A Suture Technique for Leaking Sclerotomies

This method is recommended for sclerotomy wounds showing any degree of leakage after cannula removal.

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Twenty-three- and 25-gauge trocar/cannula systems are misleadingly called sutureless vitrectomy systems, thereby pressuring surgeons to remain “sutureless” even if a sclerotomy shows evidence of leakage at the end of surgery. Another factor that may make a surgeon resistant to suturing sclerotomies is the concern of postoperative patient discomfort caused by suture knots. In addition to the irritation caused by the suture itself, potential suture granuloma formation may further decrease a surgeon’s willingness to use stitches.

Several techniques have been developed in response to this resistance to sclerotomy suturing, including the recently described cauterization of the sclerotomy site,1 releasable sutures,2 and tissue glue and polyethylene glycol-based hydrogel bandages.3,4 However, all of these techniques have disadvantages that prevent their widespread use. For example, one disadvantage of the releasable suture technique is that it may expose the scleral tunnel to conjunctival flora when one of the suture ends passes from the conjunctiva into the sclera while releasing the stitch on postoperative day 1. The disadvantages of using different types of tissue glues include cost, patient discomfort, and the theoretical risk of anaphylaxis.3

Cauterization of sclerotomies may cause scarring of the scleral tissue, which can lead to postoperative complications that are comparable to, if not more severe than, those associated with conventional suturing techniques, such as astigmatism or discomfort due to uneven ocular surface. Another disadvantage of the cauterization technique is that it causes shrinkage of the scleral tissue and makes further rescue suturing impossible if the leak is not properly sealed.

This article describes a modified suture technique that enables complete sclerotomy closure without causing increased patient discomfort due to suture irritation.

SURGICAL TECHNIQUE

Transconjunctival vitrectomy is performed with a 23-gauge Synergetics One-Step sutureless trocar/cannula system. The conjunctiva is grasped with Colibri forceps (Katena Products, Inc.), inferior and further from the limbus from the intended sclerotomy site, and pulled toward the limbus. The sclerotomy sites are measured (4 mm for phakic eyes and 3.5 mm for pseudophakic eyes), and a trocar is inserted in a 30˚-angled fashion (ie, the conjunctival opening always inferior and further from the sclerotomy site). In addition to displacing the conjunctiva, use of the Colibri forceps also stabilizes the eye during trocar insertion.

Standard vitrectomy is performed, and when the surgery is completed, a light pipe or flute needle is used to guide the cannula out following the trocar entry direction. The light pipe or flute needle is then withdrawn, with the forceps gently compressing the conjunctiva overlying the sclerotomy. A cotton swab is used to massage the sclerotomies as soon as the forceps are released. The sclerotomy wound was checked for any signs of leakage. One effective way of exposing minute leakage is to splash saline over the sclerotomies; if the eye is filled with air or gas, bubbling (which signifies leakage) will be evident. Once any degree of leakage is noted at this stage, we proceed with sclerotomy suturing.

Westcott scissors are used to extend the initial conjunctival opening (inferior and further from limbus) at a radial fashion to 3 mm. The Tenon capsule underneath the opening is bluntly dissected toward the sclerotomy site (Figure 1). Colibri forceps are used to displace the conjunctiva and expose the sclerotomy entry site, and
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8-0 polyglactin is used to suture the sclerotomy in 3:1:1 fashion (Figure 2). The end of the suture is trimmed to 1-mm long. The conjunctiva is gently displaced to cover the suture, and no conjunctival suturing was performed (Figures 3 and 4). Subconjuntival betamethasone injections are administered around the conjunctival opening to further apposition the opening.

**DISCUSSION**

We strongly recommend suturing sclerotomy wounds that show any degree of leakage after cannula removal to prevent hypotony and reduce the risk of endophthalmitis. With this technique, vitreoretinal surgeons can suture leaking sclerotomies without the concern of postoperative patient discomfort. Routine preemptive sclerotomy sutures can also be placed in specific cases with potential postoperative leakage, such as in myopic patients with thin sclera, eyes undergoing reoperation, and eyes with silicone oil insertion, without the risk of postoperative suture irritation.

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