Section: Ophthalmology

Original Research Article

STUDY OF EVALUATION OF COMPLICATIONS AND POSTOPERATIVE VISUAL OUTCOMES OF CATARACT SURGERIES

Sunil Chaturvedi[1]

[1]*Associate Professor, Department of Ophthalmology, Government Medical College, Haridwar, Uttarakhand, India.*

Received *: 11/01/2025*
Received in revised form *: 27/01/2025*
Accepted *: 15/02/2025*

Corresponding Author:
Dr. Sunil Chaturvedi,
Associate Professor, Department of Ophthalmology, Government Medical College, Haridwar, Uttarakhand, India.
Email: jaya_sunil@yahoo.com

DOI: 10.70034/ijmedph.2025.2.42

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (2); 240-242

ABSTRACT

Background: Cataract represent the primary cause of preventable blindness globally. Cataract surgery is primarily indicated when there is a significant decline in visual acuity and/or an increased sensitivity to light. Hence; the present study was conducted to evaluate complications and postoperative visual outcomes of cataract surgeries.

Materials and Methods: A total of 50 patients undergoing cataract surgery were enrolled. Complete demographic and clinical details of all the patients were obtained. A comprehensive pre-operative assessment of the eye, including an evaluation of visual acuity, was conducted. All patients subsequently underwent cataract surgery. Post-operative evaluations were conducted using a slit-lamp biomicroscope on the first day following surgery and again within the first week, focusing on the cornea, surgical wound, anterior chamber, and the implanted lens. During follow-up visits, the eyes were examined for any post-operative complications, and visual acuity was measured using Snellen's chart and pinhole testing to establish best corrected visual acuity (BCVA). All the results were evaluated using SPSS software. univariate analysis was done for evaluation of the level of significance.

Results: A total of 50 patients were evaluated. The mean age of the patients was 46.2 years. Among them, 66 percent were males while the remaining were females. Complications were seen in 18 patients (36 percent). Among them, Striate keratopathy, Corneal edema, Anterior uveitis, Macular edema and Acute onset endophthalmitis was seen in 10 percent, 6 percent, 6 percent, 12 percent and 2 percent of the patients. Good outcome was seen in 90 percent of the patients while borderline outcome and poor outcome was seen in 4 percent and 6 percent of the patients.

Conclusion: The findings indicated a significant prevalence of striate keratopathy and corneal edema, likely attributable to the initial incision made in the corneoscleral region. Notably, ninety percent of the cases that underwent surgery exhibited favorable outcomes.

Keywords: Visual Outcome, Cataract surgery.

INTRODUCTION

Cataract represent the primary cause of preventable blindness globally. Although some cataract may arise from congenital factors, trauma, or medication, the majority are associated with aging. Age-related cataract result from the clouding of the lens. The crystalline lens, a biconvex structure, plays a crucial role in focusing light onto the retina.[1,2] It is characterized by its transparency, measuring approximately 10 mm in diameter and 4 mm in axial length. The lens is composed of fibers originating from the lens epithelium, encased in a delicate capsule, and supported by zonular fibers that facilitate accommodation in collaboration with the ciliary body. As individuals age, the lens becomes less flexible, resulting in a condition known as presbyopia, which is characterized by difficulty in focusing on nearby objects.[3,4] Cataract surgery is primarily indicated when there is a significant decline in visual acuity and/or an increased

sensitivity to light. Additionally, surgical intervention on the lens may be required if age-related lens thickening results in a flattening of the anterior chamber and a narrowing of the chamber angle, which can subsequently lead to elevated intraocular pressure. This condition is predominantly observed in hyperopic patients who possess a smaller ocular globe with a reduced axial length and/or a shallow anterior chamber.[5,6] Hence; the present study was conducted to evaluate complications and postoperative visual outcomes of cataract surgeries.

MATERIALS AND METHODS

A total of 50 patients undergoing cataract surgery were enrolled. Complete demographic and clinical details of all the patients were obtained. A comprehensive pre-operative assessment of the eye, including an evaluation of visual acuity, was conducted. Slit-lamp examination was performed to classify the types of cataract present: nuclear cataract (nuclear color NO, nuclear opalescence NC), cortical cataract (C), and posterior subcapsular cataract (P), in accordance with the Lens Opacities Classification System III (LOCS III). Additionally, keratometry and A-scan ultrasound were utilized to ascertain the necessary dioptric power for the intraocular lens (IOL). All patients subsequently underwent cataract surgery. Post-operative evaluations were conducted using a slit-lamp biomicroscope on the first day following surgery and again within the first week, focusing on the cornea, surgical wound, anterior chamber, and the implanted lens. During follow-up visits, the eyes were examined for any post-operative complications, and visual acuity was measured using Snellen's chart and pinhole testing to establish the best corrected visual acuity (BCVA). All the results were evaluated using SPSS software. univariate analysis was done for evaluation of the level of significance.

RESULTS

A total of 50 patients were evaluated. Mean age of the patients was 46.2 years. Among them, 66 percent were males while the remaining were females. Complications were seen in 18 patients (36 percent). Among them, Striate keratopathy, Corneal edema, Anterior uveitis, Macular edema and Acute onset endophthalmitis was seen in 10 percent, 6 percent, 6 percent, 12 percent and 2 percent of the patients. Good outcome was seen in 90 percent of the patients while borderline outcome and poor outcome was seen in 4 percent and 6 percent of the patients.

Table 1: Complications

Complications	Number	Percentage
Striate keratopathy	5	10
Corneal edema	3	6
Anterior uveitis	3	6
Macular edema	6	12
Acute onset endophthalmitis	1	2
No complications	32	64
Total	50	100

Table 2: Visual outcome

Complications	Number	Percentage
Good outcome	45	90
Borderline outcome	2	4
Poor outcome	3	6
Total	50	100

DISCUSSION

The term "cataract" denotes the opacification of the eye's lens. This gradual clouding leads to a deterioration in visual acuity, which may ultimately result in blindness. Symptoms can vary based on whether the opacification occurs in the nucleus or cortex of the lens, and may include diminished visual contrast, heightened glare sensitivity, altered color perception, and changes in the lens's refractive ability. Notably, the hardening of the lens nucleus, known as nuclear sclerosis, is linked to the development of progressive myopia (nearsightedness). The progression of lens clouding is typically slow and painless, and it is recognized as the most prevalent reversible cause of blindness globally, impacting an estimated 95 million individuals.[6-8]

In developing nations, the scarcity of adequately trained surgeons and the absence of suitable medical infrastructure often render phacoemulsification unfeasible. As a result, sutureless manual cataract surgery, commonly referred to as small incision cataract surgery, is increasingly adopted as an alternative. This method involves creating a self-sealing incision approximately 6.0 mm in length, positioned outside the limbus. An incision is made in the anterior capsule, allowing the denser part of the cataract, known as the nucleus, to be extracted through this opening. When executed correctly, this technique can be performed swiftly, and the need for suturing the incision is infrequent, making it well-

suited for high-volume surgical settings.[8,9] Hence; the present study was conducted to evaluate complications and postoperative visual outcomes of cataract surgeries.

A total of 50 patients were evaluated. Mean age of the patients was 46.2 years. Among them, 66 percent were males while the remaining were females. Complications were seen in 18 patients (36 percent). Thanigasalam T et al. investigated the factors influencing complications and visual outcomes following cataract surgery. This retrospective cohort study analyzed data from 1,632 cataract procedures. The average age of the patients was 66.9 years, with a balanced representation of both genders. A significant proportion of the participants presented with age-related cataract. The phacoemulsification technique was performed more rapidly than alternative surgical methods, particularly by experienced surgeons. A history of previous ocular surgeries and procedures conducted under general anesthesia were linked to an increased incidence of complications. Conversely, phacoemulsification was associated with fewer complications and superior visual outcomes. The age and underlying cause of cataract did not significantly influence the occurrence of complications. Factors such as gender, age, cataract etiology, systemic comorbidities, surgeon expertise, and both intraoperative and postoperative complications did not significantly impact visual outcomes. Overall, phacoemulsification demonstrated favorable visual results in cataract surgery, with the duration of the procedure, surgeon expertise, and complications showing no significant effect on visual outcomes.[10]

In the present study, Striate keratopathy, Corneal edema, Anterior uveitis, Macular edema and Acute onset endophthalmitis was seen in 10 percent, 6 percent, 6 percent, 12 percent and 2 percent of the patients. Good outcome was seen in 90 percent of the patients while borderline outcome and poor outcome was seen in 4 percent and 6 percent of the patients. Donthineni PR et al described the visual outcomes and complications following cataract surgery in dry eye disease (DED). This retrospective study included 668 eyes of 399 patients with DED, who underwent cataract surgery. Based on etiology, they were divided into three groups: cicatrizing conjunctivitis (CC), meibomian gland dysfunction (MGD), and Sjogren's syndrome (SS). The median age at which cataract surgery was performed was 58 (IQR: 47–65) years. Etiology of DED was CC in 279, MGD in 255, and SS in 134 eyes. Most (471) eyes underwent phacoemulsification, under peribulbar anesthesia (548) through a temporal clear corneal incision (209) with foldable intraocular lens implantation (417). The overall median LogMAR BCVA improved from 1.1 (IQR: 0.6–2.1) at baseline to 0.3 (IQR: 0.1–0.7) and 0.1 (IQR: 0–0.65) at 1 and 6 weeks ($p < 0.0001$) post-operatively. The median 6 weeks post-operative BCVA was 0.3, 0.1, and 0.1 in CC, MGD, and SS, respectively, and significantly better than at baseline. The leading cause of sub-optimal vision was corneal scarring (44; 9%), and the most common complication was posterior capsular rupture with vitreous loss (23; 3%). Cataract surgery has good visual outcomes in patients with DED, without any disconcerting rate of complications.[11]

CONCLUSION

The findings indicated a significant prevalence of striate keratopathy and corneal edema, likely attributable to the initial incision made in the corneoscleral region. Notably, ninety percent of the cases that underwent surgery exhibited favorable outcomes. Therefore, the results suggest that cataract surgery can yield visually beneficial results for patients with cataract, provided that the integrity of the ocular surface is properly preserved both before and after the procedure.

REFERENCES

1. Hejtmancik JF, Riazuddin SA, McGreal R, Liu W, Cvekl A, Shiels A. Lens Biology and Biochemistry. Prog Mol Biol Transl Sci. 2015; 134:169-201.
2. Lim JC, Umapathy A, Grey AC, Vaghefi E, Donaldson PJ. Novel roles for the lens in preserving overall ocular health. Exp Eye Res. 2017 Mar; 156:117-123.
3. Gollogly HE, Hodge DO, St Sauver JL, Erie JC. Increasing incidence of cataract surgery: population-based study. J Cataract Refract Surg. 2013 Sep;39(9):1383-9.
4. Ezra DG, Allan BD. Topical anaesthesia alone versus topical anaesthesia with intracameral lidocaine for phacoemulsification. Cochrane Database Syst Rev. 2007;3
5. Deeks ED. Tropicamide/phenylephrine/lidocaine intracameral injection: a review in cataract surgery. Clin Drug Investig. 2019; 39:1133–1139.
6. Eke T, Thompson JR. Serious complications of local anaesthesia for cataract surgery: a 1-year national survey in the United Kingdom. Br J Ophthalmol. 2007; 91:470–475.
7. Ianchulev T, Litoff D, Ellinger D, Stiverson K, Packer M. Office-Based Cataract Surgery: Population Health Outcomes Study of More than 21 000 Cases in the United States. Ophthalmology. 2016 Apr;123(4):723-8.
8. Findl O, Kriechbaum K, Sacu S, et al. Influence of operator experience on the performance of ultrasound biometry compared to optical biometry before cataract surgery. J Cataract Refract Surg. 2003; 29:1950–1955.
9. Memmi B, Knoeri J, Bouheraoua N, Borderie V. Intraocular lens calcification after pseudophakic endothelial keratoplasty. Am J Ophthalmol. 2022; 246:86–95.
10. Thanigasalam T, Reddy SC, Zaki RA. Factors Associated with Complications and Postoperative Visual Outcomes of Cataract Surgery; a Study of 1,632 Cases. J Ophthalmic Vis Res. 2015 Oct-Dec;10(4):375-84.
11. Donthineni PR, Das AV et al. Cataract Surgery in Dry Eye Disease: Visual Outcomes and Complications. Front. Med. 7:575834.