

Streamlining Glaucoma Surgery on Eyetube.net

BY NATHAN M. RADCLIFFE, MD

Albert Einstein said, "Make things as simple as possible, but not simpler." This installment of "Inside Eyetube.net" reviews a variety of videos that consider ways to simplify and streamline glaucoma surgical management.

AN END TO WOUND LEAKS?

Wound leaks are a common problem of glaucoma surgery and can threaten an otherwise perfect trabeculectomy. In the Collaborative Initial Glaucoma Treatment Study (CIGTS), out of the 465 trabeculectomies that were performed, 26 postoperative wound leaks occurred, resulting in a complication rate of 6% from this problem alone.¹ In the Tube Versus Trabeculectomy (TVT) Study, wound leaks were even more common, occurring in 11% of trabeculectomies performed, possibly because of better leak detection or due to more aggressive use of anti-fibrosis chemotherapy.²

In his video, Frank Kesteloot, MD, offers a solution to

the problem of wound leakage and demonstrates how to apply the ReSure Adherent Ocular Bandage (Ocular Therapeutix, Inc.) over a fornix-based trabeculectomy (Figure 1). The ReSure bandage is CE Mark approved and commercially available in select European markets and Australia.

Dr. Kesteloot begins with a relatively standard fornix-based trabeculectomy, which includes a 5-mm conjunctival peritomy and a 3- × 2.5-mm scleral flap. He performs an iridectomy and places at least two nylon sutures through the scleral flap. Prior to the application of the ReSure, Dr. Kesteloot sutures the conjunctiva to the corneal limbus, which is then dried. Mixing two components of the hydrogel ocular bandage together activates the adhesive's polymerization process, and Dr. Kesteloot applies the resulting mixture to the fornix-based incision using a nonabsorbing foam-tipped applicator. Although the use of this ocular bandage appears promising, it remains to be seen if the wound can be closed without any sutures at all. In any case, I will certainly look for additional applications and data for tissue sealants in many forms of ocular surgery.



Figure 1. The surgeon applies the ReSure Adherent Ocular Bandage to the fornix-based trabeculectomy conjunctival wound at the limbus.



Figure 2. Dr. Loewen places a single stitch through the scleral wound of the small triangular flap of the microtrabeculectomy.

A SMALLER, SIMPLER TRABECULECTOMY

Perhaps another way to prevent wound leakage and other complications after glaucoma surgery is to make a smaller conjunctival peritomy and simplify the entire procedure. Nils Loewen, MD, PhD, presents his technique for a small-incision trabeculectomy, also known as a *microtrabeculectomy*. The advantages of this technique include the lack of a retraction suture, a small peritomy requiring only two 10-0 nylon wing sutures to close, no iridectomy, and a single-stitch scleral closure (Figure 2). Dr. Loewen uses the Blumenthal Conjunctiva Dissector (Katena Products, Inc.) to create a sub-Tenon pocket and administers 0.4 mg/mL of mitomycin C for 3 minutes. He performs cautery during the application of mitomycin C to better use the surgical downtime. Dr. Loewen begins constructing the triangular scleral flap about 1 mm posterior to the limbus, and it extends no more than 1.5 mm at its apex. The surgery is a streamlined trabeculectomy, and the video is worth viewing if for no other reason than to consider ways to minimize the size of one's own trabeculectomy. As far as his microtrabeculectomy technique, I think Dr. Loewen may have just as well used Occam's razor to perform his procedure.



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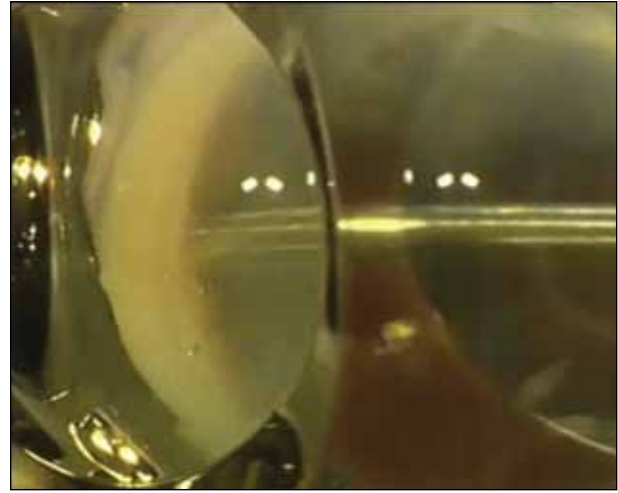


Figure 3. The high-frequency deep sclerotomy ab interno procedure uses intraoperative gonioscopic viewing of the Abee Tip to deliver a high-frequency diathermic current to the trabecular meshwork.

pressure, and it's not too extreme, it's worth trying to take out a cataract if one is present. I think that, if there is a real major concern of pressure control, you're almost certain to get more control with a combined procedure, but you take on a greater risk."

What about cases in which the crystalline lens is clear, but the patient has severe ACG with uncontrolled IOP? While acknowledging that these cases are not too common, Dr. Friedman also noted that trabeculectomy can be more complicated in these patients, when, for example, aqueous misdirection develops. Fortunately, in Great Britain, the Effectiveness of Early Lens Extraction With Intraocular Lens Implantation for the Treatment of Primary Angle-Closure Glaucoma (EAGLE) study, led by Dr. Azuara-Blanco, is assessing the efficacy of clear lens extraction for ACG that should provide valuable evidence soon.³ Dr. Friedman concludes that, although cataract surgery has a strong safety profile, "Even in good hands, there are times when cataract extraction can harm patients, so you really want to be thoughtful about case selection in this disease."



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AVOIDING TRABECULECTOMY ALTOGETHER

David S. Friedman, MD, MPH, PhD, recently spoke with Eyetube TV about the value of lens extraction as an IOP-lowering procedure in angle-closure glaucoma (ACG). As a clinician scientist who has dedicated much of his career to angle closure, Dr. Friedman had some salient advice: "As a bottom line, I would say that, if the patient has uncontrolled

A NEW AB INTERNO PROCEDURE

Ab interno angle surgeries are defined by attempts to limit resistance to aqueous humor outflow from within the anterior chamber. Commonly performed surgeries within this class include goniotomy,



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the Trabectome procedure (NeoMedix Corporation), and the iStent Trabecular Micro-Bypass Stent (Glaukos Corporation). Bojan Pajic, MD, and Farhad Hafezi, MD, present a new ab interno angle surgery called the *high-frequency deep sclerotomy ab interno*.

The procedure requires visualization of the anterior chamber angle, which is achieved using a four-mirror gonioscopic lens. The video introduces the Abee Tip (Oertli Instruments), which contains a sharp platinum electrode that delivers a high-frequency diathermic current (electrically induced heat) to the trabecular meshwork (Figure 3). As the procedure is performed, bubbles appear where tissue has been ablated. The surgeon performs four to six deep sclerotomies. On the video, anterior segment optical coherence tomography demonstrates that a rather large thalamus is created, about 1 mm deep and one- to two-thirds of a millimeter in diameter. This procedure, therefore, removes both the inner and outer walls of Schlemm canal as well as a section of sclera posteriorly. After the tissue has been ablated, the surgeon removes the viscoelastic and hydrates the clear corneal incisions. Hyphema or microhyphema did not occur. The efficacy and safety of this procedure fit well within the category of microinvasive glaucoma surgery, as it is a relatively straightforward and clean ab interno glaucoma procedure.⁴

CONCLUSION

Glaucoma surgery continues to evolve toward streamlined, safer, and simplified procedures that promise to benefit the surgeon and patient alike. Eyetube.net is a great place to find videos that can help surgeons learn how to add efficiency to their techniques while providing a glimpse of the surgeries ophthalmologists may be performing in 5 years. ■

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