

## **RESEARCH ARTICLE**

# SURGICAL OUTCOMES IN PATIENTS WITH PSEUDOEXFOLIATION UNDERGOING SMALL INCISION CATARACT SURGERY

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### Manuscript Info

Abstract

Manuscript History Received: 30 January 2023 Final Accepted: 28 February 2023 Published: March 2023 Aim of the study: To study the intraoperative and postoperative complications in patients with Pseudoexfoliation undergoing small incision cataract surgery.

**Methods**: 50 eyes of 50 patients with Pseudoexfoliation undergoing SICS for senile cataract with Pseudoexfoliation in one or both eyes were included in the study, Study done at a tertiary eye care centre. All patients with glaucoma, including known pseudoexfoliation glaucoma and increased IOP, traumatic cataract, Previous history of trauma, intraocular surgeries, systemic conditions predisposing to subluxation of Lens, Uveitis, Posterior segment pathology were excluded Outcomes including visual acuity and complications if any were noted.

**Results**: 74% of the population had insufficient pupillary dilatation. 36% had difficulty in capsulorrhexis,16 % had difficulty in nucleus delivery, 22% had zonular dialysis, 18 % had PCR. 8% of the cases were left aphakic

**Conclusion:**Pseudoexfoliation is associated with significant complications intra and post operatively. Thorough preoperative evaluation and planning with anticipation of these risks during surgery can help us avert these conditions.

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#### Introduction:-

Pseudoexfoliation (PEX) syndrome is characterized by the production and progressive accumulation of fibrillargranular extracellular material in many ocular tissues(1). It has whitish flaky deposits, on the pupillary margin and the anterior lens capsule, corneal endothelium, trabecular meshwork, ciliary body, ciliary zonules and even the anterior vitreous [1]. Pigment loss from the iris sphincter region and its deposition on the anterior chamber are associated features which add to diagnosis [2]. Patients with PEX have a risk of an array of complications during cataract surgery because of deposition of PEX material in the anterior segment. These include intra-operative complications like small pupil, zonular weakness, posterior capsule dehiscence, vitreous loss, etc. Post-operatively there may be an increase in Intra-ocular Pressure (IOP), corneal decompensation, posterior capsular opacification, anterior capsular phimosis, macular oedema [3]. In developing countries like India manual Small Incision Cataract Surgery (SICS) is among the most common procedures performed for cataract. In cases with pseudoexfoliation syndrome, surgery can cause significant complications. Meticulous pre-operative planning and modification of intraoperative techniques can help reduce the incidence of complications.

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#### Methods:-

A prospective, observational study was conducted in the ophthalmology department of a tertiary care government eye hospital, in India over a period of six months from Jan 2019 to june 2019. Prior approval was obtained from the Institutional Clinical Ethics Committee. A total of 50 eyes of 50 patients aged 50 years and above, of either sex, clinically diagnosed (on the basis of slit-lamp biomicroscopy before and after pupillary mydriasis) to have senile cataract and Pseudoexfoliation were enrolled in the study. Written, informed consent was obtained from all cases. All surgeries were performed by a single surgeon in the same institutional setting. All patients with glaucoma, including known pseudoexfoliation glaucoma and increased IOP, traumatic cataract, previous history of trauma, intraocular surgeries, systemic conditions predisposing to subluxation of Lens, uveitis, posterior segment pathology were excluded.

#### **Results:-**

A total of 50 eyes of 50 patients were included. Mean age of the population was 64.5+2.3 years. 56% were male and 44% were female. The IOP range is as shown below in Table-1. The pre-operative distribution of various iris characteristics is as shown in Table - 2.

IOP (in mm Hg)	No. of patients	Percentage
12-14	14	28%
16-18	22	44%
20-22	14	28%

Table 1:- Range of IOP among the subjects.

PXF	No. of patients	Percentage
Pupillary margin	49	98%
Iris surface	13	26%
Iris atrophy	15	30%
Iridodonesis	4	8%
Associated posterior synechiae	5	10%

 Table 2:- Characteristics of Iris.

The preoperative characteristics, intraoperative pupillary dilatation and complications, mean post op visual acuity and post operative complications are all as shown below in tables. 54% had bilateral pseudoexfoliation, 46% had unilateral pseudoexfoliation. 37 (74%) had insufficient pupillary dilatation as assessed by the single surgeon intraoperatively. 6(12%) patients had zonular dialysis preoperatively and / or intraoperatively as indicated by phacodonesis.

62% of the cases had intraoperative complications. The intraoperative complications that occurred have been depicted in Figure-1. Most common complication was difficulty in capsulorrhexis(36%) followed by zonular dialysis (22%) and Posterior capsular rent (18%). This was followed by difficulty in nucleus delivery and vitreous loss at 16% each. 9 patients underwent sphincterotomy, 6 patients underwent synechiolysis and 3 patients underwent both the procedures as shown in Figure -2



Figure 1:- Intraoperative complications.



Figure 2:- Intraoperative procedures.

Type of IOL implantation performed is as shown in Figure -2

IOL type	No. of patients	Percentage
PCIOL	43	86%
Sulcus IOL	3	6%
Aphakia	4	8%

 Table 3:- IOL placement and aphakic eyes.

Mean post op visual acuity is as shown below in figure -3



Figure 3:- Post op visual acuity.

Mean postoperative IOP is as shown below in figure -4



Figure 4:- Mean Postoperative IOP.

Postoperative complications are depicted in Figure- 5



Figure 5:- Post op complications.

#### **Discussion**:-

There have been multiple prior studies that compared the outcomes of cataract surgery in patients with and without pseudoexfoiliation syndrome[4-17]. Pseudoexfoliation increases with age and is common in patients above 60 years of age.[18] The mean age of the population in this study was 64.5+2.3. There are differing reports with respect to gender predilection (18,19] In our study 56% were male. The most common site of pseudoexfoliation deposition was the pupillary margin(98%). This is in accordance with other studies.[4] 74 % of the eyes had poor pupillary dilatation. The percentage of poor pupillary dilatation varies across multiple prior studies. [4, 5, 6, 7] Shivakumar et al reported an insufficient pupillary dilatation in 32.2% in their cohort of 152 patients. [20]. Joshi et al in their study on 1022 patients reported insufficient pupillary dilatation in 27.4% eyes.[21]This could be due to the presentation of the patient to the hospital at various clinical stages of the condition.

12% patients had zonular dialysis as evident by phacodonesis. This is consistent with the findings in several studies[21-25] This complication is expected in patients with PXF syndrome, particularly in cases of high-grade cataract.

Shastri and Vasavadastated that the performance of cataract surgery intraoperatively in PXF eyes is similar that in non-PXF eyes.[13]Naik and Gadewar have reported intraoperative complications in 42% (21/50) patients during small-incision cataract surgery.[5]Joshi et al stated a complication rate of 27% [21] However, the complication rate in the present study was very high at 62%. The authors state that this could be due to the possibility that the severity of pseudoexfoliation was much higher in our institute.

The most common complication intraoperatively was difficulty in capsulotomy (36%) followed by zonular dehiscence (22%) followed by posterior capsular rent (18%), vitreous loss(16%) and difficult nucleus delivery(16%). These complications are similar to previous other studies (20,21, 22). However, the rates of complications vary considerably.

An additional procedure in the form of sphincterotomy was performed in as high as 18 %(9) eyes. This is in contrast to various other studies which have described the routine use of iris hooks or pupil expanders in such cases. (21,22,) This was due to non-availability of the above devices as the present study was conducted in a government hospital set up which did not have access to these facilities intraoperatively. Mohan P et al., and Shivkumar et al., also described use of sphincterotomy in patients undergoing SICS in their study. (16, 20).

86% of the eyes had in the bag PCIOL implantation whereas the rest had either sulcus implantation or aphakia. This should once again reiterate the importance of anticipation of such complications and a thorough counselling of the patient, prior to surgery.

95 % of the eyes had a mean Log Mar visual acuity of 0- 0.5 at 6 weeks post operatively. The most common complications noted were inflammation and corneal edema followed by retained cortex. These again are similar to various other studies.

#### Conclusion:-

Patients with Pseudoexfoliation syndrome and cataract undergoing small incision cataract surgery have to be carefully assessed for the presence of Zonular weakness, insufficient mydriasis, phacodonesis, subluxation/ dislocation of the cataractous lens because these preoperative risk factors can alter the surgical outcome. Inadequate mydriasis, one of the most common intraoperative challenges faced and might require additional procedures. It is imperative that we know more about this entity and be aware of its consequences so that visual loss and complication rates can be minimised.

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