

# Case report: repair of open globe injury

## Abstract

Globe rupture is a common sight-threatening ophthalmic emergency. We present a twelve-year-old girl with ocular trauma by sharp object resulting in corneal laceration, hyphema, traumatic cataract and iris prolapse. This case illustrates the importance of early diagnosis, proper wound repair of ruptured globe as well as management of post-operative complications and value of early post-operative visual rehabilitation.

**Keywords:** globe rupture, open globe injury, corneal laceration

Volume 3 Issue 1 - 2015

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**Received:** October 16, 2015 | **Published:** October 19, 2015

**Abbreviations:** FB, foreign body; VA, visual acuity; CT scan, computerized tomography; RD, retinal detachment; INR, international normalized ratio; GA, general anesthesia; D, diopter

## Introduction

Ruptured Globe is a common ophthalmic emergency. It is a leading cause of blindness. Early examination with high level of suspicion is recommended in any patient with ocular trauma. Many signs may obscure detection of globe rupture, so the ophthalmologist should examine the patient thoroughly and treat the patient as early as possible including early visual rehabilitation for young patients to prevent amblyopia. Globe rupture may be associated with traumatic hyphema, traumatic cataract, lens dislocation, vitreous hemorrhage, retinal detachment, uveal prolapse, scleral wound, orbital wall fractures, or optic nerve damage. Pre-operative care must insure that the patient received proper stabilization of the general condition, application of protective eye shield, administration of antibiotics, antiemetics, analgesics and no manipulations to the globe. Meticulous post-operative care is mandatory especially for patients in pediatric age. Searching for any possible post-operative complications is crucial.

## Case presentation

A 12-month-old girl presented to the emergency department with right ocular redness, ocular pain and diminution of vision. The patient had been diagnosed one day earlier at a local clinic as acute mucopurulent conjunctivitis and was prescribed topical tobramycin eye drops and topical anesthetic benoxinate eye drops. Her mother noticed no improvement so she visited the ophthalmology department seeking for advice. The girl patient gave history of eye trauma by a sharp object and was diagnosed with rupture of the right globe.

On examination, the ophthalmologist detected severe conjunctival chemosis, corneal edema, and vertical linear corneal laceration (Figure 1) extending from 12 o'clock towards 5 o'clock with possible extension to the sclera, iris prolapse, total hyphema and subconjunctival hemorrhage. Posterior segment could not be examined. Review of systems was totally free. A protective eye shield was placed and the patient was sent for CT scan axial and coronal sections which revealed periorbital swelling but no intraocular or intraorbital FB or intraocular hemorrhage no injury to orbital walls or extraocular muscles. The

patient then was given tetanus immunization, antiemetics, analgesics and intravenous broad spectrum antibiotics and prepared for globe rupture repair under GA. Laboratory tests included a full blood count, liver function tests, INR, prothrombin time, partial thromboplastin time, kidney function tests, all were within normal.

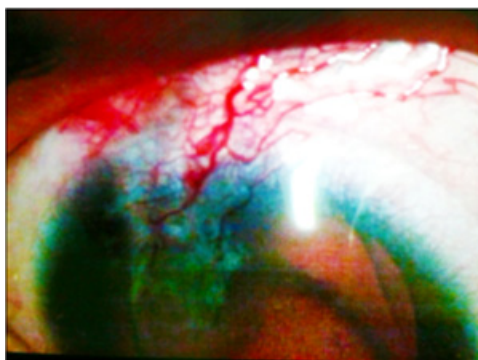


**Figure 1** Repair of corneal laceration and application of therapeutic contact lens.

Repair of the right globe rupture was done under GA, which included sterilization of conjunctiva by povidone iodine eye drops. No scleral extension of the wound was found. Limbal sutures were placed using 10/0 Nylon sutures. The prolapsed iris was viable and was repositioned by iris spatula. Corneal wound was sutured by 10/0 Nylon sutures. Hyphema was washed using bimanual irrigation aspiration technique. Traumatic cataract was detected and lensectomy was performed. Anterior vitrectomy was done through pars plana incision which was sutured at the end of operation using 8/0 virgin silk sutures. Anterior chamber was reformed by viscoelastic solution and the patient was left aphakic. Side ports were sutured and a therapeutic contact lens was applied.

In the first postoperative visit, the eye was slightly injected with periorbital ecchymosis and conjunctival chemosis, anterior chamber was formed, no signs of wound leakage or infection were found. On the second week, neovessels began to grow at the limbal portion at 12 o'clock towards the cornea with mild corneal edema. Neovessels started to penetrate the cornea, intense topical steroids were prescribed and the parents were advised to follow up weekly. Refractive +18D soft contact lens was prescribed and the patient could gain best corrected

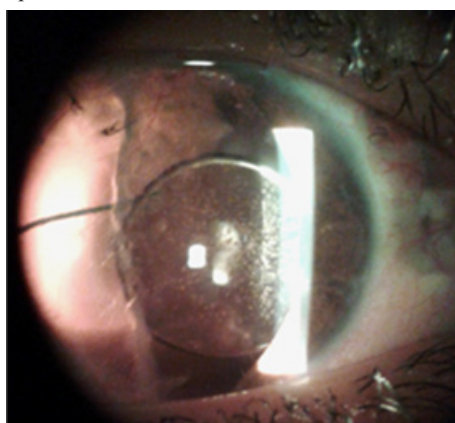
visual acuity of 20/80. After one month, aggressive neovascularization in the conjunctiva invading the superior one third of cornea was noticed (Figure 2) so the patient underwent conjunctival recession operation and diathermy of the feeding vessel under GA. After two months of the operation, the patient underwent scleral fixation IOL implantation. After six months: pseudophakic retinal detachment was detected and the patient was urgently transferred to vitreo-retinal unit for vitrectomy surgery. The surgery was completed successfully and the patient regained visual acuity of 20/40.



**Figure 2** Neovessels growing and invading the cornea.

## Discussion

Ocular trauma is a common ophthalmic emergency. Globe rupture represents a leading cause of blindness.<sup>1</sup> Rapid and accurate diagnosis of ruptured globe is mandatory to save visual acuity and prevent further damage of the eye although diagnosis of occult globe rupture may be challenging (Figure 3).<sup>1</sup> Alarming signs that raise the suspicion of globe rupture include: hyphema, subconjunctival hemorrhage, abnormally deep or abnormally shallow anterior chamber, distorted pupil or iridodialysis, low intraocular pressure, uveal tissue exposure and limitation of ocular motility.<sup>1,2</sup> If globe rupture is suspected, emergency ophthalmic consultation must be taken after stabilization of the general condition of the patient. Ocular manipulation must be avoided.<sup>1</sup>



**Figure 3** Scleral fixated IOL in place, corneal neovessels regressed.

Management should include protective eye shield, prophylaxis against tetanus according to immunization status of the patient,<sup>2</sup> and administration of antiemetics, analgesics, and systemic antibiotics to guard against traumatic endophthalmitis.<sup>1</sup> CT scan of the head and orbits is mandatory to evaluate the condition, detection of intraocular or intraorbital foreign body and orbital wall fractures, but one must not rely to CT scan alone to diagnose globe rupture. Risk of amblyopia is high in children with globe rupture of young age, which is considered poor prognostic indicators. Blunt trauma, large wounds, posterior scleral wounds, pars plana lensectomy and vitrectomy are poor prognostic factors.<sup>3,4</sup>

## Acknowledgments

None.

## Conflicts of interest

The author declares that there are no conflicts of interest.

## Funding

None.

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