An Endoscopic Approach to Retinal Detachment

By Jeffrey S. Heier, MD

In the past several years, there have been dramatic advances in surgical approaches to retinal diseases in both instrumentation and technique. With smaller-gauge instrumentation, better light sources, and wide-angle viewing, along with improved understanding of pathology, and the availability of pharmacologic treatments to aid in our surgical procedures, such as dyes, we can achieve improved outcomes. We continue to be limited by challenges, however, such as visualization, particularly in patients with compromised anterior segments due to corneal edema, displaced intraocular lenses, and pupillary membranes, and in the hard-to-visualize areas of the eye such as the peripheral retina, pars plana, and posterior iris.

What are our options for problems with visualization? We can use scleral depression, but this technique can distort anatomy. The use of iris retractors can cause bleeding and inflammation, and keratoprosthesis can require penetrating keratoplasty, which is associated with a high rate of failure and which can be expensive.

I have found that using an endoscopic approach is a relatively autraumatic method of visualizing pathology that facilitates better surgical evaluation and management of cases that would otherwise be difficult. Using endoscopy allows assessment of the ocular situation without the requirement of time-consuming and expensive anterior segment surgery.

Figure 1. The Endo Optiks endoprobe.

Figure 2. Endoscopic view of the optic nerve and retina.

The idea of using endoscopy is certainly not new. Over the years, the use of endoscopy has been described for assessing pathology and aiding in minimally invasive procedures.[1,2] In my opinion, endoscopy may have fallen out of favor because the rise in popularity of small-gauge vitrectomy led to surgeons' hesitance to use larger probes. The smaller probes that are now available from Endo Optiks, however, answer these objections.

IMPORTANT STEPS IN USING AN ENDOSCOPE

The first step in utilizing an endoscope in the proper way is orientation—you have to understand where you are with the probe. I orient outside the eye, and when the probe is in the eye, I immediately locate the optic nerve, which helps me to know in which direction I am headed. I then move the probe and locate the structures anteriorly to ensure that I am placing my cannulas in the right position.

The next step is localization. I look for the breaks so that I can better understand the pathology. The endoscope provides enough visualization of multiple breaks and the vitreous that staining is not required. The instruments are also easily identified using the endoscope and can be tracked as they move through the vitreous. This instrument provides remarkable visualization of the anterior structures and is very useful when removing vitreous from behind the iris. Whereas scleral depression might compress vitreous behind the iris, the endoscope does not.

ENDOSCOPY PEARLS

There is a learning curve to using the endoprobe in vitreoretinal surgery that includes learning to view surgery on the monitor rather than the microscope, orientation of the probe, and using monovision during surgery. The technique, however, is easily mastered after the surgeon has used it in several cases. I recommend that users start with using the endoprobe for a couple of cases per day just by inserting the probe and taking it out to become used to orientation outside and inside of the eye. After becoming accustomed to that step, I suggest surgeons use it first for easier cases such as mild core vitrectomy or vitreous hemorrhage, and gradually work up to more difficult cases.

SUMMARY

Endoscopy enables visualization, evaluation, and management of complicated retinal diseases. It can be used to facilitate surgery in cases for which, previously, it may not have been considered appropriate, cases that may have previously required significant additional surgery with inherent costs, and cases that could not be completed with the same degree of finesse and/or success. In my opinion, the endoscope is a good additional tool for vitreoretinal surgery. ■

Jeffery S. Heier, MD, is Director of the Vitreoretinal Service at Ophthalmic Consultants of Boston. He states that he is a consultant to Endo Optiks. Dr. Heier can be reached at jsheier@eyeboston.com.

1. de Smet MD, Mura M. Minimally invasive surgery-endoscopic retinal detachment repair in patients with media opacities. *Eye (Lond)*. 2008;22(5):662-665.
2. Faude F, Wiedemann P. Vitreoretinal endoscope for the assessment of the peripheral retina and the ciliary body after large retinectomies in severe anterior PVR. *Int Ophthalmol.* 2004;25(1):53-56.