

Post Operative Clinical Evaluation of Cataract Surgery in Complicated Cases

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Abstract

Introduction: Postoperative complications of cataract surgery are notably more challenging in patients with preexisting ocular conditions such as old uveitis, glaucoma, high myopia, diabetic retinopathy, age-related macular degeneration (ARMD), pseudoexfoliation syndrome and subluxated lens. The present study was a cross-sectional study aiming to evaluate various factors responsible for visual outcomes after cataract surgery in complicated cases.

Aim: To study various factors responsible for visual outcomes after cataract surgery in complicated cases.

Objectives

1. To evaluate the visual outcome of complicated cases like cataract with old uveitis, cataract with glaucoma, cataract with high myopia, cataract with diabetic retinopathy, cataract with age-related macular degeneration, cataract with pseudoexfoliation and cataract with subluxated lens.
2. To modify the line of management in such cases for better visual outcomes.

Materials and Methods: The present study was undertaken over 18 months from June 2022 to November 2023 in the Department of Ophthalmology, Krishna Vishwa Vidyapeeth, Karad, India. The inclusion criteria was cataract with glaucoma , cataract with high myopia , cataract with old uveitis, cataract with pseudoexfoliation , cataract with diabetic retinopathy , cataract with age related macular degeneration and subluxated lens. Paediatric cataract, traumatic cataract and cataract post vitreoretinal surgery was a part of the exclusion criteria. A comprehensive history-taking process, focusing on past medical history including diabetes, ocular trauma, previous retinal surgeries, and any infections. This was followed by a thorough general examination to assess vital signs and overall health status. Subsequently, participants underwent detailed ocular examinations which included visual acuity assessments, slit lamp examinations, fundus evaluations (including optic disc and macula assessments), selective gonioscopy and perimetry, OCT imaging, and fundus photography.

Results: A total of 90 patients who fulfilled the inclusion criteria were included in the study. In the present study the mean age was 63.76 years. The gender distribution of the population showed that 40% of the population was female, while males constituted 60%. Pseudoexfoliation syndrome (PXF) had the highest incidence at 25.6%, making it the most frequent ocular condition. The findings showed that high myopia was significantly more common in females, while glaucoma and PXF were more prevalent in males.

Conclusion : The present study documented improvement in postoperative vision : the highest being in patients with old uveitis (100%); which was followed by PXF, diabetic retinopathy, subluxated lens, high myopia , glaucoma and ARMD in that order. In 11 out of 90 patients (12.2%), the vision was less than 6/60 postoperatively even at POD 30. This constituted 25% myopia cases, 26.6% glaucoma cases and 33.3% ARMD cases.

The integration of tailored surgical approaches and comprehensive postoperative evaluation and care is essential to improve visual outcomes and quality of life for patients undergoing cataract surgery in the presence of complicating factors.

Keywords: Cataract, Intraocular Pressure, Best Corrected Visual Acuity, Intraocular Lens

Introduction

Cataract is the most common global cause of treatable blindness. According to WHO, it causes 51% of blindness in South Asia, including India, and 47.8% of blindness globally. In India, the incidence of cataract in 2001 was estimated to be 7.75 million and this increased to 8.25 million by 2020. Cataracts are generally age-related; it is estimated that 30% of people over the age of 65 have visually significant cataracts (vision of 6/12 or

below), while 70% of those over the age of 85 have visually significant cataracts.

Postoperative complications of cataract surgery are notably more challenging in patients with preexisting ocular conditions such as old uveitis, glaucoma, high myopia, diabetic retinopathy, age-related macular degeneration (ARMD), pseudoexfoliation syndrome and subluxated lens. Patients with a history of uveitis are at higher risk during cataract surgery due to increased postoperative inflammation, which can exacerbate conditions like cystoid macular edema and promote the formation of posterior synechiae. Those with glaucoma are at risk of intraocular pressure spikes post-surgery, which can further damage the optic nerve, necessitating meticulous intraoperative and postoperative management. High myopia introduces unique challenges due to the elongated axial length of the eye, which complicates the calculation of intraocular lens (IOL) power and increases the risk of retinal detachment postoperatively. Diabetic retinopathy patients often have fragile retinal vasculature, predisposing them to exacerbation of macular edema and hemorrhages after cataract surgery. The presence of age related macular degeneration adds to the complexity as the degenerative changes in the macula can lead to suboptimal visual recovery, even with successful cataract extraction. Lastly, pseudoexfoliation syndrome, characterized by the accumulation of extracellular material on lens surfaces, poses a higher risk of zonular weakness and lens subluxation, complicating both the surgical procedure and the postoperative course. These conditions necessitate a critical preoperative evaluation including specialist opinions and special investigations in selected cases, tailored surgical approach and vigilant

postoperative care to mitigate complications and optimize visual outcomes.

Aim:

To study various factors responsible for visual outcomes after cataract surgery in complicated cases.

Objectives

- To evaluate the visual outcome of complicated cases like cataract with old uveitis, cataract with glaucoma, cataract with high myopia, cataract with diabetic retinopathy, cataract with age-related macular degeneration, cataract with pseudo exfoliation and cataract with subluxated lens
- To modify the line of management in such cases for better visual outcomes.

Materials and Methods: The present study was undertaken over 18 months from June 2022 to November 2023 in the Department of Ophthalmology, Krishna Vishwa Vidyapeeth, Karad, India. A comprehensive history-taking process, focusing on past medical history including diabetes, ocular trauma, previous retinal surgeries, and any infections was done. This was followed by a thorough general examination to assess vital signs and overall health status. Subsequently, participants underwent detailed ocular examinations which included visual acuity assessments, slit lamp examinations, fundus evaluations (including optic disc and macula assessments), selective gonioscopy and perimetry, OCT imaging, and fundus photography.

Inclusion and Exclusion Criteria

Inclusion criteria

- Participants included in this study had cataracts coexisting with glaucoma.
- Participants with cataracts occurring in the context of high myopia were considered eligible.

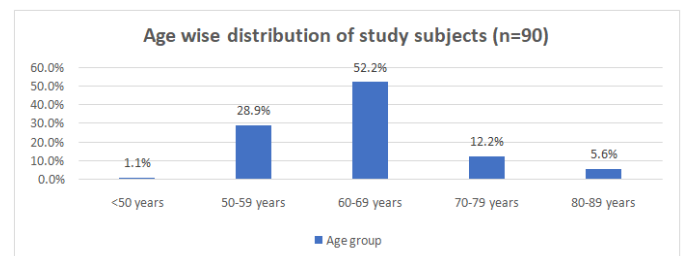
- Individuals with cataracts accompanied by pseudoexfoliation were eligible for inclusion.
- Participants with cataracts associated with old uveitis were included in the study.
- Individuals with cataracts and diabetic retinopathy were considered eligible for participation.
- Participants with cataracts and age-related macular degeneration were included in the study.
- Non-traumatic subluxated cataracts were among the conditions considered for inclusion in the study.

Exclusion criteria

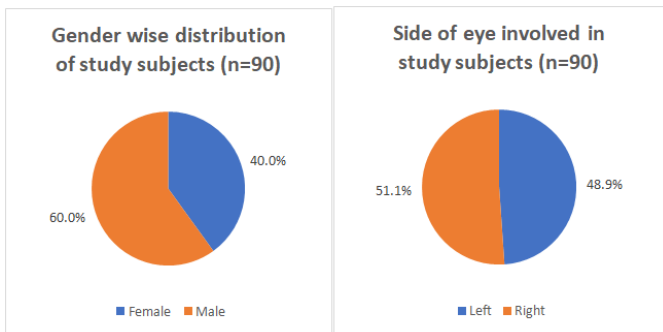
- Paediatric patients with cataract.
- Patients with traumatic cataract.
- Patients with cataract following vitreoretinal surgery.

Observation and Results

The duration of the study was 18 months in which we included a total of 90 patients who fulfilled the inclusion criteria.

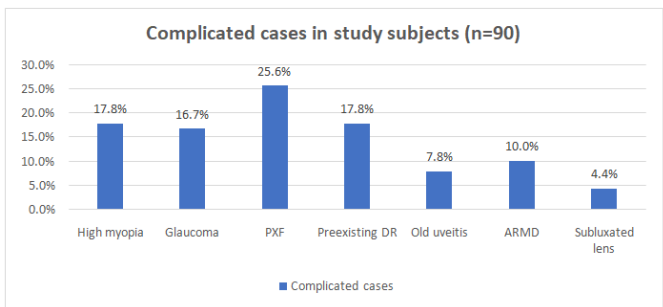


In the present study the mean age was 63.76 years and the distribution of individuals across different age groups. Out of the total population, those under 50 years old constitute 1.1% with just 1 individual. The age group of 50-59 years constitutes 28.9%, while the largest segment, aged 60-69 years, accounts for 52.2%. The 70-79 years age group represents 12.2%, and the 80-89 years group constitutes 5.6%.

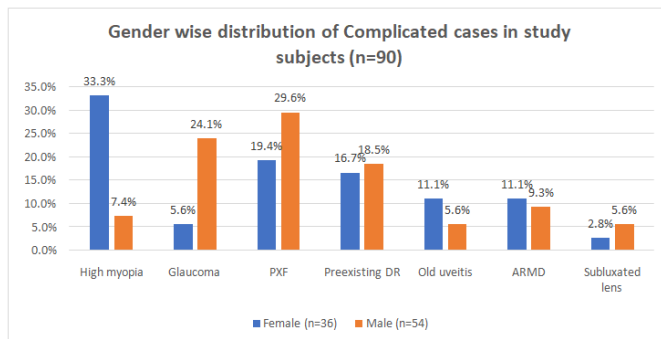


In present study the gender distribution of the population showed that 40% of the population was female, while males constitute 60%. This indicates a higher proportion of males compared to females.

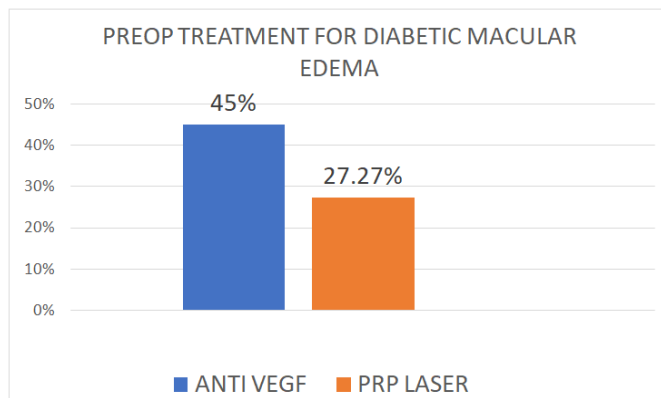
The distribution of eye sides shows that the left eye was affected in 48.9% of cases, while the right eye was affected in 51.1% of cases. This indicates a nearly equal distribution between the left and right eyes, with a slightly higher percentage for the right eye.



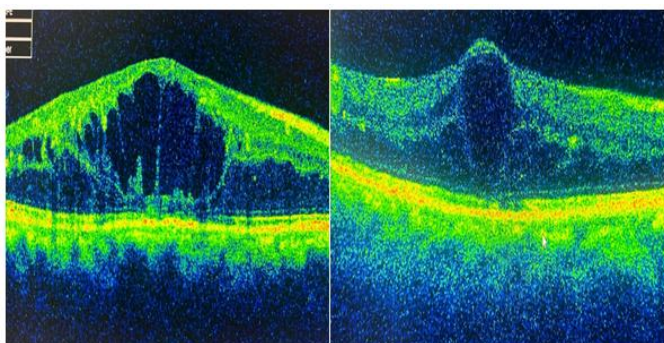
The complicated cases such as pseudoexfoliation syndrome (PXF) had the highest incidence at 25.6%, making it the most frequent ocular condition. High myopia and preexisting diabetic retinopathy (DR) each accounted for 17.8% of cases, while glaucoma was present in 16.7%. Age-related macular degeneration (ARMD) was seen in 10.0% of cases, old uveitis affected 7.8%, and subluxated lens was the least common at 4.4%.



The distribution of complicated eye conditions by gender revealed that among females, high myopia constituted 33.3% of cases, glaucoma 5.6%, PXF 19.4%, preexisting diabetic retinopathy (DR) 16.7%, old uveitis 11.1%, age-related macular degeneration (ARMD) 11.1%, and subluxated lens 2.8%. In males, high myopia represented 7.4% of cases, glaucoma 24.1%, PXF 29.6%, preexisting DR 18.5%, old uveitis 5.6%, ARMD 9.3%, and subluxated lens 5.6%.

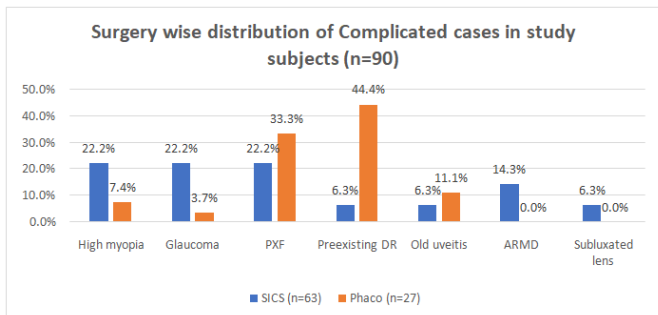


Among the diabetic retinopathy patients, 45% cases were given intravitreal anti – VEGF injections while PRP laser was done preoperatively for 27.2% cases. There was no accentuation of macular edema postoperatively in patients with diabetic retinopathy. The findings of perimetry and OCT RNFL done postoperatively were consistent with the preoperative findings.

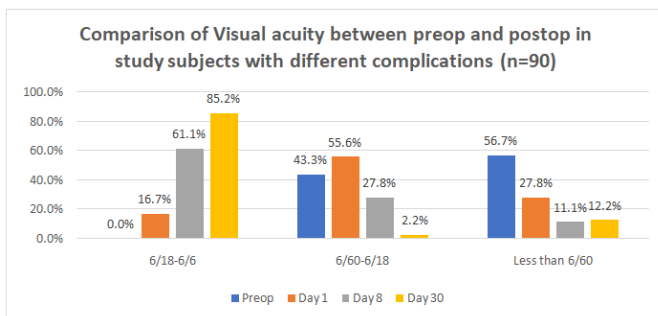


OCT before treatment

OCT after treatment



The distribution of SICS in the study was as follows: high myopia (22.2%), glaucoma (22.2%), pseudoexfoliation syndrome (PXF) (22.2%), preexisting diabetic retinopathy (DR) (6.3%), old uveitis (6.3%), age-related macular degeneration (ARMD) (14.3%), and subluxated lens (6.3%). In contrast, the distribution of phacoemulsification was as follows: 7.4% for high myopia, 3.7% for glaucoma, 33.3% for PXF, 44.4% for preexisting DR, 11.1% for old uveitis, and no reported cases for ARMD or subluxated lens. 6.6% of glaucoma cases underwent combined surgery (SICS+ trabeculectomy).

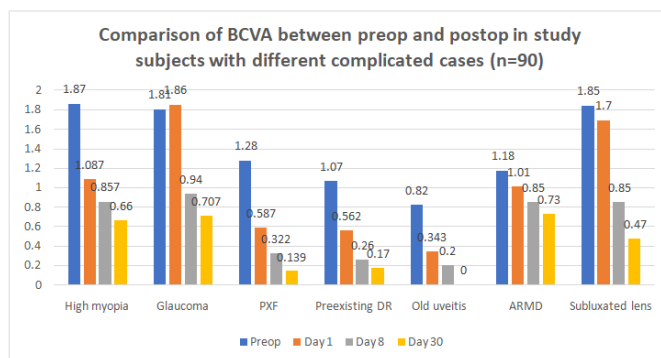


Initially, no cases were in the 6/6-6/18 visual acuity range preoperatively, but significant improvements were

observed postoperatively, with 15 (16.7%) cases achieving this level by Day 1, increasing to 55 (61.1%) by Day 8, and further to 77 (85.6%) by Day 30.

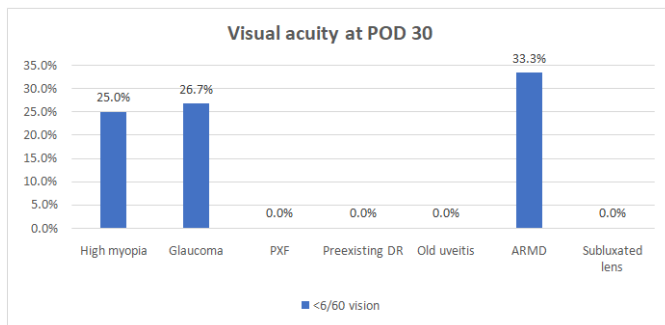
For cases categorized as 6/18-6/60 preoperatively, 39 (43.3%) exhibited this level of visual acuity, which improved to 50 (55.6%) on Day 1. However, by Day 30, the number decreased to only 2 (2.2%), suggesting sustained improvement but with some variability in recovery rates over time.

In contrast, cases with initial visual acuity less than 6/60 comprised 51 (56.7%) of the study sample preoperatively. Postoperatively, improvements were noted in 25 (27.8%) cases on Day 1, continuing to 10 (11.1%) on Day 8 and 11 (12.2%) Day 30.



Prior to surgery, significant visual impairment was noted in all conditions, with Log MAR scores ranging from 0.82 (6/36) in old uveitis to 1.87 (counting fingers at 1m) in high myopia. Postoperatively, substantial improvements in BCVA were observed across most conditions by Day 30: high myopia improved from counting fingers at 1m to 6/24, glaucoma from counting fingers at 1 m to 6/36, pseudoexfoliation syndrome from counting fingers at 3m to 6/9, preexisting diabetic retinopathy from 6/60 to 6/9, and age-related macular degeneration from 6/60 to 6/36. Notably, old uveitis cases showed remarkable improvement from 6/36 to 6/6 by Day 30. However, cases with subluxated lens

demonstrated improvement from counting fingers at 1m to 6/18 by Day 30.



Among the studied conditions, 25% of individuals with high myopia, 26.7% of those with glaucoma and 33.3% of ARMD cases experienced <6/60 vision at POD 30. In contrast, no cases of pseudoexfoliation syndrome (PXF), preexisting diabetic retinopathy (DR), old uveitis or subluxated lens exhibited <6/60 vision at this stage.

The reasons for <6/60 vision in high myopia at POD 30 were found to be degenerative myopia involving the posterior pole, amblyopia and error while calculating the IOL power. Glaucomatous optic atrophy was found to be the predominant reason for <6/60 vision at POD 30 in glaucoma patients.

Meticulous preoperative work-up, preparation of the surgical trolley with necessary additional instruments in anticipation of intraoperative complications altogether can give rise to reasonably good visual recovery in challenging cases.

This study confirms that the outcomes are compared across these conditions to determine the effectiveness of surgical interventions. Detailed post-operative follow-ups help in managing any emerging issues, ensuring optimal recovery, and guiding future treatment protocols for patients with complex ocular histories. The success of the surgery is measured by the restoration of vision, patient satisfaction, and the minimization of complications.

Conclusion

PXF was found to be the most common ocular condition amongst the various comorbid conditions.

The present study documented improvement in postoperative vision : the highest being in patients with old uveitis (100%); which was followed by PXF, diabetic retinopathy, subluxated lens, high myopia , glaucoma and ARMD in that order.

In 11 out of 90 patients (12.2%), the vision was less than 6/60 postoperatively even at POD 30. This constituted 25% myopia cases, 26.6% glaucoma cases and 33.3% ARMD cases.

Ensuring preoperative control of inflammation and intraocular pressure, customizing intraocular lenses to suit individual needs, and employment of advanced investigations and surgical techniques significantly reduced complications. Additionally, rigorous postoperative care, including close monitoring for inflammation, intraocular pressure changes and evaluation for macular edema was crucial in improving the visual outcome.

Interdisciplinary collaboration with specialists like vitreoretinal surgeons further enhanced patient management and visual prognosis.

The integration of tailored surgical approaches and comprehensive postoperative evaluation and care is essential to improve visual outcomes and quality of life for patients undergoing cataract surgery in the presence of complicating factors.

References

1. Grimfors M, Mollazadegan K, Lundstrom M, Kugelberg M: Ocular comorbidity and self-assessed visual function after cataract surgery. J Cataract Refract Surg 2014, 40(7):1163-1169.

2. Behndig A, Montan P, Stenevi U, Kugelberg M, Lundstrom M: One million cataract surgeries: Swedish National Cataract Register 1992- 2009. *Journal of Cataract and Refractive Surgery* 2011, 37(8):1539-1545.
3. Zetterström C, Lundström M, Serring I, Montan P, Behndig A, Kugelberg M: Årsrapport 2013 baserad på data från Nationella Kataraktregistret 2014.
4. Lundstrom M, Behndig A, Montan P, Artzen D, Jakobsson G, Johansson B, Thorburn W, Stenevi U: Capsule complication during cataract surgery: Background, study design, and required additional care Swedish Capsule Rupture Study Group report 1. *Journal of Cataract and Refractive Surgery* 2009, 35(10):1679-1687.