

ASOT News

The American Society of Ophthalmic Trauma Newsletter

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TRAUMA NEWS:

ASOT IS NOW ON SOCIAL MEDIA. CLICK ON THE ICONS BELOW TO FOLLOW!



WE ARE LOOKING TO INCREASE OUR MEMBERSHIP, PLEASE SHARE THIS NEWSLETTER!

MEMBERSHIP WILL BE DISCOUNTED IN 2021!

ASOT Annual Meeting

June 5th, 2021 from 10 AM to 3 PM EST
Virtually on Zoom!

Ophthalmic Trauma Submissions and Registration will open on March 1st at theasot.com!

1. Case Presentations
2. Research Paper Sessions
3. Video Competition

Featured Case

Charlotte L Marous MD, Roman Shinder MD FACS
SUNY Downstate Medical Center, Brooklyn NY

A 55 year-old-male was transferred from a local community hospital after sustaining sharp penetrating facial trauma from a knife after being involved in an altercation while intoxicated (Figure A). He arrived awake, alert, and oriented.

On examination, visual acuity was 20/20 in the right eye and no light perception (NLP) in the left eye. The right pupil was reactive to light while the left pupil was fixed and mid-dilated, and there was an afferent pupillary defect. Intraocular pressure was 13 mmHg in both eyes using iCare tonometry. Extraocular muscles were unaffected in the right eye, but notably limited in the left with -4 adduction and -3 infraduction, supraduction, and abduction (Figure B). Multiple deep periocular lacerations along the nasal bridge, left medial canthus, and medial left upper eyelid were identified along with globe luxation. Subconjunctival hemorrhage was noted, but anterior segments and dilated fundus exam were otherwise normal. A maxillofacial computed tomography scan revealed transection of the left optic nerve (Figure C) and left medial rectus muscle with orbital emphysema, but apparent sparing of the globe as evident by intact globe contour. Intracranial extension was ruled out.

Figure A



Figure B



Figure C



What would your next step be?

- A. Enucleation
- B. Globe salvage with reattachment of medial rectus muscle

The patient was intubated and sedated for emergent exploration and repair. Intraoperatively, the medial rectus muscle was unable to be identified for reattachment (Figure D), likely retracted deep into the orbit. The globe was indeed intact without rupture after close examination. The decision was made to salvage and manually reduce the globe back into the orbital cavity using malleable retractors. All periocular wounds were explored for foreign bodies (none identified) and reapproximated. Medial canthopexy provided sufficient support to maintain the globe in proper position within the orbit. A compression bandage was applied, and the patient was discharged on post-operative day one on oral antibiotics and steroids. An updated tetanus booster was also administered.

At post-operative week one and month four (Figure E), the patient is doing well. He remains NLP and with left exotropia but has acceptable globe positioning within the orbit, excellent lid support and function, and healthy corneal surface. He remains without evidence of necrosis or infection.

Case Comments

Globe luxation with optic nerve transection is a rare clinical condition, with approximately 110 cases reported. Etiologies can range between traumatic, spontaneous, or voluntary (“oedipism”), of which can then be used to guide management. Traumatic injuries result from either high impact blunt trauma leading to avulsion of the optic nerve and extraocular muscles (EOMs), or can occur following penetrating sharp trauma causing direct laceration of the nerve or EOMs. Other less frequent etiologies include spontaneous luxation, typically in patients with shallow orbits such as in Crouzon syndrome or craniofacial dystosis, or from pathologic conditions such as Graves disease, histiocytosis X, or orbital tumors that induce proptosis.

In cases of sharp penetrating trauma, objects typically enter medially without disrupting globe anatomy, causing forward displacement using the nasal bridge as support. Reflex spasm of the orbicularis oculi can furthermore lock the globe out of position. The medial rectus is the most commonly damaged EOM. Depending on the depth and angle of entry, the object can cause transection or avulsion of the optic nerve, as seen in the above case. In blunt trauma, the optic nerve can be partially or completely avulsed, and most commonly ruptures at the lamina cribrosa immediately posterior to the globe as this represents a point of anatomical weakness where the nerve fibers are not supported by myelin or connective tissue septa. However transection has also been reported 30 – 50 mm posteriorly to the globe. Intracranial hemorrhage and middle/anterior cranial fossa fracture must be ruled out in such cases, and these patients are also at increased risk for orbital infection and meningitis.

Diagnosis is dependent on having a high index of suspicion, complete and thorough history and examination, and review of radiologic findings.

Management of traumatic globe luxation with optic nerve transection requires immediate surgical exploration and repair, with globe preservation being favored over enucleation for psychological and cosmetic benefits. After ruling out globe rupture, early repositioning of the luxated globe is imperative. Especially in cases of incomplete optic nerve avulsion, where some visual function may remain, quick action to relax the orbicularis oculi to release pressure on the nerve and vascular tissues is key. Next, reattachment of EOMs should be performed if at all possible; this reduces the risk of developing avascular damage to the globe. Identifying retracted muscles can be challenging and may not be possible during the initial operation. The risk of anterior segment ischemia, necrosis, infection, and phthisis increases when more than two EOMs are involved, and must be carefully monitored for. Temporary tarsorrhaphy can be helpful. Lastly, all patients should be treated with systemic broad-spectrum antibiotics with good blood-brain barrier penetration and tetanus prophylaxis to prevent against orbital and meningeal infection.

Figure D



Figure E



References:

1. Tok L, Tok O, Y, Argun T, C, Yilmaz O, Gunes A, Unlu E, N, Sezer S, Ibisoglu S, Argun M: Bilateral Traumatic Globe Luxation with Optic Nerve Transection. *Case Rep Ophthalmol* 2014;5:429-434. doi: 10.1159/000370043
2. Das D, Kuberappa RG, Kumari Meena S, et al. Globe luxation following cow horn injury. *BMJ Case Reports CP* 2019;12:e229994.
3. Pillai S, Mahmood MA, Limaye SR. Complete evulsion of the globe and optic nerve. *Br J Ophthalmol.* 1987;71(1):69-72. doi:10.1136/bjo.71.1.69
4. Kartiaw A, Wardhani NP, Nauli RR, et al. Traumatic globe luxation. https://eyewiki.aao.org/Traumatic_Globe_Luxation. Updated Aug 15, 2020.

Trauma Survey

We'd like to forward this survey on behalf of the International Globe and Adnexal Trauma Epidemiology Study (IGATES) Terminology Consensus group.

To start the survey, please visit <http://oculartrauma.com/igates-1>

IGATES has been established with the aim of developing evidence and consensus-based guidelines to help ophthalmologists in treating and preventing ocular and adnexal trauma. This survey is focused on developing consensus for terms for classification of ocular trauma including i) revising and confirming BETTS and ii) developing and confirming additional terms not captured in BETTS, including mechanism, extent of injury, and adnexal injury.

The IGATES Terminology Consensus Survey is a 2-staged Delphi process: Delphi Stage 1 involves the completion of an on-line survey which will be analysed for consensus, followed by Delphi Stage 2 which will require a consensus statement relating to all unresolved questions (<67% consensus in Delphi 1).

We hope to reach consensus in these areas to provide a terminology which is as definitive as possible, to the wider ophthalmic community. It is with this in mind we have structured the questions in Delphi Stage 1 to be more close-ended and specific yet also broad enough to allow individual clinicians to exercise their own discretion. This focused 22 question survey will take less than 15 minutes and we aim to have this filled by a large group of ophthalmologists with special focus on ocular trauma.

This study was reviewed by the Institutional Review Board (IRB) of the Johns Hopkins University School of Medicine. The IRB determined that the study qualified as exempt under United States Department of Health and Human Services (DHHS) regulations. The Principal Investigators of the study are Annette Hoskin, PhD; Rupesh Agrawal, MD; and Fasika Woreta, MD. All respondents' answers will be considered to be their own opinion, and filling out the survey will serve as consent to participate.

More information about IGATES can also be found at <http://www.oculartrauma.com>. Should you have any further questions or prefer to discuss before commencing the survey, please feel free to contact Annette Hoskin (annettehoskin@yahoo.com.au) or Rupesh Agrawal (rupeshttsh@gmail.com).

New trauma surgical videos will be posted quarterly on the ASOT website (theasot.com).

Make sure to check them out!



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