

Wednesday, August 29

8:30 AM

Postoperative Posterior-Segment Complications in Eyes Treated With the Boston Type I Keratoprosthesis



- Darin R. Goldman, MD
- Jean-Pierre Hubschman, MD
- Steven D. Schwartz, MD
- Allen Chiang, MD
- Anthony J. Aldave, MD
- Jennifer S Huang, MD

OBJECTIVE Posterior segment complications following implantation of the Boston type I keratoprosthesis account for significant visual morbidity and pose considerable management challenges to the retinal surgeon.

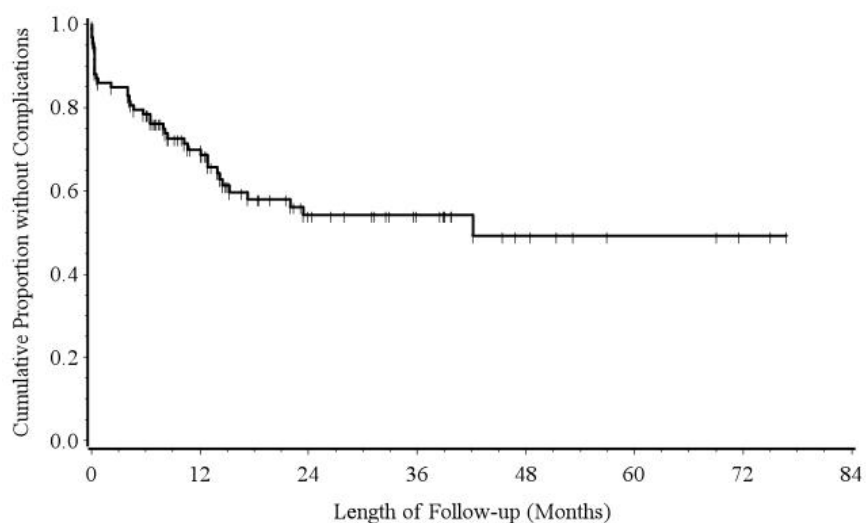
PURPOSE To describe the incidence, timing, visual significance and management of posterior segment complications occurring after the implantation of the Boston type I keratoprosthesis.

METHODS A retrospective chart review was conducted of all consecutive Boston type I keratoprostheses implanted by a single surgeon at a single institution over a six-year period. Preoperative demographics, postoperative complications, and postoperative visual acuity outcomes were analyzed.

RESULTS 110 keratoprotheses were implanted in 98 eyes of 94 patients during the period under review. A minimum of 6 month follow-up was available for 83 eyes, with a mean follow-up of 28.2 months (range 6-84, median 23.7). The mean time to occurrence of any posterior segment complication was 5.6 months (range 0 to 42.1, median 5.2, n = 38). Thirty-eight eyes (40.9%) experienced at least one postoperative posterior segment complication, the most common of which were retinal detachment (16.9%, 14/83), choroidal detachment (16.9%; 14/83), and sterile vitritis (14.5%; 12/83). Corrected distance visual acuity was worse amongst eyes that experienced posterior segment complications compared to eyes that did not at multiple postoperative follow-up intervals (statistically significant up to 3 years) and at last follow-up (LogMAR \pm SD = 1.45 ± 0.78 vs 0.89 ± 0.81 , $p = 0.003$).

CONCLUSION Posterior segment complications occur in a significant percentage of patients following keratoprosthesis surgery, resulting in a persistent reduction of visual acuity in the majority of the affected eyes. Corrected distance visual acuity was $\leq 20/400$ in 61% of eyes with complications versus 24% of eyes without complications at last follow-up.

TAKE HOME MESSAGE Posterior segment complications following implantation of the Boston type I keratoprosthesis account for significant visual morbidity and pose considerable management challenges to the retinal surgeon



8:34 AM

Trans-scleral Fixation of Foldable Akreos Posterior Chamber Intraocular Lens Implants With 25-Gauge Vitrectomy: A Large Single Surgeon Case Series



- Daniel A. Adelberg, MD

OBJECTIVE To present a novel approach for surgical management of intraocular lens implantation in the absence of capsular support utilizing 25 gauge vitrectomy techniques to improve surgical results.

PURPOSE Surgical management of intraocular lens implantation in the absence of capsular support is challenging and associated with operative and postoperative complications. A novel approach will be described utilizing 25 gauge vitrectomy and a foldable posterior chamber intraocular lens implant (AKREOS, Bausch & Lomb) to improve visual results and reduce complications.

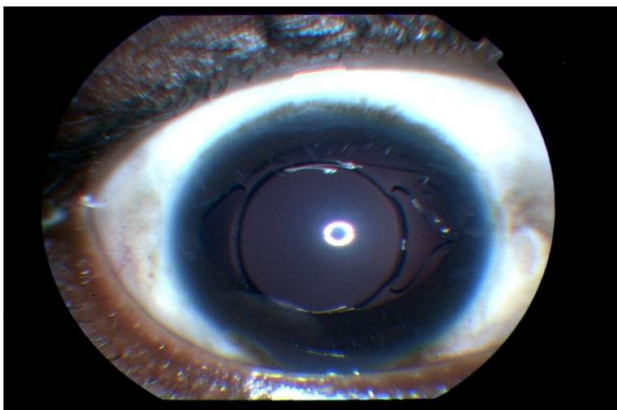
METHODS Retrospective chart review of a single surgeon case series. All patients identified who underwent trans-scleral fixation of an AKREOS posterior chamber intraocular lens implant with 25 gauge vitrectomy by the presenting author were

included. Sixty-eight (68) eyes of sixty-six (66) patients were identified. Data analyzed included age, sex, laterality, clinical diagnosis, preoperative and postoperative snellen visual acuity, operative time, and length of followup. Clinical data included preoperative and postoperative photography, intraoperative videography, and anterior segment ultrasound biomicroscopy.

RESULTS Sixty-seven eyes were managed with trans-scleral fixation of an AKREOS implant with 25 gauge vitrectomy. There were 39 males and 27 females. Age ranged from 24-98 years. Preoperative diagnoses included aphakia, dislocated PCIOL, dislocated lens or lens fragments, Marfan's syndrome, pseudoexfoliation syndrome, post-traumatic, post retinal detachment repair, aqueous misdirection syndrome, complex cataract, UGH (uveitis-glaucoma-hyphema) syndrome, aphakia with retinoblastoma and endophthalmitis with dislocated PCIOL. Visual acuity was stable or improved in all patients. Followup ranged from 1- 41 months. No patient was observed to have postoperative subluxation or dislocation. Postoperative vitreous hemorrhage with spontaneous clearing was noted in one patient. A postoperative rhegmatogenous retinal detachment was successfully repaired in one other patient. Late cystoids macular edema was treated with topical therapy in two patients. Optic opacification was observed in one patient.

CONCLUSION Trans-scleral suture fixation with the foldable AKREOS implant with 25 gauge vitrectomy techniques can be successfully performed in a variety of complex ocular conditions associated with aphakia or the absence of capsular support. Anatomic outcomes are excellent with encouraging visual results and low complications, yet long term postoperative dislocation remains a serious indeterminate risk.

TAKE HOME MESSAGE Vitrectomy with trans-scleral fixation of an AKREOS posterior chamber implant can be successfully performed in a large number of patients with a variety of challenging disorders.



8:38 AM

Visual and Surgical Outcome of Surgery (Retrieval, Suturing or Secondary Implant) for Posteriorly Dislocated IOLs in a Single Retina Procedure

- Rajiv Anand, MD

OBJECTIVE To evaluate the outcomes of surgery for dislocated IOLs with or without retained lens fragments in the vitreous conducted by a retina surgeon in a single procedure.

PURPOSE Complications of cataract surgery include posterior dislocations of lens fragments or IOLs. These cases are managed in stages with a vitrectomy followed by secondary implant by the anterior segment surgeon, resulting in multiple surgeries, suboptimal vision and complications. These cases can be managed by a single procedure conducted by the retina surgeon. We reviewed our series of cases.

METHODS A retrospective chart review of pars plana vitrectomy (PPV) for dislocated lens fragments and or IOLs conducted by a single surgeon. Forty eyes were included: all underwent a PPV, lensectomy if indicated and removal or retrieval of the dislocated IOL. If the IOL was undamaged, it was repositioned in the ciliary sulcus and sutured. Other eyes underwent a secondary suturing of a new IOL. All patients were followed for a minimum 3 months. We evaluated pre and post op vision, surgical and anatomic outcomes, and long term complications. Technique used for different types of IOLs encountered was analyzed.

RESULTS Forty eyes of 39 patients were evaluated. All underwent a successful three port PPV. Retained lens material was removed in 13/40 eyes (33%). Posterior dislocation of the entire capsular bag and IOL was noted in 5 eyes (12%). Styles of IOLs encountered were: 3-piece PMMA, 1-piece PMMA, Restor, AcrySof, iris-claw and 3-piece silicone. By

prolapsing the haptics via the pars plana, the IOL was successfully retrieved and sutured in 18/40 (45 %). A new IOL (CZ70, Alcon), sutured to the pars plana in 10/40 (25 %) was used via a limbal incision. Damaged IOLs were removed and replaced with an AC IOL in 2 (1%). Vision improved in all eyes: Pre op vision ranged from HM to 20/800. Follow up ranged from 3 to 60 months. Post op vision improved in all and ranged from 20/80 to 20/20. No intra-op complication occurred. Late CME occurred in 2 eyes, vitreous hemorrhage in 1 eye, late recurrent dislocation in 2 eyes and corneal edema in 1 eye.

CONCLUSION Posterior dislocation of IOL and/or cataract fragments is a challenging management dilemma. Most IOLs, except for single plate foldable lenses can be successfully managed by a single retina procedure. The various techniques used for retrieving and anchoring differing types of IOLs will be presented.

TAKE HOME MESSAGE A retina surgeon can successfully manage complications of cataract surgery and resuture majority of the dislocated IOLs via a pars plana vitrectomy approach.

8:48 AM

Prospective Retinal and Optic Nerve Vitreotomy Evaluation (PROVE) Study: Baseline Findings

- Maziar Lalezary, MD
- Rahul K. Reddy, MD
- Stephen J. Kim, MD
- Jeffrey Kammer, MD
- Rachel Kuchtey
- Edward F. Cherney, MD
- Franco M. Recchia, MD
- Karen Joos, MD, PhD
- Anita Agarwal
- Janice C. Law, MD

OBJECTIVE To present baseline findings of the PROVE Study; a prospective, controlled, 5-year longitudinal trial designed to determine anatomic and functional alterations after elective unilateral vitrectomy.

PURPOSE The long-term outcomes and complications of modern vitrectomy surgery are not established. This study is designed to prospectively monitor eyes undergoing elective vitrectomy and their non-operative fellow eyes over a period of 5 years with comprehensive clinical examinations, functional testing and imaging. Baseline pre-operative findings of 80 eyes of 40 patients are reported.

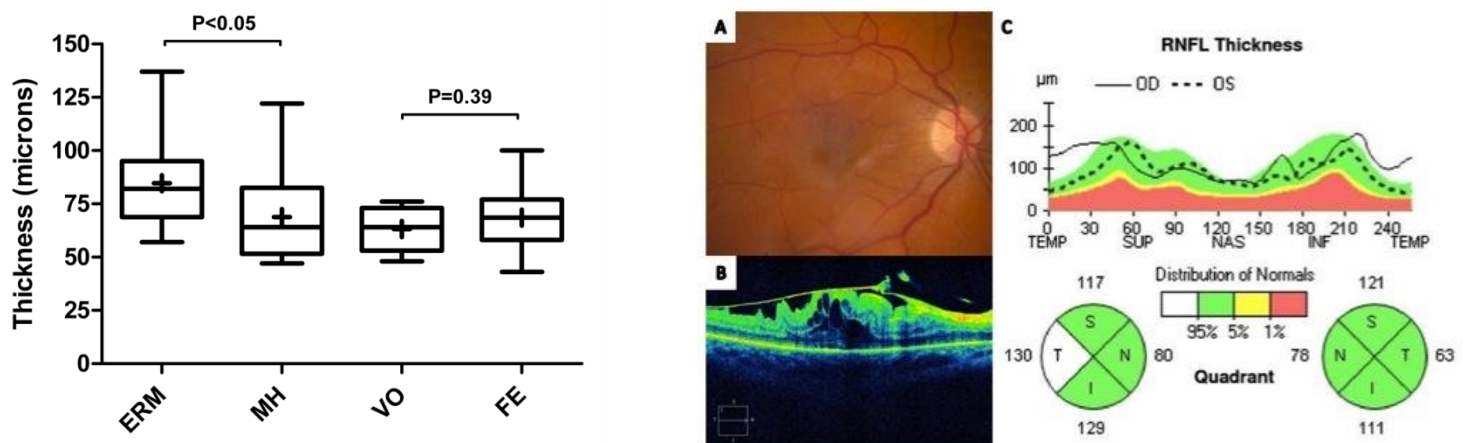
METHODS Eighty eyes of 40 participants undergoing vitrectomy for epiretinal membrane (ERM), macular hole (MH), or vitreous opacities (VO) were prospectively enrolled. Participants underwent baseline evaluation of the study (surgical) and fellow (control) eye by a glaucoma specialist that included intraocular pressure, central corneal thickness, gonioscopy, automated perimetry, and cup-to-disc ratio (CDR) measurement. In addition, color fundus and optic disc photography, fundus autofluorescence, and

spectral-domain optical coherence tomography (OCT) of the macula and optic nerve were performed.

RESULTS Surgical indications included 22 ERMs, 13 MHs, and 5 VOs. Thirteen percent of participants had undiagnosed narrow or occludable angles. Mean CDR of study and fellow eyes was 0.43 ± 0.2 and 0.46 ± 0.2 , respectively. Glaucoma hemifield test was abnormal for 18% of participants and mean deviation was significantly lower in ERM study eyes ($P < 0.05$). Mean macular OCT thickness was significantly greater in ERM and MH study eyes compared to fellow eyes ($P < 0.05$) while both eyes of VO participants were no different. Mean temporal peripapillary retinal nerve fiber layer (RNFL) thickness was significantly greater in ERM study eyes ($P < 0.05$) when compared to control eyes or MH study eyes.

CONCLUSION A relatively high percentage of patients in this cohort had undiagnosed narrow or occludable angles at baseline. The effect of macular pathology on the papillomacular bundle is described as temporal peripapillary RNFL was significantly thickened in ERM eyes. Continued follow-up of this cohort will provide important information on anatomic and functional outcomes after vitrectomy surgery.

TAKE HOME MESSAGE Patients undergoing elective vitrectomy may have unrecognized risk factors for glaucoma. Macular pathology may affect the peripapillary nerve fiber layer.



8:52 AM

Correlation Between the Unaided Observation of the ILM and Brilliant Blue-Stained ILM Following ERM Peeling: Results of the PACORES Group



- Lihteh Wu, MD
- Cristian Carpentier, MD
- Mario Zanolli, MD
- Maria H. Berrocal, MD
- Gonzalo A Sepulveda Moreno, MD
- Mario J. Saravia, MD
- Manuel Diaz-Llopis, MD
- Roberto Gallego-Pinazo, MD, PhD, DiSSO
- Luis H Filsecker, MD
- Juan Ignacio Verdaguer-Diaz, MD
- J. Fernando Arevalo, MD, FACS

OBJECTIVE To determine if staining is required to assess the integrity of the ILM following epimacular membrane peeling

PURPOSE To correlate the surgeon's unaided observation of the ILM with the observation of the brilliant blue stained ILM following epimacular membrane peeling.

METHODS A prospective multicenter observational study of 73 eyes undergoing pars plana vitrectomy and membrane peeling for epimacular membrane. Following core vitrectomy, intravitreal triamcinolone was injected to verify that the posterior hyaloid had been removed. The surgeon then observed and recorded the characteristics of the

underlying ILM. Following a partial fluid exchange, staining of the posterior pole with brilliant blue was performed and the same observations on the characteristics of the ILM were recorded. Peeling of the ILM was left to the surgeon's discretion.

RESULTS The kappa coefficient of correlation between the surgeon's unaided observation of the ILM with the observation of the brilliant blue stained ILM following epimacular membrane peeling was of 0.377 ($p < 0.0001$).

CONCLUSION Even among experienced vitreoretinal surgeons, there is little correlation between the surgeon's unaided observation and the brilliant blue stained observation of the ILM following epiretinal membrane peeling. If the surgeon intends to peel the ILM it should be stained.

TAKE HOME MESSAGE There is little correlation between the surgeon's unaided observation and the brilliant blue stained observation of the ILM following epiretinal membrane peeling.

8:56 AM

Intraoperative Optical Coherence Tomography Use During Epimacular Membrane Removal With Internal Limiting Membrane Peeling

- Ching J. Chen, MD
- Victor Copeland, MD
- Matthew Olson, CRA

OBJECTIVE To assess the retinal structure change by intraoperative SD-OCT before and after the ILM peel during the EMM surgery and to correlate the change to postoperative vision and symptoms of distortion

PURPOSE Controversy still exists in regarding to the necessity of internal limiting membrane (ILM) peel during epimacular membrane (EMM) removal. We examined the use of intraoperative, spectral domain optical coherence tomography (IOSD-OCT) as an aid to surgical EMM removal combined with ILM peeling. We hypothesize that ILM peeling is necessary to restore normal retinal anatomy in EMM surgery.

METHODS A single-center, retrospective chart review identified patients who underwent EMM removal with brilliant blue G assisted ILM peeling and concurrent intraoperative handheld SD-OCT imaging from May 2011 through December 2011. Inclusion criteria were documented pre- and 3-month post-op best corrected visual acuity (BCVA), as well as IOSD-OCT images taken at the start of surgery, after EMM removal, and following ILM peeling. All OCT scans were obtained using with a SD-OCT system mounted to a stand (iVue with iStand, Optovue™). Outcome measures included change in retinal distortion on OCT imaging before and after ILM peel, and comparison of pre-and post-op BCVA and distortion symptom.

RESULTS 14 patients were identified who met inclusion criteria. OCT image analysis revealed that removal of EMM alone rarely alleviated the retinal folds intraoperatively. A significant decrease in retinal distortion after ILM peeling was found in 6 (Group 1) patients and mild to moderate change in 8 (Group 2) patients. Mean logMAR pre-op BCVA was 0.42 and mean post-op logMAR BCVA was 0.27, with 9 out of 14 patients (64%) reported subjective improvement in visual distortion.

CONCLUSION EMM removal alone won't alleviate the retinal folds. ILM removal could resolve retinal wrinkling significantly. Study results support ILM peeling as an important step restoring normal retinal appearance during surgical EMM removal. Future investigation is warranted to determine if anatomical changes resultant from ILM peeling are necessary for improved functional outcomes.

TAKE HOME MESSAGE Intraoperative SD-OCT confirmed that removal of EMM alone can not alleviate the retinal folds but peeling of ILM can significantly reduce the retinal wrinkling.

9:06 AM

Structural and Functional Implications of Severe Foveal Dystopia in Epiretinal Membranes

- Amani A. Fawzi, MD
- Alexander Craig Walsh, MD
- Julie L. Gasperini, MD
- Florian M Heussen, MD

OBJECTIVE To study the functional and structural correlates of severe foveal dystopia in patients with epiretinal membranes (ERM).

PURPOSE To study the functional and structural correlates of severe foveal dystopia in patients with epiretinal membranes (ERM).

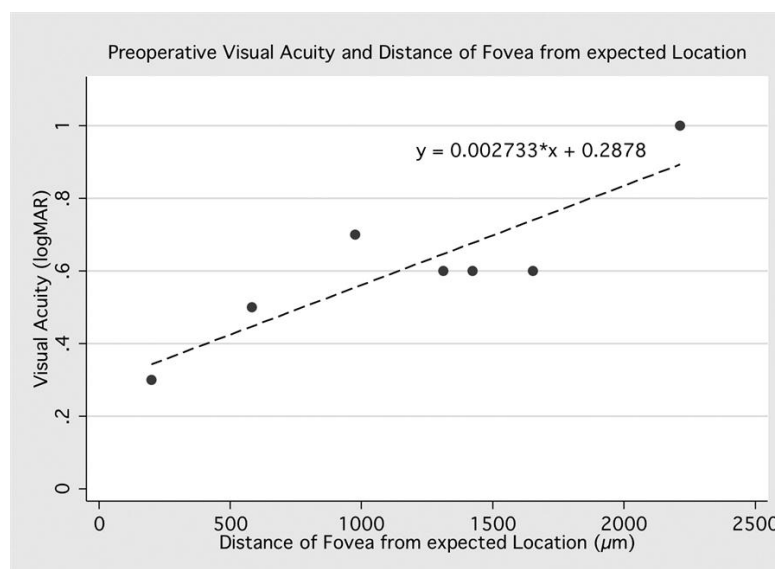
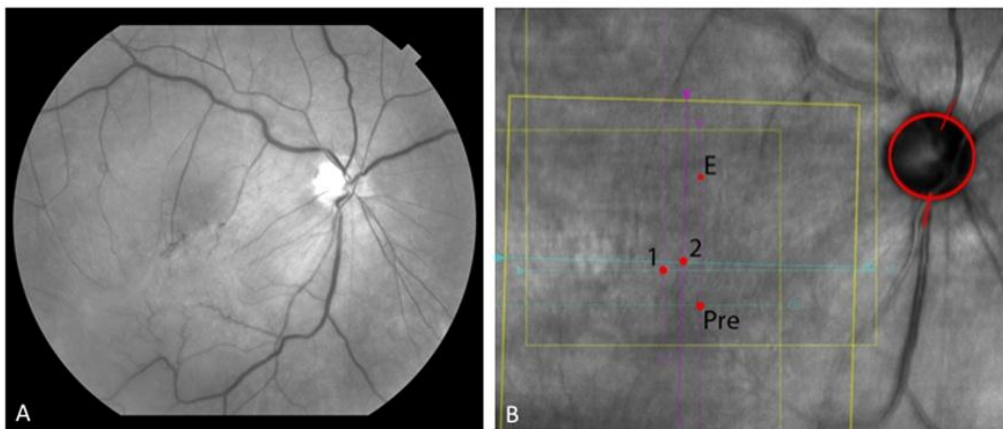
METHODS Retrospective study of 29 eyes with ERM in a single surgeon practice identified 7 eyes that underwent surgical removal of the ERM causing severe foveal dystopia. Severe foveal dystopia was defined as fovea located >200 microns from its expected anatomic location (a point 4.3 mm lateral from the center optic nerve and 7 degrees down vertically). Using OCT, we followed the direction and rate of foveal movement pre- and postoperatively. We examined the correlation between the degree of preoperative foveal dystopia and preoperative vision. We also examine correlation between degree of postoperative movement, macular thickness and the final visual outcome achieved postoperatively.

RESULTS ERM traction caused the fovea to move preoperatively at a rate of 275 micrometers/month from its anatomical location in 2 patients. The final preoperative foveal location was, on average, 1217 ± 683 μm away from the expected location. Median preoperative BCVA was 20/80 (range: 20/40 to 20/200), and median postoperative BCVA was 20/35 (range: 20/20 to 20/100), with an average improvement of 3.3 ± 1.7 lines (range 1-6). Postoperatively, foveal movement toward its expected location was

largest during the first month after surgery (mean=547±340 μm), and slowed down until the final follow-up position was achieved (mean=301±131 μm). Overall, the fovea moved a total of 848±445 μm , allowing the fovea to correct only 32.8±22.1% of the total displacement from its expected location. A univariate regression model confirmed a linear relationship between preoperative visual acuity and preoperative foveal distance from its expected anatomical location with an R^2 of 0.759 ($P = 0.0107$).

CONCLUSION The extent of tractional foveal displacement (dystopia) correlates with decreased visual acuity preoperatively. While all patients experienced functional and anatomic improvements with surgery, long-standing or severe foveal dystopia may be associated with permanent structural changes that limit functional outcome.

TAKE HOME MESSAGE Epiretinal membranes that cause tractional foveal displacement (dystopia) decrease vision commensurate with the degree of foveal dislocation, and may lead to permanent structural and functional loss.



9:10 AM

Functional Outcome in Patients With Posterior Vitrectomy After Idiopathic Epiretinal Membrane from 2007 to 2011

- Boris Josue Bajaire, MD

OBJECTIVE The importance of functional outcomes in patients with epiretinal membranes after posterior vitrectomy between 2007 and 2011

PURPOSE 1. Describe functional outcomes in patients with pars plana vitrectomy after idiopathic epiretinal membrane. 2. Describe recurrences posvitrectomy in patients with epiretinal membranes.

METHODS Study observational, descriptive, retrospective, cases series. The variables measured are age, sex, preoperative , postoperative visual acuity and presence of recurrences. Sample for convenience patients attending the clinic of Dr. Boris Bajaire who underwent pars plana vitrectomy after epiretinal membrane. Criteria for inclusion: patients attending Dr. Boris Bajaire office with idiopathic epiretinal membrane and that underwent pars plana vitrectomy or later recurrence of it. Criteria for exclusion: patients with information incomplete on clinical history, also patients who underwent pars plana vitrectomy with other pathology different than idiopathic epiretinal membrane

RESULTS Retrospectively, were reviewed medical records of 78 patients and 82 eyes that underwent pars plana vitrectomy after idiopathic epiretinal membrane, with age between 51 years and 87 years and average 69 years. With respect to the functional findings, it can be divided into four groups Those with visual gain were 58 eyes and equivalent to 70.7% Those who remained stable or equal vision after the procedure were 14 eyes and equivalent to 17% And those in which there is not visually improved are 10 and equivalent to 12.2% A fourth group of patients with recurrence of epiretinal membrane was obtained from the three group mentioned before , the result were 4 eyes

which equivalent to 4.8% requiring reoperation with brilliant blue, of which 2 had improved and 2 worsened by presenting macular degeneration one and the other macular edema.

CONCLUSION With this review of case series may be conclude that patients with epiretinal membrane who undergo the surgical procedure of posterior vitrectomy via pars plana achieve improvement or stabilization of the clinical course of their visual acuity. Although recurrence may present its percentage is low and there is still useful tool which is reoperation with quite favorable results.

TAKE HOME MESSAGE Need for improved treatment of epiretinal membranes

9:14 AM

Epiretinal Membrane Progression Occurs in Exudative Age-Related Macular Degeneration and May Contribute to Poorer Anatomical and Functional Outcomes

- Omar S. Punjabi, MD
- Baseer Ahmad, MD
- Alex Yuan, MD
- Rishi P. Singh, MD

OBJECTIVE To determine if Epiretinal Membrane progression occurs in patients receiving intravitreal injections for exudative AMD and to determine the effect of ERM on AMD treatment

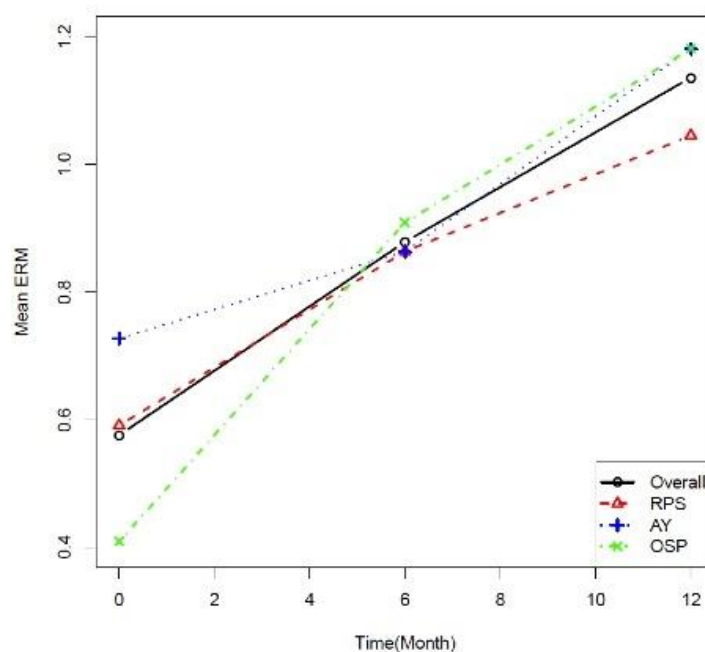
PURPOSE The purpose of our study was two-fold: Firstly, to study the progression of epiretinal membranes (ERM) in patients receiving intravitreal injections of anti-Vascular Endothelial Growth Factor (anti-VEGF) agents for exudative age-related macular degeneration (AMD), and secondly to determine the efficacy of anti-VEGF therapy in patients with ERM in comparison to those without ERM.

METHODS A retrospective study involving newly diagnosed patients with exudative AMD, naive to treatment, and with at least 1-year follow-up was performed. For the first part of the study, patients did not have a clinically evident ERM. Three masked observers analyzed and graded (0-4) the optical coherence tomography (OCT) images at day 0 (date of initiation of therapy), at 6 months and at 12 months. The effect of the number of injections and the presence of posterior vitreous detachment (PVD) was noted. For the second part of the study, patients with and without ERM were identified. Assessment of visual acuity (VA) and central subfield thickness (CST) of the macula on OCT at 6 months was performed.

RESULTS For the first part of the study, 22 eyes of 19 patients were included. 66 OCT scans were studied. The weighted kappa value for agreement of ERM grading among the pairs of observers ranged from 0.70-0.88 and was 0.79 for all 3 observers. The overall mean ERM grade increased significantly from baseline to the 6 month and from the 6 month to the 12 month follow-up visit using the Wilcoxon-signed-rank test ($p=0.05$). Mixed effect regression analysis showed that the slope of ERM progression with time was independent of the presence of PVD and to the number of injections. For the second part of the study, 18 eyes were included in the ERM and non-ERM groups. Average visual acuity dropped from 20/100 to 20/250 in the ERM group and improved from 20/100 to 20/80 in the non-ERM group. Mean CST improved more in the non-ERM group (from 356 μm to 243 μm) compared to the ERM group (from 309 μm to 264 μm); $p=0.01$. The ERM group required a mean of 4.6 injections compared to 4.1 in the non-ERM group.

CONCLUSION Patients receiving intravitreal anti-VEGF agents had a significant linear increasing trend in ERM progression over time, which was independent of the number of injections and to the presence of PVD. Agreement between observers was good. The anatomical and functional response to anti-VEGF treatment in AMD patients with pre-existing ERM was reduced as compared to those without ERM.

TAKE HOME MESSAGE Patients receiving intravitreal injections of anti-VEGF agents may have ERM progression with time. Additionally, presence of ERM may decrease the anti-VEGF response in AMD.



9:18 AM

Natural Clinical Course of Unoperated Eyes With Vitreomacular Traction Syndrome

- Vishak J. John, MD
- Harry W. Flynn, MD
- William E. Smiddy, MD

OBJECTIVE

The objective of this study is to better understand the natural progression of vitreomacular traction without any interventions

PURPOSE The purpose of the study is to investigate the natural clinical course of eyes with vitreomacular traction syndrome in terms of vision and anatomy using spectral domain OCT

METHODS A consecutive case series of patients who presented to the Retina Service at Bascom Palmer Eye Institute between 2007 and 2011 who had OCT findings consistent with vitreomacular traction. At the initial visit, demographic information, vision, symptoms, and OCT were collected. Fellow eyes of patients with macular hole, and advanced AMD were excluded. Vitreomacular traction was graded based on OCT findings at initial and follow up visit.

RESULTS 49 eyes of 34 patients were identified as having vitreomacular traction by SD-OCT on their initial visit. The mean age of the patients was 74 years, with 19 females and 15 females. The mean follow up was 589 days [range 71 to 1652 days]. At initial visit, patients had a mean BCVA of log 0.268, and 16 eyes had Grade I VMT[no cysts], 27 eyes had Grade II VMT with cysts, and 6 eyes presented with Grade III VMT with subretinal fluid. At final visit, the best corrected vision was log 0.271 [p=0.95 when compared to baseline vision]. Within Grade I patients, two improved, 10 remained stable, and 4 patients worsened during the time of followup. In Grade II, 6 patients improved, 20 remained stable, and only 1 patient worsened. Finally in Grade III, 4 patients improved,

while one remained stable, and the other worsened. Overall, 43 out of the 49 eyes remained stable or improved without any surgical intervention in our series.

CONCLUSION Unoperated clinical course of vitreomacular traction is relatively stable over the course of the 16 month mean follow up in this study. Mean initial and last follow up vision were similar. Rate of progression from mild to severe grades of VMT that may need vitreoretinal surgery is low. Many if not most VMT patients can be followed nonsurgically; surgical indications are not clearly defined.

TAKE HOME MESSAGE Many if not most VMT patients can be followed nonsurgically; surgical indications are not clearly defined but surgery might be considered for eyes with progressive visual or anatomic worsening.