PostScript

LETTERS

The use of fibrin adhesive in trabeculectomy: a pilot study

During trabeculectomy, tight suturing of the scleral flap to avoid overfiltration may pose a risk of increased intraocular pressure (IOP) and a flat non-functioning bleb. Furthermore, the nylon sutures usually used to reattach the conjunctiva to the limbus may tear out of the conjunctiva and induce an inflammatory reaction. To overcome these problems, investigators have suggested the use of laser suture lysis¹ or releasable sutures² or other types of closure methods, such as staples, tapes and adhesives.³

Quixil (Omrix Biopharmaceuticals, Ramat Gan, Israel) is a human fibrin sealant consisting of two biological components that form a clot within 30 s of placement on the tissue surface. The clot promotes collagen crosslinking and, consequently, wound healing, and is absorbed after a few days. The aim of this study was to determine whether our good preliminary results with Quixil in an animal model could be extrapolated to human eyes.

Brief report

The study group consisted of five (three male, two female) adults aged 64–70 years (mean 68 (standard deviation (SD) 6.5) years) with endstage, drug-refractory glaucoma (five eyes): neovascular in two (due to central retinal vein occlusion or proliferative diabetic retinopathy), primary open angle in one and pseudoexfoliative in two. All had raised IOP, visual acuity worse than hand movement, painful eye owing to raised intractable IOP and a total optic disc cup. A peripheral iridectomy had not been carried out in these cases owing to the open-angle nature of glaucoma or extensive rubeosis iridis. Informed consent was obtained before the procedure. The study was approved by the institutional ethics committee.

Eyes were anaesthetised with topical oxibuprocaine hydrochloric acid 0.4%. A fornix-based conjunctival flap was created in the superotemporal or superonasal quadrant, and a scleral flap was formed up to the clear cornea. Two-minutes application of mitomycin C 0.04% solution to the exposed scleral surface and external eye irrigation were followed by paracentesis to the anterior chamber. Deep sclerectomy and peripheral iridectomy were carried out. The scleral flap was attached with Quixil Omrix Biopharmaceuticals, and the conjunctival flap was pulled and glued above it.

Postoperatively, patients were treated with topical corticosteroids and chloramphenicol eye drops. No drug was prescribed for glaucoma.

All eyes were biomicroscopically examined preoperatively, on postoperative days 1–3, and then weekly for 1 month, monthly for 2 and 3 months, and thereafter every 3 months to 1 year. The mean duration of follow-up was 1 year. The main outcome measures were a change in IOP, presence of an active filtering bleb, wound leakage (Seidel test),

and intraoperative and postoperative complications.

Preoperative visual acuity ranged from hand movements to no light perception; mean preoperative IOP was 40 (SD 8) mm Hg.

No intraoperative complications were found. One patient with primary open-angle glaucoma had a shallow anterior chamber and choroidal effusion with a negative Seidel test on the first postoperative day, which resolved within 3 weeks after topical treatment with atropine sulphate and dexamethasone drops.

All five patients showed a diffuse active filtering bleb following surgery, with no signs of leakage (fig 1). No patient needed digital massage on the postoperative days. IOP decreased considerably in all patients in the first postoperative month (mean 14 (SD 3.5) mm Hg). In two patients, it increased to 30 mm Hg in the second month and then normalised in one of them with topical antiglaucoma treatment for glaucoma. The other three patients remained treatment free, with an IOP of 10–20 mm Hg at 1 year. Visual acuity was stable in four patients, but deteriorated from light perception to no perception in the patient with pseudoexfoliative glaucoma.

Comments

Fibrin adhesive is theoretically amenable to trabeculectomy, as it mimics physiological sealing processes. It has been used so far in trabeculectomy to manage leaks and hypotony or for closure of conjunctival wounds, with good results.^{4–8} To our knowledge, this is the first use of fibrin adhesive instead of sutures for scleral as well as conjunctival wound closure in penetrating trabeculectomy. Grewing and Mester⁹ described a temporary tamponade of the scleral flap with subconjunctival fibrin glue in two patients with post-trabeculectomy hypotony, in whom the sclera and conjunctiva were primarily sutured.

We found the fibrin adhesive to be safe and effective, forming a smooth seal around the edge of the wound. Additionally, pushing the conjunctiva away from the sclera temporarily prevented scleroconjunctival fibrosis and allowed for bleb formation. Its use simplified the procedure and decreased operating time.

Figure 1 Anterior segment photograph 7 days after trabeculectomy surgery with fibrin adhesive, showing a diffuse active filtering bleb, with local conjunctival hyperaemia.

No postoperative complications were found, and overall outcome was good.

Further investigations with a prospective controlled, randomised study and longer follow-up are still needed.

I Bahar, M Lusky, D Gatot, A Robinson, R Avisar, D Weinberger

Department of Ophthalmology, Rabin Medical Center, Petah Tiqwa, Israel

Correspondence to: I Bahar, Department of Ophthalmology, Rabin Medical Center, Beilinson Campus, Petah Tiqwa 49100, Israel; iritbahar@yahoo.com

doi: 10.1136/bjo.2005.089961

Accepted 17 May 2006

Competing interests: None declared.

References

- 1 Macken P, Buys Y, Trope GE. Glaucoma laser suture lysis. *Br J Ophthalmol* 1996;**80**:398–401.
- 2 Raina UK, Tuli D. Trabeculectomy with releasable sutures: a prospective, randomized pilot study. *Arch Ophthalmol* 1998;**116**:1288–93.
- 3 Schwartz SI. In: *Principles of surgery*, 3rd edn. New York, NY: McGraw-Hill Book Company, 1979:303–24.
- 4 Seligsohn A, Moser MR, Steinmann W, et al. Use of Tisseel fibrin sealant to manage bleb leaks and hypotony: case series. *J Glaucoma* 2004;**13**:227.
- 5 Gammon RR, Prum BE Jr, Avery N, et al. Rapid preparation of small-volume autologous fibrinogen concentrate and its same day use in bleb leaks after glaucoma filtration surgery. *Ophthalmic Surg Lasers* 1998;**29**:1010–12.
- 6 Graham SL, Murray B, Goldberg I. Closure of fornix-based posttrabeculectomy conjunctival wound leaks with autologous fibrin glue. *Am J Ophthalmol*, 1992;**114**:221–2.
- 7 O'Sullivan F, Dalton R, Rostron CK. Fibrin glue: an alternative method of wound closure in glaucoma surgery. *J Glaucoma* 1996;**5**:367–70.
- 8 Kajiwaru K. Repair of a leaking bleb with fibrin glue. *Am J Ophthalmol* 1990;**109**:599–601.
- 9 Grewing R, Mester U. Fibrin sealant in the management of complicated hypotony after trabeculectomy. *Ophthalmic Surg Lasers* 1997;**28**:124–7.

Exclusion of COL8A1, the gene encoding the α_2 (VIII) chain of type VIII collagen, as a candidate for Fuchs endothelial dystrophy and posterior polymorphous corneal dystrophy

Fuchs endothelial corneal dystrophy (FECD) MIM#136800 and posterior polymorphous corneal dystrophy (PPCD) MIM#122000 both belong to the corneal endothelial dystrophies in which endothelial dysfunction can lead to corneal oedema. In addition, they both share the common features of endothelial metaplasia and the secretion of an abnormal Descemet's membrane as a pathological posterior collagenous layer (PCL) with a small or absent posterior non-banded zone.^{1,2}

The exact cause of both FECD and PPCD is still unknown, although both are thought to be the result of a disorder of neural crest