

Clinical study of traumatic cataract and its management

Manjula Mangane, M.R. Pujari, Chethan N. Murthy

Department of Ophthalmology, Basaweshwar Teaching and General Hospital, Gulbarga, Karnataka, India

Abstract

Background: Traumatic cataract is one of the common sequel following ocular injury. It is one of the leading cause of uniocular visual loss. A need was therefore felt to study the clinical outcome of traumatic cataract, Mode of management, postoperative complication, to analyze the visual prognosis following traumatic cataract extraction with intraocular lens implantation.

Objectives:

1. To know the incidence of traumatic cataract in the age group of 3-60 years
2. To know the associated findings and complications due to traumatic cataract
3. To analyze the visual prognosis following cataract extraction with intraocular lens implantation.

Methods: Fifty cases (3-60 years) who developed traumatic cataract were prospectively analyzed. Age, sex, traumatic sequelae, surgical strategies and postoperative complications were reviewed for all eyes from the period of January 2014 to January 2016

Results: The study group comprised of 50 cases of traumatic cataract out of which 36 cases (72%) were males and 14 cases (28%) were females. Most of the injuries (78%) were caused by stick or bow and arrow. Most of the cases i.e., 47 had total cataract. Corneal injuries (54%) and iris related problems (28%) were the most common associated findings. Small incision cataract extraction with intraocular lens (IOL) implantation was performed in these cases. Visual acuity improved from PL PR preoperatively to 6/18 or above in 82.97% postoperatively

Conclusions: Small incision cataract extraction with IOL implantation provides satisfactory results in traumatic cataract. The main cause for impaired vision was corneal scarring and opacity obstructing visual axis and posterior capsule opacification

Key-words: Traumatic cataract; Blunt trauma; Penetrating trauma; Cataract extraction; Intraocular lens implantation; Visual acuity

Introduction

Cataract remains commonest cause of blindness in India 81%. Traumatic cataract accounts for about 36%. 75% of patients are younger than age 40 years. Male to female ratio is 9:1^[1]

It is estimated that approximately 4-5% of a comprehensive ophthalmologist's patients are seen secondary to ocular injury. Traumatic cataract may present as acute, subacute, or late sequela of ocular trauma. Both penetrating and concussion injuries can cause cataract, the type of trauma, extent of lenticular involvement and associated damage to

the ocular structure go a long way in determining the ultimate prognosis^[2]. Any prevention strategy requires knowledge of causes of injuries, which may enable more appropriate targeting of resources toward preventing such injuries. 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

Address for Correspondence

Dr. Manjula Mangane

Department of Ophthalmology, Basaweshwar Teaching and General Hospital, Gulbarga, Karnataka, India

Email: dr_manjulamangane@yahoo.com

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.

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. This study is done with special reference to age, etiology, associated ocular injuries, and type of surgery; surgical complications and final visual outcome after surgery

Material and Methods

The present study consists of 50 cases of traumatic cataract in age group of 3-60 years attending the Government General Hospital, Basaveshwar Teaching & General Hospital, Gulbarga during the period of January 2014 to January 2016.

All the patients from age of 3-60 years having traumatic cataract due to blunt and penetrating injuries were included in the study. All the cases of traumatic cataract having posterior segment involvement like retinal detachment optic atrophy, vitreous hemorrhage, macular hole, traumatic cataract due to retained intraocular foreign body, electric shock, radiation were excluded.

These 50 cases of traumatic cataract were admitted and the following tests were done preoperatively:

1. Routine blood analysis.
2. Routine urine analysis.
3. Lacrimal patency test
4. Intraocular pressure measurement
5. Systemic examination
6. Blood pressure
7. Radiological study, B-Scan ultrasonography to rule out IOF, RD, vitreous hemorrhage
8. Ocular Examination:
 - Using torch light, slit lamp bio microscopy, indirect ophthalmoscopy were done.
 - Preoperative visual acuity was recorded in both eyes.
 - Keratometry and A-scan biometry was done for intraocular power calculation, but in case of corneal

scarring the power of other eye was calculated

Management of Traumatic cataract

Depending on the condition of lens and status of capsule and zonules, the type of cataract surgery done was -

- Irrigation and aspiration
- Anterior capsulotomy + irrigation and aspiration
- Lens extraction and vitrectomy
- SICS

Follow up: All patients were regularly followed up at after 1 week, after 1 month and after 6 weeks, 3 months and 6 months.

Parameters 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.

Results

In the current study majority of the cases were seen in the age group ranged from 3 to 60 years. More number of cases were found in the age group of 11-20 years (36%). Out of 50 cases, 36 were males and 14 were females. The male-female ratio is 2.57:1 (Table1).

Table 1. Age and gender-wise analysis

Age group (years)	Male	Female	Number of Cases	Percentage
< 10 years	4	1	5	10.00
11-20 years	12	6	18	36.00
21-30 years	10	3	13	26.00
31-40 years	5	2	7	14.00
41-50 years	3	1	4	8.00
>50 years	2	1	3	6.00

Table-2: Type of Trauma

Type of trauma	Male	Female	Number of Cases	Percentage
Blunt	14	5	19	38.00
Penetrating	22	9	31	62.00
Total	36	14	50	100.00

Out of 50 cases of traumatic cataract, 39 were caused by stick or thorn, 9 were caused by stone particles and 2 were caused by metallic particles (Table 2).

Table-3: Type of Cataract

Type of Cataract	No
Total lens opacity	47
Rosette	3

Analyzing the type of cataract, it was found that 47 cases has total lens opacity and 3 cases were found to be of rosette type (Table 3)

Table-4: Duration between trauma and surgery (n = 50)

Duration	No. of Cases	Percentage
Within a week	2	4.00
Within a month	17	34.00
Within a year	26	52.00
More than one year	5	10.00
Total	50	100.00

The duration between trauma and surgery was analyzed and it was found that the duration varied from less than a week to more than one year (Table 4).

Table-5: Associated ocular damage (n = 50)

Associated Ocular Damage	No. of Patient	Percentage
Corneal injuries	27	54.00
Injury to iris	14	28.00
Adherent leucoma	3	6.00
Posterior Synechiae	4	8.00
Dislocated lens	2	2.00

Associated Ocular Damage:

Associated ocular injuries go a long way in determining the ultimate visual prognosis in cases of traumatic cataract. 27 patients (54%) showed corneal injuries in the form of scars or opacities. Injury to iris, in the form of Iridodialysis, traumatic mydriasis was seen in 14 cases (28%). Adherent leucoma was seen in 3 cases (6%). Posterior Synechiae was seen in 4 (8%) of cases. Dislocation of lens was seen in 2 (2%) of cases (Table 5).

Table-6: Type of Surgery

Type of Surgery	No. of Eyes	Percentage
SICS with PCIOL	45	90.00
Plain SICS with later Secondary IOL implantation	2	4.00
Needling aspiration	2	4.00
Combined Extraction with IOL	1	2.00
Total	50	100.00

Type of Surgery:

Out of 50 cases of traumatic cataract, 45 cases underwent SICS (small incision cataract surgery) with posterior chamber intraocular lens implantation. 2 cases underwent plane SICS because zonular dialysis and PC rupture and at a later date secondary IOL was implanted. 2 cases of pediatric traumatic cataract were managed by needling and aspiration without IOL implantation. One case associated with glaucoma was managed by combined extraction with IOL implantation. Others like which had metallic foreign bodies were referred to higher centers after initial SICS. (Table6)

Table-7: Preoperative Visual Acuity (n = 50)

Visual Acuity	No. of Eyes	Percentage
PL/PR	39	78.00
HM	3	6.00
CF ½ mtr.	5	10.00
Could not be assessed	3	6.00
Total	50	100.00

Preoperative Visual Acuity: Most cases presented with PL/PR – 39. But in 3 patients vision could not be assessed as they were uncooperative children (Table 7)

Table-8: Final visual acuity (n=47)

Final Visual Acuity	No. of Eyes	Percentage
6/6 – 6/18	39	82.97
6/18 – 6/60	8	17.02
3/60 – or less	Nil	-
Total	47	100.00

Final visual acuity (best corrected visual acuity) assessed at the end of 6 months: The patients were followed up at 6 weeks, 3 months and 6 months. Most of patients (82.97 %) achieved 6/6-6/18.

Discussion

This study included 50 cases of traumatic cataract managed at BTGH, Gulbarga. Male preponderance was found with a male to female ratio of 78:25 %. It is due to involvement of males in sports and outdoor activities (Figure 1).



Figure 1. A case with traumatic cataract

Daljit Singh et al^[3] stated that majority (49.17%) of traumatic cataract patients ranged between 11-30 yrs which is consistent with the present finding i.e. cases ranged between 11-30yrs were 62% . The study found that most of the cases i.e., 39 (78%) were caused by stick and thorns. This is because of the rural people who are working in fields. The type of injury was mostly of penetrating type. Krishnamachray M et al^[4] also found that most of the injuries i.e., 54.7% were caused by stick or bow and arrow. This study showed penetrating trauma was common mode of injury i.e., 32 (64%) cases, blunt trauma was seen in 18 cases (36%), comparable with a study by Renuka Srinivasan et al^[5] showed 30 penetrating and 4 blunt trauma.

This study showed duration between trauma and surgery varied from within one week to more than a year. Two cases (4%) presented within one week. Seventeen cases (34%) presented within one month. The duration between trauma and surgery did not much affect the visual outcome. But in one child due to late presentation, divergent squint was complication seen.

In this study the associated damage are corneal injuries in the form of scar or opacity was seen in 27 cases (54%), corneal scarring and opacity affected the visual acuity by obstructing the visual axis and causing astigmatism.

Table-9: Comparison of Associated Complications

Studies	Corneal injury (scar or opacity)	Iris related	Dislocated lens
Marcus Blum et al ^[7]	61.9%	52.3%	35.2%
Krishnamachary et al ^[4]	60.5%	49.6%	--
Daljit Singh ^[3]	37%	26.2%	6.5%
Present study	54%	36%	2%

In this study the major postoperative complication encountered were PCO (30%) (Figure 2) and anterior uveitis (12%) (Figure 3).



Figure 2: Posterior capsular opacification



Figure 3: Anterior uveitis

Out of 50 cases of traumatic cataract who underwent surgery, the final visual acuity was assessed for 47 cases, 3 cases missed for follow-up. The main cause for the impaired vision in this study was due to corneal scars and opacity obstructing the visual axis, and posterior capsular opacification as shown by other studies; Shoeb Ahmed et al^[9] and Eckstein et al^[10] shows 92%.

In this study of 50 cases of traumatic cataract who were managed by cataract extraction with IOL implantation showed good visual outcome, as shown by a study^[6], in which excellent visual results were noted i.e., 86%. Marcus Blum et al^[7] reported good visual outcome of 90%. Daljit Singh reported 70%^[3]. Renuka Srinivasan noted 88.2% of visual outcome^[5]. Joseph et al^[8] also noted good visual outcome 95%.

Conclusion: Small incision cataract extraction with IOL implantation provides satisfactory results in traumatic cataract. The main cause for impaired vision was corneal scarring and opacity obstructing visual axis and posterior capsule opacification.

References

1. Das R, Roy M, Midya A, Roy IS. Intraocular lens implants in traumatic cataracts. *Ind Jr of Ophthal* 1989 April-June; XXVIII(2): 89-90.
2. Bhatia IM, Panda A, Sood NN. Management of traumatic cataract. *Ind. Jr. Ophthal* 1982; 31: 290-293.
3. Daljit Singh. The role of intraocular lens in traumatic cataract. *Ind. J. of Ophthal* 1983; 31: 294-297.
4. Krishnamachari M, Rati V, Gupta J. Management of traumatic cataract in children. *Jr. of Cat & Ref surgery* 1997; 23(1): 681-7.
5. Srinivasan R, Kumudhan. Traumatic cataract – Factors affecting visual outcome. *Jr. of TNOA XXXVII(1)*: 45-48.
6. Brar GS, Ram J, Pandav SS, Reddy SS. Postoperative complications and visual results in uniocular pediatric traumatic cataract. *Ophthalmic Surg lasers* 2001; 32(3): 233-8.
7. Blum M, Tetz MR, Greiner C, Voelcker HE. Treatment of traumatic cataract. *J. Cataract Refract Surg* 1996 April; 22(3):342-6..
8. Moisseiev J, Segev F, Harizmann N. Primary cataract extraction and intraocular lens implantation in penetrating ocular trauma. *Ophthalmology* 2001; 108: 1099-1103.
9. Ahmed SS. Traumatic cataract – Newer Perspectives. *Jr. of TNOA* 1998; XXXVIII(2): 31-33.
10. Ekstein M, Vijaylakshmi P, Killedar M, Gilbert C, Foster A. Use of intraocular lenses in children with traumatic cataract in South India. *Br. J. Ophthalmol* 1998 Aug; 82: 911-915.

Conflict of interest: **Nil**

Source of funding: **Nil**

Date received: April 29th 2016

Date accepted: June 14th 2016