

Bilateral complete blindness following globe-sparing single-bullet orbital injury

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Key words: Bullet injury, foreign body, orbital perforation, traumatic optic neuropathy

Traumatic optic neuropathy due to missile injury typically results in unilateral visual loss.^[1] We discuss an uncommon case, in which injury from retroocular passage of a single bullet resulted in bilateral orbital perforations, frozen globes, and complete blindness.

A 20-year-old female presented with bilateral absent light perception detected immediately, following alleged accidental bullet injury. There were no cranial manifestations and sutured skin wounds were visible on the temporal aspects of both the orbits. Bilateral ocular coats were intact with normal intraocular pressure and anterior segments. However, there was bilateral complete afferent pupillary defect and vitreous hemorrhage. Noncontrast computerized tomography (NCCT) imaging revealed multiple orbital and nasal fractures, a bony fragment abutting the right globe [Fig. 1a], and bilateral temporal orbital perforations on reconstructed images [Fig. 1b and c]. The entry wound was left-sided and slightly lower than the right-sided exit wound [Fig. 1b and c]. Sonography revealed attached bilateral retinas. The combination of complete afferent and efferent neural dysfunction was attributed to injury of bilateral posterior orbits near the apical region. No ocular intervention was planned due to poor prognoses and absence of any foreign body.

Discussion

Bilateral globe sparing orbital perforation due to a single bullet is an extremely rare entity. Missiles can cross the facial midline, resulting in ocular motility disorders, and ocular injury may also result secondarily from mobile bony fragments.^[1] Bilateral ocular injury is usually related to gunshot or blast injury, and bilateral optic neuropathy is especially rare. However,

suicide attempts with bullets aimed at the temple can result in contralateral visual defects, prognoses, and extent of which depends on the passage of the bullet.^[2] The integrity of ocular coats is usually breached though rarely it may remain intact as seen in our case.^[3,4]

Bilateral vision loss after globe sparing head trauma may be because of direct or indirect traumatic optic neuropathy, Terson syndrome, or chiasmal injury. In our case, NCCT of the head did not reveal any injury to the cranial cavity, chiasma, or the optic canals. Because of the accompanying efferent loss, direct traumatic optic neuropathy due to orbital injury appears to be the most likely cause of vision loss in this case. Vitreous hemorrhage resulted possibly from tangential trauma inflicted during the bullet's retroocular passage.

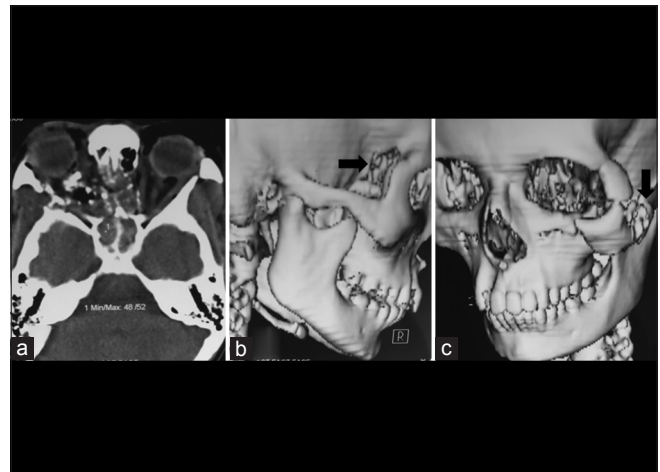


Figure 1: (a) Transverse computerized tomography scan depicting bilateral multiple orbital and nasal fractures along with a bony fragment abutting the right posterior globe. (b) Three-dimensionally reconstructed computerized tomography image of the right side of the face showing the exit wound of the bullet (black arrow). (c) Three-dimensionally reconstructed computerized tomography image of the left side of the face showing the entry wound of the bullet, set lower than the exit wound (black arrow). Other orbital and facial fractures are also visible

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Conflicts of interest

There are no conflicts of interest.

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