

Ocular trauma. Part 2: blunt injuries

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This month, we continue our discussion of ocular trauma with a look at two common types of blunt eye injuries.

Although the eye is well protected by its bony socket, it is subject to blunt trauma from external agents and vulnerable in many sports, especially squash, badminton and indoor cricket. In some games, rules have been modified in order to reduce the risk of injuries – for example, in some leagues of badminton, points cannot be scored if players are not wearing appropriate eye protection. Octopus straps are another frequent cause of blunt eye injuries.

The two most common injuries produced by blunt trauma are hyphaemas and blowout fractures; retinal damage is less common. The wide range of injuries following blunt trauma necessitate ophthalmological review in all cases.

Hyphaemas Presentations

An hyphaema occurs when there is bleeding in the anterior chamber of the eye (Figure 1). The bleeding may be visible without magnification (macroscopic) or on slit lamp examination only (microscopic).

Macroscopic hyphaemas are often classified with respect to the amount of blood in the anterior chamber. Most hyphaemas fill less than one-third of the anterior chamber (grade I), and the prognosis for vision after these injuries is usually good. Grade IV hyphaemas fill the anterior chamber (and are sometimes referred to as 'eight ball' hyphaemas because of their resemblance to the billiard ball), and generally have a poor prognosis for recovery of vision because of associated retinal damage, glaucoma and corneal bloodstaining. All hyphaemas are prone to rebleeding, with the greatest risk occurring in the first week after the injury.

Management

Hyphaemas are usually managed conservatively. All children and adults with hyphaemas classified as greater than grade I are usually admitted to hospital to ensure a period of reduced

physical activity. Aspirin is contraindicated because it may increase the risk of secondary haemorrhage. The affected eye should be covered with an eye shield, not a pad, to reduce the risk of further trauma. Padding is not required unless there is an associated corneal abrasion.

A cycloplegic agent such as homatropine 2% (Isopto Homatropine, Minims) or atropine 1% (Atropt, Minims) may be used along with a corticosteroid agent such as prednisolone 0.5% (Predsol Eye Drops, Minims) or dexamethasone (Maxidex) to treat any inflammatory changes in the affected eye. Patients are not usually restricted to bed, but strenuous physical activity should be avoided and they should be encouraged to sleep with the head elevated on two pillows. Daily examination is appropriate to look for secondary complications (such as an elevation of pressure in the eye) and to monitor the resolution of the hyphaema. The patient is usually discharged for review in the clinic or rooms when the hyphaema is no longer visible without magnification.

Rebleeding is usually accompanied by severe pain in the affected eye, and inspection usually shows evidence of fresh bright blood in the anterior chamber. All patients with a secondary haemorrhage should be seen by an ophthalmologist urgently and will require inpatient management.

Other consequences of blunt injuries that may accompany an hyphaema include dislocation of the crystalline lens (Figure 2), choroidal rupture (Figure 3) and retinal tears. It is recommended that all patients with hyphaemas be reviewed by an ophthalmologist because of the risk that these injuries may escape detection and have serious consequences for vision.

Blowout fractures Presentations

A blowout fracture is classically described when an object like a squash ball strikes the globe, forcing the orbital contents backwards. Fractures occur in the thinnest part of the orbital walls, medially into the ethmoid sinuses and inferiorly into the maxillary sinus.

In such cases, the eye should always be examined carefully because there are often associated injuries, such as hyphaemas or retinal contusion. Herniation of orbital contents through the fracture into the sinus is typical. Fractures of the orbital floor are often accompanied by paraesthesia of the upper gum on the affected side as a result of damage to the infraorbital nerve. There may be a restriction of elevation of the eye (Figure 4), and the eye may appear sunken (enophthalmos). The upward restriction of eye movement is manifest by the presence of vertical diplopia, which may be missed initially if a lot of eyelid swelling is present.

When suspected, a blowout fracture is best confirmed by CT scanning using bone windows in the coronal plane. The classic finding is disruption of the orbital floor with evidence of fluid

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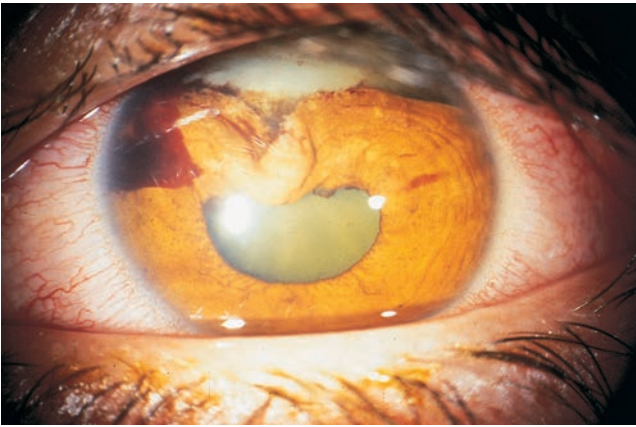


Figure 1. A slit lamp photograph of a blunt injury to the right eye producing an hyphaema and iridodialysis (tearing of the iris root).

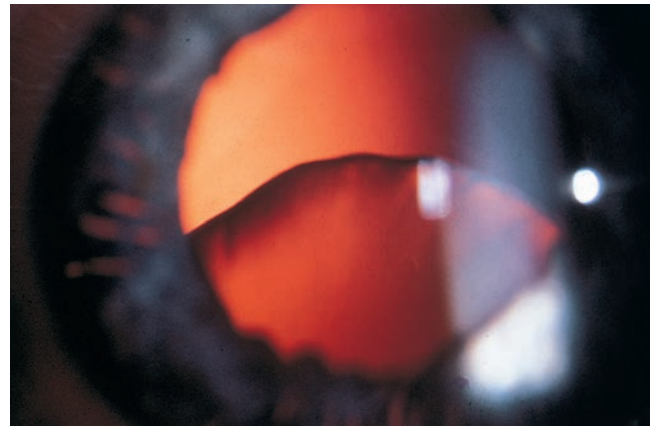


Figure 2. A slit lamp photograph showing inferior subluxation of the crystalline lens after trauma.



Figure 3. A crescent shaped choroidal tear involving the macula in the left eye of a patient who had been assaulted four weeks earlier.

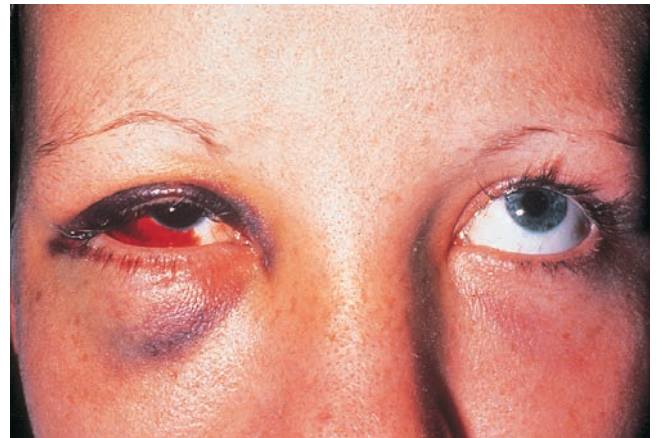


Figure 4. A patient with a right blowout fracture attempting to look upwards. Note the associated subconjunctival and periorbital bruising as well as the restricted elevation of the right eye compared with the left eye. The injury was sustained when playing squash.

in the antrum. Surgical emphysema is a frequent radiological finding.

Management

Blowout fractures are often managed conservatively in the first instance unless there is severe enophthalmos. It is not uncommon for the diplopia to resolve over the first week; however, persistent diplopia is an indication for surgical exploration of the orbital floor to release any entrapped tissue. Forcefully blowing the nose may lead to the development of surgical emphysema, and patients should be advised not to do this.

Patients are generally placed on a course of oral antibiotics covering sinus pathogens to reduce the risk of orbital cellulitis. Blowout fractures may be managed by either ophthalmologists

or plastic surgeons, but ophthalmological review is suggested in any case because of the risk of associated ocular damage.

Keypoints

- Hyphaemas and blowout fractures are the two most common blunt ocular injuries. Prompt recognition is important for a patient's wellbeing, and ophthalmological review is recommended in all cases.
- Protective eyewear is appropriate to reduce the risk of ocular trauma, including blunt injuries. MT

Next month, part 3 of this article will discuss chemical eye injuries.