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STUDY ON INTRA-OPERATIVE MODIFICATION AND COMPLICATIONS IN EYES WITH PSEUDOEXFOLIATION UNDERGOING SICS

Ophthalmology

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ABSTRACT

Introduction: Pseudoexfoliation (PXF) is an age related generalized disorder involving abnormal production or turnover of extra-cellular matrix in ocular tissues, orbital tissues, skin and visceral organs. Cataract surgery on eyes with Pseudo exfoliation (PXF) has difficulties related to altered structures due to the deposition of white fibrillary material and hence susceptible for increased risk of surgical complications. The present study was concerned mainly with intra-operative modification in surgical procedure without use of any adjunctive instruments, complication rate and immediate post – operative visual outcome.

Material and Methods: This observational study of 100 patients was conducted from January 2016 to May 2017 at a district government hospital located in a rural area of Andhra Pradesh. Patients scheduled for cataract surgery and who were diagnosed with PXF syndrome during the study period were consecutively included. Proper pre-operative complete ophthalmic workup of all cases of pseudoexfoliation with a detailed examination on slit lamp both before and after pupillary dilatation was done. We assessed the eyes with pseudo exfoliation in relation to grading of cataract, pupil size, preoperative findings, intra operative modifications and complications during surgery.

Results: The study sample consisted of 100 patients out of which there were 32 patients of age group 50 – 59 years, 58 patients of age group 60 – 69 years and 10 cases of age group 70 – 79 years. The average age of patients was 65.83 years. Out of these patients 62 were male and 38 were female. Out of these patients 62 were male and 38 were female. Pupillary margin was the most common site of deposition of PXF material followed by anterior lens capsule. Intraoperative difficulties were reported in 24% of the patients while 76% did not. Intra operative modification of sphincterotomy was done in 18%. Intra operative complications observed were 10 had extension of rhexis, 6 of patients had zonular dehiscence, 4 of the patients had Posterior Capsular tear and 3 had iridodialysis. 4 patients were left aphakic where secondary IOL implantation was done at a later date.

Conclusion: This study reiterates the fact that in patients with pxf the rate of complications is high when compared to patients without pxf. But in experienced hands and without the use of any adjunctive devices the visual outcome is satisfactory in these patients. This is especially beneficial in developing countries where the access to devices like Iris hooks, CTR are not available in all eye care centres and where rural eye camp based cataract surgical volume is high.

KEYWORDS

Cataract, Pseudoexfoliation, Glaucoma, Small incision Cataract Surgery.

INTRODUCTION:

Pseudoexfoliation (PXF) is an age related disease was first described by Lindberg in 1917[1].PXF is a genetically inherited condition affecting elderly aged over 60 years. It 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. PXF is a pathologic accumulation of abnormal fibrillar deposits on various ocular structures and extra-ocular tissues that may affect up to 20% of people over the age of 60. A prevalence of 3.8% is reported in rural South Indian population[3].

Cataract surgery on eyes with PXF has difficulties related to altered structures due to the deposition of white fibrillary material and hence susceptible for increased risk of surgical complications like extension or tear of rhexis margin, iridodialysis, posterior capsular rupture, zonular dialysis and iritis. According to Scorolli et al., intraoperative complications are 5 times greater compared to normal eyes[4]. Other factors associated with zonular instability are age, shallow anterior chamber depth, cataract density, pupil size, rise in IOP and associated pseudoexfoliative glaucoma.

In this study we assessed the eyes with PXF in relation to grading of cataract, pupil size, preoperative findings, intra operative modifications and complications, but we emphasized mainly on intra-op modification in surgical procedure without use of any adjunctive instruments, complication rate and immediate post – operative visual outcome.

MATERIALS AND METHODS:

This observational study of 100 pts was conducted from January 2016 to May 2017 at a district government hospital located in a rural area of Andhra Pradesh.Ethical approval was obtained from the Institutional Review Board of the hospital. Patients scheduled for cataract surgery from eye camps and who were diagnosed with PXF during the study period wereincluded. Patients <50 years, with cataract due to uveitis, trauma and history of intra-ocular surgeries were excluded.

All patients underwent a complete ocular examination.Slit lamp examination for morphological alterations of the cornea, PXF material in the pupillary margins, anterior chamber depth and pigment dispersion in the anterior chamber, pupillary reactions, iridodonesis, measurement of pupil size before and after dilatation of pupil. We examined the IOP using Goldmannapplanation tonometer, Gonioscopy with Goldmann two mirror lens in all patients with PXF. Cataract grading was done based on the Lens Opacity Classification System (LOCS-III)[3]

All patients were given topical antibiotics on the preoperative day and in pts who had IOP of > 30 mm of Hg were given oral glycerol 1gm/kg body weight. In pts where oral glycerol was contraindicated those patients were given intravenous mannitol 5ml/kg body weight. Patients were taken up for surgery only after adequate control of IOP and post operatively they were continued on topical anti glaucoma medications. On the day of surgery pupil of the operating eye was dilated adequately using instillation of 0.8% tropicamide and 5% phenylephrine eye drops and in patients who were given oral glycerol or IV mannitol were given Tab Diamox 250mg 2 tablets stat dose in the block room before peribulbar anaesthesia. Under aseptic precautions Manual Small Incision Cataract Surgery was performed under peribulbar anaesthesia under a single senior ophthalmologist.

Surgical technique – Sphicterotomy:

The procedure was performed by making 10–15 radial cuts measuring approximately 0.5 – 0.7mm limited only sphincter are are cut at equal intervals along iris border using a Vannas scissors. The sphincterotomies are performed on the nasal pupil border, temporal pupil border and a single radial cut inferiorly via the superior tunnel incision. This resulted inan increase in pupil size. After performing the sphincterotomies, the anterior chamber is deepened with dispersive viscoelastic resulting in further pupil dilation. After cataract extraction and lens implantation, residual viscoelastic is removed and anterior chamber is formed and a subconjunctival injection of antibiotic and steroid combination is given.Complications was managed appropriately.

RESULTS:

The study sample consisted of 100 patients of which 62 were male and 38 were female. Pupillary margin was the most common site of deposition of PXF material followed by anterior lens capsule. As many as 58 patients had a poorly dilating pupil (diameter <5 mm after mydriasis). On gonioscopic examination 79 had open angles out of which 42 had pxf material in the angle and 21 patients had narrow angles where 9 had pxf material in the angle. Intraoperative difficulties were reported in 24%. Intra operative sphincterotomy was done in 18.Intra operative complications observed were 10 had extension of rhexis, 6 had Zonular dehiscence, 4 had Posterior Capsular tear and 3 had iridodialysis (< 3 clock hours). 4 were left aphakic (3 had ZD more than 4 clock hours and 1 had PCR with whole bag removal). Out of 23 patients who had complications, 19 had insufficient mydriasis (<5) and 4 had adequate mydriasis (>5). POD 1 visual acquity was between 6/6/ to 6/12 is 64%, 32% had between 6/18 to 6/36 and the rest had vision less than or equal to 6/60. Most common cause of decreased VA in post operative period was corneal edema and straitekeratopathy in18 % followed by glaucomatous optic nerve damage in 3%.

Table 1: Age Wise Distribution

Age in Yrs	Percentage
50-59	32 %
60-69	58 %
70-79	10 %

Table 2: Location Of Pxf

Pxf Location	Percentage (%)
Pupil margin	41
Lens capsule	31
Both	28

Table 3: Intra-ocular Pressure

IOP	Percentage (%)
<21mmHg	54
22-30mmHg	22
31-40mmHg	15
>41mmHg	4

Table 4: Pupil Dilation

Pupil dilation	Percentage(%)
Sufficient >5mm	42
Insufficient <5mm	58

Table 5: Intra Operative Complications Vs Pupil Dilatation

Intra operative complication	Insufficient Mydriasis (%)	Sufficient Mydriasis(%)
Extension of rhexis	8	2
PCR	4	0
ZD	5	1
Irido dialysis	2	1

DISCUSSION:

This study reiterated certain known facts and unearthed certain new findings during its conduct. We have reiterated that patients with pseudoexfoliation are at increased risk for development of complications. With the use of basic intra-operative modification of controlled sphincterotomy and without the use of any adjunctive devices we can still be able to manage the intra-operative complications and can give a satisfactory visual outcome to the patient. This is especially beneficial in developing countries where the access to devices like Iris hooks, CTR are not available in all centres.

Epidemiological studies of PXF have shown that it is more common in patients older than 60 years and prevalence further increases with age. (8), (4). Pts with PXF have a high prevalence of rigid pupil with poor dilatation. Pupillary dilation of less than 7 mm is reported to be as high as 94.1%(9).We did the intra – op modification of sphincterotomy and with this even the prolapse of hard cataracts into Anterior chamber was done effortlessly. In a normal sphicterotomy less number of radial cuts would be given of more than 1 mm according to clock hours which may sometimes be inadequate and may cause severe post operative pupillary distortion resulting sometimes in glare and diplopia. But when sphicterotomies were given like our modified technique the surgical space is increased and post operative pupillary distortion can be prevented. Sphincterotomies are safe, quick and easy to perform, requires little instrumentation, and yields a consistently dilated pupil. Sphinterotomy has the disadvantage of causing post-op distorted pupil but we could not find any gross pupillary distortion in our study with the modified technique during immediate post operative period. Sphincterotomy was done in 18 pts.Intra op complications observedwere 10% had extension of rhexis which was managed by converting it into capsulotomy, 6% had Zonular dehiscence of which 3 had less than 3 clock hours and were managed by placing the lens in the bag and 3 patients had more than 5 clock hours and in these cases secondary IOL placement was done at a later date. 4% had Posterior Capsular tear with vitreous disturbance out of which 3% underwent manual anterior vitrectomy and had adequate bag support and lens was placed in sulcus and 1 did not have adequate support and secondary IOL placement was done at a later date . 3% had iridodialysis of less than 3 clock hours inferiorly and were managed conservatively. Out of 23 pts with complications, 19 had insufficient mydriasis (<5mm) and 4 had adequate mydriasis (>5). In our study, the rate of Posterior capsular tear was 4%, while other studies have reported rates varying from 0% to 11% (11,12).In a study done by Thevi et al., they found that the incidence of overall intraoperative complication was 2.68 times more likely among patients with Pxf compared to those without Pxf(11).Spontaneous PCR in the presence of PXF is rare and a case has been described by Takkar et al.(11).POD1 VA was between 6/6/ to 6/12 is 64%, 32% between 6/18 to 6/36 and the rest had vision less than or equal to 6/60. Most common cause of decreased visual acquity in post operative period was corneal edema followed by (18 %) followed by glaucomatous optic nerve damage in 3%.A similar experience has been reported by Dwivedi NR et al.(12)

LIMITATIONS:

The main limitations of our study include small sample size and shorter follow-up. Long term follow-up is needed to comment on cornea status, intra-ocular pressures and IOLs decent ration. We have not done any triple procedure because the camp patients are unlikely to turn up for frequent follow ups which the procedure demands. Hence the patients with high IOP and evidence of glaucomatous damage were advised to continue medical management.

CONCLUSION:

We would like to reiterate the fact that in patients with pxf the rate of complications is high when compared to patients without pxf. But in experienced hands and without the use of any adjunctive devices the visual outcome is satisfactory.This is especially beneficial in developing countries where the access to devices like Iris hooks, CTR are not available in all eye care centres and where rural eye camp based cataract surgical volume is high.

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