

Blebless Glaucoma Surgery

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Eyetube.net is a great resource for ophthalmologists who want to showcase or solicit feedback on new surgical techniques in glaucoma. This article reviews videos demonstrating the Holy Grail of glaucoma surgery: the blebless, tubeless, conjunctiva-sparing procedure.

LASER TRABECULOSTOMY

The first candidate for the ideal IOP-lowering procedure is excimer laser trabeculostomy (ELT; not approved in the United States). In a video demonstration (<http://eyetube.net/videos/default.asp?giheki>), Michael S. Berlin, MD, uses a short-pulsed, 308-nm argon-fluoride excimer laser to nonthermally ablate portions of the juxtacanalicular trabecular meshwork and the inner wall of Schlemm's canal. To perform ELT, the surgeon stabilizes the anterior chamber of a phakic or pseudophakic eye with an ophthalmic viscosurgical device and inserts the probe into the eye through a corneal paracentesis. Dr. Berlin uses a Swann-Jacobs lens to visualize the trabecular meshwork, but he notes that ELT can also be performed under endoscopic guidance. During the treatment, Dr. Berlin creates 10 open-

Several videos demonstrate the Holy Grail of glaucoma surgery: the blebless, tubeless, conjunctiva-sparing procedure.

ings in the trabecular meshwork. As the tissue is vaporized, a small bubble forms in the anterior chamber (Figure 1).

The patency of the trabeculostomies is confirmed at the end of the procedure by the hypotonic reflux of blood into the anterior chamber. The patient treated in the video achieved a final IOP of 12 mm Hg (a 57% decrease from baseline). When the surgeon performed cataract surgery on the same eye 1 year later, he observed the egress of trypan blue from the anterior chamber into the episcleral veins, a finding suggesting that the trabeculostomies remained patent.

Pending clinical studies in Canada and the United States may help to determine if ELT will become a reliable surgical treatment for glaucoma.

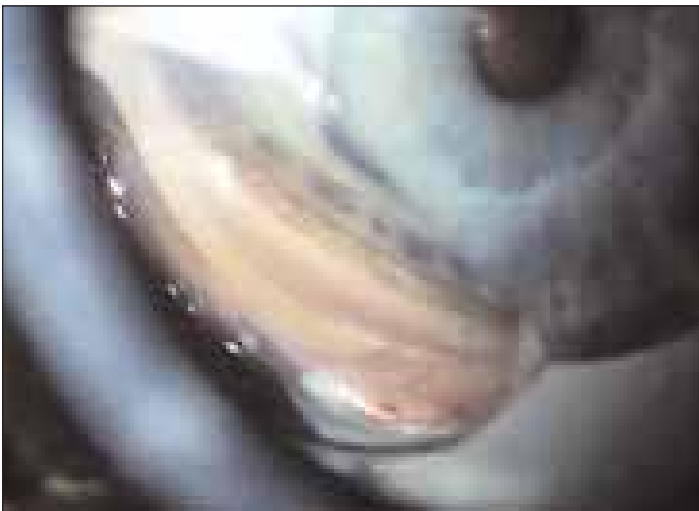


Figure 1. ELT creates a series of holes in the trabecular meshwork.

AB INTERNO TRABECULOTOMY

Glaucoma surgery can be challenging in eyes with a history of penetrating keratoplasty. A video submitted by Steven D. Vold, MD, demonstrates a novel solution to an all-too-familiar problem: How does one control IOP in an eye that, after penetrating keratoplasty, has vitreous in the anterior chamber, large peripheral anterior synechiae, and iris adherent to the graft-host junction? Because tube shunts threatened the health of the corneal graft, and because the patient's chronic use of steroids after keratoplasty could increase the risk of blebitis, Dr. Vold decided to perform an ab interno trabeculotomy with the Trabectome system (NeoMedix, Inc., Tustin, CA). The



Figure 2. The surgeon uses the Trabectome's I/A unit to ablate the inner wall of Schlemm's canal.



Figure 3. The appearance of blood in the anterior chamber indicates that the iStent has pierced the trabecular meshwork.

Trabectome's I/A unit has a microelectrocautery tip and a protective footplate that allow the surgeon to ablate the trabecular meshwork and the inner wall of Schlemm's canal (Figure 2) (<http://eyetube.net/videos/default.asp?dofisi>).

Dr. Vold's approach reflects the thinking of a seasoned glaucomatologist: always plan for the next surgery. He therefore performs the Trabectome procedure through a 1.6-mm corneal incision before completing an anterior vitrectomy and removing the irido-corneal adhesions. Dr. Vold's video shows how an inter-no trabeculotomy preserves and prepares the eye for

future surgical options, such as the implantation of a tube shunt.

TRABECULAR BYPASS DEVICES

In "Implanting the Glaukos iStent," Carlos Buznego, MD, uses a very small device to bypass the trabecular meshwork (<http://eyetube.net/videos/default.asp?fedili>). The iStent (Glaukos Corporation, Laguna Hills, CA; not available in the United States) is a 0.5- X 1.0-mm heparin-coated titanium device that is placed in Schlemm's canal through a corneal paracentesis. As the stent pierces the trabecular meshwork, it causes a reflux of blood into the anterior chamber (Figure 3). The blood not only highlights the anatomical target, but it also confirms that the stent has established a connection between the anterior chamber and Schlemm's canal.

CONCLUSION

The videos highlighted in this article demonstrate "blebless" surgical techniques that do not require adjunctive antimetabolites and spare the conjunctiva for future filtering procedures. Although the novel interventions theoretically reduce the risk of postoperative hypotony, their efficacy for lowering IOP (ideally into the low teens) is still under investigation. Of the three techniques discussed, only the Trabectome has been cleared for clinical use by the FDA. I invite you to submit a video of your innovative approach to glaucoma surgery at <http://dropbox.yousendit.com/eyetube>. □

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