Welcome to another installment of Surgical Meditations. I love to try new surgical techniques and approaches, looking to solve surgical problems with insight, ingenuity, and intrepidness while being cognizant never to put patients at risk. The aim of this column is to discuss surgical techniques and share pearls for both common and complex vitreoretinal topics. In this installment I answer a question posed by a Retina Today reader with my own personal considerations and recommendations.

**THE QUESTION**
What is the best way to approach surgical retina cases with anterior segment pathology causing poor visualization of the posterior segment?

**THE SHORT ANSWER**
Vitreoretinal surgeons sometimes encounter patients with pathology in the anterior segment that limits visualization and access to the posterior segment. The most common examples include infectious endophthalmitis (eg, after cataract surgery or intravitreal injection) and hemorrhage (eg, hyphema, vitreous hemorrhage, choroidal hemorrhage). In these instances, the anterior segment may contain a significant amount of inflammatory material or blood. This hinders the ability to safely secure the typical posterior pars plana infusion and precludes good visualization of the posterior segment. One approach to overcome this difficulty is to employ a combination of limbus-based and pars plana–based vitrectomy. By placing trocar-cannulas in the corneal limbus in addition to the pars plana, you can remove fibrin, inflammatory membranes, and hemorrhage from the anterior chamber before proceeding to posterior pars plana vitrectomy (PPV). This technique allows the surgeon to clear anterior segment pathology from both the anterior chamber and vitreous cavity in a safe and efficient manner.

**THE LONG VERSION**
Vitreectomy for infectious endophthalmitis or hyphema-associated vitreous hemorrhage is challenging given the significant anterior chamber media opacity that can limit visualization of the posterior pole. Attempting to complete these vitreoretinal cases in a standard manner with only posterior pars plana trocar-cannulas may not be possible because the surgeon will not be able to safely verify placement of the infusion line, light pipe, and vitrector instruments.

In cases such as these, I like to use a surgical technique combining limbus-based vitrectomy and posterior PPV. The limbus-based vitrectomy is used initially to remove infectious, inflammatory, and hemorrhagic material from the anterior chamber. This is an ideal technique to improve visualization of the posterior pole to allow a more complete PPV.

**AT A GLANCE**

- The author describes a handy technique for use in eyes with anterior segment pathology impeding posterior segment view.
- Limbus-based vitrectomy with trocar-cannulas allows access to anterior segment pathology to clear the way for posterior segment maneuvers.
- In aphakic and pseudophakic eyes, the anterior infusion can be used throughout the case.
The technique includes a five-trocar setup using three standard 25- or 27-gauge pars plana valved trocar-cannulas and two limbal anterior valved trocar-cannulas (Figure).

The anterior infusion is initially turned on once it is verified to be in the anterior chamber via the corneal limbus. As I have touched upon in previous installments of this column, I love the idea of using the simplest possible surgical setup. This facilitates case setup, which is especially important when you operate at multiple facilities that may not all stock all the same equipment.

Rather than having a separate dedicated anterior infusion, this approach requires nothing extra. You use standard valved trocar-cannulas and the infusion line from your vitrectomy unit. The valved cannulas work better than nonvalved cannulas because they don’t require plugs, and their use allows you to maintain a stable and predictable anterior chamber using the IOP-maintaining function on your vitrectomy console.

The second anterior corneal limbus cannula is used for anterior chamber washout and removal of fibrin, inflammatory membranes, hemorrhagic clots, and iris-lens adhesions. Both the vitreous cutter and retinal forceps can be used to achieve these ends. Once again, no additional equipment is needed.

After all anterior chamber material is cleared and media clarity optimized, the posterior segment is better visualized. At this time, the balanced saline solution infusion line can be turned off, moved to one of the pars plana cannulas, verified, and turned on. A complete posterior vitrectomy can then be performed.

Once again, we see the theme of simplicity as this is efficiently done without extra equipment. This contributes to shorter surgical time, which is beneficial in an inflammatory case such as endophthalmitis. The full surgical technique can be seen in the Video, which is on Eyetube at bit.ly/Almeida0919.

In a combined limbal/PPV in pseudophakic and aphakic eyes, the posterior vitrectomy can be performed with the anterior infusion line left in place. This works well in pseudophakic eyes, as the anterior infusion provides adequate flow around the IOL to maintain stability during posterior segment work. In aphakic eyes, the creation of a unicameral cavity allows straightforward fluidics via the corneal limbus infusion.

For phakic eyes this approach does not work so well, so you must improve the visualization sufficiently to secure posterior segment infusion. When you use combined limbal/PPV in phakic eyes, you must also be vigilant of where the trocars, cannulas, and instruments are positioned to avoid lens-instrument touch resulting in iatrogenic cataract.

In aphakic eyes, you can perform the entire procedure with corneal limbus access only. In these eyes, I add a third limbal trocar cannula so that I have infusion, illumination, and vitrector all placed at the corneal limbus.

Finally, this technique can also be employed for lens repositioning when anterior segment access is needed, rather than trying to manipulate the lens from the posterior segment.

**TIDBITS TO TUCK AWAY**

How many trocar-cannulas do you need? For the successful execution of any surgery, planning is most of the work. For these cases, make sure you let your circulating nurse or scrub technician know to pull the extra cannula-trocars that you will need. Refreshingly, you will not need much else to complete these challenging cases.

At the conclusion of the case, you can remove the limbal cannulas the same way you do posterior pars plana ones. The 25- or 27-gauge limbal wounds can be hydrated or closed with single interrupted 10-0 nylon sutures. In inflammatory eyes, I always close with 10-0 nylon sutures to avoid wound leaks or hypotony. Similarly, leaking sclerotomies should be closed with the suture that you normally use for sclerotomy closure. I like 7-0 polyglactin (Vicryl, Ethicon).

This surgical technique of five-port combined limbal/PPV allows the removal of infectious, inflammatory, or hemorrhagic material from both the anterior chamber and vitreous cavity in a safe and efficient manner. The limbus-based approach greatly aids visualization and potentially improves the efficacy of vitrectomy in eyes in which media opacity precludes securing posterior segment infusion.

**WANT ANSWERS?**

If you have a question that you would like addressed in this column, please email me or contact me on Twitter. Likewise, if you have comments or criticisms regarding topics addressed in this article, feel free to reach out. I would love to hear from you.

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