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Original Research Article

A Hard Case to See Through: The Largest Intraocular Stone on Record

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Abstract

Ocular trauma is an eye emergency and is one of the leading causes of preventable visual impairment morbidity. Trauma may or may not be associated with foreign body lodgement in the globe but it's localization and removal plays a crucial role in management and prognosis. The location and damage caused by an IOFB depends on several factors including the size, shape, and composition of the object as well as the momentum of the object at time of impact. FBs can cause direct damage via entry into the eye but can also ricochet in the eye causing further damage. Subsequent damage depends on the composition of IOFB. High-speed, small FBs will cause a small linear laceration that is less damaging than blunt trauma. Large irregular IOFBs, however, can cause significant initial damage. Here we report a 27 years old, who presented with high velocity trauma to left eye with no perception of light. Slit lamp examination revealed ocular structures distortion. NCCT revealed a large hyperdense object in left orbit. Frill evisceration with removal of the stone of size 2.2x2x2.3 cm, was performed on immediate basis. Patient has been planned for a custom-made ocular implant, which will be later fitted to improve the patient's cosmetic appearance. Further it reduced the chances of sympathetic ophthalmia thereby preventing the patient from any threats of becoming completely blind. Thus, this case highlights the importance of proper evaluation and prompt management in case of ocular traumas to prevent any further catastrophe.

Keywords: Intraocular Foreign Body, Avulsed Cornea, Frill Evisceration, Sympathetic Ophthalmia, Substance Abuse.

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Introduction

Intraocular foreign body (IOFB) injuries vary in presentation and prognosis depending upon various factors. The visual prognosis depends on the zone, type and size of foreign body, and the subsequent complications.

IOFBs account for 18% to 41% of open globe injuries, predominantly affecting middle-aged males during occupational activities. [1] Studies indicate that metallic IOFB constitute the majority; however, stone also represent a significant concern in clinical practice. Such cases require immediate evaluation and management to alleviate the suffering and also to save the fellow eye from any catastrophe.

The index case highlights the clinical features, evaluation and successful management of a unique case of IOFB that was almost about the size of an eyeball.

Case Report: A 27 years old male, alcoholic, presented with pain and bleeding from the left eye following a high velocity trauma to that eye at workplace.

On examination, Best corrected visual acuity of Left eye(LE) was PL negative, Slit lamp examination revealed Cornea avulsed 300º with a thin margin attached at the limbus inferiorly with complete loss of normal architecture.[fig.1a]

Dilated fundus examination and intraocular pressure of LE couldn't be assessed. NCCT brain and orbit showed large hyperdense foreign body in left orbit causing metallic artifact with disruption of architecture of the left eyeball.[fig 1b] The patient was diagnosed with open globe injury with retained large IOFB in the LE. General anaesthesia was given. The periocular skin was painted with 10% povidone iodine and cul-de-sac with 5%.Conjunctival peritomy was done. The avulsed cornea was completely excised. Due to the larger size and posterior lodgement of the foreign body, sclera was cut in frill shaped manner. A stone of size 2.2x2x2.3 cm was removed [fig 1c]. All intraocular contents were removed using a curette and conjunctiva was closed with 8-0 Vicryl suture. Post operatively intravenous antibiotic and analgesics were continued and injection dexamethasone 2 cc was added. On post op day 1 the wound site was healthy. The patient was instructed to use chloramphenicol+ polymyxin B+ dexamethasone ointment 4 times daily and tab prednisolone 60mg per day tapered over weeks. The patient was counselled for acrylic eye implant in future visits.

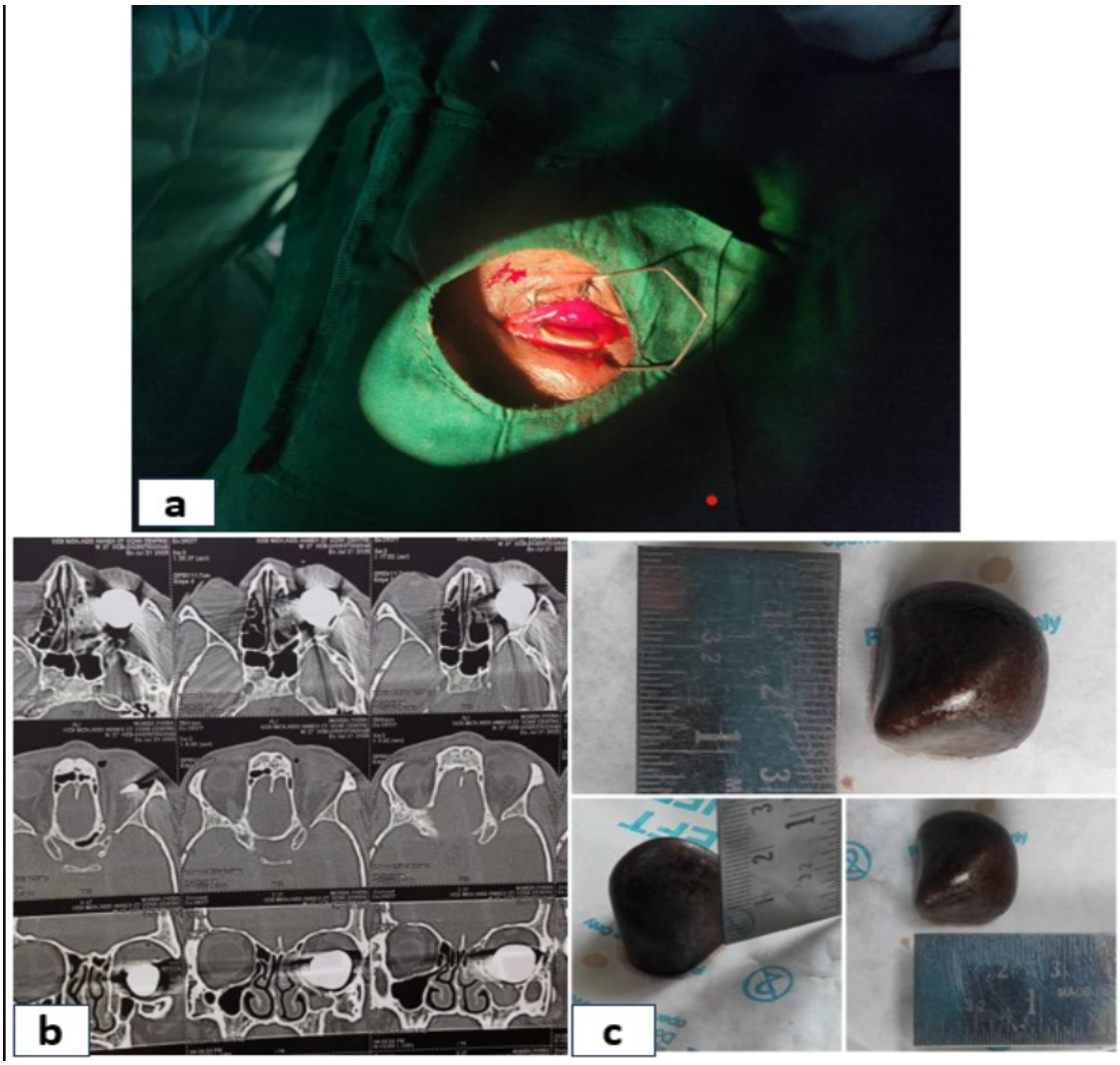

Figure 1: a. Preoperative left eye with avulsed cornea hanging inferiorly. b. Noncontrast CT scan of brain and orbit showing large hyperdense foreign body in left orbit causing metallic artifact with disruption of architecture of the left eyeball. c. Intraocular foreign body removed from the left eye.

Discussion

IOFB following penetrating injury can lead to vision loss mainly due to direct injury by a high-velocity object leading to laceration, hyphaema, vitreous haemorrhage, development of lens opacities or direct impact on the optic nerve and endophthalmitis. Late-onset vision loss can be due to toxicity (siderosis and chalcosis), secondary glaucoma and sympathetic ophthalmia (SO). A

careful examination supported by a thorough radiologic workup is essential to identify the site and nature of IOFB. It's extraction depends on the location, nature, transparency of lens and any vitreoretinal damage. [2]

In our case, the small size of entry wound without any orbital fractures might wayward the diagnosis of such a large IOFB. Here comes the importance of Multimodal imaging, as the IOFB may not be detected clinically in up to 55 % of patients.[3,4] NCCT orbits with thin cuts is the imaging modality of choice, identifying in up to 95 % of patients.[3] The documented case retrieved a eyeball sized stone enlodged in the posterior segment. The question of concern is that how did such a large foreign body enter through a small corneal button opening and did not damage the orbit? One possibility can be that on high velocity impact, the sclera might have expanded to accommodate and contracted later cushioning it to prevent orbital fracture. All such cases should always be imaged to rule out any adjoining fractures. This also highlights the grave consequence of substance abuse. As the patient was on alcohol, it further raises concern about how their consumption is playing a crucial role in traumatic eye injuries. Studies have found that rates of drug usage among open globe injury patients range from 24–73%.[5] Thus being grievous in nature and a matter to ponder upon. Evisceration and enucleation are surgical options for severely traumatised eyes. Researches shows chances of developing SO are very low when surgery is performed within 10 days. In 1974, Green et al reported four cases of SO following evisceration.[6] However, Hansen AB, et al recent large-scale retrospective analyses have reported no cases of SO following evisceration.[7] The choice of procedure requires an active discussion with the patient, considering risks and benefits. In our case, as the globe was severely damaged with nil perception of light, according to OTS score, chances of obtaining VA of >= 20/40 at 6 months were only 1% with a significant risk of developing SO. Therefore, evisceration being technically easier and perhaps superior in terms of the cosmetic appearance and motility, was chosen.

Conclusion

Patients presenting with ocular trauma require careful consideration. The key issues to address are the visual potential of the eye, risk of sympathetic ophthalmia and informed patient preference. It is important for non-ophthalmology based doctors to correctly identify to provide the patient with an idea of their prognosis prior to onward referral to ophthalmology.

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