

An unusual case of protruding retro-orbital metallic foreign body

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A 34-year-old female presented with firecracker injury with curved metallic foreign body embedded in the left orbit and protruding out through the upper eyelid. The report highlights notable aspects in diagnosis, decision-making, and successful removal of this unusual case of retro-orbital foreign body.

Key words: Foreign body removal, orbital foreign body, orbital imaging

Intraorbital metallic foreign bodies have varied clinical presentations. Retrobulbar foreign bodies of the orbit are either associated with double perforation of the globe^[1] or traverse the orbital septum through the lids and peribulbar tissues. In the later scenario, as the globe integrity is maintained, the visual prognosis is good.^[2] We present a case of a projectile metallic foreign body in the orbit, which took an unusual bended course around the eyeball and caused significant ocular morbidity.

Case Report

A 34-year-old female presented with history of injury to the left eye while viewing bursting firecrackers during a local festival. On initial evaluation, the patient was noted to be alert and oriented, and to have an isolated injury to the left orbit with normal neurologic examination.

Local examination showed a metallic bar embedded in her left orbit with a part of it protruding out through her upper eyelid [Fig. 1a]. Visual acuity in left eye was counting fingers close to face. Ocular movements of the left eye were restricted in elevation and adduction. Anterior segment examination was unremarkable except a relative afferent pupillary defect in the left eye. The right eye was normal.

Fundus examination of the left eye revealed blurred optic disc margins, disc hemorrhage, multiple choroidal folds, and retinal hemorrhages at the posterior pole [Fig. 2a]. Foreign body

indentation was present nasal to the optic disc which became more prominent with adduction. A localized retinal detachment of 3–4 disc diameters size with subretinal hemorrhage was present adjacent to it [Fig. 2b], but no retinal break was noted, which indicated the possibility of posterior scleral injury by the sharp end of the foreign body and self-sealing of the wound subsequently.

Computed tomography (CT) scan of the orbits [Fig. 1b] showed 55 mm long "L-" shaped metallic foreign body passing through left upper eyelid, coursing through medial rectus, bending laterally, indenting the sclera, passing superior to the optic nerve compressing it downward. Extraorbital part measured 8 mm, vertical limb of intraorbital part was 27 mm, and posterior limb was 20 mm. Three-dimensional reconstructed CT image showed spike-like protrusions along the foreign body [Fig. 1c]. There was decreased amplitude and increased latency on visually evoked response in the left eye.

Under general anesthesia, surgical removal of the foreign body was successfully done by carefully pulling it out along a curved path. Pupillary reactions were monitored during the maneuver. Resolution of choroidal folds was noted on indirect ophthalmoscopy. Laser delimitation around the retinal detachment was done. On examination of the removed foreign body [Fig. 1d], no sharp protrusions were seen and the imaging findings were considered as streak artifacts. She was advised oral antibiotics and oral steroids, with topical antibiotic-steroid drops for 2 weeks.

The patient recovered well with restoration of full ocular movements and improvement in optic nerve function. At 2-week follow-up, retinal hemorrhages cleared [Fig. 2c] and visual acuity improved to 20/40. Retinal detachment was well delimited and settled with absorption of subretinal fluid though some subretinal hemorrhage persisted [Fig. 2d].

Discussion

Metallic intraorbital foreign bodies are known to be well tolerated and associated with minimal adverse visual prognosis when their path does not traverse through the globe and globe integrity is maintained.^[2] However, there have been several reports of orbital foreign bodies with potential serious eye injuries [Table 1].

In this case, on initial evaluation, the foreign body did not appear to cause any harm to the eyeball as it was embedded in upper lid with its sharp protruding end away from the globe and there were no signs of trauma in anterior segment. The relative afferent pupillary defect alerted that the optic nerve was compromised, either due to direct injury or through orbital compartment syndrome secondary to hemorrhage and/or

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edema. Posterior segment examination provided an important clue that the foreign body passed through the medial orbit to cause injury from behind the globe. We emphasize the need for evaluation of the posterior segment and optic nerve function in every case of intraorbital foreign body.

CT scanning assists in the proper localization of the foreign body, estimation of its consistency, size, path, and the relation to the adjacent orbital tissue.^[9] In this case, the unusual path of the foreign body was well delineated by CT scan, which

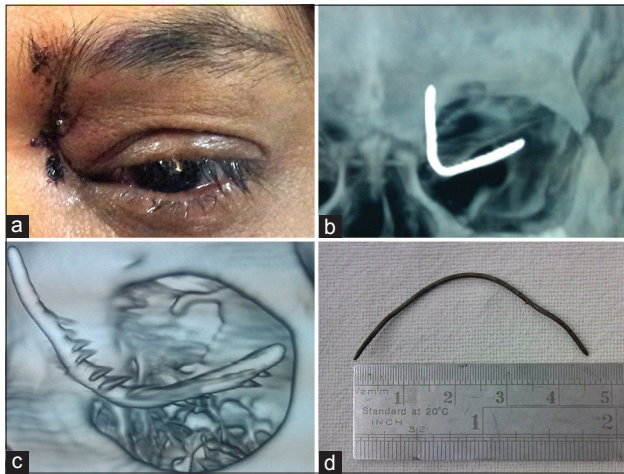


Figure 1: (a) Clinical photograph showing metallic foreign body protruding through left upper eyelid, (b) computed tomography scan of the orbits showing the “L-” shaped metallic foreign body, (c) computed tomography scan three-dimensional reconstruction showing spike-like protrusions along the foreign body (streak artifacts), (d) foreign body measurement after removal

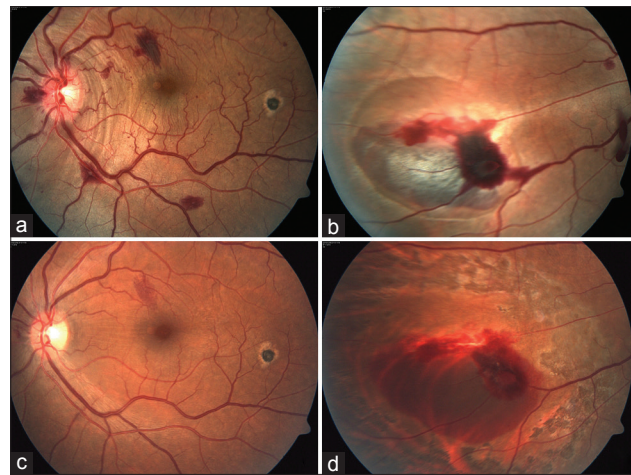


Figure 2: (a) Fundus photograph showing indistinct optic disc margins, retinal hemorrhages, and choroidal folds at posterior pole, (b) foreign body indentation with subretinal hemorrhage and localized retinal detachment in the nasal retina, (c) postoperative resolution of disc edema, hemorrhages, and choroidal folds, (d) postoperative disappearance of foreign body indentation and resolution of retinal detachment, with persistent subretinal hemorrhage

Table 1: Clinical characteristics and outcome of various intraorbital foreign bodies

Author	Age Sex	Foreign body	Clinical presentation	Entry wound	Location (CT scan)	VA	Pupil	Fundus	Outcome postsurgical removal
Asif <i>et al.</i> ^[3]	30 Male	Curved iron nail	Diplopia, restricted EOM	Lateral nose	Posterior orbit	6/6	Normal	Normal	No functional deficit
Mukherjee <i>et al.</i> ^[4]	25 Male	Solidified molten plastic	Vision loss, pain, restricted EOM	Medial canthus	Infero medial orbit	No PL	Dilated	Disc edema, Retinal hemorrhages	Vision loss, Skin necrosis over medial canthus
Singh <i>et al.</i> ^[5]	10 Male	Plastic ball pen	Frozen Globe, UL retraction	Upper eyelid	Superior orbit, extension in anterior cranial fossa	No PL	Dilated	Not visible	Vision improved to FC/2m
Nowroozzadeh ^[6]	25 Male	Metallic brake lever	Protruding foreign body, Frozen Globe, complete ptosis	Lower eyelid	Posterior orbit, extending out through zygomatic bone	No PL	Dilated	Not done	Loss of vision and EOM
Khanduja <i>et al.</i> ^[7]	47 Male	Metallic nail	Protruding foreign body	Lower eyelid	Impacted in the floor of the orbit	6/9	Normal	Not done	No functional deficit
Czyz <i>et al.</i> ^[8]	39 Male	Sickle-shaped metallic foreign body	Loss of vision, restricted EOM	Lateral canthus	Superior orbit extending into anterior cranial fossa	No PL	Fixed, dilated	Disc hemorrhage, diffuse retinal hemorrhage, Berlin’s edema	Loss of vision and EOM
Our case	38 Female	Curved metallic foreign body	Protruding foreign body, restricted EOM	Upper eyelid	Curved course from medial to posterior orbit	6/6	Normal	Subretinal hemorrhage with localized retinal detachment, retinal folds	Resolution of retinal hemorrhages and detachment

EOM: Extraocular movements, VA: Visual acuity, PL: Perception of light, CT: Computed tomography

supported the clinical findings of optic nerve compression and globe indentation by the posterior part of foreign body, and helped in planning surgical removal. However, streak artifacts should be differentiated from any protrusion of the linear metallic foreign body.

Surgical intervention in a case with intraorbital foreign body is usually indicated in the presence of a sharp foreign body, signs of infection, proptosis, restricted motility, palpable orbital mass, optic nerve compression, abscess, suspicion of organic material, fistula formation, or when adjacent structures are compromised.^[10,11] In our case, indications for surgical intervention were direct optic nerve compression by the foreign body, risk of infection along the foreign body tract, restricted ocular motility, and foreign body compressing the globe on posterior surface.

Our experience with this case shows that curved metallic orbital foreign bodies with benign appearance may be associated with sight-threatening retinal injuries. Thus, it is mandatory to perform funduscopy in such cases. Although foreign bodies with protruding end can simply be removed along their tract, one should be aware of an unusual intraorbital course. In our case, optic nerve function showed remarkable improvement after removal of the foreign body. Thus, we advocate early surgical exploration and guarded extraction of the foreign body to improve the visual prognosis and outcome in such cases.

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Conflicts of interest

There are no conflicts of interest.

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