Purpose: A potential adverse consequence of ILM peeling is the appearance of DONFL. Here, we describe the changes in local retinal electrical responses in eyes with DONFL appearance after ILM peeling.

Methods: Retrospective review of medical records, photography and MFERG data of 11 consecutive patients who underwent macular hole repair with ILM peeling using Brilliant Blue dye. The amplitude (nV/deg2) and implicit times (ms) of the peak MFERG response (P1 wave) were obtained from both operated eyes and fellow, unaffected eyes and grouped into five rings (Ring 1: Central 2° centred on the fovea, Ring 2: 2–5°, Ring 3: 5–10°, Ring 4: 10–15°, Ring 5: >15°). DONFL was identified on blue reflectance photographs post-operatively and OCT images used to identify the total number of focal depressions, characteristic of DONFL, which were scored. Area of peel was measured from intra-operative video images and minimum linear diameter of the macular hole was measured from pre-operative OCT images.

Results: A higher DONFL score strongly correlated with larger area of peel, r=0.7. The P1 amplitude was reduced by 14.6% in zone 1 (p=0.03) and 7.7% in zone 2 (p=0.02) in eyes that underwent ILM peeling compared to unaffected fellow eyes. However, the implicit time was only significantly different in zone 5, with a 1.4% elongation compared to fellow eyes (p=0.03). In operated eyes, larger area of peel was associated with lower P1 amplitude in zone 1 (r2= 0.83, p=0.01) and zone 3 (r2=0.67, p=0.03) and associated with elongation of implicit time in zone 4 (r2=0.88, p=0.02) and 5 (r2=0.75, p=0.03). A negative correlation between DONFL score and implicit time was only significantly different in zone 4 (r2=0.88, p=0.02) and 5 (r2=0.75, p=0.01) was observed. No statistically significant correlations were observed between any factors assessed and implicit time in zone 1-3 or amplitude in zone 4 and 5.

Conclusions: Eyes with larger peel areas demonstrate lower P1 amplitude centrally and elongation of implicit time peripherally. DONFL is thought to be due to focal thinning of the ganglion cell layer. However, the MFERG waveform largely consists of responses from the outer retina. Our findings suggest that ILM peeling may cause changes deeper in the retina and larger peel areas may be associated with more retinal dysfunction. Prospective, longitudinal studies are required to confirm these findings.

Commercial Relationships: Christiana Dinah, None; David Steel, None; Haifa Madi, None

Program Number: 2205
Presentation Time: 4:00 PM–4:15 PM
Reducing post-vitrectomy cataracts
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Purpose: Cataracts are known to develop after vitrectomy (PPV), a process believed to be due to increased retrolental oxygen levels. The finite element oxygen model of cataractogenesis proposed by Filas et al [IOVS 2013;54:6549-59] predicts that an eye with intact anterior vitreous and without posterior vitreous detachment (PVD) will have 50% lower retrolental oxygen levels, thereby mitigating cataracts. Thus, cataract formation after vitrectomy might be curbed by performing vitrectomy without removing anterior vitreous and not inducing PVD intra-operatively. This hypothesis was tested in a retrospective study of patients undergoing minimally-invasive vitrectomy for floaters.

Methods: 59 phakic eyes in 48 patients (26 males, 22 females; 58 ± 15 years old; range = 24 - 81 years) underwent minimally-invasive 25 gauge vitrectomy for floaters. PVD was not induced intra-operatively and 3-4 mm of anterior vitreous was left intact behind the lens. The results were compared to 23 eyes in 18 patients (63 ± 8 years old; range = 44 - 75 years) undergoing vitrectomy for floaters that included surgical induction of PVD and extensive vitreous removal.

Results: In the minimally-invasive group without PVD induction, 13/59 (22%) eyes developed cataracts requiring surgery, on average 13.1 months post-vitrectomy (age range 56-82 years). In the extensive vitrectomy cases where PVD was induced surgically, 20/23 (87%) eyes required cataract surgery (P<0.0001) on average 7.3 months post-vitrectomy (age range = 50-75 years old), which is considerably sooner than following minimally-invasive vitrectomy (P < 0.002).

FIG. 1 LEGEND: By 16 months after vitrectomy (PPV) the risk of cataract formation requiring surgery is more than 80% in patients who underwent extensive PPV with PVD induction, but just around 20% in the minimally-invasive PPV group without PVD induction.

Conclusions: Not inducing PVD and leaving the anterior vitreous intact during vitrectomy seems to be associated with a 4-fold lower risk of subsequent cataract surgery in the short term (P<0.001). Furthermore, it seems to take 70% longer before cataract surgery is needed after minimally-invasive vitrectomy for floaters (P<0.002). Continued surveillance will determine any long-term differences, but these results are consistent with the predictions of the finite element model of intraocular oxygen distribution, and should be further tested in a randomized prospective study.
Purpose: Venous thromboembolism is an important subject of research due to its preventable nature and potentially fatal consequences. Postoperative immobilization is a significant risk factor. Thus most ophthalmic surgeries are ambulatory in nature. Many vitreoretinal (VR) surgeries require patients to maintain specific positioning for up to several weeks postoperatively. Despite the consensus on the importance of early postoperative mobilization, to date, there is not sufficient data documenting the incidence of VTE following VR surgery. The goal of this study is to quantify the incidence of VTEs attributable specifically to prolonged immobilization following VR surgery.

Methods: We included data from 146 patients, 74 of whom were in the study group and 72 in the control group. No complications were attributed to postoperative positioning after VR surgery. This is a novel study directly assessing complications in the context of positioning after VR surgery.

Conclusions: There was no significant difference in the rates of VTE and death between the two study groups and no significant complications were attributed to postoperative positioning after VR surgery. This is a new study directly assessing complications in the context of positioning after VR surgery.

Commercial Relationships: Munir Iqbal, None; Lisa Jagan, None; Jeff Gale, None; David Almeida, Alcon (R), Allergan (R), Genentech (R), Novartis (R)

Program Number: 2207
Presentation Time: 4:30 PM–4:45 PM
Visual Phenomenon Perceived during Vitreoretinal Surgery with MAC Anesthesia
Hema L. Ramkumar¹, Azadeh Khatibi², Isaac Ezon³, Cheryl A. Arciune⁴, Giulio Barteselli⁵, Joseph T. Nezgoda⁶, William R. Freeman⁷, Michael H. Goldbaum⁸, ¹Department of Ophthalmology, Jacobs Retina Center at Shiley Eye Center, University of California, San Diego, La Jolla, CA; ²Private Practice, Los Angeles, CA.

Purpose: To determine the prevalence and preoperative predictors of visual phenomena seen by patients during trans pars plana vitrectomy (TPPV) under monitored anesthesia care (MAC). We wished to determine how often patients see visual phenomena, including surgical instruments in the eye, the implications, and the association with different anesthetics.

Methods: A prospective observational study of 100 TPPV procedures was conducted at a single academic eye hospital on adults under MAC plus peribulbar block between March and October 2013. The pre- and intraoperative intravenous and local anesthetics used were correlated with the results of a postoperative questionnaire administered 1-2 days after surgery. It was designed to elicit patient satisfaction, pain, and perception of the instrument visualization phenomenon. SASS software was used for the Wilcoxon rank sum test and Fisher’s exact test.

Results: Seventy percent of patients remember being in the operating room, and only 28% of patients reported seeing visual phenomena during the surgery. Of these, 71% of patients saw lights, 50% saw colors, and 17% reported seeing moving instruments. Ten percent of patients who reported seeing visual phenomena found this disconcerting. Seeing moving instruments was not associated with a specific type or combination of intravenous (propofol, fentanyl, midazolam, benzodiazepine) medications, surgical time, preoperative vision, use of gas, or location of intraocular pathology. The average patient reported mild intraoperative discomfort, 3 on a scale of 0 to 10 (maximum pain). The vast majority (95%) were satisfied with the choice of MAC with local over general anesthesia.

Conclusions: The prevalence of visual phenomena during TPPV is lower than reported by other groups. No association was found with macular pathology, as previously described. In our prospective study designed to investigate visual phenomena, we found few patients disconcerted with visual sensations. MAC with local anesthesia provided excellent analgesia and comfort.

A drawing entitled “brush” drawn by a highly myopic patient after a macula off retinal detachment repair with silicone oil. Preoperative vision was hand motion, and postoperative vision was 20/800.

Commercial Relationships: Hema L. Ramkumar, None; Azadeh Khatibi, None; Isaac Ezon, None; Cheryl A. Arciune, None; Giulio Barteselli, None; Joseph T. Nezgoda, None; William R. Freeman, Michael H. Goldbaum, None.

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ARVO 2014 Annual Meeting Abstracts


Purpose: To study the postmarketing safety profile of ocriplasmin (Jetrea®) as experienced by retinal physicians in the United States.

Methods: Two thousand four hundred sixty-five (2465) retinal physicians were surveyed via the web based SurveyMonkey® software regarding their frequency of use of ocriplasmin and incidence of ocular adverse events.

Results: There were 270 respondents (11.0%) who reported treating 1056 eyes with ocriplasmin; 91.5% of respondents were male and 8.5% were female. Geographic distribution of respondents was: Northeast (32.1%), South (24.4%), Midwest (24.4%), and West coast (19.1%). Practice type distribution included: retina group practice (49.4%), multispecialty group practice (23.2%), full time academic practice (16.2%), solo private practice (10.7%). The incidence of adverse events were as follows: acute decline in visual acuity 179 (16.95%), development of submacular fluid 108 (10.23%), dyschromatopsia 96 (9.09%), progression of VMT to macular hole 92 (8.71%), development of retinal detachment 28 (2.65%), development of retinal tear 21 (1.99%), development of afferent pupillary defect 19 (1.80%), ERG abnormalities 6 (0.57%), crystalline lens instability 4 (0.38%), and vasculitis 3 (0.28%). 15.9% of physicians who experienced an adverse event reported their incident to the Food and Drug Administration and 84.1% did not.

Conclusions: Although the incidence of many ocular adverse events reported in this study are comparable to those reported in the phase III registration trials, additional phase IV safety studies are warranted to better understand the pathophysiology of ocular adverse events of ocriplasmin.

Commercial Relationships: Sumit P. Shah, None; Karen Jeng, None; Howard F. Fine, Allergan (C), Genentech (C), Regeneron (C); Harold M. Wheatley, None; Daniel B. Roth, Bayer (C), Ohr (E), Regeneron (C), Thrombogenics (C)

Program Number: 2209
Presentation Time: 5:00 PM–5:15 PM
Safety profile of ocriplasmin for symptomatic vitreomacular adhesion – a comprehensive analysis of pre- and post-marketing experiences


Purpose: Following the recent approval of ocriplasmin by the Food and Drug Administration, post-marketing safety concerns have been raised by the vitreoretinal community. The American Society of Retina Specialists (ASRS) Therapeutic Surveillance Committee (TSC) was commissioned to monitor post-marketing drug- and device-related adverse events. The purpose of this report is to analyze the post-marketing safety experience in the context of available pre-marketing, clinical trial safety data.

Methods: Periodic aggregate safety reports consisting of pre-marketing, or clinical trial, data (n=999 injections) and post-marketing reports (n=4,387 injections) were analyzed by the TSC. The aggregate data were analyzed to classify adverse events, and post-marketing safety data for each event type were compared to the pre-marketing data.

Results: Eight categories of adverse events were identified. Acute reduction in visual acuity, electoretinogram changes, dyschromatopsia, retinal tears and detachments, lens subluxation or phacodonesis, impaired pupillary reflex, and retinal vessel findings were reported in both the pre- and post-marketing experiences. Ellipsoid zone (inner segment/outer segment) findings were only reported in the post-marketing experience. Rates of post-marketing reports were lower than in the pre-marketing data. Adverse events were generally transient, and characteristics of these adverse events were generally similar between the pre- and post-marketing experience.

Conclusions: Based on this report, it is the opinion of the TSC that the post-marketing safety profile following ocriplasmin administration has thus far been consistent with the pre-marketing clinical trial program. Post-market analysis can uncover unidentified adverse events and places known events in context but is limited by the nature of voluntary reporting. The TSC urges informed management of patient expectations and active post-market surveillance by all practitioners.

Commercial Relationships: Paul Hahn, None; Mina M. Chung, None; Harry W. Flynn, Alimera (C), Pfizer (C), Santen (C); Saber Huang, Bausch&Lomb (C), Lumoptik (I), Notal Vision (C), Second Sight (C), Thrombogenics (S); Judy E. Kim, Genentech (F), Regeneron (F), Thrombogenics (S); Tamer H. Mahmoud, Alcon (C), Alimera (C); Srinivas R. Sadda, Allergan (C), Bausch&Lomb (C), Carl Zeiss Meditec (C), Genentech (C), Optos (C), Regeneron (C); Pravin U. Dugel, Abbott (C), Acucela (C), Alcon (C), Alimera (C), Allergan (C), Artic DX (C), Arctic DX (I), Digisight (C), Digisight (I), Genentech (C), LUX (C), Macusight (C), Macusight (I), Neovisa (I), Neovisa (C), Ophthotech (C), Ophthotech (I), ORA (C), Regeneron (C), Thrombogenics (C)