

laboratory analysis showed that econazole and miconazole had identical minimal inhibitory concentrations (0.25 mg/ml), and as econazole is less toxic to corneal epithelium when used long-term,<sup>13</sup> it was our agent of choice.

If possible, pharmacological treatment should be combined with debridement and removal of necrotic tissue as this speeds recovery and improves final outcome.<sup>3</sup> Antifungal treatment needs to be continued in the long term after the infection has clinically resolved as fungal hyphae can persist in tissue several months after obtaining negative microbiology swabs.<sup>14</sup>

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Sir,

#### Conservative management of double penetrating ocular injuries

Penetrating eye injuries can result in severe visual loss.<sup>1</sup> Double penetrating (perforating) injuries represent a separate group which generally have a poorer prognosis.<sup>2-4</sup> Various surgical options are available to deal with perforating eye injuries. Beneficial effects of vitrectomy in the management of perforating eye injuries have been reported,<sup>4</sup> and scleral buckling<sup>5,6</sup> procedures with or without intravitreal gas injection also have a role in the management of perforating eye injuries. We present two cases of double penetrating eye injuries caused by slender sharp-tipped objects which were successfully managed conservatively.

#### Case reports

**Case 1.** A 15-year-old girl presented with a 1 day history of being struck in the left eye by a dart. Immediately after the injury the dart was pulled out. On presentation visual acuity was 6/9 unaided in the left eye. A 2 mm corneal puncture wound approximately 2 mm from the limbus was noted. The anterior chamber was shallow with a wick of vitreous incarcerated in the corneal wound. A laceration of the iris sphincter at the 8 o'clock position was present. The lens was clear. There was vitreous and retinal haemorrhage nasal to the optic disc and a sector of retinal oedema nasal to the retinal haemorrhage (Fig. 1a). The haemorrhage and oedema were caused by direct transection of a retinal arteriole at the retinal impact site; the posterior exit wound was approximately 1 disc diameter in size. She underwent primary repair of the corneal wound with interrupted 10/0 nylon sutures. The anterior chamber was deepened with viscoelastic and the vitreous wick abscised. She was treated with oral cefuroxime for 1 week. No vitreoretinal surgery was undertaken. On review a week later, the eye was quiet and the lens remained clear.

As the intravitreal blood cleared vitreous incarceration into the posterior exit wound became obvious. The retinal oedema secondary to arteriolar occlusion resolved after 2 months and pigmentary scarring around the posterior exit site gradually developed without any retinal elevation. On review 6 months following the initial injury her unaided visual acuity was 6/5. The lens was clear and the posterior hyaloid and retina remained attached with a mature pigmented scar tissue around the posterior exit wound. There was no evidence of retinal neovascularisation (Fig. 1b). The vitreous incarceration remained unchanged. Visual fields as tested on computerised visual field analyser were normal.

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(a)



(b)

**Fig. 1.** Case 1. (a) Fundus 1 day after injury showing the posterior exit wound with preretinal haemorrhage due to transected retinal vessels at the impact site. (b) Spontaneous pigment reaction around the exit wound 6 months following the injury.

**Case 2.** A 37-year-old man with myopia of  $-8.00$  dioptres in both eyes underwent nasal valve suspension under general anaesthesia (a procedure performed to relieve nasal airway obstruction by anchoring the nasal mucosa to the inferior orbital margin by passing a subcutaneous suture<sup>8</sup>). During the operation he sustained double penetrating injuries to the left eye with a Keith needle<sup>8</sup> (a long straight needle) which were not recognised at the time of surgery. On the first post-operative day he complained of blurred vision in the left eye and was found to have hand movements visual acuity.

His anterior segment was found to be normal without any evidence of subconjunctival haemorrhages. Intraocular pressures were 14 and 15 mmHg in the right and left eyes respectively. The view of the central retina was obscured by a vitreous haemorrhage and the peripheral retina was attached. The lens was clear. No antibiotics were prescribed.

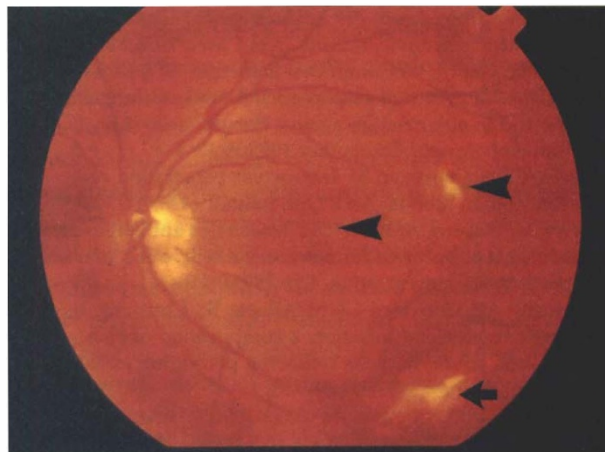
The vitreous haemorrhage cleared over the following 2 weeks and four small puncture wounds involving the choroid and retina were identified on indirect ophthalmoscopy: two entry wounds were identified at the 7 and 8 o'clock positions approximately halfway between the pars plana and equator. There were two exit wounds at the posterior pole, one of which involved the fovea (Fig. 2). The patient was managed without any ophthalmic surgical intervention.

Seven months after the injury his visual acuity was 6/60 (eccentric fixation). The anterior segment was normal and the lens remained clear. There was minimal residual vitreous blood inferiorly with evidence of vitreous incarceration into the entry wound at the 7 o'clock position. The posterior hyaloid had detached but the retina remained attached with no evidence of subretinal fluid accumulation around the entry or exit wounds.

#### Comment

In general penetrating posterior segment ocular trauma will require vitreoretinal surgical intervention to relieve vitreous traction, repair retinal detachment, clear an opaque vitreous, remove retained intraocular foreign bodies, remove ruptured lens or manage acute endophthalmitis.<sup>2-4</sup> Double penetrating (perforating) injuries represent a subgroup with a particularly poor outcome.<sup>2-4</sup> In one case-control series a beneficial effect of vitrectomy in severe double penetrating eye injuries was demonstrated.<sup>4</sup> The incidence of retinal detachment following vitrectomy carried out for double perforating injury can be as high as 68%<sup>7</sup> compared with 32% following vitrectomy in all penetrating injuries.<sup>2</sup> Double penetrating eye injuries due to long, slender but sharp-tipped objects such as darts<sup>5,7</sup> and nails<sup>6</sup> have been treated with conventional techniques such as scleral buckling, cryotherapy and intravitreal gas injection.

In our patients there was no immediate indication for surgical intervention (for example, evidence of endophthalmitis or progressive retinal detachment) and



**Fig. 2.** Case 2. Fundus showing the posterior exit sites (arrowheads) and vitreous condensation (arrow).

we elected to manage these patients conservatively. In such cases prophylactic laser retinopexy or transscleral retinal cryotherapy around the wounds may be unnecessary, as there is often adequate spontaneous chorioretinal scarring to seal the entry and exit wounds. It is notable that case 1 had retinal oedema secondary to retinal arterial occlusion and that this subsequently resolved without any significant sequelae (visual field testing was normal).

The ocular injuries were caused by slender, sharp-tipped objects leading to minimal contusional tissue disruption, allowing conservative management. In this respect these injuries are analogous to the penetrating injuries caused by sharp needles as a complication of retrobulbar or peribulbar anaesthesia.<sup>9,10</sup> It is notable that such injuries (a) are often not complicated by retinal detachment and (b) can have a good visual outcome if there is no foveal injury (or injection of local anaesthetic into the eye). However, if foveal injury has occurred the visual prognosis is poor.<sup>11</sup> Moreover, sharp penetrating chorioretinal injuries may demonstrate an ordered wound healing response without overt epiretinal or vitreous membrane formation notwithstanding the presence of significant vitreous haemorrhage. These potential outcomes allow carefully selected cases of sharp penetrating or perforating injuries to be managed by observation without initial vitreoretinal intervention.

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Sir,

#### Herpes zoster ophthalmicus presenting as contralateral disc swelling

Optic disc involvement is a rare complication of herpes zoster ophthalmicus (HZO) occurring typically on the ipsilateral side.<sup>1</sup> We present a case where the onset of HZO was heralded with contralateral optic disc swelling. To our knowledge, this has not been reported previously in the literature.

#### Case report

A 70-year-old man presented with a 1 week history of intermittent blurred vision in his right eye associated with a ring-shaped floater. He also had a 3–4 day history of a left-sided headache which he described as a piercing pain particularly affecting his temple. There was no jaw claudication, systemic symptoms or other ocular history of note. Relevant medical history included myocardial infarction 11 years previously and hyperlipidaemia. Medications included daily aspirin and allopurinol. The patient was an ex-smoker of 10 years.

On examination, visual acuity (VA) was 6/12 in the right eye improving to 6/9<sup>-1</sup> with pinhole and 6/6 in the left eye. Anterior segment examination was normal as were the intraocular pressures and there was no relative afferent pupillary defect. Dilated fundal examination revealed a right swollen optic disc with peripapillary haemorrhages (Fig. 1).

The right macula was normal and examination of the left fundus was unremarkable. There was no temporal tenderness and the patient had bilateral pulsatile temporal arteries. Neurological and systemic

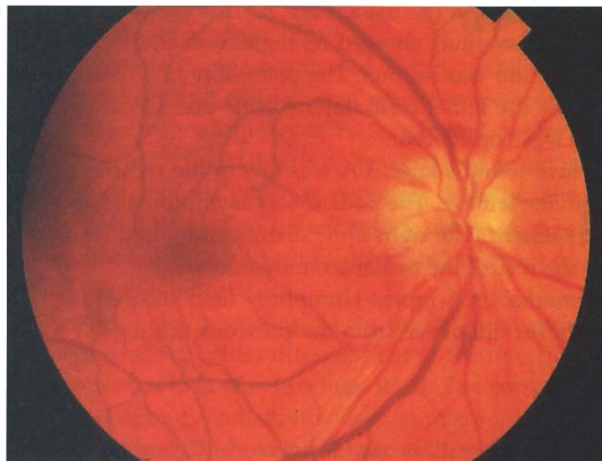


Fig. 1. Fundus photograph of the right eye showing a right swollen optic disc with peripapillary haemorrhages.