COMPLICATIONS OF CATARACT SURGERY IN PATIENTS WITH PSEUDOEXFOLIATION SYNDROME

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Background: The weak zonule's predisposition to complications during conventional cataract surgery is one of the common risk factor for poor visual acuity after surgery. The present study was conducted to determine the frequency and types of complications during cataract surgery in patients with Pseudoexfoliation Syndrome. **Methods:** A cross sectional descriptive study based on non probability sampling of patients having pseudoexfoliation syndrome admitted for cataract surgery in tertiary care hospitals was carried out spread over 4 years. The data of all variables of interest were entered and analyzed through SPSS version 15.0. **Results:** A total of 200 eyes of 122 patients having Psuedoexfoliation were included in the study. Vitreal prolapse in 21 (10.5%) and posterior capsular rupture in 18 (9%) patients were the most common complications seen in Pseudoexfoliation. Damage to sphincter pupillae in 16 (8%), iridodialysis in 2 (1%), decentration of IOL in 8 (4%) and hyphaema in 2 (1%) patients was seen. Zonular dialysis in 8 (4%), retained lens matter in 12 (6%) and lens dislocation was seen in 6 (3%) patients. **Conclusion:** Patients with pseudoexfoliation are at increased risk for development of complications. Ophthalmologists should stress to increase awareness among general public for the proper diagnosis and convince patients for proper and regular follow up visits to the hospital.

Keywords: Pseudoexfoliation, Cataract, Complications, Intraocular pressure

INTRODUCTION

Pseudoexfoliation (PEX) is a senile condition[1], more common in males, familial and seems to be genetically inherited disease characterized by bluish white fibrillogranular material in the anterior segment of eye and conjunctiva. The deposit is most prominent on the anterior lens capsule at its centre as thick translucent membrane and on periphery of lens as granular deposits.[2]

Pseudoexfoliation was first described by Lindberg in 1917.[3] He believed that this material was created by earlier inflammation. The main and full description of pseudoexfoliation was made by a Swiss Ophthalmologist Alfred Vogt.[4] In 1918 he described pseudoexfoliation as a film on the anterior lens capsule due to remnants of pupillary membrane. In 1925, full description as 'exfoliation of the lens capsule' and its deposition on lens capsule, iris, back of the cornea and its association with 'glaucoma capsulare' was made.[5] The histological studies done by Davork-Theobald differentiated between true exfoliation seen in glass blowers and senile exfoliation. Senile exfoliation was then termed as 'pseudoexfoliation'.

There is slight variation in prevalence for example it is 6.45% in Pakistan[6] and 3.8% in South India.[7] It is quite rare in few populations for example prevalence rate is 0.4% in Chinese people[8], aged above 60 years. The pseudoexfoliation syndrome develops at younger age in persons living at lower attitudes[9], other possible contributing factors are nutrition, climate, radiation and ultraviolet light[10]. Multiple factors contribute to the development of pseudoexfoliation syndrome. The most common association is age and is most common between 60 and 70 years.[11] Pseudoexfoliation can cause inflammation in the eye which may lead to complicated cataract and secondary glaucoma. PEX results in increased complications during cataract surgery.[12] The objectives of this study are to determine the frequency and types of complications during cataract surgery in patients having Pseudoexfoliation syndrome and cataract.

MATERIALS AND METHODS

This study was carried out from 1st July 2003 to 30th June 2007 at Departments of Ophthalmology, District Head Quarter Hospital and Ayub Teaching Hospital Abbottabad. A total of 200 eyes of 122 cataract patients aged 50 years or more were included in the study. Convenience (non probability sampling) was used for this prospective and descriptive study. Patients with developmental cataract, traumatic cataract, complicated cataract, high myopia, any other ocular disease and previous surgery were excluded. Patients were admitted to the Ophthalmology wards of the hospitals.

Written consent of all the patients included in the study was taken after fully explaining the procedure and purpose of the study to the patients. A detailed proforma was devised containing all essential details for each individual. A complete ophthalmic history was taken. The patients were asked about their name, age, sex, occupation and address. The questions and inquiries about the

complaints were made which included dimness of vision, headache, pain in the eyes, watering of the eyes, discharge from the eyes, sticking of the lids, photophobia, history of injury and past history.

A thorough examination including visual acuity, anterior segment, posterior segment and measurement of intraocular pressure (IOL) was performed before the cataract surgery. Intraocular pressure was recorded with applanation tonometer. The diameter of pupil of each patient was measured. Intra-operative maximum pupillary dilatation was obtained and its size measured. This pupil size was graded as poor, fair and satisfactory/good. Poor pupillary dilatation meant 2–4 mm, fair pupillary dilatation meant 5–6 mm, satisfactory/good pupillary dilatation meant 7–9 mm.

Standard extracapsular cataract extraction with PMMA intraocular lens implantation was done. Topical antibiotic ointment was applied. Eye was padded and patients were put on oral analgesics. The patients were examined with slit lamp on 1st post operative day. The follow up of the patients was carried out on 8th day, 4 weeks, 8 weeks and finally 12 weeks. All the patients received oral analgesics and topical Polymyxin, Neomycin, Dexamethasone and Ofloxacin/Ciprofloxacin. The data were entered and analysed using SPSS version 15.0. Analysis was done for quantitative and qualitative measures.

RESULTS

Two hundred (200) cataract patients with pseudoexfoliation syndrome were included in this study. Patients lost during follow up were excluded from the study. The ages of these 200 patients ranged from 50 years to 87 years with 12% patients in age group of 80–89, 35% patients in the age group of 70–79, 37% patients in age group of 60–69 years and 16% patients in age group of 50–59 years. The distribution by gender shows that 84% of patients were males, while the remaining 16% of the patients were females; the male and female ratio was 5.25:1. Distribution of frequency and percentage of right and left eyes shows that 12% were right, 10% were left and 78% were bilateral.

Preoperative features show that 22% patients had zonular fragility, 6% had iridodonesis and 14% had phacodonesis. In 6% patients, pigment dispersion was seen, out of these 4% was present on lens and 2% was present on cornea. Subluxation of lens was seen in 4% patients.

Mean IOP was 19.68±2.30 mmHg. Intraoperative pupillary diameter measurements showed that poor pupillary dilatation was seen in 48% patients, fair pupillary dilatation was seen in 42% patients while satisfactory/good pupillary dilatation was seen in 10% patients.

Different procedures were conducted during cataract surgery. Peripheral iridectomy was done in all the cases. Sphincterotomy was done in 46% patients with poor pupillary dilatation. Fifty-four (54%) patients received posterior chamber IOL and 92 (46%) had planned cataract extraction. Table-1 shows distribution of surgical complications during cataract surgery. A total of 93 (46.5%) complications were recorded.

Routine follow up visits were done for 12 weeks in all the patients. On each follow up, visual acuity and slit lamp examination was done. Final visual acuity was recorded after 12 weeks, which is shown in Figure-1.

Table 1: Surgical complications during Cataract surgery (n=93)

Surgical complications	Pseudoexfoliation patients (n=200)
Damage to sphincter pupillae	16 (8%)
Irididialysis	2 (1%)
Lens dislocation	6 (3%)
Posterior capsule rupture	18 (9%)
Vitreous prolapse	21 (10.5%)
Retained lens material	12 (6%)
Decentration of IOL	8 (4 %)
Zonular dialysis	8 (4%)
Hyphaema	2 (1%)
Total:	93 (46.5%)

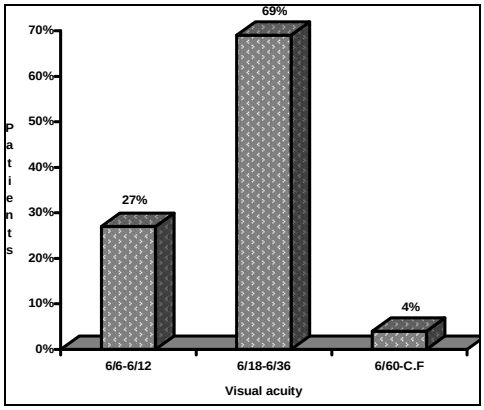

Figure-1: Distribution of post-operative visual acuity in patients (n=200)

DISCUSSION

This study explored the peroperative outcomes and complications of cataract patients with pseudoexfoliation in tertiary care setting.

Pseudoexfoliation was more commonly seen in males as compared to females in the present study, i.e., 84% in males and 16% in females. This ratio is approximately 5:1. More frequent occurrence of pseudoexfoliation in males can be explained by two factors. The first factor is that most of the patients undergoing cataract surgery are males. Secondly, males are more commonly involved in outdoor

activities while most of the females are restricted to homes as traditional housewives. This particular aspect of restriction to houses partly explains environmental factors, as there are fewer risks for development of pseudoexfoliation. This is consistent with the finding of other studies.[13,14] Pseudoexfoliation can be unilateral or bilateral. Our study describes unilateral cases to be 22%. Unilateral cases are reported to be 25%[15] in another study in Pakistan.

Pseudoexfoliation is associated with constricted pupil. Adequate pupillary dilatation is necessary for standard extracapsular extraction. Pupillary dilatation is obtained by topical tropicamide. In the present study, pupil size was recorded after installation of tropicamide at 10 minutes interval for half an hour. Poor pupillary dilatation was seen in 48% of the patients, adequate in 42% of the patients and good in 10% of the patients with pseudoexfoliation. In another study, 68.75% of pseudoexfoliation patients had poor to moderate pupillary dilatation.[14] These results indicate that good/adequate pupil dilatation for standard extracapsular cataract extraction is more difficult to be obtained in patients with pseudoexfoliation. Constricted pupil exposes the patient to more complications.[16] To obtain adequate dilatation, different methods are in use. Bimanual stretching is one of the least time consuming methods[17] and was used in our study. This method is more convenient and cheaper but may lead to iris sphincter damage. Sphincter damage was seen in 8% of the patients. This damage leads to anisocoria postoperatively but is of help to obtain pupil dilatation thus making anterior capsulotomy more convenient and of appropriate size. Proper anterior capsulotomy and adequate dilatation of pupil help in uneventful surgery. The better option is sphincterectomy in patients who are susceptible to sphincter damage. Sphincterectomy thus provides more controlled enlargement of pupil and at the same time better site can be selected.

Iridodialysis occurs intraoperatively as a result of the manipulation of intraocular tissues. It is one of the established, although rare, complications of cataract surgery. The patients with pseudoexfoliation syndrome are more prone to have complications as compared to patients without pseudoexfoliation.[18] In this study, only two patients had this complication. The main reason is inappropriate handling of intraocular tissues rather than pseudoexfoliation. These patients had only mild iridodialysis, which was optical as well as cosmetically insignificant. That is why no significant surgical intervention was done.

Pseudoexfoliation is a source of severe complications in cataract surgery.[19] The increased frequency of intraoperative complications stem from zonular weakness rather than capsular tears. Zonular weakness poses different problems that are zonular dialysis, posterior dislocation of crystalline lens material[20] and delayed spontaneous dislocation of the intraocular lens and capsule.[21] In the present study, 8 patients (4%) had zonular dialysis. Experienced surgeons do have complications but their frequency and extent of damage is far less as compared to juniors or residents.

Posterior capsular rupture impacts the patients in terms of additional surgical procedures, additional topical and oral medications, and number and duration of follow up reviews.[22] In the present study, 18 patients (9%) had posterior capsular rupture. The risk factors for the development of this complication are quite extensively discussed, keeping in mind its effects on visual outcome. Even racial differences although not significant have been considered.[23]

Our study describes vitreous loss rate as 10.5%. Measures were taken to clear the vitreous from the anterior chamber and wound edge and no postoperative complications occurred. Intraocular lens was not implanted in any patient who had posterior capsular rupture, vitreous loss or zonular dialysis. Posterior capsular tears, zonular dialysis and vitreous loss are reported to be more frequent in pseudoexfoliation syndrome than in otherwise normal subjects and this study confirms the findings.[16,24]

Retained lens material does not necessarily require surgical intervention but may incite a significant postoperative inflammation that may be difficult to distinguish from microbial endophthalmitis. Present study describes 12 patients who had retained lens material. All of them had retained little cortical material, which is better tolerated and was having no optical effects due to inferior position in anterior chamber; that is why, repeat surgery was not done. Treatment with cycloplegics and topical steroids allows for the gradual dissolution of the retained lens material.

Patients with pseudoexfoliation may be at risk for delayed spontaneous dislocation of intraocular lens within the capsular bag after uncomplicated surgery. There may be tilting of the intraocular lens in less severe cases. Keeping in mind this complication, it is better to re-evaluate surgical consideration for cataract removal. Better option is to implant the intraocular lens in the ciliary sulcus.[21] Hyphema in the immediate postoperative period usually originates from the incision or iris. Only 2 patients with pseudoexfoliation had this complication. It was mild and not associated with

vitreous loss. No intervention was done and it did resolve spontaneously.

CONCLUSION

Cataract surgery, like any surgical procedure, has associated complications. Patients with pseudoexfoliation are at increased risk for development of complications. Early diagnosis, detailed examination, knowledge of the complications, ability to manage these complications, use of viscoelastic material and surgery by experienced surgeon are keys of success. Ophthalmologists should stress to increase awareness among general public for the proper diagnosis and convince patients for proper and regular follow up visits to the hospital.

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