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# CATARACT SURGERY IN PSEUDOEXFOLIATION-COMPLICATIONS AND CLINICAL OUTCOME

Ophthalmology

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## ABSTRACT

**Introduction:** The diagnosis of pseudoexfoliation (PXF) is of paramount importance as this disease is a major risk factor for complications during cataract surgery and the most frequent cause of secondary glaucoma. Considering the phacopathy and iridopathy associated with PXF makes the routine cataract surgery difficult, this study was conducted with the aim of studying the intraoperative and postoperative complications and the clinical outcome in patients with pseudoexfoliation syndrome at a tertiary care centre in Kashmir.

**Materials And Methods:** This was a retrospective, observational study, conducted at Government Medical College, Srinagar on patients who were admitted over a period of 1 year (April 2019-March 2020). Patients of all ages and both genders, with pseudoexfoliation who underwent extracapsular cataract surgery (Phacoemulsification/SICS) were included in the study, while patients with other ocular pathologies like glaucoma or raised IOP, traumatic cataracts, true exfoliation and systemic diseases like uncontrolled hypertension and diabetes mellitus were excluded from the study. All the records of the included patients were observed, intraoperative and postoperative complications noted and final visual acuity was noted at the end of 6 weeks.

**Results:** The study included 84 eyes of 84 patients. The complications observed were poor pupillary dialation (69.05%), extension of capsulorhexis (7.14%), iris prolapse (3.57%), iridodialysis (4.76%), zonular dehiscence (9.52%) and posterior capsular rupture (7.14%). The postoperative complications included corneal edema (16.67%), AC reaction (14.28%), increased IOP (7.14%) and decentered IOL (2.38%). Visual acuity at follow up on 6 weeks was good (≥ 6/36) in 78 eyes while poor visual acuity (≤/60) was seen in 6 eyes.

**Conclusion:** Presence of PXF in cataract patients, significantly increases operative complications like poor pupillary dialation, posterior capsular rupture, however such patients can still have a good visual and clinical outcome following cataract surgery if proper measures are taken pre and intraoperatively.

## KEYWORDS

Pseudoexfoliation, Cataract, Pupillary Dialation.

## INTRODUCTION:

Cataract still remains the world's leading cause of blindness and visual impairment in the elderly population, despite the decreasing number of people affected.[1] The pseudoexfoliation (PXF) syndrome is a production and deposition of fibrillar extracellular material in ocular structures.[2] Recently, it has been identified as an accumulation of whitish gray fibrinogranular extracellular pseudoexfoliative material produced by abnormal basement membranes of ageing epithelial cells in trabecular meshwork, equatorial lens capsule, pupillary margin of iris and ciliary body, hyaloid and endothelial surface of the cornea.[3] PXF is generally recognized late in life as the course of the disease is for long time subclinical and the degree of ocular involvement and visual loss is often asymmetrical or more rarely unilateral. The diagnosis of PXF is of paramount importance as this disease is a major risk factor for complications during cataract surgery and the most frequent cause of secondary glaucoma.[4] Intraoperative and postoperative complications may arise from the weakened capsule and zonular apparatus (zonulopathy) secondary to the progressive proteolytic disintegration of the suspensory ligament, responsible for the instability of the crystalline lens during surgery, capsular rupture, zonular dialysis, vitreous loss, nuclear luxation, decentration or dislocation of the intraocular lens (IOL) with time. Further difficulties during surgery result from poor or inadequate pupil dilation (iridopathy), secondary to atrophic changes of the iris sphincter and stroma characterized by transillumination defects. Postoperative anterior chamber inflammation and fibrinous reaction occur frequently in PXF patients due to an acquired weakened blood-aqueous barrier.[5] Corneal endothelial morphological and functional changes (endotheliopathy) are seen in eyes affected with PXF, explaining the greater susceptibility of these eyes to surgical trauma, resulting in transitory and permanent corneal decompensation.[6] Considering this phacopathy and iridopathy makes the routine cataract surgery difficult, this study was conducted with the aim of studying the intraoperative and postoperative complications and the clinical outcome in patients with pseudoexfoliation syndrome at a tertiary care centre in Kashmir.

## MATERIALS AND METHODS:

This was a retrospective, observational study, conducted at Government Medical College, Srinagar on patients who were admitted over a period of 1 year (April 2019-March 2020). Patients of all ages and both genders, with pseudoexfoliation who underwent extracapsular cataract surgery (Phacoemulsification/SICS) were included in the study, while patients with other ocular pathologies like glaucoma or raised IOP, traumatic cataracts, true exfoliation and systemic diseases like uncontrolled hypertension and diabetes mellitus were excluded from the study. All the records of the included patients were observed, intraoperative and postoperative complications noted and final visual acuity was noted at the end of 6 weeks.

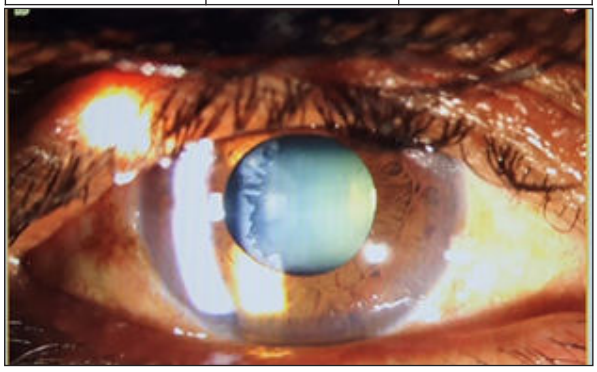
## RESULTS:

The study included 84 patients, among whom 57(67.86%) were males while 27(32.14%) were females [Picture 1]. Among the study patients, 49 had undergone manual small incisional cataract surgery (SICS) while 35 had undergone phacoemulsification. Majority of the patients were in the age group of 61-70 yrs (36.90%), followed by 71-80 yrs (25%)[Table 1]. Most of the patients had nuclear cataract (46.42%) followed by PSC (33.34%) and cortical cataract (20.24%)[Table 2]. Majority (41) of the patients had a preoperative visual acuity of 6/60-1/60 while 23 patients had a visual acuity of FCCF-HM and 14 patients had a visual acuity of only PL/PR [Table 3]. Poor pupillary dialation was the major complication seen in 58 eyes (69.05%), for which iris hooks were used in 13 eyes while Bhex was used in 4 eyes and sphincterotomies were done in 5 eyes to achieve further dialation of the pupil. Other complications that were observed included extension of rhexis in 6 eyes, iris prolapse in 3 eyes, iridodialysis in 4 eyes, zonular dehiscence in 8 eyes, posterior capsular rupture with vitreous loss in 6 eyes, retained cortex (due to poor pupillary dialation) in 4 eyes [Table 4]. Early postoperative complications included corneal edema in 14 eyes which gradually improved with the use of topical steroids, raised IOP in 6 eyes which gradually decreased to normal with antiglaucoma medications, retained cortex in 4 eyes with subsequent dissolution on treatment, mild-moderate AC reaction in 12 eyes which cleared on treatment with topical steroids. Late postoperative complications included decentered IOL in 2 eyes and compromised cornea in 3 eyes. Visual acuity at follow up on 6 weeks was good (≥ 6/36) in 78 eyes while poor visual acuity (≤/60) was seen in 6 eyes [Table 5].

**Table 1: Age Distribution Of Study Patients**

| Age(Years) | No. of patients | Percentage% |
|---|---|---|
| 41-50 | 7 | 8.34 |
| 51-60 | 17 | 20.23 |
| 61-70 | 31 | 36.90 |

| | | |
|---|---|---|
| 71-80 | 21 | 25.00 |
| >80 | 8 | 9.53 |



**Picture 1:** Slit lamp picture of one study eye showing PXF on lens capsule and cataract.

**Table 2: Distribution Of Study Patients According To The Type Of Cataract**

| Cataract | No. of patients | Percentage % |
|---|---|---|
| Nuclear | 39 | 46.42 |
| Cortical | 17 | 20.24 |
| PSC | 28 | 33.34 |

***PSC-Posterior Subcapsular Cataract**

**Table 3: Preoperative Visual Acuity Of The Study Patients**

| Visual acuity | No. of patients | Percentage% |
|---|---|---|
| 6/6-6/12 | 0 | 0 |
| 6/18-6/36 | 6 | 7.14 |
| 6/60-1/60 | 41 | 48.81 |
| FCCF-HM | 23 | 27.38 |
| PL/PR | 14 | 16.67 |

**Table 4: Profile Of Surgical Complications In The Study Eyes**

| Complications | No. of eyes | Percentage% |
|---|---|---|
| Poor pupillary dialation | 58 | 69.05 |
| Extension of rhexis | 6 | 7.14 |
| Iris prolapse | 3 | 3.57 |
| Iridodialysis | 4 | 4.76 |
| Zonular dehiscence | 8 | 9.52 |
| Posterior capsular rupture | 6 | 7.14 |
| Retained cortex | 4 | 4.76 |
| Decentered IOL | 2 | 2.38 |
| Increased IOP | 6 | 7.14 |
| Corneal edema | 14 | 16.67 |
| AC reaction | 12 | 14.28 |

**Table 5: Postoperative Visual Acuity At 6 Weeks**

| Visual acuity | No. of patients | Percentage% |
|---|---|---|
| 6/6-6/12 | 44 | 52.39 |
| 6/18-6/36 | 34 | 40.47 |
| ≤6/60 | 6 | 7.14 |

## DISCUSSION:

This study included 84 eyes of 84 patients, out of which 57 (67.86%) were males while 27 (32.14%) were females. There are various results on gender distribution of PXF in the literature. While some studies like Yalaz M et al[7] and Ringvold A et al[8] reported no difference, the others suggested that PXF is more prevalent in men or women.[9-11] Majority of the patients 31(36.90%) in our study were in the age group of 61-70 yrs, followed by 71-80 yrs. Epidemiological studies of PXF have shown that it is more common in patients older than 60 years and prevalence further increases with age.[12,13] While grading the cataract it was observed that 39 patients (46.42%) had nuclear, 17 (20.24%) had cortical and 28 (33.34%) had PSC. In a study conducted by Gelaw Y et al[14], it was found that the prevalence of nuclear cataract was found to be high (41%) followed by, cortical cataract (12.5%) and posterior subcapsular cataract (6.3%), which was quite similar to our results. The preoperative visual acuity was seen to be 6/18-6/36 in 6 patients, 6/60-1/60 in 41 patients while poor visual acuity of FCCF-HM and PL/PR was seen in 23 and 14 patients respectively. Among the 84 patients, 49 had undergone SICS and 35 had undergone phacoemulsification. On analyzing the complications, the most common intraoperative complication that was seen was poor pupillary dialation in 58 eyes (69.05%). To achieve further dialation of the pupil, iris hooks were used in 13 eyes while Bhex was used in 4 eyes and sphincterotomies were done in 5 eyes. However, the disadvantage with sphincterotomy and stretching by iris hooks, is the deformed pupil postoperatively. While extension of capsulorhexis, iris prolapse, iridodialysis was seen in 6,3,4 eyes respectively, zonular dehiscence was encountered in 8 eyes (9.52%). Iris prolapse and iridodialysis is related to the difficult manoeuvres during the surgery due to rigid pupil and zonular weakness. Posterior capsular rupture was seen in 6 eyes (7.14%). Similarly in a study conducted by Jawad M et al[13] Vitreal prolapse in 21 (10.5%) and posterior capsular rupture in 18 (9%) patients were the most common complications seen in Pseudoexfoliation. Damage to sphincter pupillae in 16 (8%), iridodialysis in 2 (1%), decentration of IOL in 8 (4%) and hyphaema in 2 (1%) patients was seen. Zonular dialysis in 8 (4%), retained lens matter in 12 (6%) and lens dislocation was seen in 6 (3%) patients. In one more study, conducted by Pranathi K et al[15] on 52 eyes, the most common complications associated with cataract surgery in pseudoexfoliation were poor pupillary dialation, accidental iridodialysis, posterior capsule rupture, vitreous loss, retained cortical matter, decentered intraocular lens and zonular dialysis. In our study, in the postoperative period, corneal edema was seen in 14 eyes, AC reaction in 12 eyes, Increased IOP in 6 eyes, retained cortex in 4 eyes and decentered IOL in 2 eyes. A higher degree of postoperative anterior chamber inflammation is expected in PXF due to the chronic alteration of the blood-aqueous barrier that accompanies the iris ischemic changes seen in these patients. Excessive intraoperative manipulations cause post-operative corneal edema. In presence of weak zonules, it may lead to severe complications of lens subluxation and vitreous loss. Visual acuity at follow up on 6 weeks was good (≥ 6/36) in 78 eyes while poor visual acuity (≤/60) was seen in 6 eyes, indicating that though the surgery in PXF seems to be challenging and associated with complications, the visual outcome seems to be comparable to simple cataract surgery if proper steps are taken to minimize complications.

## CONCLUSION:

Presence of pseudoexfoliation in cataract patients, significantly increases complications like poor pupillary dialation, posterior capsular rupture, however such patients can still have a good visual and clinical outcome following cataract surgery if proper measures are taken pre and intraoperatively.

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