

# Complications and Controversies in Retinal Surgery

BY ANDREW M. SCHIMEL, MD

In 1889, Mark Twain wrote, “she was wise, subtle, and knew more than one way to skin a cat.” We can apply this to vitreoretinal surgery today. Although surgical finesse is critical when performing complex maneuvers in the eye, recognizing multiple ways to solve a problem can often save a surgeon during challenging cases.

At the first annual Vit-Buckle Society (VBS) meeting in Miami Beach, complex surgical cases sent in by surgeons from across the country were discussed. Rather than showing a highlight reel of perfect footage and outcomes, common real-world retina surgical problems were evaluated and addressed. I presented the cases described below.

## RETAINED LENS MATERIAL

An 80-year-old woman presented with retained lens material and aphakia. Video demonstrated a 360° conjunctival peritomy followed by a standard 23-gauge 3-port vitrectomy through valved trocars. Applying a technique described by Jon Prenner, MD, light scleral cautery was applied to achieve adequate hemostasis. Two ciliary–sulcus-based sclerotomies (CSS) were created with a 20-gauge microvitreoretinal (MVR) blade and scored to approximately 18 gauge. The CSS were made 2 mm from the limbus and positioned 180° apart at 6 and 12 o’clock to ensure perfect lens centration and ciliary sulcus location. A clear corneal wound was then created and an MA60AC (Alcon) 3-piece intraocular lens (IOL) was inserted into the anterior chamber. The leading haptic was grasped at its distal tip with disposable 25-gauge forceps and I attempted to externalize it. The video shows the leading haptic breaking off of the IOL and being pulled out of the inferior CSS with the forceps (Figure 1). The IOL was removed and a second IOL prepared and inserted into the anterior chamber. The leading haptic was successfully externalized; however, when the trailing haptic was



externalized through the superior CSS, the leading haptic was noted to detach from the IOL. This lens was then removed, and the video ends with an anterior chamber IOL in place.

## DISCUSSION

Should an 80-year-old patient with a normal cornea be receiving a scleral-fixated IOL or an anterior chamber IOL? In our experience, the risk-benefit ratio for this patient to receive a scleral-fixated lens was unfavorable. Relatively healthy patients younger than 65 years of age are good candidates for scleral-fixated IOLs, while patients older than 70 years are better candidates for anterior chamber IOLs. This leaves a 5-year gray area, where overall patient health becomes paramount. Unfavorable corneal status skews these criteria significantly toward the use of scleral-fixated IOLs.

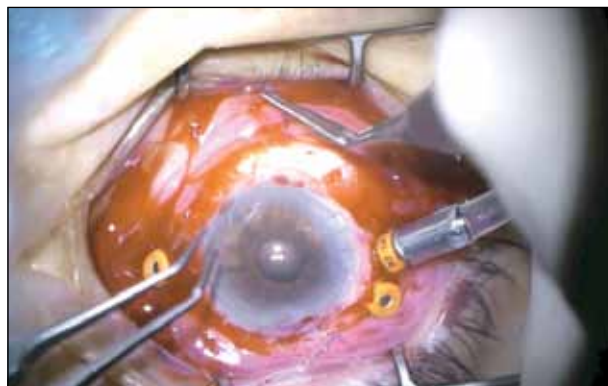


Figure 1. The leading haptic broke off of the IOL and is being pulled out of the inferior CSS with forceps.



**Figure 2.** Blood and gas can be seen entering the eye through the infusion line.

### **SURGICAL PEARLS**

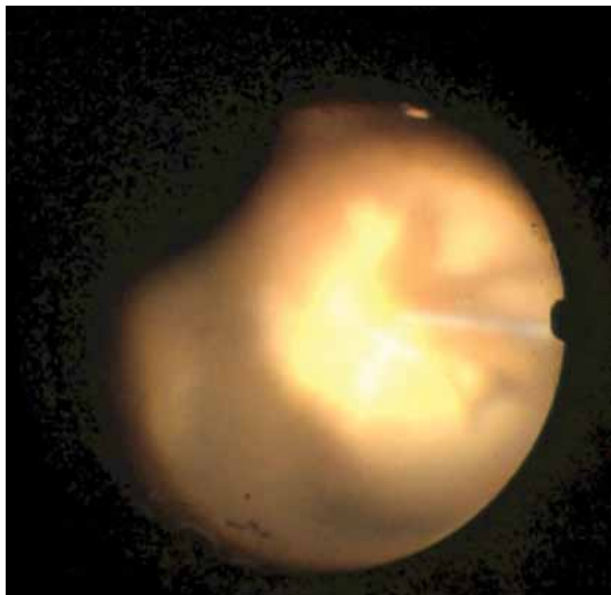
It is important to ensure that the IOL is completely released from the insertion forceps prior to attempting externalization of the leading haptic. In the video, the first lens was partially stuck to the insertion forceps and was not completely released when the leading haptic was externalized. This caused excess force on the haptic, leading to its breakage. The leading haptic on the second lens was successfully externalized. The leading haptic, however, was left fully externalized when the trailing haptic was grasped and externalized, causing too much traction and yielding breakage of the leading haptic. This is a common occurrence for surgeons who have their

assistant hold the externalized leading haptic too firmly. In our experience, it is optimal to create scleral tunnels adjacent to the CSS prior to placing the IOL. After externalization of the leading haptic, the distal end should be placed into the scleral tunnel, allowing a greater margin for externalization of the inferior haptic and preventing the leading haptic from slipping back into the eye during the maneuver.

### **SEVERE DIABETIC TRACTIONAL RETINAL DETACHMENT WITH RECURRENT VITREOUS HEMORRHAGE**

A 52-year-old woman, 2 months status post pars-plana vitrectomy with membrane peeling, panretinal photocoagulation, air-fluid exchange, and insertion of  $C_3F_8$  gas for severe diabetic tractional retinal detachment presented with recurrent vitreous hemorrhage and retinal detachment. Of note, the surgeon reported that the initial surgery went well without the creation of any stretch holes; the placement of gas was precautionary. Just prior to the start of the video, the surgeon flushed out the anterior chamber with balanced salt solution, causing some of the gas to be pushed out through the infusion line. The surgeon placed the vitrector just behind the IOL and began vitrectomy to remove the remaining gas and blood. Blood and gas can be seen entering the eye through the infusion line (Figure 2). The





**Figure 3.** Diffuse whitened hemorrhagic membranes are peeled off of the retina with the vitrector and end-grasping forceps.

surgeon removed the infusion line from the eye to flush out the remaining blood and gas. Upon reentering the eye, the surgeon attempted to obtain a view through the BIOM lens posteriorly, but the view was still poor. Further attempt was made to remove intraocular hemorrhage with the vitrector, but a better view was not achieved. The surgeon then scraped the cornea to attempt to obtain an improved view, which proved unhelpful. A 25-gauge butterfly needle was utilized to create an anterior segment infusion, and the vitrector was utilized to strip an occult hemorrhagic membrane from the surface of the IOL, which provided an improved view posteriorly. Diffuse whitened hemorrhagic membranes were seen posteriorly, and these were peeled off of the retina with the vitrector and end-grasping forceps (Figure 3). A superior stretch hole created during the original surgery was noted to have caused the recurrent retinal detachment and was lasered after air-fluid exchange. Fill-in panretinal photocoagulation was added, focusing on the still-bleeding vasculature.

## DISCUSSION

In an eye filled with hemorrhage and gas, it is optimal to avoid pushing these materials into the infusion line with increased pressure at the beginning of the case. If this occurs, removing the infusion line immediately to flush the line is helpful. Placing the vitrector just posterior to the IOL is optimal to begin removing gas and blood. If the view does not improve with this maneuver, the anterior chamber should be explored prior to scraping

the cornea, and this should be utilized only as a last step, particularly in a diabetic patient. It is possible that there are vessels still bleeding posteriorly, so the intraocular pressure can be raised using the infusion to help clear the hemorrhage. Laser photocoagulation and diathermy can be used to help control oozing proliferative vasculature. At the VBS meeting, multiple questions were raised regarding management of vasculature that does not stop oozing despite laser, diathermy, and temporary increased intraocular pressure. The consensus among the senior surgeons was to hold pressure on these vessels with the tip of the vitrector until bleeding stops.

## SURGICAL PEARLS

The use of preoperative anti-VEGF injections has revolutionized surgery in patients with proliferative diabetic retinopathy and tractional retinal detachment. In our experience, injections should be given 3 to 5 days prior to surgery to optimally modify proliferative vasculature. We further ensure patients are medically cleared and committed to surgery within 7 days of the injection prior to administration, as any delay can lead to contraction of membranes and more difficult surgery. As shown in the video, 23- and 25-gauge vitrectors can be better utilized to lift, segment, and peel membranes, given the proximity of the cutter to the tip of the vitrector.

*The VBS would like to acknowledge the distinguished surgeons who provided indispensable feedback throughout the first annual VBS meeting including (but not limited to) Stanley Chang, MD; Harry W. Flynn Jr., MD; Steve Charles, MD; María H. Berrocal, MD; Audina Berrocal, MD; and William E. Smiddy, MD. We hope to see everyone in Las Vegas in March 2014. ■*

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