

Sir,

Accidental self-inflicted optic nerve head avulsion
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Optic nerve avulsion is characterized by traumatic disinsertion of the nerve fibres from the globe at the level of the lamina cribrosa.¹ It is usually associated with significant trauma.^{2,3} Infrequently, it has been reported with relatively minor injuries.^{2–4} We report here a patient who presented with optic nerve avulsion following a seemingly trivial thumb injury.

Case report

A 30-year-old healthy male was struck in the right eye with his thumb during a practice session of Thai kick boxing. Following the injury, he described immediate 'darkening' of vision in the right eye with the appearance of floaters. On presentation to casualty 2 h later his visual acuity was perception of light in the right eye with inaccurate projection inferiorly, temporally and nasally. There was localized bruising of the lower lid (Figure 1). Slit-lamp biomicroscopy showed a small subconjunctival haemorrhage at 8 o'clock limbus (Figure 1). There was a microhyphaema with 3+ cells and flare in the anterior chamber. Intraocular pressures were 08 mmHg OD and 14 mmHg OS. There was a right relative afferent pupillary defect. Dilated fundoscopy showed partial avulsion of the optic nerve with retro displacement of the superior part of the optic disc. Bare sclera was apparent in the peripapillary region from 10 o'clock to 2 o'clock position (Figure 2). There was peripapillary haemorrhage, surrounding retinal oedema and

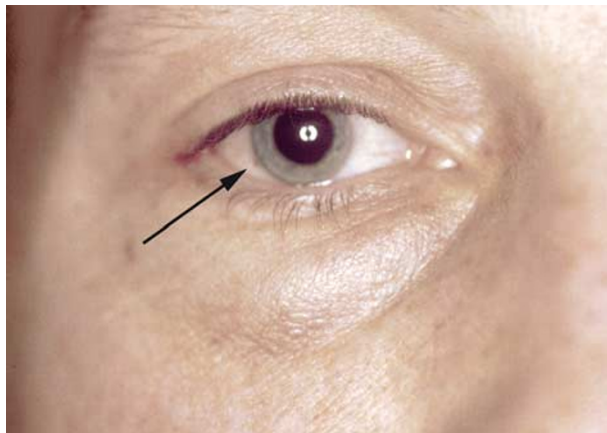


Figure 1 Localized lower lid bruise with subconjunctival haemorrhage at 8 o'clock limbus. Arrow indicates line of impact.

inferior vitreous haemorrhage. This progressed to a total vitreous haemorrhage by 2 weeks follow-up. CT scan of the brain and orbits did not show any evidence of optic nerve rupture. There was no bony injury.

Comment

Avulsion of the optic nerve is an infrequent traumatic event.^{4,5} It is usually associated with a decelerating injury of significant momentum.² The specific causes of injury are varied.¹ Motor vehicle and bicycle accidents are the most common followed by falls.² Sporting injuries have also been variously associated with optic nerve head avulsion, the commonest reported being basketball injuries.⁴ There exist isolated reports in the literature of optic nerve head avulsion following injuries sustained during water polo, skateboarding, snooker, and cricket.^{2,4} The mechanism of optic nerve avulsion depends on the type of injury. In cases of nonpenetrating trauma with a finger or other pointed object entering the orbit at an angle to the globe, the most likely mechanism is thought to be extreme rotation and forward displacement of the globe causing shearing of the optic nerve fibres.⁴ This happens most frequently at the lamina cribrosa as the loss of myelin and absence of supportive connective tissue septae make the axons particularly susceptible to damage in this location.^{4,5}

Our patient had optic nerve avulsion following seemingly trivial trauma to the eye from his thumb while practising with a punch bag. However, on further questioning it emerged that at the time of injury, he was hitting the punch bag with his elbow with his back close to a wall. On rebound, the punch bag caught his elbow and forced his forearm and extended thumb backwards into the orbit. The entire momentum of the punch bag was thus transmitted to the eye via the forearm and thumb. This could understandably lead to the kind of globe rotation and displacement associated with optic nerve head avulsion. The site of avulsion would depend on the site of impact and is thought to be opposite to it.⁴ It has been suggested that when the eye suffers relatively minor nonpenetrating injury from pointed objects such as fingers, poles, etc, these may on impact slide to either side and be thrust in the medial and lateral check ligament, resulting in a sudden rotation of the globe in the direction of the object.⁶ Our patient had a subconjunctival haemorrhage at 8 o'clock limbus with the lower lid bruising in line with it. If this represented the line of impact (Figure 1), it would lead to inferior rotation of the anterior aspect of the globe with stretching and tearing

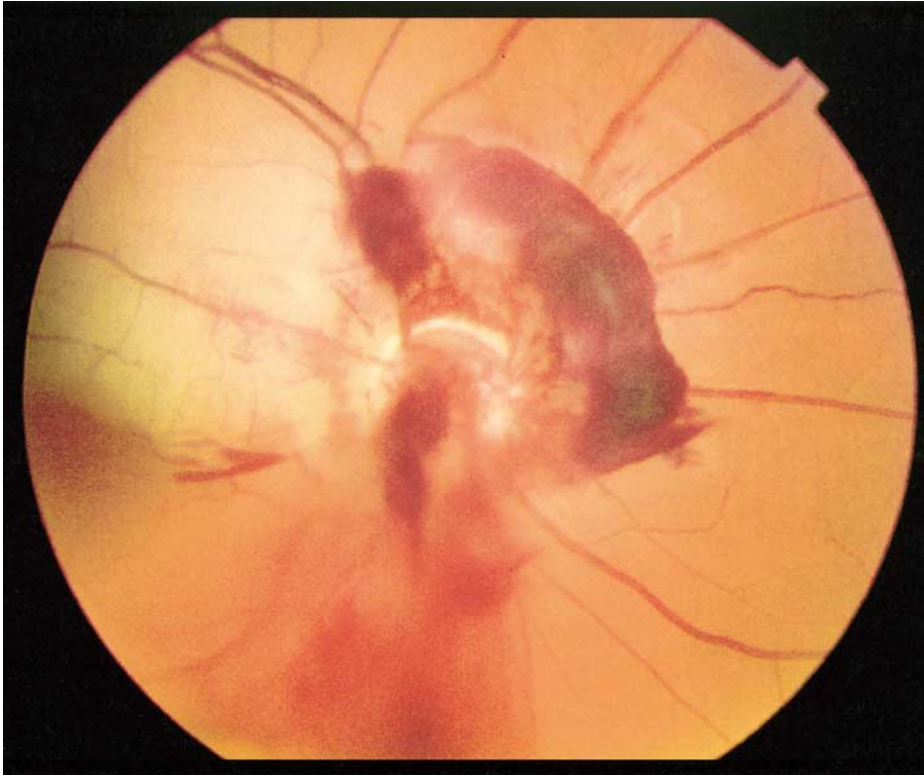


Figure 2 Colour fundus photograph showing superior optic nerve avulsion.

of the superior optic nerve, as was seen in this patient.

This was a case of optic nerve avulsion that could have been easily avoided with basic safety precautions. Use of boxing gloves (a mandatory requirement of the sport being practised) or protective eyewear would have prevented injury.

Physical sports such as kickboxing are rapidly gaining in popularity among youngsters and fitness seekers the world over. Although formal tournaments may be regulated with strict rules, practice sessions and informal play are often unregulated. This case highlights the potential for serious ocular trauma, if adequate safety measures are not observed at all times.

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