



Case Report

Management of unusual missed diagnosis of a Intra-orbital wooden foreign body: A case report and review of literature

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ABSTRACT

Introduction: Although intra-orbital foreign bodies (IOFBs) are commonly seen in daily ophthalmology practice, rarely, they can have very unusual clinical presentations, especially nonmetallic FBs.

Presentation of case: A 33-year-old male presented with sudden onset right lower lid swelling and tearing. He was initially tolerating the symptoms, however, it got progressively worse, so he came two weeks after the initiation of symptoms. His eye vitals were within normal limit, including the visual acuity of 6/6 OU. Additionally, slit lamp and fundus examinations were benign. Concern was for infectious etiology with unclear source. After a lengthy conversation, he recalled falling on the ground with face down about 16 months ago. However, he stated that he had remained asymptomatic and never went for treatment after the incident. Non-contrast CT of head and orbit showed hyperdense tract in medial aspect of right eye adjacent to the globe, piercing across the bilateral ethmoidal sinuses. Thus, a diagnosis of retained IOFB was made. He underwent surgery where a 5cm rotten wood was extracted. Post-surgical course was uncomplicated. Not all penetrating intra-orbital foreign bodies present immediately after the incident. In our case the patient remained asymptomatic for 16 months.

Conclusion: Therefore, when dealing with an ocular infection of unclear source, clinicians should ask about distant histories of ocular or facial injuries to assess intraocular foreign bodies.

1. Introduction

Periorbital swelling can be due to various causes like infections, drug reactions, hypersensitivity reactions, systemic contact dermatitis, SLE, dermatomyositis, solid facial edema, angioedema, superior vena cava syndrome, sarcoidosis, ocular trauma, and others [1]. Ocular trauma is one of the major causes of blindness worldwide, and around 16% of ocular trauma is associated with foreign bodies (FB) [2]. Although intra-orbital foreign bodies (IOFBs) are commonly seen in daily ophthalmology practice, rarely, they can have very unusual clinical presentations, especially nonmetallic FBs. For example, in a CT scan, wood initially presents with low density and may appear as air. It takes time to change its density which may often result in delayed or missed diagnosis [3]. In contrast, metallic FB can be easily detected via CT scans.

Without the help of advanced imaging techniques, diagnosing the cause of periorbital swelling can be challenging, give the wide differential diagnosis. Clinicians have to rely just on the provided history and

performed a physical examination. Particularly challenging is post-trauma periorbital swelling. Various studies have reported that the time between trauma and final diagnosis can vary from 24 hours to 50 years [4,5].

Here, we report an unusual case of an intra-orbital wooden foreign body that presented 16 months after the incident as the patient remained asymptomatic in the interim. It is rare because the injury was severe enough to penetrate both eyes, yet his vision remained unchanged.

2. Case description

A 33-year-old male presented with complaints of right lower lid swelling with right eye tearing, onset two weeks prior to presentation without visual changes, vision loss, nausea, vomiting, and seizures. He is a farmer by profession. 16 months ago, he sustained facial trauma after a fall on a street. Following the incident, he had mild epistaxis and a small laceration below the right lower lid. He was very confident that he did not sustain any penetrating injury. Following the incident, he went to a

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local clinic to treat a laceration and had a short course of antibiotic ointment. He became completely asymptomatic 10 days later.

Two weeks before presentation, he noticed a sudden-onset right lower lid swelling associated with excessive tearing of the right eye, getting progressively worse. His vitals were stable. Physical examination was negative for icterus, pallor, lymph nodes enlargement, or rashes. Ocular examination revealed the best uncorrected visual acuity (BUVA) of 6/6 in both right (OD) and left eyes (OS). OD was watery with an edematous lower lid and a small wound as shown in Fig. 1. The area was tender to palpate. OS appeared normal. There was no relative afferent pupillary defect (RAPD). Intraocular pressure of the right and left eyes was 12 and 10 mmHg respectively. Slit lamp and fundus examination of both eyes (OU) revealed normal findings.

3. Investigations

Routine investigations such as complete blood counts with differential and comprehensive metabolic panels were within normal limits. Based on the remote history of trauma, with the suspicion of retained intra-orbital foreign body, an orbital X-ray was performed, but it was benign. Realizing X-ray often misses nonmetallic FBs, non-contrast CT of head and orbit was done which showed hyperdense tract in the medial aspect of the right eye adjacent to the globe, piercing across the bilateral ethmoidal sinuses with the tip reaching the apex of left orbit in the region of insertion of medial rectus as shown in Fig. 2. Thus, a diagnosis of retained IOrbFB was made.



Fig. 1. External Image showing the watery right eye with edematous lower lid and wound.

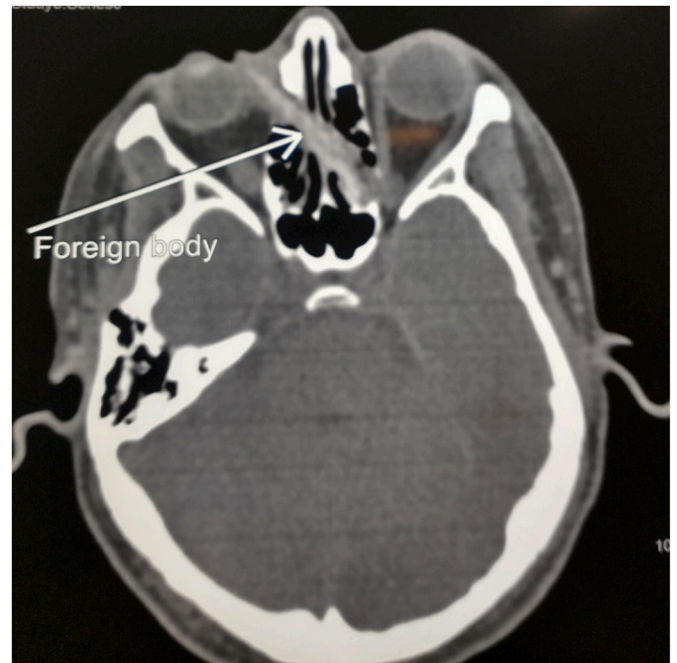


Fig. 2. Showing hyperdense tract in medial aspect of right eye adjacent to the globe, piercing across the bilateral ethmoidal sinuses with the tip reaching the apex of left orbit in the region of insertion of the medial rectus.

4. Treatment, outcome and follow up

The patient was admitted for the IOrbFB removal surgery via anterior orbitotomy. Post-operatively, a wooden material of 5 cm which looked rotted was revealed as shown in Figs. 3 and 4. Then, the orbit was copiously irrigated with Gentamicin antibiotic solution. Oral antibiotics (amoxicillin-clavulanate 625 mg Q6hrly) and pain medications (Ibuprofen 500mg Q8hrly) were continued for five days post-operatively. The swelling and discomfort on the right eye resolved two days after the surgery. Surgery and post-operative courses were uncomplicated. The patient was discharged on post-operative day four and was completely asymptomatic on post-operative day seven follow-up.

5. Discussion

Recognizing retained orbital foreign bodies secondary to trauma can be a challenge. Patients may not recognize that their injury involved an object entering the orbit and the initial history and mechanism of injury can be unclear as we saw in our case. Our patient was able to remember the exact mechanism of his injury but confidently denied intra-ocular

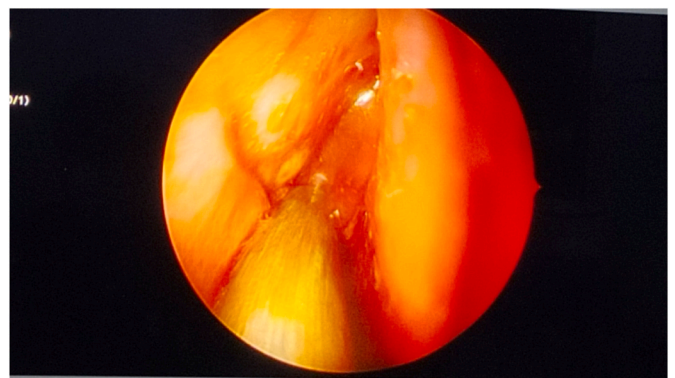


Fig. 3. Showing the intraorbital foreign body.



Fig. 4. Showing an approximately 5 cm rotten foreign body (wood) extracted after the surgery.

foreign body penetration.

IOrbFBs commonly present with orbital cellulitis, orbital hematoma, proptosis, impaired motility, diplopia, visual field loss, orbital abscess, optic neuropathy/atrophy, Superior orbital fissure syndrome [6]. Therefore, it is very important to obtain a detailed trauma history and to perform a thorough physical examination. A foreign body with extension up to the orbital apex and beyond often results in optic neuropathy and permanent damage to the neurovascular structures [7]. However, our patient was fortunate that there were no signs of neurovascular structure damage, despite FB reaching the tip of the left orbit.

Although FBs like metal, plastic, and glass are easily detected with conventional radiographs like X-rays, organic FBs like wood is often missed. Therefore, with the feasibility to calculate Hounsfield Units (HU) to differentiated tissues and with the capacity of the higher geometrical resolution, CT is the gold standard method to detect wooden foreign bodies (WFB) [8] Meanwhile, performing magnetic resonance imaging (MRI) in orbital FBs is still controversial [9]. Penetrating organic FBs often leads to acute inflammatory reaction when left unremoved which can lead to an abscess, fistula, and granuloma formation [10,11].

Organic IOrbFBs like wood must be surgically removed and copiously irrigated with antibiotics as they often lead to infections and complications; whereas metallic FBs can be safely monitored without acute intervention as they are less likely to elicit inflammatory reactions [12].

Our case was perplexing because of its rare, atypical presentation. Despite the patient's initial hesitation to pursue penetrating injury workup, eventually, we were able to obtain a comprehensive history, perform thorough examinations, ordered appropriate tests and imaging to reach a definitive diagnosis. Additionally, this case gave us an insight that organic IOrbFB following a penetrating injury can remain asymptomatic for a significant period, resulting in delayed diagnosis and treatment. Our patient was lucky that he did not have intra-orbital complications during the interim. Based on this case, it seems reasonable to encourage the public to seek out eye care following a peri-orbital

trauma, even if a patient does not have immediate ocular problems. This case report has been reported in line with the SCARE Criteria [13].

Ethical approval

This study was conducted in accordance with ethical standard.

Sources of funding

There is no any source of funding for this case report.

Author contribution

- 1 Kamal Pandit took relevant history, clinical examination, collected relevant investigations of the patient and wrote the report. And he was directly involved in patient's care.
- 2 Sagun Narayan Joshi, Meenu Chaudhary, Sanjeeta Sitaula and Gulshan Bahadur Shrestha provided support and mentorship for development, writing and revision of this case report. And they were directly involved in patient's care.

Trial registry number

1. Name of the registry: Not applicable
2. Unique Identifying number or registration ID:
3. Hyperlink to your specific registration (must be publicly accessible and will be checked):

Guarantor

Kamal Pandit. He is the first author and corresponding author for this case report.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the editor-in-chief of this journal on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Declaration of competing interest

There is no any conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104017>.

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