

Visual Outcome of Traumatic Cataract at Holy Family Hospital, Rawalpindi

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Purpose: To evaluate the visual outcome of patients with secondary extraction of traumatic cataract with IOL implantation.

Study design: Prospective case series.

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Place and Duration of Study: Department of Ophthalmology, Holy Family Hospital, Rawalpindi from January 2014 to July 2015.

Materials and Methods: 38 eyes of 38 patients with traumatic cataract were managed with Cataract Extraction with IOL implantation. The patients were followed up for six months post operatively and final best corrected visual acuity was determined.

Results: 38 eyes of 38 patients were studied and there was a male predilection of 3.2:1. The most common age group affected was between 4 and 20 years (50%). Blunt trauma was the cause in 11 (28.9%) patients and penetrating trauma in 27 (71.1%). More than 88% of patients had pre-op BCVA of 6/60 or less. Residual corneal scar due to trauma was present in 24 (63.2%) patients. The final BCVA at 6 months post-op was 6/6 – 6/9 in 11 (28.9%), 6/12 – 6/18 in 21 (55.3%) and 6/24 – 6/36 in 6 (15.8%) patients.

Conclusion: Traumatic cataract is a major cause of ocular morbidity in younger age groups and males are commonly affected. If properly managed, good final visual outcome can be achieved in such patients.

Key Words: Traumatic cataract, visual acuity, Intraocular lens implantation.

Ocular trauma is a leading cause of ocular morbidity and is one of the commonest causes of monocular blindness worldwide.¹ Approximately 0.5 million people suffer from blinding ocular injuries every year and more than 2 million people are bilaterally visually impaired owing to ocular trauma.² In the developed country like US, the incidence of ocular injuries ranges from 8 to 13 per 1000 population.² A previous study shows that from India the reported incidence is 20.53% and from Pakistan it is 12.9%.¹

Ocular injuries commonly affect younger age group and hence of great public health importance in terms of significant and often unnecessary toll in terms of medical care, human suffering, long-term disability,

productivity loss, rehabilitation services, and socioeconomic cost.³

Cataract formation is a common complication of blunt or penetrating ocular trauma resulting in visual impairment.^{1,4} the methods used for evaluation of visual outcome of traumatic cataract are similar to those used for other types of cataract³ but the management needs special consideration because of associated injuries to other ocular structures¹. The final visual outcome may be compromised by such injuries³ but if the cataract extraction is carried out as a secondary procedure the outcome is improved¹. Hence the purpose of this study was to evaluate the visual outcome of patients with secondary extraction of traumatic cataract with IOL implantation.

MATERIAL AND METHODS

This prospective study was carried out at the Department of Ophthalmology, Holy family Hospital, Rawalpindi from January 2014 to July 2015. All the patients presenting with unilateral traumatic cataract were included in the study. Patients with associated injuries to the posterior segment e.g. retinal detachment and retained intra-ocular foreign body (IOFB) which could affect the final visual outcome were excluded from our study.

Patient’s data including demographic details, mode of injury, pre-operative visual acuity, operative procedure, type of IOL, presence or absence of corneal scar and final visual outcome was noted. Cataract extraction with IOL implantation in the capsular bag was performed as a separate procedure after initial management of the patients for the primary ocular injury.

The preoperative assessment of the patients included slit lamp biomicroscopy of the anterior segment with examination of the fundus where possible owing to media clarity. In patients with obscured fundus view, B-scan was performed to rule out any IOFB or other pathology like retinal detachment etc. Best corrected visual acuity was also noted. Biometry was performed for the calculation of IOL power. In cases with corneal scar, the keratometric readings of contralateral eye were used.

Three types of operative procedures were used i.e. irrigation and aspiration I&A, Phacoemulsification and ECCE, and either rigid or foldable posterior chamber IOL was placed. The patients were followed-up regularly for post op recovery and final best corrected visual acuity (BCVA) was recorded 6 months after surgery.

The data was analyzed by Statistical Package for Social Sciences (SPSS) version 20.0 and values were expressed in terms of frequencies, percentages and means.

RESULTS

The study included 38 eyes of 38 patients who presented with unilateral traumatic cataract. Out of these, 29 (76.3%) were males and 9 (23.7%) were females with a male to female ratio of 3.2: 1. The age ranged between 4 and 65 years (mean age: 22.68 ± 14.6 years). Half of the patients (50%) ranged between 4 and 20 years. 39.5% patients were between 21 to 40 years. The rest (10.5%) were from 41 to 65 years. The

Table 1: Demographic details (n=38).

Parameters	N (%)
Age Distribution	
4 - 20	19 (50)
21 - 40	15 (38.5)
41 - 65	4 (10.5)
Gender	
Male	29 (76.3)
Female	9 (23.7)
Eye	
Right	18 (47.4)
Left	20 (52.6)
Mode of Injury	
Blunt	11 (28.9)
Penetrating	27 (71.1)

Table 2: Pre-op BCVA, procedure and type of IOL (N=38)

Parameters	N (%)
Pre-op BCVA	
6/6 - 6/9	0 (0%)
6/12 - 6/18	0 (0%)
6/24 - 6/36	4 (10.5)
6/60 - 1/60	17 (44.7)
< 1/60	17 (44.7)
Procedure	
I&A	17 (44.7)
PHACO	15 (39.5)
ECCE	6 (15.8)
Type of IOL	
Rigid	16 (42.1)
Foldable	22 (57.9)

Table 3: Corneal scar and post-op BCVA (n=38).

Parameters	n (%)
Corneal scar	
Absent	14 (36.8)
Present	24 (63.2)
Post-op BCVA	
6/6 - 6/9	11 (28.9)
6/12 - 6/18	21 (55.3)
6/24 - 6/36	6 (15.8)
6/60 - 1/60	0
< 1/60	0

right eye was involved in 18 (47.4%) patients whereas left eye was involved in 20 (52.6%) patients. The mode of injury was blunt trauma in 11 (28.9%) patients and penetrating trauma in 27 (71.1%). Table 1 shows these

Table 4: Different parameters according to age (n=38).

		Age Groups			Total (n=38) n (%)
		4 - 20 years (n=19) n (%)	21 - 40 years (n=15) n (%)	41 - 65 years (n=4) n (%)	
Mode of Injury	Blunt	4 (21.1)	5 (33.3)	2 (50)	11 (28.9)
	Penetrating	15 (78.9)	10 (66.7)	2 (50)	27 (71.1)
Pre op Vision	6/6 - 6/9	0 (0)	0 (0)	0 (0)	0 (0)
	6/12 - 6/18	0 (0)	0 (0)	0 (0)	0 (0)
	6/24 - 6/36	3 (15.8)	0 (0)	1 (25)	4 (10.5)
	6/60 - 1/60	6 (31.6)	11 (73.3)	0 (0)	17 (44.7)
	< 1/60	10 (52.6)	4 (26.7)	3 (75)	17 (44.7)
Procedure	I & A	15 (78.9)	2 (13.3)	0 (0)	17 (44.7)
	PHACO	1 (5.3)	11 (73.3)	3 (75)	15 (39.5)
	ECCE	3 (15.8)	2 (13.3)	1 (25)	6 (15.8)
Post op Vision	6/6 - 6/9	3 (15.8)	6 (40)	2 (50)	11 (28.9)
	6/12 - 6/18	11 (57.9)	9 (60)	1 (25)	21 (55.3)
	6/24 - 6/36	5 (26.3)	0 (0)	1 (25)	6 (15.8)
	6/60 - 1/60	0 (0)	0 (0)	0 (0)	0 (0)
	< 1/60	0 (0)	0 (0)	0 (0)	0 (0)

figures.

4 (10.5%) patients had a pre-operative best corrected visual acuity (BCVA) of 6/24-6/36 and 17 (44.7%) had visual acuity of 6/60 - 1/60, whereas 17 (44.7%) patients had a visual acuity of <1/60. 17(44.7%) patients were operated by I&A, Phacoemulsification was done in 15 (39.5%) and ECCE in 6 (15.8%) patients. Rigid lens was placed in 16 (42.1%) and foldable lens in 22 (57.9%) patients (Table 2).

Residual corneal scar due to trauma was not present in 14 (36.8%) patients whereas 24 (63.2%) patients had corneal scar. The post-operative best corrected visual acuity (BCVA) at 6 months was found to be 6/6 - 6/9 in 11 (28.9%), 6/12 - 6/18 in 21 (55.3%) and 6/24 - 6/36 in 6 (15.8%) patients (Table 3).

DISCUSSION

This study included 38 eyes with traumatic cataract that presented to and managed at Department of Ophthalmology, Holy Family Hospital, Rawalpindi from January 2014 to July 2015. More than 75% of

patients were males. A previous study from Karachi, Pakistan in 2011 showed a male to female ratio of 4:1.² Another study from Italy in 2008 showed male predilection of 5.5:1.⁵ This is due to involvement of males in hazardous outdoor activities like sports and work^{1-3, 6}. Younger age groups were mostly involved and 50% patients were from 4 to 20 years of age. Another 39.5% were between 21 to 40 years. This pattern of younger age group involvement is also shown in many local and foreign studies^{1,3,6-8}. This shows that ocular trauma is a major cause of visual morbidity in productive age groups.

About two – thirds of patients in this study were affected by penetrating trauma. This is consistent with previous studies which showed open globe injuries in 70 to 80 percent of patients.^{1,3,6,7} More than 88% of patients had a pre-op BCVA of 6/60 or less with only 10% with a BCVA of 6/36 or better. A previous study in Singapore reported pre-op BCVA of less than 6/60 in about 70% of patients of traumatic cataract⁹. As most of the patients were young with soft cataracts so I&A was performed in about 45% patients. Phacoemulsification was done in 39% and ECCE in the remaining 16% patients. Posterior chamber IOL was placed in all 38 patients as it is the standard method to overcome aphakia in patients operated for cataract, and results in good visual outcome.²

The post-operative BCVA checked at 6 months was satisfactory in this study. About 30% of patients had a vision of 6/9 or better and 85% achieved a final visual acuity of 6/18 or better. In a study conducted in Africa two – thirds of patients had a visual outcome of 6/18 or better.⁸ Two previous local studies showed a visual outcome of 6/36 or better in more than 90% patients.^{2,6} A foreign study from Italy reported a final BCVA of 6/12 or better in 48% of patients.⁵ Another study from Singapore demonstrated a final BCVA of 6/12 or better in 35% of patients⁹. This study and previous studies show that good visual outcome can be achieved by removal of traumatic cataract and implantation of posterior chamber IOL.

Another point to consider is that ocular injuries are a major cause of significant morbidity not only in terms of physical and psychological stress but also a great economic burden. The cost is estimated to be almost 3 billion dollars annually.⁵ The limitations in this study were a small sample size and a fixed follow-up period. This was mainly due to the fact that we excluded patients who had posterior segment involvement or a retained IOFB and secondly, most

patients were from far flung areas and it was not convenient for them to come for longer follow-ups.

CONCLUSION

To conclude, it has been observed in this as well as previous studies that ocular trauma mostly affects young males and it is a major cause of physical, psychological and economic burden. Though good visual outcome can be achieved in most patients by proper management but efforts should be made to create awareness about strategies to prevent ocular morbidity due to ocular trauma and traumatic cataract. The importance of eye protection should be emphasized to the high risk population through continuous and persistent health education.

The limitations of this study were a small sample size and limited follow up period. With further studies including more patients and a longer follow up period, more elaborate results can be obtained.

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