Acta Scientific Ophthalmology (ISSN: 2582-3191)

Volume 5 Issue 6 June 2022

Case Report

An Ophthalmologic Nightmare: Traumatic Enucleation

Onur Furundaoturan[1], Mehmet Hasta[1], Kadri Emre Çalışkan[2], Cenk Eraslan[3] and Ozlem Barut Selver[1]*

[1]Departments of Ophthalmology, Ege University Faculty of Medicine, Izmir, Turkey

[2]Departments of Neurosurgery, Ege University Faculty of Medicine, Izmir, Turkey

[3]Departments of Radiology, Ege University Faculty of Medicine, Izmir, Turkey

***Corresponding Author:** Ozlem Barut Selver, Assistant Professor, Departments of Ophthalmology, Ege University Faculty of Medicine, Izmir, Turkey.

Received: December 30, 2021

Published: May 09, 2022

Abstract

A 42-year-old head trauma patient was referred after a motorcycle accident. The right globe was subluxated laterally with avulsed optic nerve. Following an urgent neurosurgery, removal of the enucleated globe and closure of other tissues were done. After the need for intensive care patient was discharged with topical medication and waiting for the recovery of the tissues for the prosthesis.

Keywords: Ocular Trauma; Traumatic Enucleation; Optic Nerve Avulsion

Traumatic enucleation rarely may occur due to high-energy trauma [1-4]. The main cause of the traumatic globe luxation is traffic accidents [5].

With this case report, we would like to present a traumatic enucleation case due to motorcycle accident.

Case Report

A 42-year-old head trauma patient was consulted from emergency department. The patient had a motorcycle accident with multiple head bone fractures who needed an urgent neurosurgical intervention. Right globe was subluxated laterally. All of the extra ocular muscles were detached. The only attachment tissue between the globe and the orbit was the remnants of lateral rectus muscle. Free avulsed optic nerve was present right behind the right globe. Eyelids were formed without any major traumatic cutaneous laceration (Figure 1). According to the imaging of the patient, the frontal bone was significantly displaced, and the orbital soft tissues were disorganized. Globe was not manifest in the scans (Figure 2).

Figure 1: Right, The outside appearance of the patient with frontal injury. Left, the globe may be seen luxated outside of the orbit with the cut optic nerve with only the attachment of lateral rectus muscle.

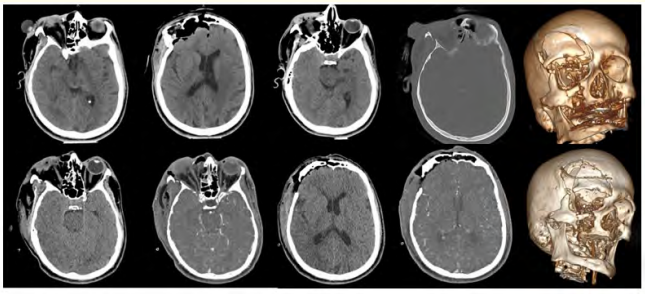

Figure 2: The upper line: Preoperative CT images demonstrate deformed and anteriorly-laterally displaced right bulbus oculi. All the extra-ocular muscles and optic nerve were ruptured except the lateral rectus muscle. Periorbital bones and frontal bone were scattered which caused many apertures between orbit and right paranasal sinuses.

The lower line: Space due to enucleated right globe and removed bony fragments is seen on postoperative CT images. Density changes due to frontal sinus cranialization and repairment of dura mater by using fascia lata and surgical material is also obvious on reformatted CT images.

During the neurosurgical operation, which was about ten hours after the accident, dural injuries caused by fractured bone fragments causing cerebrospinal fluid leakage were repaired using 4.0 silk suture after a frontal craniotomy, including the orbital roof and the orbital bar using the right frontal incision line caused by trauma. Frontal sinus cranialization was performed using bone wax and muscle graft. To prevent cerebrospinal fluid leak, a fascia lata graft was placed on the frontal dura, and then fibrin glue was applied. The fractured frontal bone was cleaned with Batidex (Cimedis, Betadine, %10) and Vancotek (Kocak Farma, Vancomycin, 1000 mg) solution and then replaced. Enucleated globe was removed from the orbit and the closure of Tenon's capsule and conjunctiva was performed (Figure 3). Any implant or conformer were not placed because of the risk of infection. The ocular operation has done after about 10 hours from the accident and the bulbus oculi had lost its spherical shape. The enucleated bulbus oculi with surrounding tissues underwent pathological evaluation with no significant result. The patient was followed up in the intensive care unit for two postoperative days. During the hospitalization, the patient was treated with Vancotek (Kocak Farma, Vancomycin, 1000 mg) and Forsef (Bilim, Ceftriaxone, 1gr) to prevent central nervous system infections. Additionally, he was treated with local antibiotics and steroid therapy. During the follow-up of the patient, cerebrospinal fluid leak, rhinorrhea, wound infection and meningitis were not observed. The patient was discharged after the need for intensive care with the same treatment, and he is waiting for tissue recovery for the prosthesis.

Figure 3: The image of the orbit after the surgery.

Discussion and Conclusion

There are only a few published reports about total enucleation of the globe. Globe avulsion is an unusual situation that generally occurred due to the severe orbital trauma [6].

The traumatic enucleation of the globe may occur after a traffic accident, which is the most common cause, as well as after a fall, hitting or assault [1]. In the presented case, the trauma was a traffic accident with a motorcycle.

Various theories have been proposed for enucleation to occur. Morris., *et al*. [7] suggest a wedge or elongated-shaped object medially entering the orbit may cause the enucleation and by the cutting force of nasal wall optic nerve can be damaged. The other suggested theory is the force caused by multiple orbital fractures may lead compression of the orbit without leaving enough space for the globe [3,4]. In brief retrobulbar posterior-to-anterior force may cause the traumatic enucleation. This leads to globe luxation. A sudden corresponding cutting force is needed to bisect the optic nerve. It could be because of a retrobulbar foreign body or interior displacement of the orbital walls [2,8]. In the current case, the

globe was pushed forward by decreased orbital volume resulting from displaced frontal and medial orbital bones. A sharp or sudden high-speed blunt trauma was the reason of the optic nerve injury.

As a result of the high energy required for the emergence of such a force, other cranial injuries can also accompany. For that reason, multidisciplinary approach and appropriate imaging are necessary [4]. As expected, there was a severe cranial injury in the presented case.

Although the first approach is to eliminate the emergency and life-threatening situation, surgery should be planned considering the future cosmetic state.

Disclosure Statement

No conflicts of interest.

Funding

The authors received no financial support for the research, authorship and publication of this article.

The written consent of the patient was provided, and the report was conducted in compliance with the Declaration of Helsinki.

Bibliography

1. Wong TY., *et al*. "The prevalence and 5-year incidence of ocular trauma. The Beaver Dam Eye Study". *Ophthalmology* 107.12 (2000): 2196-2202.
2. Amaral MBF., *et al*. "Traumatic Globe Luxation Associated with Orbital Fracture in a Child: A Case Report and Literature Review". *Journal of Maxillofacial and Oral Surgery* 14.1 (2015): 323-330.
3. Khadamy J., *et al*. "Missing Globe: A Case of Severe Head Trauma, Eyelid Laceration, and Traumatic Enucleation". *Cureus* 9.12 (2017): e1988-e1988.
4. Tok L., *et al*. "Bilateral traumatic globe luxation with optic nerve transection". *Case Reports in Ophthalmology* 5.3 (2014): 429-434.
5. Bajaj MS., *et al*. "Traumatic globe luxation with optic nerve transection". *Orbit (Amsterdam, Netherlands)* 19.3 (2000): 165-170.
6. Lelli GJ., *et al*. "Avulsion of the optic nerve with luxation of the eye after motor vehicle accident". *Ophthalmic Plastic and Reconstructive Surgery* 23.2 (2007): 158-160.
7. Morris WR., *et al*. "Traumatic evulsion of the globe". *Ophthalmic Plastic and Reconstructive Surgery* 18.4 (2002): 261-267.
8. Paul S., *et al*. "Traumatic Enucleation with Chiasmal Damage". *Ophthalmology* 124.6 (2017): 767.