

A Modified Technique for Holmium Laser Sclerostomy

Changes that minimize complications.

BY WAYNE F. MARCH, MD

Holmium laser sclerostomy has always offered advantages in certain patients,¹⁻³ including its adaptability as an office procedure (rather than an ambulatory surgery procedure); the equal ease of its application at every clock hour of the limbus; and its causation of less inflammation than trabeculectomy owing to a smaller incision, topical anesthesia, and a short operating time. Initially, the disadvantages of the procedure severely limited its application, but recent changes in the surgical technique have eliminated many of these problems and increased the procedure's popularity. This article describes a technique I designed to eliminate iris incarceration and minimize postoperatively flat chambers.

TECHNIQUE

I administer anesthesia by moistening a swab with 4%

lidocaine and placing it on the limbus for 5 minutes at the proposed clock hour of the procedure (Figure 1). Next, I securely place a specially designed, short-beveled, 30-gauge needle known as a Laser Sclerostomy Needle (BD Ophthalmic Systems, Franklin Lakes, NJ) on a 0.5-mL syringe of Viscoat (Alcon Laboratories, Inc., Fort Worth, TX) (Figure 2). The tip of the needle is marked by touching it to a strip of rose bengal.

I then insert the needle, bevel up, through the conjunctiva and Tenon's capsule, approximately 8 mm from the limbus, and bring it to the desired clock hour (Figure 3). If the needle does not slide easily beneath the conjunctiva with slight assistance in elevating the conjunctiva with a smooth forceps, then a new clock hour with virgin conjunctiva should be selected. Next, I pass the tip of the special, short-beveled needle through the Tenon's insertion at the limbus, still under conjunctiva

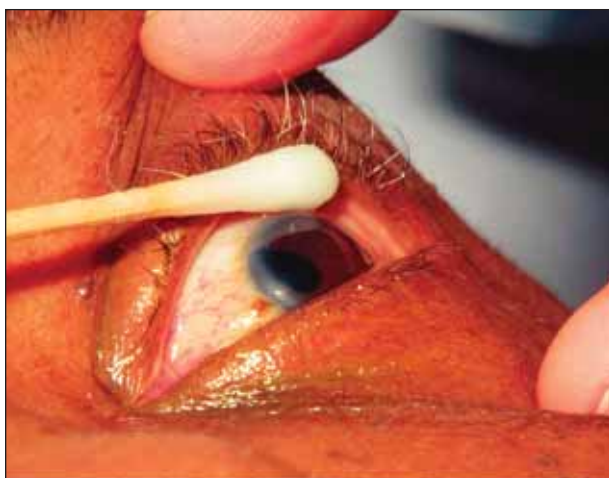


Figure 1. The author administers anesthesia.



Figure 2. A laser sclerostomy needle placed on a syringe has been dipped in rose bengal.

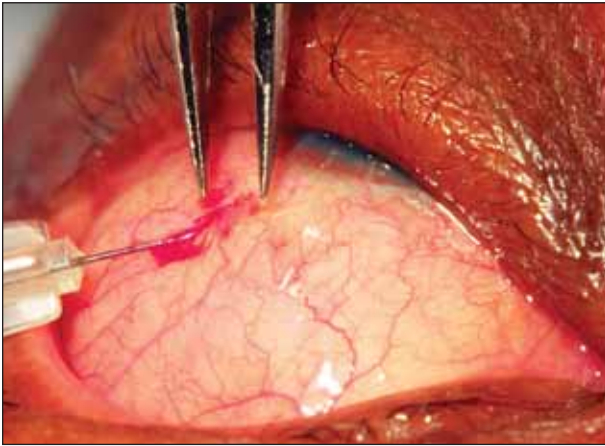


Figure 3. The author inserts the needle through the conjunctiva while elevating this tissue with forceps.

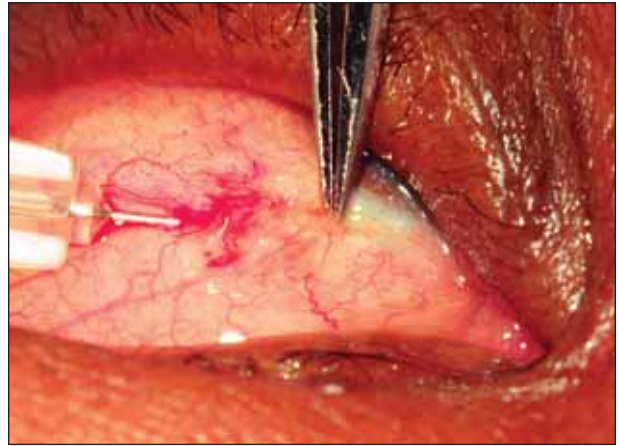


Figure 4. The needle passes through the Tenon's insertion.

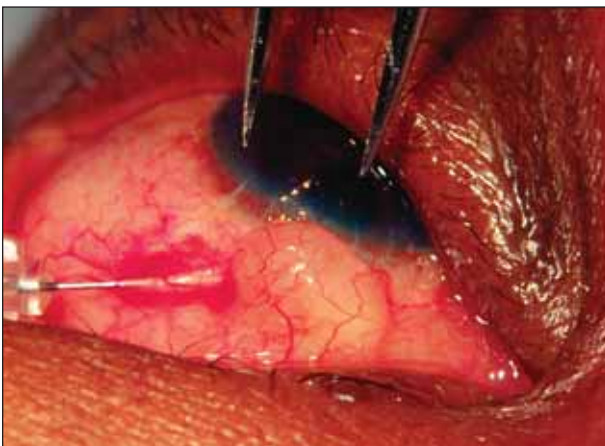


Figure 5. The author injects viscoelastic beneath the conjunctiva.

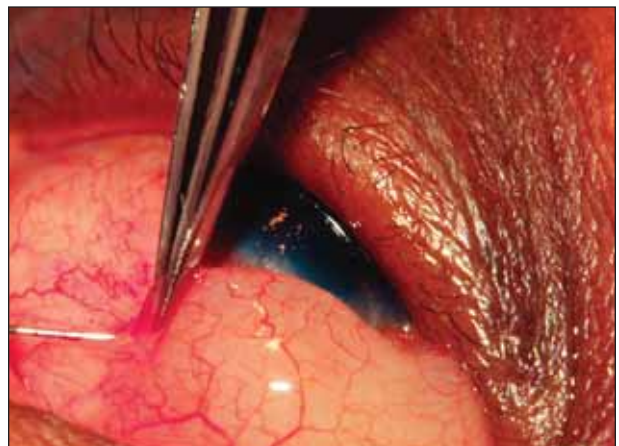


Figure 6. The needle is withdrawn.

(Figure 4).

I use some force to inject 0.2 mL of Viscoat subconjunctivally (Figure 5). This step is essential to obtaining an opening that is sufficiently anterior to be out of the iris plane so that future iris incarceration is avoided. A standard 30-gauge needle cannot be used; the bevel is too long, so the surgeon cannot elevate the adherent Tenon's capsule (because the conjunctiva has so much less resistance). After angling the syringe upward, I insert the needle directly through the cornea and into the anterior chamber. Injecting the remaining 0.3 mL of Viscoat with force helps to avoid a future flat chamber.

I am careful when withdrawing the needle (Figure 6) not to lose the 30-gauge needle hole, which the needle's tip marked with rose bengal upon entry. One withdrawal technique is to hold the conjunctiva at the needle hole with a smooth forceps as the needle exits and to

have the scrub nurse hand the Laser Sclerostomy Probe to the surgeon so that he need not raise his eyes.

At this point, I force the 25-gauge Laser Sclerostomy Probe through the 30-gauge needle hole (Figure 7) and bring it to the limbus. By noting the notch on the probe opposite to the laser side, I am able to position the laser probe with the laser side down. Gently pressing the probe against the globe ensures the absence of any Viscoat between the probe and the globe. This step is important, because this viscoelastic will completely absorb laser at this wavelength (2.1 μm). I always apply 30 pulses of laser energy at 300 mJ (Figure 8). This is more energy than used in previous studies¹⁻³ and therefore yields a larger opening, which is less likely to close. The Viscoat makes the use of greater energy possible. At this point, the procedure is complete, and the probe is withdrawn. No suture is required.

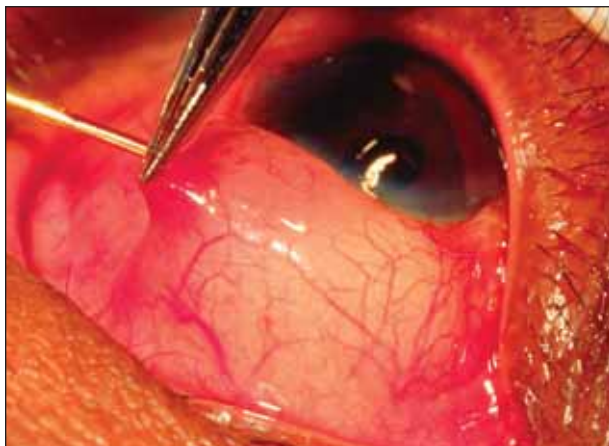


Figure 7. The author forces the laser sclerostomy probe through the needle hole.



Figure 8. The author applies laser energy.

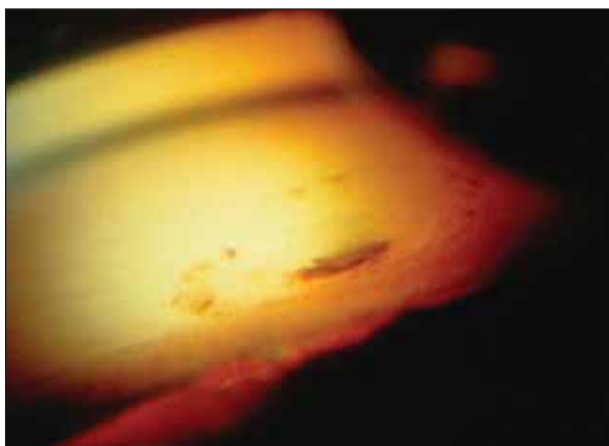


Figure 9. A gonioscopic view of an African American patient reveals the patent internal ostium. The size of the opening is larger than described in other reports due to the higher energy and increased number of pulses used.



Figure 10. The external ostium of the laser sclerostomy is visible through this thin conjunctiva.

POSTOPERATIVE COURSE

Postoperative medication consists entirely of a steroid-antibiotic combination drop q.i.d. Figure 9 shows the patent internal ostium produced by the procedure, and Figure 10 shows the external ostium.

CONCLUSION

Injecting viscoelastic beneath Tenon's capsule that is adherent to the cornea and into the anterior chamber eliminates the incidence of a postoperatively flat chamber. Because the adherent Tenon's capsule is elevated, the surgeon can place the sclerostomy probe more anteriorly and create the incision well out of the iris plane, thereby eliminating iris incarceration. By using this modified procedure in 150 consecutive cases, my

long-term rates of success, complication, and retreatment from laser sclerostomy are now equivalent to what I would expect from trabeculectomy. □

The practice of Wayne F. March, MD, is limited to tertiary glaucoma referral. He receives no income from the sale of any instrument or device mentioned herein. Dr. March may be reached at (718) 763-2488; wfmarch47@aol.com.

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