

## CASE REPORT

# Arrow Ocular Injury

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### ABSTRACT

Pediatric ocular trauma; though the number is small, can lead to a devastating lifetime impact due to its risk of amblyopia (if it occurs before the age of seven) and also loss of vision. We are reporting a case of a young 12-year-old-boy who was struck unintentionally by an arrow to the eye by another friend during sports activity. The arrow pierced the right eyebrow just below the orbital roof then perforated the globe from the superior orbit pointing downwards piercing the floor of the orbit fracturing the maxillary roof. Emergency scleral repair was done; however, there was no useful vision left. Arrow injury to the eye is a rare occurrence but leads to severe consequences given its high velocity and projectile in nature. The incidence is low and highly avoidable if precautionary measures are taken.

**Keywords:** Child, Lacerations, Orbital fractures, Hyphema, Athletic injuries

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### CASE REPORT

A 12-year-old boy was struck by an arrow into his right eye unintentionally by another friend during sports activity. He was not wearing any protective eye gear. There was pain, sudden loss of vision and bleeding. Since the arrow tip was sharp and clean, he managed to pull the arrow himself then was brought to the hospital immediately. On examination, the vision was seeing vague "light perception" (LP). There was a small laceration at the right eyebrow which represented the entry wound. The right eye was swollen, the globe was very soft, with subconjunctival hemorrhage, the cornea was intact but with total hyphema. No obvious laceration was seen at the anterior segment of the globe however severe nerve and retinal injury were suspected because of the arrow perforation and thus could not be repaired (Fig.1 & Fig.2). He was then sent for an urgent Computed Tomography Scan of the brain and orbit. The sagittal cut showed: the globe was irregular in shape mainly at the superior (entry wound) and inferior quadrant (exit wound). The orbital floor was fractured and the maxillary sinus was partially opaque most likely due to blood. (Fig.3) There was no retrobulbar hemorrhage seen. A diagnosis of right orbital globe perforation with orbital floor fracture was made. He was pushed to the emergency operating room for a complete examination and scleral toilet and suturing under general anesthesia.

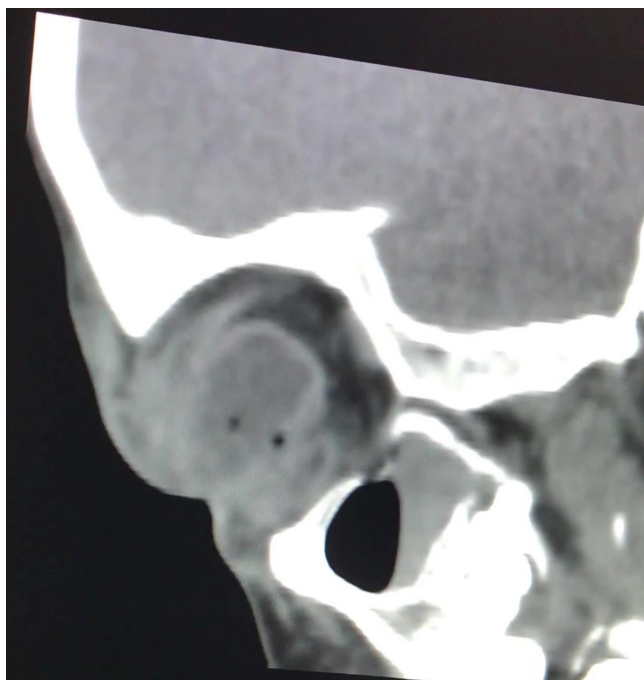


**Figure 1: Pencil-tip metal arrowhead. (10mm diameter)**



**Figure 2: The right eye at presentation. Prolapsed chemotic conjunctiva with hazy cornea and total hyphema**

Intraoperatively, there was a scleral laceration at the inferonasal aspect of the globe, at 5 o'clock position, 1mm from the limbus extending upward circumferentially reaching the superior rectus muscle (8mm from the limbus) just below the insertion with the belly of the muscle which was also macerated from the entrance of the arrowhead. The wound extended 8mm to the posterior diagonally. There was an exit wound at the inferior globe lateral to the inferior rectus muscle about



**Figure 3: The sagittal cut of CT-scan of the right orbit showed: the globe was irregular in shape mainly at the superior (entry wound) and interior quadrant (exit wound). The orbital floor was fractured and the maxillary sinus was partially opaque mostly likely due to blood**

6mm from the limbus measuring 4mm long. The vitreous prolapsed and the retina layer was severely macerated and thus was unable to be repaired. The scleral wound was sutured using 7.0 vicryl while the conjunctival layer was secured with 8.0 vicryl suture. The orbital fracture was treated conservatively.

Post-operatively, the vision was “No Light Perception” (NLP) given the severe retinal damage. The cornea was edematous while the anterior chamber was filled with total hyphema. The conjunctival tissue was chemotic and hemorrhagic. No fundus view was available.

### DISCUSSION

Ocular trauma represented about 11.2% of emergency operating room admissions in Scotland in 2011(1). The number seems small and the working-age group is was the most commonly affected. Pediatric ocular trauma incidence is was even smaller; however, its effect is was detrimental and lasts last a lifetime due to its risk of amblyopia (if it occurs before the age of seven) and also loss of vision. P.Desai et al, reported that the rate of ocular trauma requiring admission was 8.82% in age from 0 to 14-year-old in 2008-2009 and among that, around 46% of cases are were penetrating ocular injury. Most of the ocular trauma incidence occurs occurred at home (30.6%) followed by the workplace (20.4%). For other premises such as school, ocular trauma incidence is was 1%, the street is was 21.4% and sport or leisure facility is was 8.2% (1). In most studies, ocular trauma always has had a male preponderance, this is was most likely

because of their higher physical activity involvement (2). These traumas often associated with traumatic cataracts and even loss of vision.

Ocular injury with an arrow is not very common but is probably underreported. Lawan & Danjuma from Africa reported an arrow injury to the eyes of 2 two teenagers due to some tribal dispute. The injuries were so severe that both eyes ended up with evisceration (3). According to R.Saxena et al, bow and arrow consisted of 28.9% of pediatric ocular trauma in India (2). A paper by Sudarshan Kokhar et al from India also stated that bow and arrow cause the highest incidence of traumatic cataract in his retrospective series (4). In our case, the patient came with very minimal vision left and after surgery, there was given the arrow entry and exit wounds perforated the eye from top to the floor of the orbit, damaging most of the functional neural layers rendering it unsalvageable. Most of the arrow injury ended losing their functional vision. The injury in our case was highly avoidable if precautionary measures were taken, such as using protective eye gear. Kriz et al reported that the mandate for protective eyewear was associated with a reduced incidence of eye/orbital injuries in school sports (5). Therefore, it is important to educate the children the safety measures during sports and the adults should never leave the children out of sight at all moments as in this case the arrow would have cost patient, his life if he was not lucky.

### CONCLUSION

Perforated globe injury by an arrow is a rare type of sports injury that may lead to devastating damage to the eye and usually leads to loss of vision.

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