

## Complete Globe Protrusion Post Trauma: A Case Report

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**Abstract:** Complete traumatic protrusion of the globe is a rare event, and there are only a few reported cases in the literature. Complete globe protrusion post trauma may be associated with optic nerve avulsion where visual recovery is obviously not expected. We report a case of 9 year old boy who was a victim of bicycle accident with unilateral globe protrusion. Vision in the protruded eye was reduced to perception of light with gross restriction of ocular movements. After repositioning the globe and tarsorrhaphy patient showed satisfactory visual and cosmetic improvement. Thus good visual recovery and ocular motility may be achieved by prompt and appropriate management in traumatic protruded globe.

**Keywords-** complete globe protrusion, trauma

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### I. Introduction

Complete protrusion of the globe with or without optic nerve avulsion is a rare condition that results from an extreme form of facial or orbital trauma.[1] The optic nerve and the globes are very resistant to mild and moderate trauma.[2] The existing literature indicates that either optic nerve avulsion or extraocular muscles avulsion separately or both occur.<sup>2</sup> In our case, in spite of full protrusion of globe neither of these was involved resulting in satisfactory salvage of globe integrity and visual outcome.

### II. Case Report

We have conducted our study keeping in mind the Helsinki Declaration of 1975, as revised in 2000. A nine year old boy presented to the emergency department with history of injury by bicycle handle approximately 6 hours ago. On examination left globe was found displaced anteriorly and posterior part of globe was caught tightly by the closed lids (Fig. 1). Conjunctiva was hyperemic with few bluish discolored patches suggesting anterior segment ischemia. Cornea showed early signs of exposure keratopathy. Pupil was dilated and sluggishly reacting. The movements of left eye were grossly restricted in all gazes. Visual acuity was reduced to light perception. Right eye was normal (Fig. 1).

The patient was hospitalized and put on intravenous corticosteroids (1 milligram methylprednisolone per kilograms of body weight) to take care of possible nerve compression and prophylactic antibiotics. An urgent MRI scan was performed which showed protrusion of the left globe with intact orbital walls. Optic nerve did not show any avulsion. Intracranial structures were normal. The right eye was normal. Patient was urgently taken for surgery the next day under general anesthesia. An attempt to reposit the protruded eyeball was unsuccessful. Therefore lateral canthotomy was done. Finger was inserted from canthotomy site into the orbit and a tight girdle of tenon was felt behind the globe on palpation. After orbital exploration multiple relaxing incisions in girdle of tenon were given to reposit the globe. After repositioning the globe, muscles and their insertions were carefully examined and found intact. The lacerated conjunctiva was repaired and central tarsorrhaphy was done which was released after 15 days. After three months post operatively globe was in position (Fig. 2). The ocular movements and best corrected visual acuity returned to near normal (visual acuity 6/9). Color vision and contrast sensitivity was also normal.

### III. Discussion

Complete globe protrusion is a rare condition usually resulting from severe trauma to the orbit and face. It may be associated with either optic nerve injury or disruption of the extraocular muscles along with optic nerve. Obviously if optic nerve is avulsed, visual recovery may not be expected. Following trauma, the most commonly injured and avulsed extraocular muscles in decreasing order of frequency are the medial rectus, inferior rectus, superior rectus, and the obliques.[3] It may lead to life-threatening neurologic sequel like orbital infection, intracranial or subarachnoid hemorrhage, cerebrospinal fluid leakage, meningitis, or hypothalamic infarcts. There are many schools of thought regarding management of protruded globe. It has been suggested that reoperation on a lost muscle should be performed within 7 to 10 days after the initial surgery since contracture of muscles may occur.[4] Some of the reported cases of avulsed globe were replaced within the orbit without later requirement of enucleation.[1, 5] On the other hand some were initially repositioned but subsequently needed enucleation.[6] No report of sympathetic ophthalmia was reported in these cases. Prompt reposition of the globe

in comparison with initial enucleation, has two advantages; first, the patient has not to sacrifice an organ after such severe accident; secondly, we can easily fit an ocular prosthesis with better motility on phthisic eye. In our case neither optic nerve nor extraocular muscles were avulsed, therefore ocular movements and visual acuity along with globe could be saved satisfactorily (Fig. 2). This probably happened because of early and correct intervention and fortunate globe protrusion merely due to stretching of extraocular muscles and retro-orbital tissue. Immediate intravenous corticosteroids were started to take care of possible nerve compression as the pupil on presentation was dilated and sluggishly reacting. Central tarsorrhaphy probably helped to maintain globe and other tissues in their respective anatomical positions.

### Figures



Fig.1:Preoperative



Fig. 2: Three months post-operative

### IV. Conclusion

In globe protrusion, proper assessment of severity and extent of tissue involvement is very crucial. Canthotomy/ cantholysis, releasing the girdle of tenon, globe reposition at its place and complete tarsorrhaphy helps in keeping the globe in position. A prompt decision and sequential management may result in good visual and cosmetic outcome in traumatic globe protrusion if vital ocular structures are not severely compromised.

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