

Original Research Article

Visual outcome of traumatic cataract in a tertiary care hospital, Tirupati

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Abstract

Background: The incidence of ocular injuries in India is estimated to be 20.5% affecting mainly those aged less than 40 years and males. Cataract is the commonest complication after ocular injury resulting from either penetrating injuries from sharp objects like stick or thorn or with blunt trauma by objects like stone, cricket ball etc. The present study aims to find out the visual outcome of traumatic cataract cases.

Material and methods: This was a cross sectional study conducted among 40 traumatic cataract cases attending outpatient units of SVRR Government General Hospital, Tirupati during July 2014 to June 2015. A predesigned interview schedule was used to collect the necessary information. All patients had undergone Posterior Chamber Intra Ocular Lens Implantation and visual outcome was assessed after 15 days, 6 weeks, 3 months and 6 months. The results were analyzed using MS excel software and Epiinfo 7 version statistical software.

Results: It was found that a large majority of the cases were aged less than 40 years (67.5%) and males (62.5%). The most common type of cataract developed was found to be 'white soft' type (47.5%). In 52.5% of patients, the time lag between injury and surgery was found to be 1 week to 1 month. It was found that 70% patients had regained vision ($\geq 6/18$) after surgery.

Conclusion: Posterior Capsular Intra Ocular Lens Implantation is highly effective in restoring vision in traumatic cataract cases. The time lag between injury and surgery should be as short as possible for complete recovery. There should be quick referral of traumatic cataract cases to the specialized ophthalmic care units depending on condition of patients.

Key words

Ocular trauma, Traumatic cataract, White soft cataract, Posterior Capsular Intra Ocular Lens Implantation.

Introduction

The incidence of ocular injuries in India is estimated to be 20.5% with 75% cases occurring among those aged less than 40 years. Males are predominantly affected than females with a male to female ratio of 9:1. Further, it is the leading cause of unilateral blindness [1]. Cataract is the commonest complication following ocular injury [2]. Traumatic cataract results most commonly from either penetrating injuries from sharp objects like stick or thorn with direct injury to lens or through blunt trauma by objects like stone, cricket ball etc. Rarely, it can occur from electrical shock, ionizing radiation or infra-red rays (glass blower's cataract) [3].

Traumatic cataract following a perforating injury may be localized cataract, rosette cataract, intumescent cataract or lacerated cataract. Blunt trauma leads to concussion type of cataract due to coup or contre coup ocular injury. The lenticular opacity may be vossius ring, localized or diffuse type [4-7].

In this background, this present study was conducted to find out the visual outcome of traumatic cataract cases developed following ocular trauma. The findings of the present study are expected to help in appropriate management of traumatic cataract cases.

Material and methods

This cross sectional study was conducted among 40 traumatic cataract cases caused by penetrating or blunt trauma attending Ophthalmic outpatient services of Sri Venkateswara Ram Narayan Ruia Hospital which is the teaching hospital of Sri Venkateswara Medical College, Tirupati, Andhra Pradesh. A predesigned interview schedule was used to collect information regarding age, gender, visual acuity at presentation and after surgery, time lag between injury and surgery and causes for decreased postoperative visual acuity.

The study was conducted during July 2014 to June 2015. This study included those cases aged 5 years and above with traumatic cataract of Zone I and II and grade III and IV. Those cases with intraocular foreign body, co-morbid conditions like retinal detachment, secondary glaucoma, vitreous hemorrhage etc. were excluded. Those cases with extensive corneo-scleral lacerations (Zone III) and with no PL (grade V) were also excluded.

Permission for conducting the study was obtained from the Institutional Ethics Committee of SV Medical College, Tirupati. A written consent was taken from all the patients participating in the study. In case of minors, the consent was obtained from the parent or guardian. Visual acuity was checked using Snellen's chart. Wherever possible, a detailed fundus examination was carried out. X-ray of orbit and ultrasound B scan were taken whenever necessary. Ocular trauma score was calculated and prognosis explained to the patient or guardian. The intraocular lens power was calculated using the axial length of the traumatized eye (or normal eye in case if it was not possible from traumatized eye).

The patients were explained about the surgery including advantages and disadvantages. A written consent was obtained in all cases as per the rules. Cases with recent trauma were put on steroid – antibiotic eye drops and cycloplegics to control any associated uveitis or breakdown of blood aqueous barrier resulting in pre-operative quite eyes. The associated ocular damage was managed before taking up temporal small incision cataract surgery with Posterior Chamber Intra Ocular Lens (PCIOL) Implantation.

Most of the cases were discharged on the 3rd post-operative day. All cases received topical steroid -antibiotic and cycloplegic eye drops.

Steroid-antibiotic eye drops were then tapered off based on anterior chamber reaction. Only those cases with significant postoperative iridocyclitis received systemic steroids. Patients were instructed to attend for follow up after 15 days, 6 weeks, 3 months and 6 months. At each visit, complete ocular examination was carried out with slit lamp, tonometry and ophthalmoscope with dilated pupils. Retinoscopy was done after 6 weeks in all cases and necessary correcting glasses were prescribed. Postoperative Intra ocular lens implantation complications if any were noted and causes for decreased visual acuity determined. Routinely in all cases, the other eye was checked periodically for any signs of sympathetic ophthalmia. The data was analyzed using MS Excel 2010 and Epiinfo 7 version statistical software.

Results

It was found that a large majority of the cases were aged less than 40 years (67.5%) and males constituted a higher proportion (62.5%) than females (37.5%). (**Table - 1**) 'White soft' type of cataract was the common form of cataract developed after ocular trauma (47.5%) while 'total' cataract was found 37.5% patients. It was found that the most common structures with associated ocular damage were found to be cornea (77.0), iris (67.5%) and lens matter in anterior chamber (47.5%). It was found that in 52.5% patients, the time lag between injury and surgery was found to be 1 week to 1 month while in 25.0% patients, it ranged from 1-6 months. In 5 patients (12.5%), the time lag was found to be more than 6 months (**Table - 2**). The visual acuity at presentation was found to be 'the perception of hand movements' in 50.0% of cases while it was found to be less than 3/60 in 37.5% of cases. After the surgery, it was found that as much as 70.0% of patients had regained vision (visual acuity more than or equal to 6/18) while in 27.5% cases, the visual acuity ranged between 6/18 to 3/60. (**Table - 3**) The most important causes for decreased post-operative visual acuity were found to be irregular astigmatism (27.5%),

central corneal opacity (22.5%) and posterior capsular opacification (15.0%). (**Table - 4**)

Table - 1: Age and gender distribution of traumatic cataract cases (N=40).

Variable	No. of cases	%
Age group (years)		
Less than 20	15	37.5
20 – 40	12	30.0
40 – 60	12	30.0
60 and above	1	2.5
Gender		
Male	25	62.5
Female	15	37.5

Table - 2: Type of cataract, associated ocular damage and time lag between injury and surgery of traumatic cataract cases (N=40).

Variable	No. of cases	%
Type of cataract		
White soft	19	47.5
Total	15	37.5
Membranous	4	10.0
Rosette	2	5.0
Associated ocular damage		
Cornea	31	77.0
Iris	27	67.5
Lens matter in anterior chamber	19	47.5
Sclera	7	17.5
Time lag between injury and surgery		
Less than one week	4	10.0
1 week to 1 month	21	52.5
1 – 6 months	10	25.0
More than 6 months	5	12.5

Discussion

Accidental ocular trauma can occur at any age but young people are more vulnerable. Cataract is a known complication after penetrating or blunt ocular trauma occurring in around 1-15% [8]. It is estimated that 14% of all cases of cataract in children are due to ocular trauma.

The type of trauma, extent of lenticular involvement and associated ocular damage determines the ultimate visual prognosis [9].

Table - 3: Visual acuity at presentation and after surgery of traumatic cataract cases (N=40).

Variable	No. of cases	%
Visual acuity at presentation		
Less than 3/60	15	37.5
Perception of hand movements	20	50.0
Perception of light	5	12.5
Final visual acuity after surgery		
Less than 3/60	1	2.5
6/18 to 3/60	11	27.5
≥ 6/18	28	70.0

Table - 4: Causes for decreased post-operative visual acuity of traumatic cataract cases (N=40).

Cause for decreased visual acuity	No. of cases	%
Irregular Astigmatism	11	27.5
Central corneal opacity	9	22.5
Posterior capsular opacification	4	15.0

In the present study, a majority of the cases occurred in younger age group (less than 40 years) which may be attributed to greater outdoor and recreation activity as well as work pattern of young individuals. Pondicherry study [10] also showed a higher prevalence of 44.6% of cases in younger age group. A study in western India [11] also found that 25.6% cases occurred in 11-20 years. The current study showed a clear preponderance in males (62.5%) as they are more prone to ocular trauma because of their occupation. Similar findings were reported by Gujarat study [12] (69.5%) and western India study [11] (61.7%).

In the current study, 'white soft' cataract with ruptured anterior capsule was most common (47.5%). In contrast, Pondicherry study [10] study found that 'total' cataract was the most common type (64.7%). In the present study, the visual acuity at presentation was found to be 'the perception of hand movements' in 50.0% of cases while it was found to be less than 3/60 in 37.5% of cases. Pondicherry [10] and Hyderabad [13] studies had found visual acuity of less than 6/60 to perception of hand movements or light perception in most of their cases. Gujarat study [12] had found that 87.8% had preoperative visual acuity of less than 1/60. Western India study [11] had found that 51.2% had visual acuity of perception of light. It was found in the current study, that 70.0% cases regained best corrected visual acuity of 6/6 to 6/18. A comparatively lower proportion of restoration of vision was found in studies in rural western India [11] (46.3%), Gujarat [12] (43.5%) and in East Africa [14] (64.7%). The higher proportion of regained visual acuity in the present study may be attributable to inclusion of only PCIOL (Posterior Capsular Intra Ocular Lens) implantation cases in the study and excluding those cases with intraocular foreign body, secondary glaucoma, retinal detachment, vitreous hemorrhage and those with extensive corneo-scleral lacerations. The common causes of decreased visual acuity despite surgery were found to be irregular astigmatism, central corneal opacity and posterior capsular opacification.

Conclusion

The traumatic cataract cases are predominantly common in young age group and males. Time lag between injury and surgery should be as short as possible for complete recovery. Posterior Capsular Intra Ocular Lens Implantation is highly effective in restoring vision in traumatic cataract cases. There should be quick referral to the specialized ophthalmic care units depending on the condition of the patients. Long term follow up studies are recommended to find out the visual outcome in all traumatic cataract cases.

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