**Original Article**

# POSTOP REFRACTIVE SURPRISES IN PATIENTS UNDERGOING CATARACT SURGERY

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**Abstract**

**Objective:** To manage post-op refractive surprises in patients undergoing cataract surgery
**Study design:** It was a Descriptive hospital-based study.
**Place and duration of study:** The study was conducted at The Department of Ophthalmology, Eye OPD, Holy Family Hospital, Rawalpindi from April to September 2023.
**Material and Methods:** 100 patients were studied for the research purpose. Detailed examinations were performed including slit lamp examination, visual acuity, refraction and fundoscopy.
**Results:** Out of 100 patients, 23 were fully corrected by using spectacles, and 15 had no refractive error. Out of 100 patients with post-op refractive surprises presented in the refraction room, myopia was seen as the most common post-op refractive surprise. As per data 82 out of 100 patients had myopia. Whereas hyperopia came out to be 18 patients. Out of 100 patients, 46% were fully corrected by using spectacles.
**Conclusion:** Post-op refractive surprises presented in eye OPD, Holy Family Hospital have positive relation with both myopia and hyperopia. Myopia is the most common refractive surprise presenting mostly in females. 46% out of all cases were fully corrected using spectacles only following cataract surgery with IOL implantation.

## 1. Introduction

A cataract is a clouding of the eye's lens that results in reduced vision. It usually develops gradually and may occur in one or both eyes. Globally, the most common reason for reversible blindness and visual impairment is cataract.[1] Risk factors for cataract development include diabetes, smoking, and routine UVB radiation exposure.[2] The two most significant risk factors for the various forms of cataract are age and heredity.[3] Numerous changes in glasses, blurred vision, colored halos, difficulty seeing in dim light (including poor night vision), decrease in contrast sensitivity, increased nearsightedness, or alteration in refractive status (including the phenomenon of “secondsight") are the symptoms.[4] Nuclear, cortical, posterior subcapsular, congenital, traumatic, and secondary cataracts are the most common kinds of cataract. In nuclear cataract, the core region of the crystalline lens gradually yellows and hardens over years, a condition known as nuclear sclerosis. The most typical sign of cortical cataract is glare, particularly from headlights when driving at night.[5] Opacities called posterior subcapsular cataracts (PSC) are seen beneath the lens capsule in the posterior cortical layer. Among the various forms of cataract, posterior subcapsular cataracts (PSC) typically require surgery due to the rapid development. [6]

Anterior subcapsular cataracts may arise iatrogenic, as a result of trauma, or idiopathically. Retinitis pigmentosa may also be linked to anterior sub capsular cataract. Following an accident, the impacted eye develops a traumatic cataract. Cataract formation is typically seen when a foreign object penetrates the crystalline lens directly or when the globe or adnexa is bluntly traumatized, causing a "shockwave" to occur inside the eye.

Congenital cataracts often present as unilateral or bilateral.

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The most common cause of childhood blindness worldwide is congenital cataract.

Congenital cataracts have a wide range of etiologies, but autosomal dominant inheritance is frequently observed; in many children, the cause is unknown. Surgery is the only option for treating cataract.[7] Treatment for cataract blindness remains a daunting task on a global scale. Cost, a lack of population knowledge, a lack of skilled professionals, and unsatisfactory surgical results are all significant obstacles. Although both phacoemulsification and manual small incision extracapsular cataract surgery produce excellent visual results with low complication rates, manual small incision extracapsular cataract surgery is noticeably quicker, less expensive, and technologically less complex. The preferable method for cataract surgery in developing countries may therefore be manual small incision extra capsular surgery.[8] Following cataract surgery, complications can manifest as either immediate or delayed. The surgical procedure has resulted in some immediate complications. These include pain, swelling of eyelids, elevated IOP, and an allergic reaction to the antibiotics or steroid drop. Postoperatively, these complications remain monitored over time.[9] Patients are advised to seek medical attention if symptoms worsen and include pain, blurred vision, or discharge from the eye. Even with modern developments in cataract surgery, a residual refractive error can occasionally lead to a poor visual outcome. [10]

According to research, people who already use glasses anticipate continuing to do so following cataract surgery. But those who do not wear glasses previously do not anticipate doing so. This latter group is especially susceptible to refractive dissatisfaction and complaints. Generally speaking, patients value the chance to be glasses-free significantly. [11]

In 2019, a study was done by Petros Aristode mou FRCOphth at the University of Bristol's Department of Public Health and Social Medicine in Bristol, England. The aim of the study was to identify out liars by comparing methods for evaluating refractive outcomes after cataract surgery. There were nine thousand patients in total. Twelve patients had their data missing so they were removed. The expected value of the refractive error was -0.12+0.12×2. The actual postoperative refractive error was -0.30+0.47×6, which was different from the expected refractive error. Considering the intended refractive outcome as aspheric cylinder improves the accuracy of detecting clinically significant refractive outliers.[12]

A study was done by Johnson Huang, Ophthalmology, University of Washington School of Medicine,Washington, United States in June 2022. In this research, the post-cataract refractive outcomes of patients with glaucoma were compared to those without, who do not have any concurrent visually significant co-morbidities. There were 503 patients in all (354 without glaucoma and 149 with glaucoma). Compared to 65.7% and 89.9% in the glaucoma group, 67.8% and 95.2% of patients in the control group are within 0.5D and 1.0D of target, respectively. When the different types of glaucoma were compared for their refractive outcomes, the percentage of patients within 0.5D and 1.0D of the target did not significantly differ. The result shows that Compared to the general population, glaucoma patients are more likely to experience post-operative refractive surprise. [13]

## 2. Materials & Methods

Descriptive cross-sectional hospital based study was conducted within the duration of six months. Out of 2500 patients presented in the eye OPD, Holy Family Hospital Rawalpindi. 926 were referred to the refraction room. Taking into account the study duration, 100 patients with post-op refractive surprises were studied for research purpose. Data was collected through specifically designed performa. History was taken and detailed eye examinations were performed including slit lamp examination, visual acuity, refraction and fundoscopy. On the basis of inclusion criteria patients of all age groups, both genders, patients with complaint of decreased vision following cataract surgery were included in the study. Non-cooperative patients and

patients with ocular pathologies were excluded on the basis of exclusion criterion.

## 3. Results

Results are analyzed using SPSS version 2024. Results includes frequency of demographics, correlation and regression.

Results showed that the most common post-op refractive surprise following cataract surgery was myopia. 41 out of 100 patients had a myopic refractive error .Whereas only 21 patients had hyperopia, making it a total of 18%. Gender based distribution showed that out of these cases 61were female and 39 were male. Age based distribution showed that 20 out of all cases presented in the age group of 51-60 years and 24 respondents were also in the age group 61-70 years.44 were in the age group of 40-50 years and 8 in the age groupofabove70years.Only4patientswere age groupbelow40.After correction of the refractive error using spectacles, 23 (46%) out of all were fully corrected with excellent vision.

**Table.1 Visual outcomes following cataract surgery**

| *Visual Outcome* | *No of Patients* |
|---|---|
| 6/9-6/6 | 24 |
| 6/18-6/12 | 47 |
| 6/24-6/36 | 29 |
| Total | 100 |

Correlation analysis shows the direct positive and significant relation of post-operative refractive error with Myopia, Hyperopia and negative significant relation with no refractive Error

**Table.2 Correlation Analysis of Post-operative refractive error after cataract**

| | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| *Postoperative Cataract* | 1 | | | |
| *Myopia* | .084** | 1 | | |
| *Hyperopia* | 124* | .026** | 1 | |
| *With no Refractive Error* | -.180** | .047 | .448** | 1 |

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed)

## 4. Discussion

Cataract is the clouding of normally clear crystalline lens of eye. The only treatment of cataract is surgery. The research was held over a period of 6 months. Results of my study showed that the most common post-op refractive surprise following cataract surgery was myopia. 82 out of 100 patients had a myopic refractive error. Whereas only 21 patients had hyperopia. Gender based distribution showed that out of these cases 62 were female and 38 were male. Age based distribution showed that 34 out of all cases presented in the age group of 51- 60 years and 34 in the age group 61-70 years. 8 were in the age group of 40-50 years and 18 in the age group of above 70 years. Only 6 patients were age group below 40. Visual outcome showed that 47 out of all cases had visual acuity of 6/18-6/12 whereas only 24 had visual acuity of 6/9-6/6. After correction of the refractive error using spectacles 46 out of all had visual acuity in the range of 6/9-6/6 making it the most common. 4 out of all had visual acuity of 6/60 and another 2 out of all had visual acuity of 6/36-6/24 making these the least common. Out of all cases presented 54 had bilateral cataract and 46 had unilateral cataract. The results showed that myopia was the most common refractive error post-op and that most cases could be corrected to visual acuity of 6/6 providing best vision. The limitations of my study are small sample size and a single study location. Larger sample size with more than one hospital could give better results.

**Conclusion:**

Post-op refractive surprises presented in eye OPD, Holy Family Hospital include both myopia and hyperopia. Majority of these refractive errors could be fully corrected. Myopia is the most common refractive surprise presenting in female of age 51-60 years and 61-70 years.

**Conflict of interest:**

Authors declared no conflict of interest.

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