7/29/2023 12:00 am

Surgery Symposium 1

Naive SubRetinal Hemorrhage in Neovascular AMD—Pneumatic Displacement, Subretinal Air, and tPA: Subretinal vs Intravitreal Aflibercept: The NATIVE Study

- Matias Iglicki, MD
- Marina Koury
- Lucas Donato, MD
- Adiel Barak, MD
- Diego Quispe
- Javier Melamud
- Dinah Zur
- Anat Loewenstein, MD

Objective: This is first study that shows better VEGF suppression with lower need for anti-VEGF injections in the follow-up period after subretinal aflibercept vs. intravitreal aflibercept in the context of PPV, pneumatic displacement with subretinal air and subretinal tPA in patients with submacular hemorrhage secondary to naïve neovascular AMD.
Purpose: As the efficacy and safety profile of intravitreal compared to subretinal aflibercept in this context has not been investigated previously, our results shed light in this matter and are encouraging. Therefore, we believe that our study will be of special interest for the attendes of the 41st ASRS meeting that will take place in Seattle, USA. *This paper* add priceless information on novel treatment options in this devastating condition.
Methods: ***Study Participants***
Study inclusion criteria included: (1) age 55 years or older; (2) SMH due to naïve nAMD; (3) onset of vision loss within 3 days before surgery; (4) SMH classified as small, i.e. not extending beyond the arcades; (5) PPV with subretinal tPA , subretinal air, and concomitant subretinal or intravitreal aflibercept administration; (6) 24 months of follow-up after surgery.
Exclusion criteria were (1) another concomitant ocular disease that causes CNV; (2) any previous treatment with ocular or systemic anti-VEGF agents; (3) treatment with anticoagulants or antiplatelets, such as aspirin, warfarin, clopidogrel, etc.; (4) large SMH, i.e. hemorrhage reaching the arcades.
Consecutive patient records were reviewed for demographic and clinical data; best-corrected visual acuity (BCVA) intraocular pressure (IOP), and OCT data before surgery and after 24 months; the time between vision loss and surgery (in days); surgery details (intravitreal vs. subretinal aflibercept injection); intra- and post-operative complications; anti-VEGF injections over 24 months follow-up (which were administered on a pro-re nata regiment, i.e. patients were re-injected in case of signs of exudation on the OCT and/or retinal hemorrhage and/or decrease in vision attributable to exudative of AMD); cataract surgery over 24 months follow-up.
Surgical Procedure
All patients underwent standard 3-port PPV. Following vitrectomy, tPA (25 mcg/0.1mL) was injected into the subretinal space utilizing a 38-gauge subretinal needle.In the “subretinal group”, aflibercept was injected subretinally together with tPA. Following tPA injection,In the “intravitreal group”, aflibercept (2mg/0.05mL) was injected intravitreally at the end of the surgery.
OCT Analysis .***Outcome measures. Statistical analysis***

Results: This study included 80 eyes of 80 patients (mean age 80.3 ±3.7 years, 50% female). All patients had treatment naïve nAMD as the underlying cause of SMH. The average duration from onset of symptoms to surgery was 1.26 days (range 0-3 days). Based on review of OCT images, SMH was subretinal in all 80 patients (100%), and sub-RPE in 29 patients (36.25%). In all patients, the SMH did not reach the arcades.
Baseline characteristics of both groups are shown in Table 1. All patients in the “subretinal” group were pseudophakic, while 12/39 patients in the “intravitreal” group were phakic. There was no difference in terms of anatomical displacement and visual outcomes between patients with and without sub-RPE hemorrhages. The follow-up post-surgery was 24 months in all cases. The outcomes are shown in Table 2.

Conclusion: We presented the first study that evaluated the efficacy and safety profile of sub-retinal compared to intravitreal aflibercept in the context of PPV, pneumatic displacement with subretinal air and subretinal tPA in patients with naïve SMH secondary to neovascular AMD. This study shows better management of the CNV, with statistically significant lower need for anti-VEGF injections over 24 months when treated with subretinal aflibercept compared to intravitreal application

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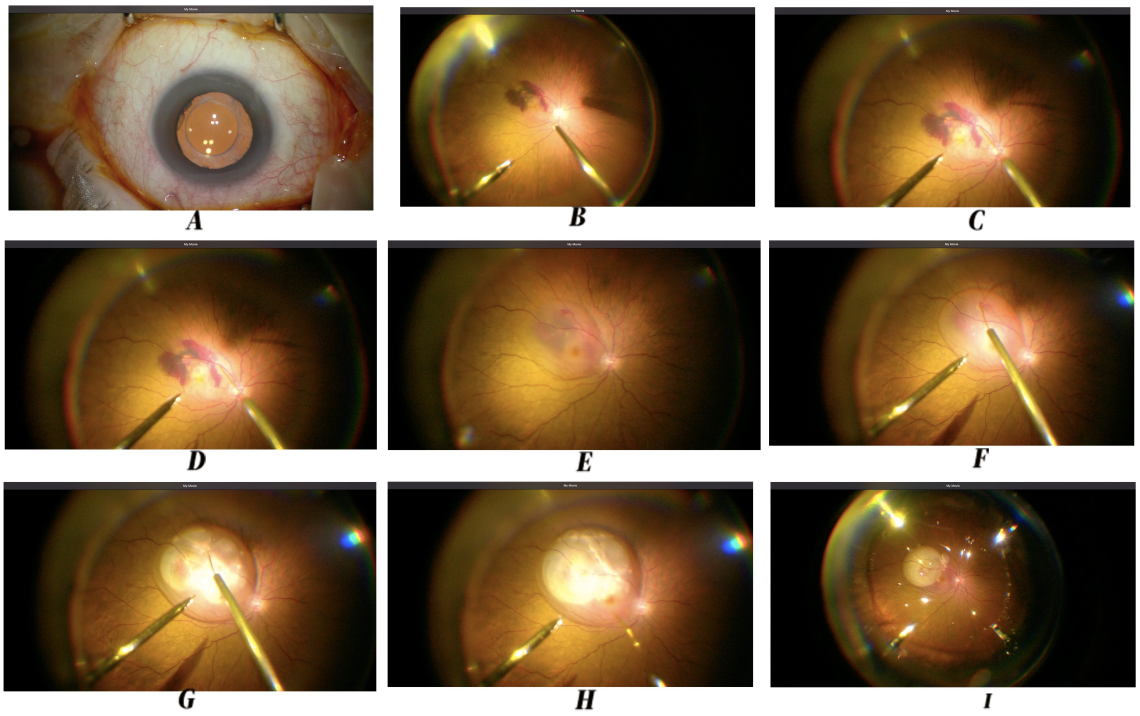
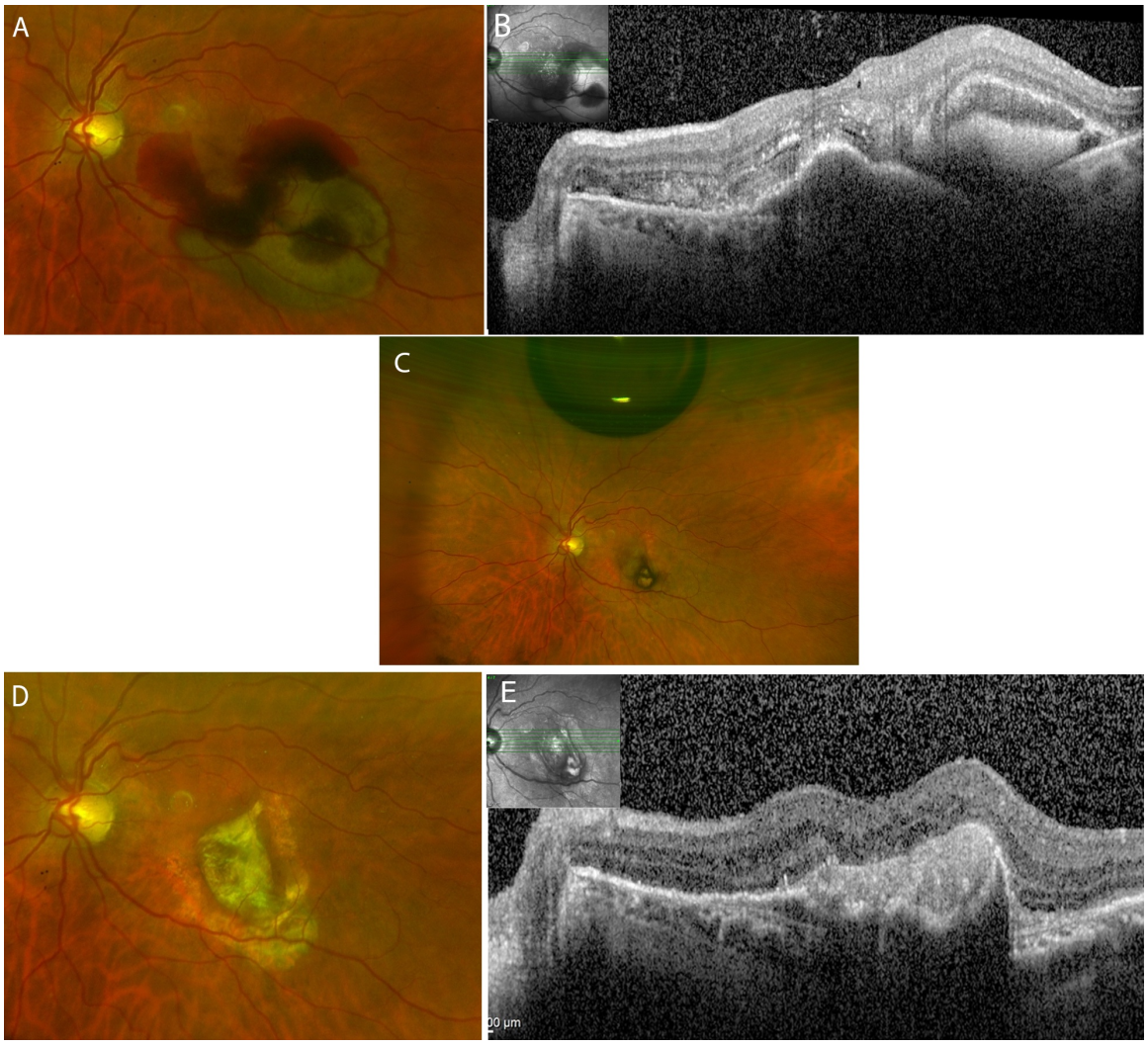


Figure 2. Step by Step Surgery, including subretinal aflibercept injection



Color fundus and OCT over the follow-up of 24 months in a patient intreated

7/29/2023 12:00 am

Surgery Symposium 1

Intraoperative Fluorescein Angiography to Efficiently Identify Many Biomarkers and Guide Surgical Decision-Making

- Alan Franklin, MD, PhD, FASRS
- Gustavo Huning, MD, MBA
- Hisanori Imai, MD, PhD

Objective: We sought to design an efficient method to perform intraoperative fluorescein angiography using digitally assisted visualization.
Purpose: The ability to perform intraoperative fluorescein angiography permits excellent visualization of the posterior segment vasculature which is sometimes not possible preoperatively. Many of the observed biomarkers guided surgical decision making to potentially enhance post operative results.
Methods: A 485 nm bandpass filter was placed into the filter holder of the accessory light sources of the Constellation machine with steel modified washers to produce an exciter source, and a 535 nm bandpass filter in another steel washer was placed into the blank slot of an active laser filter to produce a barrier filter. A specific color channel was also developed for DAVS using NGENUITY to produce a digital barrier filter in some cases also. Fluorescein, 500 mg in 5 ml was then injected intravenously during retinal surgery to produce digital video and images.
Results: Vascular filling times were observed in real time. Increased filling times are observed in the settings of increased intraocular pressure, systemic hypotension, and poor microvascular circulation. Discrete vascular blockages are readily identified in branch retinal vein occlusions. In the scenario of central retinal vein occlusions, increased vascular filling time, venous tortuosity, and arteriovenous shunt vessels can be identified. Multiple intravascular abnormalities can also be identified. In addition, retinal and choroidal neovascularization are easily observable. Another finding is that residual microvascular abnormalities with leakage can be found after membrane delamination for proliferative diabetic retinopathy, or other ischemic retinopathies. Regions of retinal capillary dropout can be identified so that panretinal laser can be altered to treat areas of ischemia with more confluent laser to relatively spare areas of better perfused retina. Both inflammatory cystoid macular edema and perivascular leakage can be visualized in eyes affected by uveitis or infection. Finally, relative activity of inflammatory lesions can be observed by the presence or absence of fluorescein leakage.
Conclusion: We were able to develop an technique to permit efficient high resolution and efficient transition to and from intraoperative FA visualization in real time during DAVS. to reliably reproduce many routine clinical biomarkers such as vascular filling times, vascular occlusions, shunt vessels, retinal capillary dropout as well as both retinal and choroidal neovascularization. Residual vascular abnormalities after membrane delamination of ischemic neovascular retinopathies directed treatment of these areas of residual leakage in real time. We were also able to preferentially treat regions of ischemic peripheral retina with heavier laser and relatively preserve better perfused areas. Thus, intraoperative FA reliably and efficiently reproduced many clinical biomarkers such as vascular filling times, microvascular abnormalities, and leakage to modify and optimize many surgical interventions intraoperatively.

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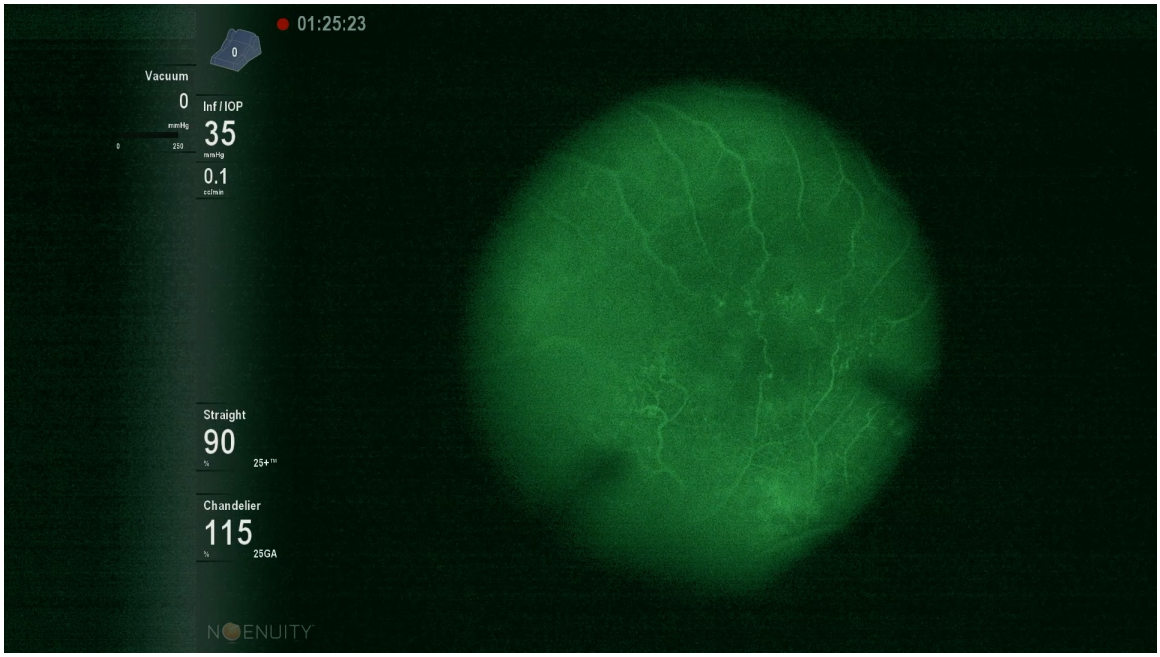

Intraoperative FA of BRVO

Intraoperative FA of Residual Vascular Abnormality

7/29/2023 12:00 am

Surgery Symposium 1

Type of Vitreoretinal Anesthesia and Sources of Variation in the United States

- Ahmed Sallam, MD PhD FRCOphth
- Muhammad Chauhan, MS, MA
- Abdelrahman Elhusseiny, MD, MSc
- Mohamed Soliman, MD, MSc

Objective: To analyse the trends in (VR) surgery anesthesia between 2015 and 2021in the USA and to describe variation between centres, surgeons and type of vitreoretinal surgery.

Purpose: There has been a growing trend of using monitored anesthesia care (MAC) compared to general anesthesia (GA) over the last two decades in VR surgery worldwide.
From the USA, there is no data available on national practice patterns and how patient, procedural and institutional characteristics influence the use of VR anesthesia. Gaining insights into anesthetic trends in VR surgery will aid surgeons and anesthesiologists in risk-stratifying patients before surgery and identifying the optimal anesthetic modality for a particular patient.
Methods: The study population included adult patients (>18 yrs.) undergoing VR surgeries with MAC or GA at participating Multicenter Perioperative Outcomes Group (MPOG) academic and community hospitals in the USA from January 1, 2015 to December 31, 2021. The primary outcome of this study was MAC use. Multilevel multivariable mixed-effects models were performed with patients nested within clinicians nested within institutions to assess the association between MAC use and relevant patient-, clinician-, and institutional-level factors. We estimated the proportion of variation explained by each level (patient, provider, and institution) using intraclass correlation coefficients obtained from the mixed model.

Results: We included 51,803 surgical cases from 41,595 patients treated by 175 retina surgeons across 34 institutions, with MAC being performed on 33,177 cases (63.55%). Multivariable random effect modeling of the institution, provider, and patient demonstrated that 25.11% of the variation in MAC use was attributable to the institution, 35.11% to the provider, and 67.12% was attributable to patients (Fig 1,2) Patient-level factors independently associated with MAC use included increasing age (p=<.001) and an American Society of Anesthesiologists (ASA) class 4 or 5 physical status (p<.01). Using non-complex pars plana vitrectomy (PPV) surgery (surgery for vitreoretinal interface, vitreous hemorrhage or dropped nucleus) as the reference group, complex VR surgery (surgery for diabetic traction detachment or proliferative vitreoretinopathy detachment) and scleral buckle with oor without PPV were less likely to be operated under MAC (p<.0001). Academic affiliation and US region were not predictors for MAC use.
Conclusion: Most variations in MAC use for VR surgery are associated with patient-level factors, including older patients and those with higher medical co-morbidities (ASA). Complex PPV surgery and surgery involving the placement of a buckle were associated with increased use of GA. We also observed marked variation between providers in their use of GA, irrespective of the surgery indication.

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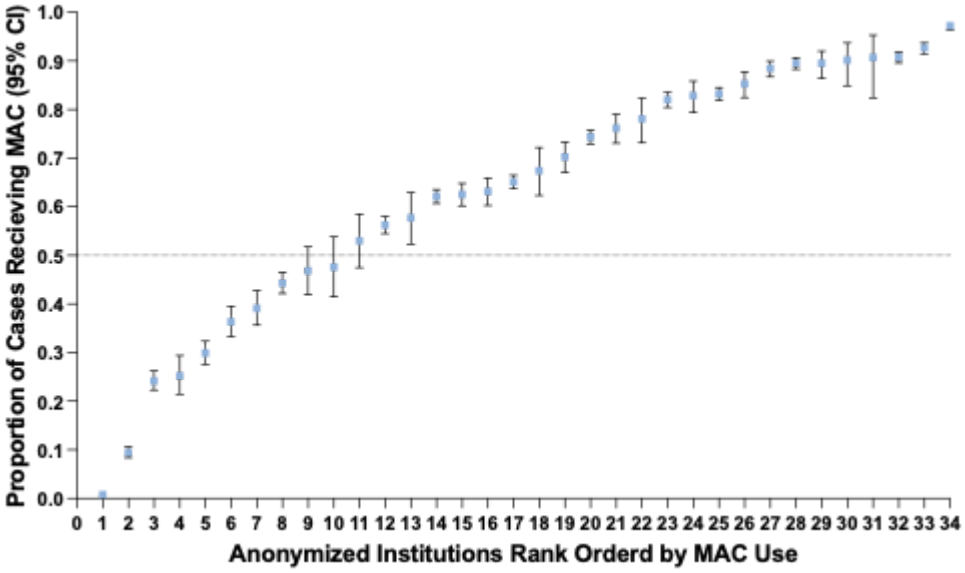
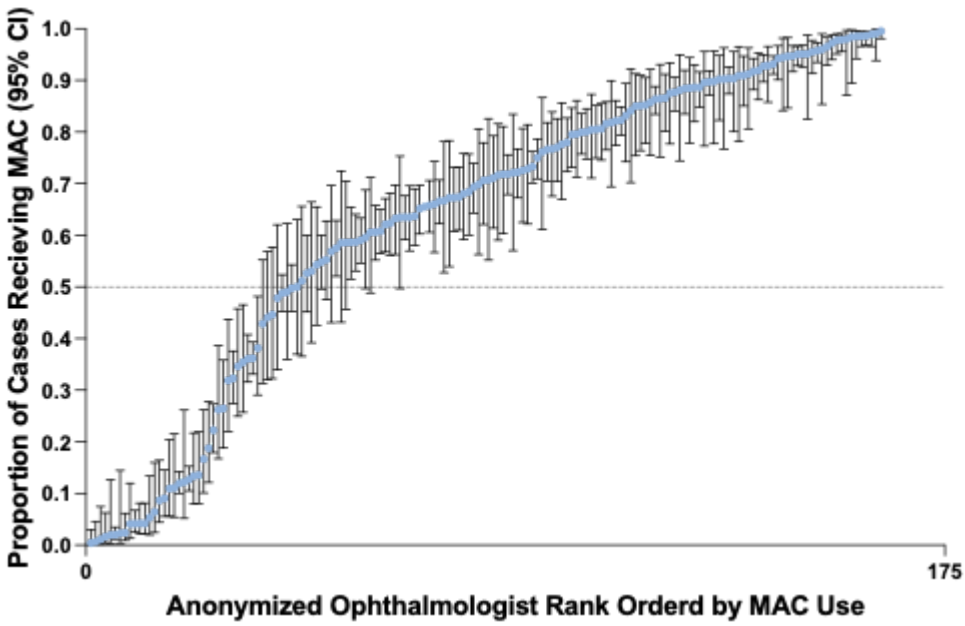


Variation in monitored anesthesia care (MAC) use by institution



Variation in monitored anesthesia care (MAC) use by surgeon

7/29/2023 12:00 am

Surgery Symposium 1

27-Gauge vs 25-Gauge Vitrectomy for Symptomatic Vitreous Opacities: Outcomes Using Infrared Video

- Shawn Kavoussi, MD

Objective: This study utilizes a novel vitreous opacity scoring system based on infrared video to quantify the severity of macula-obscuring vitreous opacities in patients willing to undergo pars plana vitrectomy as well as document an objective reduction in post-operative vitreous opacity scores.
Purpose: Symptomatic vitreous opacities are among the most common patient complaints in a retina practice, yet traditional examination and imaging modalities have limitations for evaluating vitreous opacities. At ASRS 2022, infrared video was introduced as an optimal means for the demonstration of vitreous opacities. Infrared imaging renders the opacities black in front of a white fundus, and the video function creates a more complete presentation of how much of the macula is obscured.

This is the first surgical study utilizing infrared video and the novel Macular Vitreous Opacity Score (MVOS) to quantify the reduction in vitreous opacities following vitrectomy. Secondary endpoints include comparing the 27-gauge vitrectomy probe and a 25-gauge vitrectomy probe in terms of cut time, total case time, and subjective improvement in VFQ-25 scores following pars plana vitrectomy.
Methods: Thirty two consecutive eyes of patients with a chief complaint of symptomatic vitreous opacities were enrolled in this prospective, non-randomized, non-masked series. Eyes with diabetic vitreous opacities and/or history of prior vitrectomy or laser vitreolysis were excluded. All patients completed a pre-operative and post-operative VFQ-25 questionnaire and received a pre-operative and post-operative MVOS (0-4) based on infrared video assessment. Sixteen patients underwent vitrectomy using the 27-gauge Hyper-Vit vitrectomy probe and the other sixteen patiens had vitrectomy with the 25-gauge Advanced Ultra-Vit vitrectomy probe (Alcon). Cut time and total case time were recorded and compared with t-tests.

Results: Mean pre-operative MVOS was 2.0 (SD 0.8) in the 27-gauge group and 2.1 (SD 0.9) in the 25-gauge group. The majority of patients (26 of 32, 81%) undergoing vitrectomy for symptomatic vitreous opacities had MVOS ≥ 2. All 32 patients reached a score of 0 for post-operative MVOS ($p<0.001$). Mean cut time was 130.6 seconds (SD 5.0) in the 27-gauge group and 188.3 (SD 8.8) in the 25-gauge group ($p<0.001$). Mean case time was 7.2 minutes (SD 0.5) in the 27-gauge group and 8.0 (SD 0.5) in the 25-gauge group ($p<0.001$). Mean pre-operative self-reported "general vision" (VFQ25-A2) scores were 7.6 / 10 (SD 0.7) in the 27-gauge group and 7.3 (SD 0.7) in the 25-gauge group. Mean post-operative VFQ25-A2 scores were 9.8 (SD 0.4) in the 27-gauge group and 9.9 (SD 0.3) in the 25-gauge group ($p<0.0001$ vs. pre-operative), with no significant difference between the 27- and 25-gauge groups.
Conclusion: The MVOS is useful to standardize the clinical documentation of the severity of symptomatic vitreous opacities. The majority of patients willing to undergo surgical intervention have MVOS ≥ 2. Pars plana vitrectomy with both 27- and 25-gauge platforms yielded significant subjective and objective improvements in vitreous opacity scores. Lower cut times and case times were achieved with the 27-gauge platform.

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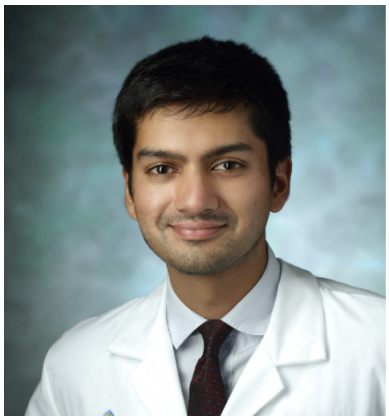
7/29/2023 12:00 am

Surgery Symposium 1

Determining Vitreoretinal Surgery Fellow Surgical Competency: Survey of Fellowship Program Directors



- Kapil Mishra, MD
- Muhammad Hassan
- Linus Amarikwa
- Omesh Gupta, MD, MBA
- Sunil Srivastava, MD
- Adrienne Scott, MD, FASRS
- Philip Ferrone, MD, FASRS
- Prithvi Mruthyunjaya, MD, MHS

Objective: To query fellowship program directors on fellow surgical competence.

Purpose: Vitreoretinal (VR) surgery is a complex surgical field requiring mastery of several procedures not traditionally taught in an ophthalmology training program. Conventionally fellow surgical competency is determined by program educators, yet little is published on what criteria educators utilize to make that determination. We surveyed fellowship program directors (PDs) to elucidate how they assess fellow surgical skills.
Methods: An institutional review board-approved Qualtrics survey was distributed to U.S. VR fellowship PDs listed on the San Francisco Match website. The educators were queried on several aspects of assessing surgical competency, including the minimum number of vitrectomies a fellow should perform to achieve competency, how comfortable a fellow should be with complex vitreoretinal procedures at the end of fellowship, what tools the educators use to assess surgical competency, and what resources most help fellows achieve surgical proficiency.
Results: 42 fellowship PDs responded to the survey (response rate 41.2%). 33 PDs were affiliated with academic institutions and 9 with private practice fellowships. Responses varied on the minimum number of vitrectomies a fellow should perform (primary and assist) with the most common responses being at least 200 cases (36.4%), no absolute minimum number (18.2%), and at least 300 cases (11.4%). Educators responded on a Likert scale (1: not in scope of fellowship, 2: low comfort level, 5: very comfortable and independent) how comfortable fellows should be at the end of fellowship on the following surgeries: primary buckle (4.6), giant retinal tear (4.6), grade C proliferative vitreoretinopathy detachment (4.5), advanced diabetic tractional retinal detachment (TRD) (4.5), pediatric TRD (2.4), and plaque brachytherapy (2.1). Educators were also asked (1: not applicable, 2: least important, 5: most important) to rate several evaluation tools, with the 3 highest being direct surgical observation (5.0), discussion with other faculty members (3.7), and outcomes or complications of fellow cases (3.6). Respondents also rated learning experiences fellows should have aside from direct surgical experience, with the 3 highest being small group surgical discussions (4.3), national fellow surgical courses (4.1), and home institution surgical conferences (3.9).
Conclusion: Educators expect fellows to be comfortable with most advanced vitreoretinal surgeries at the end of fellowship with few exceptions including pediatric TRDs and plaque brachytherapy. Direct surgical observation is the most important evaluation tool, and educators noted small group discussions to be a valuable surgical resource for fellows. The lack of consensus on minimum numbers, broad complexity of surgical cases, and the various competency metrics may warrant standardization and improved methods to assess competency.

IRB APPROVAL Yes

7/29/2023 12:00 am

Surgery Symposium 1

Mastering the Retrobulbar Block: Using a New 3D-Printed Simulator for Practical Training

- Brittany Powell, MD
- Remigio Flor, MD
- Nicole McMinn
- Peter Liacouras, PhD
- Hind Baydoun, Phd, MPH
- Richard Rosen, MD, DSc(Hon), FACS, FASRS, FARVO

Objective: Can a 3D-printed training model realistically simulate ocular and orbital structures for use as a retrobulbar block simulator?

Purpose: The retrobulbar block (RBB) is an essential procedure for achieving effective anesthesia of the eye and orbit, but currently has limited simulation options. We developed a 3D-printed training model to realistically mimic critical orbital anatomic features and evaluated whether the model could provide ophthalmologists with an effective simulation option for this high-risk procedure.

Methods: The training model was created via 3D modeling of anatomical structures and printed using two different 3D printing technologies incorporating a variety of plastic and silicone materials. Training subjects consisted of 43 ophthalmologists who simulated administering retrobulbar anesthesia using the training model and completed pre- and post-training surveys. The primary outcomes measured included utility and anatomical fidelity of the training model. Secondary outcomes evaluated included previous experience of retrobulbar training, utility of the use of a training model for retrobulbar blocks, training period in ophthalmology, training status, and location of the simulation injected medication.

Results: This 3D-printed training model realistically simulated ocular and orbital structures and optimized procedural learning. 16% (n=7) of participants had never previously performed an RBB. 77% (n=36) of participants reported that performing an RBB was part of their residency training, and none had performed an RBB with a simulator. In terms of anatomical fidelity, 46% (n=20) indicated that the model was similar or very similar to the actual procedure. Paired t-test analyses comparing pre-training to post-training outcomes suggested that the training improved the level of comfort with performance of an RBB ($P< 0.0001$). The extent to which the participants would include or plan to include an RBB as part of their clinical practice improved between the pre-training and post-training periods ($P= 0.0053$). Similarly, the extent to which participants believed that using a training model would improve their clinical practice increased between the pre-training and post-training periods ($P=0.11$). Anatomical fidelity, level of comfort and planning to include retrobulbar block as part of the clinical practice was strongly correlated with years of experience.

Conclusion: A 3D-printed training model for retrobulbar anesthesia can realistically simulate ocular and orbital structures and successfully simulate critical orbital anatomic features sufficient for use as a training tool.

IRB APPROVAL Yes

7/29/2023

Intravitreal Infliximab for the Treatment of Proliferative Vitreoretinopathy Associated with Rhegmatogenous Retinal Detachment: The Phase II FIXER Trial.

Intravitreal Infliximab for the Treatment of Proliferative Vitreoretinopathy Associated with Rhegmatogenous Retinal Detachment: The Phase II FIXER Trial.

- Ayman Elnahry, MD, PhD
- ahmed younes, MD
- Ahmed Abdel-Kader, MD
- Ahmed Abdelbaki, MD
- Hany Hamza, MD

Objective: Is intravitreal infliximab (IVI) given at the conclusion of pars plana vitrectomy (PPV) safe and effective in the treatment of proliferative vitreoretinopathy (PVR) associated with rhegmatogenous retinal detachment (RRD)?
Purpose: There are currently no medications approved for treating PVR associated with RRD (PVR-RRD). A recent animal study showed that IVI can inhibit PVR development and reduce cytokines levels in an experimental dispase-induced PVR model. The purpose of this phase II trial was to evaluate the safety and efficacy of IVI in treating PVR-RRD.
Methods: This study was a randomized controlled trial to evaluate the safety and efficacy of IVI in treating PVR-RRD. Patients were randomized in a 1:1 ratio to undergo PPV and silicone oil (SO) injection with or without IVI at conclusion of PPV. Trial was registered at clinicaltrials.gov (NCT04891991) and approved by Cairo University IRB (MD-185-2021). We included male or female patients 18 years of age or older with primary RRD and grade C PVR. Patients with history of open globe injury, recurrent RRD, other retinal diseases, pregnant or breastfeeding, or history of tuberculosis were excluded. Surgeons were masked to treatment allocation until PPV conclusion. Patients randomized to receive IVI got 1 mg/0.05 mL (Remicade®) in the air-filled globe before SO injection. Patients were followed for best corrected visual acuity (BCVA), intraocular pressure (IOP), intraocular inflammation (IOI), retinal redetachment, epiretinal/subretinal proliferation (ESP), central macular thickness (CMT), macular vascular density (VD), and macular function (multifocal electroretinography). SO was removed starting 3 months post PPV. Patients with recurrence repeated the same protocol. The primary outcome measure was anatomic success defined as complete retinal reattachment without a tamponade at 6 months post SO removal. Secondary outcome measures were final BCVA, single operation success rate (SOSR), rate of recurrent RRD, and macular thickness, function, and VD.
Results: The study included 60 eyes of 60 patients, with 30 eyes in each group. At baseline, there were no differences regarding age, gender, history of blunt trauma, lens status, duration of RRD, BCVA, IOP, IOI, detachment clock hours, number/size of breaks, presence of vitreous hemorrhage, axial length, or grade/extent of PVR between both groups. Intraoperatively, there were no differences between both groups regarding combining phacoemulsification and PPV, prevalence of posterior vitreous detachment, rates of retinectomy, or iatrogenic breaks. For the outcome measures, 30 eyes in the IVI group achieved anatomic success vs 29 eyes in the control group. The SOSR was higher in the IVI group (26) vs the control (23), but this was not statistically significant (p=0.317). Final BCVA was better in the IVI group (mean logMAR (SD)=1.14(0.4)) vs the control (0.96(0.4), p=0.044). There were no differences regarding IOP, IOI, ESP, time of SO removal, macular function, CMT, or VD.
Conclusion: PPV with SO tamponade with or without IVI is safe and effective in treating PVR-RRD. IVI may be associated with better final visual outcomes in PVR-RRD due to possible higher SOSR.

IRB APPROVAL Yes

Table 1: Details of patients who failed to achieve a single operation success in the infliximab group

Infliximab group (n=4)
No.1 o Recurrence at 3 weeks o Localized infero-nasal recurrence , with PVR and new break formation, o Localized 90 degrees infero-nasal retinectomy was done
No.2 o Recurrence at 3 weeks o Total recurrence ,PVR "circumferential star folds" and inferior shortening o 360 retinectomy was done
No.3 o Recurrence at 5 weeks o Inferior recurrence "inferior new break with inferior star folds and ERM" Membrane peeling and drainage through break o No retinectomy
No.4 o Recurrence at 4 weeks o Inferior recurrence "inferior PVR & shortening" o 120 degrees inferior retinectomy

Details of patients who failed to achieve single operation success with IVI

Table 2: Details of patients who failed to achieve a single operation success in the control group

Control group (n=7)
No.1 ○ Recurrence at 4 weeks ○ Infero-temporal multiple star folds and ERM ○ Infero-temporal retinectomy 120 degrees and ERM removal
No.2 ○ Recurrence at 5 weeks ○ Inferior recurrence with SR band and new inferior breaks at laser edge ○ Inferior retinectomy 90 degrees
No.3 ○ Recurrence at 5 weeks ○ Inferior retinal shortening and star folds ○ Inferior retinectomy 90 degrees
No.4 *First recurrence* ○ Recurrence 4 weeks ○ Inferior recurrence with inferior shortening and opened breaks ○ Inferior retinectomy 120 degrees *Second recurrence* ○ Total recurrence at 3 weeks post 2nd surgery ○ PVR with retinal shortening , new breaks at laser edges ,ERM ○ Continuing 360 degrees retinectomy, ERM peeling
No.5 ○ Recurrence at 4 weeks ○ Inferior recurrence, with inferior PVR and SR bands ○ Inferior 120 degrees retinectomy
No.6 ○ Recurrence at 3 weeks ○ Total recurrence with new temporal breaks and infero-temporal star folds ○ Infero-temporal 90 degrees retinectomy done
No.7 *First recurrence* ○ Recurrence at 2 weeks ○ Total recurrence with inferior and temporal new breaks ○ No retinectomy *Second recurrence*: ○ Recurrence at 3 weeks post 2nd surgery ○ Retinal shortening and multiple breaks at laser edges ○ 360 degrees retinectomy *Third recurrence* ○ Recurrence during SO removal 4 months post 3rd surgery ○ Silicone oil was re infused and not removed ○ Considered surgical failure

Details of controls who failed to achieve single operation success

7/29/2023 12:00 am

Surgery Symposium 1

Comparison of Complete vs Incomplete Closure of Zone 3 Scleral Lacerations

- Pedro Tetelbom, MD
- Ryan Oliver, BS
- Muhammad Chauhan, MS, MA
- Sami Uwaydat, MD

Objective: To compare the clinical course and outcomes of patients presenting with zone 3 scleral lacerations undergoing complete versus incomplete closures on primary repair.
Purpose: Zone 3 scleral laceration (SL) is defined as a full-thickness scleral rupture extending more than 5mm posterior to the corneoscleral limbus. Posterior zone 3 lacerations may require excessive manipulation to close, which may exert unintended pressure on the globe for a full closure. In this study, we compare the clinical course and outcomes of complete versus incomplete closures of Zone 3 SL's.
Methods: We reviewed the medical charts of consecutive patients with zone 3 SL who underwent globe exploration and/or repair, followed by PPV for the management of traumatic vitreoretinal sequelae (i.e., non-resolving vitreous hemorrhage, retinal detachment, lens rupture, intraocular foreign body) between 2010 and 2022. Demographic, preoperative, surgical, and postoperative data were recorded. Patients with zone 3 SL and follow-up of at least 3 months from the initial injury were included. Cases were subdivided into complete and incomplete closure groups, based on the operative note details, and compared using chi-square test for categorical variables and non-paired Student's t-test for continuous variables.
Results: 36 patients were included, 29 (80.6%) were male, with a mean age of 46.47 ± 17.45 years. 28 (77.8%) received systemic steroids. 14 (38.9%) had incomplete zone 3 SL repair. The incomplete and complete repair groups had similar presenting VA (logMAR 2.35 ± 0.41 vs 2.26 ± 0.52, p=0.60), time to initial repair (1.50 ± 4.54 vs 0.68 ± 1.13 days, p=0.42) and time to first PPV (12.08 ± 7.86 vs 11.95 ± 8.48 days, p=0.96). There was no statistical difference between the 2 groups with respect to the total number of surgeries (3.14 ± 1.35 vs 2.80 ± 1.36, p=0.47), final IOP (13.50 ± 9.55 vs 14.17 ± 7.45 mmHg, p=0.83) and VA at last follow up (logMAR 1.79 ± 1.04 vs 1.81 ± 1.08, p=0.939). Silicone oil use on subsequent surgeries was similar between the 2 groups (p = 0.09). Choroidal detachment [OR 0.35 (CI 0.03-5.57)] and proliferative vitreoretinopathy (OR 0.58 [CI 0.12-2.78]) were not associated with an incomplete closure. 3 eyes were enucleated, all from the complete closure group. The retina was attached without oil at last follow up at similar rates (OR=0.62 [CI 0.16-2.41]) between the 2 groups. There were no recorded cases of postoperative endophthalmitis or sympathetic ophthalmia in this series.
Conclusion: Our results show that incomplete closure of globes with a zone 3 SL carry a similar prognosis compared to eyes that underwent complete closure of the SL's. We hypothesize that aggressive attempts at closing posterior SL's may not add benefit to the postoperative outcomes.

IRB APPROVAL Yes