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A Novel Approach for Rescuing and Scleral Fixating a Posteriorly Dislocated Intraocular Lens-Bag Complex Without a Conjunctival Opening

BY JONATHAN L. PRENNER, MD, AND H. MATTHEW WHEATLEY, MD

By combining a number of anterior segment techniques with maneuvers that take advantage of the surgical instrumentation and skill set of the posterior segment surgeon, we have designed a reliable and reproducible operation to rescue a posteriorly dislocated lens-bag complex and permanently fixate it to the ciliary sulcus. This article describes a representative case.

CASE REPORT
A 90-year-old pseudophakic woman with a history of advanced glaucoma treated with trabeculectomy and ocular antihypertensive agents, pseudoexfoliation, posterior vitreous detachment, and multiple retinal tears treated with cryotherapy presented with a 2-day history of acute visual acuity compromise in her left eye. Her right eye had no light perception secondary to advanced glaucoma. Her intraocular pressures were 12 mm Hg and 24 mm Hg in the right and left eye, respectively. She had an afferent pupillary defect.

The anterior segment examination of the left eye revealed a functional trabeculectomy, peripheral iridotomy, pseudoexfoliative material on the iris, a small pupil, and aphakia. Examination of the posterior segment examination revealed optic nerve cupping, peripheral cryotherapy scars, a posterior vitreous detachment, and a dislocated 3-piece intraocular lens (IOL) in a fibrotic capsular bag.

A reverse scleral tunnel, as described by Hoffman et al., was created at 9-o’clock by using a guarded 0.5-mm blade to create a 2.0- to 3.0-mm long, partial-thickness, clear corneal incision at the corneal limbus (Figure 1). An angled crescent blade was used to dissect the groove posteriorly into the sclera at 50% of the scleral depth. The crescent blade was bent approximately 30° to straighten the angle of the blade, which improved visualization and prevented the blade from contacting the operating microscope (Figure 2). The tunnel was continued posteriorly for 3.5 mm and was kept perpendicular to the limbus. A second pocket was made 180° away at 3-o’clock. A 15° blade was used to create a paracentesis 1 clock hour above each pocket. A standard, 25-gauge, 3-port vitrectomy setup was then placed into position.

The 25-gauge vitrectomy was then completed. The vitreous base was shaved, and the IOL within the capsular bag was allowed to fall posteriorly onto the retinal surface. The peripheral retina was examined with scleral depression to rule out any peripheral pathology. The lens-bag complex was carefully approached. A 25-gauge forceps was used to engage the IOL-bag complex at the haptic-optic junction; we prefer to use a disposable end-grasping forceps for this maneuver (Figure 3). When the capsule is intact, the open forceps tip may need to be pressed posteriorly to puncture the capsule before the haptic can be engaged. In the case described here, the lens-bag complex was grasped and elevated into the iris plane.
A needle-docking technique was used to suture the lens. A 25-gauge needle was passed 2 mm from the limbus through the bed of the pocket opposite the hand holding the lens-bag complex. The 25-gauge needle was passed transconjunctivally into the globe and between the lens’ haptic and optic, close to the haptic near the apex of its curvature. A double-armed, 9–0 Prolene suture (Ethicon) was passed backward through the opposing paracentesis so that corneal fibers were not engaged in a false track. The needle was docked into the opening of the 25-gauge needle and removed (Figure 4). The 25-gauge needle was then passed through the same pocket again, now 1.5 mm from the limbus, and placed above the lens-bag complex. The needle from the second half of the Prolene suture was passed backward through the same paracentesis and was docked into the 25-gauge needle and removed. This maneuver effectively lassoed the haptic-bag complex. The process must be repeated on the opposite side, except that the lens-bag complex cannot effectively be grasped while it is floating in the midvitreous while hinged by the first suture. To combat this problem, the light pipe was used to reposition the lens-bag complex onto the surface of the retina, which allows the surgeon to repeat the initial process and adequately grasp the lens-bag complex at the opposing optic-haptic junction. Once the lens is engaged and brought into the iris plane, the lassoing process can be repeated on the second side.

The needles were then cut off, and a Sinskey hook was used to externalize both suture ends from each pocket. A 3-knot was tied on each side, and each knot was tightened and slid under the protective roof of each pocket to achieve perfect centration. Once centered, the knots were made permanent with two 1-1 throws on each side. The 25-gauge trocars were removed and left unsutured.

DISCUSSION

To date, we have performed dozens of surgeries using this technique, with more than 1 year of follow-up for many cases. We have found numerous advantages to the technique and have not observed significant complications. We prefer to rescue the lens-bag complex in this manner rather than perform a lens exchange. This avoids the need for larger incisions required to replace the lens. In addition, transconjunctival scleral pockets allow for the creation of a space for scleral fixation without the need for cutting down the conjunctiva, cauterizing, and creat-

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Diabetic Traction Retinal Detachment Repair Using 27-Gauge Vitrectomy

BY STEPHEN M. HUDDLESTON, MD, AND STEVE CHARLES, MD

Patients with complex diabetic traction retinal detachments represent some of the more challenging cases that vitreoretinal surgeons face. The advent of 25-gauge vitrectomy coupled with changes in techniques and instrumentation has helped surgeons improve outcomes and efficiency. Continued innovation, including newer 27-gauge instrumentation, will likely lead to less complicated surgeries and better long-term surgical outcomes. This case represents one of the first uses of Alcon’s 27-gauge vitreoretinal surgical platform (Constellation Vision System, Alcon) in a diabetic patient with vitreous hemorrhage and traction retinal detachments.

CASE REPORT
A 38-year-old man was diagnosed with type 2 diabetes 10 years ago. He was referred to us with a diagnosis of vitreous hemorrhage in his left eye. His visual acuity was hand motions in the left eye and 20/50 in the right eye. On examination, there was significant proliferative disease and extensive peripheral nonperfusion in the right eye, and a 4+ vitreous hemorrhage in the left eye. B-scan ultrasonography showed an extensive posterior pole traction retinal detachment involving the macula. Both eyes were treated with intravitreal bevacizumab (Avastin, Genentech). The right eye underwent panretinal photocoagulation; the left eye was scheduled for vitrectomy and traction retinal detachment repair 1 week after the initial examination.

Vitrectomy was performed using 27-gauge instrumentation after retrobulbar block with 2% xylocaine on a sharp 27-gauge 1.25 needle. Three self-retaining 27-gauge valved ports were placed using a 30° insertion technique with conjunctival displacement. The vitreous hemorrhage was removed using the 27-gauge Ultravit cutter (Alcon) under flat-contact visualization.

We then turned our attention to the posterior pole, where macula-involving traction detachments were found. Using a combination of disposable membrane-peeling forceps, cutter delamination, and curved scissors delamination, all traction membranes were removed without creating iatrogenic breaks or tears (Figure). The Alcon 27-gauge endophotocoagulator, part of the Constellation Vision System, was then used for hemostasis to treat focal areas of neovascularization and to create adequate panretinal photocoagulation. Wide-angle visualization was used to inspect the periphery for any new breaks.

At the conclusion of the procedure, the cannulas were removed followed by the immediate application of external pressure with closed forceps at the sclerotomy sites. Postoperative injections of vancomycin, tobramycin, and dexamethasone were delivered through the inferior fornix. A patch and shield were placed, and the patient was seen in our clinic the next day.

The patient’s postoperative course has been uneventful. Visual acuity improved to 20/100 on postoperative day 1. At the 3-week visit, visual acuity was 20/40, and optical coherence tomography showed significant improvement.

DISCUSSION
This case highlights the utility of scissors delamination for the successful repair of traction retinal detachments without creating retinal breaks and to avoid...
the unplanned use of silicone oil. In addition, valved 27-gauge cannulas allow frequent instrument switching without inducing hypotony, increased bleeding, decreased visualization, and worse outcomes.

Several prominent vitreoretinal surgeons have recently published articles describing the challenges and their techniques in approaching complex diabetic traction retinal detachment repair. Most agree with the authors of this report that a progression toward smaller gauges, additional improvement in instrumentation, and meticulous technique are all needed to continue improving outcomes in difficult traction detachment cases.

CONCLUSION
The successful outcome in this case shows the advantages of 27-gauge vitrectomy and the importance of scissors delamination in complex traction retinal detachment cases.

(Continued from page 6)

ing scleral flaps. Many eyes that have complete lens-bag dislocation have coexisting pseudoexfoliation. Preserving the conjunctiva is advantageous because it allows for a subsequent trabeculectomy—or, as in our case, a trabeculectomy may already be present. In our experience, lenses appear to be exceptionally well centered following this procedure and are stable immediately after implantation.

CONCLUSION
This novel technique combines several anterior segment and vitreoretinal approaches to effectively reposition a posteriorly dislocated lens-bag complex without the need for conjunctival manipulation. We have seen no short-term complications, including haptic extrusion and IOL dislocation. The procedure allows for a reliable and reproducible operation, with case time not exceeding what is usually required to perform an IOL exchange or an out-of-the-bag IOL rescue. Also, it avoids the need for cutting down the conjunctiva, cauterization, and creating and suturing scleral flaps.

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Optimizing Surgery for the Luxated Lens: Torsional Phaco Pars Plana Lensectomy

BY PETER Y. CHANG, MD, AND YANNEK I. LEIDERMAN, MD, PhD

Lensectomy for in situ, subluxated, or luxated crystalline lens material using ultrasound fragmentation via a trans-pars plana approach has been in widespread use for more than 3 decades. Commercially available fragmentation instruments employ longitudinal phaco technology, which corresponds to the anterior segment phaco technology that was available at the advent of trans-pars plana, ultrasound-mediated lensectomy. Pars plana lensectomy (PPL) may also be performed using the vitrectomy probe, but relatively nondeformable materials such as dense lens material are not removed efficiently using a guillotine-cutter vitrectomy probe. Given that most vitreoretinal surgeons have transitioned to microincisional vitrectomy platforms, which are less efficient than larger-gauge instrumentation for removing dense lens fragments, ultrasound-mediated PPL provides significant benefits for a subset of cases.

The following case illustrates the utility of contemporary phaco technology in PPL in a patient with a luxated crystalline lens following blunt trauma. We performed PPL using a phaco handpiece that employs torsional phaco to improve the efficiency of lens removal.

CASE REPORT

A 59-year-old woman experienced immediate blurred vision following blunt injury to her right eye sustained during an assault. Clinical examination revealed anterior chamber inflammation, luxation of the crystalline lens, and commotio retinae in the macula of the affected eye. The patient’s UCVA was 20/400, and her intraocular pressure was 12 mm Hg in the affected eye. After discussing the risks, benefits, and alternatives with the patient, we elected to proceed with PPL and intraocular lens (IOL) implantation.

The Constellation Vision System (Alcon) and the Resight wide-angle fundus viewing system (Carl Zeiss Meditec) were used to perform pars plana vitrectomy and PPL. Following transconjunctival insertion of the 25-gauge infusion cannula and a 25-gauge instrument cannula in the inferotemporal and superonasal quadrants, respectively, the superotemporal instrument sclerotomy was created using a 20-gauge microvitreoretinal blade. A localized peritomy may be created depending on the strategy for IOL implantation. A 25/20-gauge conversion cannula was then inserted (Figure 1). Prior to PPL, vitrectomy was performed to minimize the aspiration of vitreous and the attendant risks of retinal breaks and detachment. Following pars plana vitrectomy, the conversion cannula was removed, and an Ozil torsional phaco instrument (Alcon) was used to perform PPL via the 20-gauge sclerotomy (Figure 2). The torsional phaco handpiece was prepared and primed in the standard fashion with the following modifications: following priming, the sleeve was removed from the phaco needle and the irrigation tubing disconnected from the phaco handpiece and clamped. To realize the benefits of torsional phaco, an angled phaco needle (eg, modified Kelman tip, 30° or 45° [Alcon]) is used rather than a straight needle.

The crystalline lens was then emulsified and aspirated in a maneuver analogous to longitudinal phacofragmentation, with the benefits of enhanced followability, efficiency of lens removal, and reduction of phaco energy (Figure 3).
The following phaco settings may serve as a starting point, with modifications according to the surgeon's preference:

- Vacuum: 250 mm Hg
- Aspiration: 30 to 35 cc/min
- Torsional amplitude: 100%
- Phaco amplitude: 0% (increase incrementally as needed for dense lens fragments)

Following lensectomy, the handpiece was removed and the conversion cannula replaced to maintain adequate resistance to outflow. Any residual small nuclear or cortical lens particles may be removed with the 25-gauge vitrectomy probe, and completion of vitrectomy may be performed if necessary (Figure 4). In this case, an anterior chamber IOL was placed at the request of the referring surgeon. A suture was placed to approximate the 20-gauge sclerotomy.

The patient's postoperative course was uneventful, and she achieved a UCVA of 20/20 in the operated eye.

**DISCUSSION**

PPL for lens material or other tissue that is insufficiently deformable for efficient removal using a guillotine-cutter vitrectomy probe may be performed using phaco technology. Commercially available phacofragmentation instrumentation for this purpose uses linear phaco, which is an anterior-posterior oscillation of the phaco needle that induces cavitation of tissue at the tip. This linear oscillation induces the repulsion of lens fragments that are positioned at the needle tip, causing luxation of fragments in the vitreous cavity during PPL. Repeated luxation of lens fragments during PPL requires the retrieval of luxated lens fragments from the retinal surface with the attendant potential for surgical complications.

Contemporary phaco technology improves the followability of lens material, resulting in its more efficient removal of lens material via PPL and potentially improved safety. The adoption of torsional phacoemulsification for PPL was initially described by Garg and colleagues. A subsequent retrospective study compared torsional phaco PPL with phacofragmentation in 34 eyes. The authors found that torsional phacoemulsification improved the purchase and followability of lens fragments.

At our center, we use an integrated platform that enables us to use torsional phacoemulsification via the vitrectomy instrumentation system. This combined anterior-posterior segment instrumentation confers cost-
Proliferative vitreoretinopathy (PVR) is the most common and dreaded complication after primary retinal detachment (RD) repair, occurring in approximately 7% to 8% of patients. Overzealous cellular proliferation from glial cells and retinal pigment epithelial (RPE) cells, stemming from partial or full-thickness retinal breaks or holes, is the hallmark of PVR. These cells form membranes on or beneath the retinal surface, creating epiretinal and subretinal membranes and fibrosis. The next pathologic step involves contracture and shortening of the retina. The shortening, in turn, distorts and holds open the retinal breaks and can lead to persistent or progressive RD.

Significant risk factors for PVR in RD include chronic RD, numerous or large retinal breaks, giant retinal tears, trauma, aphakia, previous intraocular surgery, vitreous hemorrhage, and uveitis. Age is also a factor. In younger patients, the proliferative healing response is more aggressive, and a young patient with trauma has a higher risk for developing PVR. This proliferative process can occur in untreated eyes as well as eyes that have undergone primary RD repair. In either case, PVR management and repair are challenging and require strategic planning prior to surgical intervention.

In my tertiary retina practice, as many as 25% to 30% of patients have PVR. Here, I describe a representative case, along with an overview of the essential strategies I use for successful PVR repair.

CASE REPORT

This 49-year-old woman is highly myopic with a known history of bullous retinoschisis. She noted sudden onset of photopsias, floaters, and altered visual field approximately 2 weeks prior to this visit. At presentation, the patient’s combined complex RD was macula-involved (Figure 1), and her acuity had decreased from 20/25 to 20/80.

My main goals in managing an RD with PVR are as follows:
1. Locate and mark all offensive retinal holes.
2. Relieve all traction from the PVR epiretinal and subretinal membranes.
3. Relieve all foreshortening in extreme PVR scenarios.
4. Reattach and flatten the retina.
5. Determine and implement the best tamponade required.

The unsuccessful implementation of any of these steps results in failure. However, in my experience, the most common cause of failure is the inability to relieve foreshortening of the retina. This is important to remember when peeling the membranes, because removing all visible scar tissue may be inadequate if one fails to adequately relax the retina. In numerous instances, the retina may be reattached intraoperatively but will probably become detached during the postoperative period, most likely from the areas that are foreshortened and not adequately supported.
To determine the best surgical methodology for PVR management in this new vitrectomy era, I consider 5 factors: (1) the duration of the RD, (2) the chronicity of the PVR membranes, (3) the location of the most significant detachment component, (4) the presence or absence of an anterior PVR, and (5) the number of previous surgical procedures.

The patient in this case underwent a 240-band scleral buckle, 25-gauge pars plana vitrectomy, intravitreal injection of triamcinolone and posterior hyaloid removal (Figure 2), marking of all retinal breaks (Figure 3), complete fluid-air exchange (Figure 4), endolaser photocoagulation (Figure 5), and perfluoropropane (C3F8) gas exchange. Three months after surgery, her visual acuity was 20/30 in the operated eye.

**DISCUSSION**

As with any surgery, I have a plan of action in PVR cases. If the pathology is mostly inferior, and I do not foresee employing a large retinectomy, I place a low-lying 240 band to support the retina peripherally and combat the foreshortening that may already be present. Once that is in place, I perform as complete a vitrectomy as possible. If I believe bimanual surgery will be necessary, or if I do not have an assistant and will use my nondominant hand to perform scleral depression, then I employ an external chandelier light source. Excellent visualization is paramount. Therefore, in cases of severe anterior PVR, or if there is inadequate visualization of the retina, the lens may have to be removed. I never allow the lens opacity to impede my visualization, mainly because I view these as “one and done” cases.

A complete removal of the posterior hyaloid, along with complete peripheral dissection with scleral depression, are important to avoid failure. I often use triamcinolone in a dilute solution to visualize these areas, which I believe helps me peel more completely. Recently, I have been using the 25-gauge cutter with alternating low suction and high cut rates to avoid more retinal trauma while peeling. The recent implementation of cut rates as high as 7500 cpm allow for vitreous removal with little to no retinal surface movement. Occasionally, forceps are still required to make the retina more mobile. Mobility of the retina at this stage generally indicates that it can be flattened without a retinectomy. Perfluorooctane can then be utilized to flatten the retina. I then remove the subretinal fluid and add laser photocoagulation prior to placing air and either gas or silicone oil tamponade. If the retina is not mobile after exhaustive peeling, I use cautery to create the borders for a retinectomy. I determine which tamponade agent to use based upon how well the retina flattens. If the retina becomes mobile and flattens well with air, I use a mildly expansile concentration of C3F8 (usually 14%). If the pathology is inferior and the retina is grossly foreshortened, if it has had multiple procedures with extensive PVR and/or a large retinectomy, I prefer silicone oil. I inform the patient that the oil may be removed at a later date, but that this should not occur for a minimum of 6 months.

**CONCLUSION**

Technological advances with current sutureless, small-gauge, high-speed, flow-controlled vitrectomy systems and methodology have steadily improved the safety and
overall outcomes of PVR management. These enhancements are vast improvements from the systems we used 10 years ago. Small instrumentation with high speed and low suction can literally rest on the retinal surface to peel membranes or dissect between membranes without the use of scissors. Valved cannulas allow for a low-flow, closed system, and a more stable intraoperative experience, particularly if utilizing perfluorooctane. Modern viewing systems allow for easier peripheral visualization of the membranes requiring peeling. Relaxing retinotomies and retinectomies are now mainstays of treatment if the peeling is insufficient to flatten the retina adequately.

CONCLUSION
The application of contemporary phaco technology to PPL improves the efficiency in removing lens material via the pars plana and may be readily implemented by a surgical team familiar with anterior segment phaco technology.
Familial exudative vitreoretinopathy (FEVR) is a hereditary vitreoretinal disease involving a premature arrest in retinal vascularization that is associated with mutations in proteins implicated in the Wnt signaling pathway. The spectrum of findings in FEVR include peripheral avascularity, arteriovenous anastomoses, and vitreoretinal interface changes, often with retinal vascular straightening in milder cases, and fibrovascular proliferations with macular ectopia, vitreous hemorrhage, intraretinal or subretinal hemorrhage or exudation, tractional retinal detachment, and/or retinal folds in more severe cases.¹

CASE REPORT
The patient is a 10-year-old boy whose parents noted a dilated pupil in the left eye. The patient reported loss of vision several months prior to this visit. The patient was born at 32 weeks gestational age and had no significant medical or ocular history and no family history of eye disease. Visual acuity at presentation was 20/20 OD and hand motions OS, with a dilated fixed pupil OS and a relative afferent pupillary defect by reverse OS. Intraocular pressure was 14 mm Hg OD and 42 mm Hg OS. An anterior segment examination was unremarkable OD and revealed neovascularization of the iris (NVI) and an ectropion uvea OS. A dilated fundus evaluation OD revealed temporal dragging of the vessels with peripheral avascularity, temporal fibrotic bands, and pigmentary changes OD (Figure 1) and vitreous hemorrhage OS (Figure 2). B-scan ultrasonography revealed tractional retinal detachment (TRD) OS. A clinical diagnosis of FEVR was made. The patient was started on dorzolamide/timolol (Cosopt, Merck), latanoprost (Xalatan, Pfizer), prednisolone, and atropine drops OS.

Examination under anesthesia with fluorescein angiography revealed peripheral ischemia with small buds of leakage OD (Figures 3 and 4). The view remained hazy OS. The IOP was 10 mm Hg OU. Laser photocoagulation was performed in areas of peripheral ischemia OD, and an intravitreal injection of bevacizumab (Avastin, Genentech) (1.25 mg in 0.05 mL) was administered OS. One week later, the patient underwent surgery for the TRD OS. A 23-gauge pars plana vitrectomy was performed to evacuate the vitreous hemorrhage; it revealed a temporal elevated fibrotic ridge with associated temporal TRD. An elevated fibrous membrane extended from the temporal TRD and covered the entire retina; however, except for the temporal retinal detachment, the remainder of the retina was flat. The nerve was pale. The membrane was peeled so that all traction from its fibrous attachments at the nerve to the midperipheral retina for 360° was removed. Membranes far peripherally and over the area of temporal detachment were segmented from posterior attachments and left intact. The fovea was flat, but the...
retina showed diffuse ischemia. Endolaser photocoagulation was performed.

The patient was subsequently followed with routine outpatient examinations including ultrawidefield fluorescein angiography. Eight months after surgery, his visual acuity improved to 20/400 OS, with a centrally attached retina free of tractional membranes, stable temporal detachment, and peripheral membranes (Figure 5). NVI also regressed OS. One year after initial presentation, persistent leakage was noted peripherally OD, and the patient underwent repeat laser photocoagulation of areas of ischemia OD. He subsequently developed progressive cataract OS with visual acuity that ultimately decreased to hand motions 4 years after surgery. The retina remained attached on B-scan.

DISCUSSION

FEVR is a hereditary vitreoretinopathy that manifests with peripheral avascularity and arterovenous anastomoses with or without fibrovascular proliferative membranes that result in vitreous hemorrhage, intraretinal or sub-retinal hemorrhage or exudation, or retinal detachment. To date, there is a paucity of literature on the surgical management of retinal detachment in FEVR. Limited case series on the topic emphasize the individualized approach to each patient, based on the primary mechanism for detachment and relevant anatomy.2–5 Cases in which exudation is the primary mechanism for detachment may be managed by laser or cryoablation to peripheral ischemic retina.2,4 Scleral buckling may also be performed, as it may reduce activity of the new vessels as well as the tractional force of fibrovascular proliferations.2

Most retinal detachments in FEVR involve a primarily tractional component, and these are best approached with vitrectomy.2–4 These cases are challenging, owing to the posterior-to-peripheral traction by firmly adherent posterior hyaloid and fibrovascular membranes. Peeling of the hyaloid and membranes is generally carried out via dissection first over the nerve and then peripherally. These membranes can extend over a wide area of the retina, and because peeling of more peripheral membranes over thin avascular tissue can predispose to breaks,2 some surgeons advocate peeling only as far out to the periphery as is safe.2,3 The remaining peripheral tractional membranes may be stable once they are truncated from posterior attachments.3 Alternatively, a broad-based scleral buckle can be placed for additional support.2 Cases with membranes extending to the far anterior periphery, the vitreous base, or the posterior lens surface may require lensectomy to allow sufficient membrane peeling.2,4 Alternatively, a scleral buckle can be placed in lieu of or in addition to vitrectomy.2,3

In the case reported here, the lens was left intact, and membranes were removed posteriorly to as far peripherally as was deemed safe. The residual peripheral membranes and temporal retinal detachment remained stable for 4 years postoperatively.

The role for antivascular endothelial growth factor (VEGF) agents in FEVR is not yet well studied. The utility of these agents for neovascularization in other diseases raises the question of their applicability in FEVR. Anti-VEGF agents may reduce the activity of neovascular proliferations preoperatively, thereby reducing the risk of bleeding. In nonsurgical patients, they may facilitate the regression of iris and/or retinal neovascularization. There is one reported case of regression of fibrovascular proliferations and resolution of vitreous hemorrhage after treatment with bevacizumab,6 but the optimal timing and dose are unclear. Contraction of fibrovascular proliferations, or “crunch,” may be a concern in cases with extensive fibrovascular membranes. Some surgeons have anecdotally reported that the membranes become tougher after anti-VEGF administration, adding to the technical complexity of the surgery.3 In this patient with vitreous hemorrhage and NVI, bevacizumab was administered 1 week prior to surgery.

CONCLUSION

The management of retinal detachments in patients with FEVR poses unique surgical challenges. The surgical approach is best determined on an individualized, case-by-case basis, depending on the primary mechanism driving the detachment and the relevant anatomical features.

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Epiretinal membrane (ERM) peeling with or without simultaneous internal limiting membrane (ILM) peeling can be accomplished using a variety of techniques. The Finesse Flex Loop (Alcon) is a new tool with some unique characteristics to facilitate membrane peeling, as demonstrated by this case.

CASE REPORT
This pseudophakic 65-year-old woman had symptomatically reduced visual function related to an ERM with associated macular distortion and secondary macular edema involving her right eye (Figure 1A). After discussing management options, the patient elected for surgical intervention. In this case, I used 25-gauge instrumentation and valved trocars, my standard pars plana vitrectomy equipment. Preoperatively, I decided to remove the ILM during the surgery.

After performing a core pars plana vitrectomy, I stained the macula with indocyanine green (ICG), to highlight the ILM-ERM complex. When staining with ICG, I use a low concentration (approximately 0.05% to 0.1%) in a solution that is as iso-osmotic as possible. I typically dilute the ICG with glucose 5%. With valved trocars in place, there is no need to clamp the infusion before slowly injecting ICG over the macula, as the valves stabilize the intraocular environment and minimize fluid fluctuations. Once the ICG is injected over the posterior pole, I typically wait 30 to 60 seconds and then remove the excess dye as thoroughly as possible.

In this case, I used the Finesse Flex Loop, a recent addition to the Grieshaber instrumentation line, to initiate the edge of the ILM-ERM complex for peeling. Prior to the availability of the Flex Loop, I typically initiated my ILM peels with a technique utilizing ILM forceps, during which I would pinch the ILM and then release; after visualizing the edge of the now focally broken ILM, I would grasp the free edge and extend the peel in a maculorhexis approach. I do not frequently use the diamond-dusted membrane scraper to initiate uncomplicated ILM peeling because, in my experience, it does not facilitate the clean initiation of an ILM peel. The Flex Loop has a distinctive feel compared with the scraper, and I now use it routinely to initiate ILM peeling.

The retractable tip is a unique feature of the Flex Loop that allows me to adjust its stiffness intraoperatively to suit the needs of the individual eye and the goals of the intervention. The shorter tip equates to more rigid and firm serrated edges of the loop. As the tip is extended, the loop assumes a substantially more pliable and flexible state. For routine ILM peeling, I typically employ the loop when it is fully extended and therefore most pliable. In cases with substantial proliferative vitreoretinopathy-associated preretinal...
membranes, the Flex Loop can be used in a shorter, firmer configuration to engage the tissues to be removed.

An edge of ILM can often be readily initiated along the edge of a retinal blood vessel, and I typically create a broad sheet of ILM edge before peeling the ILM-ERM complex across the macula.

With a free and prominent ILM-ERM edge achieved in the current case, I switched to the ILM forceps and completed the peel across the central macula. If desired, the peel can also be completed simply using the edge of the Flex Loop.

After I peel the ILM-ERM complex, I thoroughly examine the retinal periphery to confirm that there are no retinal breaks. Then, I typically perform a partial fluid-air exchange. While removing the trocars, I confirm self-sealing wounds and finish the surgery with subconjunctival injections of antibiotic and steroids.

CONCLUSION

In this case, 1 month after 25-gauge pars plana vitrectomy with ERM and ILM peeling, the cystoid macular edema and macular distortion resolved (Figure 1B), and the patient’s symptoms resolved.

The Finesse Flex Loop is a unique tool for peeling preretinal tissues and ILM.

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INDICATIONS FOR USE: The CONSTELLATION® Vision System is an ophthalmic microsurgical system that is indicated for both anterior segment (i.e., phacoemulsification and removal of cataracts) and posterior segment (i.e., vitreoretinal) ophthalmic surgery. The ULTRAVIT® Vitrectomy Probe is indicated for vitreous cutting and aspiration, membrane cutting and aspiration, dissection of tissue and lens removal. The valved entry system is indicated for scleral incision, canulae for posterior instrument access and venting of valved cannulae. The infusion cannula is indicated for posterior segment infusion of liquid or gas. WARNINGS AND PRECAUTIONS: The infusion cannula is contraindicated for use of oil infusion. Attach only Alcon supplied products to console and cassette luer fittings. Improper usage or assembly could result in a potentially hazardous condition for the patient. Mismatch of surgical components and use of settings not specifically adjusted for a particular combination of surgical components may affect system performance and create a patient hazard. Do not connect surgical components to the patient’s intravenous connections. Each surgical equipment/component combination may require specific surgical setting adjustments. Ensure that appropriate system settings are used with each product combination. Prior to initial use, contact your Alcon sales representative for in-service information. Care should be taken when inserting sharp instruments through the valve of the Valved Trocar Cannula. Cutting instrument such as vitreous cutters should not be actuated during insertion or removal to avoid cutting the valve membrane. Use the Valved Trocar Vent to vent fluids or gases as needed during injection of viscous oils or heavy liquids. Visually confirm that adequate air and liquid infusion flow occurs prior to attachment of infusion cannula to the eye. Ensure proper placement of trocar cannulas to prevent sub-retinal infusion. Leaking sclerotomies may lead to postoperative hypotony. Vitreous traction has been known to create retinal tears and retinal detachments. Minimize light intensity and duration of exposure to the retina to reduce the risk of retinal photic injury. ATTENTION: Please refer to the CONSTELLATION® Vision System Operators Manual for a complete listing of indications, warnings and precautions.

\(^1\) Data on File: DHF 430 Verification Report 2,080.8 Revision 02.
\(^2\) Avery R. Single surgeon experience with an enhanced 25+ vitrectomy probe/entry system. ASCRS Poster, 2009.

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