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Abolfathzadeh, Navid

Effects of fasting on peripapillary capillary density, peripapillary nerve fiber layer, intraocular pressure and central corneal thickness

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- **Purpose:** To investigate the effects of fasting on intraocular pressure (IOP), central corneal thickness (CCT), radial peripapillary capillary (RPC) density and retinal nerve fiber layer (RNFL) thickness during Islamic fasting month of Ramadan.
- **Methods:** 27 healthy fasting volunteers were enrolled. All subjects underwent full ophthalmic examination and optical coherence tomography angiography (OCTA) of both eyes. All measurements were recorded first in the morning (8:00-10:00 am) and then in the evening (4:00-6:00 p.m.). First visit was performed during the 2nd and 3rd week of Ramadan and then two months later in a nonfasting routine day.
- **Results:** Mean age of participants was 40.07 ± 9.29 years. A significant decrease was found for evening IOP (11.17 ± 2.29 mmHg) in comparison to morning IOP (12.00 ± 2.28) ($p=0.00$) only on fasting days. A decrease was observed for CCT both on fasting ($6 \mu\text{m}$) and nonfasting days ($3 \mu\text{m}$) ($p=0.00$ and $p=0.02$ respectively) in the evening. There was a significant increase in whole and peripapillary RPC density (%) on fasting days (48.79 ± 3.08 morning, 49.72 ± 2.85 evening for whole and 50.57 ± 4.06 morning, 51.64 ± 3.71 evening for peripapillary) ($p=0.00$). Average RNFL thickness was decreased from morning to evening both on fasting days ($0.80 \mu\text{m}$) and nonfasting days ($1.25 \mu\text{m}$) ($p=0.00$). Optic nerve head (ONH) vertical cup/disc (C/D) ratio was greater on fasting days (0.30 ± 0.25 morning, 0.31 ± 0.24 evening) in comparison to nonfasting days (0.27 ± 0.25 morning, 0.28 ± 0.25 evening) ($p=0.02$).
- **Conclusion:** Fasting decreases the IOP and CCT in healthy subjects. OCTA revealed significant difference in RPC vessel density, RNFL thickness and ONH vertical C/D ratio during fasting hours in comparison to nonfasting days.

Abri Aghdam, Kaveh

Minus Lens Therapy in The Management of Children with Intermittent Exotropia

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- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences
- **Purpose:** Intermittent exotropia may be decreased by stimulation of accommodative convergence. Overcorrecting minus lens therapy has been used as a treatment for intermittent exotropia via this mechanism. Here, we aimed to determine the safety and efficacy of minus lens therapy in children with X(T) who are younger than six years old.
- **Methods:** A retrospective document review of 163 children with intermittent exotropia was performed. All patients were treated with overminus spectacles. Age, sex, visual acuity, cycloplegic refractive error, angle of deviation, exodeviation control rating score were recorded. After at least 12 months follow up, patients with manifest deviation based on history and clinical examination were considered treatment failures and underwent surgery.
- **Results:** Mean angle of deviation at initial visit was 24.7 prism diopters (PD) that improved to 10.6 PD (with overminus glasses). At the initial visit, exodeviation control score in 8 patients was good, in 29 was fair and in 126 was poor. After two years, among patients who were still under treatment, 103 patients had a good control score, 7 had a fair score, and 9 had a poor score. Sixty-eight patients (42%) with minus therapy achieved a good control score and did not require surgical intervention. Surgery had been performed on 92 (56%) children, with failure of minus therapy.

- **Conclusion:** Overminus therapy with spectacles can be effective for improving intermittent exodeviation control in young children. It can decrease the rate of surgical treatment and delayed it, too.

Abrishami, Mojtaba

Quantifying Microvascular and Structural Optic Nerve Head Changes in Active Thyroid-Associated Ophthalmopathy

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- **Purpose:** To compare quantitative optical coherent tomography angiography (OCTA) parameters of optic nerve head (ONH) microvascular and optical coherent tomography (OCT) peripapillary retinal and nerve fiber layer thickness in thyroid-associated ophthalmopathy (TAO) eyes and with the healthy control eyes.
- **Methods:** In a cross-sectional observational study on patients with TAO and age and sex matched normal subjects, enface 3x3 OCTA images of the macula and OCT of the retina and choroid were obtained using the Optovue RTVue XR Avanti. Vascular density of the peripapillary radial capillaries (PRC), retinal nerve fiber layer (RNFL), ganglion cell complex (GCC), and optic disc parameters in OCT were recorded. Clinical activity score (CAS) of orbitopathy was calculated and relation with imaging parameters were evaluated.
- **Results:** Thirty one cases (eighteen female), with mean age of 37.8 years, and matched controls were included. In patients with TAO, RPC density, either whole image or in the disc, even all vessels or small vessels; GCC analysis; were not different with the normal.
- **Conclusion:** : Peripapillary radial capillaries evaluation in OCTA and RNFL and other parameters evaluated in peripapillary area by OCT suggest that active TAO patients were not different from normal cases.

Abrishami, Mojtaba

Efficacy and Safety Non-Inferiority Comparison of Biosimilar Bevacizumab (Stivant®) to the Reference Product (Avastin®) in Patients with Prethreshold Type I Retinopathy of Prematurity

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- **Affiliation:** Eye Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
- **Purpose:** This study aimed to compare efficacy and safety of Bevacizumab (Stivant®, CinnaGen, Iran) to the innovator product (Avastin®, Genetech, South San Francisco, CA) in premature infants with prethreshold type I retinopathy of prematurity (ROP).
- **Methods:** In a non-inferiority case series, contralateral eye study preterm infants with bilateral type 1 ROP (zone I ROP, any stage with plus disease or zone I ROP, stage 3 without plus disease or zone 2 ROP stage 2 or 3 with plus disease) were enrolled in this. Under topical anesthesia intravitreal bevacizumab (IVB) (0.625 mg/0.025 ml) was injected. In right eye of the patients, Stivant was injected and in the left eye Avastin was injected. Patients were followed the day after injection and weekly for 4 weeks and then biweekly till retinal vascularization became complete. Safety and efficacy of bevacizumab under each brand name in regression of disease activity (plus disease regression) and achieve complete retinal vascularization were evaluated.
- **Results:** Fifteen infants (nne female) with gestational age (GA) of 27.5 ± 2.2 weeks and birth weight (BW) of 1202.08 ± 386.79 grams were included. IVB was performed at mean post-conceptual birth age of 34.8 ± 2.9 weeks. Only one case needed laser indirect ophthalmoscopy in both eyes, two weeks after IVB. In other cases Stivant was non-inferior to Avastin in regression of plus disease, decrease in ridge height, and progress in retinal vascularization. Endophthalmitis or uveitis was not seen in each patient.
- **Conclusion:** Stivant® was shown to be non-inferior to Avastin® in terms of efficacy with a comparable safety profile in the treatment of prethreshold type I ROP.

Abrishami, Mojtaba

Presumed Sympathetic Ophthalmia after Scleral Buckling Surgery: A Case Report

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- **Purpose:** We aimed to report a case of presumed sympathetic ophthalmia in a young female patient following scleral buckling (SB).
- **Methods:** A nineteen year old female patient was referred for visual loss in her left eye due to macula off inferior longstanding rhegmatogenous retinal detachment and three hours of proliferative vitreoretinopathy and lattice degeneration. Best corrected visual acuity was counting finger 2 meters. SB with 360 degrees encircling band and inferior segmental tire, with one spot cryoretinopexy at the break site and subretinal fluid drainage due to chronicity of the RRD was performed.
- **Results:** One week after operation, visual acuity was improved to 20/60 and retina was totally attached. Six weeks later, patient came with severe visual loss in both eyes as finger counting 0.5 meter. Bilateral multifocal serous retinal detachment and vitreous cell was found. The patient was treated with systemic corticosteroid and Mycophenolate Mofetil. The inflammation was controlled and serous detachment resolved after five days intravenous treatment and was not relapsed after six months. BCVA was 20/20 in right eye and 20/50 in the left eye. Systemic workup was negative for any extraocular disease or systemic involvement.
- **Conclusion:** SO may occur after successful SB. Inciting the choroid and retinal pigment epithelium with cryoretinopexy or perforating for drainage may induce SO.

Aghaei, Hossein

Effects of intranasal administration of violet oil in dry eye disease Clin

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- **Purpose:** the effect of Viola odorata L. oily extract was examined for the treatment of patients suffering from dry eye disease.
- **Methods:** A randomised, double-blind, placebo-controlled study was designed. During the trial, Schirmer's test, tear breakup time, Oxford staining and the Ocular Surface Disease Index were assessed. Overall, 105 patients with dry eye symptoms between the ages of 18 and 60 years were allocated to the violet-almond oil, almond oil and placebo (1% w/v hydroxypropyl methylcellulose solution) groups. The treatment and placebo were administered intranasally, two drops three times a day for one month. The patients were followed up for four weeks. A total of 91 patients (32, 29 and 30 in the violet-almond oil, almond oil and placebo groups, respectively) completed the study.
- **Results:** At baseline, there was no difference between the three groups in terms of demographic data and the measurement parameters. After the intervention, the results revealed that the Schirmer's score without local anaesthesia and the tear breakup time results significantly improved in the violet-almond oil group. One-way ANOVA indicated a significant improvement in the Schirmer's score, tear breakup time and Ocular Surface Disease Index of the treatment group, as compared with the other groups ($p < 0.05$). However, the obtained results did not present any significant mean difference between and within the groups of the Oxford staining grade ($p > 0.05$).
- **Conclusion:** This trial showed that the intranasally administered V. odorata L. oily extract enhances tear production and improves tear film stability.

Aghaei, Hossein

Comparative study of surgery, plaque radiotherapy plus Mitomycin and local chemotherapy results in patients with superficial squamous ocular tumors in Rasoul-e-Akram Hospital

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- **Purpose:** To compare the results, recurrence rate and complications of surgery, plaque radiotherapy + Mitomycin and local chemotherapy for OSSN
- **Methods:** This descriptive study was carried out in a retrospective cross-sectional fashion. The target population is all the patients referred to the Rasoul-e-Akram Hospital with superficial ocular tumors between 1392-95. Data collection was done by studying hospital documents and completing a questionnaire for each patient and obtained data entered into the SPSS software and the data analysis was done according to the type of research using statistical indicators.
- **Results:** study, there were 34 were male and 16 were female. 13 patients had surgery, 14 patients had Plaque Radiotherapy + Mitomycin, 15 had topical injection of interferon and 8 had used Interferon drop. 31 patients had risk factors and 16 patients had no risk factors. 21 tumors were in the temporal region, 22 in the nasal region, 4 in the superior region and 2 in the inferior area. In the pathological study of tumors, 22 cases of SCC, 21 cases of CIN and 7 cases of dysplasia have been reported. In examining the history of previous problems, 26 patients had positive POH. The size of the tumors was at an average size of 20.99 ± 17.89 mm². There were complications in 11 cases and There was recurrence in 6 cases
- **Conclusion:** The success rate of the treatments was not significantly different and the choice of a single treatment method for all patients with the highest success rate, minimal complications and the lowest rate of relapse was not feasible. Also, a comprehensive database for patients diagnosed with ocular tumors will be effective in facilitating and enhancing the accuracy of future studies.

Aghamollaei, Hossein

Recellular human corneal SMILE lenticule seeded with mesenchymal stem cells is a safe graft in an experimental animal model

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- **Purpose:** to evaluate in vivo safety of human Wharton's jelly derived mesenchymal stem cells - (WJSC) in a decellularized SMILE lenticules scaffold and relevant clinical results in an experimental animal model.
- **Methods:** Human corneal lenticules of about 100 μ m thickness derived from SMILE laser eye surgery were decellularized and verified for ultrastructure integrity, transparency, and cytotoxicity. 12 rabbits underwent unilateral stromal pocketing with implantation of decellularized lenticules. In 6 rabbits, implantation was followed with multiple injections of 2.5×10^5 isolated labeled WJSC in the graft. All Rabbits were evaluated for relevant clinical findings and underwent anterior segment imaging. Rabbits were euthanized after 1 month (n=6) and 3 months (n=6) to evaluate the progression of graft bio-integration and viability of injected WJSC
- **Results:** Decellularization occurred at a rate of about 98% with acceptable lack of cytotoxicity and relatively intact ultrastructure of the lenticules. After implantation, at the first month 1, only one cornea had severe haze with central neovascularization due to keratitis and one cornea had central neovascularization with mild haze. After 3 months, all 6 corneas were totally transparent without haze. After three months, labelled WJCS was detected representing the viability of stem cells in the host. In histopathological analysis, grafts were integrated well with reduced distortion of surrounding collagen and glycosaminoglycan at the third month compared to the first month.
- **Conclusion:** This model of lamellar keratoplasty is associated with acceptable bio-integration and optical transparency. Viable stem cells showed the potential of recruiting these cells as a keratocyte progenitor cells to reinforce the corneal ultrastructure.

Aghamollaei, Hossein

Histopatological study of conjunctival tissue after Plasma treatment

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- **Purpose:** Plasma offers an alternative to invasive surgical cosmetic procedures, reducing recovery time and any

complications that can arise before and after surgery. Based on this topic, for the first time we evaluated the safety of the plasma on the conjunctiva tissue in animal model.

- **Methods:** Twelve adult male New Zealand albino rabbits which divided into five groups were used. Experiments were performed on conjunctiva under the influence of created plasma by the Plexr device. Four spots were created on the conjunctiva using white hand piece of Plexr. For evaluation of plasma safety, ocular surface integrity and histopathological changes were assessed after 48 h (A), one week (B), one (C) and three (D) months after intervention.
- **Results:** After 48 h of plasma administration subconjunctival and conjunctival stromal edema and decreased blood vessels is noted. Epithelium reveals focally loss and marked thinning. After one week, all specimen show conjunctival stromal edema but less than group A without any congestion and hemorrhage. Epithelium show mild repair. Decreased blood vessels in the stroma is also noted. Generally, after one month loss of integrity of corneal epithelium has been completely improved. There is no evidence of malignancy in conjunctiva after 3 months.
- **Conclusion:** Our results showed the safety of Plasma on the conjunctiva in animal model. Plasma may be an alternative method for treatment of some ocular surface disorders. For more reliable results, long term study in animal model and a pilot clinical trial in human is proposed.

Akbari, Mitra

Review the frequency of ophthalmologists and optometrists opinions about treatment of amblyopia in Guilan province in 2018

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- **Affiliation:** Eye Research Center, Eye Department, Amiralmomenin Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran
- **Purpose:** Review the frequency of ophthalmologists and optometrists opinions about treatment of amblyopia in Guilan province.
- **Methods:** The study was cross-sectional. 30 ophthalmologists and 20 optometrists of Guilan province were surveyed during the second quarter of 2018. A structured questionnaire, without name, including closed-ended questions was the tool of data collection which was suggested by Amblyopia Treatment Studies and expert ophthalmologists and its validity and reliability was checked by (Content Validity Rate) CVR and (Content Validity Index) CVI.
- **Results:** The first treatment method in refractive amblyopia was chosen in appropriate to the patient. The first treatment step in strabismic amblyopia was patching and using glasses, the best age to start treatment was less than one year old, treatment of refractive amblyopia should be continued until 7-10 years old, mostly agreed to treat amblyopic patients over 10 years old and at least one hour near and distance activity during the day, patching of healthy eye 4-6 hours a day, for maintenance therapy both methods '0.5% atropine drop weekly' and '1 hour per day patching' are used, Drops are not used alone in treatment, Type of droplet that use in cycloplegic refraction is Cyclogel 1%, treatment with glasses alone was used in mild amblyopia and prescription of glasses in anisometropic and isometropic amblyopia at different ages is different with guidelines which are published in this regard.
- **Conclusion:** There was a differences of opinion regarding some aspects of treatment of amblyopia between ophthalmologists and optometrists and between members of each group separately. These disagreements are remarkable in some aspects. It is best to focus on newer therapies for retraining opportunities and congresses to better match the pattern of amblyopia treatment of ophthalmologists and optometrists with the results of Amblyopia Treatment Studies and clinical guidelines published in this regard.

Akbari, Mitra

Survey of the strabismus surgery on lid fissure alteration

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- **Purpose:** The lid fissure changes can be caused by strabismus surgery. The purpose of this study was to evaluate the effect of the strabismus surgery on lid fissure alteration in Amiralmomenin Hospital of Rasht, Iran.

- **Methods:** In this cross-sectional study, all candidate of strabismus surgery were included in state of a variety of strabismus surgery according preoperative deviation in the 2016 to reach a sufficient sample size (n = 60 cases). All of the patients who were candidates for strabismus surgery were evaluated for the vertical palpebral fissure height, and MRD1 and MRD2, with clinical examination, one day prior to the surgery and one-month and three month after.
- **Results:** 97 eyes (47 left eyes, 50 right eyes) under strabismus surgery, 63.8% (37 cases) were female and 36.2% (21 persons) were male. The average and standard deviation of age was 19.7 ± 13.8 years. The results of our study showed that the pre and postoperative deviation was statistically significant in all surgical methods ($P < 0.05$). Also, changes in LFH and MRD2 were performed before-1 month and before-3 months in medial rectus and lateral rectus recess were statistically significant ($P < 0.05$). The effect of correction of deviation per millimeter on LFH before-3 months were in medial rectus recession surgery 0.138 ± 0.031 mm and in lateral rectus recession surgery 119.11 ± 0.024 mm respectively, that was statistically significant ($P < 0.05$).
- **Conclusion:** The results of our study showed change in medial and latral rectus recession surgery in eyelid fissure, in front view of the eyes (LFH), and Marginal reflex distance from lower eyelid (MRD2). In latral rectus recession, In addition to the two above mentioned, cornea reflex from the upper eyelid (MRD2) increased significantly over time. Therefore, it seems necessary to consider these patients to be aware of possible changes in the eyelid fissure before the strabismus surgery.

Akbari kamrani, Marjan

Determinants of patient expectations and patient satisfaction after uneventful cataract surgery in Gorgan province of Iran: a longitudinal study

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- **Purpose:** To study determinants of patients' expectation of vision improvement after cataract surgery, the discrepancy between expected and actual improvement, and predictors of patients reported outcome (PRO) after taking cataract surgery.
- **Methods:** We enrolled patients with visual impairment due to cataract scheduled for surgery between June 2017 and March 2018 at a university-affiliated hospital in Gorgan, Iran. Patients were examined and all completed questionnaires about their visual function and level of difficulties in their daily activities due to their vision, attitude towards surgeon's competence, self-perceived knowledge about the disease and surgery, and their expectation of improvement in visual function. Actual visual outcomes and patients' reported satisfaction were assessed at least six weeks after the surgery. We calculated the discrepancy between expected and actual scores of post-surgical visual functions. We developed a multinomial logit model to predict over- and under-expectation of improvement. A generalized estimating equation was developed to predict satisfaction.
- **Results:** 88 patients were included in this study. 97% had presenting VA of less than 6/10. The main significant predictors of over-expectation were lower visual acuity ($P=0.03$), lower knowledge scores ($P=0.04$), and higher scores of attitude towards surgeon's competence ($P=0.05$). Under-expectation was also predicted by lower knowledge ($P=0.03$) and lower visual acuity ($P=0.03$). Average score of satisfaction was 8.5 (on 10-point VAS). The main predictors of lower satisfaction were being male ($P=0.02$), needing corrective glasses after surgery ($P=0.005$), and over-expectation of the improvements ($P=0.001$).
- **Conclusion:** Over-expectation of visual outcome of cataract surgery is a significant predictor of lower satisfaction, and patients with lower knowledge scores are more likely to have unrealistic (over- or under-) expectations about the effect of surgery. We recommend active engagement of care providers with patients and educational interventions for patients' need and knowledge. This may help patients develop more realistic expectations especially in those with lower visual acuity at presentation.

Akhlaghi, Mohamadreza

Effect of laser diode micro pulse laser in patients with acute Central serous retinopathy and its comparison with control: a clinical trial study

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- **Purpose:** The aim of this study was to determine the effectiveness of diode micropulse laser for improving visual acuity in patients with acute Central serous retinopathy
- **Methods:** In this clinical trial study, 26 patients with acute Central serous retinopathy were selected and divided into two groups of 13, the first group was treated with diode micro pulse laser and in the second group, no intervention was performed. Patients in both groups were followed for three months and visual acuity and recovery were compared between the two groups.
- **Results:** The visual acuity (log mar) before the start of treatment and at the 4th and 12th week of the start of treatment did not show a significant difference between the two groups, but in intragroup examination, visual acuity (log mar) in both groups was significantly different ($P < 0.001$), but there was no significant difference between the two groups in the intergroup analysis ($P = 0.82$).
- **Conclusion:** Although the results of this study indicate that diode micropulse laser improves clinical and anatomical results in patients with acute Central serous retinopathy, there is no statistically significant difference compared with spontaneous improvement of these patients.

Alemzadeh, Sayyed amirpooya

Surgical outcome of retinotomy and retinectomy in patients with proliferative vitreoretinopathy : 8 years experience from tertiary hospital

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- **Purpose:** To report the anatomic and functional outcomes of retinotomy and retinectomy for the management of retinal detachment complicated by proliferative vitreoretinopathy (PVR).
- **Methods:** In this retrospective study, the charts of patients who underwent pars plana vitrectomy with retinotomy and retinectomy for the management of retinal detachment complicated by PVR from 2010 to 2018 were reviewed. Primary outcome measures were final visual acuity and anatomic success rate. The cases with at least 3 months follow up post-operation and complete file were included.
- **Results:** Finally, 70 eyes of 66 patients were enrolled. Of them 62.9 % were male. The mean age was 43.49 ± 19.81 . The mean follow-up time was 25.66 ± 25.14 months. The lens status was aphakia in 28.6%, phakic in 17.1% and pseudophakia in 54.3% of the patients. The Best visual acuity was 2.64 ± 0.88 and 2.30 ± 1.06 LogMAR before the surgery and at last visit ($P=0.015$). The retina was attached after one surgery in 90% of the patients. Twenty-two eyes (31.4%) need reoperation with the mean time of 5.76 ± 5.29 months after the 1st surgery. Finally, the retina was attached in 92.7% of the patients at last visit. The silicone oil tamponade was present in 71.4% of the patients at last visit. The mean size of the retinotomy was 158.09 ± 93.23 . Spontaneous retinectomy was performed in 20% of the cases.
- **Conclusion:** Retinotomy and retinectomy is a surgical option providing good anatomical and reasonable visual outcomes in complicated retinal detachment with PVR.

Alivand, Arash

Evaluation of accommodation effect on central and peripheral vault of posterior phakic IOL (Implantable Collamer Lens)

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- **Purpose:** The aim of this study was to determine whether the peripheral vault of implantable collamer lens (ICL) to correct myopia is matter in accommodative and dilated state.
- **Methods:** Patients underwent V4c ICL implantation and had the follow-up period of at least 6 months. Anterior chamber depth (ACD), postoperative posterior corneal surface-to-ICL distance (endo-ICL distance), postoperative central, peripheral vault, and pupil size were evaluated using the Casia anterior segment optical coherence

tomography system. Measurements were performed during the nonaccommodative, accommodative, and dilated states 3 months after ICL implantation.

- **Results:** A total of 60 eyes of 32 high myopic patients who were unsuitable for corneal based refractive surgery (27.31 ± 4.77 years, 17 men) were included in the study. No statistically significant change in central and peripheral vaulting was seen during accommodation ($P = 0.184$ and $P = 0.449$ respectively). However, the reduction in ACD, endo-ICL distance measurements was noticeable during accommodation ($P = 0.013$ and $P = 0.025$ respectively). Peripheral vault during dilation of pupil was measured ($127.07 \pm 13.10 \mu\text{m}$, range: 102 to 155 μm).
- **Conclusion:** Central and peripheral ICL vault were not affected by accommodation. Minimal but noticeable distance between periphery of ICL and crystalline lens during dilation of pupil is seen if central vaulting were within normal limit and proper ICL sizing were chosen.

Alizadeh Eghtedar, Reza

Automatic Segmentation of Choroidal Layer on OCT Images Based on Graph Theory and Curvelet Transform.

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- **Purpose:** The thickness measurement and the segmentation of choroid could guide ophthalmologists in order to diagnose most of the pathologies of the eye like diabetic retinopathy (DR). Manually measurement of the choroidal thickness from optical coherence tomography (OCT) images is time-consuming, tiresome and dependent on human errors. To overcome these difficulties in this paper we have introduced new computer aided diagnosis based method for automatic quantification of choroidal thickness.
- **Methods:** In this paper we used curvelet transform, KSVD dictionary learning and Lucy-Richardson algorithm in order to speckle noise removal and enhancement of the OCT images. Then, the graph theory is used to determine the location of the inner choroidal boundary (ICB). In order to find the outer choroidal boundary (OCB), we defined the image histogram in a specific range depend on the average brightness of the image. The area between ICB and OCB considered as choroidal thickness.
- **Results:** Our proposed method was evaluated on 60 EDI-OCT (Enhanced Depth Imaging Optical Coherence Tomography) images and by comparing the automatic segmentations with manual segmentations of ophthalmologists the average Dice's Coefficient was 92.14%. The Dice's coefficient is one of the statistical metrics for comparing the similarity of two samples which was presented by Thorvald Sørensen and Lee Raymond Dice in 1948 and 1945 respectively. It shows notable superiority of our proposed method over other methods.
- **Conclusion:** In both normal eyes and eyes with diabetic retinopathy, we observed a great agreement between the manual segmentations and our automatic segmentations. Also the choroid was thinner in eyes with diabetic retinopathy. Automatic segmentation of choroidal layer could also be useful for large-scale quantitative studies of the choroid.

Ameli zamani, Kambiz

Histopathologic findings of levator palpebralis superioris muscle biopsy in congenital and acquired ptosis and correlation with surgical response

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- **Purpose:** To evaluate the Histopathologic results of levator muscle and its aponeurosis and to understand the relation between the histology and factors that can affect response to levator surgery.
- **Methods:** : This study is a retrospective comparative before- and after-study done in a university – based hospital from november 2014 to january 2019. All patients that had ptosis were included in the study. Exclusion criteria were any history of eyelid trauma or surgery, any aberrant nerve regeneration or follow up less than 3 months postoperatively. Patients underwent levator muscle resection ether under local or general anesthesia. Tissue

specimens were sent for histopathology exam. Patient preoperative and postoperative data and their relation to the histology report was analyzed.

- **Results:** 880 patients underwent ptosis surgery during 5 years from 2014 to 2019. 383 patients were excluded due to incomplete follow up or reoperation sooner than 3 months due to undercorrection. Of 497 patients, 344 patients had CP and 153 had AP. Postop-MRD-1, -MRD-2 and LF improved significantly in both groups. Improvement was significantly greater in the AP group (p value< 0.001) in improvement of levator function and MRD-1. There was a positive correlation between preop-MRD1, postop-MRD2, preop-LF and a negative correlation between postop-lid lag and lagophthalmus with percentage of striated muscle report on histology report.
- **Conclusion:** Histopathology of the levator muscle and presence of abnormal fat levels can predict the future success and even recurrence of ptosis, and it may be helpful in making the patient understand the etiology of recurrence.

Anvari, Pasha

Foveal Avascular Zone is Larger in the Superficial Retinal Layer; an Optical Coherence Tomography Angiography Study Comparing Two Spectral Domain Devices

- **Authors:** Pasha Anvari, Amin Najafi, Reza Mirshahi, Mahsa Sardarinia, Maryam Ashrafkhorasani, Pegah Kazemi, Abbas Habibi, Khalil Ghasemi Falavarjani
- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Ira
- **Purpose:** To evaluate the size of foveal avascular zone (FAZ) area in the superficial and deep retinal layers using two different spectral-domain optical coherence tomography angiography (OCTA) devices.
- **Methods:** A cross-sectional comparative study was conducted to obtain macular OCTA images from healthy subjects using Optovue RTVue XR Avanti (Optovue, Inc, Fremont, CA) and Spectralis HRA+OCTA (Heidelberg Engineering, Heidelberg, Germany). Two independent trained graders measured the FAZ area using automated slab segmentation. The FAZ area in superficial and deep retinal layers was compared.
- **Results:** Twenty-three eyes of 23 subjects were included. The graders agreement was excellent (>0.86) for all measurements. The mean FAZ area was significantly larger at the superficial retinal layer compared to the deep retinal layer on both devices (0.31 ± 0.08 mm² versus 0.26 ± 0.08 mm² in Optovue and 0.55 ± 0.16 mm² versus 0.36 ± 0.13 mm² in Spectralis, both $P < 0.001$). The mean FAZ area was significantly larger at both superficial and deep retinal layers in Spectralis than in Optovue measurements ($P < 0.001$ for both).
- **Conclusion:** In contrast to previous reports, the size of FAZ was larger in superficial than in deep retinal layers using the updated software versions. The measurements from different devices cannot be used interchangeably.

Anvari, Pasha

The Effect of Intravitreal Recombinant Tissue Plasminogen Activator Injection on Diabetic Tractional Fibrovascular Membranes: Proposed Criteria using Optical Coherence Tomography

- **Authors:** Khalil Ghasemi Falavarjani, Pasha Anvari, Mohamadhasan Dehghan, Saber Molaei, Pegah Kazemi
- **Affiliation:** Eye Research Center and Eye Department, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran.
- **Purpose:** o evaluate the effect of intravitreal recombinant tissue plasminogen activator (rTPA) on diabetic tractional fibrovascular membranes (FVM) using the proposed optical coherence tomography (OCT) based measurement criteria.
- **Methods:** This prospective, interventional case series enrolled eyes that were candidates for vitrectomy. OCT images were obtained to study attached-detached retinal borders at baseline and on- week post-intravitreal rTPA injection using the follow-up scan protocols. Two independent graders assessed retinal detachment (RD) height, FVM height, FVM thickness, retinal thickness at the site of membrane attachment and release of retina-membrane touch point.
- **Results:** Nine eyes from nine individuals were included. Assessment of RD height, FVM height, FVM thickness and retinal thickness at touch point were feasible in 8/9 (88%), 7/9 (77%), 8/9 (88%) and 5/9 (55%) of eyes, respectively. There was an excellent agreement between the two graders in all of measurements (all ICC> 0.93).

Release of retina-membrane touch point was not observed in any eyes. No statistically significant change was found in any of the measured parameters.

- **Conclusion:** Our proposed OCT-based measurement system in assessing diabetic FVM was reliable and feasible. We did not find any significant change in the status of diabetic FVM, one-week after intravitreal rTPA injection, using OCT-based measurements.

Arabi, Amir

Effects of vitamin D supplement therapy on clinical outcomes of intravitreal bevacizumab in diabetic macular edema

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- **Purpose:** : To evaluate the effects of oral vitamin D supplement administration on clinical outcomes of intravitreal bevacizumab administration in diabetic macular edema
- **Methods:** : A total of 71 patients with the diagnosis of center involving DME were planned to receive three monthly intravitreal bevacizumab (IVB) injections. Those patients with less than 30 ng/ml of 25-OH vitamin D were divided into treatment and control groups. The treatment group members were treated with oral vitamin D, 50000 IU per week for 8 weeks. One month after the third IVB injection, changes of best corrected visual acuity (BCVA) and central macular thickness (CMT) were analyzed for each group. The primary outcome measures were changes of BCVA and CMT from baseline to one month after the third injection. Multiple linear regression analysis was performed to investigate the relationship between variables.
- **Results:** Thirty three patients were found to have a sufficient level of vitamin D, and 34 patients had insufficient levels. Nineteen patients with an insufficient level of vitamin D were treated with oral vitamin D and 15 patients entered in the control group. Average level of serum 25-OH vitamin D in all patients was 27.9 ng/ml, with a mean of 20.3 ± 5.4 and 17.3 ± 5.4 in control and treatment groups respectively. After three IVB injections, BCVA improved in all groups significantly but the difference between treatment and control groups was not significant. Also CMT decreased in all three groups significantly. The mean CMT decreased more in vitamin D treated group, but the difference was not statistically significant ($p=0.29$). Pearson correlation coefficient (-0.032) showed a significant negative correlation between serum vitamin D and HbA1c levels.
- **Conclusion:** : In patients with DME and vitamin D insufficiency, treatment with oral vitamin D supplement may have some beneficial effects on outcomes of IVB injections.

Ayatollahi, Ali

wavelight topolyzer vario VS Javal keratometer; Comparison of Keratometric Values

- **Authors:** Ali Ayatollahi, Jahangir Ayatollahi
- **Affiliation:** Novindidegan Eye Center
- **Purpose:** The purpose of this study was to compare keratometry measurements from the wavelight topolyzer vario and the Javal Manual keratometer.
- **Methods:** Keratometry measurements in the steep (Ks) and flat (Kf) meridians were taken with the Javal Manual keratometer (Javal Schiotz type; Haag-Streit AG, Koeniz, Switzerland) and wavelight topolyzer vario (Wavelight, Germany) in myopic virgin eyes. The 95% limits of agreement (LOAs) were reported to evaluate the agreement between devices.
- **Results:** The mean K readings of wavelight topolyzer vario and Javal Manual keratometer were 43.89/43.71 diopter (D), 44.01/43.92 D, respectively. Correlation coefficients for the CASIA AS-OCT and Javal Manual keratometer in measuring flat K and steep K were $r=0.918$ and $r=0.921$, respectively ($p<0.001$).
- **Conclusion:** The wavelight topolyzer vario provided reliable K measurements in clinical practice in comparison with Javal Manual keratometry and seem to be interchangeable.

Perfluorocarbene May Change The Silicon Oil Specific Gravity

- **Authors:** pejvak azadi
- **Affiliation:** kermanshah university of medical sciences
- **Purpose:** To report a case in which Perfluorocarbene (DK-Line) residuals changed the injected silicon oil specific gravity soon.
- **Methods:** A 46 year-old man was referred to the clinic due to the right eye pseudophakic rhegmatogenous retinal detachment since 5 days ago.
- **Results:** : At the presentation the vision was hand motion perception in the right eye. Funduscopy revealed nearly- total, macular involving retinal detachment with large superior retinal break and multiple peripheral small breaks. The left eye examinations were within normal limit. Two days later he was experienced pars plana vitrectomy with DK-Line injection and endolaser. During air-fluid exchange the retina slipped significantly, so DK-Line – silicon oil 5700 exchange was performed for him, trying to evacuate the DK-Line completely. One month later the vision had improved to 1/10, but it seemed that some DK-Line has not been completely removed from the eye. Retina was attached. Trying to lessen the DK-Line-induced retinal toxicity, he was scheduled for silicon oil, DK-Line removal. During the second surgery it was seen that the silicon oil specific gravity had changed completely to a denser- than- water liquid, necessitating deeply removal. The DK-Line removed too
- **Conclusion:** intraocular remained DK-Line could change the light silicon oil density, necessitating deep removal and emphasizing another reason for complete DK-Line removal.

bilateral endogenous endophthalmitis following pneumosepsis

- **Authors:** pejvak azadi
- **Affiliation:** kermanshah university of medical sciences
- **Purpose:** To report a case of bilateral endogenous endophthalmitis secondary to pneumosepsis.
- **Methods:** a 84 year-old man was referred for bilaterally severely decreased vision and pain, since days ago. The patient was hospitalized for pneumosepsis.
- **Results:** At the presentation the vision was poor light perception bilaterally. ophthalmic examinations and imagings showed bilateral endophthalmitis for which pars plana vitrectomy and intravitreal antibiotic injection performed. One month later the patient was discharged from the hospital but the vision was no light perception bilaterally and the globes were phthisic. Echography showed retinal detachment and reduced globe diameter compatible with phthisic bulbi.
- **Conclusion:** in any elderly, specially hospitalized for infectious causes, and complaining of eye pain and decreased vision, prompt comprehensive eye examinations are necessary, preventing delayed management and poor prognosis.

Evaluation of Claims Referred to Board of Appeal of the Disciplinary Court of Mashhad Medical Council during 2008 to 2013

- **Authors:** Abbas Azimi (Ms,OD,Ph.D) Seyed Mostafa Monzavi (MD) Amin Azimi Khorasani (MD) Melika Oraee (optometrist , Bsc)
- **Affiliation:** Mashhad university of medical sciences,paramedical school
- **Purpose:** This study was designed to investigate the medical malpractice claims referred to the Board of Appeal of Disciplinary Court in Mashhad Medical Council (MMC).

- **Methods:** In this descriptive-analytical study, cases referred to the Board of Appeal in the years 2008 to 2013 were reviewed and extracted data were entered into a checklist.
- **Results:** During this six-year period. 1943 malpractice claims were initially filed in the Disciplinary Court of MMC. Subsequent to issuing the initial verdict by the Council of Magistrates, after objection of the plaintiff or defendant, or both; 628 cases were referred to the Board of Appeal. The majority of claims were filed against gynecologists (16.1%), followed by orthopedists (13.1%) and general practitioners (12.3%). Most of the verdicts issued by the Council of Magistrates were innocence (46.3%), article "g" (23.5%), and article "b" (11.3%). Appellant in 52.6% of cases were the plaintiff, 39.3% were the defendant and in 8% were both the plaintiff and the defendant .for the ophthalmologists, the claims were 4.46% and the types of the claims were most in surgical malpractice such as eye infections after cataract surgery.
- **Conclusion:** In this study, it was found that about one-third of the verdicts issued by the Council of Magistrates were objected and referred to the Board of Appeal, but only in about one-sixth of objected cases or one-eighteenth of the total cases, the initial verdict was challenged. Medical community members should respect medical ethics in dealing with patients to achieve their satisfaction and trust; and they should strictly comply with treatment and legal protocols to prevent any legal and penal consequences in case of disease complications and failures in medical procedures. To provide your patients expectation, satisfaction and loyalty you have to have the following criteria skills abilities, affabilities and availabilities

Bahmani Kashkouli, Mohsen

Endoscopic-Assisted Lateral Orbitotomy for Large Dermoid Cysts with Dural Touch; Report of 5 patients and video presentation of the technique

- **Authors:** Mohsen Bahmani Kashkouli, Meysam maleki, Nasser Karimi, Behzad Khademi
- **Affiliation:** Eye Research Center, The Five Senses Institute, Iran University of Medical Science
- **Purpose:** Large orbital roof lesions with bone erosion and dural abutting could surgically be approached via either craniotomy or orbitotomy. Craniotomy is an invasive procedure with cosmetic and functional morbidities. On the other hand, orbitotomy (lateral and/or superior) provides a less invasive approach with lower morbidities but the area behind the superior orbital rim is not visible and therefore the risk of dural damage and incomplete removal of the dermoid (especially epithelial lining) are higher. The aim is to demonstrate endoscopic-assisted lateral orbitotomy for patients with a very large orbital roof dermoid cysts associated with orbital roof bone erosion and dural touch.
- **Methods:** A classic lateral orbitotomy with bone flap was performed. Dermoid was dissected and freed from the other orbital tissue. It was punctured and its content was suctioned (syringe) to reduce the size. The epithelial lining was incised laterally, remaining dermoid content was suctioned, and the cavity was repeatedly irrigated to completely remove the contents. Epithelial lining of dermoid was gradually dissected and totally removed from the orbital side. Finally, dermoid content and epithelium abutting the dura and causing orbital roof erosion were removed using endoscopically assisted curettage (Video)
- **Results:** Procedures were performed uneventfully on 5 patients (age range: 23-48 years old) from 2006 to 2012. Specimens (contents and dermoid wall) were sent for pathology. No orbital drain was used. Sutures were removed 1 week later. No ocular and or orbital complications were observed at early or late postoperative follow ups. No recurrence was reported and observed in the last follow up times.
- **Conclusion:** The endoscopic-assisted orbitotomy approach enabled safe removal of very large dermoid cysts with orbital roof erosion and dural touch and provided an effective and less invasive alternative to a frontal craniotomy.

Bahmani Kashkouli, Mohsen

Supine Test: A New Test for detecting Lacrimal Gland Prolapse before Upper Blepharoplasty

- **Authors:** Mohsen Bahmani Kashkouli, Amir Tabrizi, Mahya Ghazizadeh, Behzad Khademi, Nasser Karimi
- **Affiliation:** Eye Research Center, The Five Senses Institute, Iran University of Medical Science
- **Purpose:** Lateral eyelid bulging is the only recognized sign of lacrimal gland prolapse in the literature which is not sensitive nor specific. The aim of this study is to introduce a new (Supine) test and assess the values of lateral eyelid bulging for diagnosis of lacrimal gland prolapse before upper blepharoplasty

- **Methods:** In a prospective case series (2011-2017), lateral eyelid bulging and Supine Test were recorded, preoperatively. Lacrimal gland prolapse was graded as mild (< 4mm), moderate (4-7 mm), and severe (>7mm). A few spots of cautery on lacrimal gland capsule was performed in patients with bilateral mild and suture repositioning in unilateral or bilateral moderate and severe lacrimal gland prolapse. Patients with asymmetric lacrimal gland prolapse was treated based on more severe grade, bilaterally
- **Results:** Included were 1207 patients. Frequency of positive Supine Test (11.8%, 142/1207) increased from almost 10% in patients under age 41 to 15% in more than 60 years. Their mean age was significantly older and 53.2% showed asymmetric lacrimal gland prolapse. Septum was just opened in patients with positive Supine Test and all had lacrimal gland prolapse of ≥ 3 mm (mean: 5.6 mm, range: 3-14 mm). Mild, moderate and severe lacrimal gland prolapse were observed in 22.5%, 62.6%, and 14.7% of the patients, respectively. Mean follow up time was 22 months (12-60 months). Recurrence was observed in one patient (bilateral) after suture repositioning. Lateral eyelid bulging had a high negative (96.2%) and low positive (30.6%) predictive value as compared to the Supine Test.
- **Conclusion:** Positive Supine Test means lacrimal gland prolapse of ≥ 3 mm (100% positive predictive value). Negative lateral eyelid bulging was highly predictive of no lacrimal gland prolapse.

Bazvand, Fatemeh

Correlation between Multifocal Electroretinogram parameters with Different Optical Coherence Tomography Features in patients with Diabetic retinopathy.

- **Authors:** Hassan Khojasteh MD1, Hamid Riazi-Esfahani, Elias Khalilipour, Fariba Ghassemi, Fatemeh Bazvand,
- **Affiliation:** Farabi eye hospital, Tehran university of medical sciences
- **Purpose:** To evaluate multifocal electroretinogram (mfERG) parameters in eyes with diabetic macular edema (DME) and its correlation with vision and optical coherence tomography (OCT) features.
- **Methods:** Fifty-four eyes of 27 subjects with DME due to non-proliferative diabetic retinopathy were evaluated. MfERG responses in three concentric rings were measured. Macular thickness was measured by OCT in each segment of the concentric rings and mfERG rings were superimposed on macular thickness map. Correlation between VA, localized macular thickness, and retinal structural abnormalities with mfERG parameters at each segment was evaluated.
- **Results:** Mean of BCVA was 0.5 ± 0.3 in logMAR and central macular thickness was 392.6 ± 123.4 microns. The central ring P1 and N2 amplitude were both significantly correlated with BCVA in univariate and multivariate analysis ($P=0.001$). Retinal thickness was correlated significantly with N1 amplitude in central ring ($p=0.02$). Outer retinal layer disruption (ELM and ellipsoid zone) was correlated with prolonged P1 implicit time at corresponding location ($p=0.005$). Disorganization of retinal inner layers (DRIL) was associated with reduced P1 and N2 amplitude ($p=0.037$ and $p=0.019$ respectively). Presence of cyst was correlated with lower central P1 amplitude ($p=0.033$).
- **Conclusion:** Central retinal thickness or different OCT biomarkers (as an anatomical indicator of diabetic macular edema) can be correlated with different mfERG features. Predictive models such as those described in this report, may make it possible to identify correlation of specific anatomic and functional characteristics in diabetic macular edema.

Bolkheir, Alireza

Association Between Advanced Keratoconus and Serum Levels of Zinc, Calcium, Magnesium, Iron, Copper, and Selenium

- **Authors:** Shahram Bamdad, Naser Owji and Alireza Bolkheir
- **Affiliation:** Poostchi Ophthalmology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran.
- **Purpose:** To investigate the possibility of an association between serum levels of zinc (Zn), calcium (Ca), magnesium (Mg), iron (Fe), copper (Cu), and selenium (Se) and advanced keratoconus (KCN).
- **Methods:** In this study, 50 patients with advanced KCN and 50 control subjects were included. Plasma levels of Zn, Ca, Mg, Fe, Cu, and Se were compared between the groups.

- **Results:** Mean \pm SD age of the patients in the case and control groups was 29.3 ± 3.5 and 28.9 ± 5.9 years, respectively ($P = 0.669$). Among serum parameters, there were no statistically significant differences between the 2 groups in serum levels of Ca, Mg, and Fe ($P > 0.05$), whereas serum levels of Zn and Cu were significantly lower in the case group than the control group [65.92 ± 7.90 vs. 87.36 ± 13.64 mg/dL and 78.48 ± 11.96 vs. 116.34 ± 20.87 mg/dL, respectively (both $P < 0.001$)] as well as the serum level of Se [79.76 ± 19.16 vs. 87.41 ± 15.91 mg/dL ($P = 0.032$)].
- **Conclusion:** The lower serum levels of Zn, Cu, and Se in patients with advanced KCN compared with healthy controls indicate the possible role of antioxidants in the etiopathogenesis of KCN, which points to early treatment of this progressive degenerative disease with supplementation therapy, rather than keratoplasty techniques.

Boroomand, Negar

Epidemiology of ocular trauma in outpatients referred to 5-Azar hospital in Gorgan during 2017 and 2018

- **Authors:** Negar broomand¹, Zahra Hesari²
- **Affiliation:** 1. Department of ophthalmology , Golestan University of Medical Sciences, Gorgan, Iran. 2. Laboratory Sciences Research Center, Golestan University of Medical Sciences, Gorgan, Iran.
- **Purpose:** Traumatic ocular injuries are one of the most important reasons of visual loss in the world(1-5). The aim of this study is to determine the epidemiology and type of eye trauma in outpatients at 5-Azar hospital in Gorgan
- **Methods:** In this retrospective study, 849 outpatients who referred to the trauma center of 5-Azar hospital in Gorgan due to eye trauma were enrolled. All information including age, sex,type of eye trauma (blunt or penetrating trauma), etc , were extracted from their records. Data were analyzed using SPSS-16.
- **Results:** In this study 712 (83.87%) of the patients were male and 137 (16.13%) were female. The mean age of the patients was 29.65. Most of them were in their third (22.6%) and first decade (22.2%), respectively.The most common cause was blunt trauma (82%) ,in this group foreign body (extra-ocular) was the most cause (76.75%).Subconjunctival hemorrhage, hyphema, and lid echymosis were also seen in 6, 5.6, and 5.6% of patients, respectively. In penetrating trauma (10.36%): partial thickness corneal laceration and full thickness corneal laceration were seen in 70.07% of patients as well as scleral laceration in 25% of cases. About 32.62% of this cases required surgery.
- **Conclusion:** The most common causes of trauma was extraocular foreign body in workplace and the most common age was the third decade of life that people have more activity, so this kind of trauma could be prevented with improving the safety in workplace.

Daryabari, Seyed Hashem

In silico design of new inhibitors for crystalline aggregation as a new approach in treatment of Congenital cataract

- **Authors:** Seyed hashem Daryabari, Hossein Aghamollaei, Mahdi Naderi, Khosrow Jadidi
- **Affiliation:** Chemical Injuries Research Center, Systems biology and Poisonings Institute, Baqiyatallah University of Medical Sciences, Tehran,Iran
- **Purpose:** . The aim of this study was to in-silico evaluation of 8-amino acids peptides for inhibition of crystallin proteins aggregation.
- **Methods:** Firstly, the model of 3D structure of human mutated crystallins was designed using bioinformatics tools. Then , three different 8- amino acids peptide were evaluated for their potency for inhibition of protein oligomerization and crystalline aggregation. The binding site of these peptides to the crystallins was determined.
- **Results:** Bioinformatics variables showed that the 3D model of crystallins are reliable. Designed peptides can bind to mutated Gamma crystalline efficiently. The results showed that peptides affinity to gamma crystalline inhibited protein-protein interaction and reduced oligomerization and aggregation of gamma crystallins. The binding site of these peptides on the crystallin are different.
- **Conclusion:** In silico analysis approved that these peptides can prevent aggregation of crystalline proteins. After more confirmation in experimental studies, these peptides can be introduced as new candidates for treatment of congenital cataract.

Histopatologic finding in the cornea of patient 30 years after exposure to Sulphur mustard gas

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- **Affiliation:** Chemical Injuries Research Center, Systems biology and Poisonings Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran
- **Purpose:** Delayed mustard gas keratopathy is the main chronic outcome in the eye of patient who exposed to Sulphur mustard (SM). The aim of this study was histopathological evaluation of mustard exposed cornea after more than 30 years.
- **Methods:** 10 corneas after Lamellar keratoplasty was evaluated in this study. After 4 µm tissue sectioning, cornea was stained by H&E method.
- **Results:** The main histopathological findings in these cases were presence of severe stromal edema and corneal scar. In the sections with visible superficial epithelium, Subepithelial bullae formation (Bullous keratopathy) was seen. Focal or diffuse disruption of Bowman membrane and replacement with fibrosis were also seen. There was no evidence of stromal vascularization and inflammation in all specimens.
- **Conclusion:** scar tissue without vascularization and fibroblastic proliferation is the main finding in SM exposed cornea. This pathology results is different from other scars.

The relationship between myopia and anterior posterior eye length with severity of diabetic retinopathy in patients referred to Ophthalmology clinic of Valiasr Hospital.

- **Authors:** Mohammad Hossein Davari, Mohammad ali modafe
- **Affiliation:** Assistant Professor, Ophthalmology Dept. Birjand Cardiovascular Disease Research Center, Birjand University of Medical Sciences, Birjand, Iran
- **Purpose:** Diabetes is a major concern for causing complications and vascular problems, including retinopathy, nephropathy, neuropathy and cardiovascular problems as a global pathology., our goal was to determine the relationship between myopia and anterior- posterior eye length with the severity of diabetic retinopathy in patients referred to Ophthalmology clinic of Valiasr Hospital.
- **Methods:** In this case-control study, 75 patients were randomly divided into three groups, diabetic without retinopathy, with proliferative and non-proliferative retinopathy. Inclusion criterion for entering the study, were a clinical diagnosis of type 2 diabetes and at least 10 years of history of diabetes. Exclusion criteria including patients with cataract, eye surgery, keratoconus, keratoglobulus, and dissatisfaction. In order to investigate the presence of retinopathy from indirect retinal examination and examination with 90-degree lens, to determine the type of retinopathy from OCT and Fundus graph and indirect fundoscopy, were used, and to examine the anterior posterior length of the A-scan Nidek and to determine the degree of myopia from the auto refractometer and retinoscopy were used. After completing the questionnaire, the data were entered into SPSS 21 software and analyzed by Chi-Square, at a significant level of $\alpha = 0.05$.
- **Results:** The mean age of patients referring was 59.7 ± 8.22 years and the mean duration of diabetes was 13.6 ± 5.0 years. There was a higher incidence of diabetes in patients with non-proliferative retinopathy than in the other two groups ($P < 0.05$). Also, the serum level of the last glucose and HbA1c in diabetic patients without retinopathy was lower than the other groups ($P < 0.05$).
- **Conclusion:** Although the anterior -posterior eye length in the left and right eye are significantly affected retinopathy. The greater the length of the anterior -posterior eye length, or the patient with more myopia, it seems that the incidence of retinopathy is less.

Evaluation of relationship between presbyopia and Presbycusis in patients referred to

- **Authors:** Mohammad Hossein Davari ,Ghasem Karimi ,Vahid Ghorriani
- **Affiliation:** Assistant Professor, Ophthalmology Dept. Birjand Cardiovascular Disease Research Center, Birjand University of Medical Sciences, Birjand, Iran
- **Purpose:** presbyopia and Presbycusis are common disorders of aging that have many negative consequences such as social problems, cognitive disorders, depression and imbalance. The combination of two hearing and vision disorders increases the negative outcomes. Regarding the effect of presbyopia and Presbycusis on the ability of communication and quality of life in individuals, this study was conducted to determine the relationship between these two sensory disorders.
- **Methods:** This descriptive-analytical study was performed on 111 patients suffering from presbyopia referred to ophthalmology clinic of Vali-e-Asr Hospital in Birjand during 1394-1385. Criteria for entering the study were the reduced visual acuity and criteria for exit were the diabetes, glaucoma, infectious diseases of the ear, kidneys, history of trauma to the head, history of the use of ototoxic drugs, history of ear tumors and intracranial tumors, and working in noisy environments. Presbyopia and Presbycusis were diagnosed with routine clinical examinations. Data were entered into SPSS (Version22) and analyzed using chi-square test. Significance level of P was considered ≤ 0.05 .
- **Results:** Findings showed that 70% of the patients in the age group of 45 to 49 years old, 64% in the age group of 50 to 55 years, and 55% in the age group of 56 to 60 had different visual problems. In the present study, slight hearing impairment was observed in individuals. No correlation was observed between Presbyopia and Presbycusis, sex, gender and housing, and also there was no relationship between these two sensory impairments.
- **Conclusion:** There was no relationship between two sensory impairments. The incidence of Presbyopia was more than 50% and mild hearing impairment was observed in patients. In addition, treatment of these disorders can prevent negative consequences such as cognitive impairment and falling.

Dehghani, Alireza

Effects of subthreshold diode micropulse laser photocoagulation on treating patients with refractory diabetic macular edema

- **Authors:** Dehghani AR, Akhlaghi MR, pourmohamadi R, Leila Asadpour, Pourazizi M.
- **Affiliation:** Isfahan Eye Research Center, Isfahan University of Medical Sciences, Isfahan IRAN
- **Purpose:** To evaluate the effects of subthreshold diode micropulse laser photocoagulation on treating patients with refractory diabetic macularedema (DME)
- **Methods:** This randomized clinical trial recruited patients with DME in both eyes that were resistant to treatment with intravitreal bevacizumab (IVB). The eyes were randomly divided into two groups who received laser therapy and IVB, or IVB alone. Subthreshold diode micropulse laser photocoagulation and IVB injection were administered in one eye, and an IVB injection was administered in the second eye. IVB injections were repeated in both eyes within one month and two months after the first injection. Best corrected visual acuity (BCVA) logarithm of the minimum angle of resolution (logMAR) and central macular thickness (CMT) were measured before, within a month, and three months after start of intervention.
- **Results:** In this study, 42 eyes of 21 patients were evaluated. The mean age of patients was 60.86 ± 8.57 years. Ten patients (47.6%) were male. Within-group analysis showed a significant decrease in BCVA logMAR in the laser+IVB group reflecting improvement in visual acuity (VA) ($P < 0.001$); it increased in the control group during study reflecting more vision loss ($P = 0.01$). In the laser+IVB group, a significant decrease in mean \pm standard deviation (SD) CMT at 3 months compared to baseline was observed (baseline: 513 ± 126.29 vs. three months: 408.1 ± 95.28 ; $P < 0.001$). The mean \pm SD CMT was significantly lower in the laser+IVB group of eyes than in the control group three months after intervention ($P = 0.02$).
- **Conclusion:** Using subthreshold diode micropulse laser photocoagulation in combination with IVB can significantly reduce CMT and improve BCVA in patients with refractory DME.

Dezhagah, Habib

High Intracranial Pressure in Retinitis Pigmentosa (RP)

- **Authors:** Hamid Sajjadi, Habib Dezhagah, Mohammad-Ali Abtahi
- **Affiliation:** MD, Director, private eye clinic, Apadana building, Ahvaz, Iran
- **Purpose:** To check intracranial pressure (ICP) in patients who have RP, to see association of Pseudotumor Cerebri (PTC) to RP, and to prevent further visual loss due to secondary optic neuropathy in these patients
- **Methods:** Nine patients who were known cases of RP, came to check if there are any new method of treatment for their retinal disease. All of them claiming recently developed visual loss. Optical coherence tomography (OCT) showed micro-papilledema and peri-papillary nerve fiber layer thickening in all of patients. Next step was obtaining MRI of brain which showed no intracranial mass, but mild (milder than Dandy Criteria) evidences of high intracranial pressure. So, patients were referred to neurologist for lumbar puncture to check the intracranial pressure. Also, our routine systemic work up for optic neuropathy, including serum level of vitamins A, D and B12 had been done in all of patients
- **Results:** : Four of our nine (45%) cases were male. Seven out of nine (78%) had frequent headaches in their past medical history. Seven (78%) were overweight or obese. In all (100%) of our patients intracranial pressure was significantly higher than normal. Cerebrospinal fluid (CSF) opening pressure ranges were 26 to 49 cm H₂O. All cases were treated with oral acetazolamide. Eight (89%) of cases had adequate follow-up and most of these had some visual improvement
- **Conclusion:** According to our finding, we suggest that patients with Retinitis Pigmentosa should have work up for high intracranial pressure including OCT of peri-papillary nerve fiber layer (NFL) and macula, looking for any thickening or thinning of NFL and/or ganglion cell layer (GCL). We have established that one major cause of vision loss in RP patients is optic neuropathy secondary to associated PTC, which if undiagnosed may destroy their optic nerves and make them poor candidates for retinal implants

Doroodgar, Farideh

Multifocal intraocular lenses for unilateral cataract in children

- **Authors:** Farideh Doroodgar, MD1, Sana Niazi, MS2, Azad Sanginabadi, MSc1, Cyrus Alinia, PhD3
- **Affiliation:** Negah eye hospital
- **Purpose:** To assess the implantation of apodized diffractive multifocal intraocular lenses (IOLs) in children with unilateral cataract.
- **Methods:** three children between 9 and 12 years of age with unilateral cataract had cataract extraction and implantation of an apodized diffractive multifocal IOL (AcrySof Restor SN60D3). Phacoaspiration was accompanied by posterior capsulorhexis followed by an anterior vitrectomy. Uncorrected distance, corrected distance, and corrected near visual acuities; binocular function using the Worth 4-dot test and the TNO stereotest; and subjective symptoms such as glare and halos were evaluated over 6 months of follow-up.
- **Results:** At the final follow-up visit, the mean UDVA was 0.45 \pm 0.149 logMAR and the mean CDVA was 0.30 \pm 0.06 logMAR with 20/32 in 2 eyes, 20/50 in 1 eye. The mean CNVA was 0.11 \pm 0.06 logMAR (about 20/25) with J1 in 2 eyes, J2 in 1 eye. The stereoacuity was 120 seconds of arc (arcsec) in 2 patients, 240 arcsec in 1 patient. The Worth 4-dot test showed that all patients had fusion. None of the all patients complained about halos or glare. No IOL decentration was observed in any patient.
- **Conclusion:** Implantation of an apodized multifocal IOL is by all accounts an acceptable option to monofocal pseudophakia in children with unilateral cataract.

Doroodgar, Farideh

Simultaneous replacement of stromal donor lenticul in cornea with ectasia during Smile surgery

- **Authors:** Farideh Doroodgar, Azad Sanginabadi, Sana Niazi
- **Affiliation:** Negah eye hospital

- **Purpose:** The aim of the present study was to investigate the feasibility and effects of Simultaneous replacement of stromal donor lenticul in cornea with ectasia during Smile surgery
- **Methods:** Six patients with decreased visual acuity due to corneal ectasia were included in this prospective pilot study. These lenticules were extracted during SMILE procedures using the VisuMax femtosecond laser (Carl Zeiss Meditec) on 6 donors with myopia and Simultaneous replacement of stromal donor lenticul in cornea with ectasia. Pre- and postoperative (1 or 3 days, 1month, and 6 months) slit lamp microscopy, corneal topography, anterior segment optical coherence tomography, and in vivo confocal microscopy were performed.
- **Results:** The surgeries and postoperative follow-up examinations were uneventful and no complications were noted over 6 months of follow-up. At the last measurement, the corrected distance visual acuity of all recipient eyes gained at least two lines. 2 eyes (33.3%) gained at least two lines of uncorrected distance visual acuity compared to their preoperative levels. Mean keratometric power increased by 5.97 ± 3.73 diopters and central corneal thickness increased by 55.25 ± 36.38 μm . Anterior segment optical coherence tomography observation showed the lenticule was transparent with a visible demarcation line during the follow-up examination.
- **Conclusion:** This technique seems to be feasible and safe for increasing corneal stromal thickness and changing corneal refractive power, which may provide a useful method for treatment of keratoectasia, presbyopia, and hyperopia.

Doroodgar, Farideh

Clinical Outcomes of Small Incision Lenticule Extraction with Accelerated Cross-Linking (ReLex SMILE Xtra) in Patients with thin cornea: six months follow-up

- **Authors:** Farideh Doroodgar, MD1, Sana Niazi, MS2, Azad Sanginabadi, MSc1, Cyrus Alinia, PhD3
- **Affiliation:** Negah eye hospital
- **Purpose:** To study the safety and clinical outcomes of ReLex SMILE with accelerated cross-linking in eyes with thin cornea.
- **Methods:** six eyes with thin cornea, corrected distance visual acuity 20/40 or better, stable refraction of at least 1 year, age 18 years or older, and residual corneal thickness of greater than 400 μm before performing collagen crosslinking were studied. Following the removal of lenticule, 0.25% riboflavin in saline was injected into the interface and allowed to diffuse for 60 seconds. Finally, eye was exposed to UV-A radiation of 45mW/cm² for 75 seconds through the cap. Total energy delivered was 3.4 J/cm².
- **Results:** 3 patients with mean age of 26.75 ± 5.99 years were treated. Mean follow-up was 6 months ± 28.12 days. Mean spherical equivalent (SE) was $-5.02 \pm 2.06\text{D}$ preoperatively and $-0.24 \pm 0.18\text{D}$ postoperatively. The mean central corneal thickness (CCT) and keratometry changed from 501 ± 25.90 μm to 415 ± 42.26 μm and $45.40 \pm 1.40\text{D}$ to $41.2 \pm 2.75\text{D}$, respectively. Mean uncorrected visual acuity (UCVA) was 20/25 or better in all eyes. No eyes lost lines of corrected distant visual acuity (CDVA). There were no complications like haze, keratitis, ectasia, or regression.
- **Conclusion:** Based on the initial clinical outcome it appears that SMILE Xtra may be a safe. although further follow-up and larger samples are needed to fully confirm these findings, the results suggest that combined small-incision lenticule extraction and intrastromal corneal collagen crosslinking are a promising treatment option for patients for whom conventional laser refractive surgery is contraindicated

Entezari, Morteza

Combination of intravitreal Bevacizumab and Erythropoietin versus intravitreal bevacizumab alone for refractory diabetic macular edema; a randomized double-blind clinical trial

- **Authors:** Morteza Entezari MD. Zahra Kiani Flavarjani MD. Alireza Ramezani MD. Humayon Nikkhah MD. Saeed Karimi MD. Hamid Fateh Moghadam MD. Narsis Daftarian MD. Mehdi Yaseri, PhD.
- **Affiliation:** 1. Ophthalmic Research Center, Department of Ophthalmology, Imam Hossein Medical Center, Shahid Beheshti Medical Sciences, Tehran, Iran
- **Purpose:** To evaluate the effect of three intravitreal bevacizumab (IVB) injection alone or in combination with intravitreal erythropoietin (EPO) in the treatment of refractory diabetic macular edema (DME).
- **Methods:** In a randomized double-blind clinical trial, 48 eyes of 34 diabetic patients with refractory DME were

enrolled. Eyes were randomly assigned to receive either 3 monthly injections of 0.05 cc (1.25mg) IVB plus 0.05 cc (1000 Unit) EPO or 0.05 cc (1.25mg) IVB alone. Main outcome was best-corrected visual acuity (BCVA) changes and secondary outcome was central macular thickness (CMT). The patients were followed for 6 months.

- **Results:** Mean BCVA changes up to 4 and 6 months were insignificant in both groups. It changed from 0.72 ± 0.56 logMAR at baseline to 0.74 ± 0.5 ($P=0.85$) and 0.71 ± 0.44 ($P=0.40$) in the combination group and from 0.48 ± 0.39 logMAR to 0.47 ± 0.35 ($P=0.48$) and 0.52 ± 0.33 ($P=0.69$) in the IVB alone group, at 4 and 6 months, respectively. The difference of mean BCVA changes between the groups were insignificant at both 4 and 6 months ($P=0.07$ and $P=0.36$, respectively). Within the group changes of mean CMT were significant only in the combination group at 4 and 6 months, from $518 \pm 134 \mu$ at baseline to 472 ± 151 to $475 \pm 167 \mu$, respectively ($P=0.01$ and $P=0.05$). Corresponding changes were not significant in the IVB alone group. However, the difference between the groups was not significant at all visits ($P=0.51$ and $P=0.71$, respectively).
- **Conclusion:** This clinical trial demonstrated that intravitreal erythropoietin had no additional effect to IVB in the treatment of refractory DME in short term.

Eshaghi, Mohammad

Factors affecting the Anatomical and Functional Success rate in Canalicular Laceration Repair

- **Authors:** Mohammad Es haghi, Nase Aghaie, Sarvin Es haghi
- **Affiliation:** shahid beheshti medical university
- **Purpose:** To evaluate the factors determining the anatomical and functional results in primary canalicular laceration repair
- **Methods:** In this observational study, we reviewed the medical records of all cases underwent primary canalicular laceration repair in a tertiary hospital between 2016 and 2018. All cases were repaired by monocalanicular stent (Minimonoka). Anatomical and functional patency were assessed by the presence of epiphora, lacrimal system irrigation, dye disappearance test and scintigraphy. The effect of demographic characteristics, causes of canaliculum laceration, accompanying orbital injuries, anatomical location of laceration, and time of repair were evaluated.
- **Results:** Out of 210 eyelid laceration, 40 cases (82% male) with mean age of 33 ± 17 years (ranged, 4-77) with canalicular laceration were included in the study. The causes of injury were car accident (45%), occupational injury (20%), quarrel (20%) and others (15%). Laceration of the distal part of canaliculum occurred in 75% and the proximal part in 25%. Lower canaliculum was involved in 65% of the cases and bicanalicular injury in 18%. Eighty percent of the cases were repaired in less than 48 hours from the injury. Anatomical patency, confirmed by irrigation test, was achieved in 93%. Epiphora improved in 75%. Multivariate analysis demonstrated that laceration of distal part had lower success rate ($P<0.05$). The lower success rate was also seen in cases with repair after 48 hours ($P<0.05$). Symptoms and dye disappearance test were relatively abnormal in lower canaliculi laceration, complex injuries and delayed operation time.
- **Conclusion:** Our results showed that the primary canalicular laceration repair using monocalanicular stent have an overall excellent anatomical success rate. Proximity of laceration and early repair may improve the outcome. Distal laceration location, lower canaliculi laceration and accompanying orbital injuries could deteriorate the functional success rate.

Eslami, Fateme

Prevalence of increased intraocular pressure in patients with Graves' ophthalmopathy and association with ophthalmic signs and symptoms

- **Authors:** Fatemeh Eslami, Mehdi Alizadeh
- **Affiliation:** 1Department of Ophthalmology, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran
- **Purpose:** Graves' ophthalmopathy (GO) is the most common extra-thyroidal manifestation of Graves' disease and is characterized by multiple ocular symptoms such as eyelid retraction, lid lag, proptosis, elevated intraocular pressure (IOP) and ultimately loss of vision. We aimed to investigate the prevalence of increased IOP in Graves' patients and association with ophthalmic signs and symptoms in north-west of Iran
- **Methods:** This descriptive cross-sectional study recruited 93 patients with GO who were diagnosed based on

- clinical and laboratory examinations. A complete ocular examination and IOP measurements on forward gaze were performed using Goldman applanation tonometer.
- **Results:** In this study, 93 patients with GO were evaluated from 2016 to 2017. Among these patients, 67 (72.05%) were female and 27 (27.95%) were male. The most common complaints of patients were lid retraction (62.36%), puffy eyelids (58.06%) and proptosis (46.23%), respectively. The duration of disease was 0–24 months in most patients. Most subjects were at grade 3 according to NOSPECS classification. Nine patients (9.6%) had an IOP greater than or equal to 21 mmHg. The mean IOP in subjects was 16.61 ± 3.42 mmHg. The mean IOP in males and smokers was significantly higher than that of females and nonsmokers. The mean IOP increased significantly with a higher grade of disease, duration of disease, age and smoking
- **Conclusion:** According to the results, females comprised the majority of the study population, while ocular complications were more prevalent among males. The highest IOP was seen in old cases of GO. The most prevalent ocular signs in patients were eyelid retraction and periorbital edema. The least prevalent sign was glaucomatous optic neuropathy. In this study, the prevalence of intra-ocular hypertension was higher than that of the general population, especially in males, old cases with a drug history of antithyroid medication and smokers.

Esmaeili, Mahdad

Automatic Detection of Glaucomatous Optic Nerve Head from Optical Coherence Tomography Retinal Images

- **Authors:** Zahra Rafati, Yashar Sarbaz, Fedra Hajizadeh, Mahmood Rafati, Mahdad Esmaeili
- **Affiliation:** Tabriz University of Medical Sciences
- **Purpose:** To develop an automatic method for detection of glaucoma from Spectral domain optical coherence tomography (OCT) images by image processing algorithms instead of traditional manual time consuming and labor intensive detection method for glaucomatous optic nerve head (ONH) objects.
- **Methods:** This study included 299 glaucoma patients, and 576 healthy participants with good quality OCT B-scans images (768×496) taken with the Spectralis OCT-Heidelberg Engineering, Germany. The images were classified into normal or glaucomatous types by 2 glaucoma specialists. Randomly, 656 B-Scans were selected for training data and 219 for test data. A deep convolutional neural network (CNN), as the most successful and widely used deep learning model was trained with the training data and evaluated with the test data.
- **Results:** The method is developed with least complicated algorithms and the results show considerable improvement in accuracy of detection the glaucoma over similar methods. The automated classification results were compared to manual results from two glaucoma specialists. The validated accuracy against test data for the CNN was 95%.
- **Conclusion:** OCT analysis of the ONH is useful for early glaucoma detection. This method having an acceptable result can be effective in automatic diagnosis of glaucoma and the proposed machine learning system has proved to be good identifiers for different type of Optic disk with high accuracy.

Esmaeilkhani, Houri

Asian Iranian Blepharoplasty and Anchor Epicanthoplasty

- **Authors:** Mohsen Bahmani Kashkouli, MD, Houri Esmaeilkhani, MD, Nasser Karimi, MD, Behzad Khademi, MD.
- **Affiliation:** Eye Research Center, The Five Senses Institute, Iran University of Medical Science, Tehran, Iran
- **Purpose:** Anchor Epicanthoplasty (Ep) technique has just appeared in a couple of articles previously. There is no study on Asian Iranian subjects. The aim of this retrospective study is to report the results of blepharoplasty and anchor epicanthoplasty in Asian Iranian subjects.
- **Methods:** Excluded were other Ep and associated eyelid / eyebrow procedures. Photography (Canon, Melville, same setting), and surgery were performed before and at least 12 months after surgery by a surgeon. Epicanthal fold (EF) severity (1: no, 2-4), intercanthal distance (ICD), upper lid margin to superior brow distance (LM-SB), brow fat span (BFS), tarsal plate show (TPS), marginal reflex distance 1 (MRD1) were recorded on photo analysis by a masked observer. While patients with grade 2 (mild) EF was just offered an anchor Ep, higher grades could choose other techniques. Manchester scar scale score (MSSS, 4-14, the higher the worse), visual analogue scale score (VAS; 0-100, the higher the better), and complications were also recorded.

- **Results:** Out of 204 eyelids (102 patients), 70 eyelids of 35 patients (28 females) with a mean age of 29.2 and Median follow up of 12 months were included. EF was disappeared (grade 1) in all eyelids with grade 2 (51 eyelids), 11 out of 14 with grade 3, and 1 out of 4 with grade 4. Mean ICD (3.3 mm); LM-SB (1.7-2.9 mm) and BFS (3.2-3.7 mm) at 3 different sites significantly ($P < 0.01$) decreased. However, MRD1 (0.26 mm) and TPS (1-1.5 mm) significantly ($0.01 < P < 0.04$) increased. There were a high mean satisfaction score (97.3) and low mean scar score (5.3). Two eyelids (2.8%) required re-operation of epicanthoplasty.
- **Conclusion:** Anchor Ep on Asian-Iranians resulted in the disappearance of EF in all grade 2 and the majority of grade 3 EF. Blepharoplasty led to significantly increase in MRD1 and TPS as well as a decrease in LM-SB and BFS.

Fata, Abdolmajid

Diagnosis of Acanthamoeba Keratitis in Mashhad during 2016 -2017, a Gene-Based PCR Assay

- **Authors:** Fata A1,2, Sedaghat MR3, Khosravinia N1, Moghaddas E1, Hosseini BR1,2, Eslampour A 3, Jarrahi L4
- **Affiliation:** 1. Department of Medical Parasitology and Mycology, Faculty of Medicine, Mashhad University of Medical Science, Mashhad, Iran. 2. Cutaneous Leishmaniasis Research Center, Mashhad University of Medical
- **Purpose:** Acanthamoeba is a free-living opportunistic protozoan Amoeba which widely distributed in soil, water sources, dust and contact lens solutions. Acanthamoeba keratitis (AK) which causes a sight-threatening infection of the cornea is going to rise in Iran and worldwide. The aim of this study was: to compare three different methods; PCR, microscopic examination and culture for detection of Acanthamoeba in clinical samples, and genotyping of Acanthamoeba by sequencing of 18SrRNA gene.
- **Methods:** 18 specimens of corneal scrapes were obtained from suspected AK patients that referred to the Ophthalmology Hospital of Khatam-al-Anbia of Mashhad, Iran, between August 2017 and November 2018. The samples were divided in three parts and subjected to direct microscopic examination, cultivation onto the non-nutrient agar plate and PCR Technique
- **Results:** The results showed that 13(72%) of these patients infected with AK. Majority of patients were female (61%). Appearance of a stromal ring shaped infiltrate was the most common sign. On using culture as the gold standard, sensitivity and specificity of PCR and direct microscopic examination were 100 % (95% CI, 59.0 - 100.0%), 45.45% (95% CI, 16.7 - 76.6%), 57.14% (95% CI, 18.4 - 90.1%) and 90.9% (95% CI, 58.7 - 99.8%), respectively. Also positive predictive value, negative predictive value of PCR and direct microscopic examination were calculated 53.8%, 80%, 100% and 76.9%. Sequencing analysis demonstrated that all strains belonged to T4 genotype.
- **Conclusion:** PCR based on 18S ribosomal DNA (rDNA) is a reliable and sensitive method in the diagnosis of AK in clinically suspected cases. It can set up in diagnostic laboratories as an easy diagnostic tool.

Ghiasian, Leila

safety of subconjunctival injection of doxycycline in rabbit eyes.

- **Authors:** Leila Ghiasian, Abbas Habibi, Roshanak Aliakbar Navahi, Ali Hadavandkhani, Shadi Akbarian, Sayyed Amirpooya Alemzadeh, Maryam Ashraf Khorasani
- **Affiliation:** eye research Center, the five senses institute, Rassoul Akram Hospital, Iran University of Medical Sciences
- **Purpose:** To evaluate the safety of subconjunctival injection of doxycycline in rabbit eyes.
- **Methods:** Eight white New Zealand rabbits were selected. Different concentrations of 250 micrograms (μ g), 500 μ g, 1000 μ g, and 2000 μ g in 0.1 ml were prepared for subconjunctival injection. Each concentration was injected into the two eyes of each rabbit. For each dose, dextrose was injected in one contralateral eye and the other fellow eye remained non-injected. All rabbits underwent ocular examination in the 1st, 3rd, and 30th day after injection. The rabbits were sacrificed 30 days after injections and the histopathological examination was performed.
- **Results:** No obvious change was detected in all four groups from the 1st day to the 3rd day after injection in terms of tearing, hyperaemia, and chemosis. There was no visible sign of inflammation or necrosis, and also no histological change in both clinical and histopathological examinations

- **Conclusion:** Subconjunctival injection of doxycycline with different dosages of 250 to 2000 ug in 0.1cc in rabbit eyes was safe and no clinical or histological changes were observed after one month.

Habibi, Abbas

Retinal and optic disc micro vascular changes after acute intraocular pressure elevation in healthy and diabetic patients measured by optical coherence tomography angiography

- **Authors:** Maryam Ashraf Khorasani, Pasha Anvari, Abbas Habibi, Sharyar Ghasemizadeh, Khalil Ghasemi Falavarjani
- **Affiliation:** Eye Research Center, Rassoul Akram Hospital, Iran University of the Medical Sciences, Tehran, Iran
- **Purpose:** : To assess the microvascular change of the optic nerve head and macula after acute rise of intraocular pressure (IOP) in normal and diabetic eyes.
- **Methods:** In this prospective, interventional, comparative study, ten normal and sixteen diabetic eyes without diabetic retinopathy (NDR) or with mild non-proliferative diabetic retinopathy (NPDR) were enrolled. IOP rise induced by a suction vacuum attached to the sclera. IOP was measured and optical coherence tomography angiographic (OCTA) images were obtained from the optic disc and macula, before and after IOP rise. The repeatability of the device in the vessel density measurements was calculated by analyzing the two consecutive imaging-derived data of the subjects before the intervention.
- **Results:** The change in IOP after activation of the suction was significant in all three groups (all $P < 0.05$). There was no significant difference in the amount of IOP change between the three groups (all $P > 0.05$). The changes in the vessel density in the macular deep and superficial capillary plexus was statistically significant in whole image and parafoveal area in normal subjects (all $P < 0.05$). Also, the change in the vessel density was significant in the inside disc measurements in NPDR. Other microvascular changes were not statistically significant. All microvascular changes in all three groups were less than the measurement repeatability of the OCTA device.
- **Conclusion:** Acute rise of IOP may induce different levels of microvascular changes in healthy and diabetic eyes. The results of this study may shed a light on the autoregulation mechanisms of the microvascular networks. Financial Disclosure: No

Hasani, Hamidreza

Laser Assisted Eye Color Change Using SYL 9000 Nd: YAG Laser

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- **Purpose:** To investigate color changing effect of Nd: YAG laser on the surface of domestic sheep iris and to review the current literature on eye color changing methods.
- **Methods:** We extracted the iris of a domestic sheep and applied Nd: YAG laser on the surface. The Laser wavelength setting was 1064 nm, energy of 6 mj, spot size of 8 microns and 1 pulse for each burst. Then we reviewed the literature and added the available eye color changing methods.
- **Results:** The targeted spots were all depigmented without puncturing the iris. When a – 20 D was placed between the target and the laser source, the spots were bigger in size.
- **Conclusion:** 1064 nm Nd: YAG laser can effectively depigment the iris surface.

Hasani, Hamidreza

Comparison of Femtosecond Laser versus Mechanical Intrastromal Corneal Ring Segment Implantation in Keratoconus: A Randomized Clinical Trial Study

- **Authors:** Hamidreza Hasani, MD; Bahram Einollahi, MD; Sanam Alilou, Ms; Shirin Rafatnia, Ms

- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran.
- **Purpose:** To compare visual, refractive, and corneal aberrometric outcomes and complications of mechanical and femtosecond laser-assisted tunnel creation for intrastromal corneal ring segments (ICRS) in keratoconic eyes.
- **Methods:** In this prospective study, 56 keratoconic patients were randomly assigned to have ICRS tunnel creation by a mechanical device or a femtosecond laser. Keraring ICRS with a 0.5 mm diameter and different degree arc length were implanted in all cases. All patients had contact lens intolerance and clear central corneas with moderate to severe keratoconus. A complete ophthalmic examination, including uncorrected (UDVA) and corrected (CDVA) distance visual acuities, spherical equivalent (SE), manifest refraction, keratometric readings (orbscan II), ultrasound pachymetry, slitlamp examination were performed before and after surgery. All 3, 6, and 12-month follow-ups were completed and the data in the mechanical group and the femtosecond group were compared statistically.
- **Results:** One year postoperatively, significant improvement was observed regarding the mean UCDVA and CDVA (both $p < .001$). Keratometry readings, SE, and manifest sphere improved in both groups at 3, 6, and 12 months ($p < .001$). The mean reduction in maximum keratometry was 6.38 diopters (D) in mechanical group and 7.04 D in femtosecond laser group. The mean reduction in SE was 4.17 D and 5.47 D, respectively. There was significant improvement in cylinder in femtosecond laser group at 12 months and in mechanical group at 3, 6, and 12 months. The reduction in cylinder was significantly greater in femtosecond laser group at 6 months ($p = .027$). There was no statistically significant difference between the two groups in visual or refractive results ($p > .05$). Bacterial keratitis, superficial segment placement, and segment extrusion in 1 eye, and white sterile deposition in 5 eyes occurred in the mechanical group.
- **Conclusion:** Similar visual and refractive outcomes were achieved by implanting a ICRS using mechanical and femtosecond laser assisted procedures, despite more intraoperative complications in mechanical group.

Hasani, Hamidreza

Pediatric Post-traumatic Orbital Subperiosteal Hematoma: A Case Series and Review of Literature

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- **Affiliation:** Farabi eye hospital, Tehran, Iran; Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran
- **Purpose:** To report a case series of five children presenting with post-traumatic subperiosteal hematoma and review the literature.
- **Methods:** In this study, we described five cases with post-traumatic subperiosteal hematoma in children retrospectively, and reviewed the similar cases in a systematic literature review.
- **Results:** Considering literature review, we included 39 cases in total. The mean age of the patients was 11.31 ± 3.41 , ranging from 4 to 17 years and 79.5% of them pertained to boys. 36 patients (92.31 %) had a history of blunt trauma, falling and direct impaction and the other remaining patients had a history of car accident. 3 patients (7.69 %) had bilateral involvement. The Mean interval time between trauma and presentations was about 10 days. 10 patients (25.6 %) developed compressive traumatic optic neuropathy. Although, final visual acuity was impaired only in 3 of them. Nearly all of the patients had a subperiosteal hematoma in the superior orbital wall. Treatment options mostly included needle aspiration (28.21 %), surgical drainage (53.85 %) and observation for spontaneous resolution in 8 children (20.51 %).
- **Conclusion:** The most popular location for post-traumatic orbital subperiosteal hematoma is the superior orbital wall. Traumatic optic neuropathy and permanent visual loss is uncommon. Observation, surgical drainage and aspiration are common treatment options; however, surgical intervention is more often required.

Hasani, Hamidreza

Unilateral Idiopathic Lipid Crystalline Keratopathy: A Rare Case Report

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- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran.

- **Purpose:** To report a case of unilateral idiopathic lipid crystalline keratopathy involving adjacent limbus.
- **Methods:** A 54-years-old female referred to Cornea clinic because of gradually decreased visual acuity since 10 years ago. On ocular examination, a mostly inferotemporal located, 8 by 7 mm, whitish corneal mass was seen on left eye without any vascularization. History of systemic lipoprotein disorders or lipid dystrophies of cornea was negative. Confocal scan and finally histopathologic exam confirmed the diagnosis. The fellow eye ocular exam was completely normal with distant BCVA of 10/10.
- **Results:** Due to visual axis involvement and decreased vision, the patient undergone penetrating keratoplasty. There was no recurrence of disorder within six-months follow-up.
- **Conclusion:** In cases of corneal lipid deposition, serum lipids level should be evaluated and ocular disorders cause secondary lipid keratopathy should be considered. Unilateral primary lipid keratopathy is extremely rare, but should be contemplated as a diagnosis of exclusion.

Hashemian, Seyed javad

Visual and Refractive Outcomes and Tomographic Changes of One Segment Femtolaser Assisted Intrastromal Corneal Ring Implantation based on severity of Keratoconus

- **Authors:** Seyed Javad Hashemian; MD., Leila Ghiasian MD., Ali Hadavandkhani, MD., Mohammad Ebrahim Jafari; MD.
- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences and Iranian Eye Clinic, Tehran, Iran
- **Purpose:** To assess the visual and refractive outcomes and tomographic changes after femtosecond laser-assisted implantation of a single-segment intrastromal corneal ring (ICRS; Intacs® SK) in the early stages of Keratoconus.
- **Methods:** In retrospective interventional case series study; One segment Intacs SK ICRS was inserted using a femtosecond laser into eyes with stage I–II Keratoconus. Visual and refractive outcomes and corneal tomography changes were analyzed 1 week, 2 and 6 months postoperatively.
- **Results:** The study evaluated 155 eyes of 123 patients (mean age: 31.3 years). At six months post operation, the spherical equivalent, mean sphere, and mean cylinder were decreased by 0.97, 1.22, and 1.29 diopters (D), respectively. The mean preoperative uncorrected (UDVA) and corrected distance visual acuity (CDVA) increased from 0.78 ± 0.20 to 0.39 ± 0.21 and from 0.45 ± 0.18 to 0.18 ± 0.14 LogMAR ($P < 0.001$), respectively. Steep and Flat Keratometry, Mean K and anterior and posterior best fit sphere decreased significantly ($P < 0.001$). Among all eyes, 94.0% gained one or more lines of CDVA. Mean internal anterior chamber depth decreased from 3.21 ± 0.33 to 3.12 ± 0.33 mm ($P = 0.001$), and mean irregularity in the 3 mm zone decreased from 4.74 ± 1.68 to 3.89 ± 1.24 ($P < 0.000$).
- **Conclusion:** Implantation of one segment Intacs SK is safe and effective to treat Keratoconus, especially in stage I–II, leading to significant improvement in UDVA, CDVA, and refractive error.

Hashemian, Seyed javad

Long-term Visual and Refractive Stability and Ocular Biometric changes after Customized LASEK for Correction of Myopia (8 Years follow up)

- **Authors:** Seyed Javad Hashemian; MD., Acieh Eshaghi MD., Mohammad Ebrahim Jafari; MD.
 - **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences and Iranian Eye Clinic, Tehran, Iran
 - **Purpose:** To Assess the long-term Visual and refractive stability and ocular biometric changes in low to moderate myopic subjects treated by customized LASEK.
 - **Methods:** In retrospective interventional case series study; 70 eyes of 35 patients that were treated by customized LASEK for correction of myopia < 6.0 diopter were included. Uncorrected and distant corrected visual acuity (UCVA & DCVA), refractive outcomes and ocular biometric changes by LENSTAR LS900 (keratometry, anterior chamber depth (ACD), lens thickness and axial length) were evaluated preoperatively and eight years after operation.
- Results:** The mean pre operative spherical equivalent was -3.99 ± 1.37 diopter (D) that improved to -0.01 ± 0.27 and

- $-0.11 \pm .32$ D 6 months and 8 years post operation respectively. The mean cylinder was $-0.75 \pm .66$ that improved to $-.19 \pm .28$ and $-0.22 \pm .32$ D respectively. At 6 months and 8 years Log Mar UCVA and CDVA was 0.001, 0.000, 0.024, and 0.002. Keratometry and pachymetry decreased significantly after surgery but was stable during study. ACD decreased and lens thickness increased significantly over 8 years follow-up. Axial length wasn't changed significantly.
- **Conclusion:** The long-term visual and refractive outcomes of customized LASEK in correction of low to moderate myopia are stable and predictable, although ocular biometric changes occurred.

Hashemian, Seyed javad

Ocular Biometric Data and Prevalence of Corneal Astigmatism in Patients' Candidate for Cataract Surgery

- **Authors:** Seyed Javad Hashemian,MD. Seyed Mahyar Hashemian,MD. Ali Hadavandkhani, MD. Mohammad Ebrahim Jafari MD.
- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences and Iranian Eye Clinic, Tehran, Iran
- **Purpose:** To present and analyze the biometric data and the prevalence of corneal astigmatism in cataract surgery candidates.
- **Methods:** Ocular biometric and keratometric values were measured before surgery in patients having cataract extraction. Descriptive statistics of biometric and keratometric cylinder data were analyzed and correlated by sex and age ranges.
- **Results:** Ocular biometric and keratometric data from 2084 eyes of 2084 patients (mean age 66.43 ± 10.61 [SD]; range 19 to 95 years) were analyzed. The mean values were as follows: Corneal astigmatism, 0.89 ± 0.69 D.; Mean corneal keratometry, 44.28 ± 1.40 D ; Central corneal thickness, 534 ± 35 μm; ACD, 3.11 ± 0.39 mm; Lens thickness, 4.49 ± 0.49 mm and AL, 23.35 ± 1.17 (SD). 79% of eyes had corneal astigmatism lesser than 1.250 diopters (D), 14% of eyes greater than 1.250 D and 7.0% of eyes greater than 2.0 D. Astigmatism was with the rule (WTR) in 48.4% of eyes, against the rule in 32.3%, and oblique in 19.3%. High astigmatism was predominantly WTR. The ACD and axis of astigmatism were correlated with age. There was no correlation between age and sex with the amount of corneal astigmatism.
- **Conclusion:** Corneal astigmatism less than 1.25 D was present in most cataract surgery candidates; it was higher in about 21%, with slight differences between the various age ranges. This information is useful for surgeons to make decision that which IOLs provide the most effective power range and how to manage the coexisting corneal astigmatism.

Hassanpoor, Narges

Comparison of Conventional and Pattern Scanning Pan-retinal Photocoagulation on Diabetic Patients' visual field

- **Authors:** Mohamadreza Niyousha¹, Mohamadhosein Ahoor¹, Amir Abdollah Eftekhari ¹, Sasan Jafari², Narges Hassanpoor³
- **Affiliation:** Farabi Eye Hospital
- **Purpose:** to compare visual field defects in two different methods of conventional pan retinal photocoagulation (PRP) and Pattern Scanning PRP in patients with proliferative diabetic or very severe non- proliferative diabetic retinopathy.
- **Methods:** Twenty patients with proliferative or very severe non-proliferative diabetic retinopathy were enrolled. Only patients with same severity score in both eyes were included. One eye underwent the Conventional PRP and the other eye Pattern Scanning PRP simultaneously. SITA Standard perimetry was repeated one month after the initial PRP and evaluated for visual field defects.
- **Results:** Pattern standard deviation (PSD) significantly increased in both pattern and conventional PRP groups within one month after PRP. There was no significant difference between the mean PSD values of the two groups before PRP and after one month of the follow-up. The mean deviation (MD) level significantly decreased in the conventional group after 1 month.
- **Conclusion:** Changes in visual acuity and visual field of patients between the two Pattern and conventional PRP

- methods did not show a significant difference but pattern PRP method causes less reduction of the overall sensitivity in the patient's visual field.

Hassanpoor, Narges

Intravitreal Bevacizumab injection outcomes in Aggressive Posterior retinopathy of prematurity compared with type one retinopathy of prematurity

- **Authors:** Amir Eftekhari Milani¹, Narges Hassanpoor², Mohammadreza Mousavimirkala¹, Arash Taheri¹, Ali Golizade³, Mohamad Reza Niyousha¹,
- **Affiliation:** Farabi Eye Hospital
- **Purpose:** To compare type I retinopathy of prematurity (ROP) with aggressive posterior retinopathy of prematurity (AP-ROP) regarding risk factors, complications and treatment outcomes.
- **Methods:** A prospective cohort approach was applied on premature newborns diagnosed as Type I ROP and AP-ROP. An intravitreal injection of bevacizumab (Avastin®) was given to each patient. Demographic features such as gestational age, birth weight, age at the initial injection, involved eye, treatment response, relapses and need to extra interventions were compared.
- **Results:** Seventy-seven patients underwent an initial intravitreal injection of Bevacizumab (IVB), 108 eyes were type I ROP and 30 eyes were A-P ROP. There was no significant difference in birth weight and gestational age (GA) between two groups. ROP relapsed in 8 eyes of 4 patients with A-P ROP (26.6 %), of which 6 eyes of 3 patients received re-injection of bevacizumab, and 2 eyes of one patient underwent a laser treatment. Recurrence occurred in 2 eyes of one patient with Type I ROP (1.8 %), which were treated by laser.
- **Conclusion:** Bilateral eye involvement, relapse and retreatment (IVB, laser and surgical intervention) are more frequent in A-P ROP than type I ROP even when treated with intravitreal Bevacizumab injection.

Hassanpoor, Narges

Effect of Scleral Buckling Surgery on Accommodation Amplitude: Compared with normal fellow eyes

- **Authors:** Narges Hassanpoor MD-MPH, Nazanin Ebrahimiadib M.D, Mohammadreza Niyousha M.D,
- **Affiliation:** Farabi Eye Hospital
- **Purpose:** To demonstrate whether scleral buckling surgery can increase accommodation amplitude in patients.
- **Methods:** Non-randomized, prospective, double masked clinical trial in which the fellow eye of all patients served as control.
- **Results:** Seventy- four eyes of 37 patients were studied. Thirty- nine eyes of 37 patients underwent scleral buckling surgery due to retinal detachment. Two patients underwent bilateral surgery due to bilateral retinal detachment. Thirty six of 39 operated eyes (92.3%) were phakic and 3 eyes were pseudophakic. In phakic eyes there was a statistically significant more accommodation amplitude in scleral buckled eyes in comparison with their fellow eyes 1 month (P value: 0.002) and 3 months (P value: 0.001) post- operatively; However the amount of increase in accommodation amplitude was not clinically significant (0.99 diopters one months and 1.17 diopters 3 months post-operatively). This increase in amplitude of accommodation was not statistically significant in pseudophakic eyes; However, this can be due to limited pseudophakic cases and low power of this study in this subgroup. Patients who underwent encircling band surgery did not show significantly more accommodation amplitude change both 1 and 3 months after surgery in comparison with segmental sponge placement (P value 0.37 and 0.38 respectively). However, both buckle types showed statistically significant more AA in operated eye in comparison with their fellow virgin eye. In segmental sponge surgeries patients with inferior quadrants sponge fixation showed significantly higher accommodation amplitude change in comparison with superior quadrants sponge. Patients with better post-operative best corrected visual acuity (BCVA) and age under 40 showed more increase in accommodation amplitude. There was a negative correlation between buckle distance from limbus and accommodation amplitude (P value: 0.04).
- **Conclusion:** Scleral buckling surgery can increase accommodation amplitude in phakic retinal detachment patients. However, the amount of increase is limited.

Oguchi disease associated with keratoconus: A case Report

- **Authors:** Ahmad Mirshahi MD.1, Narges Hassanpoor MD_MPH.1, Hassan Khojasteh M.D. 1, Mohammad Reza Baradaran M.D.
- **Affiliation:** Farabi Eye Hospital
- **Purpose:** To describe a case of genetically proven Oguchi disease associated with keratoconus for the first time from Iran.
- **Methods:** A 22-year-old Female came to a cornea specialist to do refractive surgery but due to abnormal Pentacam and keratoconus diagnosis, her refractive surgery was hold and corneal cross linking was suggested to her. Due to abnormal yellow sheen in her both eyes funduscopy, She was referred for further evaluation to us. She denied any night-blindness or decreased vision in her both eyes. Best corrected visual acuity was 20/20 in both eyes. Oguchi disease diagnosis was made with presence of obvious Mizuo-Nakamura phenomenon and was confirmed with ERG and Genetic testing. Oguchi is a very rare congenital retinal disorder and less than 100 patients has been reported to date based on our literature review.
- **Results:** We reported first case of genetically proven Oguchi disease from Middle East and first association of this disease with keratoconus in the world to the best of our knowledge.
- **Conclusion:** Oguchi disease can be seen with keratoconus. Although it could be accidental due to high prevalence of keratoconus in our population, further reports in future may suggest a pathogenic linkage between these two eye disorders.

Autosomal recessive bestrophinopathy: Clinical and multimodal imaging characteristics of sixteen cases

- **Authors:** Hassan Khojasteh M.D 1, Nazanin Ebrahimi Adib M.D1, Hamid Riazi Esfahani M.D 1, Alireza Khodabande M.D1, Narges Hassanpoor MD-MPH1
- **Affiliation:** Farabi Eye Hospital
- **Purpose:** To describe ocular abnormalities and imaging characteristics of autosomal recessive bestrophinopathy (ARB).
- **Methods:** Thirty two eyes of 16 patients with ARB diagnosis underwent complete ophthalmic examinations including refraction, anterior and posterior segment examination, Enhanced Depth Imaging Optical Coherence Tomography (EDI-OCT), Fluorescein angiography (FA), Electro-Retino-Gram (ERG) and Electro-Oculo-Gram (EOG). Optical Coherence Tomography Angiography (OCTA) and genetic testing was done in selected patients.
- **Results:** Age at onset was 4-35 year-old. Male to Female ratio was 0.5. All patients were hyperopic except one with less than 1 diopter myopia. EOG was abnormal in 12 cases with near normal ERGs. Four patients did not have enough cooperation to do EOG due to their age. Three patients had advanced angle closure glaucoma and 10 patients (62.5 %) showed thick choroid in EDI-OCT, three of them were same patients with advanced angle closure glaucoma and the other 7 were hyperopic (five of them were more than 4 diopter hyperopic). Retinal schisis unrelated to CNV was observed in 30 eyes of 15 cases (93 %) with cysts mostly located in inner nuclear layer (INL) followed by outer nuclear layer (ONL). Mild peripheral angiographic leakage was seen in only one patient. Subfoveal CNV was seen in 2 cases that responded well to intravitreal bevacizumab.
- **Conclusion:** ARB can have a wide spectrum of ocular abnormalities and may not be easily diagnosed. Pachychoroid and retinal schisis can occur concomitantly. Pachychoroid may be the underlying cause of angle closure glaucoma.

No-pedicled fat grafts in Lower eyelid blepharoplasty, A simple technique with comparable

results

- **Authors:** Heirati A
- **Affiliation:**
- **Purpose:** To evaluate the aesthetic outcome and clinically important complications of no-pedicled fat graft during lower blepharoplasty, the viability of fat grafts and patient satisfaction during at least 6 months follow up
- **Methods:** The authors retrospectively reviewed the charts of patients who underwent transconjunctival lower blepharoplasty with no-pedicled fat graft over a period of 2 years (2016-2018). The viability of fat grafts and cosmetic outcome were assessed by another independent oculoplastic surgeon on the base of tear trough grading system (Barton) by comparing before, one month and 6 months after surgery. Results: the study consists of 95 cases. No complication like hardening of the grafts, graft inflammation, eye movement restriction and diplopia was observed. Tear trough filling and softening was seen in more than 85 percent of cases
- **Results:** The study consists of 95 cases. No complication like hardening of the grafts, graft inflammation, eye movement restriction and diplopia was observed. Tear trough filling and softening was seen in more than 85 percent of cases.
- **Conclusion:** No-pedicled fat graft lower blepharoplasty is an effective procedure with comparable long term results to pedicled fat repositioning procedures. The technique is easier to perform and lacks the complications like hardening and inflammation of pedicled flaps.

Hosseini, Seyedeh Maryam

Genotyping of toxoplasma gondi strains in patients affected by ocular toxoplasmosis

- **Authors:** SeyedehMaryam Hosseini , Elham Moghaddas ,Seyed Aliakbar Shamsian ,Salman Raad, Elham Bakhtiari
- **Affiliation:** Eye Research center ,Mashhad University of Medical Sciences,Department of Parasitology and Mycology, Faculty of Medicine, Mashhad University of Medical Sciences
- **Purpose:** to identify the type ocular toxoplasmosis responsible for retinochoroiditis in patients coming to khatam alanbiya hospital in mashhad in 2017-2018
- **Methods:** 24 patients who have been clinically diagnosed with active toxoplasmic retinochoroiditis at the uveitis clinic in khatam al anbiya hospital , at the same time where given the corresponding treatment and toxoplasma serology tests and PCR for the RE , B1 and GRA6 genes were performed. RE and B1 genes to confirm the presence of toxoplasma gondi and GRA6 gene to indicate it's type. bands were separated using electrophoresis in order to identify their sequence.
- **Results:** Out of 24 patients , 2 patients were excluded from the study because of negative serology results for toxoplasma . 12 (54.5%) patients were females 10 (45.5%) were males. The common complaint in patients was blurred vision (95.5%) and floater (54%) . out of 18 (81.84%) patients who had toxoretinitis in zone 1 , 10 patients (45.5%) due to sight threatening lesion were treated by intravitreal clindamycin + dexamethasone along with oral antibiotics and the rest of patients were only given oral azithromycin and co-trimoxazole. One patient had undergone pp.vitreotomy because of uveitis complications.22 samples were RE positive , 20 samples were B1 positive. Out of 15 samples that were GRA6 positive 10 were sent for sequencing and toxoplasma type 3 was specified.
- **Conclusion:** Type 3 toxoplasma has the highest prevalence in khorasan and is responsible of retinochoroiditis.

Hosseini, Seyedeh Maryam

Evaluation and comparison of choroidal thickness with enhanced depth imaging optical coherence tomography (EDI-OCT) in patients with Behçet disease with and without ocular involvement

- **Authors:** Seyedeh Maryam Hosseini 1, 2, Negar Morrovatdar 3, Mozghan Dolatkah1, Elham Bakhtiari1, Zahra Mirfeizi 4, Mahdieh Azimizadeh 1,2
- **Affiliation:** Eye Research center ,Mashhad University of Medical Sciences

- **Purpose:** To assess sub-foveal choroidal thickness (SFCT) in patients with Behçet disease (BD) using enhanced depth imaging optical coherence tomography (EDI-OCT) and to compare SFCT in patients with and without ocular BD (OBD).
- **Methods:** This was a prospective cross-sectional study conducted on patients with BD (n= 51) between October 2016 to October 2018. Complete ocular examinations including slit lamp exam and fundus examination with dilated pupil were performed for all patients. The SFCT values were compared between patients with and without OBD. EDI-OCT was used to measure SFCT and wide field Fluorescein angiography (WF-FAG) for evaluation of ocular involvement and to determine the active or quiescent phases of Behçet's uveitis. We hypothesize that Changes of SFCT are correlated with changes of WF-FAG scores.
- **Results:** 102 eyes from 51 patients (age range: 29 to 52 years old) (male: 23, female: 28) with BD were studied. The mean age \pm standard deviation in the patients with OBD and patients without OBD was respectively 38.71 ± 7.8 and 36.22 ± 10.59 years. Mean SFCT in patients with OBD was significantly greater than patients without OBD (364.17 ± 93.34 versus 320.43 ± 56.70 μ m; $P=0.008$). Mean SFCT was greater in the active uveitis than quiescent phase (368.12 ± 104.591 versus 354.57 ± 58.701 μ m, $p=0.579$). Moreover, there was a correlation between the changes in SFCT and the scores of FAG; however, it was not statistically significant.
- **Conclusion:** Choroidal thickness significantly increases in BD patients with ocular involvement and during active phase of OBD. EDI-OCT could be a noninvasive test for evaluation of ocular involvement in patients with BD.

Hosseini, Seyedeh Maryam

Serum Levels Of Vitamin D3 In Noninfectious Uveitis Patients

- **Authors:** Seyedeh Maryam Hoseyni, Hamidreza Hakimi, Nasser shoeibi, Seyedeh Zahra Mirfeizi, Negar Morovat dar
- **Affiliation:** Eye Research center ,Mashhad University of Medical Sciences
- **Purpose:** To assess the possible association between Noninfectious uveitis patients serum levels of vitamin D and to compare it with healthy subjects.
- **Methods:** In this case control study, 100 patients with Noninfectious Uveitis in 4 groups(Anterior Uveitis, Posterior Uveitis, Intermediate Uveitis & Pan Uveitis) and 25 normal subjects were included. Groups were compered for serum levels of vitamin D, Ca, P and ALP. Ca,P and ALP were evaluated for other diseases that change serum levels of Vitamin D.
- **Results:** 50 male (39.7%) and 76 female (60.3%) were evaluated. 94% of patients have idiopathic uveitis and 6% of patients have secondary uveitis. 83% have nongranulomatosis uveitis and 17% have granulomatosis uveitis. Mean levels of vitamin D was 21.21 ± 11.96 in anterior uveitis, 21.81 ± 9.65 in posterior uveitis, 21.71 ± 13.27 in intermediate uveitis, 18.1 ± 11.21 in pan uveitis and 23.23 ± 18.58 in control group. Mean levels of vitamin D were not significantly related among all groups.
- **Conclusion:** No difference among all groups in this study base on similar articles was due to high prevalence of hypovitaminosis D in normal population and small size of sampling.

Jadidi, Khosrow

Oral Supplementation of Camelina Oil extract in Dry Eye Patients.

- **Authors:** Hossein Aghamollaei, Mahdieh Rihani, Ali Barzegar, Khosrow Jadidi, Danial Kahrizi
 - **Affiliation:** Vision health Research Center, Semnan University of medical sciences
 - **Purpose:** Camelina sativa is an oil seeded plant. The major component in the Camelina oil composition is the omega-3 fatty acid .The aim of this study was evaluation of the safety and efficacy of Camelina oil extract capsules in patients suffering from dry eye symptoms.
 - **Methods:** A randomized, triple-blind, interventional, placebo-controlled study was done. Fifty three patients were randomized in two groups to receive either two capsules containing 500mg of Camelina oil extract or placebo daily for 3 months. Uncorrected distance visual acuity (UCVA), tear film break-up time (TBUT), Schirmer's test, tear meniscus height (TMH) and Ocular Surface Disease Index (OSDI) score were recorded at baseline and 3 months after intervention.
- Results:** After three months, in Camelina group, the mean TBUT and TMH was significantly improved (P-Value <

- 0.05). Also the OSDI score was significantly reduced from 30.25 to 25.58. (P-Value < 0.05). In Placebo group, the OSDI was significantly reduced from 34.65 to 20. Comparison between these groups showed that UCVA (p=0.040), TBUT (p=0.027) and TMH(p=0.034) were significantly increased in Camelina than placebo group. There was not any serious complication in patients enrolled in this study.
- **Conclusion:** Consumption of 1000 mg of Camelina oil extract is safe in patient with dry eye. This supplement can reduce the dry eye syndrome. For more validation, a multicentral clinical study with large sample size is proposed.

Jadidi, Khosrow

Evaluation of graft survival and clarity after LKP in patients suffering from Delayed-onset Mustard Gas Keratopathy with stem cell deficiency; 3years follow-up.

- **Authors:** Shiva Bagheri, Khosrow jadidi, Seyed Hashem Daryabari, Shiva Pirhadi, Hossein Aghamollaei
- **Affiliation:** Chemical Injuries Research Center, Systems biology and Poisonings Institute, Baqiyatallah University of Medical Sciences, Tehran,Iran
- **Purpose:** To evaluate the results of lamellar Keratoplasty(LKP) in patients with delayed-onset mustard gas keratopathy without stem cell transplantation surgery.
- **Methods:** 28 eyes of 19 veterans with mustard gas keratopathy who underwent LKP were included. The presence of stem cell deficiency in all patients has been proven with impression cytology. Best spectacle-corrected visual acuity (BSCVA), corneal clarity and corneal graft survival rates were evaluated.
- **Results:** The mean patient age was 53.25 ± 6 years and the mean follow-up was 36.07 ± 22 months. The mean preoperative BSCVA was 1.70 ± 0.33 LogMAR which increased to 0.35 ± 0.25 LogMAR after surgery(P<0.05). All corneas were clear without any serious rejection.
- **Conclusion:** It seems that stem cells deficiency in mustard gas keratopathy is partial. According to the results of this study, it seems that unlike previous studies, it is no recommended to perform LPK and stem cell deficiency simultaneously.

Jadidi, Khosrow

Safety and efficacy of the new implantable phakic contact lens for the correction of myopia

- **Authors:** Khosrow Jadidi, Farhad Nejat, Shiva Pirhadi, Hossein Aghamollaei
- **Affiliation:** Vision Health Research Center, Semnan University of Medical Sciences, Semnan, Iran
- **Purpose:** : To evaluation of the safety and efficacy of the implantable phakic contact lens (IPCL V1, Care group Sight Solutions, India) for correction of myopia and myopic astigmatism.
- **Methods:** This study including 28 eyes which underwent IPCL implantation for correction of myopia and myopic astigmatism. Visual acuity and manifest refraction, slit lamp bio microscopy, IOP and endothelial cell density was analysed postoperatively and compared with preoperative visits. Also Intraoperative and postoperative complications were evaluated.
- **Results:** The mean age of patient was 39.9 ± 8.25 years old. the mean follow up was 5.1 months. Preoperative BCVA, sphere and astigmatism was 0.65 ± 0.18 , -6.4 ± 3.1 and -3.7 ± 2.9 respectively. This parameters reach to 0.94 ± 0.07 , -0.2 ± 0.3 and -0.88 ± 0.62 postoperatively. There are significant differences between this parameters at pre and post visits. (P< 0.05). At the preoperative visits, patients showed count fingers vision about 2 meters. The mean post operative UCVA reach to 0.71D (range 0.4 to 1). No intraoperative complications were noted. The endothelial cell loss was $4.08\% \pm 3.18\%$. lens rotation was seen in one patient .One eye developed iris capture lens. No vision threatening complications were noted.
- **Conclusion:** The IPCL is a safe and effective treatment modality for correction of myopia and myopic astigmatism.

Johari Moghadam, Mohammad Mehdi

Dermatochalasis through Decades; A Histopathologic Study

- **Authors:** Mohsen Bahmani Kashkouli, MD, Mohamad-Mehdi Johari-Moghadam, MD, Nasser Karimi, MD, Nasrin Shayanfar, MD, Mohamadreza Aghamirsalim, MD
- **Affiliation:** 1. Eye Research Center, The Five Senses Institute, Iran University of Medical Science, Tehran, Iran 2. Department of pathology, Rassoul Akram Hospital, Iran University of Medical Sciences.
- **Purpose:** Two prior studies (2011, 2018) histopathologically compared the eyelid specimens of patients with dermatochalasis (undergoing blepharoplasty) with a control group and proposed that dermatochalasis may begin with subclinical inflammation leading to elastolysis and secondary lymphostasis. If such changes differ at different ages is not clear which is the aim of this study.
- **Methods:** In a prospective comparative study, 20 right upper eyelid skin of 20 non-smoker, class III Fitzpatrick skin type women (30-68 years old) at 4 age groups (≤ 40 , 41-50, 51-60, ≥ 61 years) were histopathologically examined. Upper eyelid skin was preoperatively marked, intraoperatively removed, postoperatively divided into 3 zones: lateral (lateral limbus to lateral canthus), central (between medial and lateral limbi), and medial (medial limbus to medial canthus), and were separately (totally 60 specimens) sent for histopathological examination. A masked pathologist recorded skin thickness in all specimens (60) as well as lymphatic vessels diameter and density, elastic fiber density, macrophage number, collagen intra-fibril edema, and depth of collagen stromal bed in central zones (20 specimens).
- **Results:** Each age group consisted of 5 right upper eyelids. There was not a statistically significant difference between different age groups and zones regarding all the histopathological measurements. A modest negative correlation was found between macrophage number and lymphatic fiber density.
- **Conclusion:** None of the histopathological characteristics of dermatochalasis was altered by age. Results of this study support the idea that dermatochalasis is not simply an involutional disorder.

Kalantarion, Masomeh

Effects of OPSIM Simulator Training on Satisfaction in Ophthalmic Education

- **Authors:** Masoumeh Kalantarion , MS; Mohammad Ali Javadi, MD; Hossein Ziaei Ardakani H, MD; Mohammad Hossein-Rabei, MD; Reza Torabi MD; Saeed karimi MD; Amin Habibi , MS; Atefeh Hosein nazar,MS; Mohammad Hajipoor BS, Hamideh Sabbaghi MS,MS;
- **Affiliation:** Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
- **Purpose:** To evaluate the use of OPSIM simulator in phacoemulsification by measuring self-confidence and satisfaction among ophthalmology residents and ophthalmologists.
- **Methods:** In this qualitative study, a scientific collaboration was conducted between the Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran and the Atieh Pardazan Sharif Company to develop the OPSIM simulator. In this regard, 15 junior ophthalmology residents and three ophthalmology professors were trained by this simulator for phacoemulsification surgery. Afterwards, all participants were interviewed to measure their satisfaction. Findings interpretation was performed using the content analysis based on Granheim method. The codes, categories and themes were explored by inductive process in which the researchers moved from specific to general concepts.
- **Results:** The participants' experiences identified a number of advantages of OPSIM simulator in education of phacoemulsification which is correspondingly associated with ophthalmology residents' satisfaction, their self-confidence and self- reflection. Reduction surgical complication, eye hand coordination, improvement of time management, high level of motivation, improvement the proficiency level and reduce trials in the operating room were reported.
- **Conclusion:** Our results showed that OPSIM simulator can applied as an effective educational tool in ophthalmic practice accompanying with other common educational approaches.

Karbassi, Esmat

The Efficacy of Kohl(surma) and conventional therapy in treatment of staphylococcal

- **Authors:** Esmat Karbassi¹,Alireza Farsinezhad², Armita shahesmaeili³, Ehsan Ziaesistani¹,Noushin pouryazdanpanah²,Ali Derakhshani², Haleh Tajadini^{*1}

- **Affiliation:**
- **Purpose:** -
- **Methods:** 30 patients were randomized to receive kohl from Saudi Arabia in one eye and erythromycin ointment in contra lateral eye for 90 days. At baseline and during 30 and 90 days of treatment, symptoms, clinical signs and side effects of treatments were recorded. Statistical analysis was carried out using SPSS software, version 19.
- **Results:** There was also a significant difference between intervention and control eyes in baseline mean clinical score (intervention eye: 9.86(2.95) and control eye: 4.30(2.81), $P < .001$). The degree of reduction of related signs and symptoms in eyes treated with kohl was significantly higher than that in the control group (5.2 vs. 2.20 , $P < .001$) for symptoms and (7.40 vs. 2.46, $P < .001$ for clinical signs).
- **Conclusion:** The results of the present study demonstrated a significant improvement in blepharitis related signs and symptoms in both treatment and control eyes. The degree of improvement in eyes treated with kohl was much higher than that in control eyes.

Karbassi, Esmat

Evaluation of new technique Dysport injection for treatment of glabellar line

- **Authors:** Dr.Karbassi, Dr.Nakhei, Dr.Zamanian
- **Affiliation:**
- **Purpose:** To evaluate of efficacy and complication of new technique Dysport injection in frown line
- **Methods:** This cross-sectional study was conducted in 104 patients with moderate-to-severe glabellar lines. In the new technique by reassessing the responsible anatomic muscles of wrinkles, we tried to modify the injection technique of Abobotulinum-toxin A to yield more favorable results. The range and severity of frown lines were assessed by a 4-score test and a photograph taken before and 2 weeks after the injection. Patients were followed up to 180 days after injection.
- **Results:** The response time of 87.5% of patients was within the first 48 hours and the remaining 12.5% showed the symptoms within the first week after injection. At 30 days after injection, the frown lines had disappeared in 88.5% of patients in static mode and 85.6% in mechanic mode. Maximum injection durability in the first 3, 4, and 6 months after injection was 82%, 52%, and 38%, respectively. The amount of complete satisfaction after 3 months was reported to be 86.5%.
- **Conclusion:** This study indicated that the new injection technique of Abobotulinum-toxin A could be beneficial in the treatment of frown lines with more satisfactory results, especially in those patients who were not contented with the present conventional method.

Karimi, Nasser

One Procedure for All" vs. "All Procedures for One" in Congenital Nasolacrimal Duct Obstruction

- **Authors:** Mohsen Bahmani Kashkouli, MD, Nasser Karimi, MD, MPH, Behzad Khademi, MD.
- **Affiliation:** Eye Research Center, The Five Senses Institute, Iran University of Medical Science, Tehran, Iran
- **Purpose:** After a failed conservative management, most clinicians treat congenital nasolacrimal duct obstruction (CNLDO) in a conventional stepwise fashion; starting with probing, then repeat probing, next silicone intubation and/or balloon dilatation, and finally dacryocystorhinostomy. It is based on the patient's age and previously failed procedure and recruits "One Procedure for All" CNLDO at a time. A newly introduced approach is based on the type of obstruction and recruits "All Procedures for One" CNLDO at a time. The aim is to revisit the best available evidence about CNLDO management seeking a preferred therapeutic approach.
- **Methods:** The authors provide a review of the best evidence available (51 articles) in the field of CNLDO treatment in order to firstly address the time to commence the surgery and then show if this is the time to change the age-based to one-stage obstruction-based approach.
- **Results:** Recent articles support the idea that through intraoperative evaluation of obstruction complexity features, clinicians may predict probing failure and instantaneously hire more appropriate treatment modalities. This review

addresses if age-based approach should be changed into one-stage obstruction-based approach.

- **Conclusion:** One-stage obstruction-based (preferably endoscopic) approach (All procedures for one) has the potential to provide a more individualized problem-oriented answer to different types of CNLDO. Regardless of age and previously failed procedure, such an approach targets the main problem (type of obstruction) and has proved to result in a high success rate on unselected CNLDO patients in different situations. It avoids unnecessary failure of simple probing in patients with complex CNLDO, avoids unnecessary invasive procedures (intubation, ballooning) for membranous CNLDO, avoids retreatment sessions and repeat anesthesia, and therefore is more cost-effective. Lacrimal surgeons are recommended to avoid a pre-determining specific intervention when counseling the parents preoperatively. All options should be on table until intraoperative assessment guides which option is the best.

Khademi, Behzad

Forehead Pressure Necrosis following Circumferential Head Dressing: Small Case Series and Comprehensive Review of Literature

- **Authors:** Mohsen Bahmani Kashkouli, MD, Behzad Khademi, MD, Reza Erfanian, MD, Bahram Eshraghi, MD, Nasser Karimi, MD, Meysam Maleki, MD
- **Affiliation:** 1- Eye Research Center, The Five Senses Institute, Iran University of Medical Science, Tehran, Iran
- **Purpose:** we aimed to report 4 patients (from 4 different surgeons) with forehead and eyebrow PUs after endoscopic forehead lift (3 patients) and dermoid excision (1 patient) as well as review the literature to recommend a stepwise approach to forehead PU.
- **Methods:** Literature review was performed (January 2019) using the Medline database on Pubmed with the following search terms: "pressure injury," "pressure ulcer," "pressure necrosis," "pressure sore," "facial pressure injury," "pressure dressing injury," "circumferential dressing injury," "circumferential bandage injury," and "device necrosis." After reviewing the articles, total number of 96 articles were finally included.
- **Results:** PU developed in otherwise healthy subjects after endoscopic forehead lifting (3 patients) and dermoid excision (1 patient) with encircling head dressing (16- 72 hours). It gradually improved with almost no visible scar in one subject and visible scar in 3 subjects at the last follow up. PU occurs in systemically ill patients with: immobility with fixed prolonged position, diabetes, perfusion impairment, and use of medical devices. Head and neck is the most frequent site in device-related PU. External pressure, shearing forces, and reperfusion injury are 3 main contributing factors in its pathophysiology. Prevention is based on management of the underlying diseases, external pressure release, and frequent skin examination. Treatment strategy is according to the stage of PU and presence of concomitant infection which include wound dressing and debridement as well as using antiseptics, antibiotics, and nutrients.
- **Conclusion:** Early loosening of the encircling head dressing and frequent examination of the skin are the only preventive and diagnostic measures. Immediate removal of the pressure and staging of PU are the starting treatment actions. While different wound dressings have been proposed, none has shown a superiority over the others. Wound debridement is an essential step for granulation and epithelialization. Good hydration, sufficient calorie intake, and vitamin/ mineral supplements help heal the PU.

Khalili Pour, Elyas

Safety and efficacy of Stivant® – The new biosimilar of bevacizumab in Iran

- **Authors:** Elias Khalili Pour , Hamid Riazi Esfehiani , Ahmad Mirshahi , Nazanin Ebrahimi Adib , Alireza Lashai ,
- **Affiliation:** Farabi eye hospital
- **Purpose:** The purpose of this study was to evaluate the efficacy and safety profile of intravitreal injection of bevacizumab biosimilar (Stivant) for various retinal neovascular conditions.
- **Methods:** Prospective analysis was carried out on 385 injections which were administered with intravitreal Stivant® injection in Farabi Eye Hospital in Iran. The injections were administered for various indications such as wet age related macular degeneration (AMD), diabetic macular edema (DME), and retinal vein occlusion (RVO).
- **Results:** The mean age of the patients was 61.7 ± 7.20 years. A total of 55.1%% injections were administered to men and 44.9% to women. The indications for which the injection was administered were DME (61%), AMD (22 %), and RVO (17%). Mean pretreatment BCVA was 0.67 ± 0.41 logMAR with CMT 425 ± 54.9 μm and

postinjection BCVA at day 30 was 0.57 ± 0.37 logMAR with CMT reducing to 312.20 ± 40.81 μ m, indicating statistical significance ($P = 0.01$ and $P < 0.001$, respectively) for all groups. Among the ocular side effects, none of the patients were reported with severe inflammation, endophthalmitis or rise in intraocular pressure (IOP) >21 mm of Hg during 3 months follow up period post injections. No systemic adverse events were noted in study population.

- **Conclusion:** Intravitreal injection of Stivant® (biosimilar of Bevacizumab) was tolerated well over a period of three months with improvement in BCVA and CMT. This prospective analysis suggests this biosimilar can be effective and safe in the management of various retinal neovascular conditions as well.

Khavandi, Siamak

A better chance for patients; intraoperative subtenon injection of Mitomycin-C with Ahmed valve implantation in refractory Glaucoma

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- **Affiliation:** Nikoukari Ophthalmology Hospital, Department of ophthalmology, Tabriz University of Medical Sciences, Tabriz, Iran
- **Purpose:** To evaluate the result of Ahmed valve implantation with intraoperative subtenon injection of Mitomycin-C in refractory Glaucoma
- **Methods:** The records of 13 patients who retrospectively were undergone surgery of Ahmad valves Fp-7 with intraoperative subtenon injection of Mitomycin-C (0.1 ml / 0.2mg) were reviewed, and all patients were followed up for at least 3 months. The success of surgery was defined as 20% reduction in intraocular pressure with or without medication. Postoperative complications were also studied
- **Results:** In this study, intraocular pressure decreased significantly in 3 months after operation ($P < 0.05$), and there were no significant changes in patients visual acuity before and after operation ($P > 0.05$). In this study, complications such as hypotony or thinned bleb were not seen
- **Conclusion:** In this study, intraoperative subtenon injection of Mitomycin-C in refractory Glaucoma reduced intraocular pressure significantly without critical complications

Kianersi, Farzan

Ocular Manifestations in Hemodialysis Patients: Importance of Ophthalmic Examination in Prevention of Ocular Sequels

- **Authors:** Kianersi F, Taheri S, Fesharaki S, Fesharaki H, Mirmohammadkhani M, Pourazizi M, Ghalyani M, Moghadam RS.
- **Affiliation:** Isfahan Eye Research Center
- **Purpose:** Hemodialysis (HD)-associated ocular abnormalities are one of the causes of morbidity among people undergoing HD. This study evaluates the frequency of ocular abnormalities in end-stage renal disease (ESRD) patients undergoing HD and their potential link to HD and demographic parameters.
- **Methods:** This cross-sectional study examined 242 eyes of 121 patients with ESRD undergoing regular HD after excluding the ineligible subjects. The study was designed in two parts. Medical histories of each patient including age, gender, family history, medication history, past medical history, and duration of HD collected using a structured check list. All patients underwent complete ophthalmologic examination for evaluation of the best corrected visual acuity (BCVA), intraocular pressure (IOP), and anterior and posterior segments.
- **Results:** In total, 121 patients, including 68 (56.2%) males and 53 (43.8%) females, were enrolled in the study. The mean \pm SD age of the patients and their mean duration of dialysis were 51.59 ± 16.01 and 3.40 ± 2.75 years, respectively. The most prevalent etiology for HD was diabetes mellitus (39.67%), followed by hypertension (38.84%), and the most common ocular findings included cataract (142 eyes; 58.7%) and ectopic calcification of the conjunctiva and cornea (78 eyes; %32.2). There was at least one abnormal ocular finding in 89.3% of the cases. The BCVA was equal to or less than finger count in 70 eyes (28.92%). There was a significant relationship between conjunctival calcification and the duration of dialysis ($P = 0.02$). There was significant association between etiology of HD and conjunctival calcification (adjusted odds ratio, 2.44; 95% CI, 1.05-5.67; and P value, 0.03). Such significant associations were present for corneal calcification ($P = 0.009$), cataract ($P = 0.02$), and optic atrophy ($P = 0.01$).

- **Conclusion:** Regular ophthalmologic examinations are recommended due to the prevalence of clinical ocular abnormalities in HD patients.

Masoomian, Babak

Efficacy of probing adjunctive with low dose Mitomycin-C irrigation for treatment of epiphora in adults with nasolacrimal duct stenosis

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- **Affiliation:** Farabi eye hospital, Tehran university of medical sciences
- **Purpose:** To investigate the efficacy of adjunctive low-dose mitomycin-C (MMC) during successful lacrimal duct probing in adults with nasolacrimal ducts stenosis.
- **Methods:** In this interventional study, 73 eyes of 58 patients with nasolacrimal duct (NLD) stenosis were randomized in 2 groups. All patients underwent probing without or with application of MMC. Former group receiving 0.2 mg/ml MMC irrigation for 5 minutes. Main Outcome measures were; objective evaluation of patency with irrigation, as well as patients' subjective assessment of improvement.
- **Results:** Patients ages ranged from 19 to 78 years (mean 44 years). After mean follow-up interval of 9 months, 23 (60%) of the 38 eyes in the MMC groups and 8(22%) of the 35 eyes in control group had complete response and remained symptom free .This difference was statistically significant ($P=0.005$). According to patient's satisfaction, epiphora was partially improved in 6(17%) eyes of control group and 4(10%) eyes in MMC group. The success rate for application of MMC was better in patients with severe stenosis ($P=0.007$), Patients who had symptoms more than 12 months ($P=0.02$) and patients with constant epiphora compared with intermittent symptoms ($P=0.001$). No complications were detected during patients follow-up.
- **Conclusion:** This study suggests acceptable long-term results for probing adjunctive with topical MMC for adult with NLD stenosis. This technique can be recommended as a simple and effective procedure for these patients.

Medghalchi, Abdorreza

Factors associated with treatment failure of anisometropic amblyopia

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- **Affiliation:** eye research center, eye department, amiralmomenin hospital, school of medicine, guilan university of medical science, rasht, iran
- **Purpose:** to evaluate of factors which result in treatment failure of anisometropic amblyopia
- **Methods:** we retrospectively reviewed the records of 200 anisometropic amblyopia patients who were under patch therapy with treatment failure and followed for at least 10 years. Treatment failure was defined in two ways. 1: absolute failure indicating final visual acuity in amblyopic eye less than 20/30. 2: relative failure defined as less than 2 lines of Log Mar visual acuity improvements. We evaluated the factors that effective in treatment failure
- **Results:** One hundred-twenty children enrolled in our study with average aged 6.5 year old (4-10y) under patch therapy for anisometropic amblyopia that result in treatment failure during two years follow up. About 20% of patients developed relative failure and 30% of them achieved absolute failure. Treatment failure factors were evident as: 1-age above 7 year at the onset of treatment , 2-presence of astigmatism more than 1.5 diopter in amblyopic eye, 3-difference in refractive error over two diopter between eyes, 4-poor compliance, and 5-initial visual acuity in amblyopic eye less than 20/200
- **Conclusion:** Our study showed that presence of significant astigmatism, poor compliance with treatment, significant difference in refractive error between eyes, initial visual acuity less than 20/200, and age above 7 year were effective in treatment failure of anisometropic amblyopia

Mir Mohammad Sadeghi, Arash

Fluoxetine for the treatment of adult amblyopia, a randomized clinical trial

- **Authors:** Arash Mirmohammadsadeghi, Mohammad Reza Akbari, Ali Reza Mousavi
- **Affiliation:** Eye research center, Farabi Eye Hospital, Tehran University of Medical Sciences
- **Purpose:** To evaluate the effect of fluoxetine on improving visual acuity and visual-evoked potential (VEP) parameters in adult amblyopia
- **Methods:** In a randomized clinical trial, adult cases (>18 years old) with anisometropic or strabismic amblyopia included in the study. Usual treatments of amblyopia (glasses prescription and patching) were prescribed for 4 months before receiving drugs. The cases were assigned randomly to the fluoxetine or placebo group. The cases in the fluoxetine group received 20 mg fluoxetine/day and the cases in the placebo group received placebo for 3 months. The cases in the placebo group received placebo for 3 months. Visual acuity testing and VEP were performed before and after treatment. The changes in logarithm of the minimum angle of resolution (logMAR) and the changes in latency and amplitude of VEP waves were compared between fluoxetine and placebo groups.
- **Results:** 55 patients (29 cases in the fluoxetine and 26 cases in the placebo group) with a mean age of 27.2 ± 8.6 (18–54) years participated in this study. The mean pre-treatment logMAR was 0.55 ± 0.29 (0.20 - 1.3) in the fluoxetine group and 0.51 ± 0.31 (0.1–1.3) in the placebo group. The mean post-treatment logMAR was 0.35 ± 0.20 (0–0.7) in the fluoxetine group and 0.43 ± 0.35 (0–1.3) in the placebo group. The mean logMAR change was 0.20 ± 0.24 (0–0.8) in the fluoxetine group and 0.08 ± 0.15 (0 - 0.7) in the placebo group ($p=0.04$). In 8 patients in the fluoxetine group, the VA improved more than 0.2 logMAR. Among VEP parameters, only N75 amplitude change was greater in the fluoxetine group than placebo group ($p=0.05$).
- **Conclusion:** Fluoxetine can be a valuable treatment for adult anisometropic and strabismic amblyopia and increase visual acuity in some cases.

Miraftabi, Arezoo

Evaluation of peripapillary and macular vascular changes after trabeculectomy using OCT angiography

- **Authors:** Arezoo Miraftabi, MD, Samira Jafari, MD, Naveed Nilfouroushan, MD, Parya Abdolalizadeh, MD, Mohammad Banifatemi, MD
- **Affiliation:** Eye research center, Rassoul Akram Hospital, Iran University Of Medical Sciences
- **Purpose:** To determine the microvascular changes in the optic nerve head and the macular area after trabeculectomy using OCT angiography
- **Methods:** In a prospective interventional case series, 50 eyes from 28 patients with uncontrolled IOP in spite of maximum tolerable medications were enrolled in the study. Patients with previous intraocular surgery were excluded from the study. By using OCT angiography vessel density in the radial peripapillary area and the macular area was evaluated. In addition RNFL thickness was measured preoperative and one month and 6 months after surgery.
- **Results:** Preoperative IOP was 23.2mmHg(SD=10.4), which decreased significantly to 10mmHg(SD=2) at six months after surgery. ($P<0.0001$) RNFL superior and inferior hemifield thickness was 71.6 (SD=28.1) and 71.3 (SD=26.2) micron before surgery, which has not changed significantly after surgery. 71.4 (SD=28.0) and 69.1 (SD=27.9) respectively ($P>0.05$ for both) Radial PP circle superior Hemi Field vascular density was 39.6 (SD=11.2) before surgery, which was decreased to 37.9 (SD=11.3) at one month after surgery ($P<0.02$) and increased significantly to 39.7 (SD=11.4) at 6 months after surgery. ($P<0.02$) Radial PP circle inferior Hemi Field vascular density was 38.9 (SD=10.2) before surgery, which was decreased to 36.9 (SD=11.6) at one month after surgery ($P<0.003$) and increased to 39.0 (SD=10.8) at 6 months after surgery. ($P<0.05$) The whole deep vessel density in macula was 46.6 (SD=5.4), which has not changed significantly 6 months after surgery. 47.1 (SD=5.4) ($p<0.49$)
- **Conclusion:** We observed a significant transient decrease in radial peripapillary vascular density at one month after trabeculectomy, but vessel density increased gradually and remained stable at 6 months after surgery.

Mirzajani, Ali

Evaluation of Visual Evoked Potential Binocular Summation after Corneal Refractive Surgery

Authors: Amini Vishteh R, Mirzajani A, Taghieh A, Jafarzadehpur E

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- **Affiliation:** Iran University of Medical Sciences
- **Purpose:** To explore whether visual evoked binocular summation is affected in eyes with refractive errors after refractive surgery.
- **Methods:** Twenty participants (6M, 14F) aged 20–35 years (mean 26.7 ± 4.4) were assessed through pattern-reversal visual evoked potential in two different check sizes viewing with each of their eyes (first right eye and then left eye) and then with both eyes while wearing their best correction before undergoing surgery. Also, parameters of the P100 component of pattern-reversal visual evoked potential were evaluated after 3 months of refractive surgery. Monocular and binocular amplitudes and latencies of P100 wave and binocular summation indices were compared between the before and after surgery.
- **Results:** Monocular visual evoked potentials elicited by two different high contrast checkerboards patterned stimuli were significantly reduced in amplitude ($P < .05$) after refractive surgery. However, there was no difference between the pre- and post-refractive surgery in monocular P100 latency ($p > 0.05$). Similar to monocular findings of amplitude, on binocular viewing, the pattern-reversal visual evoked potential amplitude was significantly reduced ($P < .05$) and latency was prolonged ($p < 0.05$) after refractive surgery in participants. Also, the mean postoperative binocular summation index value as compared to that in the pre-operative was significantly less ($P < .05$) in this study.
- **Conclusion:** Refractive surgery can degrade binocular visual performance throughout the change in visual evoked potential binocular summation. However, monocular function deteriorates less than binocular function after refractive surgery.

Mirzajani, Ali

A comparison of central and peripheral refraction between 4-6 years old Children user and non-user of smartphones and/or other electronic screens

- **Authors:** Mirzajani A, Hosseini M, Jafarzadehpur E, Abolghasemi J
- **Affiliation:** Iran University of Medical Sciences
- **Purpose:** The purpose of the present study is to compare central and peripheral refraction between children of 4-6 years old user and non-user of smartphones and /or other electronic screens.
- **Methods:** In this cross-sectional study, 106 children aged 4-6 years old were enrolled in two groups of user (56 children: 34 boys and 22 girls) and non-user (50 children: 30 girls and 20 boys) of smartphones and /or other electronic screens. The user group used smartphones and /or other electronic screens for 1-3 hours a day for at least one year and non-user group either did not use these screens or used less than half an hour occasionally and not every day. All children have visual acuity of at least 20/20 with or without correction and showed no other ocular or systemic diseases. Both groups were evaluated for central refraction and peripheral refraction up to 20° eccentricity in nasal and temporal directions and up to 10° eccentricity in superior direction using the Shin-Nippon K5001 autorefractometer. The outcome measures were compared with SPSS statistical software.
- **Results:** Comparing the findings did not show any statistically significant difference in terms of central and peripheral refraction in superior, nasal and temporal eccentricities between the user and non-user groups ($P > 0.05$).
- **Conclusion:** According to the results of the present study, it concludes that using smartphones and/or other electronic screens for 1-3 hours a day do not show any effect on central and peripheral refraction in children with low range of refractive states.

Mirzajani, Ali

Repeatability of curvature measurements in central and paracentral corneal areas of keratoconus patients using Orbscan and Pentacam

- **Authors:** Mirzajani A, Asharlous A, Kianpoor P, Jafarzadehpur E, Abbasali Yekta, Mehdi Khabazkhoob, Hassan Hashemi
- **Affiliation:** Iran University of Medical Sciences

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- **Purpose:** To determine the repeatability of curvature measurements in 5 corneal rings (1–5 mm from the corneal center) in keratoconus (KCN) patients using the Orbscan and Pentacam and to compare the values of these devices.
- **Methods:** Forty-eight patients with a definite diagnosis of KCN were included in the study. Patients with any corneal scar or active disease or a history of ocular surgery were excluded from the study. The right eye of the patients was studied three times with the Orbscan and Pentacam. The repeatability of the curvatures of 5 corneal rings (1–5 mm from the corneal center) was evaluated using the Orbscan and Pentacam, and the agreement of their values was analyzed.
- **Results:** The intraclass correlation coefficient (ICC) of three measurements was at least 0.94 ($P < 0.0001$) for the Orbscan and at least 0.88 ($P < 0.0001$) for the Pentacam in all corneal rings. According to the grade of KCN, the Orbscan had a low ICC in the 2 mm ring in grades 2 and 3 (ICC = 0.750 and 0.298, respectively). Repeated measures ANOVA showed no significant difference between the repeated measurements of the Orbscan and Pentacam in all corneal rings. The paired t-test showed a significant difference in curvature measurements in all rings except for the 5-mm ring between the two devices ($P < 0.0001$). The Bland-Altman plot showed a weak agreement between these two devices in 1–4 mm corneal rings in curvatures more than 45 D.
- **Conclusion:** According to the results of this study, keratometry readings are highly repeatable in Pentacam and Orbscan devices in all corneal rings. Despite the high correlation between curvature measurements of the Orbscan and Pentacam, there was a significant statistical and clinical difference between the results of two devices in all corneal rings (except the 5-mm ring), and the curvature measurements of the Pentacam were steeper than Orbscan measurements.

Mirzajani, Ali

Repeatability and Agreement of Anterior Corneal Curvature Measurements using Orbscan and Eyesys Instruments in Keratoconic Eyes

- **Authors:** Kianpoor P, mirzajani A, Jafarzadehpur E, Mehdi Khabazkhoob, Hassan Hashemi
- **Affiliation:** Iran University of Medical Sciences
- **Purpose:** The purpose of the present study is to determine the repeatability of anterior curvature of 5 corneal rings (1-5 mm from the corneal center) in keratoconus patients obtained by the Orbscan and Eyesys instruments and to determine the level of agreement of curvature measurements between two instruments.
- **Methods:** In this prospective study, anterior curvatures of 5 corneal rings were measured using Orbscan and Eyesys in 48 right eyes of 48 keratoconic patients. The mean age of patients was 31.6 ± 4.7 and the grades of keratoconus of patients according to the maximum keratometry were mild (≤ 50 D), moderate (50-55D) and severe (≥ 55 D). Statistical analysis was performed using Intraclass Correlation Coefficient and Repeated measures ANOVA for repeatability of each device. Pearson's correlation coefficient, paired t test and Bland-Altman plot were also used for comparison of two techniques.
- **Results:** In this study, the ICC showed high repeatability for measurements of each devices (ICC Eyesys=0.99, ICC Orbscan=0.95, $P < 0.0001$) in all corneal rings. According to repeated measures ANOVA, there was no significant difference between the repeated measurements of each device in all corneal rings. The Pearson's correlation analysis showed high correlation between the measurements of Orbscan and those of Eyesys ($r = 0.84$, $P < 0.0001$) in all rings. According to the paired t test, there was a significant difference in curvature measurements of Eyesys and those of Orbscan in all corneal rings ($P < 0.001$). Also, the Bland-Altman plots showed low agreement between curvature measurements of two devices in all corneal rings.
- **Conclusion:** The present study showed that the anterior curvature measurements obtained by each of Orbscan and Eyesys instruments were repeatable in all corneal rings. Anterior curvature measurements of 5 corneal rings obtained by Eyesys were steeper than those obtained by Orbscan and the two devices could not be replaced for anterior corneal curvature measurement in keratoconic eyes.

Mishan, Mohammad Amir

Correlation between ELF-PEMF exposure time and Human RPE Cell Proliferation, Apoptosis and Gene Expression

- **Authors:** Mohammad Amir Mishan, Mozghan Rezaei Kanavi, Abouzar Bagheri*
- **Affiliation:** Ocular Tissue Engineering Research Center, Student Research Committee, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
- **Purpose:** Emerging evidence implies that electromagnetic fields (EMFs) can negatively affect angiogenesis. In this regard, the effects of ELF-PEMF exposure on the relative expression level of angiogenic factors, involved in the pathogenesis of ocular disorders, were evaluated in human retinal pigment epithelial (hRPE) cells in order to introduce a novel therapeutic method for patients with several ocular diseases associated with neovascularization.
- **Methods:** After separating hRPE cells from globes, cell cultures were exposed to 15 mT of ELF-PEMF (120 Hz) at 5, 10, and 15 minutes for seven days, proliferation and apoptosis of cells were evaluated following ELF-PEMF exposure via ELISA assay. Real-time RT-PCR assay was performed for evaluating the expression changes of HIF-1 α , CTGF, VEGFA, MMP-2, cathepsin D, and E2F3 in hRPE cells with ELF-PEMF exposure.
- **Results:** The ELISA results showed that ELF-PEMF exposure had no major effects on the apoptosis or proliferation rate of hRPE cells. Gene expression analysis revealed that ELF-PEMF could change the expression levels of HIF-1 α , CTGF, VEGFA, MMP2, cathepsin D, and E2F3 and downregulate them at 5 minutes.
- **Conclusion:** ELF-PEMF has an inhibitory role in retinal angiogenesis by downregulating relative angiogenic factors in hRPE cells. In addition, it has no cytotoxic or proliferative effects on the exposed hRPE cells. Therefore, ELF-PEMF can be a useful procedure for managing angiogenesis induced by retinal pathogenesis, although more studies with adequate follow-up in animal models are needed.

Nejat, Farhad

Evolution of Plasma Assisted Non-Invasive Surgery (PANIS) in conjunctivochalasis treatment

- **Authors:** Farhad Nejat, Khosrow Jadidi, Yasamin Adnani
- **Affiliation:** Vision Health Research Center, Semnan, Iran
- **Purpose:** In recent years Atmospheric Low Temperature Plasma (ALTP) used as a new treatment modalities in various medical fields like dermatology, pharmacology, ... and even cancer treatment. The purpose of this study, after proved the safety in animal models is to show that we can use (ALTP) as a non-invasive surgery to treat Conjunctivochalasis (Cch).
- **Methods:** This study included 38 eyes (22 patients) with Cch (Grade 3 and 2). Five parameters were measured at 1 week, 1, 3 and 6 months after the surgery, grading of Cch, height of tear meniscus, corneal fluorescein staining, tear break-up time (TBUT) and ocular surface disease index (OSDI). In this study plasma spots with the distance of 4 mm from limbus (depending on the Cch grading) are placed in 2 to 3 rows on the loose conjunctiva. All patients were treated with short course of topical steroid and antibiotic. The PANIS method was performed by using plasma generator (Plexr, GMV, Italy).
- **Results:** During follow up in 90% of patients, grading has reduced from 3 to 1. In all patients the height of tear mesicus has not changed. In all patients corneal fluorescein staining is completely cleared. TBUT has no significant change. In 85% of patients the average of OSDI is reduced from 50 to 10.
- **Conclusion:** Atmospheric Low Temperature Plasma is office-based new treatment modalities in Conjunctivochalasis surgery and it seems safe and efficient.

Nejat, Farhad

Evolution of Plasma Assisted Non-Invasive Surgery (PANIS) in pterygium treatment

- **Authors:** Farhad Nejat, Khosrow Jadidi, Yasamin Adnani
- **Affiliation:** Vision Health Research Center, Semnan, Iran
- **Purpose:** In recent years Atmospheric low temperature Plasma (ALTP) used as a new treatment modalities in various medical fields like dermatology, pharmacology, ... and even cancer treatment. The purpose of this study, after proved the safety in animal models is to show that we can use (ALTP) as a non-invasive surgery to treat pterygium.
- **Methods:** This study included 10 eyes (10 patients) with pterygium. Based on Maheshwari Grading we have 2

- patients with grade 1 pterygium, 5 with grade 2 and 3 with grade 3. Six parameters were measured at 1 week, 1, 3 and 6 months after the surgery, grading of pterygium, uncorrected visual acuity (UCVA), height of tear meniscus, corneal fluorescein staining, tear break-up time (TBUT) and ocular surface disease index (OSDI). In this study after releasing of pterygium from the cornea, the released part is fused to the nasal side of the limbus with the help of plasma spots. All patients were treated with short course of topical steroid and antibiotic. The PANIS method was performed by using plasma generator (Plexr, GMV, Italy).
- **Results:** During follow up in 7 patients the pterygium stay fused and no complication was reported and in 3 of patients we have recurrence. In all patients the UCVA increased about 2 to 3 line, the height of tear meniscus has not changed, in 70% of patients corneal fluorescein staining is completely cleared, TBUT has no significant change and the average of OSDI is reduced from 60 to 15.
- **Conclusion:** Atmospheric Low Temperature Plasma is a new treatment modalities in pterygium surgery and it seems safe and efficient.

Nikkhah, Homayoun

The Effect of Systemic Erythropoietin and Oral prednisolone on Recent-Onset Non-Arteritic Anterior Ischemic Optic Neuropathy: a Randomized Clinical Trial

- **Authors:** Homayoun Nikkhah, Mahya Golalipour, Azadeh Doozandeh, Kiana Hassapour, Mohammad Pakravan, Mehdi Yaseri, Hamed Esfandiari
- **Affiliation:** Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
- **Purpose:** To evaluate the effect of systemic erythropoietin and oral steroids in the management of recent onset non-arteritic anterior ischemic optic neuropathy (NAION).
- **Methods:** Ninety-nine eyes of 99 patients diagnosed with NAION within 5 days of onset were included in this randomized clinical trial. Thirty-three patients were randomized into group 1 (systemic erythropoietin), group 2 (oral steroids), and group 3 (control). Group A received 10,000 units of erythropoietin twice a day for three days. Group B received oral prednisone 75 mg daily for two weeks followed by a tapering dose. Best corrected visual acuity (BCVA) was the main outcome, and mean deviation (MD) of visual field test and peripapillary retinal nerve fiber layer thickness (PRNFLT) were secondary outcomes.
- **Results:** The mean BCVA (\pm SD) at the time of presentation was 1 ± 0.56 , 1.01 ± 0.6 , and 0.94 ± 0.47 logMAR in groups A, B, and C, respectively ($P = 0.140$); corresponding values were 0.70 ± 0.44 , 0.73 ± 0.35 , and 0.75 ± 0.39 logMAR, respectively ($P = 0.597$) at 6-month follow-up. Fifty-five percent of patients in group A versus 34.3% in group B, and 31.2% in group C had an improvement of at least 3 lines in the BCVA values at the 6th-month follow-up visit. ($P = 0.04$) The mean deviation (MD) at the time of presentation was 19.67 ± 6.2 , 20.83 ± 4.83 , and 18.94 ± 6.92 decibels (db), respectively ($P = 0.483$). The corresponding values at month 6 were 16.56 ± 7.08 , 18.15 ± 6.57 , and 15.9 ± 5.97 db, respectively ($P = 0.699$). PRNFLT at presentation was 189 ± 58 , 193 ± 64 , and 199 ± 62 micrometers, respectively ($P = 0.779$), which decreased to 88 ± 12 , 74 ± 25 , and 71 ± 18 , respectively ($P = 0.041$) at 6-month visit.
- **Conclusion:** This study indicates the beneficial effects of systemic erythropoietin in preserving the function and structure of the optic nerve in recent onset NAION.

Nourinia, Ramin

Combined Intravitreal Anti-VEGF Agent and ROCK inhibitor Injection for Macular Edema Secondary to retinal Vein Occlusion Randomized Clinical Trial.

- **Authors:** Ramin Nourinia, Hamid Ahmadi, Arash Daneshmandi, Sahba Fekri, Hamideh Sabbaghi
- **Affiliation:** Ophthalmic Research Center, Shahid beheshti University Of Medical Sciences, Tehran Iran
- **Purpose:** To compare the anatomical and functional outcomes of intravitreal injection of bevacizumab and fasudil with intravitreal injection of bevacizumab alone in patients with macular edema secondary to RVO.
- **Methods:** In this randomized controlled clinical trial patients with RVO and macular edema were enrolled and randomized to two groups. Combined group received three monthly intravitreal injections of bevacizumab and fasudil. Bevacizumab group received three monthly intravitreal bevacizumab. Patients were followed monthly for 12 months and if retreatment was needed intravitreal bevacizumab was injected. Main outcome measure was best

corrected visual acuity (BCVA) changes and secondary outcome measure was central macular thickness (CMT) changes.

- **Results:** The data of 20 patients in the combined group and 15 patients in the bevacizumab group were analyzed. Baseline BCVA and CMT were 0.74 ± 0.51 , 0.8 ± 0.54 logMAR and 537 ± 254 , 487 ± 143 μm in the combined group and bevacizumab group respectively. There was not significant difference between groups in terms of BCVA and CMT. BCVA and CMT in the last follow up visit were 0.58 ± 0.40 logMAR, 416 ± 211 μm and 0.47 ± 0.39 logMAR, 366 ± 105 μm in the combined group and bevacizumab group respectively. BCVA improvement was significant at month 3 ($p = 0.004$) and 12 ($p = 0.011$) in the combined group while the BCVA improvement was not significant at month 3, 6 and 12. ($p = 0.138$, $p = 0.205$ and $p = 0.326$) in the bevacizumab group. CMT reduction was significant at month 6 ($p = 0.002$) and 12 ($p = 0.03$) in the combined group while CMT reduction was not significant at month 3, 6 and 12 ($p = 0.063$, $p = 0.808$ and $p = 0.068$) in the bevacizumab group. No systemic and ocular side effect were observed in each group.
- **Conclusion:** Combined intravitreal injection of anti-VEGF and ROCK inhibitor may enhance and prolong the functional and anatomical effects of intravitreal anti-VEGF agents in patients with macular edema secondary to RVO.

Nourinia, Ramin

Intravitreal Injection of Zoledronic Acid in Rat Model of Choroidal Neovascularization

- **Authors:** Ramin Nourinia, Hamid Ahmadi, Mozghan Rezaei Kanavani
- **Affiliation:** Ophthalmic Research Center, Shahid beheshti University Of Medical Sciences, Tehran Iran
- **Purpose:** Purpose: To determine the effects of intravitreal zoledronic acid (IVZA) on attenuation of laser-induced choroidal neovascularization (CNV) in rats.
- **Methods:** Methods: CNV was induced in 30 pigmented rats via laser burns. Rats were divided into two groups; one group received IVZA ($8 \mu\text{g} / 2 \mu\text{L}$) and another group received $2 \mu\text{L}$ normal saline. Neovascularization area was detected by lectin staining of choroidal-scleral flat mounts and quantified by using Image J software.
- **Results:** Results: Mean CNV area in the IVZA group ($30016.02 \pm 14182.82 \mu\text{m}^2$) was less than that of the controls ($43935.49 \pm 31554.54 \mu\text{m}^2$) with a borderline statistical significance ($P = 0.059$).
- **Conclusion:** Conclusions: IVZA with dose of $8 \mu\text{g} / 2 \mu\text{L}$ was effective in attenuation of CNV in rats. To maximize the antiangiogenic effect of IVZA, further investigation using the maximum safe dose of IVZA should be conducted.

Omidtabrizi, Arash

The association between Age-related Macular Degeneration and Meibomian Gland Dysfunction

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- **Affiliation:** faculty of medicine, Gonabad university of medical sciences
- **Purpose:** To determine the association between Age related macular degeneration and Meibomian gland dysfunction
- **Methods:** In this cross-sectional study, 470 patients over 55 years old who were referred to the eye clinic were enrolled. Demographic data including medical history and suggested risk factors of AMD was recorded. Biomicroscopic and Funduscopy examination were performed for AMD and MGD. Patients with AMD were grouped by their type of involvement as wet or dry. The severity of MGD was evaluated clinically by biomicroscopic examination. The subjects were tested for Lipid profile, including TG, LDL, HDL and serum cholesterol.
- **Results:** The study population included 470 adults (55.7% female) with an average age of 67.77 ± 9.7 . AMD prevalence was 13%. 9.2% (43 cases) of patients had dry type and 3.8% (18 cases) of patients had wet type. Also, the prevalence of MGD was 41.9%, the severity of which, was mild in 23.2%, moderate in 16.4% and severe in 2.3% of patients. There was a significant association between MGD and AMD? ($P < 0.001$). Patients with MGD, were 8.1 times more likely to have AMD. In this study, there was no significant association between hyperlipidemia and AMD, but there was an association between hyperlipidemia and MGD.

- **Conclusion:** The results of this study showed that there is a significant association between MGD and AMD. We have no reasonable explanation for this association. Maybe the oxidative processes which contribute in the pathogenesis of these two entities play a role.

Pahlevani, Pouyan

Peripheral hypertrophic subepithelial opacities of corneal graft after deep anterior lamellar keratoplasty

- **Authors:** Pouyan Pahlevani, MD; Sepehr Feizi, MD, MSc; Zahra Karjou, MD; Ali Masoudi, MD; Seyed-Mohammadmehdi Moshtaghion, MD; Amir A. Azari, MD
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- **Purpose:** To investigate possible underlying etiologies of the development of peripheral graft hypertrophic subepithelial opacities (PGHSO) and to evaluate the effects of these opacities on visual outcomes after deep anterior lamellar keratoplasty (DALK).
- **Methods:** This prospective, interventional case series enrolled 29 keratoconus-affected eyes that underwent DALK and developed PGHSO (group 1). The control group comprised of 32 keratoconus-affected eyes that underwent DALK during the same period and had a clear graft at the last follow up (group 2). Possible underlying risk factors for the development of PGHSO were investigated and postoperative refractive and topographic outcomes were compared between the two study groups
- **Results:** Eyes of group 1 had well-defined elevated peripheral subepithelial opacities of the corneal graft, originating from the donor-recipient junction. The central 4-mm area of the graft was clear in all eyes of this group. Compared to the controls, group 1 had flatter grafts at postoperative month 1 and longer time interval from surgery to initial suture removal. The two study groups were comparable in other investigated factors, including severity of keratoconus, surgical technique, the length of topical steroid use, and donor quality. No significant differences were observed between the case and control groups in postoperative visual acuity and graft surface regularity.
- **Conclusion:** Graft flattening during the early postoperative period and prolonged time interval from surgery to initial suture removal might be factors predisposing to the development of PGHSO. This complication did not affect postoperative visual outcomes when the central 4-mm area of the graft remained clear.

Pakbin, Mojgan

Near Points of Convergence and Accommodation in a Population of University Students in Iran

- **Authors:** Hassan Hashemi, MD; Mojgan Pakbin, MS; Babak Ali, MS; Abbasali Yekta, PhD Hadi Ostadimoghaddam, PhD; Amir Asharlous, PhD; Mohammadreza Aghamirsalim, MD Mehdi Khabazkhoob, PhD
- **Affiliation:** 1- Noor Research Center for Ophthalmic Epidemiology, Noor Eye Hospital, Tehran, Iran. 2- Research and Technology Deputy, Tehran University of Medical Sciences, Tehran, Iran.
- **Purpose:** To determine the distribution of near point of convergence (NPC) and near point of accommodation (NPA) in a young student population in Iran.
- **Methods:** The subjects were selected using a cluster sampling method. All students underwent optometry tests, including visual acuity measurement, refraction, and cover test, as well as ophthalmic examinations. The NPC and NPA were measured using an accommodative target (near Snellen chart).
- **Results:** Of 1,595 students, the data of 1,357 were analyzed. The mean NPC and NPA in the total sample were 7.25 cm (95% confidence interval [CI], 7.02 to 7.48) and 9.99 cm (95% CI, 9.69 to 10.29), respectively. Older age was associated with an increase in the NPC, which increased from 6.98 cm in 18–20 years olds to 9.51 cm in those over 30 years. The NPA was significantly associated with age and refractive errors in the multiple linear regression model, increasing from 9.92 cm in 18–20 years olds to 11.44 cm in those over 30 years ($P = 0.003$). Hyperopic eyes had lower NPA than myopic and emmetropic eyes ($P = 0.001$). In younger age groups, the mean accommodation amplitude was lower than the mean Hofstetter value. Moreover, with age, especially after 30 years, the mean values surpassed those determined using the Hofstetter formula.
- **Conclusion:** The NPC values in this study were lower than those previously reported for identical age groups. The Hofstetter formula is not always an accurate predictor of the accommodation amplitude in the Iranian adult population.

Refractive and Visual Outcomes after New Model of Intracorneal stromal ring implantation for keratoconus correction: 1-year follow up

- **Authors:** Shiva Pirhadi, Khosrow Jadidi, Farhad Nejat
- **Affiliation:** Biomedical Engineering, Science and Research Branch,
- **Purpose:** To evaluate the refractive and visual outcomes after new intracorneal ring (Keratacx 355°) implantation in patients with keratoconus.
- **Methods:** This study included 18 eyes with stable keratoconus who underwent intracorneal ring implantation surgery. The preoperative and 12-month postoperative of uncorrected (UDVA) and corrected (CDVA) distance visual acuity, corneal sphere and astigmatism and keratometry readings (using Oculus Pentacam HR) were measured.
- **Results:** Preoperative and postoperative UDVA, CDVA, sphere, astigmatism, minimum (Kmin) and maximum keratometry (Kmax) were 0.14 ± 0.08 and 0.39 ± 0.21 LogMAR, 0.44 ± 0.17 and 0.53 ± 0.18 LogMAR, -3.79 ± 3.16 and -0.94 ± 2.18 D, -4.33 ± 2.91 and -2.47 ± 1.26 D, 47.24 ± 3.24 and 43.49 ± 3.67 D, 51.61 ± 3.04 and 45.99 ± 3.70 D, respectively. There were statistically differences between preoperative and postoperative of all these parameters.
- **Conclusion:** It seems that this intracorneal stromal ring can be safe and effective for keratoconus correction. Results of this ring is comparable with other intracorneal rings.

Association between diabetic retinopathy with serum vitamin D levels in patients with type 2 diabetes mellitus

- **Authors:** Arash Omidtabrizi ,Mina Rahmandoust , seyed farzin mircheraghi ,Abdoljavad Khajavi
- **Affiliation:** GMU and MUMS
- **Purpose:** The role of Vitamin D(Vit D) in angiogenesis regulation, inhibition of inflammation and neovascularization has been proved in biological studies. Regarding the discrepancy among the results of previous studies searching about the relation between serum Vit D level and diabetic retinopathy, this study was conducted to further investigate this association.
- **Methods:** In this cross-sectional study, 164 patients with type 2 diabetes who had conditions for entering the study were selected. Patients were classified into three groups based on funduscopy eye examination; without diabetic retinopathy (16 subjects), diabetic nonproliferative retinopathy (42) and diabetic proliferative retinopathy (106). After testing FPG, HbA1c, 25 OH vitD, deficiency of vitamin D was defined as less than 30 ng / ml for serum levels of 25 OH vitD. The relationship between the severity of diabetic retinopathy and serum vitamin D levels was investigated.
- **Results:** Results: The samples were 164 (60.4% female) with a mean age of 61.84 ± 8.52 . The prevalence of diabetic retinopathy was 90.2%. 25.6% of them had non-proliferative diabetic retinopathy and 64.6% had proliferative diabetic retinopathy. The results of multiple ordinal analysis showed that variables like FPG with odds ratio (0.99), HbA1c with odds ratio (2.68) had a significant relationship with diabetic retinopathy. Also after adjusting the variables such as age, sex, duration of diabetes, hypertension, FPG and HbA1c, serum vitamin D levels with odds ratio (2.24) and $P = 0.045$ had a significant effect on the severity of diabetic retinopathy.
- **Conclusion:** The result of this study showed that there is a relationship between the severity of diabetic retinopathy and serum vitamin D levels.

Comparison between lateral rectus plication and resection on residual esotropic patents

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- **Affiliation:** Torfe medical center and Negah eye hospital
- **Purpose:** To compare the surgical outcomes of lateral rectus plication and resection techniques in patients with residual esotropia.
- **Methods:** In this RCT study, a total of 57 patients with residual esotropia (31 females and 26 males) who were candidate for lateral rectus resection were included and randomized into plication (n=27) and resection (n=30) groups. The inclusion criteria were residual esotropia after uni- or bilateral medial rectus recession, or unilateral recession and resection (R&R). Subjects with a history of prematurity, lack of central fixation, extraocular muscle palsy, systemic, ocular disorders, follow up less than three months were excluded. A comprehensive ophthalmic examination was conducted preoperatively and at 1, 3 and 6 month follow-ups. Surgical success rate was considered postoperative eso- or exotropia ≤ 10 pd.
- **Results:** Postoperative success showed no statistically significant difference between these two groups at all postoperative follow-ups of months 1, 3 and 6 (postoperative success rate at month 6 was 77.3% in plication and 85.2% in resection group). There was also similarity between dose responses of these groups in uni- or bilateral operations,
- **Conclusion:** lateral rectus plication and resection had similar success rate results. Each surgical method could be selected according to surgeon's skill and comfort. We recommend plication method for patients with postoperative probability of anterior segment ischemia .

Riazi Esfahani, Hamid

Effect of Panretinal Photocoagulation on Macular and Disc Vasculature using Optical Coherence Tomography Angiography

- **Authors:** Houshang Faghihi; Hamid Riazi-Esfahani; Alireza Khodabandeh; Ahmad Mirshahi; Fariba Ghasemi; Reza Mirshah; Hassan Khojasteh; Fatemeh Bazvand, Ali Torkashvand, Amirhossein Hashemi, Fereshteh Tayebi, Shahin Faghihi, Mohammad Riazi Esfahani
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- **Purpose:** To evaluate the changes of macular vascular density in the superficial capillary (SCP) and the deep capillary plexus (DCP), Foveal avascular area (FAZ), choroidal flow, macular thickness and parapapillary flow after panretinal photocoagulation (PRP).
- **Methods:** In this prospective interventional non-comparative case series, patients with very severe nonproliferative (NPDR) and early proliferative diabetic retinopathy (PDR) and no significant macular edema who were candidates for panretinal photocoagulation underwent measurement of corrected distance visual acuity (CDVA), optical coherence tomography (OCT), Optical coherence tomography angiography (OCTA) at the baseline (1–5 days before PRP), 1, and 5 to 7 months following completion of PRP treatment.
- **Results:** Thirty-nine eyes from 21 patients with diabetes were enrolled. foveal SCP ($P > 0.1$), foveal DCP ($P > 0.1$), parafoveal SCP ($P > 0.1$), and parafoveal DCP ($P > 0.1$) did not change 1 month and 6 months after PRP. The parafoveal inner retina thick slab density was significantly decreased at 6 months after PRP ($p=0.015$). Deep FAZ area constricted 6 months following PRP ($P = 0.075$). Based on calculated circularity index, the FAZ area became significantly more circular. ($P=0.047$). One month after PRP the inside disc vascular density was significantly increased from baseline ($p=0.041$); while, it was decreased to lower than baseline amount, 6 months after PRP .
- **Conclusion:** Although OCTA parameters were not significantly affected by PRP at both short- (1-month) long-term (6-month) follow-up, but FAZ area may be become more circular and regular after PRP may be due to reflow of occluded capillary plexus.

Riazi Esfahani, Hamid

Intravitreal Ziv-aflibercept in Patients with Diabetic Macular Edema Refractory to Intravitreal Bevacizumab

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- **Affiliation:** Eye research center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran.
- **Purpose:** To evaluate the efficacy of intravitreal ziv-aflibercept (IVZ) in patients with diabetic macular edema (DME) resistant to intravitreal bevacizumab (IVB).
- **Methods:** This prospective non-masked study was conducted on patients with persistent DME after receiving at least three IVB injections. Patients were switched to IVZ and monitored over a course of 12 weeks. Changes in best corrected visual acuity (BCVA) as well as central macular thickness (CMT) and macular volume (MV) on OCT were compared.
- **Results:** A total of 59 eyes from 38 patients were included. Patients received an average of 7.3 bevacizumab injections before being switched to IVZ. Mean BCVA improved from 0.84 logMAR at baseline to 0.71 LogMAR ($P=0.001$) at one month after receiving the first IVZ and remained significant in every follow up visits. In subgroup analysis, this significance observed only in group with baseline $VA < 20/50$. Mean CMT and MV decreased from $479 \mu m$ and $10.6 \mu m^3$ to $364 \mu m$ and $9.9 \mu m^3$ ($P=0.004$ and <0.0001) respectively, after the first IVZ injections and remained significant. Another subgroup analysis based on baseline CMT showed that patients with $CMT > 375 \mu m$ experienced a significant improvement in CMT and vision at all follow up visits. There was one case of culture positive endophthalmitis.
- **Conclusion:** IVZ may be best reserved for patients with significant persistent DME after initial failure with bevacizumab with less likelihood for anatomic or functional improvement in those with mild persistent DME. IVZ may represent an attractive treatment in these patients, especially in lower income countries.

Riazi Esfahani, Hamid

Tamoxifen induced Pachychoroid Pigment Epitheliopathy with Reversible Changes after Drug Discontinuation

- **Authors:** Hamid Riazi-Esfahani, Babak Masoomian, Afsaneh Azarkish, Fariba Ghassemi
- **Affiliation:** Eye research center, Farabi eye hospital, Tehran university of medical sciences
- **Purpose:** To report a case of breast cancer with clinically significant retinal toxicity induced by 7 years' Tamoxifen consumption in which patient's visual acuity and paraclinical findings remarkably improved after drug discontinuation.
- **Methods:** To report a case of Tamoxifen induced Pachychoroid Pigment Epitheliopathy with Reversible Changes after Drug Discontinuation
- **Results:** A 49-year-old woman with history of breast cancer and Tamoxifen consumption was referred to our clinic for evaluation and treatment of gradual and progressive decrease visual acuity of both eyes (more prominent in right eye). Funduscopy showed bilateral macular pigmentary changes with diffuse tiny yellow crystals and reduced macular tessellation. On optical coherence tomography (OCT), there was retinal pigment epithelium (RPE) abnormality and ellipsoid zone discontinuity accompanied with retinal thinning and choroidal thickness that was more prominent in right eye. One year after discontinuation of the drug, visual acuity was significantly improved and SD-OCT revealed some surprising recoveries in the photoreceptor layers specially in her right eye.
- **Conclusion:** Tamoxifen consumption can induce clinically significant retinal toxicity but, it could be reversible with on time diagnosis and discontinuation of the drug.

Riazi Esfahani, Hamid

SAFETY OF INTRAVITREAL INJECTION OF STIVANT (BIOSIMILAR OF BEVACIZUMAB) IN RABBIT EYES

- **Authors:** Alireza Lashay, Houshang Faghihi, Ahmad Mirshahi, Hassan Khojasteh, Alireza Khodabandeh, Hamid Riazi-Esfahani, Fahimeh AsadiAmoli, Elias Khalilpour
- **Affiliation:** eye research center, Farabi eye hospital, Tehran university of medical sciences
- **Purpose:** To evaluate the safety profile of intravitreal injection of Stivant (biosimilar of the bevacizumab) in rabbits using electrophysiological and histologic analysis.
- **Methods:** Both eyes of the forty-one New Zealand albino rabbits were injected with 0.1 mL (2.5 mg) Stivant drug.

The rabbits were scheduled to be sacrificed 1, 2, 7, 14 and 28 days after injection for histopathologic evaluations. Clinical examinations and Electro-retinograms (ERGs) were done at baseline and just before sacrificing the rabbits. Fourteen separate rabbits were received the reference drug (Avastin) and considered as a control group, also three other rabbits were received the same volume of saline. Both of the control groups were sacrificed 4 weeks after injection, although ERG was done at 1, 2, 7, 14 and 28 days after injections.

- **Results:** There were no significant differences in a- and b-wave amplitude and latency after intravitreal Stivant injection between baseline and different time points. Also, there was no statistically significant difference in the waves amplitude and latency between the Stivant and control groups. The histology of both Stivant and control eyes after intravitreal injections was not distinguishable.
- **Conclusion:** The biosimilar Stivant up to 2.5 mg dosage did not appear to be toxic to the retina in albino rabbits. These results suggest that this drug could become a safe, cost-benefit therapy for intravitreal injections. Intravitreally injected Stivant should be evaluated for efficacy in the next studies.

Sabbaghi, Hamideh

Comparison between Patching and Interactive Binocular Treatment (I-BiTTM) in Amblyopia: A Randomized Clinical Trial

- **Authors:** Zhale Rajavi, Hamideh Sabbaghi, Ebrahim Amini Sharifi, Narges Behradfar, Bahareh Kheiri
- **Affiliation:** Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
- **Purpose:** To compare the effect of amblyopia therapy on cases who received Interactive Binocular Treatment (I-BiTTM) with those who received standard patching of the dominant eye with placebo I-BiTTM.
- **Methods:** In this randomized clinical trial, 38 unilateral amblyopic children (3 to 10 years old) were studied. All unilateral amblyopic children who had best corrected visual acuity (BCVA) worse than 0.30LogMAR or a difference of two Snellen lines of BCVA between their two eyes were included and children who did not complete at least 75% of amblyopia treatment were excluded from this study. Eventually, a total of 19 and 21 subjects were included in case and control groups, respectively. Cases played I-BiT™ games, while controls had standard patch therapy and played with placebo I-BiTTM games, both for one month. All subjects were examined at baseline and after one-month therapy.
- **Results:** BCVA improved significantly in both groups after one-month treatment (case: $P=0.003$, control: $P<0.001$), while in comparison with each other, there was not any difference between them ($P=0.52$). Although stereopsis improved in case ($P<0.001$) and control ($P<0.001$), there was no significant difference between them pre and post therapy. Our children played games totally for about 6 hours during one month in both groups and their compliance were 87.5% and 76% in cases and controls, respectively. Two children were excluded due to their less compliance of playing I-BiTTM games ($n=38$).
- **Conclusion:** I-BiTTM game and patching with placebo game had similar BCVA improvement in amblyopic children after one-month treatment. It is suggested to conduct further randomized clinical trials with larger sample size and longer duration of study and assessment of its recurrence.

Sabbaghi, Hamideh

Health Terminological System for Inherited Retinal Dystrophies: A Content Coverage Evaluation and a Proposed Novel Ontology

- **Authors:** Hamideh Sabbaghi, Sina Madani, Hamid Ahmadi, Narsis Daftarian, Fatemeh Suri, Abbas Sheikhtaheri, Farid Khorrami, Proshat Saviz
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- **Purpose:** To develop a novel ontology for inherited retinal dystrophy (IRD) concepts and to evaluate the content coverage of some well-known terminological systems for our proposed IRD ontology.
- **Methods:** In this regard, an expert group of two academic board certified retina specialists, one academic clinical and molecular geneticist, and five medical informatics specialists was formed. A review was conducted on the reference ophthalmic text books, afterwards a primary classification of IRD diagnoses was developed. In the next step, a comprehensive search was conducted on different international classification systems including Unified Medical Language System (UMLS), Online Mendelian Inheritance in Man (OMIM), International Classification of

Diseases (ICD-10 & 11), Systematized Nomenclature of Medicine - Clinical Terms (SNOMED-CT) and Orphanet Rare Disease Ontology. The primary classification was modified based on the consensus of working group members. Eventually, an organized hierarchy of IRD diagnoses was developed in the Protégé software. We classified our results as no matched, partially matched or completely matched.

- **Results:** The primary classification including 55 IRD diagnoses had been provided in six sections. Afterwards, it was expanded to 1020 IRD diagnoses presenting by different international classification systems. The final list containing 368 IRD diagnoses with consideration of both phenotyping and genotyping identifications in the eight sections was developed. Regarding the comparison between the five international classification systems, it was found that UMLS had the greatest coverage of 92.4%, while the lowest content coverage (24.7%) was obtained for SNOMED-CT. Generally, all five investigated systems had 12.8% overlap for IRD diagnoses. Furthermore, we found that 0.09% of diagnoses cannot be considered as IRD although they were categorized by other systems.
- **Conclusion:** This specialized classification that is dedicated for IRD diagnoses may be applicable in the ophthalmic practices and it can be considered as a preliminary step to develop an ontology for IRD concepts.

Sadeghi, Javad

The Association Between the Transforming Growth Factor Beta-1 -509C>T Gene Polymorphism and Primary Open Angle Glaucoma in North Eastern Iran

- **Authors:** Akbar Derakhshan, Jalil Tavakkol Afshari, Javad Sadeghi Allah Abadi, Amin Reza Nikpoor, Ramin Daneshvar, Saeed Shokoohi Rad, Mohammad-Reza Ansari-Astaneh
- **Affiliation:** Eye research center, Khatam-Al-Anbia eye hospital, Mashhad University of Medical Sciences, Mashhad, Iran.
- **Purpose:** Glaucoma is a common cause of irreversible blindness. Transforming growth factor beta-1(TGF- β 1) is the main isoform of TGF- β superfamily in the eye. Overexpression of TGF- β 1 is shown to be related with the glaucoma. Studies have shown that the presence of mutant T allele of TGF- β 1 -509C>T polymorphism (rs1800469) is associated with increased gene expression. So, in present study, association of the TGF- β 1-509C>T gene polymorphism and primary open angle glaucoma (POAG) in patients from north east of Iran was investigated.
- **Methods:** A case-control study was conducted on 112 POAG patients and 112 control participants. TGF- β 1-509C>T genotyping was done by PCR-restriction fragment length polymorphism (PCR-RFLP) method using Bsu36I restriction enzyme. Moreover, cup to disk ratio(CDR), intraocular pressure (IOP) and visual acuity (VA) were measured. The obtained results were statistically analyzed.
- **Results:** The highest frequency of genotype in the control group was related to CC genotype (44.6%), but the heterozygous CT genotype (45.6%) was observed as the highest frequency of genotypes in patient group (P value: 0.022, OR for TT genotype: 2.54 CI95% for OR: 1.22, 5.27). Also, the frequency of the T mutant allele showed a significant difference between case and control groups (P value: 0.005, OR: 1.73 CI95% for OR: 1.18, 2.53).
- **Conclusion:** In conclusion, a significant association was seen between TGF- β 1 -509C>T gene polymorphism and POAG disease and inheritance of mutant T allele is considered to be a risk factor for glaucoma in patients living in North Eastern part of Iran.

Shirzadeh, Ebrahim

Expression of Pluripotency Markers, SOX2 and OCT4, in Pterygium Development

- **Authors:** Ebrahim Shirzadeh, Maryam Najafi, Milad Nazarzadeh, Golsa Fazli, Farahnaz Falanji, Leila sadat Aldaghi, Abolfazl Rad
- **Affiliation:** sabsevar university of medical sciences
- **Purpose:** Although the etiology of pterygium is elusive, recent studies have focused on the role of limbal stem cells (LSCs) damage and effects of UVB. This study aimed to determine the expression levels of pluripotent markers of SOX2 and OCT4 in primary pterygium and normal conjunctiva
- **Methods:** Using real time polymerase chain reaction (PCR), the SOX2 and OCT4 expressions were compared in primary pterygium and normal conjunctiva. This study assessed the correlation between SOX2 mRNA expression and OCT4 mRNA expression, as well as the association between the clinicopathological indices and both gene expression levels.

- **Results:** The relative mRNA expression levels of OCT4 genes in primary pterygium were significantly reduced compared to the normal conjunctiva tissues. The association between OCT4 gene expression and the clinicopathological indices reported significant laterality ($P = .004$) and marginal growth activity indices ($P = .063$). The univariate correlation between the SOX2 and OCT4 expressions was statistically significant ($P = .001$).
- **Conclusion:** The present study emphasized the downregulation of pluripotent marker OCT4 genes in the pterygium. It is speculated that these results may predict a new avenue for exploring the role of stem cell deficiency in the development of pterygium.

Shokoohi Rad, Saeed

Comparison of Serum Fibroblast Growth Factor 21 in Patients with and without Pterygium

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- **Affiliation:** Eye Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.
- **Purpose:** Pterygium is a common eye disease with fibro-vascular origin. Since growth factors play an important role in some eye diseases, the fibroblast growth factor 21 (FGF21), a member of this family, has been involved in reducing neovascularization. Considering that the serum level of FGF21 was correlated with vascular eye disease such as diabetic retinopathy and Retinopathy of Prematurity in previous studies, this study compared the serum fibroblast growth factor 21 in patients with and without pterygium.
- **Methods:** This descriptive analytical cross-sectional study was performed on all individuals with pterygium who were visited in Ophthalmology Clinic of Khatam-al-Anbia Hospital in Mashhad during 2017. Control subjects were selected from healthy people without pterygium disease. Sixty people (30 in the patient group and 30 in the control group) entered the study with convenient sampling method. Intravenous blood samples were taken from all patients and after the preparation of the patients, the freeze was checked at the end of the sampling by ELISA method.
- **Results:** The mean serum FGF 21 in pterygium group was 319.09 ± 246.93 pg/ml and the serum FGF 21 level in control subjects was 608.88 ± 449.81 pg/ml ($P=0.005$). The mean Fibroblastic Growth Factor 21 in healthy subjects to pterygium in terms of sex showed that the average serum fibroblastic growth factor 21 was 281.55 ± 40.74 pg/ml in the males and 361.375 ± 10.298 pg/ml in females and the difference was not statistically significant ($P=0.19$).
- **Conclusion:** The results of this study showed that the level of Fibroblastic Growth Factor 21 in patients was lower than the level of Fibroblastic Growth Factor 21 in control subjects, which showed significant differences.

Shokoohi Rad, Saeed

Make a Comparison between the ocular perfusion pressure in patient with open angle glaucoma and the control group

- **Authors:** Saeed Shokoohi-Rad, Ghalom-Hosein Yaghubi, Abbas Hoseini-Rad
- **Affiliation:** 1. Eye Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.
- **Purpose:** Make a Comparison between the ocular perfusion pressure in patient with open angle glaucoma and the control group
- **Methods:** The present study was a case-control study in the case group of patients with glaucoma diagnosed by an ophthalmologist. After selecting the case group and confirming the open angle glaucoma in patients with gonioscopy, intraocular pressure control was measured by non-contact tonometry and blood pressure by means of the keeler pressure gauge in both groups and the peripheral pressure was calculated. Ocular perfusion pressure calculated by this formula: $OPP = \frac{2}{3} [DBP + \frac{1}{3} (SBP - DBP)] - IOP$
- **Results:** We observed that 54 cases (46.6%) were male and 53.4% were female. The average and standard deviation of the patients' age was also 55.85 ± 14.88 years, which was similar in both groups. We found that the mean and standard deviation of left ventricular perfusion pressure in the case group was 49.4 ± 9.6 mmHg and in the control group it was equal to 45.5 ± 8.5 mmHg. We also observed in our assessment of the right eye that the rate in the case group was 49.4 ± 7.4 mmHg and in the control group it was 8.9 ± 45.7 mmHg.
- **Conclusion:** As ocular perfusion pressure at formula dependent to intraocular pressure and blood pressure. In this study ocular perfusion pressure in primary open angle glaucoma patients higher than normal persons. So

Shokrollahi, Siamak

Association of Ultrawide Field (UWF) Retinal Vessel Caliber with Diabetic Retinopathy (DR) Severity, Predominantly Peripheral Lesions (PPL) and Retinal Nonperfusion (NP)

- **Authors:** Presenting Author: Siamak shokrollahi, MD. Co-authors:., Mohamed Elmasry, Konstantina Sampani, Alex Pisig U, Omar Abdelal, Gavin Robertson, Alan Fleming, Cloyd Pitoc, Jennifer Sun, Paolo Silva, Lloyd Paul Aiello
- **Affiliation:**
- **Purpose:** To evaluate the association of retinal vessel diameter with NP, DR severity and PPL in diabetic (DM) eyes.
- **Methods:** Same day UWF color and fluorescein angiography images from eyes without PRP or non-DR vascular retinal disease were graded for DR severity and presence of PPL. Arteriolar (AD) and venular (VD) calibers and AD:VD ratio (AVR) at 1 DD (inner) and 3.5 DD (outer) from the optic nerve were obtained from UWF color images using a customized semi-automated program. NP area (NPA) and NP index (NPI) were determined for the entire image and the posterior pole (PP), midperiphery (MP) and far periphery (FP).
- **Results:** 178 eyes from 109 patients with mean age 52.2 ± 13.9 yrs, DM duration 21.8 ± 12.3 yrs, HbA1c $8.3 \pm 1.6\%$, 52.3% male and 47.7% type1 DM were evaluated. DR severity distribution: 16.9% mild nonproliferative DR (NPDR); 25.3% moderate; 43.8% severe and 14% proliferative DR (PDR). Total, PP, MP and FP NPA and NPI all increased with worsening DR severity ($p < 0.0001$). Outer and inner AVR decreased with increasing DR severity (Outer/Inner: mild $0.92 \pm 0.11 / 0.87 \pm 0.12$; moderate $0.87 \pm 0.09 / 0.85 \pm 0.14$; severe $0.85 \pm 0.10 / 0.79 \pm 0.11$; PDR $0.80 \pm 0.11 / 0.79 \pm 0.13$; $p < 0.001 / p = 0.005$) while outer VD increased (mild $111.3 \pm 11.9 \mu\text{m}$; moderate $117.3 \pm 10.3 \mu\text{m}$, severe $116.9 \pm 14.3 \mu\text{m}$ and PDR $124.7 \pm 16.2 \mu\text{m}$; $p < 0.001$). Outer and inner AD and inner VD showed no significant correlation with DR severity. In eyes with PPL (N=68), as DR severity increased outer AVR decreased ($p = 0.005$), outer AD decreased ($p = 0.021$) and outer VD increased ($p = 0.003$). In eyes without PPL (N=110), only outer AVR decreased with increasing DR severity ($p = 0.048$).
- **Conclusion:** Non-invasively measured retinal vessel caliber changes are correlated with retinal NP and DR severity. Eyes with PPL have increased venous dilation and arterial narrowing, which become greater with increasing DR severity - a finding not observed in eyes without PPL. These data suggest that PPL are associated with greater vascular pathology, thus possibly contributing to accelerated DR progression

Soleimani, Mohammad

Microbiologic patterns and antibiotic sensitivity in microbial keratitis

- **Authors:** Mohammad Soleimani, Seyed Ali Tabatabaei, Reza Mirshahi, Bita Momenaei, Feresthe Tayebi
- **Affiliation:** Tehran University of Medical Sciences
- **Purpose:** To describe causative pathogens involved in microbial keratitis and trends of microbial isolates sensitivity and resistance to routinely used ophthalmic antibiotics.
- **Methods:** This is a retrospective study on smear and culture samples of corneal ulcers in patients who came to Farabi eye hospital emergency ward from January 2012 to December 2018.
- **Results:** 8912 samples were collected from patients with keratitis for 6 years, the mean age of patients with keratitis was 44.52 ± 27.46 . In patients with keratitis, 60% of cultures were negative. Pseudomonas and S.pneumonia and S.epidermidis were the most common isolates in keratitis(accounting for 10%, 5% and 4% respectively). Among patients younger than 19 years with keratitis, 41.5% were culture negative, and S.viridans was the most common isolate (13.2%) followed by S.aureus (9.5%) and S.pneumonie (8.1%). In the age group of 19-50 years, 54.3% were culture negative and Pseudomonas was the most common microorganism (15%) followed by enterobacter (7.8%) and S.epidermidis and S.aureus (4.3%). And in patients older than 50 years, 65.5% were culture negative, S.pneumonia accounted for 7.8% of isolates and pseudomonas and S.epidermidis for 6.5% and 4.8% respectively. In our study resistance of S.pneumonia to ceftazidim significantly increased after 2014 however other changes in antibiotic susceptibility profile was not significant.
- **Conclusion:** Pseudomonas and S.pneumonia and S.epidermidis were the most prevalent isolates in keratitis respectively. According to age S.viridans was the most prevalent isolate in patients younger than 19 years old with

a rising trend after 2014 and *Pseudomonas* was the most common isolate in patients with keratitis between 19 to 50 years of age with a decreasing trend in incidence during recent years, but *S.pneumonia* was responsible for most of culture positive keratitis over 50 years with a decreasing trend in incidence recently.

Soleimani, Mohammad

Subconjunctival Myolipoma Confirmed with Immunohistochemical Analysis

- **Authors:** Fahimeh Asadi-Amoli 1 , Mohammad Soleimani 2, Zohreh Nozarian 1, Reza Garebaghi 3, Tooba Ghazanfari 4, Maryam Parvizi 4, Keivan Rezaei 2 , Seyed Ali Tabatabaei 2
- **Affiliation:** Tehran University of Medical Sciences
- **Purpose:** To describe clinicopathological features of subconjunctival myolipoma
- **Methods:** A 17-year-old female presented with a white-pink mass in the left upper bulbar conjunctiva. The lesion extended and finished in the forniceal conjunctiva. The patient revealed normal complete ocular examinations and underwent complete surgical excision of the mass due to cosmetic concerns. The tumor was examined with light-microscopy, following Hematoxylin and Eosin (H&E), Masson-trichrome, and Immunohistochemical (IHC) staining using the following antibodies: HMB45, actin, desmin, Estrogen Receptor (ER), S 100 protein as well as Smooth Muscle Actin (SMA).
- **Results:** A definite diagnosis of subconjunctival myolipoma was obtained following a detailed pathological assessment. Six months postoperatively, no tumor recurrence was noted, and ocular examinations were within normal limits.
- **Conclusion:** Myolipoma of the soft tissue is an exceedingly rare tumor with less than 50 reported cases in the current literature and has female preponderance, and is commonly reported in the abdominal cavity and retroperitoneum. However, to date, only two cases of orbital myolipoma have been reported in the literature. The current report is the first case of subconjunctival myolipoma.

Sonbolestan, Seyed Ali

Bilateral optic neuritis as the presenting symptom of multiple sclerosis

- **Authors:** Masoud Etemadifar, Seyed Ali Sonbolestan, Mehrdad Goodarzi, Zahra-Sadat Abtahi
- **Affiliation:** Isfahan University of Medical Sciences
- **Purpose:** Optic neuritis (ON) is one of the earliest manifestations of multiple sclerosis (MS). The prevalence of bilateral ON (BON) as the presenting symptom is not clear. The aim of this study was to evaluate the prevalence of BON as the presenting symptom in MS and compare it with unilateral ON (UON).
- **Methods:** In this study, two groups of definite MS patients according to the McDonald's criteria were enrolled: Thirty patients with BON and fifty persons with UON (selected randomly from all of the UON patients) as the presenting manifestation. The patients' data were collected from the Isfahan MS Society Registry. The SPSS 22 software was used for analysis of the data. $P < 0.05$ considered as significant.
- **Results:** Thirty of 3972 MS patients presented with BON. The mean of their ages was 26.00 ± 6.29 in BON and 30.10 ± 8.25 in UON group ($P = 0.015$). Twenty-five of BON patients were females, and five were males and in the UON group, 42 were females, and eight were males. Expanded disability status scale was 1.83 ± 1.17 in BON and 1.84 ± 1.25 in UON group ($P = 0.975$). The severities of relative afferent pupillary defect (RAPD) (in pluses) were 2.00 ± 0.52 and 1.43 ± 0.72 in two groups, respectively.
- **Conclusion:** The prevalence of BON as the presenting symptom was about 0.7%. The patients who presented with BON were younger at the time of diagnosis when they were compared with those who diagnosed with UON and also had a more severe RAPD. BON could be considered as one of the important presenting manifestations of MS.

Tabatabaei, Ali

Pathogens involved in microbial endophthalmitis and trends of microbial sensitivity to routine antibiotics

- **Authors:** Seyed ali tabatabaei, Mohammad Soleimani, Reza Mirshahi, Bita Momenaei, Fereshte Tayebi
- **Affiliation:** Tehran University of Medical Sciences
- **Purpose:** To describe causative pathogens involved in microbial endophthalmitis and trends of microbial isolates sensitivity and resistance to routinely used ophthalmic antibiotics.
- **Methods:** This is a retrospective study on smear and culture samples of aqueous and vitreous humor in patients who came to Farabi eye hospital emergency ward from January 2012 to December 2018.
- **Results:** 2999 samples were collected from intraocular origin during 6 years (1231 samples from aqueous humor and 1768 samples from vitreous humor). Mean age of patients were 59.17 ± 21.30 . 75% were culture negative and *S.epidermidis* (6%) and *S.pneumonia* (4%) were the most prevalent microbial isolates. In endophthalmitis patients, younger than 19 years, 69.3% were culture negative. *S.viridans*, *S.pneumonia* and *S.aureus* accounted for 13%, 7.3% and 2.6% respectively. In 19-50 year old patients, 78.7% were culture negative, and *S.epidermidis* (9.1%) and *S.viridans* (3.7%) were the most prevalent microorganisms. In patients older than 50 years of age, 76.4% were culture negative and *S.epidermidis* (6.6%) and *S.pneumonia* (4.4%) were the most common isolates. In our study resistance of *S.pneumonia* to ceftazidim significantly increased after 2014 however other changes in antibiotic susceptibility profile was not significant.
- **Conclusion:** In our study 75% of culture samples of intraocular fluid of patients with intraocular infection were negative and *S.epidermidis* and *S.pneumonia* were the most common isolates (6% and 4% respectively). In patients younger than 19 *S.viridans* and in older than 19 *S.epidermidis* were the most prevalent microorganism detected in cultures.

Yousefi, Siamak

Glaucoma imaging signatures derived from fundus photographs using an artificial intelligence construct

- **Authors:** Siamak Yousefi
- **Affiliation:** University of Tennessee Health Science Center
- **Purpose:** To develop an artificial intelligence construct that can automatically identify glaucoma from fundus photographs
- **Methods:** We included fundus photographs from 267 normal eyes and 160 eyes with glaucoma in the study. We developed an artificial intelligence (AI) construct to distinguish normal eyes from eyes with glaucoma using fundus photographs. After training and testing the AI model, all 427 fundus photographs were used as input to the proposed model (based on a deep pre-trained architecture) consisting of region of interest on fundus photographs to identify clinically relevant glaucoma signatures. We then assessed different regions of the fundus photographs to identify potentially novel signatures of glaucoma. Those regions were more important in distinguishing fundus photographs of normal eyes from eyes with glaucoma. The clinical diagnostic ability of the AI model was evaluated by machine learning accuracy metrics and the identified glaucoma imaging signatures were validated by a glaucoma specialist to assure clinical relevance.
- **Results:** The accuracy of the method in discriminating normal eyes from eyes with glaucoma was 90%. Among fundus photographs that had been classified to glaucoma group, we observed that the AI model had identified significant features mostly in the superior/inferior peripapillary regions and within the optic nerve head.
- **Conclusion:** We developed an AI model that was able to detect glaucoma from widely-used fundus photographs with high accuracy. This AI model also identified clinically relevant glaucoma signatures from fundus photographs. This approach could be useful in glaucoma research, clinical practice, and primary care settings as an assistive tool for screening glaucoma without the need for glaucoma clinicians. An independent dataset with larger number of fundus photographs is required to validate our findings.

Zand, Amin

Central Retinal Vein Occlusion with a Branch Sparing: A Case Report

- **Authors:** Fatemeh Abdi, Amin Zand, Arzh'ang Gordiz
- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran.
- **Purpose:** To report a case of central retinal vein occlusion (CRVO) with a branch sparing in a patient without particular coagulopathies.
- **Methods:** retinal vein occlusion (RVO) is a sight-threatening retinal vascular disorder with prevalence of 0.7-1.6%. Main risk factors for the disease are age, hypertension, hyperlipidemia, diabetes mellitus, ocular hypertension and thrombophilic disorders. CRVO has two types including ischemic or non-ischemic according to clinical and para clinical investigations. We present an unusual case of non-ischemic CRVO in a 57 years old female with diabetes mellitus and hypertension as systemic diseases. All main branches of retinal vein except inferotemporal were occluded with macular edema in the right eye of the patient. Signs of the disease were confirmed by multimodal imaging's including optical coherence tomography and fluorescein angiography. In further investigation she did not have any particular cardiovascular diseases or specific thrombophilic disorders containing hyperhomocysteinemia, anti-cardiolipin antibodies, factor V Leiden mutation and protein C and S deficiency. We did not found any similar reports of multiple branches RVO.
- **Results:** Due to macular edema that leads to decreased visual acuity, intravitreal bevacizumab injection was performed in the affected eye. After one-month follow-up visit, the signs of RVO were regressed and macula edema was resolved in optical coherence tomography, so the patient underwent observation with follow-up visits.
- **Conclusion:** Patients presenting with multiple branches RVO should be investigated carefully to rule out any underlying thrombophilic disorders to prevent any further vaso-occlusive event and subsequently morbidities and mortality.

Abrishami, Mojtaba

Traumatic Sub-Macular Hemorrhage Removal by Sweeping in Vitrectomy: A New Surgical Technique

- **Authors:** Mohammad Khalife MD; Mojtaba Abrishami MD
- **Affiliation:** Eye Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
- **Purpose:** To describe a new technique in removing sub-macular hemorrhages (SMH) in traumatic patients and results in three patients.
- **Methods:** In this technique, for patients with SMH, a complete three port vitrectomy was performed. Using a back flush instrument and soft tip needle, considering safe distance from silicon tip to retina, SMH is swept using gentle flushes to a temporal site of the macula in which it removed via a retinotomy. In a case with macular hole, the hemorrhage is drained via the hole.
- **Results:** In case one, SMH was swept to the temporal of the macula and removed via a retinotomy. Best corrected visual acuity was improved from hand motion to 20/ 30. In the second patient, four weeks after trauma, SMH was removed and after three weeks the BCVA was improved to 20/25 after three weeks. In the third case that had macular hole, the SMH was drained via the MH and BCVA was improved from hand motion to 20/100.
- **Conclusion:** Sub-Macular hemorrhage sweeping using back flush after a complete vitrectomy seems to be efficacious in restoring macular anatomical and visual function.

Aghamirsalim, Mohammad reza

Histopathological Comparison of Asian vs. Non-Asian Iranian Medial Upper Eyelids

- **Authors:** Mohsen BahmaniKashkouli, MD, MohamadrezaAghamirsalim, MD, NasrinShayanfar, MD, Houriesmaeilkhanian, MD, Nasser Karimi, MD.
- **Affiliation:** Eye Research Center, The Five Senses Institute, Iran University of Medical Science, Tehran, Iran3. Department of pathology, Rassoul Akram Hospital, Iran University of Medical Sciences.
- **Purpose:** Asian upper eyelids are unique in terms of eyelid crease, tarsal plate show (TPS) and epicanthal fold (EF). Literature shows 7 articles all of which studied on cadavers and assessed eyelid crease and central skin thickness. There is, however, no study on histological characteristics of medial upper eyelid skin between Asian

vs. non-Asian subjects. The aim is to compare medial upper eyelid thickness and elastic fiber density and morphology of Asian Iranian vs. Non-Asian Iranian age matched group. This is the first study comparing medial upper eyelid of Asian vs. non-Asian subjects.

- **Methods:** In a prospective comparative study, 5 right upper eyelid skin of 5 Asian-Iranian non-smokers, class III Fitzpatrick skin type females (18-40 years old) were compared to their age matched counterparts (Non-Asian). Medial upper eyelid skin (medial limbus to medial canthus) was preoperatively marked and intraoperatively removed and sent for histopathological examination by a masked observer. A masked pathologist recorded skin thickness as well as elastic fiber density and morphology (10 specimens). Primary outcome measure was to compare histopathological characteristics of two groups. Secondary outcome measure was to compare 3 zones (inferior, middle, superior) of medial eyelid skin within each group in order to observe if different parts of medial upper eyelid are showing different histopathological characteristics.
- **Results:** Two groups were not significantly different regarding to epidermal ($0.1 < P < 0.9$), Dermal ($0.3 < P < 0.8$), and total skin thickness ($0.3 < P < 1$) as well as elastic fiber density ($0.1 < P < 0.7$) and morphology ($P=1$). Similarly, Histopathological characteristics were not significantly different between 3 zones of medial upper eyelid at each group ($0.4 < P < 1$).
- **Conclusion:** No significant histologically difference was found between Asian Iranian versus Non-Asian Iranian medial Upper Eyelids regarding the thickness, elastic fiber density and morphology.

Akbari, Mitra

Can we predict patients' cooperation during phacoemulsification surgery under topical anesthesia?

- **Authors:** Abdolreza Medghalchi, M.D., Abtin Heirati, M.D., Mitra Akbari, M.D. (Corresponding author), Reza Soltani Moghadam, M.D., Yousef Alizadeh, M.D.
- **Affiliation:** Department of Ophthalmology, Eye Research Center, Guilan University of Medical Sciences, Rasht, Iran.
- **Purpose:** Topical anesthesia (TA) may accompany with more discomfort for some patients during cataract surgery. We aimed to evaluate the potential factors that can be used for predicting patient's cooperation during phacoemulsification surgery under TA.
- **Methods:** One hundred sixty consecutive cases that were candidate for phacoemulsification surgery enrolled in this prospective study. Patients' sex, age, place of residency (urban or rural), education level (literate and illiterate) and physical examination variables (visual acuity, reaction to eye drop, cooperation during tonometry and reaction to press on the lacrimal sac before surgery) evaluated. Patients' cooperation during surgery was classified as successful (good and satisfactory) or failed (weak) groups.
- **Results:** In this study, 103 (64.4%) cases showed a good or satisfactory cooperation, and others had a weak cooperation. There was no correlation between patients' cooperation during surgery and sex ($p=0.2$), age ($p=0.7$), place of residency ($p=0.3$) and education level ($p=0.3$). The successful group showed a higher rate of non-reaction to eye drop ($p=0.0001$), good cooperation during tonometry ($p=0.0001$), non-reaction to press on lacrimal sac ($p=0.0001$), and lower visual acuity ($p=0.045$). In the multi-logistic regression, non-reaction to eye drop ($OR=66.4$), good cooperation during tonometry ($OR=21.2$, good vs. bad and $OR=7.2$, satisfactory vs. bad), lower visual acuity ($OR=7$, <0.1 vs. $0.1-0.4$ d) is the significant predictors for the success of TA.
- **Conclusion:** This study showed that some ocular examination tests before surgery (visual acuity, reaction to eye drop, cooperation during tonometry and reaction to press on the lacrimal sac) can predict patients' cooperation during phacoemulsification surgery under TA.

Akbarzadeh, Siamak

Frequency and Risk Factors of Retinopathy of Prematurity in newborns admitted to NICU-Hamadan

- **Authors:** Siamak Akbarzadeh-Behnaz Basiri-Mohammad Kazem Sabzehei- Maryam Shokuhei-Sumayeh Eivazeh
- **Affiliation:** Associate professor of ophthalmology-Hamadan university of medical sciences
- **Purpose:** The aim of this study was to determination the prevalence of retinopathy of prematurity and related risk factor in infants admitted and examined in Fatemieh neonatal intensive care unit-Hamadan.

- **Methods:** In this cross-sectional-descriptive study, with census sampling methods, all premature infants who were hospitalized four weeks or more in NICU. Regarding the incidence of retinopathy and its risk factors was evaluated.
- **Results:** In this study, 80 neonates were studied, 24 of which (30%) had retinopathy of prematurity. Of these, 16 were in Stage I and 8 were Stage II.. Mean gestational age of infants was 29.71 ± 2.16 weeks, and more than 75% of ROP were observed in infants under 29 weeks gestational age. However, there was a significant correlation between retinopathy with gestational age, low birth weight, first and fifth minute apgar score, need to resuscitation, use of inotrop drugs and duration of oxygen therapy. But, in the logistic regression, only significant correlation was found between low birth weight and retinopathy.
- **Conclusion:** The incidence of retinopathy in premature infants born is about the average range of internal and external statistics. Among the independent variables that affect retinopathy, low birth weight was the only significant variable affecting the incidence of retinopathy.

Alizade Hassan Kiadeh, Mehdi

Retinal Nerve Fiber Layer Abnormalities in patients with Schizophrenia referred to Hamedan Farshchian hospital

- **Authors:** Mehdi alizadeh,noushin bazzazi,Yeganeh Delbordeh
- **Affiliation:** Asistant professor of ophthalmology ,hamedan university of medical science
- **Purpose:** to investigate changes in the neural layer of the retina with OCT as an analogue of possible neurodegenerative changes in patients with schizophrenia
- **Methods:** A case-control study was performed on 15 patients with chronic schizophrenia and 15 cases of acute schizophrenia compared with 15 healthy individuals. After ophthalmic examinations, OCT of optic nerve head ,NFL and macula performed for all of them . The values included the mean retinal neuronal thickness (RNFL), atrophic changes in the retinal neural fibers in the four quadrants of nasal, temporal, inferior and superior as well as the thickness of different macular areas and macular volume. Also, the patients were divided into four groups in terms of positive and negative symptoms, and the correlation between the thickness changes of the regions affected by these symptoms was investigated
- **Results:** Based on the findings of optical coagulation tomography (OCT), the structure of the neural fibers of the acute and chronic schizophrenic patients, including the thickness of the retinal neural fibrous layer (temporal region), macular thickness (central subfield) and thickness of the retinal nerve fiber layer of the right eye (Average RNFL) were significantly altered. There was also a significant correlation between the reduction in the thickness of the retina neural layer and the prevalence of negative symptoms in schizophrenic patients.
- **Conclusion:** Optical coherence tomography can be a non-invasive method for the study of neurodegenerative diseases such as schizophrenia, which helps us to understand the nature and stage of the disease. In this study, the structure of the neural fibers of the acute and chronic schizophrenic patients in some areas significantly changed. There was also a significant correlation between the reduction in the thickness of the retina neural layer and the prevalence of negative symptoms in schizophrenic patients

Alizadeh Nia, Nastaran

Role of decreased visual acuity, contrast sensitivity disorder and visual field defect in traffic accidents and recommendations to improve these factors

- **Authors:** Nastaran Alizadeh nia, Ehsan ShirAli Vand, Haleh Kangari
- **Affiliation:** Medical Student, Students' Scientific Research Center, Tehran University of Medical Sciences, Tehran, Iran.
- **Purpose:** One of the requirements of safe driving is having good and strong vision. Some vision disorders, can increase the risk of traffic accidents. The present article was conducted to examine the role of decreased visual acuity, contrast sensitivity disorder, and visual field defect in accidents. Also, some recommendations are provided to improve these factors.
- **Methods:** In the present review article, three databases of Google scholar, PubMed, and Scopus were search for articles in English and without time limitation using some keywords (Contrast sensitivity, visual field, inappropriate

glasses, traffic accidents, and vision impairment) individually and in combinations.

- **Results:** If there is a correlation between visual acuity and accidents, it is very weak. There was a positive correlation between contrast sensitivity disorder and traffic accidents. The risk of traffic accidents can be increased if the visual field defect is binocular and severe. The main considerations to improve these factors have been in the form of recommendations to drivers and changing screening processes.
- **Conclusion:** Impaired visual acuity has a poor relationship with car accidents. Researchers do not have consensus over the direct relationship between vision disorder and traffic accidents and some believe this issue is inconclusive. But among the factors studied, contrast sensitivity has a greater impact on car accidents compared with the other two factors. Therefore, more studies should be performed to identify and reduce the causes of impaired contrast sensitivity.

Arabi, Amir

To report presentation of hypertropia with esotropia in a case of anisometropic Heavy eye syndrome (HES).

- **Authors:** Abbas Bagheri, Mohadese Feizi, Amir Arabi,
- **Affiliation:** Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences, No 23, Paidarfard St., Boostan 9 Street, Pasdaran Avenue, Tehran 16666, Iran
- **Purpose:** : To report presentation of hypertropia with esotropia in a case of anisometropic Heavy eye syndrome (HES).
- **Methods:** Case: 33-years old lady referred to strabismus clinic for evaluation. Corrected visual acuity was 2/10 and 4/100 and refraction was -24-3.25×103 and -10.25-0.75× 34 in the right and left eye respectively. There was esotropia of 45 PD and hypertropia of 25 PD in her left eye. Abduction limitation was present in both eyes but more severe in right eye, supra-duction was also limited in the right eye. A large macular scar was seen in the left eye. On orbital MR imaging lateral rectus was displaced inferiorly and superior rectus path was displaced nasally on both sides but more prominent on the right side. The assessment was bilateral HES (Heavy eye syndrome) that was more severe on dominant right eye.
- **Results:** Unilateral suture myopexy on right side and bilateral medial rectus recession was performed which resulted in orthophoria and improved comitancy in side gazes and this result lasted in one year follow up
- **Conclusion:** Conclusion: In cases of anisometropic HES, the severity of symptoms may not equal on both eyes and by changing fixation, hypertropia may appear instead of expected hypotropia. In this situation unilateral myopexy on more severe side result in vertical balance between eyes. Bilateral medial rectus recess may be required to correct esotropia.

Ayatollahi, Ali

Current methods to Myopia control: an overview of systematic reviews and metaanalyses

- **Authors:** Ali Ayatollahi, Seyed Amirhosein Mirfendereski
- **Affiliation:** Novindidegan Eye Center
- **Purpose:** The prevalence of myopia is high and increasing. Several interventions have been attempted to control myopic progression. the aim of this study is to synthesize evidence provided by systematic reviews and meta-analyses on myopia control.
- **Methods:** We performed a literature review using PubMed and Medline databases since 2011 to 2018. Studies involving myopia epidemiology and control of myopia progression were selected; only studies published in English were reviewed.
- **Results:** Low dose Atropine eye drops and Orthokeratology are highly effective for controlling myopia progression. Bifocal or progressive addition spectacles and contact lenses, peripheral defocus contact lenses and daily outdoor light exposure are also effective. however, myopia undercorrection is ineffective.
- **Conclusion:** Although there are various recommended methods in order to prevent myopia progression, long-term studies are required on each modality

hydroxychloroquine retinal toxicity

- **Authors:** pejvak azadi, darioush felegary
- **Affiliation:** kermanshah university of medical sciences
- **Purpose:** to present a case with rapidly progressive hydroxychloroquine retinopathy
- **Methods:** Retrospective evaluation of patient medical record.
- **Results:** A 37-year-old female presented with bilateral gradually decreasing visual acuity since 1 month ago. Diagnosed as rheumatoid arteritis, she was receiving hydroxychloroquine (HCQ) since 2 months ago. At presentation, the best corrected visual acuity was 8/10 in her right eye and 9/10 in her left eye.. Fundus examination revealed bilateral macular mottling changes, which showed delayed staining at fluorescein angiography. She was diagnosed as HCQ toxicity, advised to stop drug usage.
- **Conclusion:** while HCQ retinal is mostly seen after longterm drug usage, reported cases of soon toxicity emphasizes the importance of baseline visit and meticulous follow up.

optic disc drusen, mismanaged as optic neuritis

- **Authors:** pejvak azadi
- **Affiliation:** kermanshah university of medical sciences
- **Purpose:** to report a case of optic disc drusen, mismanaged as optic neuritis
- **Methods:** • a 28 year-old female with history of right eye decreased vision since years ago was referred to the clinic. file review revealed previous treatment sessions with intravenous steroid pulse, with the diagnosis of optic neuritis. She was evaluated, and afraid of probable multiple sclerosis.
- **Results:** • at the time of presentation the vision was 0.2 at the right eye. funduscopy revealed bumpy appearance of the optic nerve head. imagings were do compatible with optic disc drusen. the left eye examinations were normal. six months later the vision and funduscopy were stable
- **Conclusion:** • Any suspected cases of optic neuritis should be curiously examined by an experienced ophthalmologist, ruling out other optic nerve head disorders , avoiding mismanagement.

Novel findings in enhanced S-cone syndrome: a case with macular retinal neovascularization and severe retinal vasculitis

- **Authors:** Fatemeh Bazvand, Hassan Khojasteh, Mohammad zarei, Hamid Riazi-Esfahani
- **Affiliation:** farabi eye hospital, Tehran university of medical sciences
- **Purpose:** To describe a novel association of enhanced S-cone syndrome (ESCS) with macular retinal neovascularization and severe retinal vasculitis.
- **Methods:** Clinical examination, spectral domain optical coherence tomography, fluorescein angiography, fundus autofluorescence, infrared reflectance and electroretinography were used to study a 25-year-old male with a history of night blindness from early childhood and recent accelerated visual loss in right eye.

- **Results:** Pigmented lesions were observed along the arcades without peripheral retinal involvement. Intraretinal cystoid spaces, retinal neovascularization of posterior pole and severe peripheral and posterior retinal vasculitis were found on clinical examination and multimodal imaging. Based on characteristic clinical and electroretinographic findings, a diagnosis of ESCS was made
- **Conclusion:** This case highlights novel associations of retinal neovascularization and vasculitis with ESCS

Bolkheir, Alireza

Unilateral Duane Retraction Syndrome with Unilateral Congenital Cataract: A Case Report

- **Authors:** Majid Farvardin, Alireza Bolkheir
- **Affiliation:** Poostchi Ophthalmology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran.
- **Purpose:** To report unilateral congenital cataract in a case of unilateral Duane retraction syndrome.
- **Methods:** In this case, we present a six years old girl who was referred with ocular deviation. She had history of congenital cataract surgery in the left eye at the age of two years. The subject had no associated systemic disease, developmental delay, or positive family history.
- **Results:** She was finally diagnosed as having Duane retraction syndrome in the left eye.
- **Conclusion:** Duane retraction syndrome can be associated with congenital cataract due to matching time of gestational development of the lens to that of ocular and non-ocular anomalies associated with Duane syndrome. As both of these disorders are rare, coincidence of both in the same person and the same eye by chance is a very remote possibility.

Boroon, Mehrdad

Crystallin Lens

- **Authors:** mehrdadboroon
- **Affiliation:** Original writer
- **Purpose:** The eye or eye of the prominent part is the first sensation of the five senses of sight. In the Pahlavi language, this term was used in the same way. The lens is a convex, flexible bezel, transparent and transparent, with a diameter of 9 mm and a thickness of 4 mm, which is between the alkaline fluid and the vitreous of the eye. It connects to the grooves between the eyelids by the zenoves. A number is located behind the pupil and it performs the matching and concentration of light on the retina.
- **Methods:** The eye or eye of the prominent part is the first sensation of the five senses of sight. In the Pahlavi language, this term was used in the same way. Various kinds of light-sensitive organs are found in living organisms. The simplest types of eyes can only detect the presence of light in the surroundings, while more sophisticated eyes can recognize patterns and colors.
- **Results:** When studying, the lens with its curvature changes makes it possible to see the near objects well.
- **Conclusion:** The lens (after the cornea) is the second strength of the eye. The lens is located behind the pupil and it performs alignment and concentration of light on the retina. When studying, the lens, with its curvature, makes it possible to see close objects well.

Daryabari, Seyed Hashem

The efficacy of topical interferon alpha 2b in primary pterygium

- **Authors:** Seyed Hashem Daryabari¹, Esmaeil Shabaninezhad^{1,*}, Mohsen Saberi Isfeedvajani², Ahmad Zarei³, Shahin Zekri Amir³, Khosrow Jadidi¹

- **Affiliation:** Chemical Injuries Research Center, Systems biology and Poisonings Institute, Baqiyatallah University of Medical Sciences, Tehran,Iran
- **Purpose:** The pterygium is a benign fibrovascular tissue that originates from the bulbar conjunctiva and invades to the surface of cornea. The interferon alfa 2b (IFNα2b) is a drug with anti-viral and anti-proliferative characteristics. In contrast, the pterygium is a proliferative tissue that in several studies, it's correlation with human papilloma virus (HPV) is reported. This study has been designed to evaluate the effect of IFNα2b in treatment of primary pterygium.
- **Methods:** Intralesional injections of IFNα2b (3 million IU/ml) was done for all patients in two times; the first injection was done on the first day and second injection was performed at the end of first month. Also, topical IFNα2b (1 million IU/ml) was prescribed to all patients as: 4 times daily in first month, 3 times daily in second month and 2 times daily in third month. Ophthalmic examinations, uncorrected best visual acuity (BCVA) and corrected best visual acuity (UCVA), refraction, keratometry, size and grade of pterygium was done for all patients 4 times: on the first day (before the first intralesional injection), at the end of first, third and sixth month
- **Results:** 18 eyes (16 patients) were evaluated in this study. UCVA in sixth month in contrast to first day (P value: 0.00) had statistically significant improvement. However, other variables did not have statistically significant improvement.
- **Conclusion:** According to findings of this study, it can be said that IFNα2b has no significant improving effect on the primary pterygium and cannot be a good alternative to existing surgical treatments. Another finding was no progression of refraction, keratometry, size and grade of primary pterygium in all patients during six month follow up that can imply the inhibitory effect of IFNα2b on primary pterygium. However, it needs further study with longer follow up to confirm.

Davari, Mohammad hossein

Postoperative intraocular lens opacification

- **Authors:** Mohammad Hossein Davari ,Mahdi Davari
- **Affiliation:** Assistant Professor, Ophthalmology Dept. Birjand Cardiovascular Disease Research Center, Birjand University of Medical Sciences, Birjand, Iran
- **Purpose:** Intraocular lens (IOL) opacification is rare but may occur after intra vitreal air or oil injection after pars plana vitrectomy (PPV). We reported two cases of IOL opacification within the pupillary region.
- **Methods:** Chart was retrospectively reviewed. The predisposing factors and the visual acuity were analyzed. The opacification was evaluated by anterior segment optical coherence tomography (AS-OCT).
- **Results:** Case 1: A 66-year-old healthy woman with nearly mature cataract underwent phacoemulsification and IOL implantation in the right eye. Postoperative vision was 20/40. Seven months after surgery, fine granular deposits were seen in the anterior surface of IOL. The vision decreased to 3m count finger. Case 2: A 74-year-old woman with diabetes mellitus he presented with proliferative diabetic retinopathy, and vitreous hemorrhage received pars plana vitrectomy (PPV) and silicone oil tamponade 13 months after cataract surgery in the left eye. Granular deposits were observed in hydrophilic acrylic IOL 1 month after surgery. The visual acuity decreased to 1m count finger. AS-OCT revealed hyper reflective materials in the anterior surface of IOL in both cases.
- **Conclusion:** An uncommon phenomenon of IOL opacification in the pupil region may occur after PPV, which may be associated with intraocular air or oil injection or systemic diseases.

Doroodgar, Farideh

Therapeutic effect of Corneal Perforation With Lenticules From Small Incision Lenticule Extraction Surgery

- **Authors:** Farideh Doroodgar, MD1, Sana Niazi,MS2 , Azad Sanginabadi
- **Affiliation:** Negah eye hospital
- **Purpose:** To assess the utilization of lenticules extricated utilizing small incision lenticule extraction (SMILE) surgery as a surgical alternative for wound closure in corneal perforation.
- **Methods:** Corneal lenticules obtained through SMILE surgery with central thickness more than 100 micrometer

were fixed over corneal perforation sites using 10-0 nylon interrupted stitches. Patients were monitored for a minimum of 3 months and were assessed using fluorescein, slit-lamp microscopy and best spectacle-corrected visual acuity (BSCVA) measurements. Postoperative complications throughout the study period were recorded.

- **Results:** Corneal perforations were successfully sealed in all 4 patients; 2 patients (50%) exhibited improved postoperative BCVA. Between 2 and 6 weeks after the operation, part of the lenticules became incorporated into the corneal stroma and complete reepithelialization was achieved. During the follow-up period of 3 months, no evidence of infection, relapse, or perforation was detected in any patient.
- **Conclusion:** These starter discoveries recommend that the utilization of corneal lenticules might be a protected and viable careful option for corneal perforation closure, with potential clinical application as moderately basic and cheap transitory measures to improve the state of the cornea for further authoritative studies.

Doroodgar, Farideh

Small Incision Lenticule Extraction for Hyperopia

- **Authors:** Farideh Doroodgar, MD1, Sana Niazi, MS2, Azad Sanginabadi, MSc1, Cyrus Alinia, PhD3
- **Affiliation:** Negah eye hospital
- **Purpose:** To assess visual and refractive results of small incision lenticule extraction (SMILE) for hyperopia.
- **Methods:** This prospective study of vertex-centered hyperopic SMILE used the VisuMax femtosecond laser (Carl Zeiss Meditec, Jena, Germany). Patient with + 9.00 diopters (D) and corrected distance visual acuity (CDVA) of 20/40. Lenticule parameters were 6.7-mm diameter, 2-mm transition zone, 30- μ m minimum thickness, and 120- μ m cap thickness. Standard outcomes analysis was performed for the 3-month data
- **Results:** After surgery spherical equivalent refraction was +3.00 D and cylinder was -1.00 D. For eye targeted for emmetropia, uncorrected distance visual acuity was 20/40.
- **Conclusion:** visual and Refractive outcomes 3 months after SMILE for hyperopia were promising, given the high degree of hyperopia corrected and relatively reduced CDVA in this population.

Ehsaei, Asieh

Comparison of cyclopentolate versus tropicamide cycloplegia: A systematic review and meta-analysis

- **Authors:** Asieh Ehsaei, Negareh Yazdani, Ramin Sadeghi, Hamed Momeni-Moghaddama, Leili Zarifmahmoudi
- **Affiliation:** Department of Optometry, Mashhad University of Medical Sciences, Mashhad, Iran
- **Purpose:** The aim of the present meta-analysis is to compare the efficacy of cyclopentolate and tropicamide in controlling accommodation during refraction.
- **Methods:** A comprehensive literature search was performed in PubMed, Scopus, Science direct and Ovid databases by the key words: "tropicamide"; "cyclopentolate"; "cycloplegia" and "cycloplegic" from inception to April 2016. Methodological quality of the literature was evaluated according to the Oxford Center for Evidence Based Medicine and modified Newcastle- Ottawa scale. Statistical analyses were performed using Comprehensive Meta-Analysis (version 2; Biostat Inc., USA).
- **Results:** The present meta-analysis included six studies (three randomized controlled trials and three case-control studies). Pooled standardized difference in the mean changes in the refractive error was 0.175 D [lower and upper limits: -0.089; 0.438] more plus in the cyclopentolate group compared to the tropicamide group; however, this difference was not statistically significant ($p = 0.194$; Cochrane Q value = 171.72 ($p < 0.05$); $I^2 = 95.34\%$). Egger's regression intercept was -5.33 ($p = 0.170$). Considering type of refractive errors; refractive assessment procedure and age group; although cycloplegic effect of cyclopentolate was stronger than tropicamide; however, this effect was only statistically significant in children; hyperopic patients and with retinoscopy.
- **Conclusion:** We suggest that tropicamide may be considered as a viable substitute for cyclopentolate due to its rapid onset of action. Although these results should be used cautiously in infants and in patients with high hyperopia or strabismus when using tropicamide as the sole cycloplegic agent especially in situations that the

findings are variable or there is no consistency between the examination results and clinical manifestations of the visual problems.

Eshraghi, Bahram

Palpebral Anthrax, A rare, important issue in rural areas.

- **Authors:** Bahram Eshraghi¹, MD Ophthalmologist, Oculoplastic surgeon. Mohammadreza Fazel¹, MD. Resident of Ophthalmology
- **Affiliation:** Eye research center, Isfahan university of medical science.
- **Purpose:** To report a patient with localized palpebral anthrax
- **Methods:** Case presentation: An eight-year old boy was presented with a generalized lid edema in both sides and high grade fever starting 5 days before the admission. Then a black painless, necrotic and ulcerative lesion was appeared in the left lids. He was living in rural areas and had a history of direct contact with animal products. Considering his social history and clinical manifestations, anthrax is the most probable diagnosis. After performing a smear and bacterial culture from the necrotic tissues and consulting with pediatric infectious specialist, we started the antibiotic therapy with Oral Ciprofloxacin 375 mg twice a day. The bacterial culture proved our diagnosis. In later days, the lesion started to heal and body temperature became normal. After complete healing, the patient was discharged and he was recommended to come to the clinic for further follow up in the near future.
- **Results:** Same as method
- **Conclusion:** Bacillus Anthracis, is an aerobic gram-positive rod that involves various organs and can cause a potentially lethal disease. Localized eyelid infection, is a rare presentation of cutaneous anthrax that can cause some permanent sequels including ectropion, corneal scarring and also optic atrophy. Consequently, it should be considered in the differential diagnosis of lid infections, especially in patients with the history of direct contact with animals.

Eslami, Fateme

Comparison of Amniotic Membrane Transplantation and Conjunctival Autograft Transplantation for the Treatment of Pterygium

- **Authors:** Mehdi Alizadeh, Fatemeh Eslami, Mohammad Ali Seifrabiei, Nasrin Mohebi Emam
- **Affiliation:** 1Department of Ophthalmology, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran
- **Purpose:** Pterygium is a fibrovascular and wedge-shaped lesion that extends from bulbar conjunctiva to the cornea. Pathogenesis of pterygium depends on several factors and sunlight exposure is an important risk factor for this syndrome. Surgery is regarded as the key to successful treatment of pterygium. With this background in mind, the aim of this study was to determine the effect of amniotic membrane transplantation (AMT) for the treatment of pterygium. Moreover, this technique was compared clinically with conjunctival autograft transplantation (CAT).
- **Methods:** In this randomized clinical trial, 70 patients either referred to the ophthalmologic clinic of Farshchian Hospital in Hamadan, Iran, or diagnosed by an ophthalmologist with primary or recurrent pterygium were enrolled in this study. The patients were randomly divided into two groups, (n=35). One group underwent pterygium surgery using AMT and the other one was subjected to CAT. Furthermore, the inflammation and recurrence rates after surgery were compared in both groups. Data were analyzed in SPSS software (Version 16) through the Chi-square and the independent sample t-tests.
- **Results:** According to the results, the mean ages of patients in the AMT and CAT groups were 47.34 ± 14.85 and 48.26 ± 15.26 years, respectively ($P=0.778$). Moreover, inflammation was observed in 28.6% and 8.6% of patients in the AMT and CAT groups, respectively. The recurrence rates were 22.9% and 11.4% in the AMT group and CAT group, respectively ($P=0.205$)
- **Conclusion:** The AMT had a higher recurrence rate and postoperative inflammation, compared to the CAT. Although this difference was not statistically significant, the CAT is widely used as a treatment for patients with pterygium.

Epidemiologic Study of Ocular Injuries in Patients With Maxillofacial Fracture in Hamadan

- **Authors:** Fatemeh Eslam, Mohammad Zandi, Mohamad Ali Seif Rabiei, Nemat Bigonah, Sima Sharif
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- **Purpose:** Maxillofacial fractures are frequently complicated with injury to the eye and its adnexa. These injuries may result in loss of vision in one or both eyes or may compromise ocular function. This study aimed to evaluate ocular injuries in the patients with maxillofacial trauma.
- **Methods:** Two hundred patients with maxillofacial fractures were examined by maxillofacial surgeons and suspected cases of ocular injuries were referred for ophthalmologic consult. Sixty-three patients were excluded from the study due to death and low Glasgow Coma Score (GCS). Patients' information including maxillofacial fractures and ocular injuries were recorded in check lists and analyzed with SPSS software version 16.0.
- **Results:** out of 137 patients, 106 (77.4%) were males and 31 (22.6%) were females and their mean age was 34.1 ± 17.1 . The age group with the highest rate of involvement were 21-40 years (46%). The most common cause of injury was motorcycle accident (32.1%), car accident (30.7%), and in the third place was falling down (13.9%). The incidence of right eye injuries was 5/9%. Right eye was also involved more frequently than left eye (38% and 32.1%, respectively), and in 41 cases (29.9%) both eyes were involved. The prevalence of minor ocular injury was 52.6%, moderate injury was 24.8%, and major injury was 22.6%. The most common ocular injuries were periorbital ecchymosis (83.9%) and subconjunctival hemorrhage (72.2%), and unfortunately 5 cases (3.6%) lost their vision
- **Conclusion:** The significant prevalence of ocular injuries due to maxillofacial trauma certifies the necessity of immediate ophthalmologic examination to prevent permanent vision loss. A multidisciplinary team composed of neurosurgeons, plastic, oral and maxillofacial, ENT and ophthalmic surgeons are suggested to improve management of maxillofacial trauma

Eccrine hidrocystoma of the eyelid

- **Authors:** Fatemeh Eslami, Hamid Reza Ghasemi Basir,
- **Affiliation:** 1Department of Ophthalmology, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran
- **Purpose:** Hidrocystoma is a rare benign adnexal cystic lesion originating from sweat glands (eccrine or apocrine). Hidrocystoma occurs predominantly in the head and neck region. Periocular hidrocystomas are relatively uncommon. There is no gender or race predisposition. Spontaneous resolution is rare, especially with large cysts, and successful management usually requires excision with complete removal of the cyst wall.
- **Methods:** : A 44-year-old male admitted to our clinic with mobile mass in lower eyelid and conjunctival cystic lesion, which had increased in size over the previous 6 months. All other ophthalmologic findings were within normal limits in both eyes. The mass was exposed by blunt dissection through the lower palpebral conjunctiva. Excision was continued by careful blunt dissection in order to avoid capsule rupture and the cystic mass was removed from the surrounding tissues. The dimensions of the cyst were 8x12x10 mm macroscopically.
- **Results:** Pathological examination revealed a benign cystic mass lined with a single layer of columnar epithelium. Immunohistochemically, the mass did not exhibit ki-67 staining, that was consistent with eccrine hidrocystoma.
- **Conclusion:** : Eccrine Hidrocystoma should be considered in case of painless cystic swelling in periorbital region even though its occurrence is rare. . Hidrocystoma do not recur if total excision is achieved which was done in our case.

Investigating the Causes, Clinical Specifications and Prognosis of Wound Opening after Corneal

Transplantation in Khatam Center of Ophthalmology

- **Authors:** Alireza Eslampoor, MD
- **Affiliation:** Ophthalmologist, Cornea fellowship, Associate Professor of Ophthalmology, Mashhad University of Medical Sciences, Mashhad, Iran
- **Purpose:** The purpose of this study was to evaluate the predisposing factors, causes, clinical features, complications and prognosis of patients with wound dehiscence after corneal transplantation in Khatam Ophthalmology Hospital during 2007-2018.
- **Methods:** This study was performed on all records of patients with wound dehiscence diagnosis and history of corneal transplantation in Khatam Eye Hospital during the period of 2007-2018.
- **Results:** This study was performed on 45 patients (31 males / 14 females) aged between 8-79 years and mean age of 37.55 ± 20.04 years. In 35 cases (77.8%) the causative factor was trauma and followed by wound dehiscence after suture removal in 10 cases (22.2%). The time interval from corneal transplantation to wound dehiscence ranged from 1 day to 28 years, with a mean of 2.99 ± 5.24 years and a median time of 270 (32,5-1277,5) days. The final vision ranged from NLP to BCVAlog10 = -0.45. In the final exam, 66% of the subjects had the vision of CF and more and the best visual endpoint was VA 0.9. The most commonly complications were IOP rise in 10 (23.3%), glaucoma in 5 (11.6%), graft rejection in 5 (11, 6%), aphakia in 3 (8, 3%), vitreous hemorrhage in 2 (5, 4%), iris prolapse in 1 (4, 3%) of patients.
- **Conclusion:** All patients who have underwent a corneal transplant are at lifelong risk of wound dehiscence. In the vast majority of our cases wound dehiscence has occurred in the first 3 years after transplantation. Trauma is the leading cause of wound dehiscence especially work related traumas.

Golestani, Shahin

cataract surgery in myopic patient with artiflex lens:a case report

- **Authors:** dr siamak zareei ghanavati-dr shahin golestani
- **Affiliation:** Eye Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
- **Purpose:** phacoemulsification and artiflex lens explantation in myopic patient in one treatment.
- **Methods:** with one 3 mm cornea main wound and two stab we explanted artiflex from iris, then fill the anterior chamber with silicon oil and due to corrected force we can explanted the artiflex without any cutting lol.
- **Results:** this article or clip is a case report likelihood that show how we can explant an artiflex lens from 3 mm cornea main wound with out any additional procedure for phacoemulsification surgery in a myopic patient
- **Conclusion:** phacoemulsification and artiflex lens explantation in myopic patient in one treatment.

Hasani, Hamidreza

Heterochromia Iridum: A Case Series of Different Types

- **Authors:** Hamidreza Hasani, Mahsa Sardarinia
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- **Purpose:** To report three cases of heterochromia iridis, asymmetry of iris pigmentation, which are categorized in three main groups: idiopathic, congenital and acquired.
- **Methods:** Case 1: A 25-year-old female, referred to our clinic in June 2019 complaining of different colors of her both eyes since childhood, seeking for treatment. There was no remarkable point in her past ocular and systemic history. On examination, right eye was green and the sound eye was brown. Other ophthalmic examinations were normal. She had idiopathic type of heterochromia.
- **Results:** Case 2: A 20-year-old medical student was seen because of her right upper lid droop and lighter color since birth. Examination revealed complete visual acuity of 20/20 in both eyes. There was a slight ptosis on the right eye, but levator function was good on both sides. The iris color on the right side was lighter than the other

one. The right pupil was miotic. By performing phenylephrine test, congenital Horner's syndrome was confirmed. Case 3: A 36-year-old male came to our clinic complaining of decreased visual acuity and color change of his left eye gradually since 27 years ago, with occasionally redness of his left eye. No systemic disease was noted. His right eye was green and the fellow eye was blue. Examinations of her left eye revealed stellate keratic precipitates over corneal endothelium, 1+ cell presence in anterior chamber, 2+ vitritis and significant posterior subcapsular cataract. Confocal scanning confirmed the diagnosis of Fuchs' Heterochromic Iridocyclitis. His vision improved to 10/10 after cataract surgery.

- **Conclusion:** Comprehensive ocular and systemic evaluations are vital to differentiate the various types of heterochromia and facilitate the treatment of hypo or hyper-chromic eye.

Hasani, Hamidreza

Maxillary sinus squamous cell carcinoma with extension to orbit: A case report

- **Authors:** Hamidreza Hasani, MD; Marjan Razi-Khosroshahi, MD
- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran
- **Purpose:** Squamous cell carcinoma of maxillary sinus is a rare highly aggressive pathology and may invade the surrounding tissues and other sinuses. It presents with various non-specific signs and symptoms which may lead to delayed diagnosis and poor outcomes.
- **Methods:** A 50 year-old-male presented to our clinic with loss of vision, proptosis of his right eye and mild swelling within 10 days prior to admission. He noted that he had a mild pain in right eye, nasal obstruction and rhinitis starting about one month previously. The intraoral examination didn't reveal any oral ulcers or teeth involvement. CT scan study revealed a lesion with extension to the orbital cavity destroying inferior and medial walls of the orbit highly suggestive of maxillary squamous cell carcinoma with extension to orbit.
- **Results:** Biopsy revealed well differentiated squamous cell carcinoma with necrosis. The patient underwent maxillectomy and total orbital exenteration.
- **Conclusion:** Squamous cell carcinoma of maxillary sinus usually manifests with non-significant and non-bothersome symptoms and it is usually ignored and not diagnosed until late progressive stages of the disease and causes morbidity and mortality. Strict evaluation and removal of the primary tumor is essential to prevent it extending to other parts.

Hasanzadeh, Samira

The effect of intravitreal bevacizumab injection on the corneal endothelial cells : A systematic review

- **Authors:** Samira Hassanzadeh, Akbar Derakhshan, Alireza Eslampour, Esmaeil Safinezhad
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- **Purpose:** Bevacizumab (Avastin), as an effectiveness treatment modality, is currently used in patients with various ocular disease. However the results have been promising, the use of bevacizumab in the treatment of ocular disease is an off-label application. Hence, the aim of this study was to systematically review the effectiveness of intravitreal injection of bevacizumab on various ocular tissues, especially corneal endothelial cells.
- **Methods:** The articles related to the effect of application of Avastin in the treatment of ophthalmic diseases and especially its effect on corneal endothelial cells were collected and reviewed. We searched PubMed, Google scholar, and Scopus databases and used Avastin, ocular diseases and corneal endothelial cells as search keywords.
- **Results:** Of all 55 articles found in all databases, only 10 were relevant to the purpose of this study, and 45 articles were excluded in several step by step process of article selection according to the inclusion/exclusion criteria. The results revealed that intracameral bevacizumab injection caused no changes in specular microscopy and corneal pachymetry. Moreover, it had no significant toxicity on corneal endothelial cells.
- **Conclusion:** According to the results of included documents, bevacizumab was not toxic to corneal endothelial cells at various clinically relevant doses.

Association of improved vision after cataract surgery and risk of falling in elderlies in Gorgan 2018 2019

- **Authors:** Hamid-Reza Heidarzadeh MD, Marjan Akbari-Kamrani MD-MPH, Mohammad-Mehdi Motahari MD
- **Affiliation:** Golestan University of Medical Sciences, 5Azar hospital research center, Gorgan, Iran
- **Purpose:** Considering previous evidences about contribution of visual impairment (VI) to increased rate of falling among elderlies and its burden on the community, we investigated the association of improved VI after cataract surgery and risk of falling in adults over 50 years old in Gorgan.
- **Methods:** This was a retrospective cohort study on 100 patients referred to ophthalmology clinics of Golestan University of Medical Sciences. All were diagnosed with significant VI due to cataract and were scheduled for surgery 12 months before entering the study. Patients with movement disabilities (bedridden, needing walker or crutch) were excluded. 50 patients took cataract surgery at that time, and 50 didn't take the surgery due to personal issues. Both groups were evaluated for their systemic condition and presence of underlying disease using Charlson comorbidity index (CCI), Instrumental Activities of Daily Living (IADL), VI severity and the prevalence of falls during a 12-month period.
- **Results:** Both groups were matched in terms of demographic characteristics (age, sex), IADL and CCI scores. Patients who took the surgery had no VI (i.e. visual acuity (VA) higher than 5/10), while 62% and 38% of those who refused the surgery had moderate-to-severe VI (VA \leq 2/10) and mild VI (VA $>$ 2/10 and \leq 5/10) respectively. After controlling for demographics and major confounding variables by multivariate regression analysis, rate of falling was significantly lower among those who took cataract surgery (12% VS 32%, $P=0.01$). Among patients with cataract, severity of VI was a significant predictor for falling ($P<0.001$).
- **Conclusion:** We showed that the rate of falling was much higher among visually impaired patients due to cataract compared to those with improved vision after cataract surgery (OR=2.667). VI has a significant role in the likelihood of falls in elderly, and cataract surgery can improve vision of patients and thereby reduce rate of falls.

Dorzolamid drop effect on the treatment of patients with Central serous chorioretinopathy referred of the clinic of Vali-e-ASR Hospital of Birjand in 1394 to 1396

- **Authors:** Yaghoobi, Gholamhossein1Heydari, Behrooz2, , Ebrahimi, Reyhaneh3.
- **Affiliation:** Assistant professor of Birjand University of Medical Sciences
- **Purpose:** To determined the therapeutic effect of dorzolamide drop in Central serous chorioretinopathy among the patients referred to the eye Clinic of Vali-e-Asr hospital.
- **Methods:** In this study, 45 patients with 33 males and 12 females with mean age were $38/64 \pm 6/39$ years old. Demographic information of patients was recorded and in terms of visual acuity, eye pressure, blood tests and OCT. The patients were divided into two groups of case and control group, in case group, 26 patients and 19 patients in the control group. The data were collected in SPSS_15 software and the descriptive statistics (mean, standard deviation, frequency and percentage) were used to achieve the goal of Chi-square test with Fisher at the level of $\alpha = 5\%$.
- **Results:** According to the findings of this study, the prevalence of disease and response to treatment in men is higher. There is also a significant relationship between the results of OCT and drop consumption among patients. ($P = < 0.005$) so that in patients who were consumed drop, the amount of the retina edema and visual acuity have improved considerably compared to other patients. Based on the experiments, there was a statistically significant relationship between CRP and cortisol levels. Patients with lower CRP and cortisol responded to better treatment
- **Conclusion:** According to the results, we can say that taking a drop in the treatment of patients with CSR is very effective. Prevalence and response to treatment in men is greater. It also reduces CRP and cortisol responses to treatment.

The study of the prevalent cause of eye infections in Iran over the past 10 years

- **Authors:** Seyed rafi Hosseini
- **Affiliation:** Zahedan University of Medical Sciences
- **Purpose:** Ocular infections are common diseases that cause bacteria, fungi, viruses and parasites, and affect various parts of the eye
- **Methods:** In this study, we have tried to focus on the findings of research on the prevalence of infections Eye in Iran has been working over the last 10 years, the most common cause of eye infection.
- **Results:** Due to the increased prevalence of conjunctival infection and the involvement of various organisms in its development, it is necessary to pay attention to the microbiological findings and the choice of appropriate antibiotics, so timely treatment can save patients from the risk of blindness and other comorbidities
- **Conclusion:** Due to the increased prevalence of conjunctival infection and the involvement of various organisms in its development, it is necessary to pay attention to the microbiological findings and the choice of appropriate antibiotics, so timely treatment can save patients from the risk of blindness and other comorbidities

Enophthalmos after Carboxytherapy for Peri-Ocular Hyperpigmentation

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- **Affiliation:** Eye Research Center, The Five Senses Institute, Iran University of Medical Science, Tehran, Iran
- **Purpose:** Carboxytherapy (injection of CO₂ gas) is commonly used for its temporary effect on peri-ocular skin hyperpigmentation (POH) which has shown to be even more effective in lipolysis. Its reported side effects are pain, burning sensation, erythema, edema, and bruising. The aim is to firstly report a patient who developed enophthalmos after carboxytherapy for her POH.
- **Methods:** A 32-year-old woman was referred with chief complaint of gradual enophthalmos on the left eye after having carboxytherapy for her bilateral POH a year ago.
- **Results:** Hertel exophthalmometry showed a 3.5 mm enophthalmos and 2 mm hypo-opthalmos on the left eye. Ocular, ocular motility, ocular adnexal, and systemic examinations were otherwise normal. Orbital and paranasal sinuses computed tomography (CT) scan was within normal limits. Her face photos from before and after the carboxytherapy (taken by the patient herself on her mobile phone) showed a gradual posterior and inferior displacement of the left globe. Penetration of injected CO₂ into the orbital cavity and its lipolytic effect could be the reason for globe displacement based on clinical examination, before/ after photos, and imaging.
- **Conclusion:** This is the first report of enophthalmos/ hypo-opthalmos after carboxytherapy for POH. This complication should be discussed on pre-injection counselling.

Liposomes; an effective drug delivery to the ocular posterior segment

- **Authors:** Siamak Khavandi, Mozhdeh Mirahadi
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- **Purpose:** Ocular drug delivery is challenging in terms of achieving optimum drug concentration due to exclusive protective mechanisms of the eye. Many of barriers in eye are inherent and unique to ocular anatomy and physiology, creating it a challenging mission for drug delivery innovations. Corneal and conjunctival epithelium, bloodaqueous barriers and blood-retinal barriers are the fundamental structures that restrict the passage of molecules and fluids to the retina and impede drug penetration. Moreover, various elimination mechanisms, such

as tear turnover, Nasolacrimal drainage, protein binding, systemic absorption, and enzymatic degradation, limit the ocular bioavailability of drugs, emphasizing the leading role of liposomes.

- **Methods:** In this article, we will review the promising nanocarrier for drug delivery into the posterior segment of the eye, emphasizing the use of liposomes
- **Results:** Nanostructured carriers have proven to be an effective and slightly invasive drug delivery system to keep drug concentrations in the posterior segment of the eyeball. The advantage of using nanocarriers is their ability to increase the biopharmaceutical properties of the incorporated drug: solubility, stability, permeability, and retention at the site of application. Liposomes have been investigated for ophthalmic drug delivery since it offers advantages as a carrier system. It is a biodegradable and biocompatible nanocarrier. In the case of posterior segment disorders, improvement of intravitreal half-life and targeted drug delivery to the retina is necessary. Liposomes was proven successful in enhancing the intravitreal half-life and targeted delivery to the inner retinal cells. It can enhance the permeation of poorly absorbed drug molecules by binding to the corneal surface and improving residence time.
- **Conclusion:** Considering that liposomes accumulate the main characteristics of an optimal drug delivery system, we consider that liposomes are hopeful nanoparticles for the therapy of multiple intraocular illnesses.

Kiarudi, Mohammad Yaser

Minimal invasive vertical muscle transposition for the treatment of large angle exotropia due to congenital medial rectus hypoplasia

- **Authors:** Mohammad Yaser Kiarudi, Aliakbar Sabermoghadam, Mahsa Sardabi,
- **Affiliation:** Eye Research Center
- **Purpose:** Strabismus related to congenital abnormalities of extraocular muscles(EOM) is rare. Different forms of aberrations of the EOMs have been reported, ranging from aplasia, hypoplasia as well as supernumerary band. There are a few reports of isolated anomalies of the medial rectus muscle. In this study, we report a case of hypoplastic medial rectus in an adult with favorable surgical outcome.
- **Methods:** A 43-year-old man presented with large-angle right exotropia noted since childhood and a significant left face turn. He had an absence of right eye adduction (-6 on a scale of 0 to -8) while other ductions were present. The patient was otherwise healthy with no history of systemic disease. An interesting finding was increased palpebral fissure height resembling proptosis in the right eye. In the preoperative CT scan, all EOMs seemed normal. He underwent surgery in the right eye. Forced duction test did not reveal tightness of lateral rectus muscle. First, the lateral rectus muscle was recessed largely. Exploration revealed of a translucent band without muscles fibers in the site of medial rectus. With the new technique of transposition myopexy, the vertical muscles were secured to the sclera 8 mm posterior to the medial rectus site without splitting or tenotomy of the muscles.
- **Results:** Good correction of the exotropia was obtained in the primary position. The adduction was improved from -6 to -4. The palpebral fissure height asymmetry was corrected as well.
- **Conclusion:** Imaging is useful in identifying these unusual anomalies but may be a discrepancy between the preoperative imaging and the intraoperative findings as we showed here. Furthermore, with minimal invasive method originally described by Nishida, by changing the vector of vertical rectus muscles without splitting or tenotomy in cases of complete duction limitation, a large angle deviation can be corrected. Also, the risk of anterior segment ischemia is minimal.

Masoomian, Babak

Massive untreatable dome shape choroidal invasion with retinoblastoma in treated patient

- **Authors:** Babak Masoomian, M.D. Hamid Riazi-Esfahani, M.D Fariba Ghasemi, M.D
- **Affiliation:** Farabi eye hospital, Tehran university of medical sciences
- **Purpose:** To report a case with aggressive massive choroidal invasion by Retinoblastoma in already treated patient.
- **Methods:** A case report

- **Results:** A 24-month-old girl was diagnosed with bilateral retinoblastoma who has been treated with systemic chemotherapy and intra-arterial chemotherapy (IAC) for left eye. At 4 years of age, 6 months after last treatment, fundus examination showed regressed tumor in both eyes without any signs of activity. Three months later, a recurrent lesion was found in inferior quadrant of left eye. She underwent 2 cycles of monthly IAC adjunctive with laser thermotherapy. The patient found intra-ocular pressure (IOP) rising. One month after last IAC, surprisingly, we found a huge infero-nasal yellowish mass and 4 quadrant retinal detachments. Under close observation, 2 weeks later, despite our decision for doing Ru106 plaque radiotherapy, indirect ophthalmoscopy showed rapidly growing peripheral choroidal mass and ultrasound biomicroscopy revealed a mass lesion involving the choroid/ciliary body with dimensions of 18 × 18 × 16 mm capsule. Clinical view of the mass was not similar to the classic recurrence of RB therefore, due to high IOP, total RD and unresponsive very rapid growth intraocular lesion, enucleation was considered for her. Histopathology examination demonstrates extensive involvement of choroid, ciliary body and angle with poorly differentiated retinoblastoma.
- **Conclusion:** . The sudden appearance of a dome-shaped mass with rapid growth in undergoing treatment patients should be suspect to choroidal involvement.

Medghalchi, Abdorreza

Evaluation of nasolacrimal duct obstruction frequency in patients undergoing cataract surgery

- **Authors:** abdorreza Medghalchi, reza Soltani Moghadam, yousef alizadeh, ebrahim azaripour
- **Affiliation:** eye research center, eye department, amiralmomenin hospital, school of medicine, guilan university of medical science, rasht, iran,
- **Purpose:** Our aim is decided to study the incidence of nasolacrimal duct obstruction (NLDO) in patients with cataract and the percentage of patients who are not diagnosed with routine methods
- **Methods:** Study was performed as a descriptive nonrandomized longitudinal study. All patients who underwent cataract surgery enrolled in study. Irrigation test & Dye Disappearance Test (DDT) were done in all patients. After complete eye examination and history taking, particularly the history of tearing of the eyes, data entered in the Data form. The data were analyzed using statistical software SPSS Ver20
- **Results:** Of the 103 patients participating in the study, 52 patients were men and 51 were women. The mean age of participants' 70.53±9.79 years. Irrigation test diagnose NLDO in 19.4% (20) patients. Dye Disappearance Test (DDT) increase in %70 (14) of patients with NLDO vs normal in 73% of patient without NLDO (sensitivity=70%, specificity=73.4%). Only one patient with NLDO had pusy re?ux
- **Conclusion:** Considering the importance of preventing endophthalmitis, it seems that irrigation before cataract surgery would be a definite way to reduce the risk of postoperative endophthalmitis, but the advantages and disadvantages of prophylactic irrigation to open the duct requires more studies in this field

Mirzajani, Ali

Correlation between sleep quality and tear film tests

- **Authors:** Mirzajani A, Ahmadi P, Jafarzadehpur E, Abolghasemi J.
- **Affiliation:** Iran University of Medical Sciences
- **Purpose:** The purpose of this study is to evaluate the correlation between sleep quality and tear film tests among university students.
- **Methods:** A total of 102 students (52 men and 50 women) were enrolled in this cross-sectional study. Their sleep quality was evaluated using Pittsburgh standard questionnaire and their tear film by Schirmer-1 test and tear film break up time (TBUT).
- **Results:** Out of 102 participants in this study, 69 (67.6%) students had poor sleep quality and 64 (62.7%) students based on TBUT and 17 (16.7%) students based on Schirmer-1 test had dry eye. There was a significant relationship between Pittsburgh Sleep Quality Index (PSQI) and Schirmer-1 test (correlation coefficient: -0.409, P<0.001). There was also a significant relationship between PSQI and TBUT (correlation coefficient: -0.484, P<0.001).
- **Conclusion:** The results of this study showed that there is a significant correlation between PSQI and tear film tests.

Visual evoked potentials after panretinal photocoagulation in patients with proliferative diabetic retinopathy

- **Authors:** Mirzajani A, Khojasteh H, Amini Vishte R
- **Affiliation:** Iran University of Medical Sciences
- **Purpose:** To evaluate the changes of latency and amplitudes of pattern-reversal visual evoked potentials (PRVEP) in patients with proliferative diabetic retinopathy after panretinal photocoagulation (PRP).
- **Methods:** PRVEP was recorded in 21 eyes of 21 patients with proliferative diabetic retinopathy prior to, 1 week after every sessions of laser therapy and 1.5 months after the final treatment. Results were compared between pre and post laser treatment sessions in the study group and paired t-test was used for statistical analysis.
- **Results:** The P100 amplitude showed a significant difference among all treatment sessions with a decreasing trend in the study group after PRP ($P<0.001$). Also, P100 latency evaluation showed a significant increase after PRP in the study group in all post-PRP sessions ($P<0.05$). However, 1.5 months after laser treatment, an increase in amplitudes ($P<0.001$) and a decrease in latencies ($P<0.001$) of PRVEP were observed and the magnitudes of the parameters approximately returned to their baseline values.
- **Conclusion:** Although decreasing changes in the amplitude and increasing changes in the latency of PRVEP were observed after laser treatment in proliferative diabetic retinopathy patients, one and a half months after the completion of laser therapy, partial recovery of these parameters values was observed.

Structure versus Function in High Myopia using optical coherence tomography and automated perimetry.

- **Authors:** Nasrin Moghadas Sharif, Asieh Ehsaei, Nasser Shoeibi, David Atchison
- **Affiliation:** Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran. Refractive Errors Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.
- **Purpose:** The aim of present study was to assess the structure–function relationship between retinal thickness using spectral-domain optical coherence tomography and standard automated perimetry in high myopia.
- **Methods:** Fifty eight high myopic individuals with no posterior abnormalities (defined as a mean spherical equivalent ≤ -6.00 D and axial length ≥ 26.0 mm) were recruited for this study. Optical coherence tomography with the Spectralis spectral domain optical coherence tomograph and visual field evaluation with the Humphrey Field Analyzer II-I were performed for all participants. Linear correlations were made between different macular layer thicknesses and peripapillary retinal nerve layer thickness with their matched visual field sensitivities.
- **Results:** Participant ages were 28.2 ± 6.4 years (range 19–52 years), mean spherical equivalent refractions were -8.20 ± 1.40 D (range -7.25 D to -12.50 D) and axial lengths were 26.7 ± 0.7 mm (range 26.0–29.8 mm). There were significant positive association between retinal layer thickness and corresponding visual field sensitivities as follows: ganglion cell layer in all quadrants, temporal quadrant of the nerve fiber layer with nasal quadrant of the visual field, inferior quadrant of the outer nuclear layer with superior visual field, and temporal-superior peripapillary nerve fiber layer with nasal-inferior visual field.
- **Conclusion:** The present findings suggest that ganglion cell layer thickness changes may result in visual field defects in highly myopic eyes. The association between retinal layer thicknesses and visual field sensitivity could be explained by myopia-related losses due to lateral retinal stretching. Further research is needed to investigate it.

Presumed Clomiphene Citrate induced optic neuropathy

- **Authors:** Yousef Alizadeh, Zahra Moravvej, Yaser Khakpoor, Reza Soltani Moghadam, Ebrahim Azaripour, Mitra Akbari
- **Affiliation:** Eye Research Center, Department of Ophthalmology, Guilan University of Medical Sciences, Rasht, Iran
- **Purpose:** Clomiphene citrate is an Estrogen receptor ligand with mixed agonistic-antagonistic properties used for the treatment of female and male infertility. Various visual disturbances and few irreversible visual outcomes have been associated with Clomiphene citrate. In this report we present a patient with presumed Clomiphene induced optic neuropathy.
- **Methods:** Case Report
- **Results:** A 33-year-old man presented with acute visual loss of the right eye since a few days ago. His only medication was clomiphene citrate 100 mg daily, taken for two weeks for fertility issues. The patient presented with sudden decrease of visual acuity in the right eye on the fourteenth day of commencing the treatment, and subsequently developed complete loss of inferior visual field within days. On examination, visual acuity was 6/20, right eye, and 20/20, left eye, with a right relative afferent pupillary defect (RAPD) and decreased red saturation. Fundus examination revealed optic disc swelling with venous dilation in the right eye and a normal left fundus with a disc at risk. The patient was evaluated for cardiologic and neurologic disorders, all of which were normal. Findings were suggestive of non-arteritic anterior ischemic optic neuropathy most likely due to Clomiphene.
- **Conclusion:** As Clomiphene may increase blood viscosity, it is hypothesized that reduced flow in a posterior ciliary artery caused an anterior ischemic optic neuropathy. It is advised that patients experiencing visual symptoms while taking clomiphene be examined promptly for evidence of visual changes or optic nerve injury.

Najjaran, Marzieh

Lipoic acid eye drops for treatment of presbyopia: A pilot randomized controlled clinical trial

- **Authors:** Marzieh Najjaran, Hamid Gharaee, Bizhan Malaekheh-Nikouei, Mohammad Ali Eskandari, Elham Bakhtiari
- **Affiliation:** Refractive Errors Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran.
- **Purpose:** To evaluate the effectiveness of Lipoic acid eye drop for treatment of patients with presbyopia.
- **Methods:** In this pilot randomized, double-blind, placebo-controlled phase 2 study, a total of 30 emmetropic patients with presbyopia were assigned to receive lipoic acid eye drop (n=15) or placebo (n=15). Patients were instructed to use eye drops in each eye twice a day for 90 days. The outcome measures of the study were, uncorrected distance visual acuity (UDVA), uncorrected near visual acuity (UNVA), subjective amplitude of accommodation (both push-up and minus-lens methods) prior and 1,15,31,61 and 91 days post-administration.
- **Results:** The mean age of patients was 47.2 ± 3.2 years (range, 42-53 years). UDVA for all patients was 20/20 in each eye and remained unchanged during the follow-up periods. The mean logMAR of binocular UNVA for intervention group improved after 15 days of using lipoic acid eye drops in comparison with placebo. The difference between two groups reached the highest level at the final follow-up ($p=0.001$). Three patients (20%) reported burning in intervention group.
- **Conclusion:** This pilot randomized controlled trial of 90 days of presbyopia treatment with lipoic acid eye drop, demonstrated improvement in near vision of presbyopic patients and no reduction for distance visual acuity was observed. Additional controlled trials with larger samples are needed to evaluate the full efficacy and side effect profile of lipoic acid eye drop for treatment of presbyopia.

Shaeri, Mahdi

Ocular complications in trauma patients admitted to the intensive care unit of the ShahidBeheshti hospital in Kashan, Iran in 2018

- **Authors:** Dr Mahdi Shaeri
- **Affiliation:** Kashan university of medical sciences, Kashan, Iran
- **Purpose:** This study aimed to determine the ocular complications in the intensive care unit (ICU) patients were

- conducted in 2018.
- **Methods:** This cross-sectional study was performed on 130 trauma patients who hospitalized in the ICU of Shahid Beheshti hospital affiliated to the Kashan University of Medical Sciences. Demographic data, Glasgow Coma Scale (GCS), type of trauma (penetrating or blunt), site of trauma (head, face, neck, chest, abdomen and extremities) were evaluated. Eye status on admission (subconjunctival hemorrhage, rupture of the eyelids, corneal damage, facial lacerations, orbital injury (emphysema, proptosis, orbital fracture) was recorded by an ophthalmologist. The data analyzed with descriptive statistics such as analysis of variance, chi-square and Fisher.
- **Results:** Eighty patients (61.5%) were male. The mean (SD) of age was 42 (17.53) years (range 6 to 76 years). Of the total patients, 160 eyes (61.6%) had ocular complications. Dry eye syndrome 58 (22%) was the most complication. More complication in males was corneal epithelial defect (15.3%) and in females was chemosis (8.4%). regarding the incidence of complications in women and men statistically significant difference was seen ($P = 0.021$). A significant correlation between GCS and type of visual disorder was seen.
- **Conclusion:** Eye complications in patients admitted to the intensive care unit is high and depending on age, male, sex and length of stay and level of consciousness. Preventive management of all patients with risk factors listed in the intensive care unit is recommended.

Sonbolestan, Seyed Ali

Abducens Nerve Palsy in a Patient with Multiple Myeloma: A Case Report

- **Authors:** Seyed Ali Sonbolestan, Mohammadreza Najafi, Zahra-sadat Abtahi
- **Affiliation:** Isfahan University of Medical Sciences
- **Purpose:** Multiple myeloma (MM) is determined by the neoplastic proliferation of a single clone of plasma cells that produce a monoclonal immunoglobulin. One of the complications of this disease is central nervous system (CNS) involvement. In this study a 55-year-old male MM patient with headache and diplopia is reported.
- **Methods:** In this study, a 55-year-old male MM patient with headache and diplopia due to skull base mass lesion near the clivus is presented as a rare presentation of MM.
- **Results:** Sixth nerve palsy alongside long tract lesion (presented with hand paresis and right-side hypoesthesia) in this patient might have been due to the compressive effects of the mass or ischemic lesions of the brainstem. Some of the rare complications of MM are ischemic stroke and cerebral infarction, which result from some conditions, especially hyperviscosity, in MM. On the other hand, hypercalcemia could be a cause of the weakness in these patients. Sixth nerve palsy in this patient could also have been due to amyloid infiltration or the mass effect.
- **Conclusion:** One of the possible causes of acute diplopia in middle-aged patients could be metastatic lesions of the skull base. In this case, plasmacytoma of the clivus was the main cause of the disease.

Tabatabaei, Ali

Comparison between OCT and UBM in preoperative defining posterior capsular rupture in traumatic cataract

- **Authors:** Seyed ali tabatabaei, Mohammad Soleimani, Hamed Etesali
- **Affiliation:** Tehran University of Medical Sciences
- **Purpose:** To report the data of ultrasound biomicroscopy (UBM) and anterior segment optical coherence tomography (AS-OCT) (CASIA II) in the evaluation of posterior capsule in traumatic cataract.
- **Methods:** 67 patients were included in this study. We included just mature and near mature traumatic cataracts. All patients underwent lensectomy after blunt trauma or after primary repair of an open globe injury. All patients underwent UBM and AS-OCT before lensectomy and any finding of the status of the posterior capsule was recorded.
- **Results:** The mean age of patients was 34.19 and the youngest was 6 years of age and the oldest patient was 71 years old. In the posterior capsule imaging by CASIA2, it was closed in 42 (62.7%) patients. In the postoperative

findings, posterior capsule was closed in 34(50.7%) patients and opened in 33(49.3%) patients. OCT significantly correlated with UBM ($r=0.468$). For UBM, sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were 44%, 82%, 66% and 65%, respectively. For AS-OCT, sensitivity, specificity, PPV and NPV were 63%, 88%, 84%, and 71%, respectively.

- **Conclusion:** Both UBM and AS-OCT could predict the presence of posterior capsular opening before surgery with great sensitivity.

Tabatabaei, Ali

Hypotonic maculopathy after blepharoplasty

- **Authors:** Seyed ali tabatabaei, Mohammad Soleimani, Mohammad Mehrpour
- **Affiliation:** Tehran University of Medical Sciences
- **Purpose:** To report a case of misdiagnosed iatrogenic scleral perforation leading to macular hypotony after upper lid blepharoplasty
- **Methods:** A 35-year-old woman presented with complaint of left eye pain and blurred vision since 3 days ago following bilateral upper lid blepharoplasty in the other center. Her visual acuity was counting finger of 2m for the left eye and 20/20 for the right eye. Other ophthalmologic exams were normal in the right eye.
- **Results:** The slit-lamp biomicroscopy of the left eye revealed full-thickness lacerations in the sclera and limbus with a positive Seidel test. The anterior chamber was shallow and the eye was hypotonic. In the funduscopy, wrinkling of the macula was apparent consistent with the diagnosis of hypotony maculopathy which was confirmed by ocular coherence tomography (OCT). She was admitted and underwent the primary repair of the scleral and limbal laceration. Her visual acuity and other symptoms improved significantly during one week after surgery.
- **Conclusion:** Hence, although it is so rare, the surgeons should be aware about the possibility of ocular penetrating injury as a complication of blepharoplasty and be concerned about its symptoms and signs such as disproportionate pain, visual loss, a hypotonic globe and corneal clouding

Torabi, Hamidreza

Ocular golden galaxy: a case of an unusual presentation

- **Authors:** Mostafa Naderi, Hamidreza Torabi, Seyed-Aliasghar Mosavi
- **Affiliation:** Health Management Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran
- **Purpose:** To report a case of exogenous ocular gold deposition in both eyes associated with sudden onset reduction of vision.
- **Methods:** Case report.
- **Results:** A 27-year-old, Iranian gentleman presented to emergency department with metallic like foreign body deposition on entire aspect of both eyes associated with intense irritation, tearing and photophobia. On examination, best corrected visual acuity (BCVA) was counting finger in right eye (RE) and perception of light (LP) on left eye (LE). Slit-lamp examination revealed partial thickness corneal laceration in RE extending to sclera and LE disclosed corneal perforation with prolapsed iris, distorted pupil and disrupted anterior lens capsule associated with diffusely golden-brown confluent deposits in both cornea, sclera and conjunctiva. Posterior segment evaluation was impossible on admission day due to severe corneal edema and gold deposition as foreign body accompanied with very severe irritation. RE penetrating keratoplasty performed for patient due to diffuse corneal opacity. LE lensectomy and anterior vitrectomy was done in two separate sections. After 1 year of follow up, patient was asymptomatic and BCVA improved to 5/10 in RE but it was LP in LE secondary to macular scar formation secondary to severe tractional macular edema. Ocular media is clear and fundus is healthy in RE.
- **Conclusion:** although gold is safe and inert, it can lead to sacrifice of eyesight and life-threatening complications when contaminated with other toxic elements. Immediate and prolonged irrigation followed by proper management is essential for patients who present after acute injury and early recognition of such injuries.

Concurrent Pars Plana Vitrectomy and DSAEK to Manage Pseudophakic Bullous Keratopathy and Intraocular Lens Dislocation

- **Authors:** Hamidreza Torabi, Seyed-Hashem daryabari
- **Affiliation:** Health Management Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran
- **Purpose:** To describe the anatomical and visual outcomes of concurrent pars plana vitrectomy (PPV) and descemet stripping automated endothelial keratoplasty (DSAEK) for the management of a case with pseudophakic bullous keratopathy and intraocular lens (IOL) dislocation following complicated phacoemulsification surgery.
- **Methods:** Case report
- **Results:** A 72-year-old woman was referred to our clinic 7 days after complicated phacoemulsification surgery. Severe corneal edema and IOL dislocation into the vitreous cavity was noticed on examination. After 2 months of conservative treatment, corneal edema remained persistent, so concurrent 23-gauge PPV and DSAEK was performed in the single surgical procedure. one year after operation, the cornea was clear and best corrected visual acuity was 20/32.
- **Conclusion:** concurrent PPV and DSAEK may be safe and effective option for the management of severely complicated Phacoemulsification surgery with PBK and IOL dislocation into the vitreous cavity.

Tuberculosis endophthalmitis secondary to endocarditis.

- **Authors:** Gholamhossein Yaghoobi, Amir Norouzpor, Farshid Abedy, Maseud Zeiaei
- **Affiliation:** Birjand University of Medical Science
- **Purpose:** To describe tuberculosis endogenous endophthalmitis according of vitreous aspiration.
- **Methods:** Polymerase chain reaction of vitreous aspiration was done to find mycobacterium tuberculosis
- **Results:** : A 54-year-old mal attending to hospital due to fever ,dysuria and admitted to heart ward. The heart consultation and cardiac did not show a significant finding. So, the patient referred to infectious ward due to not controlling the fever that the patients notice sever visual impairment in left eye. Ophthalmic examination showed V/A OD= Hand motion and OS=7/10 and anterior uveitis of both eye and endophthalmitis of left eye. The patient diagnosis was suggestion of bilateral uveitis and diagnostic vitreous tap indeed of intravitreal antibiotic injection was done
- **Conclusion:** This case confirms diagnosis according of vitreous aspiration. The anti tuberculosis medication alleviated the patient refractory fever. So, the various clinical situations, indicated a high index of suspicion that vitreous aspiration was eye and lifesaving for this case.

Comparison of anterior chamber depth between normal and keratoconic eyes: A systematic review and meta-analysis

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- **Affiliation:** Department of Optometry, Mashhad University Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran of Medical Sciences, Mashhad, Iran
- **Purpose:** To review the published data about changes in the anterior chamber depth (ACD) in keratoconus patients.
- **Methods:** In this systematic review and meta-analysis of observational studies, we reviewed the available and

- relevant literature on anterior segment changes in keratoconic eyes, with a special focus on the ACD, an effective factor in many surgical methods. Articles published up to December 2017 were identified in the following data sources: PubMed, Scopus, Ovid, ISI, ScienceDirect, and Google Scholar. Databases were comprehensively searched using the key words “Anterior Chamber Depth AND Anterior segment AND Keratoconus”.
- **Results:** A total of 496 studies including these key words were detected. 453 studies were excluded, and overall 16 studies which precisely described the change in ACD were included in the literature review. The results show that with respect to the applied device, there was a statistically significant difference in ACD between keratoconic eyes and normal eyes except for Galilei analyzer.
- **Conclusion:** Summarizing the results of studies, this review revealed that ACD is significantly deeper in keratoconic eyes as compared with normal eyes, which could be explained by the steeper corneal curvature.

Yazdani, Negareh

Evaluation of Anterior Chamber Angle According to Quadrants and Refractive error using CASIA Anterior Optical Coherence Tomography

- **Authors:** Negareh Yazdani, Asieh Ehsaei, Nasser Shoeibi, Nasrin Moghaddas Sharif, Maryam Heydari, Maesom Bahrami
- **Affiliation:** Department of Optometry, Mashhad University of Medical Sciences, Mashhad, Iran
- **Purpose:** To investigate the changes in the anterior chamber angle according to quadrants and refractive status with CASIA anterior optical coherence tomography.
- **Methods:** One eye of 115 healthy subjects was selected for anterior segment OCT imaging (OCT) (Tomey Corporation, Nagoya, Japan). The patients were divided to three refractive groups: hyperopic, emmetropic and myopic. Angle parameters of 4 points (0, 90, 180 and 270) were measured in each eye. The angle opening distance (AOD), the trabecular iris space area (TISA), the trabecular-iris angle (TIA), angle to angle (ATA), and angle recess area (ARA) were measured.
- **Results:** The mean refractive error (Spherical Equivalent) averaged 1.51 ± 1.1 diopter in hyperopic group, -2.40 ± 1.0 diopter in myopic group and -0.12 ± 0.44 diopter in emmetropic group. There was no significant difference in the anterior angle parameters in hyperopic subjects except ATA and TIA 750 which showed a significant difference comparing four quadrants. Among emmetropic subjects, significant difference in terms of angle parameters was found between quadrants. Multiple comparison of four quadrants showed that angle parameters in 90 degree quadrants differs significantly. In myopic group, statistically significant difference regarding anterior chamber parameters was found between quadrants. Considering multiple comparison results, all angle parameters were significantly narrower in 90-degree quadrants.
- **Conclusion:** This is the first study to report the distribution of anterior chamber angle parameters in Iranian population. A narrow anterior chamber angle parameters was found in superior quadrant (90-degree) which is due to highest eyelid pressure of upper eyelid. When analyzing anterior chamber angle parameters and refractive status, results suggested that, the greater inter-quadrants difference induced by more myopic shift. This is supported by this fact that a shorter axial length was associated with a narrower anterior chamber angle.

Zand, Amin

Partial Avulsion of Posterior Pole: A Rare Case Report

- **Authors:** Mehdi Modarres-Zadeh; Arzh'ang Gordiz; Amin Zand
- **Affiliation:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran.
- **Purpose:** To report a rare case of partial avulsion of posterior pole that presented as partial separation of choroid layers from sclera at posterior pole with iridodialysis, caused by extreme blunt trauma during a road traffic accident.
- **Methods:** Choroidal avulsion is a serious subtype of ocular trauma, defined as a severe separation of choroid membrane from the sclera and irregular choroidal residuals on the scleral wall usually accompanied by the detachment or avulsion of ciliary body at the corresponding quadrant, caused by a sudden external force burst. We present a rare case of post traumatic choroidal avulsion at posterior pole that considered due to its unique findings as partial avulsion of posterior pole. The patient was a 24-year-old male with a previous history of road

traffic accident with severe blunt trauma to periocular area in the last days of ocular examinations. The patient complained of decreased visual acuity after the trauma in the affected eye. Main ocular findings were iridodialysis, vitreous hemorrhage at inferior of the vitreous cavity, intra-retinal hemorrhage and retinal folds at posterior pole of the affected eye. In further investigations via multimodal imagings including ocular B-scan ultrasonography and optical coherence tomography (OCT), the patient had partial choroidal separation from the sclera at the posterior pole with some residuals were attached on the sclera in the affected area and secondary adjacent retinal folds.

- **Results:** Due to acute phase of injury, we observed the patient with follow-up visit before any decision making for vitreoretinal surgeries including pars plana vitrectomy.
- **Conclusion:** In patients with a history of severe blunt trauma to ocular and periocular areas, careful clinical and para clinical investigations is necessary to find some rare but important complications such as choroidal avulsion which may be undiagnosed by ophthalmologists.