

MANAGING LEAKS

A case of conjunctival buttonhole during trabeculectomy.

BY HELEN JIANG, MD, AND TAK YEE TANIA TAI, MD



CASE PRESENTATION

A 67-year-old man with a history of anatomically narrow angles status post laser peripheral iridotomy and mixed-mechanism glaucoma in both eyes was referred for glaucoma evaluation. The

patient had been treated with topical medication, including brimonidine, latanoprost, and dorzolamide-timolol for 2 years at the time of presentation. He complained of decreased visual acuity in his left eye over the past year.

On examination, BCVA measured 20/20 OD and 20/30 OS. Patent laser iridotomies and mild nuclear sclerosis were noted in both eyes. IOP by applanation was 14 mm Hg OD and 20 mm Hg OS. On gonioscopy, the angle was open to the scleral spur in both eyes. The cup-to-disc ratio was 0.75 in the right eye and 0.95 in the left (Figure 1), with loss of the inferior rim. We felt that the IOP in the left eye was higher than optimal, and the patient was scheduled for trabeculectomy on that eye.

Intraoperatively, we created a fornix-based peritomy. We placed three sponge pledgets soaked in 0.4 mg/mL mitomycin C on bare sclera for 2.5 minutes and then irrigated the eye with balanced salt solution. The scleral flap, ostium, and iridectomy were created without complication. We closed the scleral flap with two 10-0 nylon sutures, and using a microspatula needle, we closed the conjunctiva with 10-0 nylon wing sutures, three nasally

and one temporally. After closure of the conjunctiva, we noted leakage at the conjunctival entry site at two of the nasal wing sutures.

HOW WOULD YOU PROCEED?

- Would you place more sutures to close the buttonhole directly in the setting of fragile conjunctiva?
- Would you place a suture to wall off the leak?
- Would you consider a sutureless approach to close the leak?

SURGICAL COURSE

The conjunctival entry sites with leakage are shown in Figure 2. We placed a short compression suture, which did not stop the leakage but, in fact, created another site of leakage at its conjunctival entry point. We then placed a longer compression suture, with resolution of the leakage.



AT A GLANCE

- Conjunctival buttonhole during trabeculectomy can lead to subsequent complications, including wound leak and even bleb failure.
- If a buttonhole occurs during surgery, the defect should be adequately repaired using the appropriate technique in order to prevent additional complications.
- The authors discuss the approach they used to successfully stop the leakage intraoperatively.

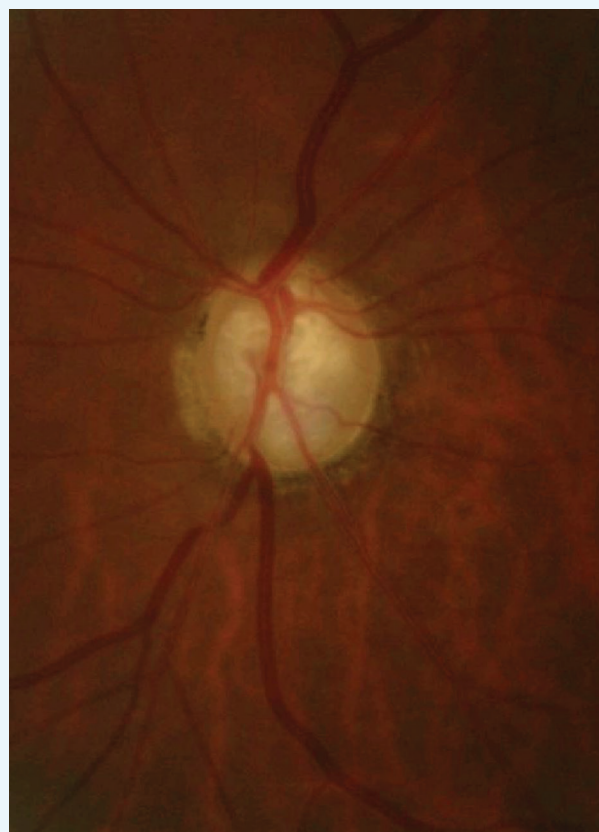


Figure 1. Optic disc appearance of the left eye.

At the conclusion of the procedure, all incisions were Seidel-negative, the anterior chamber was deep, and the eye was at a physiologic IOP.

On postoperative day 1, the patient had an IOP of 20 mm Hg OS without evidence of a bleb leak. At postoperative week 2, his IOP was 21 mm Hg OS, and we noted a diffuse bleb without leakage. Using an argon laser, we lysed the compression suture at this time, after which the IOP decreased to 18 mm Hg. At postoperative week 3, we lysed a flap suture and noted an improvement in IOP to 10 mm Hg. At postoperative month 2, the patient continued to do well, with an IOP of 9 mm Hg OS off all glaucoma medication and no evidence of a bleb leak.

DISCUSSION

A conjunctival buttonhole or tear during trabeculectomy is undesirable, given the potential for subsequent complications, including persistent wound leak, hypotony, and even bleb failure. The Collaborative Initial Glaucoma Treatment Study (CIGTS) reported an incidence of 1.1% for conjunctival buttonhole,¹ whereas the Tube Versus Trabeculectomy (TVT) study reported a 3% incidence of conjunctival buttonhole in the trabeculectomy group.²

Precautions against creation of a conjunctival buttonhole include using a smooth forceps during dissection of the conjunctiva and grasping the Tenon layer instead of conjunctival tissue.³ Because tissue necrosis can lead to a loss of conjunctival tissue integrity, cautery on the conjunctival flap should be avoided.⁴

The repair of conjunctival buttonholes can vary based on their size and location. Holes can be repaired with a purse-string suture using 9-0 Vicryl (Ethicon) or 10-0 or 11-0 nylon on a tapered needle through deeper conjunctiva or Tenon capsule.⁵ A running Vicryl or nylon suture can be used for linear tears. Anterior holes or tears near the limbus can be sealed with a horizontal mattress suture, with the surgeon apposing the posterior lip of the conjunctival tear to the peripheral cornea.⁶

Injection of Healon5 (Johnson & Johnson Vision) into the bleb has been reported to be successful

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in resolving small conjunctival leaks near the scleral flap.⁷ Tissue adhesive or placing an amniotic membrane graft over the area of leakage can be considered for closure of a small conjunctival hole.^{8,9} A conjunctival autograft may be necessary in the setting of a very large buttonhole.

A compression suture can be completed using 9-0 or 10-0 nylon passed into the cornea at 50% thickness and exiting through cornea. The suture passes over the area of desired compression, enters the conjunctiva through Tenon capsule or episclera, and exits through the conjunctiva, where it would be tied down tightly.¹⁰

The use of compression sutures to manage postoperative hypotony from an overfiltering trabeculectomy or leaking

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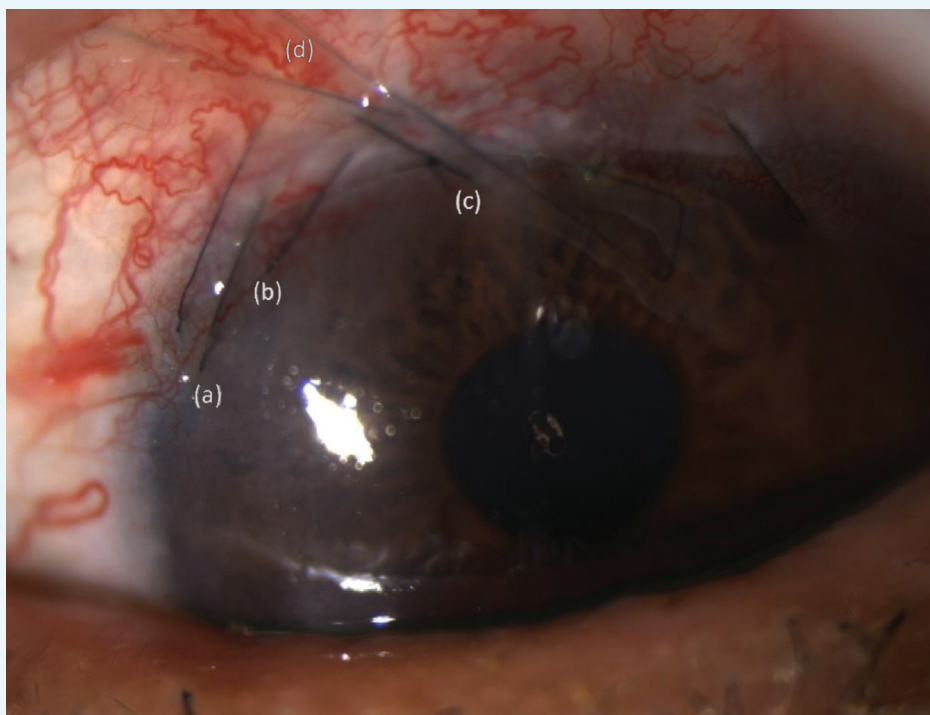


Figure 2. Postoperative week 1: (a) and (b) show the sites of leakage, (c) is the short compression suture, and (d) is the longer compression suture.

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bleb is often described. In our case, we used a compression suture during the trabeculectomy procedure to wall off an area of multiple conjunctival buttonholes from the aqueous draining through the scleral flap.

Regardless of the method used to close a conjunctival buttonhole, it is important to repair the tear in order to prevent subsequent complications. Care must be taken during the repair of thin, fragile tissue to avoid enlarging the existing buttonhole or creating a new tear. ■

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Helen Jiang, MD

- postgraduate year-3 resident, New York Eye and Ear Infirmary of Mount Sinai, New York
- (212) 979-4000; hjiang@nyee.edu; Twitter @hjiang87
- financial interest: none acknowledged

Tak Yee Tania Tai, MD

- assistant professor of ophthalmology at New York Medical College and a member of the Ophthalmology Faculty Practice at the New York Eye and Ear Infirmary of Mount Sinai, New York
- ttai@nyee.edu
- financial interest: none acknowledged