Sir,
Self-sealing sclerotomies in pars-plana vitrectomy: a prospective evaluation of peroperative complications

The use of sutureless self-sealing sclerotomy sites in pars plana-vitrectomy was first described by Chen in 1996.¹ We present the results of 296 consecutive primary vitrectomy cases over a period of 5 years (November 1997 to November 2002) prospectively evaluated for complications.

The same surgeon (RRG) carried out each procedure. The method used to create the sclerotomy sites was that originally described by Chen.¹ A proforma was completed by the surgeon at the end of each operation. Information recorded included the patient's age, indication for surgery, additional instrumentation used, any peroperative complications, and sclerotomy sites requiring sutures. Each sclerotomy site was checked at the end of the operation with a dry Visispear eye sponge (VISITEC) swab. If leakage of gas, air, oil, or balanced salt solution (BSS) was seen, it was sutured with a 6/0 vicryl or 8/0 monofilament nylon suture.

Inclusion criteria: All primary pars plana-vitrectomies

Exclusion criteria: (1) Redo operations. (2) Surgically enlarged sclerotomy sites made to remove intraocular foreign bodies (IOFB). (3) One severely traumatised eye, too soft to make scleral tunnels.

Results

In all, 296 eyes underwent primary vitrectomy through self-sealing sclerotomies in the 5-year period. There were 882 self-sealing sclerotomy sites.

Indications for surgery are given in Table 1, together with the suture rate.

Comment

The goal of self-sealing sclerotomy sites is to avoid the use of sutures to close sclerotomy sites at the end of vitreoretinal surgery. There is no need to use plugs peroperatively as the sclerotomy seals spontaneously each time an instrument is removed. It also allows constant running of the infusion with no turning on and off as instruments are removed, and thus intraocular pressure remains stable. Other reported advantages include a shortened operating time^{1,2} and prevention of irritation related to nonabsorbable sutures.³ However, a number of possible complications including wound leakage^{4,5} and vitreous and retinal incarceration⁵ have also been highlighted.

Our study found the 82.2% of sclerotomy sites were self-sealing. Wound leakage from sclerotomy sites occurs due to stretching of the scleral pocket or due to radial

tearing of the scleral flap. A number of factors may increase this leakage and hence the suture rate, for example, the use of multiple instruments.^{3,4} This was reflected in our results, comparing the indication for surgery and hence instrumentation with the number of sutures (see Table 1). Our study showed relatively few sutures in patients undergoing macular hole surgery. These operations tend to be shorter and rarely require peripheral retinal work. The use of the fragmatome (eg dropped nuclei) had a correspondingly high suture rate; it is possible that minor degrees of scleral shrinkage due to heat from the ultrasound probe may have contributed. The use of intravitreal scissors in patients with vitreous haemorrhage (complex diabetics) may account for the higher suture rate, of 53%, in this subgroup.

Van Kuljk *et al*² found that the leaks in their series occurred in patients younger than 40 years of age. Our study found a similar age difference.

In our series there were eight cases (2.7%) of the infusion port initially being under the retina. Sutureless sclerotomy techniques necessitate the infusion cannula passing through a longer, more oblique scleral tunnel. This may increase the likelihood of the infusion cannula initially failing to enter the vitreous cavity. Direct damage to the crystalline lens during vitreous surgery using direct incision ports has been reported to occur in less than 1% of cases.⁶ In our series the lens was touched in seven (2.4%) cases. However, all seven cases were due to the various intraocular instruments used during the procedure and were not directly related to the formation of the sclerotomy sites. Only two required lens removal during surgery. New peripheral retinal tears have been reported to occur in 2–8% of cases using ports made by direct incision.⁷ We found a rate of 1.35% (Table 2).

Van Kuljk *et al*² and Kwok *et al*⁸ have proposed modifications of Chen's original technique, which appears to reduce the suture rate further in their small series. It is possible that such modifications might reduce our suture rate.

Table 1 Indication for vitrectomy and suture rate

Indication for vitrectomy	No. of eyes (%)	Suture rate (%) (No. of sutures/ no. of sclerotomy sites)
Retinal detachment	107 (36.1)	18.7 (60/321)
Macular hole	61 (20.6)	9.3 (17/183)
Vitreous haemorrhage	53 (17.9)	23.3 (37/159)
Macular pucker	30 (10.1)	13.3 (12/90)
Dropped nucleus	23 (7.8)	28.9 (20/69)
Intraocular foreign body	6 (2)	8.3 (1/12)

In all, 157 sclerotomy sites required sutures at the end of surgery due to leak, an overall suture rate of 17.8%.

Table 2 Complication rates

	No.	Percentage of total no. of eyes operated
Retinal incarceration	0	0
Retinal tears at entry site	4	1.4
Iatrogenic retinal dialysis	0	0
Infusion initially under retina	8	2.7
Lens touch	7	2.4
Endophthalmitis	0	0
Conjunctival draining blebs	0	0

In all, 8% of patients were younger than 40 years but had the highest suture rate, 33.3%; 43% were aged 41–69 years with a rate of 19.3%. The remainder were over 70 years, with the lowest suture rate of 14.9%.

To our knowledge, this is the largest reported series of self-sealing sclerotomies in primary vitrectomy. We have not found a high incidence of complications. The indication for surgery appears to be directly related to the incidence of sclerotomies requiring sutures.

Sutureless sclerotomies are simple to perform, save operative time, and reduce the risk of perioperative hypotony. We therefore recommend learning and persevering with this technique.

References

- Chen JC. Sutureless pars plana vitrectomy through self-sealing sclerotomies. *Arch Ophthalmol* 1996; **114**: 1273–1275.
- Van Kuljk FJGM, Uwaydat S, Godley BF. Self-sealing sclerotomies in pars plana vitrectomy. *Retina* 2001; **21**(5): 547–550.
- Korobelnik JF, Hannouche D, Cochereau I, Hoang-Xuan T. Self-sealing sclerotomies in pars plana vitrectomy. *J Fr Ophthalmol* 1997; **20**(10): 779–784.
- Milibak T, Suveges I. Complications of sutureless pars plana vitrectomy through self-sealing sclerotomies. *Arch Ophthalmol* 1998; **116**: 119.
- Jackson T. Modified sutureless sclerotomies in pars plana vitrectomy. *Am J Ophthalmol* 2000; **129**: 116–117.
- Lehmer JM, Lewis H. Complications of vitreoretinal surgery. In: Charlton JF, Weinstein GW (eds) *Ophthalmic Surgery Complications: Prevention and Management*. JB Lippincott Company: Philadelphia, 1995, pp 215–251.
- Stern WH. Complications of vitrectomy. *Int Ophthalmol Clin* 1992; **32**: 205–212.
- Kwok AKH, Tham CCY, Lam DSC, Chen JC. Modified sutureless sclerotomies in pars plana vitrectomy. *Am J Ophthalmol* 1999; **127**: 731–733.

A Misra and RR Goble

Department of Ophthalmology, Ipswich Hospital
Heath Road, Ipswich, Suffolk IP4 5PD, UK

Correspondence: RR Goble
Tel: +44 1473 703 504

Fax: +44 1473 703 528

E-mail: richard.goble@ipswichhospital.nhs.uk

Eye (2004) **18**, 747–748. doi:10.1038/sj.eye.6700737

Published online 9 January 2004

Sir,

Extrafoveal seafan neovascularization associated with unilateral Recurrent retinal capillary haemangiomas: a known association or a mere coincidence

To report an unusual case of a 30-year-old Caucasian male presenting with left unilateral retinal capillary haemangioma who developed an inferior extrafoveal haemangioma in the form of seafan neovascularization and superior extrafoveal posterior pole angioma in addition to retinal capillary haemangioma elsewhere.

Case report

A 23-year-old white man was referred in June 1995 by an optician for evaluation of floaters in the left eye. The patient's ocular history was unremarkable except for the left persistent mild floaters of about 9 months duration. The patient was employed in an office with a negative medical history except for the frequency of urine with dysuria, as well as with a past history of plastic surgery on the nose and tonsillectomy. His routine urinalysis was showing protein +2, WBC 10, RBC 30, and his blood pressure was 120/80 mmHg.

Unaided visual acuity was 6/4 in the right unaffected eye and 6/6 in the left affected eye. His intraocular pressure in both eyes was normal. The external and, slit-lamp examination for the right eye was normal, but the left-eye examination revealed a few small old pigmented keratic precipitates with anterior chamber cells +1. The right fundus examination was unremarkable; however, the left fundus examination revealed vitreous cells +2, inferior large size, pre-equatorial haemangioma with a dilated feeder artery, and a dilated, engorged, tortuous draining vein, inferior exudative retinal detachment extending to the inferior vascular arcade (Figure 1b).

The patient received his first triple freeze–thaw cryotherapy to the inferior, pre-equatorial haemangioma on 31.08.1995, followed by a focal argon laser around the same haemangioma on 22.11.1995, and two subsequent, final sessions of triple freeze–thaw cryotherapy to the same eye on 27.09.1996 and 09.04.1998. He was last reviewed at the eye clinic on 30.08.2000; the right-eye examination was unremarkable as before, and the left-eye examination revealed a sclerotic feeder arterial wall