

Thinking Outside of the Gonioscope on Eyetube.net

BY NATHAN M. RADCLIFFE, MD

In adults, traditional glaucoma surgery, including trabeculectomy and the placement of tube shunts, is primarily performed ab externo and does not require intraoperative gonioscopic viewing. It is likely, however, that surgeons will use the next generation of ab interno approaches to angle surgery and suprachoroidal shunts with the aid of a gonioscopic lens. The Trabectome (NeoMedix Corporation) is a relatively new procedure that uses intraoperative gonioscopy. If the FDA approves the iStent (Glaukos Corporation), another surgical option that uses intraoperative gonioscopy will be added to ophthalmologists' armamentarium. In the January/February 2012 installment of "Inside Eyetube.net," I reviewed a video by Randy Craven, MD, in which he uses gonioscopy for the implantation of the CyPass Micro-Stent (Transcend Medical; not available in the United States) immediately after cataract surgery. Because many cataract and glaucoma surgeons are not routinely using gonioscopy, it is unclear if a lack of comfort with gonioscopic operating approaches will limit their acceptance of some new surgical procedures.

GONIOMETRY

Is it possible to place some devices in the angle without a gonioscope? In his video, Iqbal I. K. Ahmed, MD, FRCS, uses gonimetry when implanting a suprachoroidal microstent with a standard operating microscopic view. The direct gonimetry device is a small ruler on a spring-loaded probe with a blunt tip that can be placed through a 1.5-mm incision in an anterior chamber filled with viscoelastic. A visible scale on the gonimetry probe measures the depth from the ciliary body insertion to the limbus (Figure 1). The device is placed into the angle and advanced with the injector until it registers the same depth as the gonimetric device. This ensures that the stent will not be placed too deep in the angle. Always pushing the envelope, Dr. Ahmed demonstrates a number of cases (all in phakic eyes) in which he successfully



Figure 1. The direct gonimetry contains a visible scale that allows the surgeon to measure the depth from the ciliary body insertion to the limbus.

places the stent with direct viewing and subsequently confirms adequate placement using intraoperative gonioscopy. His video is a reminder that there are many alternative surgical approaches yet to be discovered, particularly in recently developed surgeries.

OFF-LABEL TECHNIQUE

In the January 2009 issue of *Glaucoma Today*, Adam C. Reynolds, MD, described his off-label use of the iTrack microcatheter (iScience Interventional) to perform a 360° trabeculotomy in the eyes of pediatric patients with congenital glaucoma.¹ The device was designed to pass through 360° of Schlemm canal and to facilitate the viscodilation of the canal and the collector system with placement of a tensioning suture in adult eyes with open-angle glaucoma. In his video, Dr. Reynolds demonstrates an ab externo trabeculotomy technique on a 1-week-old baby with unilateral congenital glaucoma and corneal edema. His video demonstrates the dissection of a 4-mm-wide, 300-μm-deep



Figure 2. The surgeon creates a deep, superficial scleral flap and threads the microcatheter into Schlemm canal in preparation for a 360° trabeculotomy.

flap that extends 1.5 mm into clear cornea. He then creates a second, internal scleral flap, as is typically performed with canaloplasty. After he inserts a cannula into Schlemm canal without viscoelastic (Figure 2), Dr. Reynolds creates a paracentesis in the anterior chamber and fills it with Healon (Abbott Medical Optics Inc.). He then uses gentle traction to pull both ends of the microcatheter to create a 360° trabeculotomy.

This technique has many advantages, including allowing the ophthalmologist to open up the inner wall of Schlemm canal for 360° through a single conjunctival/scleral incision. Additionally, the similarity between this surgical technique and canaloplasty allows surgeons to use this treatment in children with congenital glaucoma, which may improve their access to care in some regions.

The data regarding the success of this procedure are promising. Christopher A. Girkin, MD, and colleagues

“The similarity between [ab externo trabeculotomy] and canaloplasty allows surgeons to use this treatment in children with congenital glaucoma, which may improve their access to care in some regions.”

reported on the efficacy of circumferential trabeculotomy using this technique in 11 eyes of seven patients with congenital glaucoma.² The mean IOP decreased from 33 mm Hg preoperatively to 18 mm Hg over a follow-up period of 8 to 12 months (mean, 11 months). According to the study's authors, the most common complication was transient hyphema; 80% to 90% of the procedures were successful.

CONCLUSION

These videos describe innovative alternatives to gonioscopic surgery. I am confident that gonioscopic surgery will play an expanding role in the surgical approach to glaucoma management in the era of microinvasive procedures and that further refinements will likely appear on Eyetube.net. ■

Section Editor Nathan M. Radcliffe, MD, is an assistant professor of ophthalmology at Weill Cornell Medical College, New York-Presbyterian Hospital, New York. He acknowledged no financial interest in the product or company mentioned herein. Dr. Radcliffe may be reached at (646) 962-2020; drradcliffe@gmail.com.



1. Reynolds AC. 360° trabeculotomy for congenital glaucoma. *Glaucoma Today*. January 2009;7(1):33-36.
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