

Penetrating Orbital Injury with Retained Metallic Foreign Body

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Abstract

Penetrating orbital trauma with retained foreign body (FB) does not occur frequently but is an injury that is capable of causing blindness. Optimal management of patients with retained orbital FB requires timely identification and correct determination of the location of the FB in the orbit. The presence of an intraorbital FB should be suspected in every case of orbital trauma. Herein, a case of penetrating orbital injury with a retained metallic FB is reported and the need for appropriate trauma history, physical examination, and radiologic evaluation to minimise the chances of missed diagnosis is highlighted.

Keywords: Foreign body, orbital, penetrating

INTRODUCTION

An intraorbital foreign body (IOFB) refers to an object located within the bony orbital walls posterior to the orbital septum but outside the eyeball.^[1] Orbital injury with retained foreign bodies (FBs) is relatively uncommon.^[2] FBs in the orbit could be organic or inorganic and may be without symptoms. In some cases, it may cause worrisome clinical problems such as ocular motility disturbance, optic neuropathy, or orbital cellulitis.^[3] Many cases of orbital FBs are work related or follow high-velocity gunshot injuries, but occasionally, they could be due to road traffic and domestic accidents.^[2] In this report, we present a case of penetrating orbital injury with retained metallic FB and emphasize the need for appropriate trauma history, physical examination, and radiologic evaluation of all cases of orbital trauma to minimise the chances of missed diagnosis.

CASE REPORT

A 36-year-old automotive service company worker presented to our center with a 3 hours history of injury to his right eye. He was struck by a piece of metal that broke off from part of a heavy-duty vehicle as it was being hammered during repair work on it. The piece of metal was said not to be found after it struck him. Following the injury, he developed an immediate onset of ocular pains and bleeding from the right upper eyelid. There was no associated loss of vision or consciousness.

On clinical examination, his visual acuity was 6/5 on each eye. There was a bleeding laceration wound on the medial third of the right upper eyelid with associated orbital fat prolapse [Figure 1]. There was mild conjunctival hyperemia. The rest of the ocular examination findings appeared normal. Skull X-ray done on him revealed a radiopaque object in the right superomedial anterior orbit [Figure 2].

The patient was admitted and worked up for orbital exploration and removal of the orbital FB under general anesthesia. As part of the preparation for surgery, written consent was obtained and routine hematological and biochemistry tests were conducted and the results were all within the normal limits.

Preoperatively, he was commenced on broad-spectrum parenteral antibiotics and analgesics and had tetanus prophylaxis. At surgery after routine cleaning and draping were done and repositioning of the prolapsed orbital fat, the full extent of the upper eyelid wound was revealed. It measured 15 mm × 9 mm. The orbit was explored through the laceration wound and a triangular-shaped metallic FB

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measuring 14 mm × 9 mm was removed from the anterior orbit [Figure 3]. There was no direct damage to the eyeball.



Figure 1: The patient at presentation showing upper eyelid wound with orbital fat prolapse



Figure 2: Skull X-ray. Anterior-posterior and lateral views showing a radiopaque object in the superomedial part of the right anterior orbit



Figure 3: Picture of the metallic foreign body removed from the patient's orbit

The wound was then thoroughly irrigated and debrided and closed using a 5/0 Vicryl suture. On the first postoperative day, visual acuity remained normal and no restriction of ocular motility. There were mild lid edema and conjunctival hyperemia. By six-week follow-up, eyelid edema and mild conjunctival hyperemia had resolved and ocular examination findings were essentially normal.

DISCUSSION

IOFBs are reported to typically occur in males, children, and young adults with a history of work accidents or gunshot injuries involving high-velocity projection.^[1] The present case is consistent with the typical demographic and epidemiological profile of reported cases and series on retained IOFBs in the literature.

The clinical presentation of orbital injuries with retained FBs is variable. Associated ophthalmic morbidities which may include visual loss are dependent on the nature and composition of the FB and its size and location within the orbit. Most metallic FBs are inactive, but organic materials such as wood can present with late complications such as orbital granuloma, cellulitis, abscess, and discharging sinus.^[2]

Optimal management of patients with retained orbital FB requires timely identification and correct determination of the location of the FB in the orbit.^[4] There have been instances where retained orbital FBs causing clinical problems were undiagnosed for months and even years.^[5] The presence of an IOFB should be suspected in every case of orbital trauma. Appropriate trauma history, physical examination, and radiologic evaluation are essential to diagnosing retained IOFB. In this case, the patient's history of having not found the piece of metal he was certain struck him and the examination finding of breached orbital septum with orbital fat prolapse was highly suggestive of retained FB in the orbit. Diagnostic imaging modalities are critical in the diagnosis, confirmation, and localization of IOFBs. Computed tomography or plain radiography can detect metallic FB without difficulty, whereas organic FBs may be difficult to detect. Magnetic resonance imaging (MRI) is best suited for the evaluation of organic FB but is contraindicated when the FB is metallic.^[3] Computed tomography is regarded as the imaging modality of choice for evaluation of orbital FBs because it is safe to use in cases of metallic orbital FBs. Furthermore, it can diagnose orbital sepsis and fractures of the orbital wall accurately.^[4] However, due to financial constraints, plain radiography imaging modality was employed on this patient and preoperative localization of the FB was achieved. Plain radiographs are useful in assessing multiple FBs in the orbit and are the first-line imaging procedures in many centres in developing countries because it is readily available and relatively inexpensive.^[2]

Choice management for retained metallic FBs in the orbit is debatable. The decision to remove it from the orbit may be dependent on its size, location in the orbit, its composition, and clinical problems caused by it.^[6] Surgical removal of FBs in

the posterior orbit has higher chances of leading to disturbance of ocular motility and optic neuropathy. Large-sized FBs as well as anteriorly located FB which can easily be accessed are recommended for removal, whereas posteriorly located FBs could be managed conservatively.^[6] If the FB is organic or causing ocular problems, surgical removal is advised. When it is inorganic, anteriorly located, and asymptomatic, decision for surgical removal may depend on the patient's wish.^[7] However, it should be noted that inorganic magnetic FBs left in the orbit can render a patient unfit for future MRI evaluation. This is because of their potential to cause significant ocular injuries following exposure to strong magnetic force.^[3] In this patient, the decision for surgical removal was made because the FB was fairly large, anteriorly located in the orbit, and the patient was very anxious and eager to have it removed from his body.

The size and location of orbital FB influence the choice of surgical approach for its removal. The FB can be accessed through its entry site to the orbit or existing cutaneous fistula.^[3] In this case, exploration and removal were done from the entry site. This has the advantage of not creating an additional wound and subsequent scar and should be the first-choice approach to be considered.

CONCLUSION

The presence of an intraorbital FB should be suspected in every case of orbital trauma. Appropriate trauma history, physical examination, and imaging modality are necessary to minimise the chances of missed diagnosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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