

A Prospective Observational Study of Perioperative Surgical Complications in Eyes With Pseudoexfoliation Under Cataract Surgery

Dr. Abdul Aziz Makayee^{1*}, Aafiya Kachru², Nilofar Nazir³, Saliya Ayoob⁴

^{1*}Consultant, Associated Hospital Government Medical College Baramulla.

²Senior Resident, Associated Hospital Government Medical College Baramulla.

³Theatre Technologist, Associated Hospital Government Medical College Baramulla.

⁴Assistant (Student), Associated Hospital Government Medical College Baramulla

Corresponding Author: Dr. Abdul Aziz Makayee

Abstract

Introduction: Pseudoexfoliation Syndrome is an age related generalized disorder involving abnormal production or turnover of extra-cellular matrix in ocular tissues, orbital tissues, skin and visceral organs. The exact etiopathogenesis of this condition and chemical composition of the material still remains unknown.

Materials and Methods: It was a prospective observational study conducted in Associated Hospital, Government Medical College, Baramulla from January 2019 to December 2019. 124 patients having cataract and PEX and who were above 50 years of age were included in the study. Those having complicated cataract, trauma and with previous surgery were excluded. All patients were admitted on the previous day of surgery. Detailed examination of eye was done including visual acuity assessment, slit lamp examination gonioscopy, funduscopy and IOP measurement. The presence of PEX material was confirmed by looking for white, fluffy, fibrillar or granular material at the pupillary margin or on the anterior lens surface after pupillary dilatation. Cataract type was classified as nuclear, cortical, posterior sub capsular (PSC), mature and mixed type based on slit lamp examination.

Results: 17.74% patients were in the age group of 50 –60, 43.55 % patients were in the age group of 60 –70 and 38.71 % patients were in the age group of 70 –80. 52.42% patients were male, and 47.58% patients were female. Majority of patients were in the age group of 60-70. Male patients were more in number than female patients in our study.

Conclusion: When cataract presents with PXE, there is an increased risk of surgical complications, the main being rigid pupil. Recognition of PXE preoperatively with proper examination and its management during surgery with various techniques and devices is essential to give a good vision to the patient.

Key Words: Pseudoexfoliation Syndrome, cataract, gonioscopy, funduscopy and IOP

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I. Introduction

Pseudoexfoliation Syndrome is an age related generalized disorder involving abnormal production or turnover of extra-cellular matrix in ocular tissues, orbital tissues, skin and visceral organs. The exact etiopathogenesis of this condition and chemical composition of the material still remains unknown.¹

In the eye, Pseudoexfoliation syndrome is characterized clinically by small white deposits of material in the anterior segment, most commonly in the pupillary border and the anterior lens capsule. The most consistent diagnostic feature is three distinct zones of Pseudoexfoliation material seen on the lens capsule after full dilatation.²

Additional subtle clinical signs that help in early diagnosis are loss of pigment from peri-pupillary area producing trans illumination defects, insufficient mydriasis, and pigment dispersion into anterior chamber after mydriasis, deposition of melanin over trabecular meshwork and Schwalbe's line. Deposition of material on the zonular fibres weakens it leading to Phacodonesis, subluxation and dislocation of lens. The presence of secondary open angle glaucoma is known as glaucoma capsulare. This glaucoma has more serious clinical course and worse prognosis than primary open angle glaucoma, often not responding to medical therapy and requiring early surgical intervention. An increased incidence of nuclear cataract is seen. Pseudoexfoliation syndrome frequently goes undiagnosed leading to unexpected problems in management and during surgery. Therefore, making the diagnosis often requires a careful slit-lamp examination after pupillary dilatation.³

Due to involvement of virtually all structures by Pseudoexfoliation material, patients have a significantly greater risk for a variety of complications during cataract surgery. Poor mydriasis, pigment dispersion, combined with Phacodonesis and zonular dialysis predisposes to posterior capsular rupture and vitreous loss.⁴ Intra operative modifications like sphincterotomy can lead to post-operative irregular pupil and iris pigment dispersion. Possible pre-operative, intra-operative and post-operative measures to avoid or minimize these complications include an increased awareness of Pseudoexfoliation syndrome, a careful slit lamp examination after full pupillary dilatation, adequate control of intra-ocular pressure pre-operatively, avoidance of iris manipulation, adequate pupillary dilatation, use of capsular tension ring in selected cases and judicious use of steroids post-operatively.⁵

II. Materials And Methods

It was a prospective observational study conducted in a Associated Hospital, Government Medical College, Baramulla from January 2019 to December 2019. 124 patients having cataract and PEX and who were above 50 years of age were included in the study. Those having complicated cataract, trauma and with previous surgery were excluded. All patients were admitted on the previous day of surgery. Detailed examination of eye was done including visual acuity assessment, slit lamp examination gonioscopy, funduscopy and IOP measurement. The presence of PEX material was confirmed by looking for white, fluffy, fibrillar or granular material at the pupillary margin or on the anterior lens surface after pupillary dilatation. Cataract type was classified as nuclear, cortical, posterior sub capsular (PSC), mature and mixed type based on slit lamp examination. Pupillary diameter was measured after dilatation. A scan biometry, Keratometry and IOL power calculation was done. All the cases were operated by experienced surgeons either by Small Incision Cataract surgery (SICS) or by Phacoemulsification. Pre-operatively Moxifloxacin eye drops were instilled from previous evening. Flurbiprofen drops were instilled three times daily. Pupil was dilated with tropicamide plus Phenylephrine drops and also 2% Homatropine drops two hours before the surgery. Peribulbar anaesthesia with lignocaine (2%) and Hyaluronidase was given in all cases. Standard SICS was done and posterior chamber IOL with 6 mm optic implanted. In cases undergoing phacoemulsification clear corneal incision was used and foldable IOL implanted. Post operatively patients were put on steroids and antibiotic drops which were tapered gradually over 6 weeks. Postoperative follow-up was done on post-operative day 1, day 7, day 14, then every two weeks for 3 months. Postoperative finding regarding inflammation, IOP, position of IOL and other findings were carefully noted and tabulated. Statistical analysis was done using statistical package for social sciences version 15.0 (IBM).

III. Results

17.74% patients were in the age group of 50 –60, 43.55 % patients were in the age group of 60 –70 and 38.71 % patients were in the age group of 70 –80. 52.42% patients were male, and 47.58% patients were female. Majority of patients were in the age group of 60-70. Male patients were more in number than female patients in our study. [Table-1]

7.26% of patients had preoperative visual acuity of 6/6 –6/24, 13.71% had 6/36 –6/60, 47.58% had counting fingers (CF), 19.36% had HM, and 12.09% had PL/PR. Majority of the patients had preoperative vision of CF. [Table-2]

Poor pupillary dilatation was found in 47.58% patients, Subluxation or dislocation of lens in 1.61%, Rupture of post capsule in 4.84%, Vitreous loss in 5.64%, Lens matter retained in 6.45%, IOL decentration in 4.03%, Dehiscence of Zonules 3.22%, and Post-operative Hyphema in 0.80%. [Table-3]

Post-operative Vision was mostly good. 6/6 –6/12 vision was found in 54.84% patients, 6/18 -6/36 in 37.90% and 6/60 or less in 7.26% patients. [Table-4]

Table 1: Age-Sex Distribution

Age	Male	Female	Total	Percentage
50-60	10	12	22	17.74
60-70	29	25	54	43.55
70-80	26	22	48	38.71
Total	65	59	124	100

Table 2: Pre-Op Vision

Vision	Number	Percentage
6/6-6/24	9	7.26
6/36-6/60	17	13.71
CF	59	47.58
HM	24	19.36
PL/PR	15	12.09

Total	124	100
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Table 3: Complications

S.No	Complications	Number	Percentage
1	Poor Papillary Dilatation	59	47.58
2	Subluxation or Dislocation of Lens	2	1.61
3	Rupture of Post Capsule	6	4.84
4	Vitreous Loss	7	5.64
5	Lens Matter Retained	8	6.45
6	IOL Decentration	5	4.03
7	Dehiscence of Zonules	4	3.22
8	Post-Operative Hyphema	1	0.80

Table 4: Post-Operative Vision

Vision	Number	Percentage
6/6-6/12	68	54.84
6/18-6/36	47	37.90
6/6 or more	9	7.26

IV. Discussion

PXE is generally found in old age, the same age group are generally posted for cataract surgery. It is always essential to examine all eyes meticulously before surgery both before dilatation and after dilatation, because PXE can be missed if pupils are not dilated. In certain situations where large number of surgeries are to be performed and if pupils are dilated only just before surgery then the surgeon may face unexpected difficulty per-operatively.⁶

In our study a slight male preponderance was noticed. Studies about sex predilection in PXE are conflicting. Some studies reported male preponderance where as Arvind et al. showed no sex predilection.[5]Some other studies have shown female preponderance.⁷

In our study the commonest problem encountered was poorly dilating pupil and was seen in 47.58% patients. Alfaiate et al. found prevalence of 48.4%. The commonest measure adopted by us was sphincterotomy. We also used iris hooks and pupillary stretching. We used dispersive-cohesive viscoelastic soft-shell technique which aided the pupillary dilatation and helped in maintaining it. Other workers have also used it for the same purpose.⁸

Careful capsulorrhesis is required because ant capsule of lens may be fragile in PXE. Zonular weakness is a major problem during cataract surgery. One has to do proper capsulorrhesis, hydrodissection and nuclear rotation to avoid lens dislocation. Even there can be late dislocation of intraocular lens postoperatively. We found subluxation of lens during surgery in two cases. One of these cases was managed with capsular tension ring and the other was implanted anterior chamber lens.⁹

We had rupture of posterior capsule and vitreous loss in 6 cases (4.84%) and one additional case of vitreous loss due to subluxation of lens. In literature vitreous loss has been reported in up to 11% cases.

In 8 cases (6.45%) some amount of lens matter was retained. It was mainly due to non-dilating pupil and vitreous loss. Two cases underwent post-operative anterior chamber wash and others were followed up without any further complication.¹⁰

Three cases showed minimal post-operative IOL decentration which were compatible with satisfactory visual outcome. Literature mentions that decentration may be due to the entire capsular bag getting decentered.

V. Conclusion

When cataract presents with PXE, there is an increased risk of surgical complications, the main being rigid pupil. Recognition of PXE preoperatively with proper examination and its management during surgery with various techniques and devices is essential to give a good vision to the patient.

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