

# Clinical evaluation of post traumatic cataract in tertiary care hospital

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**Abstract- Purpose:** The aim was to present the experience in the management of cases of traumatic cataract with special reference to age, sex, type of injury, preoperative status of the eye, associated ocular injury, timing of injury and its effect on the final visual outcome.

**Methods:** 35 eyes of 35 patients who underwent surgery for traumatic cataract were included. Specific information were collected and analysed. The patients underwent necessary ophthalmic and systemic investigations and then underwent cataract surgery. The final visual acuity was assessed at the end of 6 weeks.

**Results:** Majority of the cases were seen in age group 5-14 years with male preponderance. 54% were penetrating trauma and 46% were blunt trauma. Corneal and iris tissue injuries were the most common associated injuries. Final visual acuity was 6/6-6/18 in 43% of patients, 6/24-3/60 in 31% of patients and less than 3/60 in 26% of patients. The most common late complication was PCO. On comparing final visual outcome among adult and paediatric age group, there was no significant difference. The time interval between injury and intervention had no significant effect on final visual outcome.

**Conclusion:** Patients with traumatic cataract can have an optional or best possible visual outcome depending upon management and complications.

**Index Terms-** injury, traumatic cataract, time of intervention, cataract surgery, visual outcome

## I. INTRODUCTION

Ocular trauma is the leading cause of unilateral blindness all over the world. Traumatic cataract is a common sequelae of ocular injuries in adults and children. The incidence of ocular injuries varies in different parts of the world. Any prevention strategy requires knowledge of causes of injuries, which may enable more appropriate targeting of resources toward preventing such injuries. For both eye trauma victims the society bears a large potentially preventable burden.

The method used to evaluate the visual outcome in eyes managed for traumatic cataracts and senile cataracts are similar, but the damage to ocular tissues owing to trauma may compromise the visual gain in eyes treated surgically for traumatic cataracts. Hence, the success rate may differ between eyes with these two types of cataract.

Extent of associated damage to anterior and posterior segment, time of intervention, operative and post operative

complications go a long way in determining the ultimate prognosis. The type of trauma, extent of lenticular involvement and associated secondary rise of intraocular pressure are factors of paramount importance which could dictate the exact time of management of cataract.

Based on lenticular opacity, the cataracts are classified as total, membranous, white soft, and rosette type. When there is no clear lens matter between the capsule and nucleus, the cataract was defined as total. When the capsule and organised matter are fused and formed a membrane of varying density, it is defined as a membranous cataract. When loose cortical material is found in the anterior chamber together with a ruptured lens capsule, the cataract is defined as white soft. A lens with a rosette pattern of opacity is classified as a rosette type cataract.

Management of traumatic cataract that results from either blunt or penetrating ocular trauma needs special consideration because of associated injury to ocular and periorbital structures. It is important to study the effect of time interval between injury and first intervention, as the morphology of traumatic cataract is influenced by this interval.

The present study presents the experience in the management of cases of traumatic cataract with special reference to age, aetiology, preoperative status of the eye, time of surgery following trauma, type of surgery and final visual outcome.

## II. MATERIAL AND METHODS

In a prospective clinical study, all patients coming to our hospital i.e MYH, indore operated for traumatic cataract between Jan 2013 to July 2014 were enrolled.

### SELECTION CRITERIA:-

1. Patients who were cooperative and willing for the surgery were included.
2. Patients with extensive ocular damage were not included

### PREOPERATIVE ASSESSMENT:-

#### 1. History

- a) Patients were registered with their name, age, sex and address
- b) Relevant history from the patients was taken regarding
  - Diminution of vision and associated complaints like pain, redness, watering etc with duration.
  - Nature of trauma and associated ocular damage.
  - Time lapse between the occurrence of trauma and institution of treatment recorded.

## 2. Examination

a) A comprehensive general examination of all patients was done to rule out any systemic illness.

b) ocular examination:

- Visual acuity (unaided and aided)
- Retinoscopy (where possible)
- Detailed anterior segment examination under diffuse illumination and slit lamp microscopy.
- Tonometry by Schiottz tonometer.
- Syringing for patency of lacrimal apparatus.
- Limbal ring x-ray in cases with IOFB for exact localization.
- USG-B Scan to rule out posterior segment pathology.
- Kerotometry to determine preoperative astigmatism and A-scan to determine power of IOL to be implanted.

## 3. Surgical procedures undertaken prior to cataract surgery

Corneal or scleral tear – tear repair done as soon as possible under LA or GA and cataract surgery postponed for at least 1 month. However, in some cases simultaneous cataract extraction was done and secondary implantation done at a later date.

## 4. Management of Traumatic cataract

Depending on condition of lens and status of capsule and zonules

Type of cataract surgery can be of :

- Irrigation and aspiration
- Anterior capsulectomy + irrigation and aspiration
- Lens extraction and vitrectomy
- Phacoemulsification
- SICS
- ICCE
- ECCE
- ECCE + membranectomy

## 5. Follow up

All patients were regularly followed up at first, second, fourth, sixth post operatively weeks. Parametres recorded were-

- Visual acuity ( unaided and aided).
- Retinoscopy and best corrected visual acuity by subjective test.
- IOP with Schiottz tonometer.
- Detailed anterior segment evaluation with Slit lamp.
- Any complications like PCO, iris atrophy etc recorded. Grading of PCO done.
- Keratometry for post operative astigmatism.
- Posterior segment evaluation done by direct and indirect ophthalmoscope.

## III. RESULTS

In the current study majority of the cases were seen in 5-15 years with a male preponderance.

**Table 1: Age Distribution**

Age	No. of patients	Percentage%
0-15	14	40%
15-24	11	31%
25-34	3	9%
35-44	5	14%
>45	2	6%

**Table 2: Sex Distribution**

Sex	No. of patients	Percentage %
Male	25	71%
Female	10	29%

54% were penetrating trauma and 46% were blunt trauma. Wooden stick was the most common object causing trauma

**Table 3: Type of injury**

Type of injury	No. of patients	Percentage %
Penetrating	19	54%
blunt	16	46%

**Table 4: Objects causing trauma**

Objects causing trauma	No. of patients	Percentage %
Wooden stick	17	49%
Hand and fist	3	8%
Plastic	3	8%
Metallic	6	18%
Fire cracker	1	3%
RTA	1	3%
Acid	1	3%
Brick and stone	3	8%

### Associated ocular injuries:

Associated ocular injuries go long way in determining the ultimate visual prognosis in cases of traumatic cataract.

Corneal and iris injuries were the most common associated injury.

**Table 5: Associated Ocular Damage**

Associated Ocular Damage	No. of patients	Percentage
Corneal (corneoscleral) tear	19	54%
Injury to iris	10	28%
Zonular disruption	02	06%
Corneal opacity	02	06%
Old RD	01	03%

**Type of surgery:**

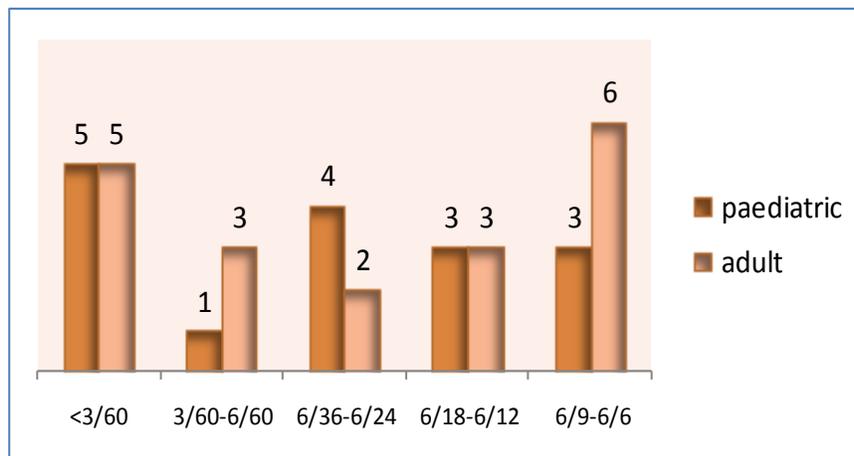
Depending on the condition of the eye, the type of surgery done were SICS with PCIOL, SICS with PCIOL and lens extraction with anterior vitrectomy

**Table 6: Type of Surgery**

Type of Surgery	No. of Eyes	Percentage
SICS with PCIOL	32	91%
SICS with ACIOL	01	3%
Lens extraction with Ant. vitrectomy	02	6%

**Final visual outcome compared among adult and paediatric groups:**

On comparing final visual outcome among adult and paedric group, there was no significant difference statistically with a p value of 0.658



**Figure 1: Final visual outcome compared among adult and paediatric group ( bar chart)**

**Effect of time interval between injury and cataract surgery**

The time interval between injury and intervention had no significant effect on final visual outcome.

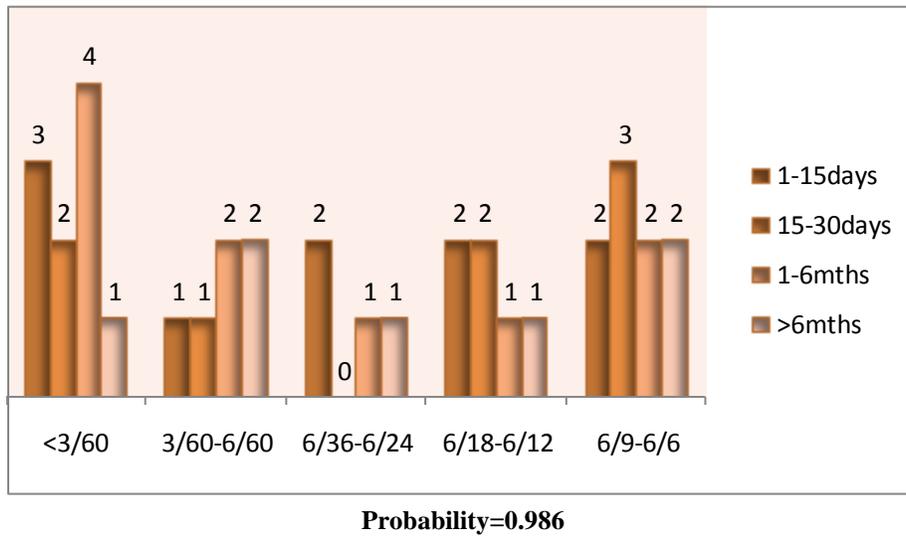


Figure 2: Effect of time interval between injury and cataract surgery ( bar chart)

**Final visual outcome:**

The final visual outcome was 6/6-6/18 in 43% of patients, 6/24-3/60 in 31% of patients and less than 3/60 in 26% of patients

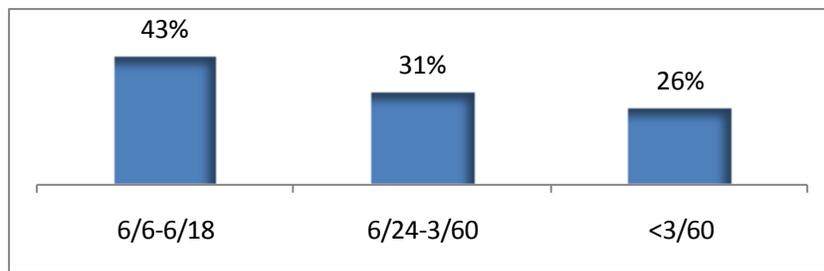


Figure 3: final visual outcome ( bar chart)

**Comparison of visual outcome between penetrating and blunt injury**

In our study though the visual outcome was better in blunt injury, the difference was not statistically significant.

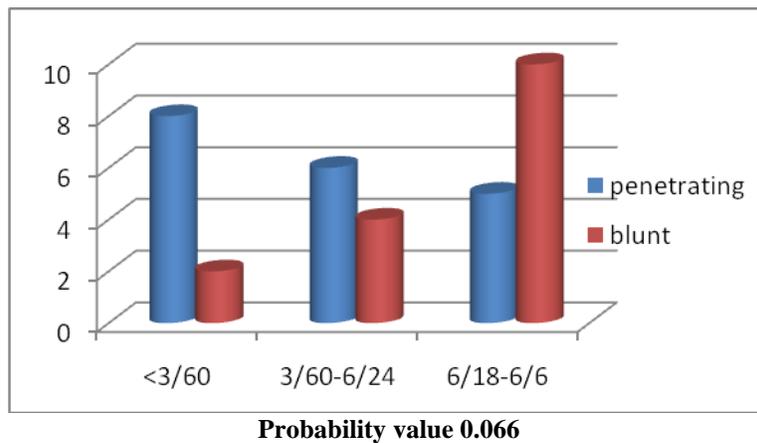
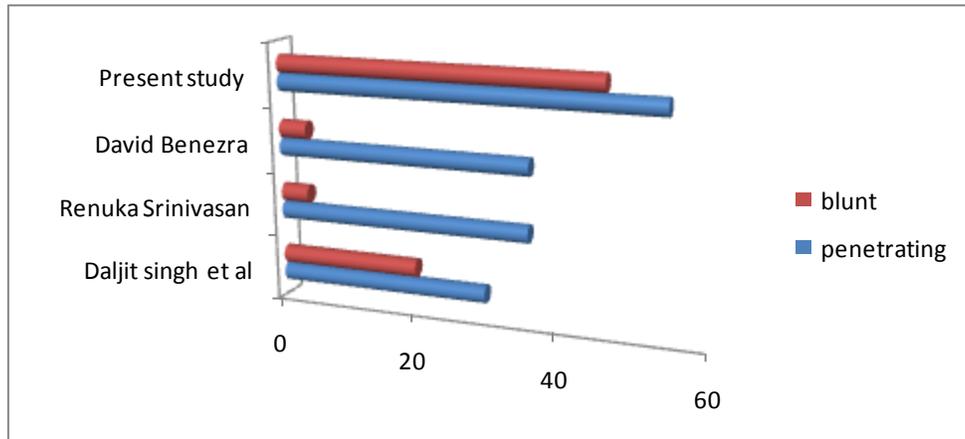


Figure 4: comparison of visual outcome between penetrating and blunt injury.

#### IV. DISCUSSIONS

- This study included 35 cases of traumatic cataract managed at MYH, Indore
- Male preponderance was found with a male to female ration of 1:2.5 . It is due to involvement of males in sports and outdoor activities.



**Figure 5: Comparison of incidence of type of injury with other studies ( bar chart)**

- On comparing the effect of time interval between injury and intervention on the final visual outcome with different studies, our conclusion i.e timing of intervention has no effect on the visual outcome is same with most of the studies except for the study which was conducted by mehul and co-workers in which they found a significant effect on visual outcome.

**Table 7: Comparison of effect of time of intervention with other studies.**

Studies	Other	Effect of time interval between trauma and intervention on visual outcome
Wos and Mirkiewicz Sieradzka		No effect
Behbehani et al		No effect
Mehul and co-workers		Has significant effect
Present study		No effect

- The major postoperative complication encountered on 1<sup>st</sup> postoperative day were ant. uveitis and C.odema which responded to medical therapy
- The commonest late postoperative complication was PCO
- Gain et al concluded that postoperative visual acuity depends on complications. The main cause of no

- Zaman et al stated that majority(50-64%) of traumatic cataract patients ranged between 5-15 yrs which is consistent with the present finding i.e cases ranged between 1-15yrs
- On comparing our study with different studies regarding the incidence of blunt and penetrating injury, our study is same with other three studies i.e penetrating injury has a higher incidence.

improvement in VA in the present finding was due to central corneal opacity and high astigmatism

- 32 patients were fitted with PCIOL, and one with ACIOL and two patients were left aphakic.

#### V. CONCLUSION

In conclusion, in our study males were predominantly affected by traumatic cataract because of their nature of work and outdoor occupation. The age group of 5-25 years formed the core group of people to get traumatic cataract.

Though, in our study most of the patient were fitted with PCIOL and one with ACIOL , newer surgical techniques like PCIOL with capsular tension ring and sclera fixation IOL and other newer technique can be done in complicated cases like zonular dehiscence and/or posterior capsular rupture. The final visual outcome showed good result however the final visual outcome depends upon the extent of associated ocular injuries. Effective Intervention and management are the key points in preventing monocular blindness due to traumatic cataract.

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