



## VARIETY OF OCULAR INJURIES DUE TO CRACKER EXPLOSION

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**ABSTRACT**

**Aim:** Clinico- Social study of different types of Cracker Injuries sustained during Diwali festival

**Materials And Methods:** This is a Prospective Cross sectional interventional study conducted on all patients coming to emergency services of an Regional institute of Ophthalmology during Diwali festival. Total number of cases presented were 61, of which 48 were males and 13 females. All fresh cases reported to emergency services were included in study. Cases who had taken treatment elsewhere and reported to the hospital were excluded from study. Informed consent from the patient or parent of patient in case of minor was obtained. Detailed history was taken by a single resident doctor, regarding how injury was sustained, whether immediate first aid was given or not, type of cracker which caused injury, whether the patient himself was igniting the cracker or he was standby observer.

All cases were examined by an experienced Ophthalmologist using Snellen's Chart, Slit lamp, Direct and Indirect Ophthalmoscope and EUGA if required. Clinical documentation was done by taking clinical photograph. Patients with simple injuries were given out patient treatment and asked to follow up in OPD. Patients with serious injuries were admitted and requisite investigations and treatment was given taking the help of sub specialties clinics available.

**Results:** Out of 61 cases, 48 were males and 13 were females. Maximum number of patients ie. 26 who got injured were between 0-10 years. Second decade 12 patients were injured, third decade 13 were injured, fourth decade 3 were involved, fifth decade 2 were involved, sixth decade 5 were involved.

Among the type of crackers, Bombs were responsible for injury to eye resulting in 48 injuries, Accidental explosion of Flower pot was next causing 10 injuries, Rocket caused 2 injuries because of misdirection, 3 got injured by Agarbatti and Fire gun caused injury in 1 patient.

27 cases had singeing of lashes and scalding of skin without involvement of Globe. 14 had moderate injuries out of which 10 had FB conjunctiva and Cornea and 4 had mild Hyphaema. Sight threatening Open globe injury occurred in 4 patients and sight threatening closed globe injury occurred in 16 cases. 41 cases who had mild to moderate injuries recovered good vision after a week. 16 Closed globe injury patients after two or three stages of surgery had UCVA between 6/24 to 6/12 and improved to 6/9 with correction.

4 cases with open globe injury, 2 cases who had limbal tear with iris prolapse could gain UCVA of 6/12 after primary repair. 2 cases who had corneo scleral tear with loss of content of globe became Pthisical.

**Conclusion:** Bombs, flower pots and Misdirected Rocket are main cause of sight threatening injuries to eye. Sparkler are safest type. Seriousness of injuries is equal in person igniting cracker or Standby observer. Patients with mild to moderate injuries recovered good vision of 6/6 after a week. Patients with severe sight threatening injuries lost one to 3 lines on Snellen's Chart. Patients who had loss of contents of globe became blind in that eye. Children who exploded under supervision of adults did'nt get serious injuries.

**KEYWORDS :** Cracker injuries, Closed globe injury, Open globe injury, Hyphaema, Bombs, Flower pots, Rockets.

**INTRODUCTION:**

During Diwali there will be influx of patients with Ocular injuries to all eye Hospital because of Crackers burning. Injuries will be simple like seinging of lashes, Scalding of skin of lids and Foreign bodies in Conjunctiva and cornea to serious sight threatening injuries like, Open globe injuries, and closed globe injuries causing Hyphaema, Iridodialysis and Vitreous hemorrhage and Retinal Detachment.

**Purpose:**

The aim of this study to know the different types of Ocular injuries caused by different types of Crackers. Comparison of seriousness of injuries in person who is igniting crackers and standby observer. Sex predilection of injuries. Effect on children exploding crackers under the guidance of adults and those who are exploding crackers without supervision.

**MATERIALS AND METHODS:**

This is a Prospective Cross sectional interventional study conducted on all patients coming to emergency services of an Regional institute of Ophthalmology during Diwali festival. Total number of cases presented were 61, of which 48 (78.69%) were males and 13(21.31%) females. All fresh cases reported to emergency services were included in study. Cases who had taken treatment elsewhere and reported to the hospital were excluded from study. Informed consent from the patient or parent of patient in case of minor was obtained. Detailed history was

taken by a single resident doctor, regarding how injury was sustained, whether immediate first aid was given or not, type of cracker which caused injury, whether the patient himself was igniting the cracker or he was standby observer. Children injured were asked about whether they were exploding crackers under the guidance of adults or not.

All cases were examined by an experienced Ophthalmologist using Snellen's Chart, Slit lamp, Direct and Indirect Ophthalmoscope and EUGA if required. Clinical documentation was done by taking clinical photograph.

27 Patients with simple injuries like Singeing of lashes, Scalding of skin of lids without any injury to globe. 10 patients with FB in Conjunctiva, Cornea and 4 patients had mild Hyphaema were given out patient treatment and asked to follow up in OPD. 4 Patients with serious open globe injuries and 16 patients with closed globe sight threatening injuries were admitted and requisite investigations and treatment was given taking the help of sub specialties clinics available.

Out of 4 patients with open globe injuries, 2 had tear at the limbus with Iris Prolapse. Emergency repair was done by repositing Iris and Corneo scleral tear sutured with 10'0 Nylon suture. 2 cases had Corneo scleral tear with loss of contents of Globe. Primary repair was done by suturing scleral tear by 5'0 Ethibond and corneal tear by 10'0 Nylon sutures.

Out of 16 Closed globe injuries 8 cases had moderate to severe Hyphaema with Cataractous changes in the lens. Paracentesis done to

aspirate hyphaema. Cataract surgery was done after a gap of 6weeks with IOL implantation. 2 cases who had Iridodialysis with cataractous changes in the lens, Primary repair of dialysis was done and SICS with IOL implantation was done after 6 weeks.

4 had Total Hyphaema with cataractous changes and Vitreous hemorrhage. Hyphaema was aspirated by doing Paracentesis on next day. Waiting period of 6 weeks was given for eye to become quite and Vitreous Hemorrhage to get absorbed. SICS with IOL Implantation was done as secondary procedure.

1 case had Sub Luxation of Lens with Vitreous hemorrhage . This case was managed medically to treat secondary glaucoma and Corneal haziness for 2 weeks and then taken up for Pars Plana Vitrectomy, removal of Crystalline lens and secondary SF IOL implantation. 1 case had Vitreous hemorrhage with Retinal detachment. This case was managed medically for 2 weeks and posted for PPV, SRF drainage, Barrage laser to the retinal tear, 240 encircling band surgery.



Fig.1 Singeing & Scalding

Fig.2 Corneal FB



Fig.3 Hyphaema

Fig.4 Iris Prolapse

**RESULTS:**

Out of 61 cases, 48 were males and 13 were females. Maximum number of patients ie. 26 who got injured were between 0-10 years. Second decade 12 patients were injured, third decade 13 were injured, fourth decade 3 were involved, fifth decade 2 were involved, sixth decade 5 were involved. Among the type of crackers, Bombs were responsible for injury to eye resulting in 48 injuries, Accidental explosion of Flower pot was next causing 10 injuries, Rocket caused injuries because of misdirection, 3 got injured by Agarbatti and Fire gun caused injury in patient.

41 cases who had mild to moderate injuries recovered good vision after a week. 16 Closed globe injury patients after two or three stages of surgery had UCVA between 6/24 to 6/12 and improved to 6/9 with correction.

4 cases with open globe injury, 2 cases who had limbal tear with iris prolapse could gain UCVA of 6/12 after primary repair. 2 cases who had corneo scleral tear with loss of content of globe became Pthisical.

**Table 1. Showing Various Types Of Injuries**

Type of injury	No. of cases	Percentage
Singeing and Scalding of lid	27	44.26%
FB Conjunctiva & Cornea	10	16.39%
Mild Hyphaema	4	6.55%
Closed globe injury	16	26.23%
a. Total Hyphaema & Cataract	8	
b. Iridodialysis & Cataract	2	
c. Hyphaema & Vitreous hemorrhage	4	
d. Sub luxation of lens & Vitreous Hemorrhage	1	
e. Vitreous hemorrhage & RD	1	

Open Globe injury	4	6.56%
a. Limbal tear with Iris Prolapse	2	
b. Corneo Scleral tear with loss of Contents of globe	2	

**DISCUSSION:**

Out of 61 cases 48 were males and 13 females. Sex predilection is obvious as females will be involved in performing Puja and preparation of festival. This difference in involvement of males is also seen in other studies like Chandana et al<sup>1</sup>, Ravi Kumar et al<sup>2</sup>, Sudesh et al<sup>3</sup>. Bomb were responsible for more number of injuries and also serious one. This was also similar finding in other studies done elsewhere. Serious open globe or Closed globe injuries required intervention in two or three sittings. This is also consistent with the results of other studies.

**CONCLUSIONS:**

Bombs , flower pots and Misdirected Rocket are main cause of sight threatening injuries to eye. Misdirection of Rocket occurs when empty plastic mineral water bottles are used to ignite Rocket. The bottle falls off because of lighter weight. Sparkler are safest type. Seriousness of injuries is equal in person igniting cracker or Standby observer. Patients with mild to moderate injuries recovered good vision of 6/6 after a week. Patients with severe sight threatening injuries lost one to 3 lines on Snellen's Chart. Patients who had loss of contents of globe became blind in that eye. Children who exploded under supervision of adults didn't get serious injuries. Children who got seriously injured ignited Crackers without supervision of adults.

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**Conflict Of Interest:** None

Study Conducted at Regional institute of Ophthalmology/ Sarojini Devi eye hospital Hyderabad

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