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Case Report

Delayed Primary Reposition in a Patient with Traumatic Globe Avulsion: A Case Report

Fatma Savur, Yusuf Yildirim

Department of Ophthalmology, University of Health Sciences, Basaksehir Cam and Sakura City Hospital, Istanbul, Türkiye

Abstract

Globe avulsion is an extremely rare and difficult to manage emergency after trauma. Especially in cases of post-traumatic globe avulsion, management and treatment depend on the condition of the globe and the surgeon's judgment. It can be done in primary reposition as well as enucleation in treatment. Recently published cases show that surgeons prefer primary reposition to reduce the psychological stress that may occur in these patients and to achieve better cosmetic results. We report the treatment and follow-up results of a patient whose globe avulsion was repositioned on the 5th post-traumatic day.

Keywords: Avulsion, Enucleation, Globe, Phthisis bulbi

Introduction

In globe avulsion, the extraocular muscles and optic nerve are damaged to varying degrees as a result of the protrusion of intraorbital structures from the orbital cavity. Avulsion of the globe (avulsio bulbi) can be classified as avulsion of the optic nerve alone (avulsio incompleta) or with accompanying disruption of the extraocular muscles (avulsio completa), which may cause total luxation of the ocular bulbus (1-3). We present the treatment and follow-up results of a patient who underwent globe avulsion reposition on the 5th day due to multiple trauma caused by a motorcycle accident.

Case Report

A 26-year-old male patient is referred to the emergency room from out of town after a motorcycle accident. On examination, there was a full-thickness skin defect starting from the left upper lid and extending to the scalp in the frontotemporal region and left globe avulsion. There was no ocular motility in all gaze positions in the left eye. The patient, who did not describe vision loss in the right eye, had no sense of light in the left eye. Left pupil was dilated (Fig. 1). There was extensive bleeding at the optic disc head in the fundus. In the computerized tomography of the patient, a displaced fracture line was observed in the bilateral frontal bone, and the fracture lines extended to the medial and lateral orbital wall (Fig. 2). In addition, hemorrhagic changes in the bilateral frontal lobe and diffuse edema in the brain parenchyma were observed. Abundant lumbrication and closure were applied to the patient's eye during the transfer procedures and during the period until the operation. The patient could be operated on the 5th day due to pathologies related to neurosurgery and plastic surgery departments.

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Address for correspondence: Fatma Savur, MD. Saglik Bilimleri Universitesi Basaksehir Cam ve Sakura Sehir Hastanesi Goz Hastaliklari Anabilim Dali, İstanbul, Türkiye
Phone: +90 505 597 81 27 **E-mail:** drfatmagezer@hotmail.com

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Figure 1. First presentation of the case and post-operative view.

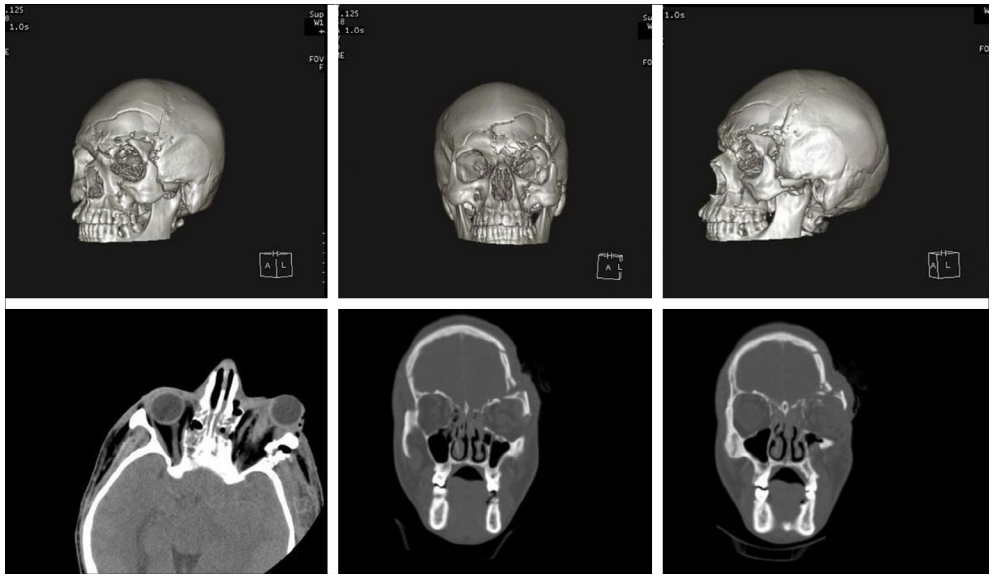

Figure 2. Computed tomography and 3D CT image of the fracture in the orbital walls.

The patient and his relatives were informed that surgical repositioning of the globe would be attempted first, but if it could not be repositioned, enucleation would be performed, and their consent was obtained. Firstly, lateral canthotomy and cantholysis were performed to the patient under general anesthesia. It was observed that the conjunctiva was separated from the limbus 360°. It was severed close to the medial and inferior rectus insertions, and the lateral and superior rectus were intact. Medial and lateral rectus muscle repetitions were found and sutured to their insertion points with 6/0 vicryl. The globe was gradually reinserted into the enlarged orbital cavity by canthotomy with the upper eyelid was retracted with Desmarre lid retractor. The conjunctiva and Tenon's capsule were sutured to the limbus with 8/0 vicryl. Temporary tarsorrhaphy was performed on the eyelids with 4/0 silk to prevent proptosis that may recur in the early period (Fig. 1). Tarsorrhaphy sutures were removed in the 1st week. At the 2nd-month follow-up, there were mild limitation of eye movements and signs of anterior segment ischemia. In the 1st-year follow-up of the case, corneal clouding and phthisis bulbi were observed. Evisceration and prosthesis were recommended to the patient. The patient refused to eviscerate. Follow-up continues.

Discussion

Sports injuries, falls, home accidents, acts of violence observed in patients with schizophrenia, or self-enucleation, as well as traffic accidents with cars, motorcycles, and bicycles are the causes of Avulsio bulbi (1,4-10).

The management of glob avulsion is controversial. Treatment of globe avulsion depends on the extent of orbital, adnexal, and ocular damage and time after injury (11). Some case reports report that the globe is repositioned in orbit and enucleation is not required in these patients (11-14). In some cases, it initially reported a repositioned sphere, which subsequently enucleated (15-17). Although the authors previously applied enucleation or evisceration in patients with globe avulsion because there was no visual expectation, today, they prefer primary reposition to reduce psychological stress in patients (6,11,13,15,17-20).

Unfortunately, there is no study in the literature evaluating pre-operative and post-operative psychological distress in patients who underwent primary evisceration and enucleation due to trauma. Sadiq et al. in their study of 56 patients undergoing enucleation and evisceration, patients aged 20–39 years reported significantly higher levels of depression compared with other age groups. Some of the important limitations of this study were that all patients had undergone evisceration or enucleation surgery and had prosthesis for a variable period of time. In addition, the reasons for evisceration and enucleation of the patients were not detailed (21). We think that the pre-operative psychological response to evisceration and enucleation in trauma patients would be worse than the post-operative psychological response. We, like many authors, although we do not expect to see, we think that repositioning the globe and keeping an eye are important in terms of providing psychological and cosmetic benefits to the patient (1,11,12,14-16,20,22,23). It is also a fact that keeping the eye in place will improve the cosmetic results of an eye prosthesis at a later date.

Primary enucleation is controversial in ocular trauma and should be performed when functional and anatomical restoration of the globe is impossible. Enucleation should be avoided in children, especially since primary repositioning of the globe contributes to adequate facial bone development (12) Enucleation is done to avoid sympathetic ophthalmia, especially after penetrating trauma. There was no report of sympathetic ophthalmia in cases with globe reduction (1,11,12,14-16,20,22,23).

Timing of surgery is important in primary reposition of the globe, delay in globe reposition causes phthisis bulbi and ocular ischemia development due to impaired blood flow (24). Unfortunately, most of these cases are multiple trauma patients who are difficult to operate without a stable general condition. Life-threatening neurologic complications such as orbital infection, meningitis, intracranial or subarachnoid hemorrhage, and cerebrospinal fluid leakage have also been reported (1,25). Ocular ischemia, ocular motility disorder and phthisis bulbi are frequently seen in these patients due to the delay in the operation time. Although ocular motility was not impaired in our patient due to delay, phthisis bulbi developed. Searching and repositioning a lost extraocular muscle are often difficult and should be attempted as early as possible. After a period of 7–10 days, such an attempt inevitably fails due to subsequent fibrosis (25). Kumari et al. extraocular motility could not be detected in the patient who underwent globe reposition 1 day after the trauma. They reported significant eye movement restriction in their patients (26). In our patient, although 5 days had passed since the trauma, suturing the medial and inferior rectus muscles in place provided reasonable eye movement (Fig. 3).

Conclusion

Enucleation should be avoided to avoid psychological depression caused by limb loss, especially in young patients. In addition, surgical treatment and cosmetic rehabilitation of phthisis bulbi, which occurs after primary reposition of the globe, are better than enucleation treatment. While the development of phthisis bulbi was not observed in the 6th-month follow-up of our patient, phthisis bulbi developed in the 12th-month follow-up. Primary repositioning in globe avulsion not

Figure 3. Images of the case in primary and four cardinal gaze positions in the 12th-month follow-up.

only allows time for the patient to psychologically accept limb absence, but also provides the option of evisceration for the movable prosthesis.

Disclosures

Informed consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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