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Original Research Article

Perioperative Complications in Patients with Pseudo-Exfoliation Undergoing Small Incision Cataract Surgery

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Abstract

Background: To investigate the risk factors associated with intraoperative complications in patients with pseudoexfoliation undergoing cataract surgery. To assess both intraoperative and postoperative complications in patients with pseudoexfoliation syndrome undergoing cataract surgery.

Material and Methods: The study included patients with pseudoexfoliation syndrome and cataract who visited the Ophthalmology OPD from August 2023 to May 2024. A detailed clinical examination including visual acuity testing, refraction, external ocular examination and a thorough slit lamp biomicroscopy was done.

Result: The mean age of presentation in the study was 68.28 years, with the majority, 44 (88%) out of 50 patients, being above 60 years of age. The male-to-female ratio was approximately 3:2, indicating a male predominance. 27 (54%) patients had bilateral occurrence, while 23 (46%) had unilateral pseudoexfoliation. It was found that 4 (8%) patients with pseudoexfoliation had associated diabetes mellitus, 14 (28%) had associated hypertension, and 3 (6%) had associated ischemic heart disease. The range of intraocular pressure (IOP) in this study was between 11-21 mmHg, with a mean IOP of 16.40 mmHg. Specifically, 44 (88%) had pseudoexfoliation material along the pupillary margin, 20 (40%) had it over the surface of the iris, 7 (14%) showed iris atrophy, 1 (2%) exhibited iridodonesis, and 16 (32%) had posterior synechiae. 10 (20%) of patients with pseudoexfoliation had very poor mydriasis (< 4mm), 25 (50%) had fair mydriasis (5-6mm), and approximately 15 (30%) had good mydriasis (more than 6mm). The most common type of cataract encountered was advanced cataract (including nuclear sclerosis grade III and IV, mature, and hypermature cataract). Poor pupillary dilatation, phacodonesis, subluxation/dislocation of the cataractous lens, and zonular dialysis are considered to be the most important risk factors because they can lead to increased intraoperative complications. On comparing the size of the pupillary diameter with intraoperative complications, a significant correlation (P = 0.021) was obtained. Additionally, there was a significant correlation between the size of the pupillary diameter and postoperative complications (P = 0.01). Majority of the patients attained a visual acuity of 6/6 to 6/18.

Conclusion: The present study showed that poor mydriasis, preoperative zonular dialysis, iridodonesis, Phacodonesis, and the type of cataract were the most common risk factors affecting the surgical outcome. Patients with pseudoexfoliation syndrome and cataract undergoing small incision cataract surgery must be carefully evaluated for zonular weakness, insufficient mydriasis, Phacodonesis, and subluxation/dislocation of the cataractous lens. These preoperative risk factors can significantly impact the surgical outcome.

Keywords: Pseudo-Exfoliation, Complications, Small Incision Cataract Surgery.

Introduction

Pseudoexfoliation (PXF) syndrome is an age-related, late-onset generalised disorder characterized by the deposition of distinctive fibrillar material in the anterior segment of the eye as well as it affects other parts of the body. It by and large leads to the formation of open angle glaucoma and also aids in progression of cataract.

Pseudoexfoliation syndrome is linked to systemic disorders including hypertension, angina, coronary artery disease, retinal vascular disease, and peripheral vascular disease [3]. It may manifest unilaterally or bilaterally, with approximately 50% of cases becoming bilateral over a period of 20 years [4].

In the eye, pseudoexfoliation is clinically characterized by the progressive production and accumulation of small fibrillar extracellular material. These dandruff-like deposits are most commonly observed over the pupillary margin and the anterior lens capsule.[3,5]

The most reliable diagnostic indicator is the target-like pattern observed on the anterior capsule of the lens, which becomes most evident after pupil dilation.[3,5,6]

This pattern typically consists of:

1. A translucent central disc with occasional curled edges.
2. An intermediate clear zone likely caused by the movement of the iris, which helps to dislodge the material.
3. A peripheral granular zone with scalloped margins.

While the central zone may be absent in 20% or more cases, the peripheral zone remain a more consistently observed feature. Therefore, complete examination often necessitates pupil dilation.[5]

Pseudoexfoliation material can also be observed over the corneal endothelium, ciliary body, zonules, anterior vitreous face, and angle structures. Associated features of pseudoexfoliation include iris transillumination defects at the pupillary margin, poor pupillary dilation, and heterochromia iris. Additionally, the affected eye often exhibits miosis. Weak zonules, leading to lens instability, can result in subluxation or dislocation, as well as variable chamber depth.[3,5,6,7]

A comprehensive ophthalmic assessment, inclusive of slit lamp examination, intraocular pressure measurements, gonioscopy, visual field testing, and optic nerve head examination with nerve fiber quantification, is indispensable in managing these cases due to their propensity to develop pseudo-exfoliation glaucoma. [8] Accurately diagnosing pseudoexfoliation syndrome is crucial and demands a meticulous examination under slit lamp, preferably after pupillary dilation. Otherwise, it risks going undetected, leading to unforeseen complications.

Material and Methods

This was a time bound, Cross-sectional study conducted over a period of 9 months from August 2023 to May 2024 after getting approval from the Institutional Ethics Committee at Department of Ophthalmology, Sir Sayajirao Gaikwad Hospital and Baroda Medical College, Vadodara. This study was conducted in 50 eyes which comprised of pre-senile and senile cataract patients with pseudo-exfoliation syndrome. The study exluded patients with known case of glaucoma, previous history of trauma, intraocular surgeries and posterior segment pathology was excluded. . Data were collected using a structured questionnaire that included socio-demographic details such as age, sex, occupation, and a comprehensive medical history. A detailed clinical examination including visual acuity, refraction, external ocular examination and a thorough slit lamp biomicroscopy was performed. Patients underwent small insicion cataract surgery under local aneathesia and the intra-operative and post-operative complications were noted. . All patients underwent slit lamp examinations to detect early postoperative complications such as corneal edema, inflammation, retained cortical material, hyphema, decentration of the IOL, and pigment dispersion over the IOL. Patients were advised to attend regular postoperative check-ups: the first visit was scheduled one week after surgery, with subsequent visits once a fortnight for a total of 45 days.

Result and Analysis

The mean age of presentation in the study was 68.28 years, with the majority, 44 (88%) out of 50 patients, being above 60 years of age. The male-to-female ratio was approximately 3:2, indicating a male predominance. 27 (54%) patients had bilateral occurrence, while 23 (46%) had unilateral pseudoexfoliation. the range of intraocular pressure (IOP) in this study was between 11-21 mmHg, with a mean IOP of 16.40 mmHg. This is notably higher than the normal mean IOP of 15.5 mmHg. Eyes with pseudoexfoliation are at an increased cumulative risk for glaucoma, with rates of 5% at 5 years and 15% at 10 years [7]. This underscores the importance of careful follow-up for patients with pseudoexfoliation. It was found that 4 (8%) patients with pseudoexfoliation had associated diabetes mellitus, 14 (28%) had associated hypertension, and 3 (6%) had associated ischemic heart disease. The significance of these associations could not be assessed in our study due to the absence of a control group. Changes seen in iris of pseudo-exfoliation patients includes 44 (88%) pseudoexfoliation material along the pupillary margin, 20 (40%) over the surface of the iris, 7 (14%) showed iris atrophy, 1 (2%) exhibited iridodonesis, and 16 (32%) had posterior synechiae. The most common type of cataract encountered was advanced cataract (including nuclear sclerosis grade III and IV, mature, and hypermature cataract). The pre-operative risk factors observed in the study included 7 patients (14%) with Phacodonesis, 2 patients (4%) with subluxation/dislocation of the lens, and 5 patients (10%) with zonular dialysis.

Table 1: Intra-operative complications

Intra-operative complication	Frequency	Percentage
Difficulty in capsulotomy	9	18
Difficulty in nucleus delivery	6	12
Difficulty in sphincterectomy	13	26
PXF on TM	18	36
Zonular Dialysis	8	16
PCR	12	24
Vitreous Loss	12	24

Table 1 displays the frequency (in percentage) of intra-operative complications observed in the study.

Specifically, 9 patients (18%) patients who underwent the surgery had difficulty in capsulotomy, 6 patients (12%) had difficulty in nucleus delivery, 13 patients (26%) experienced difficulty in sphincterectomy, 18 patients (36%) had pseudo-exfoliation material present over the Trabecular meshwork, 8 patients (16%) had intra-operative zonular dialysis whereas 6 patients (12%) patients encountered PCR and vitreous loss each.

Table 2: Post-operative complications

Post-operative complication	Frequency	Percentage
Raised IOP	8	16
Post-operative Inflammation	11	22
Post-operative corneal edema	20	40

Table 2 indicates that 20 patients (40%) experienced post-operative corneal edema 11 patients (22%) had post-operative inflammation and 8 patients (16%) had increased Intra-ocular pressure following cataract surgery in individuals with pseudo-exfoliation syndrome. Out of the 50 patients, 24 (48%) had good vision (ranging from 6/6 to 6/18), 16 (32%) had average vision (ranging from 6/24 to 6/60), and 10 (20%) had vision worse than 6/60.

Table 3: Pupillary diameter v/s intra-operative complications

Complication	Frequency	Percentage	Mydriasis			
			Sufficient		Insufficient	
			Frequency	Percentage	Frequency	Percentage
DC	9	18	7	77.78%	2	22.22%
ZD	8	16	0	0	8	100%
PCR	12	24	2	16.67%	10	83.33%
VL	12	24	2	16.67%	10	83.33%%

As shown in Table 3, comparing the pupillary diameter with intraoperative complications reveals the following:

- Out of 12 patients with posterior capsular rupture, 9 (75%) had insufficient mydriasis, whereas 3 (25%) had sufficient pupillary dilation.
- Regarding vitreous loss, out of 12 patients, 9 (75%) had insufficient mydriasis, while 3 (25%) had adequate pupillary dilation.
- Out of 8 patients who experienced zonular dialysis, all had insufficient mydriasis.

On comparing the size of the pupillary diameter with intraoperative complications, a significant correlation ($P = 0.021$) was obtained.

The present study correlates well with other research conducted by Freyler H. and Radax U (1990), Stanila A (1996), Repo L.P. et al. (1996), Asano N. et al. (1996), and Avramides S et al. (1997). Since prosthetic methods are unavailable in our setup, most cases with poor pupillary dilation are managed using sphincterotomy, visco-mydriasis, and manual iris stretching.

The limitations of our study include the absence of a control group for comparison. Although the follow-up period was planned for 45 days, many of our patients from remote areas could not be followed up for postoperative complications. Consequently, only immediate postoperative complications were included in the study.

Additionally, it was a small-scale cross-sectional descriptive study. A larger-scale study is needed to validate the findings in a broader population.

Conclusion

Patients with pseudoexfoliation syndrome and cataract undergoing small incision cataract surgery must be carefully evaluated for zonular weakness, insufficient mydriasis, Phacodonesis, and subluxation/dislocation of the cataractous lens. These preoperative risk factors can significantly impact the surgical outcome.

Inadequate mydriasis, a major preoperative risk factor in eyes with pseudoexfoliation syndrome, is associated with intraoperative complications such as posterior capsular rent and vitreous loss. Implementing surgical modifications, such as sphincterotomy, synechiolysis, and manual stretching of the pupil, can increase pupil size and reduce the risk of these intraoperative complications.

Although cataract surgery in pseudoexfoliation is challenging, a thorough preoperative assessment and meticulous attention to surgical techniques can help manage intraoperative complications effectively, leading to a favorable outcome.

Bibliography

1. Schlotzer-Schrehardt U, Naumann GOH. Ocular and systemic exfoliation syndrome. Am J Ophthalmol. 2006; 141(5):921-937.
2. Ritch R. Exfoliation syndrome: the most common identifiable cause of open-angle glaucoma. J Glaucoma. 1994; 3(2):176-177
3. Myron Yanoff, Jay S. Duker. Ophthalmology. Fourth edition, chapter 10.13 "Glaucoma associated with pseudo exfoliation syndrome. "Copyright 2014, Elsevier Inc, China. 1070-72.
4. Astrom S, Stenlund H, Linden C. Incidence and prevalence of pseudoexfoliations and open-angle glaucoma in northern Sweden. Acta Ophthalmol Scand. 2007; 85(8):832-837.
5. R. Rand Allingham, et al Shields textbook of glaucoma. Sixth edition, chapter 15 "Exfoliative syndrome & Exfoliative glaucoma." Copyright 2011 Lippincott Williams & Wilkins, Philadelphia 248-259.
6. Basic and clinical science course. Glaucoma. American Academy of Ophthalmology 2012-2013; 10:85-87.
7. Jack J Kanski, Brad Bowling. Clinical Ophthalmology. Seventh edition, Chapter10 "Glaucoma." Copyright 2011 Elsevier Limited. China 355-357.