

CASE REPORT

Ocular blunt trauma: loss of sight from an ice hockey injury

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A case of ocular blunt trauma is described in which a 17 year old male ice hockey player collided with an opponent during a game. The opponent's stick travelled under the patient's half face visor and struck his left eye causing hyphema, angle recession, lens subluxation, and choroidal rupture over the macula, permanently reducing his vision to counting fingers. Sequelae of ocular blunt trauma are discussed along with methods of injury prevention by addressing players' behaviour and safety equipment. This injury is unlikely to have occurred with properly used full face protection.

A 17 year old man presented to eye casualty with loss of vision in his left eye after an injury while playing ice hockey. He had collided with an opponent, and the force of impact had hyper-extended his neck. As this happened, his opponent's stick had travelled up under his half face visor and struck his left eye with force.

On examination his visual acuity was 6/5 in the right eye and counting fingers in the left eye. He had a 4 mm hyphema in the anterior chamber with angle recession, making examination of the posterior segment difficult, but the retina appeared to be flat. Intraocular pressure was 14 mm Hg in the right eye and 15 mm Hg in the left eye. He was started on guttae chloramphenicol, prednisolone 1%, and cyclopentolate 1% and confined to bed rest for two days to prevent further bleeding. He was followed closely as the hyphema resolved, and after 14 days there were very few blood cells left in the anterior chamber. At this stage, dilated pupil examination revealed a dislocated lens with an early posterior subcapsular cataract, and fundal examination showed a choroidal rupture crossing the macula (fig 1). Visual acuity was still only counting fingers in the left eye. This is unlikely to improve further.

DISCUSSION

This case demonstrates many of the sequelae of ocular blunt trauma. The impact causes a decrease in anteroposterior diameter and a simultaneous expansion at the equatorial plane associated with a short lived increase in intraocular pressure.¹ This impact is primarily absorbed by the lens-iris diaphragm and the vitreous base. However, damage can occur at a distant site such as the posterior pole, as happened in this injury.

The source of bleeding in a hyphema is the iris or ciliary body. Most traumatic hyphemas are innocuous and resolve spontaneously, as in this case. The suspensory ligaments of the lens are vulnerable to trauma, and, if they are broken, the lens can dislocate, either partially or completely into the vitreous. If this causes visual symptoms, it may need to be removed. Often, blunt trauma can also cause a cataract, which will require removal.

In the posterior segment, choroidal rupture can be devastating visually if it occurs over the macula or may cause visual loss later due to secondary choroidal neovascularisation.¹

Ice hockey is reputedly the fastest and most violent team sport. There are frequent collisions with other players, the side boards, the goal posts, sticks, and pucks. The head and neck are particularly vulnerable to injury.

A study of 38 ocular injuries to ice hockey players over a three year period showed that 16 required hospital admission and 12 required follow up for complications, one resulting in enucleation and another with a macula choroidal rupture similar to that in the patient described in this report.² In Canada, the incidence of eye injury dropped from 257 cases in 1974–75 to 124 cases in 1983–84 after standards of helmet and face protection were improved.³ The frequency of legal blindness decreased from 19% to 11%. None of the players injured in the 1983–84 period were wearing the new protective equipment, showing that, if full face masks are used correctly, eye injuries can be dramatically reduced.

There has been debate that, although a full face shield decreases the incidence of ocular, dental, and facial injuries compared with a half face shield, it may increase the risk of concussion and neck injuries because of more illegal play and referee leniency.⁴ However, subsequent studies showed this not to be the case and encouraged the use of the full face shield for all ice hockey players.^{5 6}

It is not just the use of protective equipment that can decrease injury but also eliminating dangerous play, such as raising the hockey stick above shoulder level. Sticks are often used as weapons and often the behaviour of the players is important in the mechanism of ocular injury.

However, this case shows clearly that a half face shield is not sufficient to protect the eye during ice hockey, leading directly to the loss of sight in this young man's left eye. This is a fact that has been well recognised in North America for many years, leading to legislation for full face protection. Perhaps this should also be enforced at all levels of ice hockey in Europe.

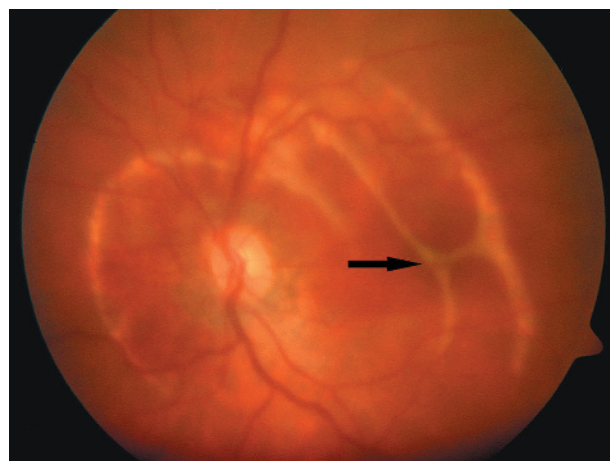


Figure 1 Choroidal rupture over the macula blurred because of traumatic hyphema and cataract. The arrow shows the macula. Permission has been obtained for publication of this figure.

What is already known on this topic

- Ice hockey is a fast, violent sport that can cause sight threatening injuries
- Half face protection is not sufficient to prevent blinding injury, but properly used full face protection can

What this study adds

- Blinding injury still occurs in the United Kingdom during ice hockey
- Full face protection during ice hockey should be mandatory in Europe

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Permission has been obtained for publication of figure 1

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COMMENTARY

The work of Pashby¹ has shown that protective visors can prevent eye injury in ice hockey. Much of the debate on full face versus half face visors revolves around the prevention of facial and dental injuries. There is clear evidence that wearing a full face visor reduces the risk of facial lacerations and dental injuries. Eye injuries are, thankfully, rare if either type of visor is used. However, loss of vision in an eye usually has greater occupational, social, and psychological implications for a player than either facial or dental injury. This paper reports a serious eye injury in a player wearing a half face visor. Assuming the player was using unmodified certified equipment, this case adds weight to the argument that full face visors should be made compulsory in ice hockey.

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COMMENTARY

This case report highlights the need for full face protection, which is certified by CSA or HECC, for all ice hockey players. It has been proved that eye and face injuries can, for all practical purposes, be eliminated by the full face shield. The half shield does not give sufficient protection from sticks or pucks that approach the eye from below. Playing hockey with no protection carries about a 7% risk of injury to the eye or face every playing season.

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