

## Less Aggressive Surgical Approach to Closed Globe Injury by Firecracker Trauma- A Case Report

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Received: March 2021  
Accepted: April 2021

### Abstract

**Background:**We describe a case of firecracker injury to left eye due to accidental explosion of firecracker during festival season in India. **Method:** A 16years male got injured while playing with firecracker during Diwali last year which accidentally exploded and caused ocular injuries. Patient came to emergency OPD within 24 hours of incident with complaint of pain and diminution of vision. On slit lamp examination, left eye conjunctiva was congested with corneal edema. Anterior chamber showed total hyphaema obscuring rest of details. Primary medical management with padding of eye and bed rest for first 24 hours of admission. Addition of topical and systemic steroid after 24 hours resolved hyphaema dramatically. Rest topical drugs for symptomatic management continued. On reviewing by slit lamp after 72 hours, anterior capsule was breached and subtotal cortical cataract with inferior iridodialysis was appreciated. **Result:**We surgically managed iridodialysis with planned cataract extraction at a later date. Patient doing well on follow-up. **Conclusion:**Firecracker ocular trauma is an important cause of monocular blindness which could be preventable. Prompt diagnoses and treatment, are essential for the best possible prognoses.

**Keywords:**Iridodialysis, Firework Accidents, Traumatic Cataract, Hyphaema, Cobbler's Technique.

### INTRODUCTION

Firecracker ocular injuries is one of the most common emergencies attended by ophthalmic surgeons. Incidence of ocular trauma due to firecrackers used in festival and other occasions are more in Indian subcontinent. These injuries

cause serious threat to vision. Usually the clinical presentations are contusion and laceration of eyelid, multiple foreign bodies in conjunctiva or cornea, laceration of cornea & sclera, disruption of lens and even retina, also rarely globe rupture.<sup>[1]</sup> Although many reports have been published relating to

fire work injuries, a very few report mentioned total hyphaema with iridodialysis and early onset traumatic cataract. We report a case of above findings which responded well to primary medical management and planned surgical intervention.

### CASE REPORT

A case of ocular trauma resulting from firecracker explosion accidentally during the festival of "Diwali" last year. A 16years old male presented to our ophthalmic emergency with fire cracker eye trauma. He had complaint of pain and diminution of vision in the left eye since one day. Parents tried to manage in nearby primary care then got referred to tertiary eye care center. On slit lamp examination of left eye, both upper and lower eyelids were edematous. Conjunctiva showed both conjunctival and ciliary congestion. Corneal examination revealed stromal edema with descemet's folds. No foreign body or abrasion detected. On examination of anterior chamber, total hyphaema was present and depth could not be appreciated [Figure 1]. Rest anterior segment, vitreous body and fundus could not be seen due to total hyphaema. Visual acuity was HM positive. Intraocular pressure was 26 millimeter of mercury. Extraocular muscle movement was normal in all directions and gaze. The B-scan revealed opacification of lens with normal posterior segment and no intraocular foreign body. The anterior and posterior segment examination of right eye was normal with VA 6/6 and IOP 16 millimeter of mercury. CT scan

of orbit didn't show any bony abnormality or foreign body.

Medical management was started with topical moxifloxacin, cyclopentolate & timolol. In addition, intravenous mannitol, dexamethasone and systemic antibiotics were administered. Medical management was continued for 48 hours and reassessed with slit lamp. Eyelid edema subsided with residual mild conjunctival congestion. Cornea got clear with no blood staining of corneal endothelium. Hyphaema was absolutely resolved with appreciable irregular depth of anterior chamber. On iris examination, there was iridodialysis extending from 5 to 7 o'clock position. Pupil appeared to be irregular, D shaped and not reacting to light. Cleared anterior chamber helped us for assessing lens which showed rupture of anterior capsule, subtotal cortical cataract and subluxation of inferior part of lens. VA had improved to CF 2 meters. IOP was reduced to 16mmHg. Posterior segment examination was normal. On day 3 of admission, iridodialysis was managed surgically under local anesthesia & cataract extraction was planned on later date. VA was CF 2mtr at 1st post-operative day. Patient was discharged on post-operative day 3 with advice of topical steroid, topical antibiotic and systemic steroid with tapering dose. After 2 weeks of postoperative follow-up, patient was doing well and he was dated for cataract surgery after 6 weeks [Figure 2].



**Figure 1:** Total Hyphaema and Inferior Iridodialysis



**Figure 2:** Immediate Postop and 2 weeks Followup

## DISCUSSION

In the present case report, Indian male aged 16years got injured by firecracker explosion. Age group of 20years or less are usually affected by fire cracker injury as they are active in cracker firing during festivals.<sup>[2]</sup> This young male had closed globe injury without any associated facial or head injury referred directly to ophthalmic emergency. Open globe injuries case series are less in number reported by ophthalmic surgeons as they have obvious other systemic injuries which warrants aggressive resuscitation to avoid lethal outcome.<sup>[2,3]</sup>

Patient managed to reach tertiary eye care in first twenty-four hours which had added advantage of managing the complications. Usually patients of closed globe injury comes to hospital later than open globe injury.<sup>[4]</sup> Patients having total hyphaema or open globe injury are two major clinical scenario requiring indoor admission among all ocular trauma patients.<sup>[5]</sup> This patient responded dramatically to steroid treatment as total hyphaema got resolved only after adding steroids (both topical and systemic) to conventional bed rest and patching of eye. In contrast, published review article in 2013 stated no clear cut benefit of corticosteroid in traumatic hyphaema over observation with complete bed rest, dark patching of eye.<sup>[6]</sup> We managed to alleviate functional problem like glare, monocular diplopia due to polycoria created by inferior iridodialysis. As these are more common in inferior,



temporal or nasal iridodialysis compared to superior iridodialysis (covered by upper eye lid).<sup>[7]</sup> We repaired iridodialysis by cobbler's technique as it has distinct advantages over other techniques like requirement of small paracentesis wound required, anterior chamber remains stable throughout the procedure, only one suture knot is required which can be easily buried as described in the technique.<sup>[7]</sup> Complete management of this patient includes traumatic cataract surgery. We preferred secondary cataract extraction over primary cataract extraction as secondary cataract extraction has distinct advantages like good control of intra ocular inflammation, good media clarity and more stability of the wound and in turn less chance of post-operative complications.<sup>[6,8]</sup> Follow-up of this patient following cataract surgery is important to look for delayed complications like glaucoma due to residual lens protein in anterior chamber. The use of protective glasses was nominal in about all victims including this patient causing impact on globe leading to iridodialysis.<sup>[9]</sup> Educational strategies and informative contents are essential to reduce ocular trauma which is lacking in developing countries like Indian subcontinent.<sup>[10]</sup>

### CONCLUSION

Firecracker injuries are emergency condition more so when ocular trauma is present. Managing this patient lead to conclusion that closed globe injury are more common referred ocular emergency and early referral to tertiary

ophthalmic care had good prognostic significance. Steroids are to be used judiciously in trauma patients so as to avoid complications related to steroid use. Cataract surgery should be planned as per surgeon's expertise and secondary cataract extraction is safer alternative for naïve surgeons. More clarity to protocols for treating firecracker ocular trauma could be formulated from larger case series and analysis of all published case reports. Public awareness mostly for youngsters and use of protective gears are important as callousness on their end may cost own or loved one's vision.

### Acknowledgement

Prof. B.N.R Subudhi, Senior Consultant, Ruby Eye Hospital, Brahmapur, Odisha-760001

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Source of Support: Nil, Conflict of Interest:  
None declared