods: We have designed a new Slit lamp-based Toric Marker (STORM) with novel applications to assist a handsfree access to the surgeon for accurate toric marking. 25 consecutive eyes were marked using this new toric marker and another 25 consecutive eyes were marked using conventional (bubble) marker. The results were evaluated photographically using

a digital planimetry software (PictZar) on pre- and post-operative photographs. Postoperative residual astigmatism was compared using these 2 markers, not only actual but also anticipated results between 2 groups were studied statistically.

Results: Software based analysis showed significantly more accurate placement of the corneal marks as well as IOL placement. Post-operative outcome at 6 months showed significantly better correlation with anticipated residual astigmatism in the group marked with our marker.

Conclusions: STORM was found to be more accurate and reproducible than currently used techniques. Surgeons found it easier to align the toric IOLs to the marks because of the accurate corneal centrations of the marks.

Ocular Imaging

Optical Coherence Tomography Angiography Evaluation of the Parafoveal Vasculature and Its Relationship With Ocular Factors

First Author: Isaac ***CHAY***
Co-Author(s): Colin ***TAN***

Purpose: Optical coherence tomography angiography (OCTA) is a new modality allowing detailed imaging of the retinal vasculature. It is a rapid, low-cost and non-invasive procedure, and importantly is able to separately visualize the superficial and deep capillary plexuses. In this video, we showcase OCTA images of the superficial and deep retinal plexuses and demonstrate a novel technique to accurately evaluate the size and characteristics of the foveal avascular zone (FAZ) therein.

Methods: We performed OCTA scans on 117 healthy participants and examined the effect of their ocular and demographic factors on FAZ size– factors including central retinal thickness, axial length, spherical equivalent and choroidal thickness, via uni- and multivariate regression analyses.

Results: We find that superficial and deep FAZ areas correlate significantly with gender, central retinal thickness and spherical equivalent. In high myopes, the FAZ size was significantly smaller in both superficial and deep layers.

Conclusions: This study highlights the relationship of the FAZ, as measured on the OCTA, with ocular factors and demonstrates the potential of FAZ size as a proxy measurement for these ocular factors.

Ocular Oncology and Pathology

A Successful Defect Reconstruction Post-wide Excision of Eyelid Sebaceous Gland Carcinoma

First Author: Neni ***ANGGRAINI***

Purpose: To present a successful defect reconstruction case of eyelid sebaceous gland carcinoma.

Methods: A wide excision of a 12 x 5 x 5mm lower eyelid mass with 5mm free margin, resulting a full thickness of 22mm horizontal defect (> 50%) and 10mm (intermediate) vertical defect. Eyelid defect reconstruction required a posterior lamellar reconstruction using mucous membrane graft harvested from the inner lip and skin flap subsequently.

Results: A good cosmetic, no ectropion nor lagophthalmos were noted postoperatively.

Conclusions: Eyelid defect reconstruction post-tumor excision should be done correctly in order to achieve good cosmetic and functional results. For horizontal extent of defect larger than 50% and intermediate (10-15mm) vertical extent of defect, posterior lamellar reconstruction and skin flap are the most suitable surgical technique.

Plaque Brachytherapy: Radiating Positivity

First Author: Rolika ***BANSAL***
Co-Author(s): Santosh ***HONAVAR***

Purpose: Plaque brachytherapy is an evolving yet effective globe and vision-sparing modality for the treatment of intraocular tumors by transscleral irradiation of the tumor base with a radioactive implant. The American Brachytherapy Society (ABS) along with the collaboration of the international multi-center Ophthalmic Oncology Task Force (OOTF) was assembled to reach a consensus regarding establishing practice guidelines and setting standards of care for intra-ocular tumors. It is important to have a clear understanding of the technique as well as it›s applications.

Methods: In this video, we shall display the concept of plaque brachytherapy, the various types of plaques available, different radiations sources, planning dosimetry and calculations, target disease spectrum, surgical placement, post-radiation outcomes in terms of local tumor control and prognosis.

Results: This technique provides the advantage of focal radiation thus eliminating the damage to the adjacent structures, minimal periorbital tissue damage, absence of cosmetic disfigurement owing to lack of retarded bone growth as seen in external beam radiotherapy. Thus, reduces the risk of metastasis and with the

recent advances, it provides a shorter duration of treatment.

Conclusions: The advent of plaque brachytherapy has revolutionized the outcomes of intra-ocular tumors thus ensuring globe salvage, reducing morbidity and mortality; and avoiding cosmetic disfigurement. A well-planned dosimetry for plaque brachytherapy results in achieving local tumor control and excellent prognosis.

Surgical Endoresection of Choroidal Melanoma

*First Author: Vishal **RAVAL***

Purpose: To demonstrate a unique surgical endoresection of choroidal melanoma.

Methods: To present a surgical video description.

Results: A 32-year-old male presented with a sudden painless decrease in vision in his right eye for one month. Fundus examination showed a medium size pigmented choroidal lesion 12 x 8 x 7 mm in size nasal to the disc with overlying retinal hemorrhage and surrounding exudative fluid. B-scan ultrasonography revealed an elevated choroidal lesion highly suggestive of choroidal melanoma. Considering the patient had near normal visual acuity, a fine needle aspiration biopsy was performed which confirmed the diagnosis of choroidal lesion of melanocytic origin. This video demonstrates a unique surgical endoresection of choroidal melanoma using a 25G vitrectomy system along with endolaser to tumor bed with silicone oil tamponade.

Conclusions: Endoresection can be an effective eye salvage method for the management of solitary choroidal melanoma, especially medium size where brachytherapy is not possible. Pre and post-systemic surveillance are necessary, along with careful follow-up to detect any local recurrence.

Ophthalmic Epidemiology and Prevention of Blindness

Community-Based Eye Health Program: Two Continuous Programs for Elimination of Avoidable Blindness in School Aged Children From Underprivileged Families in South Jakarta Indonesia

*First Author: Zoraya **FERANTHY***
*Co-Author(s): Kianti Raisa **DARUSMAN**, Rizki **NAULI**, Sri Hudaya **WIDIHASTHA**, Anton Dwi **JUNIARTO**, Sandraningrum **TRIPUTRANTI***

Purpose: Poor eye health-seeking behavior usually comes from inadequate knowledge of eye diseases, eye problems viewed as low priority, lack of affordability amongst children from underprivileged families. This program aims to ensure delivery of information, promote the importance of eye health awareness and early detection, including free full eye examination, free spectacles and medications.

Methods: This is a community-based program which was carried out in South Jakarta, Indonesia. This program was conducted in August 2022. The school aged children were selected from 61 schools from around the city. Each school randomly selected 3-7 students with vision problem that has been reported by the teacher.

Results: There were 244 students selected from each primary school and 4 students had eye diseases such as cataract, glaucoma and retinal problems. There were 31 (12.92%) students who were emmetropia and 209 (87.08%) students who had any kinds of refractive errors. The highest myopia that we found was -11.00 and the highest astigmatism was -4.50. Most of the children were 10 years old.

Conclusions: This program delivered early detection and eye health awareness by targeting the root causes of avoidable blindness and tailoring the program to the specific needs of the children. We were able to provide much-needed services that lead to improved eye health and general health for children both within and outside the school system. After successfully conducted this program, we will continue to prevent blindness and restore sight for more children in Indonesia.

Journey of a Vitreoretinal Fellow in ROP Screening – A Fellow's Perspective of Frugal Imaging Method for ROP Screening

*First Author: Prithvi **CHANDRAKANTH***
*Co-Author(s): Puja **MAITRA**, Parag **SHAH***

Purpose: To evaluate the use of frugal do-it-yourself imaging instruments ASPI (Anterior Segment Photography with Intraocular lens) and T3R(Trash To Treasure Retcam) for Retinopathy Of Prematurity(ROP) screening. As a vitreo-retina fellow/Resident, there is a need of a frugal innovative instrument which is affordable, Portable and Easy for screening ROP in premature babies.

Methods: description on how to make and use - ASPI (anterior segment photography with intraocular lens) : chart paper with 15Dioptre intraocular lens used as macro lens for smartphone and Trash To Treasure Retcam: hand sanitizer bottle along with 20d condensing lens converted to fundus imaging tool for anterior and Posterior segment imaging respectively; collectively costing 800INR/10USD. The imaging, Documentation, counselling done with the above-described tools by 1 VR fellow is portrayed: 10 screening visits-149 premature babies-298 examined eyes.

Results: 252 eyes-Zone 2 & 6 eyes + AROP stages. 6 babies referred to the main center out of which 1 baby

was kept on observation, 2 treated with Pan-retinal photocoagulation lasers and 3 with intravitreal anti-VEGF injection which regressed with no complications on follow-up.

Conclusions: ASPI and T3R are two frugal imaging instrument which would help many fellows, residents or doctors for accurate screening and referral. Hence, this can help in reducing the burden of ROP screening in any facility with minimum resources. small steps to reduce needless blindness.

Ural Very Old Study

*First Author: Mukharram **BIKBOV***
*Co-Author(s): Leisan **GILEMZIANOVA**, Gyulli **KAZAKBAEVA**, Ellina M. **RAKHIMOVA***

Purpose: To study the clinical and epidemiological aspects of eye diseases among the population of the Southern Urals aged 85 years and older.

Methods: The examination was performed 425 very old age people aged 85 and older.

Results: Ophthalmopathology was detected in 100% examined patients, with 40.2% of them unaware about their disease, 79% of very old people noticed a decrease in vision, while only 67% of them visited ophthalmologists. Cataract was the main cause of vision impairment - 41.7%. More than half - 51.4% - of them needed surgical treatment. Age-related macular degeneration was the second cause of vision impairment - 32.6%.

Conclusions: Very old people need to be actively monitored by an ophthalmologist. This will preserve visual functions in very old age, improve the quality of life.

Orbital and Oculoplastic Surgery

Browlift: When, What and How?

*First Author: Akshay **NAIR***

Purpose: A brow lift, also known as a forehead lift or forehead rejuvenation, is a cosmetic procedure to raise the brows. The purpose of this video is to describe the clinical indications, the different techniques for a browlift surgery and a demonstration of a direct brow lift, an internal browpexy (combined with a blepharoplasty) and chemical brow lift (botulinum) in cases of brow ptosis.

Methods: This video demonstration enlists the different types of brow lift: direct, endoscopic, mid-forehead, coronal, chemical and internal brow lifts. A direct brow lift in a case of paralytic brow ptosis is shown along with important factors to consider in the assessment and evaluation of a patient with brow ptosis. In this video, high quality surgical videos show the techniques of internal browpexy as well as how botulinum toxin is used to lift the eyebrows, with special focus on the identification of relevant anatomical landmarks in the periocular region. The video also touches upon the concept of eyebrow volumization.

Results: At the end of this video, the viewer would know the indications, technique, complications and the factors that go in choosing which type of brow lift is more suited in each case of brow ptosis.

Conclusions: A well done brow lift can help reduce wrinkle lines, improves frown lines, raises sagging eyebrows and places the eyebrows in a youthful face.

Comitant Rhino Orbital Mucormycosis and Ophthalmomyiasis in an Uncontrolled Young Diabetic

*First Author: Sumeet **KHANDUJA***
*Co-Author(s): Rubina **SHAIKH**, Rouli **SUD***

Purpose: To present multidisciplinary management of ophthalmomyiasis and mucormycosis by ophthalmologists, otorhinolaryngologists, maxillofacial surgeon and physician.

Methods: To present a single case.

Results: There was complete resolution of mucormycosis and ophthalmomyiasis with prolonged antifungal therapy and repeated surgical debridement.

Conclusions: Comitant ophthalmomyiasis and mucormycosis are rare manifestations and can be managed using multidisciplinary approach.

Epiblepharon: The Art of Management

*First Author: Shaifali **CHAHAR***

Purpose: To describe clinical features and complications arising in cases of children with epiblepharon warranting early surgical correction and illustrating the salient points in surgical techniques utilized for the management of these cases.

Methods: Video describing the presentation, classification, complications warranting intervention and surgical management in cases of epiblepharon.

Results: This video illustrates the important pearls in the diagnosis and management of cases of epiblepharon.

Conclusions: Epiblepharon is a common condition in south-East Asian population. Early surgical intervention is required in symptomatic cases of epiblepharon with keratopathy due to inturned cilia. Surgical management is the mainstay in treatment of these cases and the technique needs to address the pathogenesis to be effective.

Exenteration and split thickness skin graft: Managing orbital Myiasis with recurrent basal cell carcinoma

*First Author: Obaidur **REHMAN***
*Co-Author(s): Dipankar **DAS**, Deepak **SONI**, Vatsalya **VENKATRAMAN***

Purpose: Description of management of a case of recurrent basal cell carcinoma, complicated by orbital myiasis.

Methods: A 55-year-old farmer from a remote village in North-east India presented with steadily progressing swelling in his right eye and a peculiar 'crawling' sensation. A past history of basal carcinoma in the right lower eyelid was given by the patient, for which he underwent tumor excision and lower lid reconstruction 7 years ago. On local examination, an irregular fungating mass on the right upper and lower lids was seen, containing a central cavity. Live crawling maggots were noted in the cavity. CT scan showed intact orbital walls and no intracranial extension.

Results: Turpentine oil lavage with maggot extraction was done for 3 days alongside oral Ivermectin administration. An orbital exenteration on the right side was performed and clear margins were confirmed on frozen section. Temporalis muscle pedicle was rotated into the empty orbital cavity for volume replacement and surface was covered with a split thickness skin graft. For cosmetic rehabilitation, spectacle-mounted prosthesis was prescribed.

Conclusions: This video highlights management strategy and rehabilitation of a patient affected by a disfiguring basal cell carcinoma with associated orbital myiasis. At one-year follow-up, no local recurrence has been noted.

Levator Transposition Surgery for Correction of Unilateral Congenital Ptosis

*First Author: Debby **DEWI***

Purpose: To present, a levator transposition surgery in patients with congenital ptosis

Methods: A 18-year-old boy came with chief complaint of drooping left upper eyelid since birth. Visual acuity was 20/20 in both eyes. Examination revealed Palpebral Fissure Height (PFH) 6 mm, Margin-reflex distance 1 (MRD1) 0 mm, Margin-reflex distance 2 (MRD2) 6 mm, no upper lidcrease, levator function (LF) 4 mm, no lagophthalmos, higher left eyebrow in primary gaze, and normal bell's phenomenon. We diagnosed this patient with unilateral congenital ptosis and performed levator transposition surgery with general anesthesia. The wound incision was made at the lid crease and subciliary to form a tunnel under the orbicularis oculi muscle. Next, the levator muscle is made a tarsal base flap. Lidcrease is reshaped with absorbable sutures and the end of the flap is sutured to the frontalis muscle or periosteum under the eyebrows, then the subciliary wound is sutured subcuticularly.

Results: Postoperative examination revealed MRD1 5 mm, MRD2 6 mm, PFH 11 mm, and 7 mm lagophthalmos. Patient had a good primary eyelid position, no corneal complications, and effective frontalis action on eyelid elevation.

Conclusions: Levator transposition surgery resulted in satisfactory outcome in patient with unilateral congenital ptosis. The surgical technique described above seems to simplify the procedure along with time saving and still have upper eyelid movement after operation.

Palpebare Leviosa: Jones Procedure Revisited

*First Author: Mrittika **SEN***
*Co-Author(s): Santosh **HONAVAR**, Shivashankar **T***

Purpose: To demonstrate pathophysiology of involutional entropion and the Jones procedure.

Methods: This video illustrates the pathogenesis, clinical features and the clinical tests to diagnose lower eyelid entropion. In this video we also describe the surgical steps of a modification of the Jones procedure to correct involutional entropion

Results: Entropion is the inward rotation of the eyelid towards the globe, and it can cause functional disabilities. The horizontal and vertical eyelid laxity and the overriding of the preseptal orbicularis over the preseptal component are underlying causes responsible for lower eyelid entropion. Different surgeries have been described to address mechanisms responsible for lower lid entropion. Jones procedure, first described in 1972, essentially reattaches the lower lid retractors to the tarsus. Jones procedure has undergone several modifications and still remains one of the most preferred surgeries.

Conclusions: Entropion is one of the most common diseases. A sound understanding of the underlying cause and logical management with appropriate surgical technique gives optimum results.

Periocular Lymphangiomas: 'Bleo-ing' in the Wind!

*First Author: Akshay **NAIR***
*Co-Author(s): Bipasha **MUKHERJEE***

Purpose: To demonstrate the use of bleomycin in conjunctival and periocular veno-lymphatic malformations (VLMs)/lymphangiomas. The video includes a demonstration of the dilution, preparation and the steps of injection into the lesion.

Methods: This is a high-quality educational video that looks at clinical and radiological features of Periocular lymphangiomas. Lymphangiomas are benign hamartomatous venous lymphatic malformations composed of variable venous and lymphatic components. They often times involve

the orbit, the periocular structures such as the lids and the conjunctiva. In this video, we demonstrate the radiological and clinical features of periocular and orbital lymphangiomas and the treatment using bleomycin.

Results: The fact that orbital lymphangiomas (OLMs) generally have minimal internal blood flow and an absence of connection to the vascular system (no-flow vascular malformations) make them very amenable to sclerotherapy. In sclerotherapy, a sclerosant is injected into the cystic spaces of the lesion, leading to scar formation and reduction in the size. In the cases shown here, bleomycin sclerotherapy showed reduction in 10/10 cases that were treated.

Conclusions: With high-quality before and after videos, this video shows how bleomycin can be effectively used to treat orbital and periocular veno-lymphatic malformations safely and effectively.

Pie on the Floor – A Unique Intraorbital Foreign Body

*First Author: Priyanka **WALVEKAR***

Purpose: To present a unique case of an intraorbital foreign body that was lodged on the floor of the orbit.

Methods: Hereby presenting a case of a middle-aged gentleman with chief complaints of injury to the left eye following an assault causing periocular pain, lid edema and inability to keep the eye open. On inspection, his right eye findings were unremarkable. His left eye evaluation revealed periorbital edema with ecchymosis, large lower lid laceration about 3mm from the margin extending along the subciliary line from the medial canthus to the lateral canthus and beyond involving about 5mm of the left temple and cheek. The laceration was sutured elsewhere primarily. Eye was in complete ptosis and appeared to be tense. However, globe was intact. Palpatory findings raised a suspicion of a lodged foreign body along the inferior rim. Orbital imaging confirmed the same. Intraoperatively, the same penetrating sutured wound was opened, and the foreign body removed in Toto- Lo and behold it was a piece of tile! The wound was re-apposed. Postoperatively vision was restored, and inflammatory edema was noted to settle. Patient counselled about the possibility of self-resolving nature of traumatic ptosis over time and need for ptosis correction later explained.

Results: The foreign body was removed without disturbing the integrity of the globe and restoring the vision.

Conclusions: Early diagnosis and intervention in case of a an intraorbital foreign body can restore vision while maintaining globe integrity.

Promising Aspects of "One-Stage Correction" Using Frontalis Muscle Advancement Flap in BPES Syndrome

*First Author: Deepak **SONI***
*Co-Author(s): Kasturi **BHATTACHARJEE**, Obaidur **REHMAN**, Vatsalya **VENKATRAMAN***

Purpose: A multistage approach is usually recommended for the management of blepharophimosis syndrome. We present a single-stage correction of all the components of blepharophimosis syndrome with the incorporation of the frontalis muscle advancement flap.

Methods: This video presents a single-stage surgery in a 3-year-old female child, where the initial correction of palpebral phimosis started with a lateral canthotomy and canthoplasty, followed by correction of epicanthus inversus by the Y-V plasty, and telecanthus by plication of the medial palpebral ligament. Finally, correction of the vertical component (bilateral ptosis) was addressed by brow suspension using a frontalis muscle advancement flap.

Results: Single-stage correction via multiple surgical steps leads to satisfactory functional as well as aesthetic outcomes in all four classical components of blepharophimosis syndrome. The technique of frontalis muscle advancement flap resulted in adequate and appropriate correction of severe congenital ptosis in blepharophimosis syndrome with stable and superior surgical outcomes.

Conclusions: The one-stage procedure has several advantages over multistage procedures such as a single surgical sitting, decreased hospitalization and recovery time, reduced exposure to general anesthesia, and cost-effectiveness, which effectively obviate the issue of loss to follow-up seen with the multi-stage procedures in low socio-economic countries.

Re-establishing Lacrimal Drainage by Canaliculo-Rhinostomy After Dacryocystectomy: A Viable Option in Symptomatic Patients

*First Author: Shruthi **TARA***
*Co-Author(s): Pushkar **BHADANI**, Neha **PANICKAR***

Purpose: To present a modified technique of canaliculo-rhinostomy, in the complete absence of lacrimal sac, as a means to reestablish lacrimal drainage in post-dacryocystectomy (DCT) patients.

Methods: Procedure was done in 15 proven and established post-DCT patients with intact canaliculi of at least 7-8 mm. Patients presented with bothersome tearing were included. Procedure involved creating a bony ostium of optimum size, internal membranectomy and a large nasal mucosal flap anchored appropriately to create a passage in line with the common canaliculus. Adjunctively bicanicular intubation and mitomycin- C were used. The video demonstrates the

surgical procedure and tabulated results

Results: Of the 15 patients, 14 had functionally and anatomically patent lacrimal passage, one was symptomatically better with partial regurgitation of clear fluid . 3 patients had tube prolapse which was re-positioned as office procedure. The follow-up period was for 1 year.

Conclusions: With a success rate of 93.33% and a resultant patent lacrimal tear passage and trivial complication of tube prolapse, we can conclude, this technique of modified canaliculo rhinostomy in post-DCT patients is a safe and effective procedure with promising results.

Vertical Lid Split Orbitotomy for Medial Orbital Lesion

*First Author: Riffat **RASHID***
*Co-Author(s): Nishat **PARVEEN**, Sadia **SULTANA***

Purpose: To evaluate the surgical outcome of vertical lid split orbitotomy for a large medial retrobulbar orbital lesion.

Methods: We report a case of 14-year-old female, presented to the oculoplasty department with complaints of gradual, painless proptosis of her left eye for the last two years. On examination, her left eye vision was 6/6 and the globe was displaced forward and outward. CT scan orbit shows a large well-circumscribed contrast-enhancing mass in the medial retro-orbital region. She had undergone vertical lid split orbitotomy surgery and the tumor was removed. The tumor was cavernous hemangioma confirmed after histopathological examination. The patient was well during her one-year follow-up.

Results: Vertical lid split orbitotomy is the safest approach for the medial retrobulbar orbital lesion. It provides excellent exposure to deep orbital lesions. The incision is small and wound repair is easy. This video shows successful excision of a large medial deep orbital tumor and postoperatively the patient was symptom free with excellent cosmetic outcome. No complication was observed during her one-year follow-up period.

Conclusions: Vertical lid split orbitotomy not only provide good access to deeper orbital space but also enables better healing and cosmesis.

Pediatric Ophthalmology and Strabismus

Fold to Straighten- Miniplication Technique for Small Angle Residual Strabismus

*First Author: Deepti **JOSHI***

Purpose: Miniplication is a new rectus muscle tightening procedure introduced for the correction of small-angle strabismus. The aim of this video is to highlight the procedure and its outcomes in management of small angle residual strabismus.

Methods: In this procedure, 6-0 polyglactin 910 suture was secured to the central 3-4 mm of the muscle belly 5mm posterior to the insertion and was then passed through the sclera just anterior to the muscle insertion to plicate the central portion of the muscle. In our study 5 patients with residual exotropia underwent miniplication.

Results: Deviation reduced from 10-16Δ (mean,12Δ) to 2-8Δ (mean, 5.8Δ). The average correction by miniplication was 9(Δ). No complications noted.

Conclusions: Miniplication which can be performed under controlled anesthesia is a safe and simple alternative to prismatic glasses in residual small deviations and was especially useful for adult with residual strabismus who don't want to use spectacles.

Refractive Surgery

Pseudosuction: The Laser That Did Not Pass

*First Author: Ramya **SAMPATH***
*Co-Author(s): Amar **AGARWAL**, Dr.preethi **NAVEEN**, Dr.bindya **WADHWA***

Purpose: To present a rare case with complication i.e., pseudosuction, that we underwent while performing Small Incision Lenticule Extraction (SMILE) due to an unknown entity.

Methods: A 24-year-old female was planned and posted for SMILE. Her refractive error was -2DS/-0.50DC @ 180° in the right eye with a -1.50DS/-0.50DC @ 180° in the left eye. The preoperative evaluation was normal. There was no conjunctival entrapment, excessive tears or foreign body over the cornea. The treatment was centered which was confirmed using the infrared light. The Femtosecond laser was started, however, through the microscope it was observed that the laser was not being passed. Only a linear section of laser was passed in the right eye in the infero nasal quadrant. With the assumption that the laser has passed with a low energy setting, the opening of the incision was attempted but was unsuccessful. A new batch of cones was used, and the laser passed successfully.

Results: SMILE surgery was successful with the new batch of cones that was utilised. Postoperatively, the unaided visual acuity was 6/6 in both eyes.

Conclusions: Pseudosuction is one of the rare complications. The probable cause could be an unidentified interface entity or a defaulted batch of suction cones. If the pseudosuction is caused due to a defaulted batch of suction cones, the batch can

be replaced with a new one and the SMILE surgery proceeded.

Retina (Surgical)

Code Red! – Subretinal Surgical Evacuation of Massive Hemorrhagic Polypoidal Choroidal Vasculopathy

*First Author: Anand **RAJENDRAN***

Purpose: Massive submacular hemorrhages (SMH), secondary to Neovascular AMD and PCV are formidable to treat. The video helps highlight the steps of the complex procedure of surgical removal of a large submacular hemorrhage secondary to PCV.

Methods: A 58-year-old male presented with reduced vision OD in the right eye 5 days earlier. BCVA was 1/60 OD; 6/9 OS. Fundus exam revealed large fresh SMH. OCT highlighted large SMH, tall PEDs. FFA-ICG confirmed PCV. Intravitreal Ranibizumab (0.5mg) was administered. A week later, vitreous hemorrhage was noted. 3-port 23 G Pars plana vitrectomy was performed. Temporal to the arcades, utilizing a 40 G pipette attached to syringe infusion, multiple localized retinal detachments were created. A curvilear retinectomy in equatorial retina with vitrectomy probe, (post-diathermy) was done. Large submacular clots were evacuated with cutter and soft silicone tip aspirator. Laser photocoagulation, Fluid-air exchange was followed by Silicone oil infusion.

Results: Postoperatively retina was well attached with negligible submacular blood. Two weeks later, BCVA was6/60 BCV and had a well attached retina. 3 months, BCVA was 6/18; the macula flat with no bleed. Six months - BCV was 6/18 with flat macula; attached retina. OCT showed reduced elevation of the RPE and ICG/FFA showed inactivity of the pathology.

Conclusions: Mild submacular bleeds may be managed by intravitreal antiVEGF injections, pneumoretinopexy, tPA injections. However, massive SMHs, mandate a surgery. The video demonstrates the nuances, demystify a radical procedure, that may yield very gratifying results as in our case.

Double Trouble of Fluid and Flap

*First Author: Deepak **AGARWAL***

Purpose: To represent a case of macular hole formation after anti-VEGF injection and subsequent management by a free ILM flap.

Methods: A 65-year-old, one-eyed female was presented with CNVM in left eye. After 3rd anti-VEGF injection, full thickness macular hole occurred due to release of VMT. During surgery for the large FTMH, inverted ILM flap was being tried, but the flap got dislodged from hole margin. Subsequently a free ILM flap was harvested and placed in macular hole under PFCL.

Results: Macular hole was closed on the follow-up.

Conclusions: The present video shows a unique case of FTMH formation after anti-VEGF. It also highlights the challenging surgery of free ILM flap for macular hole closure.

Enigmatic Tractional Retinal Detachment- A Way Out

*First Author: Atul **THADANI***
*Co-Author(s): Poornachandra B. B **GOWDA**, Rubble **MANGLA**, Naresh Kumar **YADAV**, Rohit **SHETTY***

Purpose: Through this video, we intend to demonstrate a few tips and tricks in technically challenging cases of tractional retinal detachments (TRD) with varied presentations

Methods: All video records of patients undergoing surgery for tractional retinal detachment were reviewed. The location of TRD, areas of hyaloid separation and fibrovascular proliferation or any other challenges for detachment were noted and grouped into different categories based on the technique used to approach. Surgical techniques in tackling causes were explored.

Results: Tractional detachment was the commonest indication for vitreoretinal surgeries ranging between 60 – 80% of total patients requiring surgery. Common challenges faced during surgeries included finding a correct plane for dissection, intraoperative bleed, iatrogenic retinal break, pre-existing break, and macular hole. A good share of patients benefited highly by restoring a good vision despite presenting at an advanced stage

Conclusions: Despite excellent skill, technique, and high-end technology, some cases of tractional detachments always remain a challenge. By utilizing the techniques exhibited in the surgical cases shown in the video, one can have a better understanding to tackle cases of tractional Retinal detachments.

Firing All Cylinders in a Case of Endophthalmitis Following Open Globe Injury – Primary Repair, Vitrectomy, Endoscopy, Rehabilitation

*First Author: Vivek **DAVE***

Purpose: To describe the step-wise management in a case of open globe injury with endophthalmitis from primary repair to rehabilitation.

Methods: A 9-year old male came to us with a history of penetrating trauma to the LE one day back. Examination revealed a left eye corneal tear with total traumatic cataract. Presenting vision was noted to be hand motions positive. A tear repair was planned with lens aspiration under general anesthesia

on the same day. Third post operative day showed a well repaired tear, but the B scan showed echoes s/o endophthalmitis with anterior chamber exudates. The patient was thus posted for left eye vitreous biopsy + AC wash + vitrectomy + intraocular antibiotics under GA.

Results: On table post removal of AC exudates, conventional view was found to be very hazy and a very limited vitrectomy was possible. The patient was thus planned for an endoscopic vitrectomy. The case demonstrates the utility of an endoscopic approach to achieve adequate clarity of the vitreous cavity. A month later the eye settled with a corneal scar and a clear vitreous cavity. The patient underwent a contact lens trial after 6 weeks and on fitting a rigid gas permeable contact lens, the vision was noted to have improved to 20/160.

Conclusions: Persistent efforts are paramount for getting a satisfactory result in a case of trauma with endophthalmitis. Repeat interventions are common. As visualization is crucial, endoscopy helps circumvent media opacities and allows for adequate and appropriate surgical interventions. Management should continue till appropriate visual rehabilitation.

Four Flanged Hybrid Fixation Technique for Posterior Dislocated IOL+CTR Bag Complex in Coloboma With Retinal Detachment

First Author: Reshma ***PADMARAM***
Co-Author(s): Anwesha ***CHAKMA****, Sri* ***GANESH****, Monika* ***KAPOOR****, Savio* ***PEREIRA***

Purpose: To introduce the technique of four flange hybrid technique of IOL implantation of the same dislocated Akreos CTR bag complex in a patient with coloboma and retinal detachment as a single stage surgery.

Methods: A 60-year-old female with type 2 iridofundal coloboma underwent cataract surgery with CTR + PCIOL implantation 17 years back, presented with chief complaint of loss of vision associated with floaters. On slit lamp examination peripheral corneal bullous keratopathy with significant iridodonesis with inferior iris coloboma was noted with dislocated CTR bag IOL complex (Akreos). Fundus examination showed inferior coloboma with shallow RD. Patient was managed by pars plana vitrectomy + PFCL + transcleral fixation of the same CTR IOL BAG complex with four flange technique + subretinal fluid drainage + fluid air exchange + endo laser + silicon Oil injection.

Results: Postoperative checkup showed a stable IOL with no tilt and retina was attached. This technique proves that similar dislocated/subluxated IOLs can be tackled with good results.

Conclusions: To the best of our knowledge, this is the first case report where the four-flange hybrid (ab interno and ab externo) technique has been performed for fixing the same dislocated CTR IOL BAG complex without making any additional sclerocorneal incision.

Levitating Dropped Crystalline Lens With Intraocular Lens While Canabrava's 4 Flanged Scleral Fixation

First Author: Soonil ***KWON***

Purpose: To introduce an easier method to remove dropped crystalline lens while performing Canabrava's 4 flanged scleral fixation in patients with crystalline lens dislocation into vitreous cavity.

Methods: After complete vitrectomy, a monofocal hydrophobic IOL (ARTIS monofococal, Cristalens Industrie) was fixed with 5-0 prolene as described in the Canabrava's technique but descended into the vitreous cavity before making flange. Dropped crystalline lens was placed on top of the IOL and then the IOL was pulled to raise the crytalline lens to anterior chamber where phacoemusification was done. After removal of lens, flanged fixation was completed.

Results: Dropped crystalline lens could be removed with phacoemulsification, which took much less time and performed more easily than lens removal with vitreous cutter.

Conclusions: Through this method, it is expected that lensectomy and fixation can be performed more easily in patients with lens dislocation into the vitreous cavity.

Lifting the White Walkers Curse: Management of Coat's disease

First Author: Akshay ***KOTHARI***
Co-Author(s): Mounika ***BOLISETTY****, Jai* ***KELKAR****, Aditya* ***KELKAR***

Purpose: This video is a dramatic representation of true events surrounding the successful management of Coat›s disease with total exudative retinal detachment in a two-year-old boy.

Methods: A 2-year-old boy was brought by his parents with complaints of whitish reflex in his left eye for 2 months. Anterior segment examination was normal. Fundus examination revealed telangiectatic vessels with exudative retinal detachment suggestive of Coat's disease. He underwent 25-gauge pars plana vitrectomy with external subretinal fluid drainage with cryotherapy. The authors have used a combination of animation and clips from the "Game of Thrones", along with the surgical video to ensure, our learned audience is educated as well as entertained.

Results: With timely intervention, dreaded complications such as neovascular glaucoma and phthisis bulbi were avoided. On subsequent follow-ups over a duration of 1 year, the child had well attached retina and is currently undergoing visual rehabilitation therapy.

Conclusions: Coats disease is a dreadful condition with

poor prognosis. Therefore, early detection and timely intervention is essential to avoid further complications in children.

No Oil or Gas Tamponade: Fibrin Glue Assisted Surgeries for Rhegmatogenous Retinal Detachments

*First Author: Mudit **TYAGI***

Purpose: To describe a novel surgical technique utilizing fibrin Glue as a tamponade in cases of rhegmatogenous retinal detachment (RRD). This technique obviated the need for using silicone oil or any long-standing gas tamponade and also obviated the need for any postoperative positioning.

Methods: A complete PPV was done in a case of RRD followed by fluid–air exchange, laser photocoagulation around the breaks and application of 0.1 to 0.2ml of fibrin glue. No long-acting gas or silicone oil was used subsequently for tamponade. No specific postoperative positioning was prescribed.

Results: The patient›s retina was attached at day 1 and at 1 week and 1 month of follow-ups The best corrected visual acuity had improved from a preoperative vision of 20/400 to 20/80 at 1 week and 20/50 at 1 month. The patient did not have any complication like postoperative inflammation or elevation of IOP.

Conclusions: A fibrin plug can safely and adequately cover the bare retinal breaks until the effect of laser retinopexy becomes permanent. Thus it is a promising technique for the treatment of simple uncomplicated RRD that allows early visual recovery while avoiding the problems of gas or oil tamponade and obviating the need of postoperative positioning.

Pick and Peel - Utilize Your Armamentarium

*First Author: Shishir **VERGHESE***

Purpose: To highlight the importance of multiple instrumentation in vitreoretinal surgery for advanced proliferative diabetic retinopathy.

Methods: A video-based presentation of multiple vitreoretinal surgical cases of advanced proliferative diabetic retinopathy.

Results: Videos of multiple cases highlighting the different presentations and surgical management with multiple instruments such as forceps, scissors, pick in addition to the occutome in advanced proliferative diabetic retinopathy surgery.

Conclusions: Effective removal of membranes in proliferative diabetic retinopathy surgery has been highlighted by the use of multiple instruments.

Ploughing Beneath the Macula!

*First Author: Bhuvan **CHANANA***

Purpose: Management of sub retinal bleed with a novel technique and removal of choroidal neovascular membranes will be shown in this video.

Methods: In the first case, a 63-year-old male presented with complete loss of vision. He was diagnosed as wet age-related macular degeneration with sub-macular hemorrhage and a breakthrough bleed. The choroidal neovascular membrane (CNV) was surgically removed following vitrectomy. In the second case, a 43-year-old female presented with inferior 180-degree giant retinal tear and a large dense sub-macular bleed. Drainage of thick sub-macular bleed by an innovative technique is being described in the video clip.

Results: Both patients were successfully managed. A choroidal rupture was noted adjacent to the disc intra-operatively in the second patient. The visual acuity improved to 20/80 in the first patient and 20/100 in the second patient.

Conclusions: A novel technique for drainage of sub-macular dense hemorrhage in attached retina is being described in this video. Some cases of resistant CNV with vitreous hemorrhage can be managed surgically by removal of these membranes.

Plug the Pit: A Surgical Technique for Optic Disc Pit

*First Author: Hussain **KHAQAN***

Purpose: To present a recently described surgical technique for the treatment of optic disc pit (ODP) and evaluate its outcomes.

Methods: A patient presented with refractory serous macular detachment and secondary full thickness macular hole associated with ODP, for which he had already undergone pars-plana vitrectomy with internal limiting membrane peeling and autologous serum application over the optic disc pit. A recently described surgical technique was carried out to treat this case. In this procedure, a silicone punctal plug was used to close the ODP. The macular hole was closed with a human amniotic membrane graft. Endotamponade was carried out with 1,000cs silicone oil.

Results: Results: Postoperatively, the serous macular detachment subsided and the punctal plug and amniotic membrane graft were in situ. Patient's visual acuity improved from counting fingers to 6/38 at one year postoperative.

Conclusions: This technique appears to be safe and effective in resolving long standing serous macular detachment associated with ODP, which was refractory to the conventional intervention. However, more cases and longer follow-ups are needed to affirm the safety and efficacy of this recently described procedure.

Rotated SFIOL – An Unusual Complication of Intra-scleral Haptic Fixation

*First Author: Ruchir **TEWARI***

Purpose: To report a case of intra-scleral haptic fixation of subluxated in the bag multipiece IOL that presented with 90 degrees rotation of the IOL in the postoperative period.

Methods: A 66-year-old male, both eyes cataract surgery done 10 years back, presented with complaints of decrease in vision in his right eye post-minor trauma sustained 2 months back. UCVA was 1/60 and 6/9 in right eye and left eye respectively and BCVA was 6/9 both eyes. slit lamp examination revealed subluxated IOL bag complex in the right eye. As the IOL was noted to be a multipiece lens, pars plana vitrectomy and intra-scleral haptic fixation of the same IOL were planned. The surgery was uneventful, and the eye was left with partial air tamponade. On postoperative day 1, the IOL was found to be rotated 90 degrees with the IOL edge pointing towards the cornea. The IOP was elevated and the BCVA was perception of light. Another surgical intervention was performed where after an initial release of haptics and a trial of rotation inside the eye, an IOL exchange and haptic fixation were performed in the same intra-scleral tunnels.

Results: The IOL was well cantered after the second surgery and the patient›s BCVA improved to 6/9.

Conclusions: Intra-scleral haptic fixation of an IOL that has been inside the capsular bag for a long time may have the unforeseen complication of IOL rotation in the postoperative period. The patient may be counseled accordingly when attempting this procedure.

Subretinal Gliosis Removal in a Chronic Retinal Detachment - An Unorthodox Approach

*First Author: Naresh **KANNAN***
*Co-Author(s): Avik Dey **SARKAR***

Purpose: Removal of subretinal bands, especially, that preclude detached retina to get settled and “napkin ring” around optic disc, is considered an essential step in successful RRD managementwith PVR. This video features a unique technique of subretinal gliotic band removal through subretinal approach.

Methods: A 57-year-old presented with total RRD with extensive subretinal bands in OS. After completing usual steps of pars plana vitrectomy, the detached retina failed to get settled due to cobweb-like network of subretinal bands. Then a 25-gauge valved port was inserted 10mm from the limbus into the subretinal plane and all the subretinal bands were removed meticulously without even making a single retinotomy and anatomical success was achieved. This innovative technique is a perfect blend of skills with creativity.

Results: This unorthodox technique of removing subretinal gliotic bands via subretinal approach is a long-lost art and, in this video, helped in reattaching the chronic retinal detachment. Also there is no need for a posterior retinotomy, thereby preventing the migration of PFCL into sub retinal space

Conclusions: We want to resurface the application of this technique in the current vitreoretinal practice in surgical scenarios with extensive subretinal bands. We hope this technique will be considered a boon to the vitreoretinal surgeons in managing these tricky situations.

Surgical Management of Extensive Submacular Perfluorocarbon Liquid Globules

*First Author: Lawrence **IU***
*Co-Author(s): Michelle **FAN***

Purpose: Perfluorocarbon liquid (PFCL) is commonly used for the treatment of rhegmatogenous retinal detachment in vitrectomy surgery. Inadvertent retention of PFCL in the subretinal space is a known complication which can lead to metamorphopsia and significant visual disturbance. This video illustrates the surgical technique of treating multiple subretinal PFCL globules in the macula with induction of macular detachment, retinotomy and direct drainage.

Methods: The surgical technique involves induction of macular detachment with subretinal injection of balanced salt solution, creation of retinotomy at the far temporal macular region, direct drainage of subretinal PFCL globules assisted by fluid-air exchange, endolaser retinopexy for retinotomy and tamponade with long-acting gas 12% C3F8.

Results: A 46-year-old male patient had history of repeated vitrectomies for rhegmatogenous retinal detachment caused by a large superior retinal tear. The retina had been flattened but multiple submacular PFCL globules were noted postoperatively leading to significant metamorphopsia. The described technique successfully removed the submacular PFCL globules with flattening of the retina and improvement of metamorphopsia and vision.

Conclusions: Extensive submacular PFCL globules can be safely and effectively removed by induction of macular detachment, retinotomy and direct drainage.

Tackling Macular Puckers: Play it Smart, Not Hard!

*First Author: Veer **SINGH***
*Co-Author(s): Shubhneek **KAUR**, Dharmendra **KUMAR**, Arjan **SINGH**, Preetam **SINGH***

Purpose: To demonstrate proper methods and various tips and tricks on how to safely surgically tackle different kinds of ERMs in order to maximize visual outcomes & minimize complications.

Methods: This video is a compilation of «7 Different

Complex Macular Pucker Cases.» The video is made with an analogy to the 2021 Popular Netflix Show SQUID GAME comparing each case with the different games in the show.

Results: In the show «Squid Game,» the players use their minds and not might to smartly win games. Similarly, in this video compilation of «7 Different Complex Macular Pucker Cases,» each case is smartly tackled, to win against the macular puckers with the mind using proper techniques to safely remove the puckers.

Conclusions: ERM, or Macular Pucker is the development of scar tissue on the macula. An ERM may be asymptomatic or cause symptoms like reduced vision, distortion and central scotomas. Surgical Removal remains the only treatment option in symptomatic patients. Complications of surgery include iatrogenic breaks, macular hole formation, retinal detachment and recurrence. In this video compilation, we demonstrate proper surgical techniques and various tips and tricks on how to operate these cases to safely surgically tackle different kinds of ERMs in order to maximize visual outcomes and minimize complications.

Techniques for Managing Persistent/ Recurrent Myopic Macular Hole

*First Author: Ramya **APPANRAJ***
*Co-Author(s): Veerappan **SARAVANAN***

Purpose: This video is to describe various surgical techniques for management of persistent or recurrent myopic macular hole that fail to close after primary ILM peeling surgery.

Methods: For persistent macular hole which underwent vitrectomy, internal limiting membrane peeling and isovolumetric gas tamponade, various techniques has been tried for hole closure. Though various techniques have been described for persistent hole, the options are very limited while treating persistent myopic macular hole.

Results: In this video, we describe 2 such cases of recurrent myopic macular hole which was managed effectively with ILM graft in one case and retinal auto graft in other case along with temporal relaxing retinectomy . In both these cases, anatomical closure was obtained and there was improvement in visual acuity.

Conclusions: To conclude, persistent myopic macular hole is surgically quiet challenging one, these techniques can be tried to increase further anatomical and functional success.

Temporary Keratoprosthesis – Assisted Impaling of Posteriorly Dislocated Brunescent Cataract and Penetrating Keratoplasty

*First Author: Nasiq **HASAN***
*Co-Author(s): Mohamed **IBRAHIME ASIF***

Purpose: To demonstrate a case of posteriorly dislocated cataract with total leucomatous corneal opacity and to describe its management.

Methods: A case of total leucomatous corneal opacity of both eyes with posteriorly dislocated lens presented to our center. Temporary Keratoprosthesis - Assisted Impaling of posteriorly dislocated Brunescent cataract and penetrating keratoplasty was performed.

Results: The patient presented to us with perception of light in the index eye. Post-surgery his vision improved up to 2/60. The graft was clear and the retina was stable at 2 months' follow-up.

Conclusions: Temporary Keratoprosthesis - Assisted Impaling of posteriorly dislocated Brunescent cataract and penetrating keratoplasty.

The "Mini-PVD Technique" in Complex Flat Sticky Membrane Diabetic Vitrectomy!

*First Author: Veer **SINGH***
*Co-Author(s): Shubhneek **KAUR**, Dharmendra **KUMAR**, Arjan **SINGH**, Preetam **SINGH***

Purpose: To demonstrate the use of the «Mini-PVD Technique» to safely and efficiently manage cases of Flat Sticky Membrane Diabetic Vitrectomy.

Methods: We describe a safe and efficient method of managing these cases using our Mini-PVD Technique which is used to create a membrane edge to start membrane dissection, rather than searching for one, reducing the complications related to vitreoschisis and improving outcomes.

Results: In this video compilation, with the help of animation and by demonstrating our «Mini-PVD Technique" in 4 Complex Flat Sticky Membrane Proliferative Diabetic Retinopathy Tractional Retinal Detachment Cases we highlight the advantages offered by this technique in such cases such as increased ease, efficiency, and safety along with reduced surgical time & complication rates.

Conclusions: Diabetic Tractional Retinal Detachment cases having Flat Sticky Fibro-Vascular Membranes without a PVD are some of the most challenging Diabetic Vitrectomy surgery cases. In such cases, the most commonly used approach is to find a true membrane edge to start dissection, which not only is hard to find but many a time gets you in the false surgical plane due to vitreoschisis. We highlight the advantage offered of not having to find a membrane edge in these cases and instead creating an edge to start membrane dissection using our "Mini-PVD Technique" which results in increased ease, efficiency,

and safety along with reduced surgical time & complication rates.

Unconventional Posterior Vitreous Detachment Induction in Detached Retina

*First Author: Sriharanathan **POOPALARATNAM***

Purpose: To introduce a novel technique of PVD induction when conventional methods fail.

Methods: Penetration vitrector via the space between the retina and posterior hyaloid face temporal to fovea provides grip to extend PVD towards disc.

Results: Atraumatic PVD induction is achieved.

Conclusions: When conventional methods fail, a clever stoic surgeon must have safe unconventional techniques in his armamentarium to achieve the goal.

Using 27-gauge MIVS assisted transcleral fixation of intraocular lens

*First Author: Kajal **SINGH***
*Co-Author(s): Ashish **MARKAN***

Purpose: The surgical video describes the use of 27-gauge MIVS to transfixate a 3-piece IOL in an aphakic patient.

Methods: A 27 G infusion cannula was secured in the infero-nasal quadrant. Following this, scleral tunnels were made with a 27-gauge trocar 2mm from the corneal limbus at the 2 o'clock and 8 o'clock positions. The trochar was initially inserted parallel to the limbus for approximately 2 mm and then directed towards the center of the eye. After this, a 3-piece IOL was inserted into the anterior chamber using an injector, and the trailing haptic was held outside to prevent the IOL from falling into the vitreous cavity. Using two 27 G max grip forceps (one inserted through the 27G cannula and other through the opposite MVR entry at limbus), the haptic was guided into the tip of forcep inserted through the 27G cannula. The trochar was externalized after pulling the cannula on to the shaft of the forceps. Similar technique was used for the trailing haptic. Both the haptic ends were flanged using heated tip of localizer used in buckling surgery. The haptics were then inserted into the tunnel.

Results: The 3-piece IOL was adequately fixated into the sclera, without any tilt or decentration.

Conclusions: This is a novel technique to transfixate a 3-piece IOL into the sclera using 27-gauge MIVS which requires minimal manipulation.

What's the Deal Here?

*First Author: Shishir **VERGHESE***

Purpose: To report the surgical outcomes in a 10-year-old girl with probable familial exudative vitreoretinopathy (FEVR).

Methods: To present a vitreoretinal surgery case report.

Results: A 10-year-old girl presented with complaints of decreased vision in the left eye for past 6 months. It was noticed only after a school screening. Antenatal history revealed a normal course of pregnancy with the affected child being one of triplets. There was history of low birth weight and ICU stay for a period of 20 days. An ocular examination was not conducted during that period. There was no family history of any systemic or ocular illness. Best corrected vision in the right eye was 6/18 and in the left eye was hand movements. Anterior segment examination was unremarkable with clear lens. Right eye posterior segment revealed presence of an epiretinal membrane with abnormal vasculature at posterior pole with vessels failing to reach retinal periphery temporally along with neovascularization elsewhere. Left eye showed a total retinal detachment with posterior tractional membranes, however no break could be identified. Clinically there was no evidence of uveitis, no shifting fluid was seen and a basic uveitic work up was normal. She underwent left eye 23G pars plans vitrectomy with removal of posterior tractional membranes, partial ILM peeling, endolaser fluid air exchange and silicone oil injection.

Conclusions: This case highlights the successful retinal attachment in a child with FEVR following pars plans vitrectomy.

When the Frag Fails - Phaco in the Vitreous

*First Author: Mae-Lynn catherine **BASTION***
*Co-Author(s): Ainal **ADLIN NAFFI**, Zokri **MOHAMAD FAIZAL**, Othmaliza **OTHMAN***

Purpose: This video aims to show the method employed to remove a dropped nucleus in a pseudophakic eye, that had to be emulsified in the vitreous cavity, when the fragmentome could not be deployed.

Methods: A retrospective review of 1 unusual case is presented.

Results: A 79-year-old gentleman with diabetes, pseudoexfoliation glaucoma and mild non-proliferative diabetic retinopathy with maculopathy underwent eventful cataract surgery that saw his entire nucleus drop during hydrodissection resulting in counting finger postoperative vision. Intraocular lens had been inserted in the sulcus. Five days later, 25G pars planar vitrectomy was performed to remove the dropped nucleus. However, he complained of pain every time the 25G fragmentome was engaged. At nuclear sclerosis 3+, the vitreous cutter was ineffective. A decision was made to perform phacoemulsification via pars planar incision of 2.4mm following adequate preparation. This involved thorough vitreous clearance with indentation, and floatation of the the nucleus to mid vitreous with perfluorocarbon liquid. The light pipe functioned as a second instrument as well as

illuminator. The case was completed without other complication, and the patient enjoyed improvement of vision to 6/12 one month postoperatively due to maculopathy.

Conclusions: Fragmentome failure can be overcome by thorough clearance of vitreous, followed by usage of heavy liquid to protect the macula and act as a posterior support. The nucleus is then phacoemulsified in the vitreous-free core, via a 2.4 mm pars planar incision.

"Ousting the Invaders" – Intraocular Foreign Body Removal

First Author: Kartikey ***KOTHARI***

Purpose: To show case different cases of intraocular foreign body (IOFB) removal right from fresh IOFB to old retained IOFB.

Methods: All the cases with confirmed retained intraocular foreign bodies were included. Presence of IOFB was confirmed with b scan or x ray or CT scan whenever required. Cases from all age group were included. IOFBs were removed from posterior segment of the eye following pars plana vitrectomy with the help of intraocular magnets or forceps through the scleral or cornel incision. Tear repair was done and cataract extraction in cases where lens was damaged due to trauma was performed. Silicon oil was injected whenever tamponade was required.

Results: In all the cases foreign bodies were removed successfully. All the patients were regularly followed up and regained satisfactory vision after the final surgery.

Conclusions: Intraocular foreign bodies (IOFBs) are critical ophthalmic emergencies that require urgent diagnosis and treatment to prevent blindness or globe loss. Timely intervention and planned management can help patient regain good vision.

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