איגוד רופאי העיניים בישראל
ISRAELI OPHTHALMOLOGICAL SOCIETY

The 7th Annual Congress of
The Israeli Ophthalmological Society (IOS)

18-19 June 2019 | David Intercontinental Hotel, Tel Aviv

Abstract Booklet

Congress Secretariat
MEDICAL Expo
Sharing Medical Knowledge

Welcome Note

Dear Friends and Colleagues,
Welcome!

It is our pleasure to invite you to participate in **The Seventh Annual Congress of the Israeli Ophthalmological Society (IOS)**, which will take place on 18-19 June 2019, at the David Intercontinental Hotel in Tel-Aviv, Israel.

On June 2018 we held the 6th Annual Congress of the IOS which turned out to be a great success, being one of the largest ophthalmology meetings ever held in Israel with over 1100 participants, including over 550 ophthalmologists. This meeting was a platform for lectures by ophthalmologists from all over the country, from hospitals and the community, included discussions and update lectures in all subspecialty areas and also housed one of the largest ophthalmic-industry exhibitions in Israel.

Alongside the scientific/research presentations, the upcoming meeting will include update lectures in all sub-specialties of ophthalmology, clinical case presentations and expert discussions, with world renowned guest lecturers and special sessions. This year will include a special debate session on the hottest topics in ophthalmology discussed by prominent ophthalmologists. A session entitled "What would you have done?" will be an interactive session featuring challenging cases which will be presented and discussed with the participation of the audience. Additionally, our famous "Rapid Fire" session will include brief presentations of fascinating cases from all fields of ophthalmology.

There will also be an emphasis on discussion and audience questions to the lecturers.

Last year we had a very successful Russian-Israeli Meeting and this year we will have the French-Israeli symposium with leading experts representing the two national societies.

We will also join forces again with all of our professional colleagues, and include dedicated sessions for: optometrists, ophthalmic nurses, orthoptists, photographers, technicians, as well as residents.

The conference will again house the largest ophthalmology industry exhibition in Israel, including world leading ophthalmology companies as well as Israeli leading firms in our field, all of which contribute year-round in developing and educating ophthalmology in Israel.

The annual conference is the pinnacle of the IOS activities, and one of the largest ophthalmology meetings is Israel. We encourage all hospital and community ophthalmologists to take an active role in this important meeting, and submit abstracts for presentation of research, case presentations and topics for discussion.

Please enter the IOS meeting website, starting January 1st 2019, for registration, abstract submission, the meeting program and updates up to the meeting as well as after it.

The website also includes all information from the 2017 and 2018 IOS meetings, including a photo gallery from the meetings and the exhibitions.

We are happily available regarding any issue or question related to your participation in the annual meeting.

We wish you a fruitful and insightful meeting and a great time in the exhilarating city of Tel-Aviv

Prof. Dan D. Gaton, M.D.
President, Israeli Ophthalmological Society

Prof. Elad Moisseiev, M.D.
Head, Congress Committee

Congress Co-Chairs

Prof. Dan D. Gaton, M.D.

Prof. Elad Moisseiev, M.D.

Organizing Committee

Dr. Eitan Livny, M.D

Chair, Session "Two Sides of The Story"

Dr. Eyal Aloni, M.D.

Chair, Session "Two Sides of The Story"

Dr. Nurit Mathalone, M.D.

Chair, Session RAPIDE FIRE

Dr. Vicktoria (Vicky) Vishnevskia-Dai, M.D.

Chair, Israeli Ocular Oncology Society

Dr. Alon Skaat, M.D.

Chair, Session "What Would You Have Done?"

Heads Of Sub-Specialty Societies And Sessions

Dr. Zohar Habot-Wilner, M.D.

Chair, Israeli Uveitis Society

Dr. Ayelet Priel, M.D.

Chair, Israeli Oculoplastic Society

Prof. Abraham Solomon, M.D.

Chair, Israeli Refractive Surgery Society

Dr. Shulamit Schwartz, M.D.

Chair, Israeli Retina Society

Dr. Haneen Jabaly-Habib, M.D.

Chair, Israeli Neuro-Ophthalmology Society

Chair, Session for Neuro-Ophthalmology Meeting (Guest)

Dr. Elia Levinger, M.D.

Chair, Israeli Cataract Society

Dr. Alvit Wolf, M.D.
Chair, Israeli Pediatric Ophthalmology Society

Dr. Assaf Kratz, M.D.
Chair, Israeli Glaucoma Society

Dr. Shmuel Graffi, M.D.
Chair, Israeli Cornea Society
Dr. Tova Ma-Naim, M.D.
Chair, Community Ophthalmology Society

Dr. Miriam Ehrenberg, M.D.
Chair, Session for Orthoptists

Guy Barnett Itzhaki - M.Optom , PGDip.Orthoptics
Chair, Session for Orthoptists

Dr. Iris Moroz, M.D.
Chair, Session for Ophthalmic Technicians and Photographers

Mr. Eitan Priel
Chair, Session for Ophthalmic Technicians and Photographers

Dr. Boris Knyazer, M.D.
Chair, Session for Nurses

Mrs. Nira Granot
Chair, Session for Nurses

Dr. Eldad Adler, M.D.
Chair, Session for Optometrists

Dr. Doron Sadeh, M.D.
Chair, Session for Residents in Ophthalmology

Dr. Albert Grigiac, M.D.
Chair, Franco-Israeli Meeting

Scientific Reviewers

All contents of the presentations are scientifically evaluated in order to properly contribute for the benefit of all participants of the conference.
We would like to acknowledge the Scientific Reviewers:

Cornea

Dr. Shmuel Graffi, M.D., Consultant Ophthalmic Surgeon, Cornea and Anterior Segment Service, Rambam Medical Center, Haifa

Dr. Yoav Nahum, M.D., Deputy Director, Ophthalmology Department, Rabin Medical Center, Petah Tikva

Dr. Arie Marcovich, M.D., PhD., Deputy Director, Ophthalmology Department, Kaplan Medical Center, Rehovot

Pediatric & Strabismus

Dr. Alvit Wolf, M.D., Pediatric Ophthalmology and Strabismus, Carmel Medical Center, Haifa

Dr. Idi Mezer, M.D., Consultant Pediatric Ophthalmologist and Strabismus Surgeon, Ruth Rappaport Children's Hospital, Rambam Medical Center, Haifa

Dr. Miriam Ehrenberg, M.D., Senior Physician, Pediatric Ophthalmology Department, Schneider Children's Medical Center, Petah -Tikva

Uveitis

Dr. Zohar Habot-Wilner, M.D., Director, Uveitis & Inflammatory Eye Disease Service, Tel-Aviv Sourasky Medical Center

Dr. Radgonde Amer, M.D., Head of Uveitis & Ocular Immunology Service, Department of Ophthalmology, Hadassah Medical Center, Jerusalem

Dr. Oren Tomkins-Netzer, M.D., PhD., Retina Specialist and Head of Uveitis, Bnai Zion Medical Center, Haifa

Neuro-Ophthalmology

Dr. Hanin Jabaly-Habib, M.D., Director of the Ophthalmology Unit, Baruch Padeh Medical Center, Poriya, Tiberias

Prof. Hadas Kalish, M.D., Head, Neuro-Ophthalmology Unit, Rabin Medical Center, Petah-Tikva

Dr. Joshua Kruger, M.D., Head, Neuro-Ophthalmology Service, Department of Ophthalmology, Hadassah-Hebrew University Medical Center Jerusalem

Oculoplastic

Dr. Ayelet Priel, M.D., Oculo-Plastic and Reconstructive Surgeon, Head of Ocular Plastic and Reconstructive Surgery Society –Israel

Dr. Shirin Hamed Azzam, M.D., Oculo-Plastic and Reconstructive Surgeon, HaEmek Medical Center, Afula

Dr. Liat Attas-Fox, M.D., Oculo-Plastic and Reconstructive Surgeon, Hadassah-Hebrew University Medical Center, Jerusalem

Retina
Dr. Shulamit Schwartz, M.D., Head, Surgical Retina Clinic, Tel Aviv Sourasky Medical Center

Dr. Edward Averbukh, M.D., Director, Mount Scopus Eye Diseases Center, Hadassah-Hebrew University Medical Center, Jerusalem

Dr. Marina Shneck, M.D., Retina Specialist, Soroka University Medical Center, Beer-Sheva, and Clalit Health Services

Cataract
Dr. Elia Levinger, M.D., Director of Cataract Service, Tel Aviv Medical Center, Einaim Institute

Dr. Ori Mahler, M.D., Senior Ophtalmologist, Assaf Harofeh Medical Center, Tzrifin

Prof. Guy Kleinmann, M.D., Chair, Department of Ophthalmology, Wolfson Medical Center, Holon

Refractive Surgery
Prof. Avi Solomon, M.D., Head, Cornea Service, Department of Ophthalmology, Hadassah-Hebrew University Medical Center Jerusalem

Prof. Irit Barequet, M.D., MHA, Head of Cornea Division, Goldschleger Eye Institutes, Sheba Medical Center, Tel-Hashomer

Dr. Ami Hirsh, M.D., Medical Director, "ATIDIM" Medical Center, Tel Aviv

Glaucoma
Dr. Assaf Kratz, M.D., Director, Glaucoma Service, Soroka University Medical Center, Beer Sheva

Dr. Alon Skaat, M.D., Senior Attending Ophthalmologist, Goldschleger Eye Institute, Sheba Medical Center, Tel-Hashomer

Dr. Yaniv Barkana, M.D., Private Practice, Poria, Glaucoma Specialist

Ocular Oncology
Dr. Udi Reich, M.D., Oculoplastics & Ocular Tumor Service, Davidoff Center for Oncology, Rabin Medical Center, Petah -Tikva

Dr. Ido Didi Fabian, M.D., Consultant Ocular Oncologist, the Goldschleger Eye Institute, Sheba Medical Center, Tel-Hashomer

Dr. Ran Ben Canaan, M.D., Oculoplastic Specialist, Tel Aviv Sourasky Medical Center

What Would You Have Done?
Dr. Alon Skaat, M.D., Senior Attending Ophthalmologist, Goldschleger Eye Institute, Sheba Medical Center, Tel-Hasho

Prof. Elad Moisseiev, M.D., Chairman, Dept. of Ophthalmology, Meir Medical Center, Kfar Saba

Dr. Eitan Livny, M.D., Cornea Consultant, Rabin Medical Center, Petah Tiva

RAPID FIRE
Dr. Nurit Mathalone, M.D., Head, Retina Service, Carmel Medical Center, Haifa

Dr. Dan Jacob, M.D., Private Practice, Tel Aviv, Glaucoma Specialist

Guest Speakers

Dr. Sivan Elyashiv, M.D., Uveitits Specialist, Sheba Medical Center, Tel-Hashomer

Prof. Andrew G. Lee, Eye Institute, Houston Methodist Hospital, TX, USA

Prof. Bahram Bodaghi, Chair, Department of Ophthalmology, Pitié-Salpetrière University Hospital, Paris, France. President of the international Ocular Inflammation Society, Vice president of the French Society of Ophthalmology

Dr. Eric Souied, Chair, Department of Ophthalmology, Intercommunal and Henri Mondor University Hospital, Creteil, Paris Est, France. President of the France Macula Federation

Dr. Serge Doan, Ophthalmology, Department, Fondation Ophtalmologique de Rothschild and Bichat Hospital, Paris, France

Dr. Cati Albou Ganem, Quinze-Vingts National Ophthalmology Hospital Center, Paris, France Former President of the French Society of Implants and Refractive Surgery, SAFIR

Dr. Roy Eldor, Head of Diabetes Unit, Endocrinology Institute, Tel-Aviv Sourasky Medical Center, Tel Aviv

Dr. Rani Barnea, Neurology Department, Rabin Medical Center, Petah Tikva

Prof. Myriam Weyl Ben Arush, Director, The Joan and Sanford Weill Pediatric Hematology Oncology and Bone Marrow Transplantation Division, Chair of Pediatrics, Ruth Rappaport Children's Hospital, Head of the Pediatric Division, Rambam Medical Center, Haifa

Ms. Iris Weisman, Psychologist, Sheba Medical Center, Tel-Hashomer

Tuesday, 18 June, 2019

Plenary (Hall 1)

07:00 Workshops with the Experts
07:00 Registration
07:50 Opening Remarks
08:00 RAPID FIRE - Clinical Cases
09:00 Strabismus and Pediatric Ophthalmology
10:00 Coffee Break and Visit the Exhibition
10:30 Neuro-Ophthalmology Including Guest Speaker
12:00 Chairman's Greetings and Update, Awards and Photo Contest
12:30 Lunch Break and Visit the Exhibition
13:15 Retina (Medical and Surgical)
14:45 Coffee Break and Visit the Exhibition
15:15 Ocular Oncology
16:15 Glaucoma
17:15 Closing

Hall 2

07:00 Workshops with the Experts
08:00 RAPID FIRE – Clinical Cases (Hall 1)
09:00 Ophthalmic Technicians and Photographers
10:00 Coffee Break and Visit the Exhibition
10:30 Orthoptists
12:00 Chairman's Greetings and Update, Awards and Photo Contest (Hall 1)
12:30 Lunch Break and Visit the Exhibition
13:15 Residents in Ophthalmology
14:45 Coffee Break and Visit the Exhibition
15:30 Neuro-Ophthalmology Specialists Meeting With Prof. Andrew Lee and Clinical Case Presentations
17:15 Closing

Wednesday, 19 June, 2019

Plenary (Hall 1)

07:00 Workshops with the Experts
07:00 Registration
08:00 Uveitis
09:00 "Two Sides of the Story" – Debates Session
10:00 Coffee Break and Visit the Exhibition
10:30 Cornea and Contact Lenses
11:40 Oculoplastics
12:40 Lunch Break and Visit the Exhibition
13:30 Cataract
14:45 Refractive Surgery
15:45 Coffee Break and Visit the Exhibition
16:15 "What Would You Have Done?" – Interactive Session
17:15 Closing

Hall 2

07:00 Workshops with the Experts
08:00 Community Ophthalmology
09:00 "Two Sides of the Story" – Debates Session (Hall 1)
10:00 Coffee Break and Visit the Exhibition
10:30 Franco-Israeli Meeting
12:40 Lunch Break and Visit the Exhibition
13:30 Optometrists
14:30 Nurses
15:45 Coffee Break and Visit the Exhibition
16:15 "What Would You Have Done?" – Interactive Session (Hall 1)
17:15 Closing

RAPID FIRE

DSAEK Acrobatics in an Aphakic Aniridic Post-Penetrating Keratoplasty Eye

Shmuel Graffi
Ophthalmology, Rambam Medical Center, Haifa, Israel

Descemet-stripping automated endothelial keratoplasty (DSAEK) is considered a safe and well established solution procedure when dealing with corneal endothelial failure. However, in complex aphakic eyes lacking iris diaphragm the technique of unfolding and attaching the posterior lamellar graft is somewhat more challenging and demands precocious actions when performing surgery. Herein, we describe a challenging case of DSAEK performed on a post Penetrating Keratoplasty eye which underwent a major injury causing an eventual aphakia and aniridia. A video will focus on a technique securing the graft to prevent late detachment and unfolding in a "one segment" eye.

OCT Nsite Software Module as a Diagnostic Tool in a Patient with Acute Bilateral Central Visual Scotomas

Muhammad Biadsy, Iris Boguslavsky, Dua Masarwa, Eyal Aloni
Ophthalmology, Barzilai University Medical Center, Ashkelon, Israel

Introduction: Nsite Software module of the Spectralis OCT is a new modality that enables measurements of the papillo-macular bundle (PMB) area. The utility of these measurement is still not recognized. The nerve fibers of the PMB area are responsible for central visual acuity. Patients with bilateral acute central visual scotomas are a diagnostic challenge as objective findings might be absent and malingering might be suspected. We will present a patient with acute bilateral central visual loss with only subjective findings that was suspected of being malingering in which the Nsite OCT helped recognize an organic cause to his complaints.

Methods: Descriptive Case report.

Case presentation: A 46-year-old healthy male, of Uzbekistan origin, presented to the emergency department with complaints of acute bilateral painless visual loss. On examination, both eyes visual acuity was 6/60 with an Ishihara color test of 0/15 and confrontational visual fields showing bilateral central scotoma with tunnel vision characteristic. Humphrey 24-2 visual fields showed bilateral central scotomas. There was no RAPD. Ocular exam was normal with normal maculas and normal optic nerves. Neurological examination was normal. OCT of the maculas were normal. OCT PMB measurements demonstrated bilateral thickening. An extensive evaluation was initiated that reveled a positive serology for VDRL and TPHA in blood and CSF and also a positive FTA test in the CSF. The patient was diagnosed with neurosyphilis and treated with IV penicillin and IV solumedrol. A few days later, visual acuity returned to 6/9 in both eyes, color vision improved as did his central scotomas. OCT PMB area measurements gradually normalized.

Conclusion: In this case of acute bilateral central visual loss where there was only subjective clinical finding, OCT PMB area measurements were the only objective finding of a pathology. This finding increased the awareness of an organic etiology and initiated further evaluation that reveled syphilitic optic neuropathy.

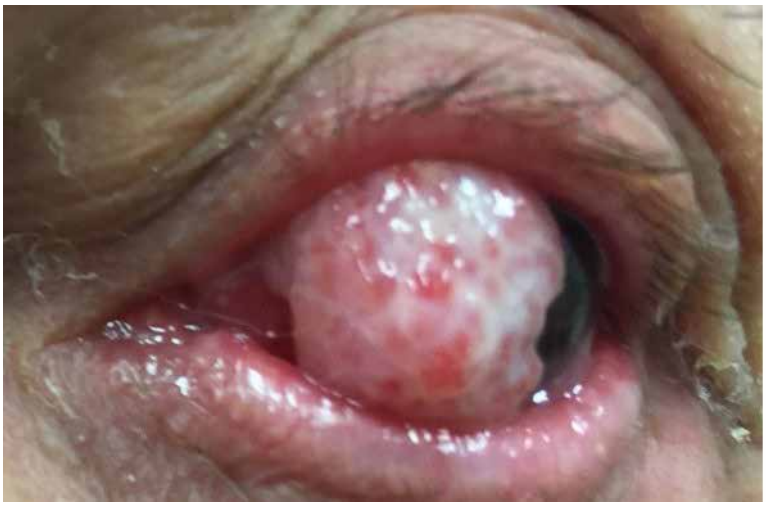
Excision of a Large Ocular Surface Squamous Neoplasia Adhering to the Sclera and to the Medial Rectus Muscle

Oriel Spierer
Ophthalmology, Wolfson Medical Center, Holon, Israel

Background: Ocular surface squamous neoplasia (OSSN) consists of varying size of conjunctival and corneal lesions. Treatment include topical chemotherapy and surgical excision. The purpose of this case is to demonstrate the surgical technique in the management of large OSSN adhering to the sclera and to the medial rectus muscle.

Methods: A patient presented with a large OSSN extending from the plica semilunaris to the superior and inferior conjunctiva in his left eye. Mythomycin C eye drops were started but the OSSN continued to grow. Under retrobulbar nerve block OSSN dissection was carried out.

Results: A 3-mm conjunctival margins around the tumor were marked. The OSSN corneal portion was scraped using a crescent blade. Then, the conjunctiva was lifted with forceps and tumor dissection was done along the marked margins using a Westcott scissors. During tumor dissection, the medial rectus muscle was isolated using a hook to prevent unintentional muscle disinsertion. A partial thickness sclerectomy was performed due to tumor adherence to the sclera. Next, an absolute alcohol epitheliectomy was done. A double freeze–thaw cycle then was applied at the limbus and to the conjunctival edges. An amniotic membrane transplant was sutured.



Conclusion: Current surgical technique for managing OSSN includes meticulous excision with clean conjunctival borders, application of alcohol and a double freeze–thaw cycle. Three months after surgery no signs of tumor recurrence were noted. There was no limitation in eye movements and cosmetic outcome was excellent.

Hide-And-See(k)

Yulia Sheinfeld, Yoav Vardizer, Modi Naftali, Michael Fainer, Nitza Goldenberg-Cohen
Ophthalmology, Bnai Zion Medical Center, Haifa, Israel

Objective: To describe a 79 years old man with ciliary injection due to retained lens material two years after uncomplicated cataract surgery.

Patient and methods: Eye exam revealed right ciliary injection. Visual acuity, IOP, anterior and posterior segments were unremarkable at first but close gonioscopy exam revealed retained lens material in the anterior chamber angle.

Results: The patient underwent two surgeries. In the first, gonioscopy was used but no lens material has been found. Repeated slit lamp exam and anterior chamber OCT revealed lens material that was hide in the angle and it was successfully extracted in the operating room.

Discussion: This is a rare case of retained lens material hiding in the anterior chamber angle for two years without any symptoms. Diagnosis made by gonioscopy exam.

Choroidal Hemangioma in Pregnancy and Post-Partum

Aleza Andron[1,2], Vicktoria Vishnevskia Dai[2], Ido Didi Fabian[2]
[1]Ophthalmology, Shaare Zedek Medical Center, Jerusalem, Israel
[2]Ophthalmology, Sheba Medical Center, Tel-Hashomer, Israel

Background: Choroidal hemangioma (CH) is a vascular hamartoma that may cause visual deterioration due to subretinal fluid leakage. Several reports have pointed out the possible association between pregnancy and excess of subretinal leakage from CH. We report a case of a 30-week pregnant woman with new onset visual symptoms and a suspicious lesion with typical features of a CH. The patient was monitored with no intervention, and on first visit 5 days post-partum, spontaneous improvement was reported with resolution of the subretinal fluid.

Methods: Retrospective Case Report.

Results: A 40-year-old 30-week pregnant woman presented to the ocular oncology service at Sheba Medical Center with new-onset visual deterioration in her right eye. She reported no past ocular or systemic history. The left eye was normal with 6/6 visual acuity (VA). On right eye examination, VA was 6/12, anterior segment was normal, and fundoscopy revealed a pale elevated choroidal lesion in the macular region, with overlying subretinal fluid. B-scan ultrasound demonstrated a hyperechoic choroidal lesion, the dimensions of which were 4.91-6.61 mm in base diameter and 1.86 mm in elevation. A-scan found the lesion to have medium internal reflectivity, and optical coherence tomography (OCT) showed a shallow retinal detachment surrounding the lesion. The working diagnosis was a CH and a decision was made to monitor the patient with no further investigations or interventions until after delivery. The patient was seen once again at week 35 of pregnancy, with no significant change in her condition. On follow-up visit, 5 days after delivery, the patient reported improvement in symptoms and on examination, spontaneous resolution of the subretinal fluid was noticed, demonstrated also on OCT.

Conclusions: Choroidal hemangioma is a potentially sight-threatening lesion that may exacerbate during pregnancy. A watchful waiting approach should be considered, as spontaneous resolution of subretinal fluid may occur after delivery.

Inflammatory Induced Pediatric Retinitis

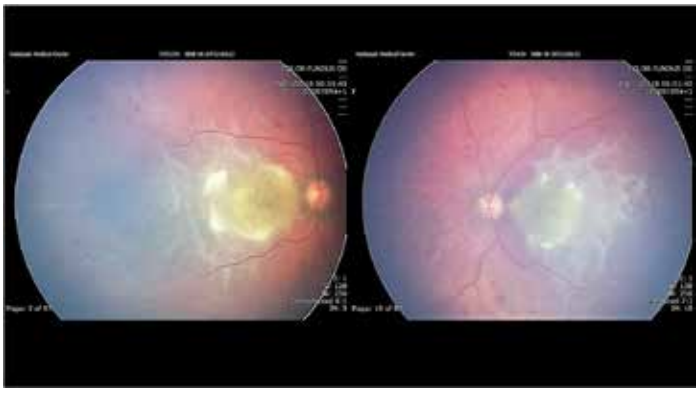
Benjamin Stern, Radgonde Amer, Irene Antebi, Milka Matanis, Oded Lagstein, Ran David, Hadas Mechoulam
Deparment of ophthalmology, Hadassah-Hebrew University Medical Center, Jerusalem, Israel

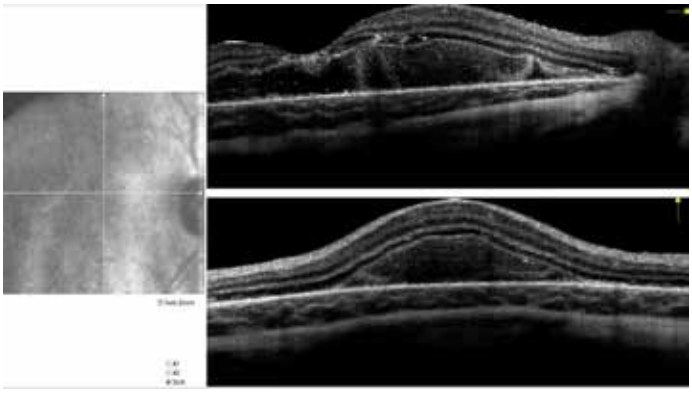
A 1-year-old previously healthy girl was referred to the emergency room because of a sudden vision loss and bilateral macular findings. On examination, severe posterior uveitis with diffuse macular infiltrates and retinal vasculitis was seen in both eyes. Two weeks before, she received a MMRV vaccine. One week after the vaccination, she developed high fever for a few days.

Repeated cultures and PCRs of blood and aqueous humor were returned negative for viral, bacterial and parasitic etiologies. Because of recent measles infections breakout and rare cases of measles retinitis reported in the literature, the patient underwent MRI and LP to rule out measles encephalitis or SSPE. Viruses were not detected in the CSF. Treatment with IV steroids and antivirals resulted in rapid improvement.

The pattern of retinal involvement strongly suggested a viral infection. MMRV is an attenuated live virus vaccine that potentially causes infection in rare cases.

By exclusion, retinitis seemed to be secondary to an inflammatory process. Several cases of post-fever retinitis are described in adults secondary to an inflammatory reaction. In this case, the vaccine may have been a trigger to the severe immunologic reaction.





Macular Hole in Pathological Myopia

Muhammad Abumanhal, Shulamit Shwartz
Ophthalmology, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel

67 years old lady, with past ocular history of pathological myopia of -16D of both eyes, axial length (AL) of 31.24 mm in the right eye (RE), and 30.13 in the left eye (LE), both eyes (BE) amblyopia, and history of myopic choroidal neovascularization in the RE 4 years ago, treated with IVT bevacizumab. She was in a regular follow-up in another institution d/t BE myopic foveoschisis in the last three years.

She presented to our retina clinic, complaining visual deterioration in her LE. Best corrected visual acuity (BCVA) was 6/40 in the RE, and 6/60 in the LE. The anterior segments were normal in BE. Fundoscopic examination revealed in BE, tilted disc with peripapillary atrophy and myopic changes.

Optical coherence tomography (OCT) showed in the left eye, foveoschisis, full thickness macular hole of 382 microns width, and central macular thickness (CMT) of 792 microns.

Treating this FTMH by pars plana vitrectomy (PPV) is challenging and associated with higher failure and recurrence rates than idiopathic one. The long AL makes the surgery technique more difficult. This macular hole has unique mechanism of combined tangential and antero-posterior (AP) traction. PPV has limited effect on the AP traction and foveoschisis component.

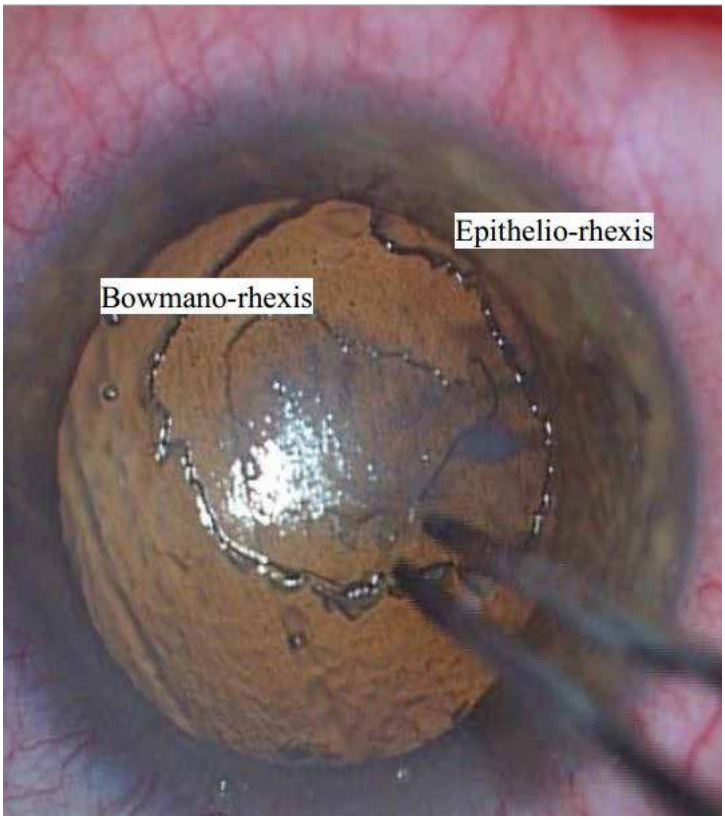
Due to PPV limitations, we treated this case by macular buckle. This technique has higher successful hole closure rates than PPV and could shorten the AL elongation by the buckle indentation effect, so treating the AP traction.

3.5 months post-surgery, LE BCVA was 6/40, and the OCT demonstrated total reduction of the schisis and closure of the macular hole.

Four Rhexis in One Case

Asaf Achiron[1,2], Irit Bahar[1,2], Eitan Livny[1,2]
1. Ophthalmology, Rabin Medical Center, Petah-Tikva, Israel
2. Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

We would like to present a surgical video of a female patient with Fuchs endothelial dystrophy who presented with reduced vision and significant glare in her right eye. Exam revealed cystic epithelial edema with guttate, Salzmann nodular degeneration and advanced cataract. In order to optimize visual acuity, the patient underwent nodule and lens removal with a subsequent DMEK procedure in one setting.



During the surgery 4 rhexis were created: 1. Epithelio-rhexis (edematous epithelium removal for better intra-operative visualization) 2: bowmano- rhexis (bowman`s layer removal of the Salzmann nodule) 3. Capsulo-rhexis (for lens removal) 4. Descemeto-rhexis (for Descemet`s membrane removal of the prior to graft insertion).

Following surgery the patient best corrected vision improved from 6\12 to 6\8.5 and she reported on much improvement of her vision quality due to reduced glare symptoms.

This case represents that visual acuity maximization can be attempted using subsequent integrative procedures in one setting, for anterior segment parameters improvement.

Choroidal Neovascularization in a Retinintis Pigmentosa Patient

Nadav Levinger, Hamzah Aweidah, Boris Rosin, Juan Martin Sanchez, Diego Almeida, Jaime Levy, Tareq Jaouni, Eyal Banin
Department of Ophthalmology, Hadassah-Hebrew University Medical Center, Jerusalem, Israel

Background: Patients with Retinitis Pigmentosa (RP) may often show presence of intraretinal fluid as part of cystoid macular changes, but choroidal neovascularization (CNV) is rare. To date, only 9 case reports of RP patients with CNV were reported. We present a patient with RP who developed CNV and describe his response to anti-VEGF treatment.

Methods: Retrospective case report of a patient with RP caused by a homozygous mutation in the NR2E3gene who is regularly followed in our retina clinic. He presented to the ER seven months after his last regular visit with an acute decrease of visual acuity (VA) in his left eye, from 0.4 to finger counting. OCT, Angio-OCT and fluorescein angiography (FA) were used to determine the cause of VA loss and to monitor response to Anti-VEGF treatment.

Results: The 71 year-old RP patient described a rapid drop of VA in his better LE since two weeks prior to presentation. Clinical exam showed new macular hemorrhages, and on OCT imaging macular thickening and subretinal fluid was evident, that was not present previously. FA and OCT-Angio testing confirmed the presence of CNV. Immediate intravitreal Avastin was initiated, but over the course of 4 monthly injections VA did not improve and anatomical worsening was observed. Following a switch to Eylea, moderate improvement of retinal structure occurred but VA remained at the FC level.

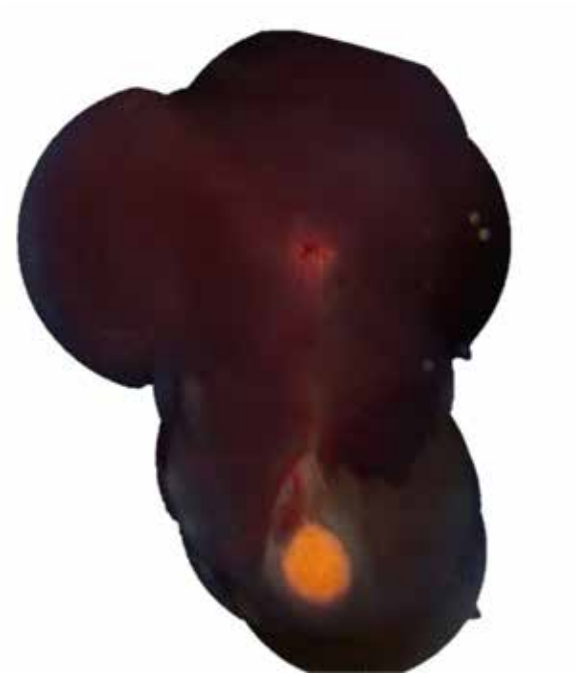
Conclusion: RP patients usually experience slow deterioration in vision throughout their lives. An acute drop in VA should alert to the possibility that another disease mechanism is at play, and the presence of SRF as opposed to intraretinal cystoid changes may suggest the presence of CNV. The occurrence of CNV in RP is rare, and the retina already compromised by RP may be more susceptible to the additional injury caused by the neovascular process.

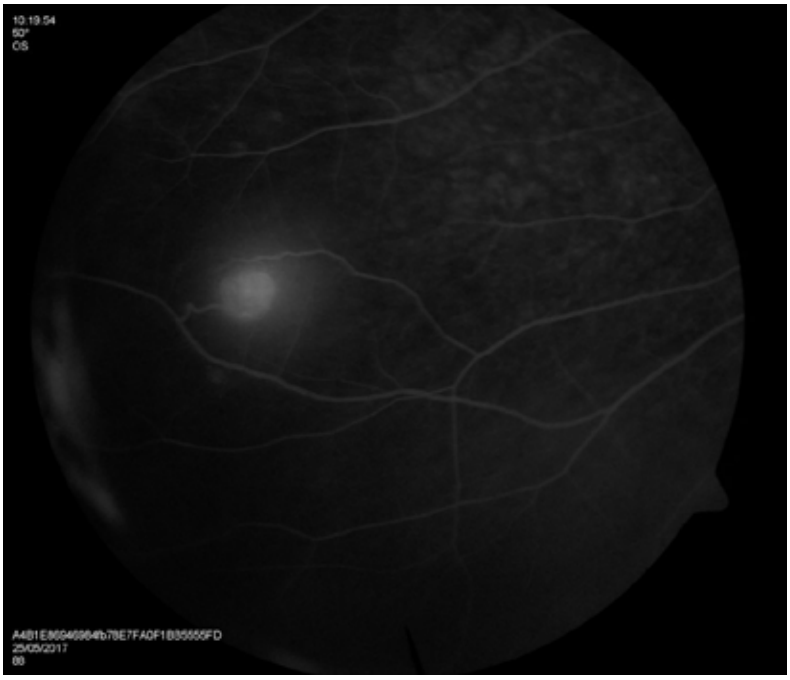
In the Eye of the Storm: Capillary Hemangioma as a Presenting Sign of Von Hippel Lindau Disease

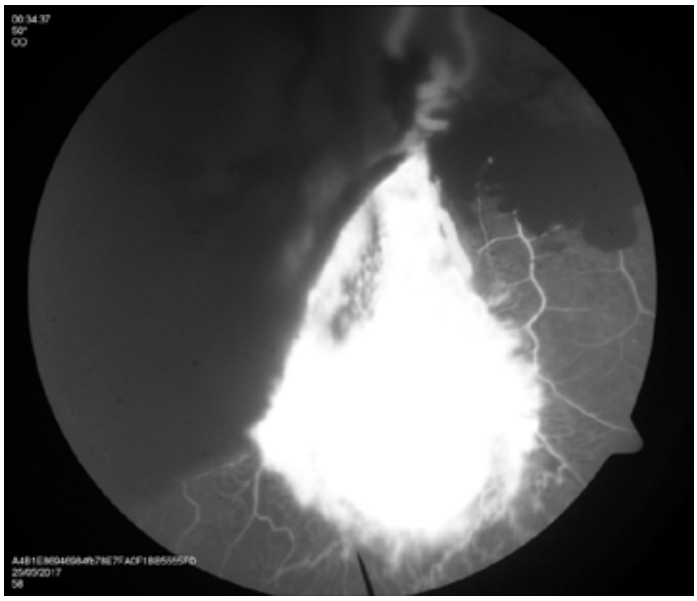
Tal Sharon[1,3], Raz Gepstein[1,3], Ido Didi Fabian[2,3], Vicktoria Vishnevskia Dai[2,3]
1. Department of Ophthalmology, Meir Medical Center, Kfar Saba, Israel
2. Glodschleger Eye Institute, Sheba Medical Center, Tel-Hashomer, Israel
3. Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

Background: Von-Hippel Lindau (VHL) is a rare autosomal dominant disease caused by a mutation in VHL gene. The VHL is a suppressor gene, when mutated it leads to multi-organ proliferation of benign and malignant tumors, some of which might have a life-threatening nature. Retinal manifestations can be the presenting symptom, and therefore are key to diagnosis and treatment.

Methods: A fifteen-year-old girl presented to the emergency department with sudden vision loss two days earlier. She reported prior symptoms of floaters and flashes. Visual acuity was FC 1m in her right eye and 6/7.5 in her left eye. Slit lamp examination of the right eye revealed a near-total serous retinal detachment, diffuse pre- and intra- retinal hemorrhages and several red-orange lesions computable with capillary hemangiomas with prominent feeder vessels. Similar lesions were detected in her fellow eye. On fluorescein-angiography all lesions demonstrated leakage. A magnetic resonance imaging (MRI) of the brain revealed a vascular nodule in the 4th ventricle. Total body MRI and MRA confirmed midbrain hemangioblastoma compressing the medulla oblongata, and cystic septate lesions in the pancreas.







Specific questioning revealed a significant weight loss during preceding months, nausea and vomiting.

Results: A multidisciplinary consultation raised the diagnosis of "VHL disease", which was confirmed by gene sequencing.

The patient was treated with Trans-Pupillary Thermal-laser therapy directed to retinal lesions bilaterally and intra-vitreal bevacizumab injection to her right eye. Few months later, VA slightly improved in the right eye to 1/60. Most retinal lesions became fibrotic, sub-retinal exudation showed absorption. A systemic treatment with Pazopanib (tyrosin-kinase-inhibitor) was started and the midbrain hemangioblastoma regressed.

Conclusion: This unusual case of a young woman diagnosed and treated, demonstrates the major role of ophthalmologists as key stakeholder in the management of VHL disease, as the eye might be in the center of a much greater storm.

Post-Traumatic Aphakia and Aniridia: Ophtec Intraocular Lens Implantation Through an Ab Externo Scleral Fixation Technique

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2. Tel-Aviv University, Sackler School of Medicine, Tel Aviv, Israel

Background: Aniridia and aphakia following ocular trauma in children remain a surgical challenge. Surgical implants include iris lens diaphragm, endocapsular tension ring - based prosthetic iris device and customized artificial Iris. For iris lens diaphragm, the implant can be fixated using an ab interno or ab externo scleral fixation techniques.

Methods: Case presentation of Ophtec Intraocular lens implantation through an ab externo scleral fixation technique. Review of literature regarding the surgical options correcting aniridia and aphakia.

Results: We present a 13-year-old male that was left aniridic and aphakic after perforating corneal injury. First, the patient underwent corneal transplantation due to central corneal scar. Later on, Ophtec intraocular lens was implanted, restoring iris and lens through an ab externo scleral fixation technique. Ab externo technique has the advantage of precise entry and exit location of surgical needles and shorter hypotony time in comparison to ab interno technique. The primary challenge is to keep the integrity of the sutures while extending the incision in order to insert the implant.

Conclusions: Scleral fixation of Ophtec iris-lens implant using ab externo scleral fixation technique is a good option to handle the surgical challenge of aniridia and aphakia in children after ocular trauma.

Complications of Laser Surgery in Changing Eye Color

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Background: Laser treatment for changing eye color is a new trend which clinics around the world advertise as a safe and easy procedure. We describe the complications of this procedure.

Methods: Review of 2 cases.

Results: Two patients were seen after undergoing cosmetic laser surgery for lightening the color of their irises and changing the color of their eye. The first underwent the laser treatment in both eyes 2 months prior to being examined in our clinic. Examination revealed pigment dispersion on the corneal endothelium, lens and in the angles with normal intraocular pressure (IOP) and vision. The second patient had undergone previous cosmetic with iris implants in both eyes. Two years following the implants she had blurred vision, corneal edema and raised IOP. The iris implants were removed and she made a full recovery. Five years later she had laser cosmetic surgery to achieve blue colored eyes. She presented at our hospital a few weeks later with blurred vision (6/36 OD and 6/24 OS) and increased IOP (38 mmHg OD and 24 mmHg OS). Both corneas were edematous with endothelial pigmentation, eccentric pupils, and bilaterally closed angles. The irises showed prominent trans-illumination defects. There was cupping of 0.8 and 0.9 respectively with severe visual field defects. A trabeculectomy was performed on the left eye to control the IOP.

Conclusion: This report highlights the risk of glaucoma and possible visual loss after cosmetic laser treatment. Our intention is to make the ophthalmologic community aware of this new trend and its complications.

Amelanotic Conjunctival Melanoma in a Child

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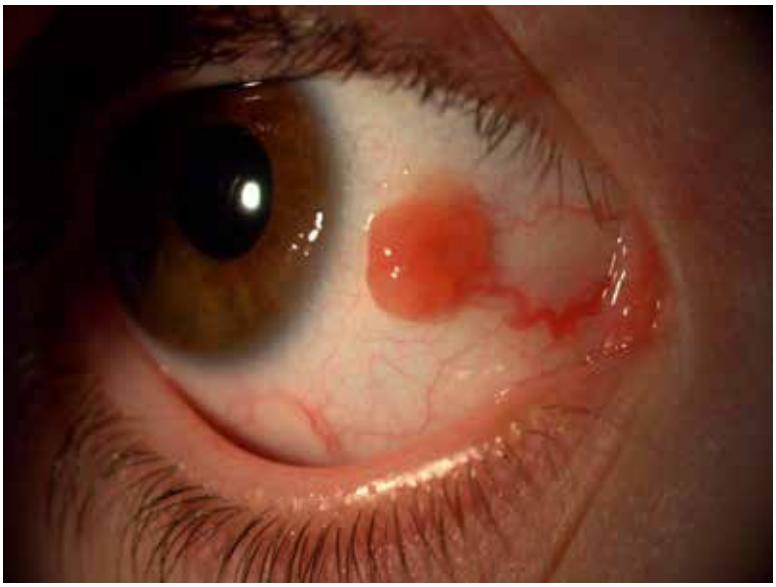
Conjunctival melanoma is a rare but potentially lethal ocular neoplasm. It accounts for 2%–5% of all ocular tumors and 5%–7% of all ocular melanomas with an incidence of 0.2–0.8 per million in white population (1). Pediatric malignant melanoma is an extremely rare condition. We report a case of a 7 years old boy who presented with a reddish lesion measuring 8 × 2.5 mm on the nasal conjunctive in his right eye. The patient underwent excisional biopsy with 4 mm free conjunctival margins and cryotherapy. Histopathology confirmed the diagnosis of conjunctival melanoma. 25 months following surgery revealed no recurrence nor metastatic lesions.



Inadvertent Descemet's Membrane Detachment following Intracameral Injection of High Viscosity Sodium Hyaluronate (Healon5)

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We report the case of a patient who inadvertently developed extensive Descemet's membrane detachment after intracameral injection of high viscosity sodium hyaluronate (Healon5). The patient had developed anterior chamber shallowing following Ex-Press shunt procedure. In an attempt to re-form the anterior chamber, Healon5 was administered intracamerally. However, during the procedure a substantial amount of the material was injected accidentally just anterior to the Descemet's membrane. As a result, a large central Descemet's membrane detachment was observed, accompanied by corneal endothelium contact with the anterior surface of the intraocular lens. Two attempts to surgically evacuate the ophthalmic viscoelastic device were only partially successful. Conservative management resulted in the return of visual acuity to baseline, complete absorption of the Healon5, and total re-attachment of the Descemet's membrane. These findings were confirmed, for the first time, by long term follow-up using anterior segment optical coherence tomography.

3-Dimensional Complex Ophthalmic Plastic Surgery

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Background: Orbital cavernous hemangioma is the most common benign intra-conal mass in the the adult. Its loose adherence to surrounding structures, low flow nature and possibility of globe compression make minimally invasive surgery feasible albeit large tumors.

3-dimensional surgery is gaining popularity in ophthalmic surgery due to high quality intra-operative detailed imaging for the whole surgical team, increased depth of focus and more comfortable surgeon's seat. We present for the first time 3 cases of complex orbital surgery using Alcon's Ngenuity system.

Methods: descriptive case reports.

Results: Three patients, two males with orbital cavernous hemangiomas, and a young woman with idiopathic intra-cranial hypertension underwent minimally invasive tumor extraction, and consecutive bilateral optic nerve sheath fenestration respectively. Surgery was completed uneventfully.

Conclusions: 3D-surgical system may be used in complex ophthalmic plastic surgery with minimal to no learning curve downtime; its use should be expanded to additional oculoplastic procedures.

Automated Diagnosis and Measurement of Strabismus in Children

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Background: Manual measurements of strabismus require trained professionals, are subjective, time consuming and unavailable universally. The automated systems published are presently at a prototype stage of development and are unsuitable for young children due to lengthy calibration processes or head restriction, while others do not distinguish between heterotropias and hetrophorias. The presented system using eye tracking can potentially provide a fast, objective and clinically available alternative. In this study we evaluated an automated system and compared it to the manual cover tests.

Methods: 72 participants, aged 3-15 years were recruited. All participants underwent cover tests, and the results were compared to the automated system. The automatic eye tracking measurement is based on a computerized cover test, using occlusion glasses and eye tracking. Instead of using prisms for evaluating the magnitude of the deviation, in this system the monocular images are shifted to match each eye's gaze position. The deviation is calculated from the distance between the two images on the screen after neutralization of eye movements. The deviating eye, direction, and size of the strabismic deviation were measured and compared between the automatic test and cover tests.

Results: 25 cases of esotropia, 36 cases of exotropia and 8 orthophoric participants were included. The mean horizontal deviation for automatic test was 14.99±1.6 prism diopters (PD) and for the manual tests was 13.17±1.38 PD, the mean vertical deviation was 1.35±0.52 PD and 0.6± 0.27 respectively. The manual and automated system showed a high correlation (R=0.9, P0.001), with 100% identification of the type of deviation.

Conclusion: The tested automated system can provide precise measurements of both heterotopias and heterophorias, in vertical deviations it may be superior to manual tests. It can be operated by technicians in any clinical setting from large volume clinics to locations in which pediatric ophthalmologist or orthoptists are not available.

A device for the Assessment of Both Visual Acuity and Strabismus to Identify Amblyopic Risk Factors in Preverbal and Verbal Children

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Introduction: Instrument based vision screening for high refractive error and amblyopia is recommended for infants and children aged 1-3 years by the AAPOS1.Eye-N-JOY (ENJ) is a novel device (Patent no. US 9,844,317 B2), including a tablet, infrared camera, LCD glasses and cloud-based software. While child is watching images on the tablet screen, camera sensors track the child's eye movements as they respond to optical stimulation. The device provides a "pass" or "refer" result.The study assessed the accuracy of the ENJ device in identifying low vision or the presence of amblyopia risk factors in children.

Methods: Prospective, single-center, comparison study. Children aged 1.5 to 6 years undergoing a full standard Pediatric Ophthalmology examination including visual acuity, alignment and cycloplegic refraction were also examined by the ENJ. Pediatric Ophthalmologists and Technician operating the ENJ were blinded to each other's findings.

Results: 51 children aged 1.5 to 6 were included. The ENJ evaluated VA by Teller in all 51 children, while Ophthalmologists were able to measure VA in 42 (82.3%) of children only (9 were evaluated by CSM method). The gold standard exam revealed: Mean visual acuity of 0.128 LogMAR (~20/27 Snellen). 2 children had strabismus, 4 children had anisometropia (1D). Overall agreement regarding pathological VA was 88.6%. Overall agreement regarding Strabismus was 86.3%.

Discussion: This is the first report of ENJ device vision screening. Compliance of patients was excellent. The ENJ is designed to evaluate both visual acuity and misalignment. Further research is underway to evaluate the accuracy of this device.

References: AAPOS vision screening recommendation. AAPOS web site.

Outcomes of Half-Thickness Vertical Muscles Transposition Augmented with Posterior Fixation Suture for Esotropia Associated with Sixth Cranial Nerve Palsy

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Background: Various vertical recti transposition procedures have been reported for esotropia due to complete sixth cranial nerve palsy. We describe our experience with half-thickness vertical muscles transposition augmented with posterior fixation suture.

Methods: The clinical charts of all patients who presented with esotropia and complete abduction deficit due to sixth cranial nerve palsy between the years 2003-2018 were retrospectively reviewed. Patients who underwent half-thickness vertical muscles transposition augmented with posterior fixation suture were included.

Results: Fifteen patients met the inclusion criteria for the study. Nine (60%) patients had a combined surgery with medial rectus muscle recession. There were no intraoperative complications. Mean follow up was 21.4 ± 23.2 months (range 1.5-82 months). Preoperative mean deviation was 51.3 ± 19.8 prism diopter (PD) (range 20-90 PD). Postoperative mean deviation on last follow-up was 8.1 ± 20.9 PD (p0.05). Two (13%) patients had overcorrection of more than 10 PD. Twelve (80%) patients had improvement in abduction and 10 (67%) patients reported diplopia improvement. All the patients with preoperative abnormal head position had improved. Two (13%) patients developed vertical deviation and one patient had an improvement in the preoperative vertical deviation.

Conclusions: Half-thickness vertical muscles transposition augmented with posterior fixation suture, with or without medial rectus muscle recession, is an effective and safe procedure for esotropia associated with sixth cranial nerve palsy. A major improvement in the angle of deviation is expected. Most patients will have improvement in their abnormal head position and diplopia.

Novel Use of Fibrin Glue Added to Hang-back Recession and Comparison to Standard Fixed Suture Recession for the Treatment of Horizontal Strabismus

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Background: Hang-back recession technique offers major advantages over standard recession with fixed sutures, as anterior suturing improves exposure and virtually eliminates the complication of retinal perforation. However, animal research and recent clinical studies have shown that the suspended muscle may not adhere at the desired recession point. In 2012 Park and colleges demonstrated that adding fibrin glue to the hang-back recession was effective in stabilizing the new rectus muscle insertion and significantly decrease muscle displacement, in rabbit eyes. The aim of this study is to evaluate the clinical safety and efficacy of the novel use of fibrin glue as an adjuvant to hang-back surgery in humans.

Methods: This is a retrospective clinical study comparing the surgical outcome of hang-back recession with fibrin glue (HGB) versus standard fixed suture recession (SFR) in the treatment of horizontal strabismus. Records of 17 consecutive patients with horizontal strabismus who underwent HBG were reviewed and compared to a matched group of 17 patients who had SFR between 2016 and 2018. A "good surgical outcome" was defined as a postoperative deviation 10 PD at a minimum follow up of 2 months.

Results: Preoperative deviations in the two groups were similar with HGB mean estropia 22 PD, mean exotropia 28PD and in the SFR, mean esotropia 26 PD, mean exotropia 21 PD. Average postoperative deviation were less than 6 PD for both groups. Good surgical outcomes were similar between both groups, 15/17 (88%). There were no complications in either group.

Conclusion: Hang-back recession with fibrin glue was safe and effective with results not significantly different than standard fixed suture recession. Hang-back recession with fibrin glue has an important advantage as it eliminates the complication of retinal perforation. HBG can be especially useful in patients with thin sclera such as patients with high myopia.

Prevalence of and Risk Factors Associated with Poor Visual Outcome in Young Children Undergoing Surgery for Bilateral Cataract

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Background: Pediatric cataract is still a major cause for childhood low vision. The goals of our study was to analyze the prevalence of children with low vision after surgery for bilateral pediatric cataract, and to evaluate risk factors associated with poor visual outcome.

Methods: Retrospective analysis of charts from children who underwent surgery for cataract up to age 5 years, with a follow up of at least 4 years. Details extracted from files included (among others) visual acuity, presence of nystagmus and/or strabismus, age at surgery, IOL implantation and number of re-operations.

Results: Fifty-seven children were included in the study (24 girls and 33 boys). Follow up ranged from 4- 13 years (mean 7.3 years). Mean age at last follow-up was 9.4 years.

Forty % of operated children had poor visual outcome (6/15 or less in the better eye) whereas fifty-nine % reached good vision (6/12 or better).

In children operated before age six months 61.5% remained with low vision. Surgery between 6 -12 months resulted in low vision in 40% whereas only 20% of those operated after age one resulted in low vision. (p value=0,019).

Other factors strongly associated with poor visual outcome included implantation of IOL before the age of 6 months, higher number of re-operations, nystagmus prior to surgery and microphthalmia. Presence of strabismus before surgery was not associated with poor visual outcome.

Conclusions: Despite early treatment and modern microsurgical technique, long-term visual outcome remains poor in 40 % of children undergoing bilateral cataract surgery before the age of 5 years. It is important to recognize pre-operatively the risk factors associated with low vision such as need for surgery at young age, early IOL implantation, nystagmus and microphthalmia, when discussing visual prognosis with affected families.

Characteristics of Childhood Glaucoma in Israel

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Background: To describe prevalence, clinical characteristics and genetics of childhood glaucoma diagnosed over a 15-year period using the new Childhood Glaucoma Research Network (CGRN) classification.

Methods: Data from patients with childhood glaucoma who underwent treatment at Carmel Medical Center from 2004 to 2019 was collected.

Results: A total of 130 patients with the diagnosis of glaucoma were included. 36 Percent were female and 77 Percent had bilateral disease. Primary Congenital Glaucoma (PCG) was the most prevalent category accounting for 57 percent of diagnosis. PCG subcategories were neonatal 23.4%, infantile 29.7% and late onset 3.9%. Juvenile glaucoma was diagnosed in 0.8% of patients. Glaucoma associated with congenital cataract surgery was diagnosed in 14.8%. Glaucoma associated with non-acquired systemic disease or syndrome (Neurofibromatosis and Sturdge Weber Syndrome) was diagnosed in 8.6% of patients. Glaucoma associated with non-acquired ocular anomalies accounted for 6.3% of patients and glaucoma associated with acquired conditions (steroid use, uveitis and trauma) was diagnosed in 8.6% and diagnosis of glaucoma suspect was given to 3.9%. Genetic testing for mutations in CYP1B1 gene was performed in PCG patients.

Conclusions: Establishing a pattern of childhood glaucoma classification and its associated clinical, genetic and phenotypic characterization will help guide treatment and management strategies in this rare group of disorders.

Practice Patterns to Decrease Myopia Progression Differ among Pediatric Ophthalmologists Around the World

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4. Ophthalmology, Hospital clínico instituto Castroviejo-Universidad Complutense, Madrid, Spain
5. Ophthalmology, Indiana University School of Medicine, Indiana, USA

Background: Myopia is a worldwide epidemic. Multiple treatments have been offered to decrease myopia progression. The purpose of this study was to compare and analyze demographic variations in the practice patterns utilized globally by pediatric ophthalmologists to decrease the progression of myopia.

Methods: Worldwide responses to a questionnaire (n=794) were analyzed after subcategorization to pharmacological, optical and behavioral treatment modalities as effective or ineffective based on current literature.

Results: Treatment rates varied significantly between geographical regions (mean 57%, range: 39 - 89%, P0.001). The majority of those, who had chosen to treat, utilized at least one effective mode of treatment (98%, p=0.16). Europe held the lowest rate of respondents offering an effective pharmacological treatment (82% versus 97%, average). Effective optical treatment rates varied significantly (P0.001), from 15.2% in Central and South America to 55.3% in the Far East. Most respondents advocated behavioral modifications (average 92%, range: 86%-100%). A combination of treatment modalities was most popular (95%) and all the 3 treatment modalities were offered by 56% of ophthalmologists, although these rates varied significantly between regions (P0.001). Rates of effective treatment combinations were 77%, nonetheless, all 3 types of effective treatment were incorporated by 21%. Demographic variation was significant (P0.001)

Conclusion: Treatment rates to decrease myopia progression varied considerably among pediatric ophthalmologists globally. Certain types of treatment and combinations were more popular. In some instances, treatment included unsupported evidence-based options. Further efforts to provide pediatric ophthalmologists with evidence-based data might universally improve their ability to effectively treat to decrease myopia progression.

Update Lecture: 3D Assisted Congenital Anophthalmia Treatment

Yoav Vardizer[1], Max Zalevsky[2]
1. Ophthalmology, Bnai Zion Medical Center, Haifa; Vardizer Prosthetic Clinic, Haifa, Israel
2. Ocularist, Vardizer Prosthetic Clinic, Haifa, Israel

Background: Congenital anophthalmia treatment is one of the most challenging for the oculoplastic surgeon as well as the ocularist. Treatment combines expander conformers that are replaced periodically during the first few years of life. Then, complementary surgeries are offered to help the anophthalmic socket resemble cosmetically the normal eye and orbit. Although treatment is intensive the end cosmetic result is usually submaximal and in some cases disappointing. The aim of our investigation was to check the possibility of printing a set of conformers that could be replaced by the parents of anophthalmic children according to a preformed plan and the socket expansion rate rather than the prefixed visits.

Methods: Expander conformer treatment has 3 major goals: first, to create a socket that is able to hold a prosthesis, to deepen the socket and enhance orbital growth, and to stimulate soft tissue and eyelid growth. We created a set of 64 expander hourglass conformers using a 3D printer that grow in size and change in three diameters: radius of the inner part to expand the conjunctiva, width to press on the orbit pit and to enhance orbital growth, and handle size to enable the growth of the eyelids.

Results: We would like to present our concept and our preliminary results with our most recent patients.

Conclusion: We believe that our new concept enables better treatment for congenital anophthalmic patients. This treatment change requires parental understanding and cooperation. It would enable treatment of patients from far as intensive visits may not be needed.

Neuro-Ophthalmology

Guest Lecture: Five Diagnoses You Cannot Afford to Miss

Andrew G. Lee
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Ophthalmologists are sometimes the first point of medical care contact for patients with potentially life threatening disorders.

Five of these neuro-ophthalmic conditions are discussed in this talk including: 1) giant cell arteritis presenting as transient or permanent visual loss or diplopia in the elderly; 2) pituitary apoplexy presenting as a bitemporal hemianopsia; 3) posterior communicating artery aneurysm presenting as a third nerve palsy with or without pupillary involvement; 4) Fungal (e.g., Mucor or Aspergillosis) sinusitis extending to the orbit and cavernous sinus in immunocompromised (especially diabetic ketoacidosis) and immunocompetent patients ; and 5) arterial dissection of the carotid or vertebral arteries. These conditions typically present with acute headache (sometimes the worst headache of their life), eye pain, or neck pain. Neuroimaging studies should be directed at the underlying etiology and distinctive and differentiating features may be present to make the diagnosis.

The Great Imitator is on the Rise: Ocular and Optic Nerve Manifestations in Patients with Newly Diagnosed Syphilis

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Background: Ocular manifestations of syphilis have been previously reported in 2-10% of systemic infection. During the last decade, the number of syphilis cases has been on the rise in developed western countries. That rise has led to an increased prevalence of ocular manifestations. Therefore, the purpose of the present study was to report the current incidence of ocular syphilis and various ocular manifestations, particularly optic nerve involvement, in newly diagnosed cases.

Methods: This was a retrospective study. Medical records of newly diagnosed syphilis patients between January 2009- 2017 in a tertiary medical center were reviewed.

Results: There were 123 new systemic syphilis cases out of 569,222 (0.02%) admissions to the Tel-Aviv Medical Center during the study period. Ninety-two/123 patients (75%) underwent ophthalmological examination. Twenty-three patients/92 (25%, mean age 48.6±12.9 years, 20 males) had ocular syphilis and in 12/23 (52%) patients the ocular symptoms and findings prompted syphilis investigation. Eighteen/23 (78%) had optic nerve involvement, the most common was inflammatory disc edema. Older age (p=0.0005) and tertiary stage disease (p=0.0441) were associated with ocular manifestations and the presence of optic nerve findings. HIV was associated with ocular but not optic nerve findings. Treatment included intravenous penicillin G, and 4 patients with severe optic neuropathy were also treated with systemic corticosteroids. Visual acuity significantly improved in most patients (p0.05).

Conclusion: Ocular syphilis was found in one-quarter of the patients diagnosed with systemic syphilis and preceded the diagnosis of systemic disease in one-half of them. Optic nerve involvement was a common manifestation. A high index of suspicion for Treponema infection is required in patients presenting with optic nerve involvement to facilitate prompt diagnosis and treatment. Post-treatment visual outcome was good.

The Use of Methylphenidate to Improve Visual Field Testing in Healthy Adults

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2. Ophthalmology, Sackler School of Medicine, Tel-Aviv University, Tel Aviv, Israel
3. Psychiatry, Ramat-Hen Psychiatric Clinic, Clalit Health Services, Ramat Gan, Israel
4. Coagulation, Coagulation Laboratory, The Chaim-Sheba Medical Center, Tel-Hashomer, Israel
5. Ophthalmology, Felsenstein Center for Medical Research, Rabin Medical Center, Petah-Tikva, Israel

Background: Cooperation and attention affect the quality of visual fields (VF). Patients with normal eye examinations often perform abnormal VFs. Repeating the VF is a proven way to improve results. Methylphenidate is used to treat Attention Deficit and Hyperactivity Disorder (ADHD). We hypothesized that methylphenidate can improve VF quality in normal subjects.

Methods: Patients with normal eye examinations but abnormal VFs were prospectively recruited. We excluded patients with optic nerve, retinal, psychiatric or cognitive disorders and patients with ADHD. Patients were randomly assigned to methylphenidate group or controls. Both groups repeated the same VF. The Ritalin group received methylphenidate 10mg P.O. before the VF test.

Outcomes included percent difference between the first and second VF in Mean Deviation (MD) and Pattern Standard Deviation (PSD) and a blinded scoring by three ophthalmologists who assessed whether the second VF was better than the first. Both eyes of each patient were included in the statistical analysis. Mixed model ANOVA and GEE were used with SAS version 9.3.

Results: Eighteen patients participated in the methylphenidate group and 17 patients in the control group. Both groups improved in MD, PSD and the experts` review of VFs. However, the differences between groups were not statistically significant. Subgroup analysis of patients with prior VF testing experience (methylphenidate: 15 eyes, controls: 11 eyes) demonstrated a trend towards increased MD improvement in the methylphenidate group compared to controls (median +70%, IQR 5%-90% vs -2% worsening, IQR [-46%] - [+43%], respectively, p=0.18). PSD improved in the methylphenidate group (median +45%, IQR 19%-67%) compared to controls (-6%, IQR [-36%] - [+26%], P=0.01). The experts` assessment found 73.3% improvement in the Ritalin group vs 9.1% in the control group (p=0.005).

Conclusion: Repeating VFs with methylphenidate in normal patients with prior VF experience, may improve the results more than simply repeating the test.

To Stent or not to Stent - Cerebral Venous Sinus Stenting for Idiopathic Intracranial Hypertension

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Background: Idiopathic intracranial hypertension (IIH) is characterized by increased intracranial pressure. It causes significant morbidity marked by headaches, papilledema and visual field loss. In the setting of failed medical therapy, venous sinus stenting has emerged as a new treatment option for patients with IIH. We review the characteristics and outcomes of patients who underwent venous sinus stenting in the management of medically refractory IIH at our institution.

Methods: We retrospectively reviewed all patients at our institution who underwent venous sinus stenting for IIH. A particular focus was dedicated to demographic, clinical, radiologic, and outcomes data. All patients had failed medical management.

Results: Six patients underwent venous sinus stenting, with a mean follow-up of 23.3 months (range, 4–63 months). The mean age was 36.8 years (range, 28-48 years), 4 (66.6%) were women, and the mean body mass index was 29.4 kg/m2 (range, 21–39 kg/m2). Prior to the stenting procedure, all patients had headaches, visual disturbances, and papilledema. The mean opening LP pressure pre-procedure was 41.3 cm H2O (range 32-55 cm H2O). The mean pressure gradient measured proximally and distally to the area of focal obstruction was 16.5 cm H2O (range, 12-20 cm H2O). Five patients had bilateral transverse-sigmoid stenosis but stenting performed unilaterally in all cases. Post stenting, all patients had resolution of their papilledema and tinnitus. Three patients (50%) had complete resolution of their headaches, whereas the other three patients remained under a neurologist`s care for other types of headaches. None of the patients underwent a re-stenting procedure for disease progression, and none had an in-stent thrombosis.

Conclusions: A multidisciplinary approach involving neurosurgeons, ophthalmologists, radiologists, and neurologists is integral in the management of patients with IIH to prevent the complications of papilledema. Venous sinus stenting offers a safe and effective means of treating IIH in appropriately chosen patients.

Risk of Stroke in Patients with Ocular Arterial Occlusive Disorders

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Background: Monocular vision loss, attributed to either central retinal artery occlusion (CRAO), branch retinal artery occlusion (BRAO), or ocular ischemic syndrome (OIS), is thought to be associated with an increased prevalence of cerebral infarcts. However, there is a paucity of data substantiating this. We aimed to investigate this relationship in a Canadian center and further understand the importance of associated internal carotid artery stenosis in potential clinical decision making.

Methods: We performed a retrospective cohort study at a comprehensive stroke center of patients presenting initially with CRAO, BRAO, or OIS to a centralized ophthalmology center over a 5-year period. Patients were followed for 3 years for the occurrence of a hemispheric stroke.

Results: We identified 83 affected eyes, with 31 CRAO, 35 BRAO, and 17 OIS patients. Before ocular diagnosis, 32.3%, 11.4%, and 41.2% of CRAO, BRAO, and OIS patients, respectively, experienced a symptomatic stroke. Of the remaining patients, 4.8%, 12.9%, and 40%, respectively, suffered a hemispheric stroke within 3 years of ocular diagnosis. Logistic regressions suggested that for CRAO and BRAO patients together, the degree of ipsilateral internal carotid artery stenosis is unable to predict the occurrence of a stroke (P=0.18), whereas our model correctly predicted a stroke in 82.4% of OIS patients (P=0.005).

Conclusions: CRAO, BRAO, and OIS are associated with significantly increased symptomatic stroke rates. Degree of ipsilateral internal carotid artery stenosis may not be useful in risk stratification for these patients, suggesting that they should be triaged appropriately for stroke risk-factor management, independent of internal carotid artery stenosis.

Update Lecture: Retinal Artery Occlusions- Neurovascular Implications and Acute Management

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Retinal Artery Occlusion workup is currently under debate in the medical literature. Recent observational studies suggest that RAO holds a significant neuro-vascular risk and should even be regarded as an embolic stroke for all purposes. In light of these observations and new insights in embolic stroke pathogenesis and prevention, an urgent and thorough embolic stroke workup approach is recommended for these cases.

Guest Lecture: Five Easy Mistakes to Avoid in Your Next Neuro-Ophthalmic Patient

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Ophthalmologists should avoid sins of commission and of omission in evaluating patients with neuro-ophthalmic disease. These Do's and Don't's include: 1) Do keep the Symptoms, Signs, Diagnosis sections of the history separated; 2) Don't let "sewage" (inaccurate or inappropriate remarks) in your record; 3) Do create a focused differential diagnosis in every case (and avoid premature closure of the differential diagnosis); 4) Don't make up your own neuro-ophthalmology rules; and 5) Do end with a directed action plan that includes either a self-directed work it up or if necessary to simply recognize, triage, and refer to another specialist or to the hospital.

Do Israeli Ophthalmologists Look After Their Own Ocular Health?

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Background: There is an undisputed belief among the population including doctors that early detection of any medical condition including ophthalmological disorders is beneficial and improves outcome. Therefore, routine screening exams are becoming widely implemented across all medical fields, ophthalmology included. The purpose of this study is to assess the attitudes and practices of ophthalmologists concerning their own ocular health.

Methods: A survey sent to all members of the Israeli Ophthalmological Society in April 2018, including sociodemographic data and questions related to their personal attitudes regarding regular ophthalmological screening exams, and their compliance with their recommendations.

Results: Two-hundred and forty three of 600 eligible Israeli ophthalmologists (40%), participated in this study. Fifty-nine percent (143/243) of respondents were males and 41% (100/243) females. Seventy-four percent (180/242) were born in Israel and 26% (62/242) were born outside of Israel. The mean age was 51.5 ± 12.6 years (range, 28 – 86 years). Ninety-eight percent (238/242) recommend adults to undergo routine ophthalmological screening, most commonly after the age of 40. Fifty-two percent (124/239) think that ophthalmological screening should be done every year every year, 36% (85/239) every two years, and 6% (14/239) every five years. However, only 29% (70/242) had an eye exam in the past year, 26% (62/242) 2-3 years ago, 12% (29/242) 4-5 years ago, 14% (33/242) more than 5 years ago, and 3% (8/242) didn't remember when was the last time they were checked.

Conclusions: Ophthalmologists, who are supposed to be role models for eye care, believe that ophthalmological screening exams are important, but do not undergo most of the recommended tests themselves.

Retina

Update Lecture: New Horizons in the Treatment of Diabetes and Impact on Diabetic Retinopathy

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Diabetes is the single most common disease creating a worldwide pandemic. In recent years increased development efforts have resulted in multiple new therapeutic options through novel mechanisms. These are intertwined with a better understanding of the pathogenesis of diabetes and it's complications and improved clinical outcomes. The publication of multiple cardiovascular outcome trials (CVOT) with medications from the SGLT-2 inhibitor and GLP-1 agonist classes have opened therapeutic options not only with regard to their anti-hyperglycemic effect but also with regards to cardio and nephroprotection. However, as seen in the SUSTAIN-6 semaglutide CVOT, the increased potency of certain formulations may lead to deleterious effects on retinopathy. Our current understanding of this observation is that it is not formulation specific but a result of the high glycemic potency observed in the study. Future formulations such as fixed ratio basal insulin/GLP-1 agonists combinations, highly potent GLP-1 agonists and GLP-1/Glucagon/GIP coagonists theoretically pose similar potential risks. Possible mitigation options include awareness of this potential risk, dedicated ophthalmologic studies, and improved titration regimens.

Anatomical and Functional Testing in Diabetic Patients without Retinopathy

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Background: To assess early retinal microvascular and functional changes in diabetic patients without clinical evidence of diabetic retinopathy (DR) with optical coherence tomography angiography (OCTA) and central visual analyzer (CVA).

Methods: This was a case-control study. Treatment naïve diabetic patients that lacked evidence of DR by funduscopic exam and retinal imaging and non-diabetic controls were included. Patients underwent OCTA imaging and visual acuity (VA) testing using the CVA. The foveal avascular zone (FAZ) area and the capillary density (CD) in the superficial and deep capillary plexuses were measured manually from the OCTA images by a masked grader. The CVA tests central VA under specific lighting that simulates the varying contrast and luminance of real-life settings.

Results: Sixty eyes from 35 diabetic patients of average age 58.5 years (range 34-93) were included in the study group and 45 eyes from 31 non-diabetic patients of average age 59 years (range 40-75) were included in the control group. FAZ area was not significantly different between the diabetic group and controls (both p 0.05). The mean CD in the deep capillary plexus was significantly lower in diabetic eyes (52.74% ± 6.3%) compared with control eyes (55.45% ± 4.3%) (p = 0.04). The mean VA in all CVA modules was significantly decreased in diabetic patients compared with controls (all p 0.05).

Conclusion: OCTA was able to detect retinal microvascular changes in the deep capillary plexus and the CVA showed signs of decreased visual acuity under conditions simulating suboptimal contrast and glare in diabetic patients without DR.

Ocular Surface Temperature Differences in Retinal Vascular Diseases

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Background: Diabetic retinopathy (DR) and age-related macular degeneration (AMD) are the two most common disorders encountered by retinal specialists. Though the exact mechanisms that initiate and render DR and AMD are not clear, there is evidence to suggest that low-grade inflammation has a dominant role in these conditions due to evidence of oxidative stress, retinal vascular endothelial dysfunction (and consequent increased vascular permeability), enhanced expression of adhesion molecules and increased production and action of pro-inflammatory cytokines.

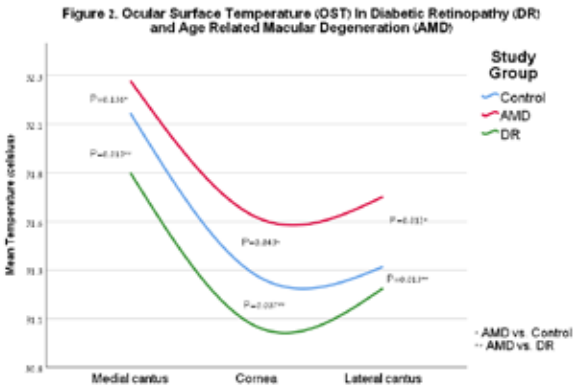
As suggested by previous studies, ocular hemodynamics can be represented indirectly by measuring the ocular surface temperature (OST).

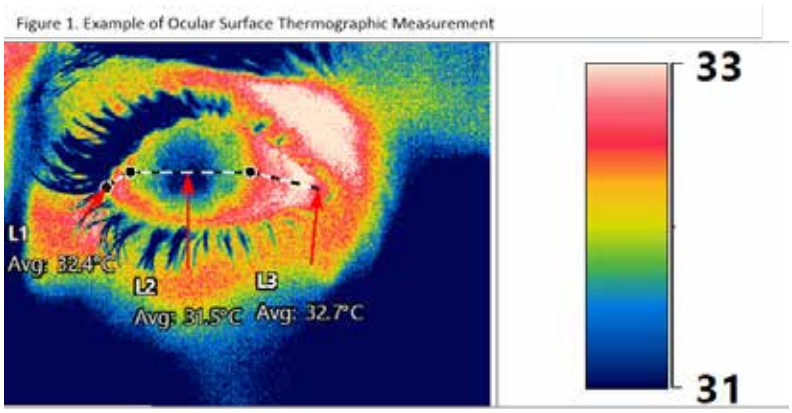
In this study we investigated the ocular thermographic profile of patients with AMD and DR compared to healthy patients, to better understand the pathophysiology of these conditions.

Methods: Subjects diagnosed with DR or AMD treated at the Goldschleger Eye Institute retinal clinic were recruited. Subjects without any ocular disease were used as controls. Therm-App thermal imaging camera was used for OST acquisition. Room and body temperature were recorded and the mean temperature of the medial cantus, lateral cantus and cornea was calculated using an image processing software (figure 1).

Results: A total of 90 subjects (133 eyes, 35 DR, 67 AMD, and 34 control) were recruited. As depicted in figure 2, surface temperature was significantly higher in the AMD group compared to both control and the DR group (P0.05, adjusted for age, sex, room temperature, body temperature, lens status and current treatment with intravitreal injections). Surface temperature was also lower in the DR group as compared to controls although the difference did not reach statistical significance.

Conclusions: The variations in OST observed herein represent the hemodynamic changes that occur in AMD and DR. The differences between the two entities might reflect a distinct pathophysiological process of each condition.





Genotype-Phenotype Correlation Study of Patients with Retinitis Pigmentosa with Different Mutations Based on Ultra-Widefield Fundus Autofluorescence Imaging

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Background: Previous studies using ultra-wide field (UWF) fundus autofluorescence (FAF) for genotypic-phenotypic characterization of UWF-FAF patterns in retinitis pigmentosa (RP) suggested that findings are heterogeneous. No previous comparison has been performed among RP patients with different, defined, gene mutations. Our purpose is to report a genotype-phenotype correlation study of patients with RP caused by different genes based on UWF-FAF imaging.

Methods: Retrospective case series of patients with autosomal recessive RP (ARRP) with confirmed causative genetic variants and UWF-FAF imaging data obtained with an Optos 200Tx imaging system. UWF-FAF characteristics of enrolled patients were graded by a masked retina specialist according to the following criteria: pattern of macular abnormal FAF, presence or absence of horizontal linear hyperautofluorescence, extension of decreased autofluorescence (DAF), DAF configuration, and presence of disc hyperautofluorescence. The Kruskal-Wallis test was used to examine mean differences among groups.

Results: Forty-three patients (86 eyes) were enrolled. Mean age was 47 ± 16 years (range 17-79 years). Twenty patients had mutations in FAM161A, 12 in DHDDS and 11 in the MAK gene. In 46 eyes, two serial UWF FAF were examined (mean time 31 months, range 5-47). Statistically significant differences were found in the pattern of macular abnormal FAF (p=0.001), DAF configuration (p=0.007) and DAF extension (p=0.037). Patients with DHDDS gene mutations had more abnormal ring macular FAF pattern and more widespread peripheral DAF. No differences were found in the other parameters examined. A moderate correlation (R = 0.422) was found among all imaging criteria analyzed and the causative gene. In cases with two serial examinations, no statistically significant change was found over time for any of the parameters.

Conclusions: ARRP patients with different causative genes depict different UWF-FAF patterns. We plan to further extend this analysis to additional causative genes and to follow patients over time to assess disease progression.

Peripheral Exudative Hemorrhagic Chorioretinopathy- Clinical Course and Imaging Characteristics with and without Treatment on Long Term Follow-up

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Background: Peripheral Exudative Hemorrhagic Chorioretinopathy (PEHCR) is a rare degenerative disorder, with only about 400 cases described up to date. Detailed reports of long-term patient follow-up is lacking.

Methods: Medical records of all patients diagnosed with and treated for PEHCR in Sheba Medical Center from 2008 until 2018 were retrospectively reviewed. Data Collection included medical and ophthalmic history, full ophthalmologic examination and findings of multi-model imaging including optical coherence tomography (OCT), ultrasound (US), fluorescein angiography (FA) and Indocyanine Green Angiography (ICGA) when available. Treatment and treatment results when applied.

Results: 35 eyes of 32 patients were included, with a female predominance (65.9%) and an average age of 79 ±9.87 at presentation. Three clinical subtypes were apparent: exudative (12 eyes), hemorrhagic (13 eyes) and combined (10 eyes). Different subtypes were found in the same patient where bilateral involvement was noted. Most patients had unifocal disease (77.1%), which was found predominantly in the temporal area. Macula was rarely involved. About one third had concomitant macular changes consistent with age-related macular degeneration (AMD). Most common OCT and US findings were a subretinal mass with subretinal fluid, atrophic changes and scarring. Mean follow-up period was 24 months with clinical examinations and repeat imaging. Disease prognosis was favorable in most cases, with visual acuity remaining stable (39.29%) or improved (25%). Only 3 eyes (10.71%) demonstrated marked clinical progression over time. Treatment with intravitreal bevacizumab induced statistically significant clinical resolution.

Conclusions: PEHCR is a rare disease with high clinical variability and generally good visual outcome. It may be subdivided into three clinical subtypes (exudative, hemorrhagic and combined), with the combined type being the most aggressive. This is the first study to show statistically significant resolution rate after anti-VEGF injections.

OCTA in MACTel – New and Complimentary Multi-Modal Imaging Findings

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Purpose: To assess the contribution of Optical Coherent Topography Angiography (OCTA) when evaluating layer-specific microvasculature morphology surrounding the central macula in eyes with idiopathic macular telangiectasia type 2 (MacTel2).

Methods: OCTA scans of MacTel2 patients were reviewed along with additional imaging data from multiple modalities, including fundus photography (FP), fluorescein angiography (FA), fundus autofluorescence (FAF), confocal blue reflectance (CBR) and spectral-domain OCT (SDOCT).

Results: OCTA displayed microvascular and layer-associated vascular abnormalities found in eyes with MacTel2. Findings included truncated and irregular small vessels, anastomotic connections between the inner and outer retinal layers and neo-vascularization. FA demonstrated various degrees of leakage from peri-foveal vessels, areas of non-perfusion and cystoid macular edema (CME). SDOCT showed cystic formations and outer-segment atrophy with retinal thinning. CBR demonstrated the classic white-grey halo surrounding the macula.

Conclusions: OCTA can contribute to the monitoring of MacTel2 patients, as it may demonstrate the presence of intra-retinal neovascularization. As this technology evolves it is likely to become integral to the multi-modal imaging approach used to diagnose and monitor these patients.

Therapeutic Potential of Mitochondrial Transplantation in Ischemic Retinal Disease

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Introduction: Mitochondrial transplantation (MitoPlant) is a novel and promising therapeutic modality, whereby healthy exogenous mitochondria extracted in vitro are injected into ischemic tissue, internalized by cells and protect them from death. MitoPlant was shown to facilitate functional recovery in ischemic mouse models of the heart, liver and nervous system, and recently in pediatric patients with congenital heart disease. In the visual system, common blinding ischemic insults lead to the death of retinal ganglion cells (RGCs), with no available treatment as for today. Here we postulate that MitoPlant may have beneficial effects in ocular ischemic pathologies.

Aim: To evaluate the therapeutic potential of MitoPlant in ischemic retinal insults.

Materials and Methods: Mitochondria were isolated from mouse livers and their purity and function were evaluated. Retinal ischemia was induced in C57BL/6 mice using an excepted model of optic nerve crush (ONC). Immediately following ONC, freshly isolated mitochondria were injected to the vitreous cavity. Mitochondrial internalization into the retina and survival of RGCs were determined 24 hours or 2 weeks afterward by confocal imaging or by histological examination, respectively.

Results: We demonstrate that our isolated mitochondria are pure and functional, with appropriate membrane potential, mitochondrial respiration, and ATP production. We show for the first time that functional isolated mitochondria injected into the vitreous cavity of a mouse eye are internalized by the RGCs of the retina and that this process is enhanced under ischemic conditions. Importantly, we show that MitoPlant significantly improves RGCs survival after retinal ischemia and restore the normal structure of retinal layers.

Conclusions: We show that MitoPlant has beneficial effects in untreatable and potentially blinding ischemic eye disease by rescuing RGCs from death. This can provide a new therapeutic tool for preserving visual function in common retinal ischemic insults.

Epiretinal Membrane Removal Surgery for Patients with Good versus Poor Pre-Operative Visual Acuity

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Background: Baseline visual acuity is a predictor of Short term post-operative VA for patients who underwent pars plana vitrectomy and ERM peeling. We compared the visual outcome of patients with good vs. poor pre-operative VA and investigated the relationship between preoperative VA and 1-year post-operative VA, as well as other patient characteristics.

Methods: The medical records of 134 eyes who underwent PPV for ERM peeling were retrospectively reviewed. Data regarding BCVA, OCT parameters, patient characteristics and surgical characteristics was collected, as well as BCVA at 12±2 months. All VA values were converted to logMAR for statistical analysis. Two groups were defined based on pre-operative VA: Group 1 included those with BCVA of 6/20 or better (logMAR≤ 0.52) and group 2 included those with BCVA worse than 6/20 (logMAR 0.52).

Results: Fifty-three patients were included in group 1 (good pre-operative VA) and 81 patients were included in group 2 (poor pre-operative VA). The median baseline BCVA was 0.397 (IQR: 0.301 - 0.522) and 0.875 (IQR: 0.699 - 1.000), respectively. The BCVA at 12 months after surgery was significantly better (p0.001) for group 1 with median BCVA of 0.301 (IQR: 0.151-0.699), whereas group 2 had median BCVA of 0.699 (0.397-1.255). There was significantly (p=0.017) greater improvement in logMAR in the poor VA group (-0.176 IQR: -0.477 - 0.278) compared to the good VA group (0.000 IQR: -0.234 - 0.301). However, within group 1, seventeen eyes (32.1%) had a BCVA of 6/9 or better at 12 months, and within group 2 only 6 eyes (7.4%) achieved this VA (p0.001).

Conclusion: Pre-operative VA is the main predictor of post-operative VA in patients who have PPV for ERM removal. Patients with ERM may benefit more from surgery at an early stage and delaying surgery might lead to worse long-term visual function.

Prognostic Factors for Surgery of Idiopathic Macular Holes on Optical Coherence Tomography

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Background: Full-thickness idiopathic macular holes cause an abrupt decrease in best-corrected visual acuity (BCVA). They are the most common cause for macular holes and are an indication for pars plana vitrectomy. Our purpose was to disclose features on pre-operative optical coherence tomography (OCT) that would predict the visual outcomes of pars plana vitrectomy for idiopathic macular holes.

Methods: Different features of preoperative OCT of 27 eyes of 24 consecutive patients that underwent pars plana vitrectomy for idiopathic macular holes were compared between patients who gained BCVA of 6/12 or better and those with BCVA of less than 6/12 at the last follow-up period.

Results: On univariate analysis, the diameter of the macular hole (p=0.002), presence of posterior vitreous detachment (p=0.047), diameter of intraretinal cystic area (p=0.019), loss of ganglion cells (p=0.022) and other cell layers (except photoreceptors) (p=0.022) were statistically associated with final BCVA in a follow-up of 13-19 months (mean 15.8). On multivariate analysis, only the diameter of the macular hole and PVD were statistically associated with final BCVA (p=0.042). All the demographic data and other OCT findings were not statistically associated with visual prognosis.

Conclusion: Certain preoperative OCT findings, especially the diameter of the macular hole, may predict the outcomes of pars plana vitrectomy for idiopathic macular holes probably because of increased irreversible damage to retinal layers.

Prognostic Factors in Penetrating Eye Injuries in the Pediatric Population up to Age 18 Treated at "Soroka" University Medical Center between the Years 2003-2015

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Purpose: To determine demographic, etiologic and clinical characteristics affecting the visual prognosis in children with penetrating ocular trauma.

Methods: A retrospective review was conducted of 112 patients between the ages of 0 to 18 who presented with penetrating ocular trauma in Soroka medical center between the years 2003 – 2015. Data collected included demographic profile data, clinical details in presentation of the trauma, time from trauma to hospital admission, time from hospital admission to first surgery, additional treatments during the follow up period, follow up duration and best corrected final visual acuity at last follow up visit.

Results: A total of 101 patients were included, 80 (79.2%) males and 21 (20.8%) females. Males were older than females ($p \leq 0.05$). Female gender is a positive predictive factor for favorite final BCVA. Good BCVA at presentation was a positive predictive factor for final BCVA (p0.001). There was correlation between the location of the injury (posterior to the limbus) with poor final BCVA, the mean score of pediatric ocular trauma system was 42.1 which was correlated to poor final BCVA (p0.001). Primary management with scleral repair is the only procedure correlated with favorable BCVA (p 0.05).

Conclusion: We report the first study on the epidemiology and clinical outcomes of pediatric ocular trauma in southern Israel. Prognosis is determined by sex, visual acuity at presentation, location of the injury, severity of pediatric ocular severity score and type of primary surgery repair.

An Emerging Surgical Technique for Submacular Hemorrhage

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Background: Acute Submacular Hemorrhage (SMH) is an uncommon but potentially devastating complication of neovascular age related macular degeneration (NAMD), but may also be caused by other etiologies, such as ocular trauma and arterial macroaneurysms. Management of massive SMH aims to minimize photoreceptor and retinal pigment epithelium (RPE) damage by removal of submacular blood. Previous interventions include pneumatic displacement with tissue plasminogen activator (tPA), pars plana vitrectomy (PPV) with or without subretinal tPA injection, gas tamponade and more. Recent reports suggest that surgical delivery of subretinal tPA and air to ensure displacement of the hemorrhage may have a potential benefit.

Methods: Patients who underwent surgery for displacement of SMH with PPV, subretinal injection of air, tPA, and anti-vascular endothelial growth factor (anti VEGF), along with gas tamponade.

Results: Four eyes of four patients, all suffering from SMH secondary to NAMD were included and underwent the above procedure. In all cases, significant displacement of the hemorrhage was noted post operatively. In most cases subjective and objective visual acuity improved, though it is worth noting that baseline visual acuity of these patients was limited due to active choroidal neovascular disease.

Edited videos will be presented.

Conclusions: Adjunct of subretinal air in addition to tPA and anti-VEGF, in PPV with fluid-air exchange may be an effective therapeutic option for SMH, which currently lacks definitive therapy options. Further studies are necessary to determine the actual efficacy of this procedure in SMH patients.

Ocular Oncology

Update Lecture: Rhabdomyosarcoma from a Lethal to a Treatable Disease

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Purpose: Although ocular rhabdomyosarcoma (RMS) is a rare tumor among the entire group of rhabdomyosarcoma, it is a relatively common lesion and significant challenge for the ocular and pediatric oncologist in terms of its diagnosis and management.

Results: A comprehensive review of epidemiological, clinical, radiological and therapeutic data will be presented.

Ocular RMS usually presents as a space-occupying lesion in the orbit or a mass located at the eyelid usually during the first decade. Regarding orbital RMS, the tumor has predilection for the superior nasal quadrant of the orbit. The clinical manifestations depend on the location of the tumor within the orbit and its rate of growth. The common histopathologic types are embryonal and alveolar varieties. CT and MR and PET –Ct imaging are important in the evaluation of this tumor. Particular attention should be placed on the bone invasion and extension of the tumor into the intracranial cavity and paranasal sinuses. Treatment usually consists of a combination of chemotherapy and radiation therapy following excisional biopsy.

Conclusions: Survival of ocular RMS has improved due to advances in chemotherapy and radiotherapy. Post treatment complications, including side effects of radiotherapy and secondary orbital malignancies, as well as visual dysfunction, occur more often and present new challenges due to improved long-term survival

Focal High Dose Rate Brachytherapy for Conjunctival and Eyelid Tumors

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Purpose: Evaluate the clinical feasibility of IntraBeam intra operative kV irradiation beam device for eyelid and conjunctival tumors. The Intra-Beam system offers a 4.4 mm diameter needle applicator of low energy radiation at a high rate that may be useful for conjunctival tumors.

Methods: Dosimetry of a newly designed applicator for conjunctival and eyelid tumors. The needle applicator allows dose rate of about 3.5 Gy/min at 10 mm distance from the needle central axis. For instance, a 50 kV beam (40 mu A) would require about three minutes to deliver a prescribed dose of 20 Gy at 2 mm depth. In order to receive a collimated beam for conformal treated volumes, we designed and applied shielded cover with PMMA window onto the needle applicator. This will filter the X-rays and produce a conformal dose distribution over the treatment area while shielding healthy ocular surfaces to be spared. We compare the dose distribution to that of the known needle and surface applicators. Dose distributions were simulated using FLUKA; a fully integrated particle physics Monte Carlo simulation package.

Results: Using a newly designed Wedge applicator made of Polythermide window and stainless steel for collimating the dose distribution is favorable for conjunctival and eyelid tumors but not for large surface areas.

Conclusion: Initial dosimetry of a newly designed intraoperative kV irradiation beam using x-rays suggests the feasibility of this approach for conjunctival and eyelid tumors. It offers intraoperative treatment over a short period of time with high dose.

The Mammalian Target of Rapamycin (mTOR) Inhibitors for the Treatment of Retinal Astrocytic Hamartomas in Tuberous Sclerosis Complex Patients

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Background: Tuberous sclerosis complex (TSC) is an inherited neurocutaneous disorder. TSC involves multiple organ systems. Ophthalmic manifestation is common. Half the children with TSC have retinal astrocytic hamartomas (RAH). The role of mTOR inhibitor was investigated in a study conducted on 20 posterior pole RAH. It was associated with a mean reduction in RAH thickness of 13.9%.

Methods: we retrospectively collected the data of all TSC patients that were referred to our ocular oncology service in between the years 2014-2018.

Patients medical records were evaluated for demographics, clinical features, imaging data, treatment and treatment outcome. In addition, all tumors with before and after images were further evaluated and comparison of tumor size was done.

Results: Nine patients were included in the series. Eight patients were males (88%). The median age was 5.33 years. Seventeen eyes were involved. A total of 107 tumors were found. The Average Tumor number was 5.5 per eye. Six patients were treated with mTOR inhibitors. Four started treatment because of ocular indication. Average follow up time was 2.08 years. Eyes of patients that were treated with mTOR inhibitors had a total number of 53 tumors. Of the tumors in the treated group, 42 (79%) tumors had images before and after starting treatment. Twelve tumors (28.5%) disappeared, 19 regressed (45.2%), 11 tumors (26.1%) did not change. All the tumors that disappear were 1 mm in diameter or less. No tumor growth was demonstrated. In the untreated group, there was a total of 54 tumors. In this group, 15 tumors had images before and after starting treatment. Five (33%) tumors regressed, 10 (67%), tumors did not change, and none disappeared.

Conclusions: In this retrospective series 73% of mTOR inhibitors, treated Astrocytic Hamartomas disappeared or regressed. Further research is needed for better understanding of the treatment safety and efficacy.

A Choroidal Metastasis Masquerading as a Primary Choroidal Melanoma in a Patient with no Known Primary Systemic Cancer

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Background: Choroidal metastasis is the most common intraocular malignancy in adults and choroidal melanoma is the most common primary malignancy in this population. Differentiating between these two entities can be difficult at times, especially in the absence of a known systemic cancer, and ultrasound (US) has a valuable role in this context. It typically shows low-medium reflectivity on A-scan for melanoma, and high reflectivity for metastasis. We report a case of a woman with no known systemic cancer and a suspicious choroidal lesion, with typical ultrasonographic features of melanoma. Further systemic evaluation, however, found the choroidal tumor to be a metastasis from lung carcinoma.

Methods: Retrospective case report.

Results: A 79-year-old ex-smoker woman with no known systemic cancer presented with sudden visual loss in her left eye. On examination, visual acuity was 1/60, anterior segment was normal, and fundoscopy revealed a pale choroidal lesion nasal and overlying the optic disc, with surrounding subretinal fluid. B-scan US demonstrated a dome-shaped choroidal lesion, with internal vascularity, the dimensions of which were 8.4x10.0 mm in diameter and 2.4 mm in elevation. On A-scan, internal reflectivity was low, consistent with the diagnosis of a choroidal melanoma. However, due to the tumor`s atypical clinical appearance, the patient was referred for systemic evaluation. She underwent a PET scan, which showed a right lower lung hypermetabolic lesion, and further CT-guided lung biopsy found it to be a poorly differentiated squamous cell carcinoma. The patient was treated systemically with Keytruda (anti PDL-1), and with external beam radiotherapy for the choroidal metastasis, and is being monitored in our service.

Conclusion: A choroidal metastasis from lung carcinoma can masquerade as a primary choroidal melanoma with typical US features. A high index of suspicion is required in order to reveal the systemic metastatic cancer and direct management in an appropriate manner.

Ocular Manifestations of leukemia and Its Treatment with Intravitreal Methotrexate

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Introduction: Ocular involvement in leukemia is rare. Ocular symptoms can present after the systemic diagnosis, can be the presenting signs of leukemia, or the first manifestation of a relapse. Treatment of ocular leukemia include systemic chemotherapy and irradiation. Yet In some cases, systemic chemotherapy treatment may not penetrate ocular structures and irradiation can involve local complications.

The purpose of this study is to present a consecutive series of twelve patients with ocular leukemia and the result of their treatment with intravitreal methotrexate (MTX) injections.

Methods: Medical records of the patients treated between January 2010 to December 2017 were retrospectively reviewed. Data collection included demographics, medical history, laterality of the condition, ocular presentation treatment, treatment result and prognosis.

Results: The series included five men and seven women. The mean age at diagnosis was 25.92 years (25.92±23.91, 2-82 years). Seven patients (58.33%) had ALL, three patients (25%) APL, one patient (8.33%) had AML and one patient (8.33%) had HCL. In five patients, the ocular disease preceded the systemic disease and in one patient, it was the first singe of a relapse. Three patients also presented with CNS involvement. Eleven eyes of six patients treated with intravitreal MTX. The mean number of MTX injections was 3.37 (3.37±5.35, 1-18). Mean time of follow up was 27.08 months (27.08± 36.79 months, 1-93). All treated patients showed improvement in the inflammatory reaction and tumor cell infiltration. Mild corneal epitheliopathy was recorded as the only complications. At the end of follow up 7 patients (58.3%) were alive of them: 6 patients were under remission and one were under maintenance.

Conclusion: Intravitreal MTX injections can be an effective treatment method for eyes with intraocular leukemia. A large study is needed to examine the effectiveness of this treatment and side effects compered to systemic chemotherapy and irradiation.

Vitreoretinal Surgical Intervention for Exudative Retinal Detachments Associated with Choroidal Melanomas

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Background: Exudative retinal detachment is the most common cause of visual loss associated with malignant melanoma of the uveal tract. The only published studies describing vitreoretinal surgical intervention as a treatment option are in the form of case reports. In said reports, this management option is described as the ideal treatment for optimal visual results. We will describe the clinical features, surgical management, and visual outcome of a patient with choroidal melanoma who presented with exudative retinal detachment.

Methods: A 73 y/o woman diagnosed with exudative retinal detachment and choroidal melanoma at the ophthalmology ER. The initial treatment chosen for the melanoma was brachytherapy (rutinium RU-106). One month later the patient underwent PPV for RD with silicone oil injection which was extracted five months later. Her final VA was 6/10.

Results: Regression of tumor thickness was noted clinically and ultrasonographically. No recurrence of ERD was seen during a one-year follow-up after silicone oil removal.

Conclusion: The benefits of retinal detachment repair must be weighed against any increased theoretical risk of extra-scleral extension of melanoma. Considering differing retinal detachment repair surgery till after achieving control of the melanoma, keeping in mind that timely treatment allows for preservation of visual function, may be advisable. This was an effective treatment plan for our patient.

The Compatibility between Clinical and Pathological Diagnosis of Basal Cell Carcinoma of the Eyelid

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Background: To explore the occurrence of the basal cell carcinoma of the eyelids in Upper Galilee, Israel. Also to explore the compatibility between clinical diagnosis and the pathological diagnosis of BCC in a major hospital in the Galilee region.

Methods: Observational retrospective study based on review of medical cases of patients diagnosed during hospital stay with BCC of the eyelids, from the hospital database, during the last 5 years, and detailed check of patient cases diagnosed with BCC of the eyelids by first clinical diagnosis compared to pathological diagnosis.

Table 2. Posture Related IOP Changes of non-operated patients

	POAG	PXFG	
Variable	Value ± SD	Value ± SD	P-value
Number of patients	21	18	
Sitting IOP mmHg (GAT)	13.22±3.79	14.08±2.89	.29
LLDP IOP mmHg (GAT)	15.22±3.98	16±2.89	.4
ΔIOP mmHg (GAT)	2±1.86	1.91±2.84	.87
Sitting IOP mmHg (Tonopen XL)	14.77±3.77	16.27±3.48	.8
LLDP IOP mmHg (Tonopen XL)	16.75±5.08	18.20±4.28	.2
ΔIOP mmHg (Tonopen XL)	1.98±2.21	1.93±2.79	.92

Abbreviations: *PXFG* pseudo-exfoliation glaucoma, *POAG* primary open-angle glaucoma, *IOP* intra-ocular pressure, *GAT* goldmann applanation tonometer, *LLDP* left lateral decubitus position, *ΔIOP* average increase in IOP between positions

Results: From a total sample 868 eyelids surgeries, 95 (10.94%) were suspected of BCC, 72 of which (75.78%) were confirmed as BCC in pathological testing. 251 eyelids surgeries weren't suspected as BCC, out of which 33 (13.14%) were diagnosed as BCC in pathological testing. Total occurrence of BCC was 0.253% of total cases referred to the ocular clinic, 5.25% out of total cases referred to oculoplastic clinic. Total BCC occurrence 0.13% of total number of hospital cases per year.

Conclusion: There's a high occurrence of BCC in Upper Galilee population. This marks the Upper Galilee as a high-risk population for BCC. Early detection and biopsy sampling can improve cure percentage. A promotion of skin cancer awareness, especially BCC is needed in Upper Galilee population.

Glaucoma

Effects of Postural Variation on Intraocular Pressure: Comparison between Pseudo-exfoliation Glaucoma and Primary Open Angle Glaucoma

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Background: The aims of this study were to compare the posture-related Intra-ocular pressure (IOP) changes in pseudo-exfoliation glaucoma (PXFG) and in primary open-angle glaucoma (POAG) patients using the EyeOP, a novel Goldmann Applanation Tonometer (GAT) and to investigate the effect of ab externo trabeculectomy on these changes.

Methods: Prospective, non-randomized, controlled, observational study. IOP was measured in sitting and in left lateral decubitus positions (LLDP), using GAT, GAT-EyeOP and Tonopen XL. Main Outcome Measure: Posture related IOP differences between groups.

Results: Thirty-two eyes of 32 PXFG patients (21 non-operated, 11 post-trabeculectomy) and 47 eyes of 47 POAG patients (18 non-operated, 29 post-trabeculectomy) were included. Among non-operated patients, the average increase in GAT IOP between positions (ΔIOP) was 2±1.86 mmHg for the PXFG group and 1.91±2.84 mmHg for the POAG group (P=0.87). The ΔIOP among operated patients (1.72±1.9) was slightly less than in non-operated (1.62±2.69; P=0.905). In the LLDP, the mean difference between GAT and Tonopen XL IOP measurements was 1.95±3.83 mmHg, (r=0.643; P0.001). Similar correlation was demonstrated between tonometers when measured in the sitting position.

Conclusion: Both PXFG and POAG patients have increased IOP in LLDP as compared to an upright position, with no statistical significant difference between groups. Trabeculectomy had no significant effect on the ΔIOP.

2-Year Large Cohort Real World Efficacy and Safety Data for the XEN45 Implant

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Background: The aim of this study is to report the real-world, long term, data on efficacy and safety of the XEN45 in a large cohort in the NHS settings.

Methods: Historical prospective, non-comparative audit of patient records for patients that underwent an antimetabolite augmented XEN45 for treatment of glaucoma or ocular hypertension. All glaucoma medications were stopped on the day of surgery. Data was electronically collected for 3-, 6-, 12-, 18- and 24-month review. The main outcome measures are IOP reduction and number of glaucoma drops taken at each timepoint. Failure was defined as insufficiently controlled IOP, further glaucoma surgery or removal of the XEN45 tube shunt.

Results: A total of 182 Eyes of 154 patients with a diagnosis of glaucoma (any type) or uncontrolled ocular hypertension were included in the study. Standalone procedure was performed in 109 (60%) of eyes, (of these 63% had phakic XEN and 37% were pseudophakic). Combined phaco-XEN procedure was done in 73 eyes (40%). At baseline the mean IOP was 21.9±6.5 mmHg. Mean IOP at 24 months follow-up was 14.5 ± 3.1 mmHg (30.1% drop in IOP). At baseline the mean number of medications was 2.8±1.1. At 24-months the mean number of drops was 0.4 ± 0.8 medications. At the 24-months post-operative time point 18% of eyes had failed. Needling was required at least once in 30% of patients at 24-months. No significant adverse event was noted in the cohort.

Conclusion: XEN45 may offer be a viable, effective and safe procedure after 24 months of follow-up in a mixed cohort of glaucoma patient. This procedure may be better suited for patients that do not require pressure in the low teens. Patients should be advised regarding failure rates as well as the possible need for bleb revisions and topical treatment post operatively.

Efficacy of Combined Cataract and iSTENT Surgery on Well-Controlled Glaucoma Patients

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Background: Glaucoma is the main reason worldwide for irreversible blindness. In the past decade several minimally invasive glaucoma surgery (MIGS) devices have been developed for treating open angle glaucoma (OAG). One of them, the iSTENT has been widely used for patients with cataract and unbalanced OAG, but few studies have addressed its efficacy for patients with OAG well controlled by topical medications.

Methods: In this retrospective study medical records of all patients with OAG controlled under topical treatment, who underwent combined cataract and iSTENT surgery in Assaf Harofeh Medical Center between 2017-2019 were reviewed. The data gathered included demographic information, preoperative IOP values and number of medication types, visual field indexes and optical coherence tomography (OCT) readings. Follow-up clinical and imaging examinations were collected at day 1, week 1, month 1, 3, 6 and 12 postoperatively when available. The magnitude of IOP and medication reduction after surgery was compared using the paired t-test.

Results: 28 cases were found allegeable. Most patients were classified as primary open angle glaucoma (POAG) (78.57%), and pseudoexfoliation (PXF) glaucoma (17.86%). Average age was 73.82±10.73 years. Preoperative IOP levels were 15.50±3.98 mmHg on 1.57±0.74 types of topical medications. Postoperative IOP reduction was statistically significant after 1and 3 months (13.43±2.94 and 13.79±3.66 mmHg respectively). There was also a statistically significant reduction in the amount of topical drug subtypes in use (preoperative 1.86±1.11, postperative 1.5±1.16). After 6 months IOP was lower (13.22±2.73 mmhg) but not statistically significant, perhaps due to smaller sample size. Nevertheless, number of anti-glaucoma topical medications was significantly reduced in this group. No severe side effects were observed.

Conclusions: According to our experience and available data so far- IOP (3 months after surgery) and number of medications (6 months after surgery) were both successfully reduced using this procedure.

Modified Moorfields Safer Surgery System for Trabeculectomy and PhacoTrabeculectomy

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Background: Since the beginning of the 2000`s, Khaw and colleagues developed and described the "Moorfields Safer Surgery System" for Trabeculectomy operation. Although many advantages, this method can be time consuming and tedious, especially in terms of scleral flap suturing. We present our experience using a surgical method that combines principles from Moorfielfds method integrated with other ideas and practices.

Methods: In this retrospective study, we evaluated the outcomes of Trabeculectomy or PhacoTrabeculectomy during the years 2016-2018, for Glaucoma or ocular hypertension not associated or related to any other co-morbid ocular condition (i.e. trauma, previous ocular surgeries, failed previous glaucoma surgeries etc.). Complete success was defined as intraocular pressure (IOP) between 5 and 21 mmHg along with lowering the IOP by more than 20% from baseline. Relative success was defined as the same but with use of glaucoma medication. Failure was defined as IOP less than 5 or higher than 21 mmHg, or by the need for subsequent glaucoma operation.

Results: The complete study database included 192 operations. After excluding cases with other ocular co-morbidities, a group of 29 Trabs and 27 PhacoTrabs were finally included in the study. For the Trab group, pre-op IOP was 28.3±8.5 mmHg with 3.9±0.8 medications. Last follow-up IOP was 10.6±4.1 mmHg with 0.4±0.9 medications (p0.00001). Mean IOP reduction was 60% from baseline. The success rate was 93% (76% complete success). For the PhacoTrab group, pre-op IOP was 25.5±10.2 mmHg with 3.6±1.3 medications. Last follow-up IOP was 10.2±3.6 mmHg with 1.0±1.4 medications (p0.00001). Mean IOP reduction was 57% from baseline. The success rate was 89% (52% complete success). In both groups the complication rate was low and there was no major surgical complication.

Conclusion: Our modified Trabeculectomy and PhacoTrabeculectomy technique is safe and highly effective in terms of success rates and IOP reduction.

Update Lecture: Alzheimer of the Eye - the Potential Role of Amyloid Beta in Ophthalmic Neurodegeneration

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Background: The fundamental cause of ganglion cell death in glaucoma remains unknown. There is evidence that soluble non-plaque amyloid beta may be involved. Oligomeric Abeta has been shown in vitro to decrease membrane potential of RGCs. In higher concentrations, systemic or intra-vitreal Abeta leads to widespread RGC death in animal experiments. Molecules which bind Abeta prevent RGC death in animal models of glaucoma. Increased staining for Abeta has recently been reported in eyes from humans who possess a genetic mutation associated with glaucoma.

Methods: Literature review.

Results: In recent years there is an exponential increase in publications relating to amyloid beta in the eye.

Conclusion: Amyloid beta may be important in the pathophysiology of glaucoma, and can serve as a target for the development of novel neuro-protective drugs.

First-in-Human Clinical Study to Establish the Safety and Efficacy of Automatic Direct Selective Laser Trabeculoplasty (DSLT)

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Background: To evaluate the safety and efficacy of automatic DSLT applied without a goniolens at various energies to the sclera overlying the trabecular meshwork (TM) in lowering intra ocular pressure (IOP) in Pramary Open Angle Glaucoma (POAG) & Ocular Hypertension (OHT).

Methods: Between March and October 2018, nine eyes of 9 patients (1 eye with exfoliative glaucoma and all other with POAG), 44% males, mean age 64.9±9.7 years. were treated by the DSLT device. Pre-medicated patients were washed out from their glaucoma medication. The DSLT treatment included 100 sequential non-contact laser shots applied automatically directly on the scleral limbus using image analysis of the limbus location and an eye tracking monitor of the location of the eye and of the laser beam. Before the laser was fired multiple safety, checks were automatically performed. Laser energy between 0.8 to 1.4 mJ/ shot were used.

Results: The duration of the irradiation was 1.5 seconds. Mean IOP before DSLT was 26.9±1.8 mmHg, one day after DSLT mean IOP was 19.2±3.0mHg, at 1 week, 1month, 3 months & 6 moths post op the IOP was 23.1±3.8; 20.9±3.9; 21.8±2.2 and 23.1±5.2 mmHg respectively. The IOP of the two patients treated by 1.0 mJ was reduced by 35% at 6 months. One case of transient conjunctival hemorrhages occurred as a result of beams targeting to area outside the limbus.

Conclusion: In early experience, an automated DSLT is a promising new modality in the treatment of POAG & OHT. Higher energy gave better sustained results. Further studies with more patients are being conducted in order to validate these initial results in both POAG and PACG.

Complex Inheritance of Juvenile Onset Open Angle Glaucoma: Upsetting an Existing Paradigm?

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Background: Juvenile onset open angle glaucoma (JOAG) is considered an autosomal dominant trait, most frequently caused by mutations in MYOC (myosin C) or CYP1B1 (cytochrome P450, enzyme 1B1). However, clinical and genetic analysis of a large Israeli family with JOAG suggests this model may be inadequate.

Methods: A 20-year-old man from a consanguineous Muslim Arab family presented with IOP of 37/40mmHg and advanced cupping (0.7/0.75). His family was referred for complete ophthalmic and genetic evaluation.

The patient`s parents and five siblings (ages 9-20) were evaluated by ophthalmic examination including VA, IOP, anterior and posterior segment evaluation, VF, and OCT. Genomic DNA of all eight family members was evaluated by whole exome sequencing.

Results: The index patient had high IOP and advanced glaucoma. His nine year old sister presented with IOP28/29 mmHg and reserved optic nerve (C/D 0.3/0.4) with normal VF. Two siblings had equivocal findings on presentation, but on follow-up examination IOP was within normal limits, optic disc VF and OCT demonstrated no change and they were defined as healthy. Two siblings and both parents had fully normal examinations.

Whole exome sequencing of all family members revealed CYP1B1 genotypes that were not consistent with autosomal dominant inheritance of JOAG. (MYOC had normal sequence in all family members.)

Discussion: Published studies indicate that JOAG can be caused by heterozygosity of the mutation CYP1B1_R368H (i.e. change of arginine to histidine at amino acid residue 368). Genotypes of our patients are not consistent with this hypothesis. Furthermore, CYP1B1_R368H is quite common among both Ashkenazi Jews and Arabs in Israel, whereas JOAG is a rare disease. We suggest that the genetic causes of JOAG are more complex, possibly di-genic.

Conclusion: The genetic basis of JOAG could be resolved by studying more families in Israel with similar clinical presentation. Such understanding could enable prevention of permanent vision damage.

The Effect of Femtosecond Laser Cataract Surgery on the Intraocular Pressure and Peripapillary Retinal Nerve Fiber Layer Thickness

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Background: Studies of femtosecond laser pretreatment in cataract surgery, suggest intraocular pressure (IOP) may increase. This IOP elevation may compromise the peripapillary retinal nerve fiber layer (RNFL). However, this has not been proven. The aim of this study is to evaluate the effect of femtosecond laser cataract surgery (FLACS) on the IOP and peripapillary RNFL.

Methods: This prospective observational study included 133 consecutive patients (133 eyes), and no associated ocular diseases, who underwent FLACS between December2017 and August 2018. Femtosecond laser pretreatment was performed using the FEMTO LDV Z8 with Liquid Optics Interface. The IOP was measured immediately before and 2 minutes after the femtosecond laser pretreatment, using a rebound tonometer (ICare PRO). Peripapillary RNFL thickness measurements were performed by spectral domain optical coherence tomography before FLACS and at 1 month postoperatively. The vacuum time was recorded.

Results: The mean IOP was 20.2 ± 3.6 mmHg and 21.9± 5.1 mmHg before and after femtosecond laser pretreatment, respectively (mean increase from baseline 1.7±4.3 mm Hg) (P.0001). In 25% of patients there was an IOP rise of 5mmHg and beyond (maximal increase 14 mmHg). Compared to preoperative RNFL measures, statistically significant thicker postoperative values were found in all the studied sectors (p 0.0001). Mean difference: 8.1 ± 6.1µ, 10.2 ± 13.4µ, 7.6 ± 5.6 µ, 8.4±7.9 µ, 7.6 ±6.2 µ, for the average, superior, nasal, inferior, temporal sectors, respectively. No decrease in RNFL thickness was observed in any of the patients. The mean vacuum time was 2.07± 0.16min. There was no correlation between the IOP rise and RNFL thickness increase, and between IOP rise or RNFL thickness increase and vacuum time.

Conclusion: Although femtosecond laser pretreatment causes a rise in IOP, FLACS does not cause thinning of peripapillary RNFL, in patients with normal eyes.

Meeting of the Neuro- Ophthalmology Society with Prof. Andrew G. Lee

Five Myths That Even Neuro-ophthalmologists Believe are True

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Information from the textbooks sometimes differs from the practical applications in the "real world". Five Myths (misconceptions) that even some Neuro-ophthalmologists Believe are True include: 1) A Horner syndrome always needs pharmacological drop testing for confirmation and localization. In practice, few clinicians actually have direct access to the topical agents (e.g., cocaine or hydroxyamphetamine) and in the emergent setting it is probably faster and safer to simply image the entire oculosympathetic pathway in patients with suspected Horner syndrome.; 2) Although the traditional teaching is that idiopathic and demyelinating (typically MS) optic neuritis always gets better, some patients do not improve. In addition, the lack of recovery, bilateral onset, and/or longitudinally extensive optic nerve enhancement on MRI may indicate a far more serious antibody mediated (non-MS), inflammatory optic neuropathy such as neurmyelitis optica (NMO) or myelin oligodendrocystic glycoprotein (MOG) which require different acute (e.g., IVIG or plasma exchange) and chronic (immunosuppressive rather than immunomodulatory) therapy; 3) Likewise, although a normal brain MRI in optic neuritis is often interpreted as a good sign (less likely to be MS), a negative brain MRI for demyelinating white matter lesions may suggest that the optic neuropathy is due to NMO or MOG.; Although a relative afferent pupillary defect (RAPD) is typically ipsilateral to the lesion producing vision loss, an RAPD actually represents a defect in the pupillary pathway on the afferent side that is relative to the fellow eye. An RAPD can be due to an optic tract or pretectal lesion in the afferent pupillary pathway that is either ipsilateral or contralateral to the lesion.; and 5) The size of the clinical sign does not matter in neuro-ophthalmology (Grade 1 papilledema has the same significance as Grade 4 papilledema) and underestimating the size of the problem producing a clinical sign can be dangerous.

Seven Imaging Errors that can Produce a 'Normal' Scan

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Directed neuroimaging is necessary for accurate clinicoradiologic correlation. A number of potential imaging errors can produce a "normal" scan report. Five easy mistakes to avoid in ordering imaging studies in neur0-ophthalmology include 1) Wrong lesion location (i.e., poor clinicoradiologic correlation on the front end; 2) Wrong scan (e.g., CT instead of MR) ordered; 2) Wrong imaging sequence selection (e.g., no contrast ordered, no fat saturation or CSF suppression sequences); 3) Wrong indication given to neuroradiology (e.g., too brief, too vague); 4) Wrong sequence performed (e.g., MRA only); and 5) Failure to look at the scan with the neuroradiologist. In addition, the major post-imaging errors are failing to appreciate the significance of the clinical findings and over reliance on the negative imaging (i.e., throwing away the patient and not the scan) and failing to repeat the neuroimaging if there was a problem with the initial imaging or if the patient is progressing despite reportedly normal initial imaging.

Mini Course On Visual Fields Interpretation

Joshua Kruger
Hadassah-Hebrew University Medical Center, Jerusalem, Israel

Proper interpretation of automated visual fields is critical in neuro-ophthalmology. Interestingly, there is significant variability among neuro-ophthalmologists in the method used for interpretation. This variability can compromise patient care due to misunderstandings between clinicians. This presentation will summarize a collaborative effort of over 20 Israeli neuro-ophthalmologists towards developing a unified set of definitions of various visual field abnormalities.

Celebrity Neuro-ophthalmology: Teaching Cases that Make the Point

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Neuro-ophthalmic disease affects people from all walks of life. Some interesting (pubic knowledge) celebrity cases will be shown to demonstate specific neuro-ophthalmic conditions in an educational and entertaining presentation in order to make specific heuristic points that might be more memorable than a more traditional didactic lecture on the same content.

Uveitis

Susac Syndrome - Novel Clinical Classification

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Susac syndrome is a rare condition characterized by the clinical triad of central nervous system dysfunction, sensorineural hearing impairment, and branch retinal artery occlusion. The diagnosis can be challenging since the disease can mimic other disorders. Early diagnosis and prompt aggressive immunomodulatory treatment may improve the patients' outcome.

The purpose of this study was to suggest a noval clinical classification for the syndrome.

Methods: Retrospective data collection for all Susac syndrome patients treated at our center between 1998 and 2014 including the demographics, clinical characteristics, treatment, and long-term prognosis of Susac syndrome. Based on our finding we suggested a clinical classification for the syndrome

Results: Susac syndrome was diagnosed in 10 patients (age 30–45 years). Only two patients presented with the full triad. Seven patients developed the full triad during follow-up. The average time to full triad was 7 months. Based on our observations at presentation, we divided the disease to suspected, incomplete, and complete Susac syndrome.

All 10 patients were treated at diagnosis with a pulse of high-dose intravenous methylprednisolone. There was improvement in visual acuity and visual field at the end of follow-up compared to baseline, but it was not statistically significant (P=0.479, P=0.053 respectively).

Five patients remained with neurological damage, and five patients had no improvement of their hearing loss at study closure.

Conclusions: Susac syndrome is a rare condition that can mimic other disorders. Early diagnosis and prompt aggressive immunomodulatory treatment may improve the outcome. The diagnosis is challenging since most patients do not initially present with the definitive triad. We suggest a clinical classification for the syndrome that may assist in early diagnosis of the condition.

Risk Factors for Cystoid Macular Edema in Children with Uveitis

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Background: Cystoid macular edema (CME) is a major complication of non-infectious uveitis in children, often causing significant visual loss. The aim of this study was to identify risk factors for developing CME among pediatric uveitis patients.

Methods: This is a retrospective cohort study conducted in Israel and the UK and included 150 pediatric uveitis patients. Patients were excluded when sufficient data was unavailable. The cohort was divided into eyes that developed CME (group A) and those that did not (group B). Data retrieved included demographic information; age at presentation; type of uveitis based on the SUN classification and etiology; time to develop CME, complications at presentation and at periodic time points during follow up.

Results: Group A included 63 eyes of 36 patients and group B included 201 eyes of 114 patients. CME developed in the whole cohort at an estimated average time from onset of uveitis of 132±7.24 months (95% CI 118.13-146.5).

At time of diagnosis, 7.14% of eyes had band keratopathy (BK) present, 22.78% had posterior synechiae (PS), 12.18% had cataract, 4.2% had glaucoma, and 8.33% already had CME. CME developed in 23.86% eyes (group A), on a mean time of 15.37±2.95 months. Multivariate analysis identified the following risk factors upon presentation for developing CME which included, non-anterior uveitis HR 2.8, p0.0001, BK HR 2.51 p0.02, and PS HR 1.82 p=0.05. Cataract was significant in univariate analysis but lost significance when other factors were accounted for HR 1.51 p=0.29.

Conclusions: Eyes of pediatric patients with uveitis presenting with non-anterior uveitis, band keratopathy and posterior synechia had a greater risk of developing CME. Implementation of tight follow up schedule and aggressive treatment may be beneficial in such patients.

Ocular Complications and Management of Children with Pars Planitis

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Purpose: Pars Planitis is commonly observed in tertiary referral centers. The aim of this study is to evaluate the visual outcome and treatment modalities in children with pars planitis.

Methods: Retrospective review of medical records over 17 year-period.

Results: Included were 33 children (58 eyes, 79% boys). Mean age at diagnosis was 8.3 years. Mean follow-up was 53.5 months. It was bilateral in 76% of patients. The most prevalent complications were cystoid macular edema (CME), papillitis and posterior synechiae.

Eighteen eyes developed CME (31%): 61% presented with CME and the rest developed CME at a mean of 49 months of follow-up. Patients who developed CME required systemic steroids, immunomodulatory and biologic therapy at higher frequency than patients who did not develop CME (p0.05). Visual acuity (VA) in eyes with CME improved from a mean of 6/24 to 6/12, whereas VA in eyes without CME improved from a mean of 6/12 to 6/7.5. A third of the patients who never developed CME were without treatment at the last follow-up, compared to only 7% of patients who suffered from CME.

Conclusion: Pars Planitis in children is associated with sight-threatening complications.

Biologic treatment offers alternative potential therapy, esp. for patients with ocular complications.

Certolizumab Pegol – ATumor Necrosis Factor Inhibitor for Refractory Non-Infectious Uveitis

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Background: Although most cases are idiopathic, uveitis may be associated with systemic inflammatory diseases. Persistent inflammation can cause serious and sight threatening complications. Early and vigorous control of inflammation, while avoiding the side effects of therapy, are the primary goals in uveitis management. Certolizumab pegol (CZP, Cimzia) is a recombinant humanized monoclonal antibody. It is approved by the US FDA for the treatment of Crohn`s disease, rheumatoid arthritis, ankylosing spondylitis and psoriatic arthritis. To date, there are limited data available on the efficacy and safety of CZP therapy in uveitis. Therefore, we present our experience with CZP therapy in patients with non-infectious uveitis, who were refractory and/or intolerant to other immunomodulatory agents.

Methods: Retrospective case series of three patients with bilateral active non-infectious uveitis, treated with twice-monthly, subcutaneous CZP. All patients had previously failed various immunomodulatory therapies and/or were intolerant to, including at least one tumor-necrosis-factor inhibitor (TNFI).

Results: All 3 patients showed reduction in ocular inflammation after CZP was initiated. First patient, 21-year-old male, with idiopathic pars planitis, had favorable response to therapy, without side effects. In the second patient, 20-year-old female with recurrent iridocyclitis and juvenile idiopathic arthritis, therapy was well tolerated, however mild inflammation persisted. The third patient, 17-year-old male, with recurrent iridocyclitis and Crohn`s disease, had long-term and adequate response to therapy. However, his colitis flared and therapy was changed. No adverse events from treatment with CZP were observed.

Conclusion: Treatment with the relatively new TNFI, CZP, for patients with refractory, non-infectious uveitis, in whom therapy with other TNFIs was inadequate or in which there were tolerance issues, showed good outcome. Patients that have failed another TNFI can benefit from treatment with CZP.

Are Biologic Agents Effective in Controlling Refractory, Active Non-Infectious Intermediate, Posterior or Pan Uveitis?

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Background: The use of biologic agents for the treatment of non-infectious intermediate, posterior or panuveitis (NIPPU) is increasing. The aim of this study was to examine a large cohort of subjects treated with biologic agents for NIPPU and compare their efficacy and long-term effect.

Methods: This is a retrospective longitudinal study 82 patients (156 eyes) with NIPPU and treated with biologic agents, seen at Moorfields Eye Hospital between 2001 and 2016. Information was gathered from the clinical notes of all subjects. The main outcome measures were time to first disease flare, rate of treatment failure, Best corrected visual acuity, risk factors for treatment failure.

Results: Patients were followed on average for 4.7±0.4 years (388 eye-years). Control of ocular inflammation was achieved in 136 eyes (87.18%). The average prednisolone dose at the beginning of treatment was 16.4±1.7mg/day and reduced by six months to 6.5±0.7mg/day (p0.0001), after which it remained stable for up to five years follow-up. Best corrected visual acuity at baseline was 0.5±0.05LogMAR and improved to 0.4±0.05LogMAR (p=0.006) at three months and continued to remain stable during follow-up. Following baseline 42.3% of eyes had flares and the average number of flares reduced from 1.8±0.14 flares/year to 0.6±0.08 flares/year (p0.0001). Median time to first flare was 5.41 years (95% CI 2.16-5.41). Treatment failed in 37 eyes (23.72%) at an average time of 10.55±0.55 years (95% CI 9.47-11.63). The risk for treatment failure was lower when treatment used adalimumab (odds ratio 0.4, 95% CI 0.18-0.89, p=0.03) but was greater when systemic disease was also active at baseline (odds ratio 3.22, 95% CI 1.46-7.07, p=0.004).

Conclusion: Treatment with biologic agents resulted in prolonged disease control, reduced systemic immunosuppression, preservation of visual acuity and reduced risk of disease relapse. Use of adalimumab and inactive concomitant systemic disease reduced the risk of treatment failure.

Update Lecture: Suprachoroidal Triamcinolone Injection for the Treatment of Non-Infectious Uveitis

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Purpose: To evaluate the effect of suprachoroidal injection of 4 mg triamcinolone acetonide (CLS-TA) on resolution of noninfectious uveitic macular edema (NIUME) across three clinical trials.

Methods: Three studies evaluated patients with NIUME following a suprachoroidal injection of 4 mg CLS-TA. Resolution of ME, defined as < 300 microns of retinal thickness measured by spectral domain optical coherence tomography. In DOGWOOD, 17 subjects were administered a single treatment in a randomized, controlled, masked, Phase 2 study with follow-up to 8 weeks. In AZALEA, 38 subjects were administered treatments at Day 0 and Week 12 in an open-label Phase 3 study with follow-up through week 24. In PEACHTREE, 160 subjects were randomized 3:2 to receive either a suprachoroidal injection of CLS-TA (n=96) or sham procedure (n=64) in a randomized, controlled, double-masked 24-week study. Resolution of ME was evaluated at Weeks 4 and 8 in DOGWOOD, and Weeks 4, 8, 12 and 24 in both AZALEA and PEACHTREE. Data were pooled across the three studies.

Results: More than half of the subjects across the three trials that were exposed to 4 mg CLS-TA experienced rapid resolution of edema at Week 4 (54%) and Week 8 (58%). In AZALEA and PEACHTREE, CLS-TA was administered a second time at Week 12 and edema was not present in 52% of subjects prior to protocol-driven retreatment. ME resolution was sustained in 56% of subjects at Week 24.

Conclusions: These three clinical trials demonstrate that treatment of NIUME with suprachoroidal injections of CLS-TA resulted in resolution of ME in over half of the patients as early as Week 4 and sustained throughout Week 24.

Cornea and Contact Lenses

Dupilumab Induced Ocular Surface Disease (DIOSD)

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Background: Dupilumab (Dupixent, Regeneron Pharmaceuticals) is a monoclonal antibody against the IL4 receptor. Through its action, it blocks both IL4 and IL13 signaling pathways. This drug is the only FDA-approved treatment for moderate to severe at opic dermatitis, and is considered a revolutionary drug in the management of this common debilitating disease. Ocular surface inflammation (termed DIOSD - Dupilumab associated ocular surface disease) is the most common side effect of Dupilumab, seen in up to 50% of atopic dermatitis patients receiving this treatment. In these patients, ocular surface disease can be severe enough to lead to drug discontinuation. The mechanism of DIOSD is unknown, and interestingly, this side effect does not occur in patients receiving this drug for other indications, like asthma.

Methods: Retrospective interventional case series. We reviewed the medical records of all patients receiving Dupilumab examined in the dermatology and ophthalmology outpatient clinics from April 2018. We have noted clinical symptoms and signs relevant to ocular surface disease, as well ocular treatments prescribed in the course of their treatment.

Results: About 60% (17/28) of the patients receiving Dupilumab reported temporary or lasting worsening of their ocular symptoms following the beginning of Dupilumab treatment. Findings included dry eye disease, blepharitis with marked eyelid thickening, conjunctivitis and superficial punctate keratopathy. At least six of these patients had very mild or no atopic keratoconjunctivitis (AKC) before starting Dupilumab. Patients were treated mostly with olopatadine (Patanol, Alcon Pharmaceuticals), and/or Tacrolimus ointment (Protopic 0.1% or 0.03%, Leo Pharma). Under this treatment, no patient had to discontinue Dupilumab.

Conclusion: DIOSD is a newly-reported and common side effect of Dupilumab in patients with atopic dermatitis. Signs and symptoms overlap those of AKC. Rapid diagnosis and treatment are important to allow adherence of patient to this useful systemic treatment of atopic dermatitis and to prevent ocular complications.

Subconjunctival and Intrastromal Injection of Bevacizumab for Corneal Neovascularization

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Background: Corneal neovascularization (NV) is a sight-threatening condition that can lead to vision loss. Steroids have been the mainstay treatment of choice along with their well-known side effects. There are some reports on the use of anti-vascular endothelial growth factor (VEGF) agents for the treatment of corneal NV. The purpose of our study is to report the efficacy and safety of combined subconjunctival and intrastromal injection of bevacizumab as a treatment of corneal NV.

Methods: A retrospective case series in which we reviewed the charts of patients who received combined subconjunctival and intrastromal injections of bevacizumab for NV from diverse etiology between January 2011 and December 2018. Morphological changes were assessed clinically by 1 investigator using serial slit lamp examinations before and after each injection.

Results: Nineteen Patients received 1 to 6 consecutive combined injections of bevacizumab, more than half (11/19, 57.9%) of the patients were males and the mean age was 54.68 years (range 23-83, SD 19.6). The most prevalent etiology of NV was herpes keratitis (8/19, 42.1%). The mean follow-up (FU) period was 22.08 months (range, 1–60 months, SD 20.191). Regression of some degree in the NV was noted in 16 patients (84.2%). Three patients (15.79%) failed to improve, however the best corrected visual acuity (BCVA) of two of them was stable during the FU period. Three patients with regression in the NV had decreased BCVA. 15 (15/19, 78.95%) patients had stable or improved BCVA. No significant ocular or systemic adverse events were observed.

Conclusions: These long-term results suggest that combined subconjunctival and intracorneal injections of bevacizumab can be an effective method for reducing corneal neovascularization. It can be a useful option alone or as an adjuvant to other treatments in stabilizing or improving vision.

Machine Learning of Keratoconus Detection Using Scheimpflug-Pacido Corneal Tomography: Large Cohort Results

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Background: To employ a machine learning strategy to detect keratoconus using a Sceimpflug camera-Placido disc corneal tomography (Galilei, Ziemer). To apply a score of keratoconus similarity to each image acquired. To allow for reliable automatic keratoconus detection that correlates that of a trained human observer.

Methods: We retrospectively evaluated corneal tomography images of 3014 patients obtained with the Galilei in the Tel Aviv Medical Center between 11/2010 – 7/2017. Each image was graded by a single cornea person (D.V.) for keratoconus diagnosis and for technical accuracy. We split the images to two subgroups: one for "training" (5670 images) a machine learning model, and one to "test" it (1000 images). The model used is tree based gradient boosting (GB), and after training it on the first sub group, its accuracy was evaluated on the latter.

Results: GB was applied to a dataset containing all instrument derived parameters. To reduce reliance upon previously developed keratoconus detection parameters, those were removed from the analyzed data, and the remaining 94 parameters were used. The AUC in the test group was 0.99342. The most important predictors were anterior KMax value and vertical location, Central pachymetry, Thinnest pachymetry value and vertical location.

Conclusion: Using the GB method, accuracy of keratoconus detection approximates that of an experienced observer. Applying machine learning to corneal tomography allows for large population keratoconus screening and for off-site screening of refractive surgery candidates.

The Progression of Keratoconus in Young Adults Ages 19-35, Using the Bellin ABCD Progression Display

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Background: Keratoconus is a corneal, progressive, ectatic disease with Prevalence estimated between 50 and 230 per 100,000 people with grate variety between different demographic and age groups.

The follow-up in this patients and the detection of early progression is crucial for recommending treatment in time such as corneal CROSS-LINKING (CXL) in order to halt the disease and prevent visual deterioration and corneal transplantation.

CXL is a minimally invasive procedure but not innocent, it can cause discomfort and decrease in visual acuity.

In the ages of 8 -19 progression is estimated as 80% in 6-month follow-up and CXL is recommended after diagnosis. In the adult population most of the patients do not progress and therefore raises the question if to do CXL or follow-up.

Method: We retrospectively screened 2000 files and Pentacam™ tomography, collected 100 eyes that were diagnosed with keratoconus mitting the inclusion criteria. Than analyzed them with the novel Bellin ABC Progression Display and compered the results with Kmax and regular tomographic maps.

Rsults: Most of the patients in the study did not progressed according to standard maps and the Bellin ABC Progression Display.

In very early or subtle Keratoconus the Bellin ABC Progression Display was`t able to make a good comparison between the exams.

Patients who did not make a suitable (2 weeks) brake from contact lenses, and in some cases were falsely plotted as progression in the Bellin ABC Progression Display.

Conclusion: The vast majority of patients age 19-35 did not progress, and in our practice we do not offer CXL until progression is documented.

A follow-up of 4 to 12 months, according to the individual suspect for progression seems to be an effective practice.

We found the Bellin ABC Progression Display a very good adjunctive tool in following keratoconus patient in this age group.

Comparison between Three Different Methods of Corneal Collagen Crosslinking (CXL) Treatment in Adult Patients with Keratoconus

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Background: Corneal collagen cross-linking (CXL) therapy is the most commonly used treatment for progressive Keratoconus (KC), when accelerated protocols are widely in use. This study aims to compare the outcomes between accelerated and standard CXL protocols regarding their effect on visual acuity, keratometry and topographic criteria during 6 and 12 months follow-up.

Methods: In this retrospective study we assessed 84 patients. Group I underwent standard CXL (23 patients, 3mW/cm2 for 30 min), groups II and III underwent accelerated CXL (37 patients, 9mW/cm2 for 10 min, 23 patients 30mW/cm2 for 3 min, respectively). Changes in corrected distance visual acuity (CDVA), uncorrected distance visual acuity (UDVA), keratometry (Kmax, Ksteep, Kflat, Kmean), central corneal thickness (CCT), thinnest pachymetry, endothelial cell count (ECC), were assessed over 6 and 12 monthsfollow-up period.

Results: Intra and Inter group comparison showed no significant difference in CDVA and UDVA. The decrease in mean Kmax was not significant in none of the groups after the procedure. Moreover, inter group comparison showed no significant difference between the standard and accelerated groups. However, Non-inferiority analysis of delta Kmax could not conclude that accelerated procedures are good as to the standard CXL procedure (p=0.32). After 12 months intra group comparison of mean Ksteep, Kmean and anterior corneal astigmatism showed significant improvement in group I (p=0.006, p=0.05, p=0.04, resp.). Inter group comparison showed better results after 12 months for group I compared to group III. Intra and Inter group comparison showed no significant change in ECC and CCT.

Conclusion: Our study showed better result for the standard CXL procedure after 12 months follow-up. Moreover, when we analyzed Delta Kmax after 12 months with non-inferiority test, we could not conclude that accelerated CXL outcomes as good as standard CXL procedure. However, longer follow-ups and larger sample sizes are needed to validate these findings.

Refractive Outcomes of Phacoemulsification Combined with Posterior Lamellar Keratoplasty: Comparison between Femtosecond Laser-Assisted and Microkeratome-Assisted Descemet Stripping Endothelial Keratoplasty

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Purpose: To compare the clinical and functional outcomes of posterior lamellar keratoplasty using the femtosecond laser (FS-DSEK) and manual microkeratome (DSAEK) for graft preparation combined with cataract surgery.

Methods: The retrospective study were enrolled 38 patients (39 eyes) with simultaneous Fuchs endothelial dystrophy and cataract. Study group :19 patients who underwent cataract surgery combined with Femto-DSEK. Control group: 20 patients who underwent cataract surgery combined with DSAEK. Outcomes measures were preoperative and postoperative BSCVA, pre-operative predicted spherical equivalent (SE) refractive target , actual postoperative SE, keratometry, corneal pachymetry , ECD. Evaluation of transplant geometry was performed using the ratio between central and periphery graft thickness (C:P ratio). Follow up period: 1 year following surgery.

Results: At long-term follow-up time (1 year) postoperatively there were significant difference of BSCVA between study and control group and median were 0.4 (0.3;0.5) and 0.3 (0.23;0.4), (p=0.017). In the study and control group median C:P ratio were 0.88 (0.85; 0.95) and 0.55 (0.48; 0.68),(p0,001).The mean hyperopic shift in the study group were 0.27±0.9D and 1.25±0.81D in the control group (p=0.002). Endothelial cell density loss at 12 months in the study group were higher in comparison to the control group and were 64.1±8.8% and 54.6±4.8%, respectively (p0.001).

Conclusion: The use of femtosecond laser in comparison to microkeratome-assisted DSAEK obtains more uniform graft creation and provides less hyperopic shift. We revealed correlation between C:P ratio index and development of hyperopic shift. This finding has a clinical importance for choosing the proper power of an intraocular lens prior to the aforementioned surgeries.

A Comparison of DSAEK and DMEK in the Treatment of Failed Penetrating Keratoplasty

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Purpose: To compare the outcomes of Descemet Stripping Automated Endothelial Keratoplasty (DSAEK) to Descemet Membrane Endothelial Keratoplasty (DMEK) for the treatment of failed penetrating keratoplasty (PKP).

Methods: A retrospective chart review of patients with failed PKP that underwent DMEK or DSAEK between 2007 and 2017. The minimum follow-up time for both groups was 6 months. Data collection included demographic characteristics, number of previous corneal transplants, visual acuity, graft detachment and rebubble rate, rejection episodes and graft failure.

Results: Fifty-two eyes were included in the analysis, 28 eyes in the DMEK group and 24 in the DSAEK group. 43% of the DMEK group and 50% of the DSAEK group had to be re-grafted due to failure (p=0.797). The most common reason for failure was persistent graft detachment (58%) in the DMEK group and secondary failure (58%) in the DSAEK group, hence time between endothelial keratoplasty and graft failure differed significantly between the groups (p=0.015). Six eyes (21%) in the DMEK group and 7 eyes (29%) in the DSAEK group developed graft rejection (p=0.39). Rejection was the cause of failure in 67% in the DMEK group and in 71% in the DSAEK group. The Best Corrected Visual Acuity 6 months after surgery was better in the DMEK group compared to the DSAEK group (p=0.051)

Conclusions: Both DSAEK and DMEK have a role in treating PKP failure. Primary failure due to

persistent graft detachment was significantly higher in the DMEK group, though the overall failure rate in the medium-term became similar.

The DMEK "WAVE" Maneuver

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Background: To describe a novel technique for DMEK graft handling and centration without endothelium touching the inferior part of the anterior chamber, thus, suitable for vitrectomized eyes, deep anterior chamber, AC IOL's and potentially reducing surgery time and endothelial cells loss during DMEK surgery.

Methods: A retrospective interventional case series of 10 challenging DMEK cases, 2 AC IOL's, 3 vitrectomized eyes and 5 failed PK eyes. In all cases the DMEK "Wave" maneuver was used to center an early elevated graft without complete centration of the graft on the bottom of the anterior chamber. Then, eyes were evaluated intra and post operatively for successful graft attachment and centration.

Results: In all 10 cases where the "Wave maneuver" was performed, DMEK grafts were successfully attached and centered at the end of the surgery. Intraoperatively, no maneuver related complications were observed. Post operatively, 9 corneas cleared (mean follow up time __), two eyes needed re-bubble procedure, one month post operatively, one eye had herpetic keratitis, that eventually ended in graft failure. The maneuver was performed by two surgeons with equal success rate.

Conclusion: The DMEK "Wave maneuver" can be very helpful in advanced DMEK cases where the anterior chamber is either very deep, the eye is vitrectomized or the bottom of the anterior chamber is compromised like in the case of AC IOL. The "Wave maneuver" was easily learned by another surgeon.

Update Lecture: Anterior Segment OCT as a Decision-Making Tool for the Cornea Surgeon

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Purpose: Anterior segment OCT is gaining popularity as a decision-making tool for the cornea surgeon, and evermore surgeons rely on this device on daily basis for proper identification of corneal pathologies, surgical dilemmas and surgery planning.

In this review, a thorough description of the use of AS-OCT will be given – when to use it, how to assess correctly the images, in which cases the use of this device has an utmost importance and some aspects of future utilities of this device will be presented - as the latest developments of AS-OCT based corneal tomography and the invasive intraocular OCT probe that can demonstrate adjacent structures in great details.

Real-life examples of AS-OCT images that changed the surgeon`s clinical impression (which ultimately affected the treatment provided to the patient) will be given.

Oculoplastics

The Sutureless Mullerectomy

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Purpose: Muller's muscle-conjunctival resection (MMCR) is a well-known approach for ptosis repair. In its standard fashion, it involves resection of Muller's muscle and conjunctiva, followed by suturing of the conjunctiva and Muller's muscle to the tarsus with absorbable or nonabsorbable sutures. The authors herein present their experience in performing MMCR without sutures.

Methods: The study was conducted as a retrospective review of 19 patients (34 eyelids) undergoing sutureless MMCR. Thirty-three eyelids had acquired ptosis and 1 eyelid had congenital ptosis. Surgery consisted of a standard approach and placement of a Putterman clamp. Following excision of the clamped tissues, no internal sutures were placed. Preoperative and postoperative upper margin-to-re ex distances were measured and patients were evaluated for symmetry within 1 mm and the incidence of any complications.

Results: Nineteen patients underwent 34 sutureless MMCR procedures. Of these, 13 patients had bilateral ptosis repair. Thirty-three of 34 eyelids (97%) showed improvement in margin- to-re ex distances, with an average improvement of 1.4mm (range, 0–3.5 mm, SD = 0.64) among all patients. Eighteen of the 19 patients (94.7%) showed postoperative symmetry of margin- to-re ex distances within 1mm ($p = 0.001$, $\chi 2$ test). One patient who underwent unilateral surgery demonstrated a Herring's response postoperatively, leading to the single case of asymmetry. There was 1 case of corneal abrasion seen postoperatively.

Conclusions: The sutureless technique is a rapid and effective method for performing MMCR. This technique is especially useful as an adjunct to blepharoplasty where mild ptosis exists for an added rejuvenating effect. It is low-risk and potentially corneoprotective when compared to the standard suture technique. Further studies could determine if a modi ed algorithm needs to be applied.

How to Take Care of Ocular Prosthesis, Trying to Set Guidelines for Patients' Prosthetic Daily Care

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Background: Anophthalmic socket mucoid discharge is a distressing condition that affects patients' quality of life.
Specific factors associated with this condition are not well understood, and there is no evidence based protocol for prosthetic eye hygiene.
The aim of our study was to identify factors that are associated with discharge and establish a unified protocol for prosthesis hygiene.

Methods: Anophthalmic patients, attending the ocularist clinic who agreed to participate and signed the consent form were included in our study.

According to a questionnaire we collected demographic, medical history and prosthesis hygiene habits data. An ophthalmologic examination that included prosthesis, socket and biofilm parameters was performed, then a culture swab from the anophthalmic socket was collected. Prosthesis was stained with disclosing solution, and polished.

Patients were divided into two groups: Patients with mucoid discharge-the study group, and patients without discharge- the control group. Patients were reached by phone two weeks after the visit and asked if the discharge improved. If not, topical antibiotic treatment was prescribed according to culture results.

Results: Among 109 participants, 72 (66%) had socket mucoid discharge on examination.
Risk factors for discharge were: sleeping with prosthesis and washing it with water only.
Factors that improve discharge were topical corticosteroid and frequent removing of prosthesis.
There is significant positive correlation between discharge parameters and biofilm staining.
Gram negative bacteria were more frequent in the research group.
More than 70% of all participants- both groups- reported less discharge and more comfort after prosthesis polishing.

Conclusions: According to our study we suggest the following hygiene guidelines for prosthetic eye wearers:
- Frequent cleaning.
- Washing with soap and water.
- Topical corticosteroids might be suggested.
- Patients with gram negative bacteria and discharge may benefit from topical antibiotic treatment.
- Polishing improves symptoms in most prosthesis eye wearers.

Orbital Complications of Functional Endoscopic Sinus Surgery

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Background: Functional Endoscopic Sinus Surgery allows an anatomic approach to the sinuses and neighboring structures with excellent results. Orbital Complications occur in 0.5%- to 3% of all procedures due to unintended entrance into the neighboring orbital cavity. Complications are generally minimal and transient, although some are rarely devastating and can lead to permanent double vision or even blindness.

Methods: We present 5 cases of complicated FESS surgery that required urgent Orbital treatment. All cases referred underwent urgent CT and MRI imaging of the sinuses and orbit. All cases were followed up by DB

Results: Complications involved the medial orbital wall, orbital muscles and fat in three cases two of which required urgent orbital surgical intervention. 2 cases involved the medial orbital wall and fat with orbital hemorrhage causing transient mild diplopia.

Conclusions: We recommend urgent CT and MRI imaging of all orbital complications of FESS surgery. Most cases require follow up only, although surgical intervention or exploration where indicated should be carried out urgently with an experienced orbital and squint surgeon.

Anatomical and Functional Outcomes of Evisceration and Enucleation without Orbital Implant in Elderly Patients

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Background: An orbital implant is routinely inserted during ocular evisceration/enucleation to reduce the occurrence of post enucleated socket syndrome. Nevertheless, several complications were documented following implant insertion. Reported complications were pain, conjunctival thinning, implant exposure, migration, fornix shortening and infection leading to a secondary intervention. In this study we report a case series of 15 elderly patients who underwent an evisceration/enucleation without implant to reduce post-operative complications.

Methods: The authors performed a retrospective chart review of all patients who underwent an evisceration or enucleation of eyeball with no implant in our medical center from 2010 through 2017. Data collection included age at enucleation/evisceration, indication for surgery, onset of pain, features of socket secretions and other associated symptoms.

Results: Fifteen cases were found in the records (mean age, 77.8, range 63-97 years). Average follow-up was 44.6 months, range 6-93 months. There were 13 eviscerations and two enucleations. Etiologies for eviscerations were; six perforations with melting corneas, five blind painful eyes and two endophthalmitis. Etiologies for enucleations included endophthalmitis and adenocarcinoma. Two patients suffered from secretions. Five eviscerations (38%) were done under sedation with retrobulbar block while the rest under general anesthesia. None suffered from anophthalmic pain, infections, or problems fitting the prosthesis such as fornix shortening. No complications or secondary interventions were noted.

Conclusion: Ocular evisceration/enucleation without implant insertion is an effective surgical option for patients who are less concerned with external appearance and cosmetic outcomes. Intraoperative and postoperative complications were not reported. Therefore, avoiding implant insertion is a good alternative for a selected population wishing to avoid perioperative complications, general anesthesia or secondary interventions.

Update Lecture: Advances in Treatment of Eyelid and Conjunctival Tumors

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Background: In recent years we experienced significant advances in the treatments of eyelid and conjunctival malignancies.

Methods: In this presentation we will review recent main advances in the treatment of eyelid and conjunctival cancers and their implication on clinical practice.

Results: With improvement in drug therapy there is a new interest is the concept of neoadjuvant treatment for locally advanced periocular cancers with the goal of avoiding extensive and destructive surgeries such as orbital exenteration. Vismodegib, a Sonic Hedgehog inhibitor, enabled eye-sparing surgery when used as a neoadjuvant treatment in patients with locally advanced (T4) periocular basal cell carcinoma. Longer term follow-up on these patients is still required to assess for disease-free and overall survival. Immune checkpoint inhibitors significantly changed treatment outcome for patients with several types of cancers. In the periocular region PD-1 inhibitors was found effective in the treatment of metastatic conjunctival melanoma. Another PD-1 inhibitor, cemiplimab, was shown effective and treatment of locally advanced squamous cell carcinoma with metastatic perineural invasion, showing promising results in patients with unresectable orbital disease. Avelumab, a PD-L1 inhibitor, was used successfully to treat patients with metastatic Merkel cell carcinoma. Recent histopathologic studies support the use of PD-1 inhibitors in selected cases of patients with eyelid sebaceous carcinoma and with conjunctival squamous cell carcinoma.

Conclusions: Recent advancements in drug therapy improved our ability to treat locally advanced and metastatic eyelid and conjunctival cancers. New treatment algorithms that maximize our ability to preserve eyes and vision are being developed. Research is ongoing to determine long term efficacy.

Primary Lash Ptosis Reconstruction

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Background: Lash ptosis is often an overlooked sign that may coexist with congenital and acquired blepharoptosis. We present the first series of patients presenting with primary lash ptosis and the surgical treatment.

Methods: A consecutive sample of five eyes of two men and one women (average age 48 (37-67) years) who were referred with complaints of upper lid visual field restriction, tired eyes. On examination, the primary pathology was attributed to lash ptosis dehiscence. The patients presented with visual field loss and heaviness of the eyelids complaints associated with lash ptosis. All patients underwent anterior lamellar repositioning and were followed for an average of 15 (10-24) months.

Results: All patients had resolution of visual field loss and heaviness of eyelids.

Conclusion: Lash ptosis is associated with abnormalities such as floppy eyelid syndrome. However, it may be a primary condition, with no background eyelid pathology and no external explanation for the eyelash ptosis. The condition might result from anatomical changes in the orbicularis oculi, Riolan's muscle, and tarsal plate. Patients in this series complained of upper lid visual field restriction. Anterior lamellar repositioning resulted in complete resolution of complaints. Additional studies are needed to learn about the pathophysiology of this entity.

Corneal Neurotization- Our Experience and Our Mid-Term Results

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Background: Corneal neurotization describes surgical restoration of nerve growth into the cornea to restore corneal sensation and trophic function. It represents an exciting and effective emerging treatment for neurotrophic keratopathy. Techniques described to date involve either direct nerve transfer or an interpositional nerve graft co-apted to a healthy donor nerve. We would present our experience at the Rabin Medical Center with three cases of corneal neurotization in the last six months.

Methods: Three patients with corneal anesthesia underwent nerve transfers with nerve grafting to restore corneal sensation The main outcome measured in our report was improvement in corneal sensation (measured by cochet Bonnet), corneal transparency and visual acuity. we would also describe the mid-term clinical, morphological, and functional outcomes.

Results: All eyes had prior complications of corneal anesthesia and had no measurable corneal sensation in the affected eye preoperatively. One of the three patients had some improved corneal sensation 6 months post-surgery (from non-measurable to 4) and had an improved corneal transparency. For the other two patients, we will present our results.

Conclusion: Corneal sensory reconstruction provides effective corneal sensation in previously anesthetic corneas, this can be achieved with minimal morbidity using sural nerve grafts.

Silicone Intubation for Partial Obstruction of The Nasolacrimal Duct in Adults

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Purpose: Dacryocystorhinostomy (DCR) is the standard surgical treatment for adult patients with distal nasolacrimal duct obstruction. Its success rates vary between 81.9%- 90%. There have been relatively few studies that have examined the effectiveness of silicone tube intubation treatment in nasolacrimal duct obstruction. The aim of this study was to find criteria for making the correct patient selection for the procedure and to evaluate prognostic factors affecting the outcome.

Methods: A retrospective review was conducted examining medical records of 29 patients (42 eyes) who had undergone silicone tube intubation to treat partial obstruction of the nasolacrimal duct between the years 2009 and 2016 in the ophthalmology department of the Galilee Medical center. Only patients who had partial obstruction of the nasolacrimal duct and didn't present with a history of dacryocystitis where included in this review. Then, Patients were divided into two groups: a success group and a failure group. Success was defined as the disappearance of epiphora. The following parameters were compared between the success and the failure groups: degree of saline passage in the preoperative syringing test, period of intubation and the presence of punctal narrowing.

Results: A total of 42 eyes of 29 patients were included in analyses. Silicone tube intubation was successful in 83.3% of participants. Compared to existing literature, our success rates were higher than those presented with different criteria of patient selection. Statistically significant differences between the success and failure groups were only found in the degree of saline passage in the preoperative syringing test - Difficult passage lowered the intubation success rate ($p=0.003$)

Conclusions: Patients who had partial obstruction of the nasolacrimal duct and didn't present with a history of dacryocystitis can benefit from silicone tube intubation alone and avoid a more extensive procedure such as DCR. In addition, degree of saline passage in the preoperative syringing test lowered the intubation success rate and therefore should be considered by surgeons before planning this procedure.

Bleomycin Injections for Orbital Lymphatic and Venous-lymphatic Malformations

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Background: Venous / venous lymphatic orbital malformation may be associated with severe ocular morbidity, poor cosmesis and cannot be removed surgically. Our aim is to describe the outcome of bleomycin injections for venous / venous lymphatic malformations of the orbit in 3 tertiary referral centers.

Methods: Prospective interventional clinical study.

Results: 18 patients (14 females, mean age of 17 years, range 1-35 years) underwent bleomycin injections. 14 (78%) lymphangiomas (macro- and micro-cystic) and 4 (22%) venous-lymphatic malformations. The right side was involved more commonly 11/18 (61%). Nine patients (50%) underwent at least one previous surgical debulking with or without sclerosing agent (mostly sodium Morrhuate). Average injection dose was 11 (±6) international units, in 1-3 injections. Dramatic improvement in lesion size, cosmesis, proptosis and ocular motility was noted in 15/18 patients (83%) after a mean follow-up of 16 months. Visual acuity slightly improved after treatment (20/50 to 20/30, ns). No side effects were noted post bleomycin injection.

Conclusions: Bleomycin injections for venous / venous lymphatic malformations of the orbit is highly effective, and is not associated with local or systemic side effects. To the best of our knowledge this is the largest reported series of this treatment.

Enlarged Extraocular Muscle, But… A Different Diagnosis- Case Series

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Background: Orbital myositis is a subgroup within the entity of Idiopathic Orbital Inflammatory disease. Muscle biopsies were rarely performed and response to therapy frequently confirms the diagnosis. Differential diagnosis of orbital myositis includes Thyroid eye disease, Granulomatosis with polyangiitis, orbital infections and neoplastic disease. The aim of this case series is to present cases of extra ocular muscle enlargement but with different diagnosis.

Methods: Retrospective consecutive case review of patients at a single institution with enlargement of extraocular muscle over 1-year period (2017). Patient demographic data, diagnosis, histopathology, imaging and management were recorded.

Results: 5 patients (5 males) had diagnosis of extraocular muscle enlargement. Mean age of patients was 57 years (range 40- 52 years). 4 patients underwent orbital muscle biopsy. 1 patient developed systemic symptoms and biopsy was not necessary. Diagnosis was: Migratory orbital myositis (1 patient), fibrosis post orbital myositis (1 patient), Trichinosis (1 patient), Thyroid myositis (1), Idiopathic myositis (1). Treatment modality for all patients varied according to final diagnosis: Immunosuppression, Squint surgery and anti-parasitic treatment, Orbital decompression respectively. Mean follow-up duration 9 months (range 3-24 months).

Conclusion: Extraocular muscle enlargement according to radiologic imaging is not enough for diagnosis and clinicians should have a high index of suspicion when assessing such patients, consider the differential diagnosis and appropriate treatment.

Cataract

Biometric Characteristics of Israeli Candidates for Cataract Surgery

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Purpose: To describe ocular biometry characteristics and the prevalence of corneal astigmatism before cataract surgery in a single center in Israel.

Methods: Consecutive measurements of phakic eyes, prior to cataract surgery, taken between Feb 2018 and Jan 2019, in Shaare Zedek Medical Center, were retrospectively analyzed. The minimal age for inclusion was 18 years old. All measurements were taken by a single swept source (SS) OCT-based device.

Results: 2153 eyes of 2153 patients were included in the study. 41 eyes had prior corneal refractive procedure. Mean age was 72 ± 12 years old [18-99], 53.3% were females and 46.7% males. Mean axial length (AL) was 23.96±1.75mm [16.52 to 35.59mm], 202 (9.4%) eyes had AL26.0mm, 129 (6.0%) had AL

Conclusion: This study provides information regarding the biometric measurements of cataract surgery candidates in a single center in Israel. The rate of patients with TCA greater than 0.75D reflects the high proportion of patients who are potential candidates for simultaneous correction of corneal astigmatism during cataract surgery.

Evaluation of Preoperative Measurements in Preparation for Cataract Surgery with Multifocal Intra Ocular Lens (IOL) Implantation

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Background: To evaluate the economic efficiency and the accuracy of different methods of preoperative evaluation for multifocal IOL implantation.

Method: Consecutive cases of eyes which underwent cataract extraction surgery with implantation of an AcrySof ReSTOR IOL (Alcon Laboratories) or a FineVision IOL, (PhysIOL), by a single surgeon at Ein-Tal Eye Center, were included. Measurements performed with the IOL-Master biometer were compared with those of the Lenstar-LS-900. The effect of using multiple measurements and IOL calculation formulas was determined based on the postoperative refraction results. The findings were compared to simulated refraction results of one commonly used biometry device and formula. In the second part of the study, different preoperative examinations were evaluated as a diagnostic tool for suitability for the multifocal lens.

Results: 169 eyes of 106 patients were evaluated. High agreement was seen between the IOL-Master and Lenstar devices for AL, ACD and average K (inter class correlation confidents: 1.000, 0.900 and 0.990, respectively, P0.001). Despite that, using multiple measurements and IOL calculations, compared with one measurement and formula, led to an increase in the percentage of emmetropic eyes (21.3% and 4.1%, respectively) and a decrease in the percentage of hyperopic eyes (18.3% and 63.9%, respectively), P

Conclusions: In order to achieve the most accurate outcomes of multifocal IOL implantations, several measurements should be performed, allowing better predictability and evaluation of suitability than using one device and one formula. Based on the findings, a protocol of preoperative evaluation processes was proposed to improve economic efficiency.

Swept-Source OCT-Based Biometry for Preoperative Detection of Macular Pathology Prior to Cataract Surgery

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Background: Thorough retinal evaluation prior to cataract surgery is crucial to detect existing pathology that can prejudice the final visual outcome of the surgery. Although macular OCT has been found to be effective in diagnosing macular pathology prior to cataract surgery, it is not yet performed routinely. In contrast, patients in all western centers routinely undergo biometry scan before cataract surgery. In this study, we aimed to assess the efficacy of a swept-source OCT based biometry device (IOLMaster-700, Carl Zeiss Meditec AG, Jena, Germany) for diagnosing macular abnormalities in patients scheduled for cataract surgery.

Methods: In this retrospective study, an experienced technician reviewed macular scans of 225 eyes of 225 consecutive patients obtained by IOLMaster-700. Patients over the age of fifty that were scheduled for cataract surgery were included. Data was collected only on the surgical eye of each patient. Results were compared to volumetric macular SD-OCT scans (Heidelberg Spectralis, Heidelberg Engineering, Germany) performed on the same day and interpreted by an experienced retina specialist. Sensitivity and specificity for macular pathology detection by IOLMaster-700 were assessed.

Results: Of the 225 eyes, 20 scans (8.9%) were non-interpretable by macular SD-OCT due to advanced cataract, 115 macular scans (51.1%) were within normal limits and 90 scans (40%) had clinically significant macular pathology. The overall specificity and sensitivity of the IOLMaster-700 were 91% and 28%, respectively. Higher sensitivity rate was observed in eyes with vitreomacular traction (100%), epiretinal membrane (ERM) with retinal thickening (75%) and cystoid macular edema (54%), whereas lower rates were detected in dry AMD (15%) and mild ERM (0%).

Conclusion: Although macular evaluation with IOLMaster-700 cannot substitute a dedicated macular OCT, it may assist in diagnosing some significant macular abnormalities in patients scheduled for cataract extraction. Cost-effectiveness of routine preoperative macular OCT should be further studied.

Our Practice with Premium IOLs in a Public Hospital Setting, and Implementing the Ministry of Health Regulations –"The Health Basket"

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Background: For the last 6 years we offer our cataract patients the possibility to implant toric and multifocal IOLs in their cataract surgery in order to reduce the need of glasses after surgery. The surgery is done through the regular health insurance ("form 17") with an additional cost to the patient. From 2018 The Ministry of Health introduced the Premium IOLs to the "Health Basket" and set the additional cost of the IOLs to the patients.

Methods: 61 Premium IOLs were implanted in 2017 (48 toric and 13 multifocal). 183 Premium IOLs were implanted in 2018 (112 toric and 71 multifocal)

Results: We will introduce our patient selection and methods, IOL fitting protocol, and implementing The Ministry of Health regulations from 2018.

Conclusion: Premium IOLs reduce the need for glasses and improve the quality of living. These IOLs should be offered to suitable patients in all public hospitals

Toric Intraocular Lens Implantation During Cataract Surgery: Are Our Preoperative Assessment Tools Good Enough?

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Background: Toric intraocular lenses (IOL) were introduced to the Israeli National Healthcare Services on July 2018. Preoperative evaluation to achieve best refractive outcome needs to be optimized for the setting of the public clinic.

Methods: A retrospective analysis of patients who underwent cataract surgery with toric IOL at Hadassah Medical Center was performed. Preoperative assessment included uncorrected visual acuity (UCVA) in logMAR, refraction, corneal topography using the Oculus Pentacam, and IOL calculation using Zeiss IOLmaster500, IOLmaster700 and/or Haag-Streit Lenstar900, as well as Barret Toric Calculator (BTC) formula. A comparison was made between the different IOL calculation modalities.

Results: Sixty-four eyes of fifty-nine patients (mean age 65.5±14.1, 60.9% female) were included. The preoperative mean UCVA was 0.8±0.38 logMAR with mean refraction of -1.69±4.4D sphere and -3.0±1.5D refractive cylinder (range: -0.50 to -7.00D). Postoperative UCVA was significantly improved to 0.22±0.16 logMAR (P0.001). The refractive cylinder was reduced by 1.75±0.93D (Range: 0.5-3.25D) (P0.001), yet the magnitude of the residual astigmatism was significantly larger than the one predicted by the IOL calculators (P0.001). Comparison of the biometry devices to the Pentacam demonstrated a significant deviation in fl at K (-0.91±1.72; P=0.05) and steep K (0.74±1.24; P=0.04) values in the case of IOLmaster500, while the Lenstar900 and IOLmaster700 showed similar values with less than 0.50D deviation. This discrepancy between the measuring devices however had no statistically significant effect on the post-operative UCVA or the residual astigmatism. It should be noted that a higher K-value discrepancy obtained between the IOLmaster700 and the Pentacam was correlated with a non-statistically significant trend towards higher residual astigmatism (r=0.38; P=0.09).

Conclusion: None of the tested devices showed superiority in predicting the residual astigmatism after toric IOLs implantation. Improved pre-operative tools are needed to optimize toric IOL implantation outcome.

Clinical Outcomes of Ankoris Toric Intraocular Lens Implantation Using a Computer-Assisted Marker System

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Purpose: To report the clinical outcomes of patients who underwent cataract surgery with implantation of Ankoris monofocal toric intra ocular lens (IOL) (PhysIOL SA, Liège, Belgium) using the Zeiss Callisto Eye (Carl Zeiss AG, Dublin, CA).

Methods: We conducted a retrospective case series of patients who had underwent phacoemulsification and implantation of ANKORIS toric IOL using the Zeiss Callisto eye between January to December 2018 by three senior surgeons in Assaf Harofeh medical center, Israel. Patients` medical records were reviewed, and the following data was collected: corneal astigmatism before surgery, uncorrected visual acuity (UCVA), best corrected visual acuity, post-operative outcomes including IOL deviation from target axis and IOL repositioning rate. Follow-up was performed on postoperative days (PODs) 1, 7 and 30. IOL deviation was assessed by slit-lamp biomicroscopy. Preliminary results: Twenty-nine eyes of 22 patients were included in the analysis. 12 (54.4%) were females. Average age was 69.41± 8.92 years. Corneal astigmatism before surgery was 2.08 ± 0.68 Diopter (Range 1.22-3.47). Post-operative UCVA on POD 1,7 and 30 was 0.35, 0.29 and 0.25 logmar (Snellen 20/45, 20/39, 20/36 respectively). Post-operative median residual cylinder on POD 30 was 0.00 diopter (range 0-1) (mean 0.25 ± 0.32 Diopter). Toric IOL axis showed a median rotation of 2.5° (range 0.0-20) and 3° (range 0-12) on POD 7 and 30, respectively. Rotation on POD 7 was within 5° in 69% of eyes, between 6° to 10° in 6.9% and between 11 to 15 in 11.5% of patients. Two eyes with 15° and 20° IOL rotation had undergone IOL reposition within two weeks of surgery. *Further results of more than 50 eyes will be reported By May 2019.

Conclusion: Cataract surgery with implantation of Ankoris monofocal toric IOL using the Zeiss Callisto Eye, is predictable and effective in reducing refractive astigmatism showing relatively good postoperative rotational stability.

Evaluation of the Barrett Universal II Formula in Prediction of Postoperative Refraction following Pediatric Cataract Surgery

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Background: One of the intricacies of congenital cataract surgery in early infancy is the prediction of postoperative refraction. While studies have compared the accuracy of different IOL power calculation formulas in children, the new Barrett Universal II formula has never been evaluated.

Methods: The chart of pediatric patients that underwent uneventful cataract removal surgery along with IOL implantation between the years 2008 to 2015 were retrospectively reviewed. The prediction error (PE) and absolute PE (APE) werecompared across 5 IOL formulasincludingthe SRKII, SRK/T, Holladay 1, Hoffer Q, and the Barrett Universal II formula, as well as the percentages of eyes within prediction errors of ± 0.75diopters (D) to ± 4.50 D.

Results: Forty-two eyes of 35 patients with a median age at time of surgery of 18.0 months (interquartile range28.0 months), mean average keratometry of 43.4±2.2D and mean axial length of 21.3±1.7 mm,were included in the study

The Barrett Universal II formula APEwas significantly higher than that of the SRK/T at 5 weeks (1.51D vs.0.86D, p=0.04) and at 3 months (1.57D vs.1.06D, p=0.011), respectively.

The Barrett Universal II formula PE was significantly higher compared to all other formulas both at 5 weeks and at 3 months (p ≤0.001 for all comparisons). In extremely short eyes, theBarrett Universal II formula had the largest mean PE and APE. Finally, the Barrett Universal II formula had significantly less percentage of cases within ± 1.5 D and within ± 2.0D of predicted spherical equivalent refraction outcome, when compared to SRK/T (p=0.021 and p=0.039, respectively) or SRK II (p=0.031 and p=0.022, respectively)

Conclusion: This is the first report to assess the Barrett Universal II in pediatric patients with congenital cataract. The Barrett II Universal II formula showed inferiority when compared to the other 4 formulas tested in predicting postoperative refraction after congenital cataract removal.

A Novel Technique to Prevent Argentinian Flag During Cataract Surgery in Mature Cataract Cases

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Background: Argentinian flag sign is an intraoperative complication of cataract surgery which involves a large, uncontrolled tearing of the anterior capsule. This complication may occur during capsulorhexis in cases of mature cataracts, in which the pressure inside the capsular bag is higher than the pressure in the anterior chamber. Maneuvers as spiral capsulorhexis, use of heavy OVD and other methods were previously developed to prevent this complication, however - each method has its own pro`s and con`s.

Methods: Interventional case series. Three patients with mature cataract were operated by a novel technique that we have developed during the capsulorhexis step, to prevent the Argentinian flag sign; an A.C maintainer was pre-filled with cohesive viscoelastic. Its distal end was connected to a cohesive viscoelastic syringe (rather than connecting it to a BSS bottle). Then, the proximal end of the A.C maintainer was inserted into the A.C.

During capsulorhexis, the assistant pressed the piston of the viscoelastic syringe which led to constant flow of cohesive OVD into the A.C. Thus, the A.C was kept well pressurized throughout the capsulorhexis step (even when OVD escaped through the port incisions and around the capsulorhexis forceps shaft as normally happens). By doing so, pressure gradient and bursting of the anterior capsule were prevented.

Results: All capsulorhexis performed in this manner were uneventful and no Argentinian flag sign was noted.

Conclusion: This novel technique allows for easy, cheap and reproducible means to prevent Argentinian flag sign, without the disadvantages of using heavy OVD or the disadvantages of other maneuvers used to this end.

Comparison Between Iris and Scleral Intraocular Lens Fixation in the Absence of Capsular Support

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Background: Intraocular lens (IOL) subluxation has been recognized as a major complication of cataract surgery, with an increasing prevalence in recent years. Yet, there is no consensus on the optimal fixation technique. In this study we compared the safety and efficacy of scleral fixation of posterior chamber IOLs (SFIOL) and iris fixation of posterior chamber IOLs (IFIOL).

Methods: A retrospective chart review of patients that underwent SFIOL or IFIOL at the Kaplan Medical Center between 2008 and 2018. Main outcome measures: visual acuity, refractive stability, operation time, and intra and post-operative complications.

Results: Eighty-nine eyes included in the study. Sixty-seven eyes underwent SFIOL and 22 underwent IFIOL. Mean follow-up was significantly longer for IFIOL (11±17 and 30±26.7 months, respectively [P=0.001]). There were no significant intergroup differences in baseline characteristics, interval between initial operation and IOL subluxation and operation time. Postoperative corrected distance visual acuity (CDVA) at the last follow-up improved significantly compared with preoperative CDVA in both groups ([LogMar] SFIOL: 1.1±0.8 vs. 0.5±0.5 respectively, P0.001, and IFIOL: 1.2±0.7 vs. 0.8±0.9, respectively, P=0.034). No differences in DCVA were found between the two groups. The mean astigmatism at the last follow-up was lower in the IFIOL group (absolute: 1.31±0.62D vs. 1.66±1.89D, P=0.3; centroid: 0.23±1.07D@41 vs. 1.45±1.45D@15, P[x-axis]=0.023, P[y-axis]=0.471). When comparing perioperative complications, irregular pupil was the only significant difference between the two groups (16.4% in the SFIOL group and 50% in IFIOL, P=0.002).

Conclusion: IFIOL and SFIOL resulted both in a significant improvement in CDVA and showed similar complications rate except for ovalization of the pupil that was more common in the IFIOL group. Longer follow-up was noticed at the IFIOL group.

Our Experience with the Zepto Capsulotomy System – Complications and Advantages

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Background: The Zepto capsulotomy system provides a unique way of performing round shaped, constant diameter capsulotomy. One of the key features is a collapsible super-elastic nitinol ring element attached to a clear silicone suction cup. The suction cup enables a good apposition of the wire with the anterior capsule and a 4-millisecond energy pulse is delivered to the wire. The resulted capsulotomy is round with a constant diameter. The suction is released and the cup exits through the main incision.

Methods: Patients scheduled for a routine cataract surgery were randomly assigned for Zepto capsulotomy, the surgery was recorded and assessment of the complication performed by the surgeon.

Results: During a period of 4 months between 01/10/2018 and 01/02/2019, 58 patients were operated using the Zepto. Five (8%) had mild complications which include 2 cases of failure to release the suction due to improper handling of the circular nurse, 1 case of failure to provide proper suction due to instrument failure, one case of mild bleeding and 1 case of iris capture in the suction cup. Two (3/4%) had posterior capsule tear most probably due to excessive forced active release of the suction. One of them had dropped nucleus. All the rest had nice circular constant diameter capsulotomy.

Conclusion: The use of Zepto capsulotomy system enable good capsulotomy but proper staff education of handling the instrument is essential to prevent complications.

Keratometric Outcomes for Femtosecond Laser-Assisted Arcuate Keratotomy (AK) During Femtosecond Laser - Assisted Cataract Surgery (FLACS)

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Purpose: Limbal relaxing incisions (LRI) are used to reduce astigmatism during cataract surgery. In recent years, the Femtosecond Laser - Assisted Cataract Surgery (FLACS) has emerged as an addition to the common phacoemulsification technique. This is a retrospective study to assess the keratometric results of femtosecond laser-assisted arcuate keratotomy (AK) in the treatment of corneal astigmatism during FLACS.

Methods: Preoperative and postoperative corneal topographic astigmatism measured with the TOMEY OA-2000 optical Biometer retrospectively analyzed in consecutive patients who underwent AK during FLACS. A single surgeon performed all procedures using the CATALYS® Femtosecond Laser (Johnson & Johnson). Incisional depth was set at 80% of central corneal thickness. Abulafia`s Astigmatism double angle plot tool was used to analyze and present the data

Results: This study includes more than 100 patients and the results are still in evaluation. The technique is simple, safe, repeatable and without omplications like LRI`s complications (infections, wound dehiscence).

Conclusions: AK during FLACS is a safe, easy procedure and should be consider in a case of moderate astigmatism during FLACS. (Will be determined according to the results).

Correction of Residual Pseudophakic Refractive Astigmatism with Femtosecond Laser-Assisted Corneal Arcuate Incisions

Chen Lux, Or Ben-Shaul, Michael Hyams, Michael Hyams, David Israeli, David Israeli, Orna Geyer, Orna Geyer
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Background: Residual astigmatism after cataract surgery compromises uncorrected vision, being problematic in patients who wish to reduce their dependence on spectacles. We report the visual outcomes from corneal arcuate incisions performed with the femtosecond laser as a standalone procedure, on pseudophakic patients with refractive astigmatism, following previous cataract surgery.

Methods: A prospective single-arm study. Patients with 1.0-3.0 diopter of residual refractive astigmatism after cataract surgery were treated with arcuate incision using the LDV Z8 femtosecond laser. The outcome measures were: refractive astigmatism, distance uncorrected (UCVA) and best corrected visual acuity (BCVA).

Results: Ten patients (10 eyes), 4 men, mean age 74.71±8.51 years, were included. The mean preoperative refractive cylinder of 2.35±0.40 decreased to 0.71±0.41, 2 month after the laser treatment. The mean UCVA was (logMAR 0.60±0.21) and (logMAR 0.23±0.16) before and after treatment, respectively. The mean postoperative BCVA (logMAR 0.19±0.17) did not differ from the preoperative one (logMAR, 0.20±0.11, p0.05).

Conclusion: Moderate levels of residual refractive astigmatism after previous cataract surgery can be corrected with arcuate incisions made with a femtosecond laser as a standalone procedure.

Update Lecture: Cataract Surgery in 2019

Adi Abulafia
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This update lecture will cover trends in cataract surgery in 2019, including biometry devices, IOL power calculation formulas, premium IOLs, FLACS and 2 ticking time bombs: cataract surgery in post refractive eyes and in-the-bag intraocular lens dislocations.

Refractive Surgery

Distinguishing Highly Asymmetric Keratoconus Eyes Using Dual Scheimpflug-Placido Analysis

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2. Ophthalmology, Shaare Zedek Medical Center, Jerusalem, Israel
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Backround: To identify the best metrics or combination of metrics that provide the highest predictive power between normal eyes and the clinically unaffected eye of patients with highly asymmetric keratoconus using data from a Dual Scheimpflug/Placido device

Methods: Combined Dual Scheimpflug/Placido imaging was obtained from the Galilei G 4 device (Ziemer Ophthalmic Systems AG; Port, Switzerland) in 31 clinically unaffected eyes with highly asymmetric keratoconus and 178 eyes from 178 patients with bilaterally normal corneal examinations that underwent uneventful LASIK with at least one year follow-up. Receiver operating characteristic (ROC) curves were generated to determine area under the curve (AUC), sensitivity, and specificity for 87 metrics, and logistic regression modeling was utilized to determine optimal variable combinations.

Results: No individual metric achieved an AUC greater than 0.79. A combined model consisting of 9metrics yielded an AUC of 0.96, with 90.3% sensitivity and 92.6% specificity. Among those 9 metrics included, 5 related to corneal pachymetry, Opposite Sector Index (OSI) and Anterior Height BFS Z from the anterior surface, Asphericity and Asymmetry Index (AAI), Posterior Height BFS Z, and Posterior Height BFS X from the posterior surface. The strongest variable in the model was the thinnest point location on the horizontal (x) axis.

Conclusion: While individual metrics performed poorly, using a combination of metrics from combined Dual Scheimpflug/Placido device provided a useful model for differentiating normal corneas from the clinically normal eyes of patients withhighly asymmetric keratoconus. Pachymetry values were the most impactful metrics.

YAG Laser Treatment for Post-LASIK Epithelial Ingrowth

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3. Ophthalmology, Maccabi Health Care Services, Israel

Background: LASIK remains the most widely performed laser refractive surgery worldwide. Post LASIK epithelial ingrowth is an uncommon complication (with reported incidence of up to 4% in primary LASIK and 10-20% in re-treatments), but is most common after traumatic flap dislocation. Most patients are asymptomatic, but up to one third experience foreign body sensation and glare.

The indications for treatment are extension of the ingrowth to the visual axis, flap elevation or flap melt. Treatment modalities are mechanical debridement with or without adjunctive measures to prevent regrowth (such as flap suturing, fibrin glue application, use of mitomycin C, ethanol, or proparacaine). All these treatments are invasive and involve reoperation. Recurrence may be as high as 36%.

Here we would like to present an alternative non-invasive treatment modality with Nd:YAG laser that could replace mechanical debridement for the majority of cases.

Methods: A retrospective review of 2 cases of post-LASIK epithelial ingrowth treated with Nd:YAG laser.

Results: Epithelial ingrowth occurred following H-LASIK in 2 patients, one after retreatments and the other after partial traumatic flap dislocation that was repositioned at the slit lamp. YAG laser was performed, with resolution of the ingrowth after 2-3 sessions.

Conclusions: Based on our experience and that of previously mentioned authors, Nd:YAG laser is a simple, safe and effective outpatient procedure for the treatment of epithelial ingrowth in post-LASIK patients without the need to lift the flap.

Is Residual Astigmatism the Cause of Post Refractive Surgery Night Vision Disturbances?

Roee Arnon, Josseph Pikkel
Ophthalmology, Assuta - Samson Ashdod, Israel

Background: Night vision disturbances (NVD) have been described among patients undergoing successful refractive surgery procedures. These include glare, halos and haze. According to recent literature, pupil size does not affect these complaints, and post-operative corneal aberrations may do. The purpose of the study was to evaluate the importance of post-operative astigmatism as a factor in that matter.

Methods: 60 patients underwent refractive surgery procedures (PRK, LASIK, and LASEK). We addressed the post-operative NVD using questionnaires assessing these problems before the surgery and 1 month, 3-months, and 6-months after the surgery. Demographic data, pre-surgical and post-surgical BCVA, corneal surface treated, and pre-surgical and post-surgical refractive errors were collected and processed. Independent sample t-tests or Mann-Whitney non-parametric test (depends on the samples size) were applied for testing the differences between the two groups of with or without NVDs before the surgery, and 1-month, 3-months and 6-months after.

Results: After 1 month, 28 (46%) patients had NVDs. Difference in mean sphere between the two groups were statistically significant (without NVD, -0.05±0.59, with NVD -0.38±0.59, p=0.035) and cylinder difference was not (without NVD -0.57±0.20, with NVD -0.68±0.44, p=0.240). After 3 months, 12 (20%) patients reported on NVDs. Both mean sphere and cylinder were not different between the groups (mean sphere p=0.155, cylinder p=0.288). After 6 months, 5 (8%) patients reported on NVDs. Mean sphere difference were not statistically significant (without NVD -0.18 ± 0.58, with NVD -0.50±0.85, p=0.081) and men cylinder difference was statistically significant (without NVD -0.55±0.22, with NVD -1.45±0.27, p0.001). Differences in pupil size and BCVA were not statistically significant after 1 month, 3-months and 6-months. Pre-operative NVD was not a predictive factor for post-operative NVD.

Conclusion: In this series of young patients treated with wavefront LASIK, LASEK and PRK, residual astigmatism after 6 months may explain the night complaints of glare, halos, and haze. Pupil diameter was not predictive of these complaints.

Factors Predicting Successful Customized Excimer Laser Treatment in Irregular Corneas

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3. Ophthalmology, Vissum Corporacion, Alicante, Spain

Purpose: To identify factors associated with a successful wavefront-guided customized treatment (WG-CT) with excimer laser in highly aberrated corneas.

Setting: VISSUM, Alicante (Alicante, Spain).

Design: Retrospective, consecutive non comparative case series.

Methods: Treatment was performed with the WG-CT Amaris excimer laser using ORK-CAM software for the calculation of the ablation profile.

Included were eyes of patients with significantly aberrated corneas, including post refractive and keratoplasty procedures or high irregular astigmatism with significant high order aberrations (HOAs) that underwent WG-CT. Refractive, HOAs, and visual outcomes were recorded. Statistical analysis was performed to identify factors associated with technical (based on HOAs) or refractive outcome success.

Results: Overall, 55 treatments of 51 eyes of 35 patients were included in that study. The postoperative uncorrected distance visual acuity (UDVA) was 0.2 logMAR or better in 72% of the eyes, and the postoperative residual manifest refraction spherical equivalent (MRSE) was ±0.50 diopter in 56% the eyes while 11% of the eyes lost 1 line or more in corrected distance visual acuity (CDVA). Successful reduction in HOAs occurred in 36 eyes (65%), and these eyes had significantly higher preoperative HOAs (1.45±0.93µ versus 0.91±0.34 µ, p=0.003) and preoperative coma like aberrations (1.09±0.83µ versus 0.55±0.28µ, p=0.001). In multivariate analysis, post hyperopic treatment eyes were less likely to achieve refractive outcome success (OR=0.09, p=0.02).

Conclusion: WG-CT in highly aberrated corneas had a limited refractive predictability. Eyes with preoperative coma like aberrations are more likely to benefit from a reduction in HOA. Post hyperopic treatment are associated with a higher rate of refractive surprises.

Real-Life Corneal Epithelial Thickness in Patients Undergoing Photorefractive Keratectomy

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3. Ophthalmology, Enaim Refractive Surgery Center, Israel

Purpose: To evaluate the real-time epithelial thickness (ET) as measured intraoperatively by optical coherence pachymetry (OCP) in myopic eyes undergoing alcohol-assisted photorefractive keratectomy (PRK).

Methods: A retrospective nonrandomized case series of patients who underwent alcohol-assisted PRK included 104 consecutive eyes from 53 patients. Data was abstracted on age, gender, contact lens (CL) wear, preoperative refractive errors, topographic and ultrasonic pachymetry, intraoperative OCP before and after epithelial removal, refractive outcomes and complications. The ET was calculated by subtracting the post-epithelium removal OCP value from the pre-epithelium removal OCP. Primary outcome measures included the ET for each eye and correlation between the eyes. Secondary outcomes included correlations to the demographic data, pre- and intra-operative measurements.

Results: The mean age was 27.98±6.75 years, 52.8% were males. CL was used in 56 eyes (53.8%). The mean sphere and spherical equivalent were -3.49±1.81D and -3.19±1.81D, respectively. Mean ET was 60.40±20.53µm (range, 18-150µm).

At the patient level, the second operated eyes' epithelium was significantly thicker than in the first operated eye (p=0.05). OCP was significantly correlated to the ET (p=0.04, rp=0.3), and to the topographic and ultrasonic pachymetry (p0.001, rp=0.79 and rp=0.83, respectively). There was no difference in ET between genders and CL/non-CL wear (p=0.45 and p=0.12, respectively); and no correlation to the age and refractive errors (p0.12, rp=0.01-0.15).

Conclusion: The real-life assessment of epithelium thickness in alcohol-assisted PRK showed a significant difference between the first and second operated eye. This difference can be attributed to the time elapsed from topical anesthesia instillation and may have implications when the epithelium is not removed as a separate step in surface ablation.

Comparison of LASIK and PRK for High (≥3 Diopter) Myopic Astigmatism

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Background: Both LASIK and PRK are commonly used for the treatment of high corneal astigmatism. This study aims to compare the refractive outcomes of LASIK and PRK for myopic astigmatism of 3 diopters (D) or more.

Methods: This retrospective comparative study set at Care-Vision Laser Centers, Tel-Aviv, reviewed data of consecutive myopic patients (SE 0 to -10 D) undergoing LASIK or PRK between 2007 and 2016 with astigmatism of 3 to 6 D, and postoperative follow-up of at least 30 days for LASIK and 60 days for PRK. The LASIK and PRK groups were matched and refractive outcomes were compared.

Results: Each group comprised 175 eyes of 175 patients. For the LASIK and PRK groups, respectively, median follow-up was 39 and 139 days (P0.001), mean manifest preoperative astigmatism was -3.35 ± 0.46 and -3.42 ± 0.51 D (P=0.92), postoperative SE was -0.43 ± 0.55 and -0.16 ± 0.64 D (P0.001), and arithmetic astigmatism was -0.59 ± 0.46 and -0.88 ± 0.60 D (P0.001). Fifty-seven and 64.0% eyes had postoperative SE within ± 0.5 D of emmetropia (P=0.19), and 57.7 and 38.8% eyes were within 0.5 D of attempted astigmatic correction (P 0.001) for the LASIK and PRK groups, respectively. The efficacy and safety indices were close to 1.0 in both groups. The surgically induced astigmatism, magnitude of error, index of success, correction index and flattening index were all better in the LASIK group.

Conclusion: Both LASIK and PRK achieve good outcomes in high astigmatism. However, LASIK has a small but definite advantage over PRK for the astigmatic component of myopic eyes with high astigmatism.

Update Lecture: The truth behind the Myths in LASIK Surgery 2019

Joseph Frucht-Pery, Denise Wajnstajn, Abraham Solomon
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Purpose: There are many myths regarding the outcome of LASIK surgery including: the recurrence of myopia with time, the incidence of disabling glare and hallows, the incidence of dry eye after the procedure, that phycians would not have LASIK on their own eyes, and others myths. Our purpose was to report the realities of these myths in LASIK procedures.

Methods: Literature review of the past 15 years.

Results: Physicians undergo more LASIK procedures compared to other populations. Modern LASIK reduces glare and halos in the majority of the patients. Contact lenses use is less safe than a single LASIK procedure. Dry eye is extremely common after LASIK for the first 3 months and usually resolves after 6 months. LASIK records for over 20 years have shown refractive stability and safety. Lasik is the safest procedure with the greatest patient satisfaction of any surgery performed in the world today.

Conclusions: LASIK results have continually improved as technology and surgical techniques advance and preoperative diagnostic screening and patient selection become more refined. LASIK is safe and is currently the most successful and the most studied elective procedure in the world.

What Would You Have Done?

One Eye - Multiple Options?

Alon Skaat
Ophthalmology, Sheba Medical Center, Tel-Hashomer, Israel

Two monoculus phakic patients witn uncontrolled advanced NVG secondary to PDR in their "good" eye.

Should Trab be done? AGV? or CPC?

A complicated decision in complicated cases.

Dislocated Crystalline Lens in an Eye with a Huge Filtering Bleb

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Case presentation: 79-year-old man, 10 years post-trabeculectomy was referred for cataract surgery. On Examination: LE BCVA 6/120, IOP 16, limbal avascular filtering bleb (from 10 to 2 o'clock), cornea – clear, PXF, patent PI, posterior dislocated crystallin lens (floating on the vitreous face), fundus – attached retina. How to proceed with the cataract surgery? Corneal (superior? temporal?)/Pars plana approach? AC/PC IOL?

We will present our approach for such a case and its long-term results.

Dysthyroid Optic Neuropathy- A Money Time Decision

Yael Yohai Patael, Arie Nemet
Ophthalmology, Meir Medical Center, Kfar saba, Israel

Dysthyroid optic neuropathy (DON) is a serious complication of Graves orbitopathy that can result in irreversible and profound visual loss. Controversy exists regarding the pathogenesis and management of the disease.

We report a challenging case of a patient with recurrent bilateral episodes of DON not responsive to IV methylprednisolone. She underwent 2 orbital decompressions in her right eye but lost her sight after a central artery occlusion.

In her only left eye she has had orbital decompression 15 months ago with a good response, and presented now with an acute new episode on DON.

We present the conflict of the clinical decision of a patient losing her visual function in her only eye as a result of DON, responding slightly to medical therapy and following a surgical decompression in this eye.

Multiple Co-Existing Anterior Segment Pathologies

Yariv Keshet, Irit Bachar
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Background: Patients presenting variable simultaneous pathologies constitute a challenge for the anterior segment surgeon. Rather than a stepwise approach, one may choose to operate multiple pathologies on the same occasion, based on the surgeon's capabilities. This method can improve the surgical results, decrease patient's anxiety as well as lower the surgical costs.

Methods: We present a case of an 82 years old female, referred to our corneal unit with right eye progressive visual loss and intermittent irritation. Her past ocular history included cataract extraction and intraocular lens (IOL) implantation a few years prior to her presentation. In addition, trabeculectomy surgery was performed one year past the cataract removal, due to secondary glaucoma. Preliminary examination revealed central corneal edema, IOL subluxation and advanced nasal pterygium. She underwent one operation including scleral fixation of the IOL with Gore-Tex suture, Pterygium excision with conjunctival autograft and Descemet stripping automated endothelial keratoplasty.

Results: Following surgery, the corneal edema resolved and the IOL was seen central and well fixated to the sclera. Her BCVA improved and she was satisfied with the cosmetic results. Constant normal intraocular pressure measurements were recorded during her follow up visits.

Conclusions: Operating multiple anterior segment pathologies on the same occasion might be a good possibility for the capable surgeon.

Unilateral Extensive Disc Neovascularization: Looking for the Etiology

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2. Ophthalmology, Soroka University Medical Center, Beer Sheva, Israel

We describe a Moyamoya (MMD) patient presenting with mild visual deterioration in her right eye. Visual acuity was 6/12. Extensive optic disc neovascularization (NVD) was detected in the right eye. CTA and MRI were suggestive of MMD. Diagnosis was confirmed by cerebral angiography, demonstrating "puff of smoke" collaterals. During the follow-up period, seven intravitreal bevacizumab injections and laser PRP were performed. However, NVD was unresponsive and the eye developed macular atrophy first with deterioration of vision to finger counting only, and then tractional retinal detachment. Patient underwent right posterior vitrectomy with silicon oil injection. Vision remained unchanged.

The differential diagnosis of retinal neovascularization and the extensive workup patient underwent will be presented.

Questions to the audience about diagnostic procedures in cases with NVD without proliferative diabetic retinopathy or retinal vein occlusion will be asked.

Cataract Surgery in a Patient with a Preexisting Iris-Claw Lens

Nirit Bourla
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We describe the challenges and the different surgical approach of a combined procedure of explantation of the Artisan pIOL and subsequent cataract surgery.

Background: The Artisan (Ophtec) is an iris-fixated anterior chamber intraocular lens (IOL) that can be used for the correction of ametropia in aphakic and phakic eyes. However, when applied in phakic eyes, cataract may develop. We describe the technique of explantation of iris-claw phakic IOL (pIOL) pIOLs followed by cataract surgery and implantation of a posterior chamber IOL. Potential risks of the procedure are high endothelial cell loss resulting from manipulation of the pIOL and subsequent phacoemulsification, low predictability of the final refraction because of high levels of surgically induced astigmatism secondary to removal of the rigid IOL through a large limbal incision, wrong measuring of axial length in the presence of an anterior chamber IOL, and inappropriate results from the formula used for IOL power calculation, in addition to a higher probability for intraoperative and post-operative complications. The best approach for removal of the claw lens combined with cataract operation regarding the sequence of manipulations, and placement of cornel incisions has not been determined currently and depends on personal preferences.

Methods: We will present and describe the different surgical approaches existing for the combined procedure of explantation of the Artisan pIOL and subsequent cataract surgery.

Results: We will present the surgical approach and technique we use for treatment of 49 years old patient presented with pIOL for correction of myopia in both eyes, and cataract. Conclusions: Anterior chamber pIOLs can lead to cataract formation in a considerable percentage of patients necessitating a combined procedure of pIOL explantation and cataract surgery. The best approach for this procedure has not been determined yet. We present hereby our preferred surgical technique for treating patients with anterior chamber pIOLs and cataract.

Acute Angle Closure in an Aphakic Infant

Lily Okrent, Noa Dalman, Elad Moisseiev
Ophthalmology, Meir Medical Center, Kfar saba, Israel

A one-year old infant presented to the emergency room with acute angle closure in his right eye. He underwent surgery for unilateral congenital cataract removal in the same eye at age 6 weeks. Immediate surgical intervention was performed successfully.

The case will be presented, along with discussion of possible mechanisms of pathogenesis and treatment options. The patient was treated with an elegant surgical solution that has not been reported before, and the surgical movie will be presented.

Chronic Hypotony Following Multiple Intraocular Surgeries

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Thirty-four years old female was referred to our glaucoma service due to chronic hypotony in her right eye.

Past medical history: Juvenile idiopathic arthritis, BE anterior uveitis, RE – PP vitrectomy due to retinal detachment, BE- cataract extraction with PCIOL, BE – Uveitic glaucoma, treated in the LE with 3 medications.

Four years before presentation she had a Baerveldt Glaucoma Implant in her right eye.

On admission: BCVA 6/15 in the RE and 6/30 in the LE. IOP was 02mmHg in the Re and 22mmHg in the LE. In the RE, the bleb over the plate was flat and diffuse. Tube was in place in a deep anterior chamber with trace of cells and flair. PCIOL was in place. Fundal examination revealed choroidal folds.

Macular OCT revealed CMT of 850 microns with choroidal folds.

UBM of the anterior chamber was normal. Ultrasound revealed scleral thickness with suprachoroidal fluids.

We tied off the tube by extraocular approach. Since IOP was still low on the following 2 weeks, we tied the tube by intracameral approach.

A UBM was done under intracameral injection of viscoelastic material.

By this approach we revealed a cyclodialysis cleft between 4-6 O`clock.

Here, we`ll discuss the subject and the surgical options with the audience.

Our selected surgical approach was: tube explantation with insertion of CIONI RING CTR. The CTR was tied to the sclera to form a Cyclopexy.

The surgical video, imaging results (UBM and OCT) and clinical findings, will be presented.

Franco-Israeli Meeting

Pediatric Uveitis: Progress and Challenges

Bahram Bodaghi
Dept of Ophthalmology, Sorbonne University, Pitie-Salpetriere Hospital, Paris, France

The visual prognosis of children with uveitis has significantly improved during the past 10 years. This progress is mainly due to a prompt diagnosis of the disease and a rapid initiation of treatment. Early introduction of steroid-sparing molecules is paramount for appropriate management, avoiding different complications such as secondary glaucoma. Biologic therapies have improved the therapeutic management of JIA-uveitis and adalimumab is nowadays approved for this disease. Ocular complications in JIA-uveitis appear less frequent compared to previous reports. However, patients with JIA-uveitis seem to be particularly dependent on either immunosuppressive or biologic agents. Even though, the probability of these children at 5 years of not having cancer is high, the continuation of long-term follow-up seems necessary. New noninvasive tools such as laser flare photometry and SD-OCT have improved the evaluation of ocular inflammation at a level never reached before. Other types of pediatric uveitis such as pars planitis, Behçet's disease, Vogt-Koyanagi-Harada disease, sympathetic ophthalmia and ocular toxoplasmosis have specific patterns with well-defined therapeutic strategies. Interestingly, the age at cataract surgery has increased and fewer children need lens surgery. Indications for primary lens implantation have expanded considerably with the evolution of materials and better control of inflammation with biologic agents.

Risks Factors and Treatments for Complications of Uveitis in Children

Michal Kramer
Head, Uveitis Service, Department of Ophthalmology, Rabin Medical Center, Petah-Tikva, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

Despite the progressive management of pediatric uveitis, and especially of JIA-related uveitis, complications such as cataract, cystoid macular edema and secondary glaucoma are still prevalent and may cause visual impairment. The SITE study, among others, suggested that the presence of complications poses additional risk for development of more complications.

In this presentation, the literature and our own data addressing the development of complications will be discussed, including risk factors assessment specific for cataract and CME, in pediatric uveitis in general, not limited to JIA-related uveitis; The role of active uveitis, and the presence of specific complications at presentation, such as posterior synechyae, band keratopathy, cataract, and elevated IOP will be discussed, as well as the role of steroid treatment in its various forms on the development of cataract and secondary glaucoma; The added value of biologic agents on the rate and severity of complications will be evaluated based on the available published data.

Can OCT Angiography predict neovascular AMD? (10')

Eric H Souied
Hopital Intercommunal de Creteil, University Paris Est, Paris, France

The optical coherent tomography angiography (OCT-A) is a non-invasive imaging of the retina that emerged recently and is already a part of the puzzle of multimodal imaging of the macular and retinal disorders. It allows visualization of the flow on the posterior pole of the retina, in all layers of the retina, from the superficial layers to the choroid. In neovascular AMD, all type of choroidal neovascularization were described, including type 1, type 2, type 3 and polypoidal lesions. All kind of patterns of the choroidal flow were portrayed, such as blossoming tree, gelly-fish, medusa, tangled network, tuft, sea fan and dead tree patterns. Such patterns were correlated with the maturation of the CNV and follow up of these patterns of flow have been analyzed by several groups. Beside these lesions, OCT-A helped to demonstrate 3 other kind of neovascular lesions, before exudative feature visible on fluorescein angiography or SD-OCT. First, quiescent CNV, a phenotype already described by the mean of indocynanine green angiography (ICG) is now easily and promptly diagnosed using OCT-A. Nascent type 3 is an entity that correspond to early sign of type 3 CNV, before the occurrence of exudative features, particularly well seen of the B scan of OCT-A. Finally, using OCT-A , our group and other demonstrated the presence of abnormal small pattern of flow under some drusen, corresponding to infraclinical CNV, proved by ICG. These lesions are now called "vascularized drusen" , leading to short term follow up of these lesions.

Innovations in Screening, Monitoring and Management of AMD

Anat Loewenstein
Director, Division of Ophthalmology, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel

Age related macular edema (AMD) affects tens of millions world-wide, and the numbers of those affected will only continue to rise in the future. Ophthalmologists are constantly looking for ways to improve management of AMD and simultaneously lessen the treatment burden of that falls heavily on the shoulders of clinic personnel and of patients.

This search has led to groundbreaking novelties in the past such as anti-VEGF agents, and it continues to set ophthalmologists at the spearhead of medical innovations. My talk will deal with several of these new technologies such as home screening devices and telemedicine, making use of big data and machine learning in retina imaging, new drug delivery systems and innovative surgery gear.

New Treatments for Meibomian Gland Dysfunction

Serge Doan
Ophthalmology Department, Fondation Ophtalmologique A.de Rothschild and Bichat Hospital, Paris, France

Meibomian gland dysfunction (MGD) is a major cause of dry eye. However, treatment is still challenging. Mechanical expression of meibomian glands by lid warming and massage is a keystone of the treatment, but compliance is weak. New automated methods are available, such as Lipiflow® or Eyelux®.

Artificial tears can provide lipids or oil in order to supplement the tear film lipidic layer. However, the composition varies a lot between different products.

Anti-inflammatory drugs are also frequently used, especially antibiotics. Azithromycin is an interesting solution with a long half-life and interesting anti-inflammatory properties.

Intense pulsed light therapy is a promising technique already used in Dermatology. Several flashes are applied to the peri-ocular area, with repeated treatments 2-4 weeks apart

Although the mechanism of action is unclear, it has shown its efficacy in MGD patients.

Finally, antidemodex treatments are also useful, as demodex blepharitis can be associated to MGD. Ivermectin and tea tree oil are the main treatments.

Improving Surgical Outcomes in Patients with Ocular Surface Disease

Fani Segev
Meir Medical Center, Kfar Saba, Israel

Cataract is an important cause of blindness and visual impairment worldwide. Many patients who are candidates for cataract surgery suffer from various ocular surface diseases. The lecture will overview the challenges in diagnosing patients with common ocular surface diseases such as dry eye syndrome, exposure keratopathy, blepharitis, and less prevalent conditions such as limbal stem cell deficiency. Meticulous treatment of these conditions is mandatory in order to optimize the ocular surface prior to cataract surgery. These include proper patient selection, pre-operative care and procedures in order to improve outcomes of cataract surgery.

Which Refractive Surgery is Best Suited to My Patient?

Cati Albou-Ganem
Centre Ophtalmologique Etoile, Clinique de la Vision, Paris, France

The issue
The need to answer 2 questions
- Is surgery indicated?
- Which technique is the best suited to the patient?

How to determine the surgical indication?
- Patients who want refractive surgery, except the rare cases when the proposition comes from the ophthalmologist: Unilateral anisometropia + contact lens intolerance
- The motivation can be:
  - Professional:
    - Minimum useful VA required, ametropia not to be exceeded
    - Specific clothing: full body suit or helmet
  - Leisure
    - Increasingly important for patients
    - Sports: water sports, tennis, mountaineering, diving, motorcycling, paragliding, …
  - Esthetics
    - Specially in case of contact lens intolerance
  - Visual Comfort
    - Glasses uncomfortable specially with progressive glasses
    - Reaching good visual comfort in all circumstances
    - No handling of lenses
- Indications depend on:
  - Oph exam data
  - Additional tests data
  - Age
  - Degree of Ametropia
  - Patient's visual needs: Priority: DV/IV/NV ?

The technics

- Ablative Surgery
  - LASIK
  - PRK
  - SMILE
- Additive surgery
  - Phakic IOLs
  - Corneal ring segments
- Lens surgery
  - Multifocal IOLs
  - EDOF IOLS
  - Toric IOLs
  - Monofocal IOLs and monovision

LASIK and presbyopic lens surgery currently represent the most frequent choice of refractive surgery.
Complete and precise exam and well-chosen surgical indication give excellents results.
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Franco-Israeli Meeting

Presbyopia in the Phakic Patient: Present and Future Solutions

Guy Kleinman
Chair, Department of Ophthalmology, Wolfson Medical Center, Holon, Israel

In the presentation we will discuss several options to repair presbyopia in phakic patients, medically as well as surgically.

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