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Case Report

Managing a bullet inside the orbit in lieu of a rifle – A video demonstration

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ABSTRACT

Background: Bullet injuries to the orbit are rare occurrences in a civilian's life and are usually associated with severe ocular morbidity. The amount of damage inflicted by a bullet depends on various factors like the distance of the shooter from the victim, the speed of the bullet, the angle of impact, the site of damage, etc.
Case Report: The authors here report a case where a male teenager presented to the ophthalmology casualty with a history of gunshot injury to his left eye. A foreign body was noted to be lodged in his left orbit on radiological imaging causing vitreous haemorrhage and traumatic optic neuropathy. The foreign body was then surgically removed from the orbit. It was the bullet of a rifle 3.2 cm long.
Conclusion: Intraorbital foreign body management must be tailored according to their type and location as well as to the clinical characteristics of the patient.

1. Background

Violence is a major worldwide cause of mortality and morbidity, and firearms contribute a large part.[1,2] Bullet injuries to the orbit are a rare phenomenon. The amount of damage produced by a bullet mainly depends on the type of bullet, the distance from where it is shot, initial velocity, direct or indirect nature of the impact (ricochet) and the shooter's intention.[3,4]

2. Case Presentation

An 18-year-old male was brought to the eye emergency with complaints of sudden diminution of vision in the left eye for the past two days.(Figure 1 a) He gave a history of being shot with a gun in his left eye by a goon two days back, after which he was taken to a local hospital in his village where a primary repair of the wound was done, and he was referred to a higher centre for further management.

He was alert and conscious with normal vitals. On ocular examination, there was no perception of light in his left eye, while the right eye had 6/6 (Snellen's chart) best corrected visual acuity. There was a repaired wound in the medial aspect of the left orbit along with severe chemosis of both upper and lower eyelids. There was mild ocular movement limitation on the left side. On slit-lamp examination, the right eye had normal findings; however, in the left eye, there was a subconjunctival haemorrhage with a fixed dilated pupil. On indirect ophthalmoscopy, the right eye was within normal limits, whereas the left eye had a poor glow with vitreous haemorrhage. X-ray (anteroposterior and lateral views) of the orbit and the paranasal sinuses revealed a large radiopaque metallic foreign body in the left medial orbit.

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(Figure 11b) An ultrasonogram of the left eye revealed an intact globe with evidence of vitreous haemorrhage without any retinal detachment. CT scan revealed a metallic foreign body located in the medial orbit of the left side without any signs of fracture. A visual evoked potential revealed no response in the left eye.

The patient was diagnosed to have left eye retained intra-orbital foreign body with vitreous haemorrhage and traumatic optic neuropathy. He was explained the prognosis and immediately moved to the operation theatre. The pre-existing sutures were removed, the wound site was explored, the foreign body was found and removed. (Video is available: **https://youtu.be/QGyAAsTothE**) Bleeders were cauterized, localized exploration revealed the medial canthal tendon to be intact, the lacrimal sac was also unaffected, and the wound was closed in layers. The foreign body was a bullet, measuring 3.2cm X 0.5cm in dimension. (Figure 1c)

Intravenous antibiotics and oral steroids were administered post operatively. At 1week follow up he was doing fine; however, there was no gain in vision in his left eye. (Figure 1d)

Fig. 1: A: Clinical picture of the patient at presentation. B: X-ray orbit showing a well-defined radiopaque object in the left orbit. C: Picture of the removed bullet. 3.2cmX 0.5cm in dimensions. D: Clinical picture of the patient at 1week follow up.

3. Discussion

The presence of an intra-orbital foreign body should be suspected based on the nature of the accident and clinical findings. While organic foreign bodies like wood or vegetative matter have a different course of inflammation, metallic foreign bodies are relatively inert.[5–7] Radiology tools are helpful in investigating in either of the scenarios. In the case of an intra-orbital bullet, X-ray imaging usually reveals a radiopaque foreign body with a typical shape. Computed tomography (CT) scan aids in providing the exact position of the foreign body.[1]

The surgical extraction of a foreign body depends on its site, the technical facilities available, and the surgeon's experience. Endoscopic approach has also been described in the literature.[8] Lateral orbitotomy is considered the best approach for foreign bodies on the orbital floor.[1] At times the bullet may get fragmented or may lie near the apex, wherein depending upon the extent of damage and clinical scenario, the bullet or pellet can be left untouched.[9]

Even after a meticulous surgery, a person without any damage to the optic nerve may not gain vision due to an entity known as chorioretinitis sclopetaria. It is a specific, irreversible, post-traumatic sequelae from the lesions to the eyeball caused by the shock wave and energy released by the bullet at the time of entry in the orbit.[10] It is characterized by macular scarring and abnormal pigmentations.

In our case, we were unable to ascertain the presence of chorioretinitis sclopetaria due to the presence of vitreous haemorrhage.

4. Conclusion

Intra-orbital foreign bodies pose challenging diagnostic and therapeutic hurdles. Management of such cases must be customized according to their type and location and to the clinical features of the patient. This at times, calls for novelty in decision making and formulation of approach to procedures.

5. Conflict of Interest

The authors declare no potential conflicts of interest.

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