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Ophthalomology

KEY WORDS: Early cataract, Late cataract, Loss of vision, IOL, complications

STUDY TO COMPARE THE RESULT IN EARLY VERSUS LATE TRAUMATIC CATARACT SURGERY AND INTRA OCULAR LENS IMPLANTATION

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ABSTRACT

Background: Loss of vision due to traumatic cataract is an important public health problem. The cataract can be operated early or late in the course of disease. This study was undertaken in order to compare the early and late cataract surgery. **Material and Methods:** A prospective interventional study was conducted on patients selected from OPD and camps in LLRM Medical College, Meerut. All patients with traumatic cataract attending ophthalmology OPD and admitted to eye wards were included in to the study. Patients were divided in to two groups where first group who undergone early cataract surgery and second group undergone late cataract surgery in repeated sitting. After surgery, examination at follow up included Visual Acuity, Intraocular Pressure (IOP) and Anterior Chamber Inflammation and Pupil examination was conducted. **Results:** Most of the early and late cataract surgery group were aged less than 20 years and were males. Blunt injury was the main reason for trauma and right eye was involved in both the groups. The mean axial length was lower in late cataract surgery group. The mean BCVA improved after surgery to same extent in both the groups. The improvement of uncorrected visual acuity was better in late cataract surgery group than early cataract surgery group. The IOL position was Bag in early and sulcus in late cataract surgery group. Inflammation andposterior synechiae were complications in early and Raised IOP was the main complication in late cataract surgery group. **Conclusion:** This study had shown that there was statistically significant difference in outcomes including BCVA between the early and later cataract surgery.

INTRODUCTION

Loss of vision due to ocular trauma is an important public health problem around the world. The vision loss due to trauma is preventable in many circumstances. More than half a million people around the world are blind due to ocular injuries. Around 40% of the monocular blindness can be attributed to the ocular trauma.[1]

The ocular trauma may lead to traumatic cataracts and thus contributes to the notable visual morbidity.[7] The crystalline lens is important component of the optical system of human body and its transparency and integrity is vital for the normal functioning of the eye. The incidence of traumatic cataract is increasing in the era of industrialization and incidence had increased in spite of ye protected with the lids, projected margins of the orbit, the nose and cushion of fact from behind. It mainly affects significant number of the younger persons. Thus, it deprives its victims of vision in the prime ages of life.[2]

The traumatic cataract surgery can be performed either early in association with the repair laceration in open globe injury, at early days after presentation of penetrating injury or as a late procedure in quiet eye. If the lens capsule is ruptured and lens material has been introduced into the anterior chamber it is preferable that the lensectomy can be performed as early procedure to prevent inflammation, lens particle introduced uveitis and glaucoma. Thepower of the intraocular lens (IOL) is calculated mostly by the biometry of the fellow eye because of corneal irregularity, or associated open globe injury.[3]

Another advantage of performing the early surgery is the surgery can be performed during same admission and reducing the cost and time. The advantage of late procedure includes better IOL calculation after suture removal and knowing the potential for visual improvement.

The literature available shows no consensus in timing of the cataract surgery and its prognosis. Hence it was decided to take up this study with the aim of comparing the advantages and disadvantages of early and late traumatic cataract surgery.

MATERIAL AND METHODS

The study was conducted in the upgraded department of ophthalmology, LLRM medical college, Meerut during 2019 – 2020. A population based prospective interventional study was done on patient selected from OPD and camps. All cases were observed for at least sixth month period after surgery.

All patients with traumatic cataract who are attending ophthalmology OPD and admitted in eye wards were included in the study provided they fulfil the inclusion criteria. Patients of all age groups, all types of traumatic cataract, Patient who gave written informed consent for examination, treatment and surgical procedure, Mentally and physically fit up to a minimum level required to participate in study were included in to the study. Patients who were Not interested/ unable to provide informed consent, Any substance abuse, mental illness or medical condition that in opinion of Investigator, would make it difficult for potential participant to participate in intervention, Patients with uncontrolled systemic illness and Patients not fit for general anaesthesia were excluded from the study.

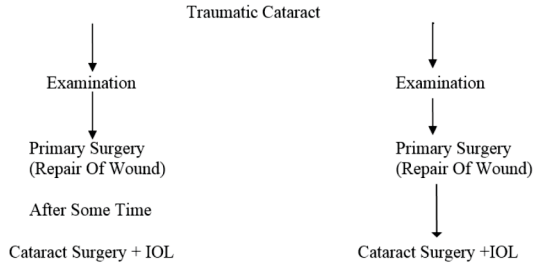
Patients were divided in to two groups, First group – early cataract surgery in same sitting and Second group – late cataract surgery in repeat sitting. After taking detailed history general physical examination of patient will be done which includes recording of vitals such as Blood Pressure, Pulse Rate, Respiratory Rate and Temperature.

After general examination ocular examination was done which included Type of injury, Type of cataract, UCVA, BCVA, PLPR, Pupillary reaction, RAPD, Headposture, Facial symmetry, Visual axis, Ocular movement, Eyelid, Conjuctiva, Cornea, Iris, Lens and Fundus.

After ocular examination basic laboratory investigations was done such as Hemogram, Blood sugar (fasting and post prandial), Bleeding time and clotting time, Blood Urea and Serum Creatinine.

BSCAN

After surgery the result of surgery is graded qualitatively in view of patient, operating surgeon and an observer.



Following surgery topical antibiotics Corticosteroids and Cycloplegics were prescribed. Examination at follow up included Visual Acuity, Intraocular Pressure (IOP) and Anterior Chamber Inflammation and Pupil examination was conducted.

The data thus obtained was compiled using Microsoft Excel sheet. The data was presented as frequencies, percentages, mean and standard deviation. Chi square test was used as test of significance for categorical variables and independent sample T test was used as test of significance for the quantitative variables.

RESULTS

		Early cataract surgery n (%)	Late cataract surgery n (%)
Age group	Less than 20 years	16 (53.3)	18 (60.0)
	21 – 30 years	9 (30.0)	8 (26.7)
	31 – 40 years	3 (10.0)	4 (13.3)
	41 – 50 years	2 (6.7)	0
Sex	Male	20 (66.7)	18 (60.0)
	Female	10 (33.3)	12 (40.0)
Type of trauma	Blunt	19 (63.3)	21 (70.0)
	Penetrating	11 (36.7)	9 (30.0)
Laterality	Left	11 (36.7)	9 (30.0)
	Right	19 (63.3)	21 (70.0)

About 53.3% of the patients with early cataract surgery and 60.0% with late cataract surgery were aged below 20 years. About 66.7% of the patients in early cataract surgery group and 60% in the late group were males. About 63.3% of the early group and 70% in the late group underwent blunt injury. Right eye was involved in 63.3% of the early cataract surgery group and 70% in the late cataract surgery group of patients.

Table 2. Distribution Of Study Groups According To Axial Length

Axial length	Early cataract surgery	Late cataract surgery	T value	P value, sig
Mean ± SD	25.7 ± 4.54	24.1 ± 2.4	1.668	0.101, NS

The mean axial length was 25.7 in early cataract surgery group and 24.1 in the late cataract surgery group. However, this difference was not statistically significant between the two groups.

Table 3. Distribution Of Study Groups According To Pre-operative UCVA And Post Operative BCVA (Logmar)

Mean ± SD (Logmar)	Early cataract surgery	Late cataract surgery	T value	P value, sig
Pre operative UCVA	3.03 ± 0.89	3.07 ± 0.87	0.147	0.884, NS
Postoperative BCVA	0.59 ± 0.21	0.56 ± 0.21	0.43	0.669, NS

The mean pre-operative UCVA in early cataract surgery group was 3.03 and 3.07 in the late cataract surgery group. But, this difference was not statistically significant. The mean post-operative BCVA in early cataract surgery group was 0.59 and 0.56 in the late cataract surgery group. But, this difference was not statistically significant.

Table 4. Pre-operative And Post-operative Vision (UCVA)

	Vision (UCVA)	Pre-operative vision n (%)	Post-operative vision n (%)
Early cataract surgery	6/ 6 to 6/12	5 (16.7)	30 (100)
	6/18 to 6/24	11 (36.7)	0
	6/24 to 6/60	6 (20.0)	0
	Less than 6/60	8 (26.7)	0
Late cataract surgery	6/ 6 to 6/12	5 (16.7)	30 (100)
	6/18 to 6/24	14 (46.7)	0
	6/24 to 6/60	2 (6.7)	0
	Less than 6/60	9 (30.0)	0

In early cataract surgery, about 36.7% of the patients in this study had vision between 6/18 to 6/24. During post-operative phase all the vision were recovered to 6/6 to 6/12. In late cataract surgery, about 46.7% of the patients in this study had vision between 6/18 to 6/24. During post-operative phase all the vision were recovered to 6/6 to 6/12.

Table 5. Distribution Of Study Groups According To IOL Position

IOL position	Early cataract surgery n (%)	Late cataract surgery n (%)
Bag	19 (63.3)	12 (40.0)
Sulcus	11 (36.7)	18 (60.0)
Total	30 (100)	30 (100)

χ^2 value=3.27 df=1 p value, sig=0.071, NS

About 63.3% of the patients 40.0% of the late cataract surgery group had bag type of IOL position. This difference was not statistically significant between the two groups.

Table 6. Distribution Of Study Groups According To Complications

Complications	Early cataract surgery n (%)	Late cataract surgery n (%)
Inflammation	3 (10.0)	1 (3.3)
IOL pigment deposition	1 (3.3)	1 (3.3)
Posterior synechiae	2 (6.7)	1 (3.3)
Raised IOP after surgery	3 (10.0)	2 (6.7)
Subluxation of IOL	2 (6.7)	1 (3.3)
Visual axis opacity (VAO)	2 (6.7)	1 (3.3)
Total	30 (100)	30 (100)

χ^2 value=3.1 df=1 p value, sig=0.796, NS

Inflammation was present in 10% of the patients in early cataract surgery group followed by raised IOP (10%), subluxation of IOL, Visual axis opacity (VAO) and posterior synechiae in 6.7% of the cases. In late cataract surgery group, raised IOP was present in 6.7% of the cases followed by inflammation, IOL pigment deposition, posterior synechiae, subluxation of IOL and visual axis opacity in one patient each. However, this difference in complications was not statistically significant between the two groups.

DISCUSSION

The population based prospective interventional study was conducted in the upgraded department of ophthalmology, LLRM medical college. All patients with traumatic cataract who are attending ophthalmology OPD and admitted in eye wards were included in the study provided they fulfil the inclusion criteria. A total of thirty patients selected randomly by using card method were subjected for early cataract surgery and thirty patients were subjected for late cataract surgery. This study had shown that, about 30% of the patients with early cataract surgery and 33.3% with late cataract surgery were aged between 21 – 30 years which was statistically significant. In a similar study by Tabatabei et al, the mean age in early cataract surgery group was 31.1 years and late cataract surgery group was 31.8 years.[48] The studies have revealed that, ocular trauma mainly involves children and young men. Hence, it is reasonable to perform early cataract surgery to make the visual rehabilitation shorter and helps in better anatomical and visual outcomes.[4, 5]

In this study males outnumbered males which was statistically not significant. In a study by Tabatabei et al, more than 90% of the patients in both the groups were males.[3] About 63.3% of the early group and 70% in the late group underwent blunt injury which was statistically not significant. A study by Akpolat et al, the blunt injuries were higher than the penetrating injuries.[56] Right eye was involved in both the groups in majority of the cases which was not statistically significant. In contrary to these results, Tabatabei reported

that the injuries were higher of left side in both the groups.[6]

Right eye was involved in both the groups in majority of the cases which was not statistically significant. In contrary to these results, Tabatabei reported that the injuries were higher of left side in both the groups.[3] The mean BCVA in early cataract surgery group was 0.59 and 0.56 in the late cataract surgery group which was not statistically significant. The mean BCVA in a study by Tabatabei et al was 0.15 in early cataract surgery group and 0.12 in late cataract surgery group.[3] In a study by Akpolat et al, the BCVA was 0.22 in blunt injuries and 0.39 in penetrating injuries.[6] A study by Shah et al had shown that, the group of patients had a significantly higher post-operative inflammation and lower final BCVA. Hence, they concluded that it is better to perform the traumatic cataract surgery as an early procedure because of lower complication rate as well as sooner and better visual rehabilitation.[7]

Inflammation was present in 10% of the patients in early cataract surgery group followed by raised IOP (10%). In late cataract surgery group, raised IOP was present in 6.7% of the cases followed by inflammation. In a study by Tabatabei et al, raised IOP after surgery, visual axis opacity and IOL pigment deposition were observed in early cataract and inflammation, Visual axis opacity and posterior synechie were the common complications encountered by the late cataract surgery group.[3]

CONCLUSION

This study was mainly undertaken to compare the early cataract surgery with the late cataract surgery. This study had shown that, there was statistically significant difference in outcomes including BCVA between the early and later cataract surgery.

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