Relasenable Scleral Flap Suture in Trabeculectomy: Preliminary Results of a New Technique

The Department of Ophthalmology, Faculty of Medicine, Cairo University.

Abstract

Purpose: To demonstrate a technique for a releasable scleral flap suture placed to reduce post-trabeculectomy complications.

Methods: Under a fornix based conjunctival flap, a rectangular partial thickness scleral flap is fashioned. A sclerostomy is made followed by a peripheral iridectomy and the scleral flap is secured. A trapezoid suture is then placed from the sclera across the scleral flap to exit on the corneal surface and then tightened under the conjunctival flap which is then secured. During the follow-up, this suture can be safely removed on the slit lamp if the IOP is high. If the IOP is ideal, the suture can be left in place.

Results: Immediate postoperative complications as flat anterior chamber and choroidal detachment didn’t occur. The suture was removed only if the filtration was not sufficient and the IOP was high.

Conclusion: The releasable scleral flap suture was effective in preventing post trabeculectomy complications. In addition, it can be easily removed on the slit lamp without the need to fish under the conjunctiva, or to search for equipments as lasers.

Key Words: Trabeculectomy – Releasable suture – Scleral flap.

Introduction

TRABECULECTOMY is an effective operation for lowering intraocular pressure. However, success is limited by complications such as infection, hypotony and scarring. These complications, which are increased by antifibrotic use, can be reduced with attention to surgical technique \[1\]. To decrease the complications of early postoperative over-filtration after trabeculectomy, a tightly sutured scleral flap is widely recommended \[2\]. Titration of filtration in the postoperative period is currently attempted with digital massage, laser suture lysis or a releasable suture technique \[2,3,4\].

We are describing a technique for an easily removable releasable suture, added to our regular 10/0 sutures that close the scleral flap in a trabeculectomy operation.

Patients and Methods

Fifteen eyes of 11 patients were included in this study. All patients were specifically informed that an additional suture would be placed during surgery to provide an option for releasing scar tissue if this became necessary. All procedures were carried out by a single surgeon (MH) under local peribulbar anaesthesia, using a 50:50 mixture of lignocaine 2% and bupivacaine 0.5%. A fornix based conjunctival flap is fashioned by cutting conjunctiva and Tenon’s capsule flush with the limbus over a circumference of 8mm at the 12 o’clock position. Blunt dissection is carried out under the flap and the mobilised conjunctiva is held back with a sponge or forceps. Gentle wet field cautery is used to achieve haemostasis. A rectangular partial thickness scleral flap (about one-half of the scleral thickness) is fashioned with a 15º superblade and a crescent knife. The scleral flap is extended past the limbus into clear cornea and hinged anteriorly. A sclerostomy is made with a 15º superblade and Vanas scissors, followed by a peripheral iridectomy. The scleral flap is secured with 2 figure of eight 10/0 nylon sutures. Before closure of the conjunctiva, a radial 10/0 nylon suture is passed through the sclera, partial thickness, to exit in the cornea just anterior to the limbus. The point of needle entry is approximately 2mm from the lateral edge of the scleral flap and approximately in the middle of the radial limb of the flap. The suture is then taken on the corneal surface, parallel to the flap hinge, to the end of the other radial limb. The direction of the suture is then reversed and the needle is passed through the...
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limbus inwards, again in partial thickness, to exit in the sclera opposite the point of entry. The suture is taken above the scleral flap and tied to the other end (entry site). An illustrative diagram for the technique of suture placement is illustrated in Fig. (1). The conjunctival flap is then secured with 3 interrupted 8/0 vicryl sutures. Subconjunctival injection of dexamethasone and gentamycin is given at the end of the procedure.

Results

None of the patients included in our study suffered any of the immediate postoperative complications as flat anterior chamber and choroidal detachment. The suture was removed only if the filtration was not sufficient and the IOP was high. This was the case in 7 eyes (35%). Suture removal, when indicated, was easily done on the slit lamp, by cutting its corneal limb without interfering with the integrity of the conjunctival flap.

Discussion

The classic trabeculectomy technique using a rectangular scleral flap with two sutures at the edges and viscoelastic to maintain the anterior chamber (AC) is most routinely used [8]. However, this technique has its drawbacks [6]. One of these is that the amount of filtration is variable. Hyperfiltration can result in a flat AC, hypotony maculopathy, choroidal detachment or haemorrhage, aqueous misdirection or cataract [7]. Another drawback is that peroperative flat chamber and hypotony during trabeculectomy augment the risk of vision threatening complications such as choroidal haemorrhage, macular wipeout and corneal decompensation. Finally, debris that remains at the trabeculectomy site after surgery induces an inflammatory response that induces fibrosis.

In our technique, the fornix based conjunctival flap results in a good visualisation of the surgical field and allows the aqueous humour to drain posteriorly promoting the formation of a diffuse bleb [8]. Although a higher incidence of bleb leakage has been reported to be associated with fornix based conjunctival flaps [9], the use of a proper suture technique to close the conjunctiva was efficient in preventing persistent bleb leakage. A wide scleral flap dissected centrally into clear cornea also favours the posterior drainage [6].

After a standard trabeculectomy, ocular massage and/or laser suture lysis are frequently necessary to obtain a low postoperative intraocular pressure (IOP). Laser suture lysis is non-titratable, sometimes impossible to perform and can result in subsequent overdrainage and hypotony [6]. Releasable sutures reduce the incidence of complications of early postoperative overfiltration after trabeculectomy. As a result, there are fewer cases that might require reformation of the anterior chamber and drainage of suprachoroidal fluid [10].

Aykan and coauthors found no statistically significant differences in success and complication rates between laser suture lysis and releasable sutures after trabeculectomy. They concluded that both the laserable and releasable suture techniques can be preferred to permanent sutures for closing scleral flaps in primary trabeculectomy with mitomycin-C in uncomplicated glaucoma [11]. In contrast to performing laser suture lysis; the releasable suture can be removed from its corneal limb on the slit lamp, hence, there is no need for a laser, suture visibility under the conjunctiva is irrelevant, and no contact lens is required [10].
Conclusion:

Releasable sutures for the scleral flap in trabeculectomy provide better control of filtration in the postoperative period, reducing incidence of complications of hypotony. Removal of the sutures from the corneal surface, without the need to manipulate the conjunctiva gives it superiority over other techniques.

References