

Fig. 4. Proposed mechanism for retinal angiogenesis by accumulation of GMP.

sensitivity and blurred vision.³ This is attributed to inhibition of PDE6, which is involved with the phototransduction process in photoreceptor outer segments. Electrophysiological studies have demonstrated significant decreases in a- and b-wave amplitudes 1 h following a 100 mg dose of Sildenafil in healthy subjects.⁴ The effect resolved 6 h later on repeat testing.

Cardiovascular effects of sildenafil have been investigated extensively following reports of a number of cardiovascular-related deaths in the United States.⁵ A systematic review evaluated the safety profile of sildenafil following its use in over 4000 patients for over 6 months.⁶ However, there have been no published studies regarding the effects of sildenafil on animal or human subjects concerning diabetic retinopathy. Both the manufacturer (Pfizer) and the Drug Information Service were contacted and they confirm that there have been no reports of any similar cases to date.

In addition to its effects on smooth muscle relaxation, the NO/cGMP pathway is directly implicated in angiogenesis. Vascular endothelial growth factor (VEGF), a growth factor implicated in retinal neovascularisation, evokes a proliferative response on cultured microvascular endothelium of coronary post-capillary venules *in vitro*.⁷ This endothelial cell proliferative effect is reduced by pretreatment with NO synthase inhibitors, which reduce NO production. We suggest that the accumulation of cGMP, due to the inhibition of PDE5, may also exert a similar proliferative effect on the retinal post-capillary venules, stimulating the neovascularisation seen in proliferative diabetic retinopathy (Fig. 4).

One could argue that since the patient was an insulindependent diabetic for many years, having developed significant vascular complications in the form of a sixth nerve palsy and impotence, the development of proliferative diabetic retinopathy may simply be a reflection of the natural progression of his underlying disease. On the other hand, sildenafil is a potent vasoactive drug and diabetes fundamentally a vascular disease. Is it purely coincidence that such a dramatic deterioration in diabetic retinopathy should occur in the few months following commencement of sildenafil? We suggest keeping an open mind regarding sildenafil and proliferative diabetic retinopathy, and stress the need for a detailed and accurate drug history in all cases.

References

- 1. Sildenafil for erectile dysfunction. Drug Ther Bull 1998;36(11).
- 2. Marmor MR. Sildenafil (Viagra) and ophthalmology [editorial]. Arch Ophthalmol 1999;117:518–9.
- 3. Sildenafil. Summary of drug characteristics, UK and Ireland. Pfizer Limited, September 1998.
- Vobig MA, Klotz T, Staak M, Bartz-Schmidt KU, Engelmann U, Walter P. Retinal side-effects of sildenafil. Lancet 1999;353:375.
- Kloner RA, Zusman RM. Cardiovascular effects of sildenafil citrate and recommendations for its use. Am J Cardiol 1999;84:N11–7.
- Morales A, Gingell C, Collins M, Wicker PA, Osterloh IH. Clinical safety of oral sildenafil (Viagra) in the treatment of erectile dysfunction. Int J Impot Res 1998;10:69–74.
- Morbidelli L, Chang CH, Douglas JG, Granger HJ, Ledda F, Ziche M. Nitric oxide mediates mitogenic effect of VEGF on coronary venular endothelium. Am J Physiol 1996;270:H411–5.

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Sir,

A new method of temporary tarsorrhaphy

Temporary tarsorrhaphy has been in use for many years as a method of coping with transient exposure problems of the cornea or persistent epithelial defects. The standard temporary tarshorrhaphy was performed by passing a silk suture through the lid margins and tying it over a bolster, but this has been replaced by the use of a monofilament nylon suture with or without a silicone button. The latter has substantially reduced the inflammatory reaction in the lid, but the opening and closing of the suture is still a traumatic procedure for the patient. A variation whereby tubes are sewn to the eyelid skin and the suture passed through the lumen of the tubes was described in 1993 by Rapoza et al.¹ but is still an invasive procedure demanding local anaesthesia. The use of a cyanoacrylate to glue the lashes or lid margins together, published in 1991 by Eric et al.² is effective, but does not allow a good examination of the cornea. The injection of botulinum toxin A to induce a protective ptosis in corneal disease, advocated in 1988 by Kirkness *et al.*,³ has not been widely adopted as the ptosis is unpredictable and the toxin is expensive.

Case report

We describe a simple and inexpensive way of performing a temporary tarsorrhaphy which does not require local anaesthesia or a skin suture, and allows repeated opening of the tarsorrhaphy for examination of the eye without causing any discomfort to the patient.

A cable clip of the type used to nail telephone wires to the wall is cut in half, and the part containing the hole for the nail trimmed to form a flat surface (Fig. 1). Using household cyanoacrylate (Super Glue) the plastic beads thus formed are stuck to the skin of the lids just above and below the lashes. A thread passed through the holes is tied with a double throw then with a bow. This can easily be opened at any time and retied after the







Fig. 1. (a) Cable clip. (b) Cable clip after cutting. (c) Cable clip bead after trimming.



Fig. 2. Plastic beads stuck to the lids, with silk thread through the holes.

examination without causing the patient any distress (Figs. 2, 3). The plastic bead stays in position for between 2 and 3 days and then detaches, probably due to desquamation, but it can be quickly and easily cleaned and restuck in position as the underlying skin remains unharmed and unchanged.

The advantages of the procedure are that the glue does not run into the eye, the suture does not cheesewire into the skin, no surgical procedure is involved and the patient experiences no discomfort. This new temporary tarsorrhaphy has been used successfully both in the clinic and at the bedside of neurologically handicapped patients, who expressed their preference for this procedure.

References

- 1. Rapoza PA, Harrison DA, Bussa JJ, Prestowitz WF, Dortzbach RK. Temporary sutured tube-tarsorrhaphy: reversible eyelid closure technique. Ophthalmic Surg 1993;24:328–30.
- Donnenfeld ED, Perry HD, Nelson DB. Cyanoacrylate temporary tarsorrhaphy in the management of corneal epithelial defects. Ophthalmic Surg 1991;22:591–3.
- Kirkness CM, Adams GGW, Dilly PN, Lee JP. Botulinum toxin A-induced protective ptosis in corneal disease. Ophthalmology 1988;95:473–80.

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Fig. 3. Temporary tarsorrhaphy after tying the suture.