



VISUAL OUTCOME OF WHITE CATARACT WITH EXFOLIATION IN A TERTIARY CARE HOSPITAL

Ophthalmology

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ABSTRACT

INTRODUCTION: Pseudoexfoliation (PXF) syndrome is a multifactorial, genetically determined, age-related and environmentally influenced disorder of the elastic fiber structure, the prevalence of PXF increases markedly with age as the deposition of the typical white fibrillar material, that characterizes this disease, progressively accumulates during life. It is a major risk factor for complications during cataract surgery. Intraoperative and postoperative complications may occur due to many factors. The aim of our study was to see post surgical visual outcome in patient of white cataracts with exfoliation coming to tertiary care hospital.

MATERIAL AND METHODS: This study was conducted on patients with white cataracts and exfoliation coming to tertiary care hospital in Northern Indian state of J&K over a period of two years. All the eyes were subjected to manual small incision cataract surgery (MSICS) in the same manner.

RESULTS: In this study 79 eyes were included. The mean age of patients was 62.1 (SD 11.21). Total number of males were 38(48.1) and females 41(51.9). The most common complication rate in our study was striate keratopathy in 24(30.4%) patients and corneal edema in 12 patients(15.2%). 70 patients gained either 6/12 or more vision (13 eyes had 6/6, 35 had 6/9 and 22 had 6/12)

CONCLUSIONS: Manual small incision is cost effective, easy, quick visually rehabilitative alternative for mature and hypermature cataracts with exfoliative fibrilopathy in dealing with heavy backlog of cataracts

KEYWORDS

Pseudoexfoliation, SICS, Visual outcome, Difficult cataract, White cataract

INTRODUCTION

Un-operated cataract remains the leading cause of blindness in developing countries like India accounting for nearly 35% of cases.[1] A cataract is termed mature if the cortex and nucleus become so opaque that the red fundus reflex is absent, the cortex becomes extensively hydrated; this is the stage where the lens looks white. In developing countries white mature cataracts are seen very frequently. Surgical removal of white mature cataracts presents special challenges to the surgeon. The capsule is more fragile, leakage of liquefied cortical material and the absence of red reflex obscure visualisation, and capsulorhexis tear tends to extend to periphery because of high intracapsular pressure. The anterior capsule may undergo degeneration with deposition of calcium or development of focal plaques may interfere with capsulorhexis. Nuclei of varying hardness may be camouflaged by a totally opaque cortex. A plaque or residual posterior capsule opacification is observed despite successful surgery [2-7] Among various types of cataracts, white cataracts with exfoliations is a dreadful combination for any surgeon because of complications rates and degree of difficulty in performing these surgery.

Pseudoexfoliation (PXF) syndrome is a multifactorial, genetically determined, age-related and environmentally influenced disorder of the elastic fiber structure, characterized by excessive production and accumulation of an elastotic material within a multitude of intra and extraocular tissues.[4] For this reason, PXF is a diffuse disease with ocular and systemic manifestations. In all populations, the prevalence of PXF increases markedly with age as the deposition of the typical white fibrillar material, that characterizes this disease, progressively accumulates during life. With an occurrence as low as 0% in the middle age group (49–54 years), this value increases up to 6.25% among elderly patients of 85 years or more in the Australian population and up to 5% in the USA, with both men and women equally affected. [2,5] Also known as the “Viking disease”, PXF is more common in Scandinavia and in other Northern Europeans with low climatic temperature, though the disease is reported in all population types and races.[6,7] Pseudoexfoliation is diagnosed by the deposition of white, “dandruff-like”, fluffy material, virtually in all the structures of the human eye, but more importantly in the anterior segment: corneal endothelium, anterior capsule, lens zonules, iris, and trabecular meshwork. The material is composed of amyloid, laminin, elastic fibers, collagen, and basement membrane.[8,9] The same material seen in the ocular district has been found in other parts of the human body such as heart, lung, liver, kidney, cerebral meninges, and blood vessels, indicating that PXF is a multiorgan disease.[10] This may explain why

patients with ocular PXF may present a history of systemic hypertension, abdominal aorta aneurysm, angina, cardiovascular disease, and stroke.[11,12] Despite all these, life expectancy does not differ between persons with and without PXF[13] The diagnosis of PXF is of paramount importance as this disease is a major risk factor for complications during cataract surgery and the most frequent cause of secondary glaucoma.[14] Intraoperative and postoperative complications may arise from the weakened capsule and zonular apparatus (zonulopathy) secondary to the progressive proteolytic disintegration of the suspensory ligament, responsible for the instability of the crystalline lens during surgery, capsular rupture, zonular dialysis, vitreous loss, nuclear luxation, decentration or dislocation of the intraocular lens (IOL) with time. Further difficulties during surgery result from poor or inadequate pupil dilation (iridopathy), secondary to atrophic changes of the iris sphincter and stroma characterized by transillumination defects. Postoperative anterior chamber inflammation and fibrinous reaction occur frequently in PXF patients due to a weakened blood-aqueous barrier.[15] Corneal endothelial morphological and functional changes (endotheliopathy) are seen in eyes affected with PXF, explaining the greater susceptibility of these eyes to surgical trauma, resulting in transitory and permanent corneal decompensation.[16] The aim of our study was to see post surgical visual outcome in patient of white cataracts with exfoliation coming to tertiary care hospital.

MATERIAL AND METHODS

This study was conducted on patients with white cataracts and exfoliation coming to tertiary care hospital in Northern Indian state of J&K over a period of two years. All patients were completely evaluated by taking complete history and eyes were subjected to slit lamp examination, intraocular pressure, B scan was done to see status of retina. Size of pupil and exfoliation was noted. Patients with diabetes, uveitis, previous surgery, ocular trauma was excluded from study.

All the eyes were subjected to manual small incision cataract surgery (MSICS) in the same manner. Preoperatively topical fluoroquinilone 0.5% moxifloxacin was used to three days four times a day prior to surgery. On the operative day, cyclopentolate 0.5 % and tropicamide 0.15% was used to dilate the eye. Under all aseptic conditions eye was draped and cleaned. Bridle suture was used to stabilise the eye in downward gaze, conjunctival peritomy was done from 11 to 2 o'clock position. Dry cautery was done to cauterise the area and about 1 to 1.5mm from limbus, a 3.5 mm frown incision was made from 9 O clock position and pracentesis was done with MVR blade. Trypan blue was used to stain the cataract, depending upon size of pupil, can opener

capsulorrhexis or continuous curvilinear capsulorrhexis was done. Hydrodissection was done, nucleus was rotated and prolapsed into anterior chamber following entry into AC and extension of tunnel. Nucleus was expressed by visco expression. Three piece or single piece rigid IOL was implanted. AC was formed with normal saline, subconjunctival dexamethasone and gentamycin was injected and eye was closed with sterile eye pad. The preoperative and postoperative visual acuity and complication rates were recorded and data compiled and analyzed at the end of study period

RESULTS

In this study 79 eyes were included. The mean age of patients was 62.1 (SD 11.21). The total number of males were 38(48.1) and females 41(51.9). Out of 79 eyes, 67 were mature cataracts (84.8%) and 12 (15.2%) were Hypermature cataracts. The demographic data and patient information is given in table 1,2 and 3.

Table 1: Age distribution of study patients

Age (years)	Frequency	Percentage
< 50	8	10.1
50-59	13	16.5
60-69	30	38.0
≥ 70	28	35.4
Total	79	100
Mean±SD (Range) = 62.1±11.21 (32-90)		

Table 2: Gender distribution of study patients

Gender	Frequency	Percentage
Male	38	48.1
Female	41	51.9
Total	79	100

Table 3: Laterality of study eyes

Laterality	Frequency	Percentage
Right	47	59.5
Left	32	40.5
Total	79	100

The pre operative and post operative visual acuity data is given in table 4 and 5 respectively

Table 4: Preoperative visual acuity of study eyes

Preoperative VA	Frequency	Percentage
HM	37	46.8
PL/PR	36	45.6
CF CTF	4	5.1
1/60	1	1.3
2/60	1	1.3
Total	79	100

Table 5: Postoperative visual acuity of study eyes

Postoperative VA	Frequency	Percentage
6/6	13	16.5
6/9	35	44.3
6/12	22	27.8
6/18	5	6.3
6/24	3	3.8
6/36	1	1.3
Total	79	100

Intra –operative and immediate post operative complications are enumerated in table 6

Table 6: Intra-operative & immediate postoperative complications in study eyes

Complications	Frequency	Percentage
PCR	4	5.1
Striate Keratopathy	24	30.4
Corneal edema	12	15.2
Corneal edema with SK	8	10.1
SCH	1	1.3
Hyphema	1	1.3

DISCUSSION

Mature and hypermature cataracts with exfoliations form a group of cataracts with high risk of complications rate. Handlings such cataracts

needs a meticulous workup and great expertise. Manual suture less small incision cataract surgery with Can Opener or CCC (continuous curvilinear capsulorehexis) with relaxing cuts offers a easy, and quick visually rehabilitative technique for dealing with such complicated cataracts. The technique is also a cost effective alternative to phacoemulsification when dealing with heavy load of cataract patients in developing countries.

The most common complication rate in our study was striate keratopathy in 24(30.4%) patients and corneal edema in 12 patients(15.2%). This could be attributed to compromised endothelium in elderly population with exfoliation and liberal use of viscoelastics in these patients. A higher degree of postoperative anterior chamber inflammation is expected in PXF due to the chronic alteration of the blood-aqueous barrier that accompanies the iris ischemic changes seen in these patients. A three times greater percentage of endothelial cell loss is estimated in patients with PXF.[17] However, despite the abnormal endothelium seen in these patients, the risk of irreversible corneal decompensation with surgery is low.[18]

Four patients had vitreous loss due to PCR, patients with exfoliative fibrilopathy are prone to such complications(6) Shingleton et al reported a 4% frequency of vitreous loss in PXF patients compared to 0% in patients without PXF.[19] A posterior capsular rent in MSICS does not cause a lot of vitreous loss like the ECCE, as the chamber is closed. However, aspiration of the epinucleus or sheets of cortex becomes difficult. In the event of capsular rent, dry aspiration can be done by a Simcoe canula if the rent is small, or by an automated vitrectomy cutter if it is larger.[20]

Other complications encountered and also reported in previous studies include iridodialysis, intraocular bleeding, vitreous loss. These are also related to difficult maneuvers due to small rigid pupils and zonular instability. Zonular fragility increases the risk of lens dislocation, zonular dialysis or vitreous loss.[21]

In our study 70 patients gained either 6/12 or more vision (13 eyes had 6/6, 35 had 6/9 and 22 had 6/12) on snellens chart. Four patients had intraoperative PCR however after putting multipiece IOL in sulcus, 2 patients gained vision (6/18) and 2 patients had 6/24 vision. One patient had postoperative hyphema and after anterior chamber washing, vision was 6/36. This is consistent with results obtained by study conducted by George et al and Gogate et al.[22,23]

CONCLUSION

Manual small incision is cost effective, easy, quick visually rehabilitative alternative for mature and hypermature cataracts with exfoliative fibrilopathy in dealing with heavy backlog of cataracts with high risk factors. The limitation with our study is endothelial count responsible for corneal edema with a control groups with no exfoliation

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