Section: Ophthalmology

Original Research Article

STUDY OF COMPLICATIONS DURING PSEUDO EXOFOLIATION CATARACT SURGERY

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ABSTRACT

Background: Pseudoexfoliation (PEX) is characterized by the production and progressive accumulation of a fibrillar extra-cellular material in ocular and extra ocular tissues. It is characterized by small white deposits of material in the anterior segment hence it poses a challenge to ophthalmic surgeon during cataract surgery. **Materials and Methods:** 80 (eighty) patients above fifty years of age with PEX were studied; planned manual small incision cataract surgery with rigid posterior chamber intraocular lens implantation under peribulbar anesthesia was carried out. **Result:** 34 (42.5%) patients had intraoperative complications. The major postoperative complications were 27 (33.7%), corneal edema with SKS, 24 (30%) severe AC reactions, and 11 (13.7%) iris pigment dispersion. **Conclusion:** It is proved that proper preoperative evaluation and modification of surgical technique are essential to manage intraoperative complications and successful cataract surgery with PEX.

INTRODUCTION

Cataract is the most frequent eye disease in the elderly population. Despite recent improvement in surgical techniques and subsequent outcomes, cataract remains the leading cause of mild to moderate visual impairment globally.[1]

Pseudo exofoliation syndrome is characterized by the production and progressive accumulation of a fibrillar extra cellular material in ocular and extra ocular tissues.[2] In the eyes pseudo exfoliation syndrome (PXS) is characterised clinically by small white deposits of material in the anterior segment, most commonly on the pupillary border and anterior lens capsule. It is the most common identifiable cause of open angle glaucoma.

Association between PXS and cataract have been inconsistent. Prevalence of PXS and cataract are strongly associated with age, and PXS is known to be associated with open angle glaucoma,[3] which together with the glaucoma surgery, can be independent risk factor for cataract.[4] Therefore the apparent association between PXS and cataract are reported. Hence an attempt is made to evaluate the complications during PXS cataract surgery.

MATERIALS AND METHODS

80 (eighty) elderly patients aged between 50-90 regularly visited the ophthalmology department; Al-Falah School of Medical Sciences and Research Centre, Dhauj, Faridabad, Haryana-121004 were studied.

Inclusion Criteria:

Patients above 50 years, diagnosed as having cataract with pseudo exfoliation on the basis of slit lamp examination. The patients gave consent in writing for study and were selected for study.

Exclusion Criteria

Patients below fifty years, patients with traumatic cataracts, congenital cataract, patients with raised intraocular pressure (> 20 mm of Hg), patients with uncontrolled diabetes mellitus, and severe cardiovascular diseases were excluded from the study.

Method: Every patient underwent a detailed medical and ocular history. Visual acuity, pupillary dilatation, fundoscopy, lacrimal sac syringing, and intraocular pressure were studied. A slit lamp examination was done to note the status of the cornea, anterior chamber depth and pigment dispersion, pseudoexfoliation material over the anterior lens capsule and pupillary border, and phacodonesis. Nuclear sclerosis grading and cataract grading were based on the lens opacity classification system (LOCS-III). Intraocular lens power calculation was done using the SRK-T formula. All the patients were planned for manual small incision cataract surgery with rigid posterior chamber intraocular lens implantation under peribulbar anesthesia. These is (1) Usage of intraoperative adrenaline (Epitrate), (2) mechanical stretching of the pupil, (3) sphincterotomy, (4) type of capsulotomy, and (5) use of CTR/use where ever required.

Adequate peribulbar block was given, the size of the scleral tunnel corresponding to nuclear sclerosis was fashioned, liberal use of viscoelastic protecting the

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corneal endothelium was made wherever required, epitrate was used, and sphincterotomy was done, especially in small pupils or nuclear sclerosis > grade 4. A thorough cortical wash was done, and postoperative topical and systemic steroids or antiglucoma drugs were given appropriately. Postoperative complications were recorded, and patients were followed up on 1st, 7th, 40th days.

The duration of the study was September 2024 to April 2025.

Statistical analysis: Distribution of age of patients preoperative, intraoperative, and postoperative complications were classified with percentage. The statistical analysis was carried out in SPSS software. The ratio of male and female was 2:1.

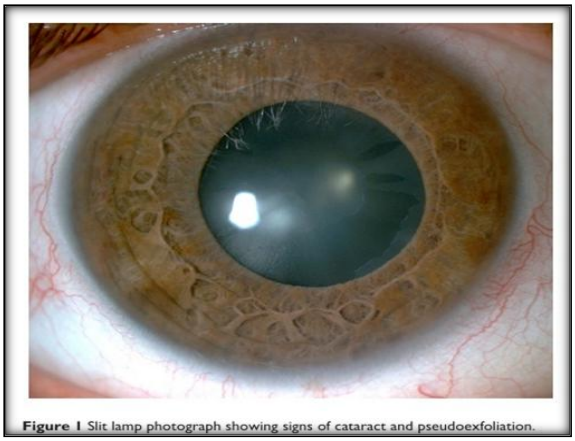

Figure 1 Slit lamp photograph showing signs of cataract and pseudoexfoliation.

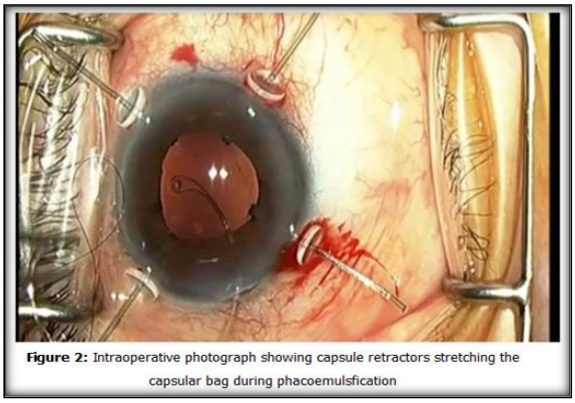

Figure 2: Intraoperative photograph showing capsule retractors stretching the capsular bag during phacoemulsfication

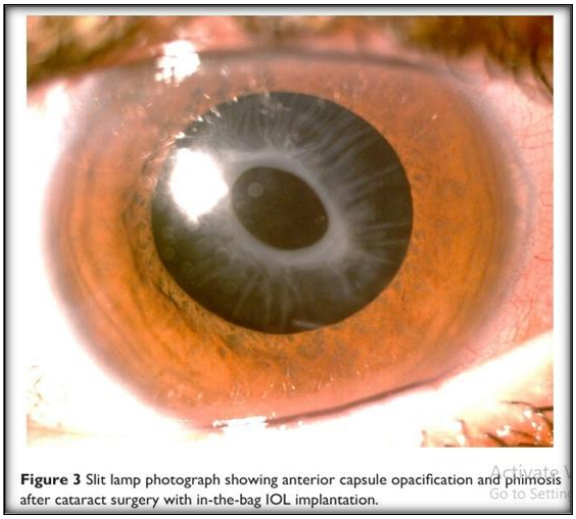

Figure 3 Slit lamp photograph showing anterior capsule opacification and phimosis after cataract surgery with in-the-bag IOL implantation.

RESULTS

[Table 1] Distribution of age in pseudoexfoliation cataract patients: 55 (68.75%) were aged between 50-69 years, 24 (30%) were aged between 70-89 years, only 1 patient was above 90 years old.

[Table 2] Pre-operative feature in patients with pseudoexfoliation cataract: 21 (26.2%) had a small pupil (< 7mm), 2 (2.5%) had posterior synechia.

[Table 3] Study of intra-operative complications in patients with exfoliations: 2 (2.5%) zonal dialysis, 7 (8.7%) difficulty in nucleus delivery, 7 (8.7%) sphincterotomy, 5 (6.2%) PC rent, 3 (3.7%) iridodialysis, 3 (3.7%) vitreous loss, 2 (2.5%) hyphaema, 5 (6.2%) residual cortical matter. Total number of patients with intra operative complications was 34 (42.5%).

[Table 4] Study of post-operative complications in patients with pseudoexofoliation: 2 (2.5%) posterior synechia, 11 (13.7%) iris pigment dispersion, 27 (33.7%) corneal oedema with seborrheic keratitis, 24 (30%) severe AC reaction, 5 (5.5%) postoperative rise of IOP, 6 (7.5%) irregular pupil due to sphincterotomy, 5 (6.2%) exudative, 1 (1.25%) decentred IOL.

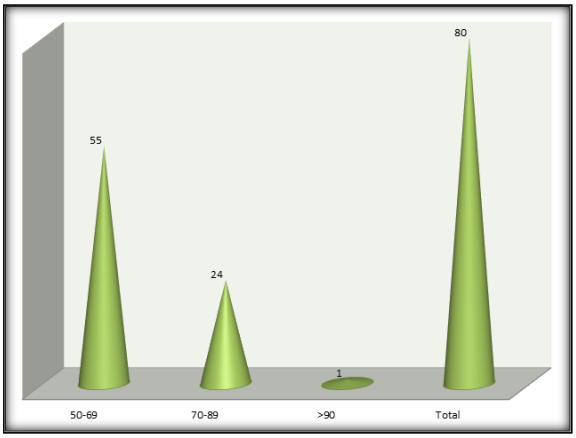

Figure 1: Distribution of age in pseudo exfoliation cataract

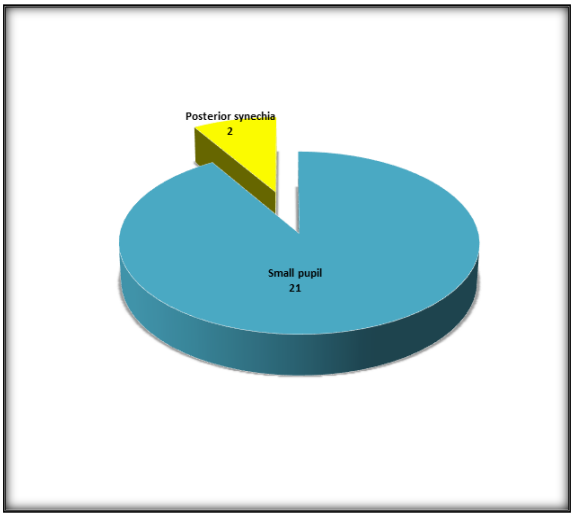

Figure 2: Pre-operative features in patients with pseudoexofoliation cataract

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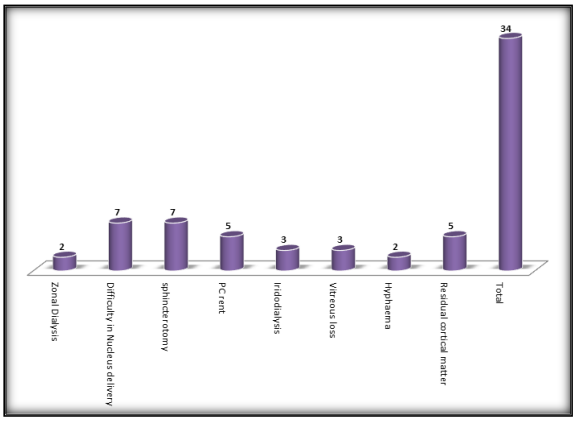

Figure 3: Study of Intra-operative complications in patients with exfoliation

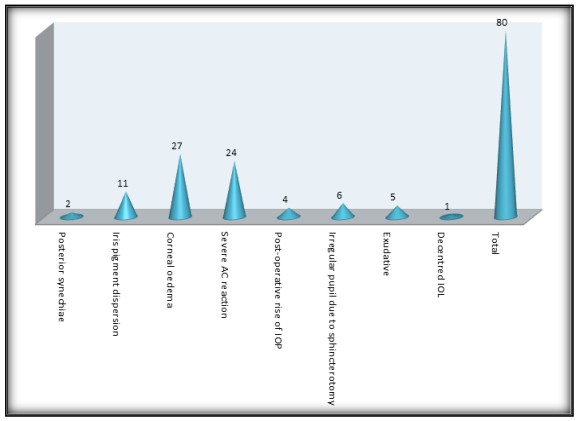

Figure 4: Study of Post-operative complications in patients with pseudoexfoliation

Table 1: Distribution of age in pseudo exfoliation cataract

Age in years	No of patients	Percentage (%)
50-69	55	68.75
70-89	24	30
>90	1	1.25
Total	80	100

Table 2: Pre-operative features in patients with pseudoexfoliation cataract

Sl. No	Pre-operative signs	No of patients	Percentage (%)
1	Small pupil (< 7mm)	21	26.2
2	Posterior synechia	2	2.5

Table 3: Study of Intra-operative complications in patients with exfoliation

Sl. No	Intra operative complications	No of patients	Percentage (%)
1	Zonal Dialysis	2	2.5
2	Difficulty in Nucleus delivery	7	8.7
3	sphincterotomy	7	8.7
4	PC rent	5	6.2
5	Iridodialysis	3	3.7
6	Vitreous loss	3	3.7
7	Hyphaema	2	2.5
8	Residual cortical matter	5	6.2
	Total	34	42.5

Table 4: Study of Post-operative complications in patients with pseudoexfoliation

Sl. No	Post-operative complications	No of patients (80)	Percentage (%)
1	Posterior synechiae	2	2.5
2	Iris pigment dispersion	11	13.7
3	Corneal oedema	27	33.7
4	Severe AC reaction	24	30
5	Post-operative rise of IOP	4	5
6	Irregular pupil due to sphincterotomy	6	7.5
7	Exudative	5	6.2
8	Decentred IOL	1	1.25
	Total	80	100

DISCUSSION

The present study of complications during PEX cataract surgery. The preoperative features in patients with PEX were that 21 (26.2%) had a small pupil (<7 mm) and 2 (2.5%) had posterior synechie [Table 2]. Intraoperative complications were 34 (42.5) [Table 3]. The major postoperative complications were 27 (33.7%) corneal edema with SKS, 24 (30%) had severe AC reaction, and 11 (13.7%) had Iris pigment dispersion [Table 4 & Figure 1-3]. These findings are more or less in agreement with previous studies.[5-7]

The association between PEX and the development of cataract is biologically plausible. Electron microscopic examination of the iris vasculature in eyes with PEX revealed multiple abnormalities, including deposits of pseudoexfoliation material lying adjacent to the vascular endothelial wall, thin vessel basement membrane sometimes even interrupted, extreme reduction of vessel lamina through increased volume of the endothelial cells, and fenestration of the vascular endothelial wall.[8] It is also observed that the rate of aqueous flow through

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the anterior chamber was lower in eyes affected by PEX than in normal eyes. Moreover, it is confirmed that there is impairment of the blood-aqueous barrier in the eyes of those affected with PEX at the level of the ciliary body.[9] Lens metabolism depends on the aqueous. Alterations in the iris vasculature and blood-aqueous barrier could affect the composition of aqueous and subsequently could affect the lens metabolism, resulting in cataract formation.

PEX is a risk factor for open-angle glaucoma. Glaucoma may confound the association between PEX and cataract. Moreover, the nuclear cataract surgery with PEX was successful controlling the intra ocular pressure in patients of for open-angle glaucoma. This suggests that PEX may contribute to the development of cataract through a pathway different from that responsible for elevated intraocular pressure or open-angle glaucoma.[10]

PEX causes zonal fragility, leading to a higher risk of nucleus drop during surgery. In addition, eyes with PEX dilate poorly, making surgery technically difficult. As a result, eyes with PEX have a higher rate of operative complications such as capsular rupture, zonular dehiscence, and vitreous loss. PEX had been shown to increase the incidence of posterior capsular opacification after cataract surgery.[11]

CONCLUSION

As the cataract surgery in pseudoexofoliation is challenging, the proper evaluation preoperative and modified surgical technique will lead to successful cataract surgery with PEX. The present study demands such clinical trials must be carried out in a large number of patients at in tertiary eye centres where the latest techniques are available to combat any surgical complications.

Limitation of study: Owing to remote location of research centre, small number of patients and lack of latest techniques, we have limited findings and results.

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