LETTERS TO THE EDITOR

Sir,

In the light of McAllister and Watts' recent paper[1] we report our series of holmium laser sclerostomies (HLS) which illustrates some important points concerning the procedure, its complications and their interrelation.

Our 18 patients comprised 15 with chronic open angle glaucoma (COAG), 2 with aniridia and 1 with glaucoma secondary to chronic uveitis. Only the last case had undergone previous ocular surgery in the operated eye (trabeculectomy).

All patients underwent HLS using the technique (mean power 7.0 J, range 21.6–16.1 J) initially described by Hoskins *et al*.[2] Patients were treated with g. pilocarpine 2% 1 hour prior to surgery and g. pilocarpine 2% and g. prednisolone 0.5% three times daily for 1 month postoperatively. Follow-up visits were carried out on the day after surgery, then at 4 days, 1 month and 3 months. Follow-up has continued for a mean of 14 months (range 7–24 months) to date.

Control of intraocular pressure (<21 mmHg) was achieved in 9 (60%) of the 15 cases of COAG, 1 of which required one topical medication. The 6 remaining cases of COAG subsequently underwent successful trabeculectomy. The other 3 cases all failed and subsequent filtering surgery was successful in only 1 of them.

Significant complications occurred in 6 cases as follows:

1. *Iris plugging* of the sclerostomy occurred in 4 cases, 1 of which recurred following treatment. Plugging was successfully reversed by argon blue–green laser in all cases initially, but could not be reversed the second time in the recurrent case using either argon blue–green or Q-switched Nd:YAG laser.
2. *Primary failure* of the procedure to produce a functioning fistula occurred in 2 cases, 1 of which was abandoned because of the appearance of gross corneal striation.
3. *Corneal striae* occurred to some extent in all cases but was severe in 2 cases. In 1 case the procedure was abandoned prior to completion of a patent fistula. The other case was complicated by gross corneal astigmatism (see below).
4. *Corneal astigmatism* occurred in 1 case. The patient developed severe striation of the cornea during the procedure, though a patent fistula was established. Initially, there were 9 dioptres of astigmatism and 18 months later this had only reduced to 5.5 dioptres.

In our experience, the outcome of the procedure and type of complications encountered are dependent upon the orientation of the sclerostomy. A posterior sclerostomy close to the iris root tends to be complicated by iris plugging. A more anteriorly directed sclerostomy requires more laser power to produce patency, as the cornea is traversed obliquely, and may be complicated by primary failure to produce a functioning fistula and corneal striae with consequent corneal astigmatism.

McAllister and Watts[1] suggest that appropriate orientation of the sclerostomy can be attained by pointing the aiming beam at the centre of the anterior chamber. In truth, the orientation resulting from this manoeuvre varies with AC depth (ACD), a progressively more posterior sclerostomy being produced with increasing ACD. The procedure is neither as simple nor as consistent as has previously been described.

We doubt the advisability of using pilocarpine at any stage before or after the procedure as it shallows the anterior chamber and, we believe, increases the risk of iris plugging. Circumstantial evidence that ACD is an important factor in iris plugging was provided by Hoskins *et al*.[2] who observed that plugging was rarely encountered in aphakic or pseudophakic eyes.

McAllister and Watts[1] state that '[HLS] shows promise as an alternative to trabeculectomy' and that 'a longer follow-up is required to prove its superiority over or equality with other standard filtering procedures'. However, their results, supported by those of both Hoskins *et al*. and ourselves, indicate that HLS is considerably inferior to conventional trabeculectomy which successfully lowers intraocular pressure in the long term in 90% of cases without additional medication.[3] In the 1960s, Cairns[4] developed conventional trabeculectomy to overcome some of the complications associated with the full-thickness fistula. Its re-emergence in a new technical guise associated with a 30–40% failure rate surely has little to commend it.

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Sir,

We read with interest the article by Kirkpatrick *et al.*[1] who found that corneal abrasions healed more quickly without the use of an eye pad. In their study, the method used to approximate the area of the abrasion was not stated, nor the error that such an approximation would introduce. It was not clear whether the padded and unpadded groups had equivalent pain scores at presentation. This knowledge would have allowed comparison of the relative pain scores between the two groups on successive days, rather than just the rate of pain diminution.

We conducted a similar contemporaneous study to evaluate the use of padding the eye for the treatment of corneal abrasions. We randomly allocated 40 patients with corneal abrasions into two groups, one treated with, and the other without, firm padding of the eye, in addition to guttae cyclopentolate 1% and oculentum chloramphenicol 1%. A record was kept of the number of paracetamol tablets (500 mg) required. To avoid bias from lateralisation, we used a vertical visual analogue scale for the daily assessment of pain. The location of the corneal abrasion was recorded as either predominantly peripheral or central, and the size of the abrasion was assessed by recording the major and minor axes of the defect, to the nearest millimetre, using the gated beam of a slit lamp biomicroscope.

In our study, the two groups were comparable in the age and sex distribution ($p>0.3$ respectively); in the location of the corneal abrasion ($p = 0.63$); in the pain score at presentation ($p = 0.22$); and in the dimensions of the abrasion at presentation ($p>0.4$). There was no significant difference, as determined by measurement of maximum or minimum length, between our groups at presentation ($p = 0.58$ and $p = 0.43$ respectively), or on days 1 or 2 ($p>0.4$) (Table I), by which stage nearly all of the abrasions had healed. Also, there was no significant difference in the pain score between the groups on days 1 ($p = 0.44$) or 2 ($p = 0.89$). There was a significant decrease in the pain score for both groups on days 1 ($p = 0.0009$ and $p = 0.0002$) and 2 ($p = 0.0009$ and $p = 0.0038$), similar to the finding of Kirkpatrick *et al.* The number of patients taking paracetamol and the number of paracetamol taken were similar in both groups ($p>0.2$ and $p>0.8$ respectively [Mann–Whitney U-tests]). Overall there was a significant correlation between the pain score and the number of paracetamol tablets taken for both groups on days 0, 1 and 2 ($0.17<r^2<0.85$; $0.0001<p<0.05$); and on day 1 between the size of the major and minor diameters of the abrasion and the pain score (unpadded: $r^2 = 0.18$, $p = 0.03$ and $r^2 = 0.18$, $p = 0.02$; padded: $r^2 = 0.7$, $p = 0.001$ and $r^2 = 0.5$, $p = 0.04$ [Pearson's correlation]).

The results of our study show that padding of the eye, in addition to the use of a topical antimicrobial and cycloplegic agent, do not affect patient comfort, nor re-epithelialisation. As opposed to Kirkpatrick *et al.*, we did not find that padding the eye decreased healing, rather that it had no effect on healing. Pain, as represented by the number of analgesic tablets taken and visual analogue score, is not influenced by padding of the eye. We agree, therefore, that the use of a topical antimicrobial and cycloplegic agent appears to be adequate for the treatment of simple corneal abrasions. Although there is no indication for padding the eye for the treatment of simple corneal abrasions, conversely, there is no contraindication to its use unless an infection is suspected.[2] It is important to be aware that in both our study and that of Kirkpatrick *et al.* there were only 20 unpaired control cases. If one extrapolates from both studies that approximately 75% (30/40 our study) of abrasions treated with a pad heal by day 2, then to show a 90% healing rate, a power calculation predicts that a sample size of at least 140 controls would be required (ARCUS statistical software, I. Buchan, Liverpool).

Table I. Comparison of padded and unpadded eyes

	No pad			Padded		
	Day 0	Day 1	Day 2	Day 0	Day 1	Day 2
Minor axis (mm)	1.5 (1.73)	0.75 (0.64)	0 (0.12)	1.6 (2.11)	0.5 (0.87)	0 (0.39)
Major axis (mm)	2.25 (2.51)	1.0 (1.12)	0 (0.23)	2.5 (3.06)	1.0 (1.65)	0 (0.56)
Pain: visual analogue (cm)	5.15 (5.15)	1.4 (2.29)	0.1 (0.64)	7.5 (6.35)	2.5 (3.17)	0.2 (0.74)
Analgesia (no. of tablets)	0 (0.53)	0 (1.10)	0 (0.35)	0 (1.67)	0 (2.33)	0 (1.89)

Values are the median (mean).
Major and minor axes were measured in millimetres at the slit lamp biomicroscope. Pain was assessed on a 10 cm vertical visual analogue scale. Analgesia was recorded as the number of paracetamol tablets ingested.