

Letter to the Editor: Authors' Response

Transorbital Penetrating Head Injury (TOPHI): Short Series of Two Cases with Review of Literature

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We thank authors for taking the time to go through our study.¹ The path of transorbital penetrating head injury (TOPHI) is dependent on orbital bony anatomy and morphology of penetrating object, size, shape, and trajectory. In our first case of TOPHI at entry point trajectory angulated with respect to orbital wall led to trajectory caused side ways displacement of bony fragments. So, it typically represents TOPHI. As orbit has pyramidal shape with quadrangular base, which gradually converges triangular sides formed of orbital walls with apex terminating at superior orbital fissure, inferior orbital fissure, and optic canal. However, the globe usually escapes injury as it is suspended and mobile within orbital fat and hard sclera.^{2,3,6}

Turbin et al opined low velocity TOPHI may be directed towards superior or inferior orbital fissures,³ further high velocity object traversing perpendicular to orbital wall can cause fracture of orbital wall; however, those with a trajectory 45-degree angle of lateral wall may even cross the midline to damage contralateral structures.³⁻⁵

Turbin et al analyzed 37 such cases and based on entry points of TOPHI in relation to orbital anatomy categorized into four zones of entry of TOPHI and to monitor further its trajectory course. Zone 1 being lateral, central, and unspecified part of upper eyelid, Zone 2 including central, lateral, and inferior conjunctival entry. Further medial and canthal entry classified as Zone 3, and rest Zone 4 represents

nonmedial lower and upper lid and conjunctival penetration.³ Incidence of entry point were revealed 6 Zone 1 injuries, 9 Zone 2 injuries, 21 Zone 3 injuries, and 15 Zone 4 injuries among 37 analyzed cases.³ A total of 85% of Zone 1 injury caused fracture of orbital roof and frontal lobe injury, while about 55% Zone 2 existed through orbital roof. However Zone 3 entry TOPHI injured optic canal or fissures and even temporal lobe.

For proper management of cases, proper knowledge of trajectory is essential for selection of proper surgical approach to minimize new neurological deficits.

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