

# Comparison of the Rate of Complications of Phacoemulsification in Patients with and without Pseudoexfoliation Syndrome

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## ABSTRACT

**Objective:** The objective of this study was to compare the rate of complications of Phacoemulsification in patients with and without pseudoexfoliation syndrome.

**Study Design:** Cohort study.

**Place and Duration of Study:** This study was conducted at the Department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur from July 2017 to December 2017.

**Materials and Methods:** This study included 50 eyes of the patient having cataract with pseudoexfoliation syndrome Group I, and another 50 eyes of patients having cataract without pseudoexfoliation syndrome Group II. All the patients underwent phacoemulsification. PMMA IOL 5.5 to 6mm was implanted in all patients after enlarging the incision. Per-operative and postoperative complications were assessed in both the groups and compared.

**Results:** In both the groups no per-operative complications were noted. On 1<sup>st</sup> postoperative day Group I, 38 (76%) patients had no complications, 12(24%) developed complications which are striate keratopathy 8 (16%), anterior chamber (AC) reaction 4 (8%).

Group II, 1<sup>st</sup> Postoperative day, 42(84%) patient had no complication, 8(16%) developed complications which are striate keratopathy, 6(12%) developed AC reaction 2(4%). In Group I, on first month 47(94%) had no complication and 3 (6%) developed complication which is AC reaction while in group II, 49(98%) had no complication, 1 (2%) developed complication which is AC reaction. on third month In Group I 47(94%) had no complications and 3(6%) developed complications which are AC reaction 1(2%) and pigment on the IOL surface 2(4%) while in Group II, 48(98%) had developed no complications and 2(4%) patients had developed complications which are AC reaction 1(2%) and pigment on the IOL surface 1(2%).

**Conclusion:** A planned approach to cataract surgery using the advanced techniques of phacoemulsification, significantly reduces the risk of complications during surgery. Therefore, phacoemulsification is a safe procedure in cataract without pseudoexfoliation syndrome and in selective cases of cataract with pseudoexfoliation syndrome.

**Key Words:** Pseudoexfoliation syndrome, cataract surgery, intraocular lens implant, complications

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## INTRODUCTION

Cataract still remains the world's leading cause of blindness and visual impairment in the elderly population, despite the decreasing number of people affected.<sup>1</sup> If age is the main risk factor for cataract progression, pseudoexfoliation syndrome (PXF) represents an independent additional hazard for the development of nuclear sclerosis and indication for cataract surgery.<sup>2,3</sup>

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 elastic material within a multitude of intra and extraocular tissues.<sup>4-5</sup> For this reason, PXF is a diffuse disease with ocular and systemic manifestations.

Pseudoexfoliation syndrome is common among the people of various countries including India and Pakistan<sup>6-7</sup> Pseudoexfoliation syndrome is rare before the age of 50 years but increase s thereafter, nearly doubling in incidence every decade<sup>8</sup>

PEX is diagnosed clinically by anterior segment examination, and is defined as the presence of grey-white fibrogranular pseudoexfoliation material on the anterior capsule of the lens and edges of the pupil<sup>(9,10)</sup>. The prevalence of PEX varies by population; however, PEX frequency increases with age and it is believed that an extremely significant relationship exists between age-related cataractous lens changes and PEX<sup>(11)</sup>.

Postoperative inflammation is higher in PEX versus routine cataracts.<sup>1</sup> This is due to a constitutively

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damaged blood-ocular barrier that leads to increased leakage of serum proteins into the aqueous humor after surgery (flare or Tyndall effect). The fragility of the blood-ocular barrier and intense postoperative inflammation may be responsible for a higher risk of pseudophakic macular edema in PEX eyes.<sup>12</sup>

Pseudophakic macular edema is due to the breakdown of the blood-retina barrier.<sup>13</sup> Eyes with PEX are at higher risk of developing pseudophakic macular edema.<sup>12</sup> The incidence and the effects of subclinical macular edema after phacoemulsification on vision are probably underestimated.<sup>13</sup>

Conventional wisdom holds that Pseudoexfoliation syndrome leads to increased risk of complications during cataract surgery with regard to zonular dehiscence rupture of posterior capsule and luxation of lens into the vitreous as a consequence of insufficient zonules<sup>14</sup>. Somehow, now many authorities believe that modern cataract surgery makes it possible to achieve good operative result even in these patients<sup>15</sup>.

Some studies believe that phacoemulsification is safe in most eyes with pseudoexfoliation syndrome even though significantly more complications occur intraoperatively in these eyes<sup>15</sup>, but other studies believe that intra operative performance with Pseudoexfoliation syndrome is comparable to that in normal eyes<sup>16</sup>.

## MATERIALS AND METHODS

This was a cohort study. The patients were selected from the outpatient department of Ophthalmology, BVH, Bahawalpur on non-probability consecutive sampling basis having 50 eyes of the patients having cataract with pseudoexfoliation syndrome Group I, age above 40 years, IOP range from 10-20mmHg and no history of ocular trauma and surgery were included and 50 eyes of patients having cataract without pseudoexfoliation syndrome Group II. Patients having age above 40 years, IOP range from 10-20mmHg and no history of ocular trauma and surgery were included. The patient having hard cataract with nuclear sclerosis Grade -3 or more and phacodonesis, iridoneiss, zonular dialysis, lens subluxation, Uveitis, corneal dystrophies and known pseudoexfoliative glaucoma were excluded. Complete history and examination including visual acuity, IOP, Slit lamp examination, detailed examination of iris and pupil, lens examination for pseudoexfoliation material, zonular dialysis, fundus examination and B.Scan for dense cataract, biometry for IOL Implant was done. Most patients were operated under topical anesthesia.

All the patients underwent phacoemulsification. PMMA IOL 5.5 to 6mm was implanted in all patients after enlarging the incision. Per-operative and postoperative complications were assessed in both the groups. Analyzing the rate of complications of both the groups were compared by chi-square test while qualitative data

was compared with student t-tests. Statistical analysis was performed using the computer assisted SPSS 10 software package. P Value less than 0.005 was taken as significant

The regimen followed was preoperative evaluation, surgical procedures, postoperative care and medication and follow-up.

Patients were examined on first postoperative day, one month and three months postoperatively. At each follow-up visit following were checked and recorded.

Slit lamp examination was done for anterior segment (Striate Keratopathy, Uveitis and Pigmentation on the anterior surface of the lens), wound condition and examination of posterior segment.

## RESULTS

In Group 1 the mean age of patients was 63.64 ± 6.42 years with the range of 50-70 years. In Groups 2 mean age of patients was 55.72 ± 11.95 year with a range of 27-71 years.

There were 32 males (64%) and 18 females (36%) in Group -I and 28 males (56%) and 22 females (44%) in Group-2.

In groups-1, 36(72%) eyes had pre-operative visual acuity (VA) counting finger (CF), 10(20%) were in the range of 6/60 to 6/36 and 4(8%) were 6/24. In Group-2 32(64%) had preop VA is CF 16(32) were in the range of 6/60 to 6/36 and 2 (4%) were of 6/24. The presence of complication of follow up are shown in Table-I while distribution of complications are shown in Table-2

**Table No. 1: Comparison of complications of two Groups I & II**

Time of Assessment	Group	No Complications	Complications	P Value
Day 1	Group 1	38(76%)	12 (24%)	P= 0.3173
	Group 2	42 (84%)	8 (16%)	
1 Month	Group 1	47 (94%)	3 (6%)	P=0.3075
	Group 2	49 (98%)	1 (2%)	
3 Months	Group 1	47 (94%)	3 (6%)	P=0.6464
	Group 2	48 (96%)	2 (4%)	

**Table No. 2: Distribution of Complications**

Time Of Assessment	Complications	Group I	Group II	P Value
Day 1	Striate Keratopathy	8(16%)	6 (12%)	P= 0.6903
	AC Reaction	4(8%)	2 (4%)	P= 0.6903
1 Month	AC Reaction	3 (6%)	1 (2%)	P=0.4936
3 Months	AC Reaction	1 (2%)	1 (2%)	P=0.7609
	Pigment on the IOL Surface	2(4%)	1 (2%)	P=0.7982

## DISCUSSION

The hospital based comparative interventional study was designed to estimate the rate of complication of

Phacoemulsification. The objective of this study was to compare the rate of complications of Phacoemulsification in patients with and without pseudoexfoliation syndrome. Cataract surgery is a leading intraocular surgery being performed throughout the world. Now a days phacoemulsification has revolutionized the surgical procedure with minimal post-operative complications swift visual rehabilitation and early mobility of the patients. Pseudoexfoliation syndrome leads to increased risk of complications during cataract surgery with regard to zonular dehiscence rupture of posterior capsule and luxation of lens into the vitreous as a consequence of insufficient zonules. Somehow, now many authorities believe that modern cataract surgery makes it possible to achieve good operative result even in these patients. Some studies believe that phacoemulsification is safe in most eyes with pseudoexfoliation syndrome even though significantly more complications occur intraoperatively in these eyes, but other studies believe that intraoperative performance with Pseudoexfoliation syndrome is comparable to that in normal eyes. This was a comparative interventional study. 100 patients were selected from the outpatient department of Ophthalmology, BVH, Bahawalpur. Patients were selected on convenient sampling basis into two groups. "Group I" contained 50 eyes of the patient having cataract with pseudoexfoliation syndrome, and "Group II" containing 50 eyes of patients having cataract without pseudoexfoliation syndrome. All the patients underwent phacoemulsification. PMMA IOL 5.5 to 6mm was implanted in all patients after enlarging the incision. Per-operative and postoperative complications were assessed in both the groups. Analyzing the rate of complications of both the groups were compared by chi-square test. Statistical analysis was performed using the computer assisted SPSS 10 software package. In both the groups no per-operative complications were noted. On 1<sup>st</sup> postoperative day Group I, 38 (76%) patients had no complications, 12(24%) developed complications which are striate keratopathy, 8 (16%) developed anterior chamber (AC) reaction 4 (8%). Group II, 1<sup>st</sup> Postoperative day, 42(84%) patient had no complication, 8(16%) developed complications which are striate keratopathy 6(12%), AC reaction 2(4%). In Group I, on first month 47(94%) had no complication and 3 (6%) developed complication which is AC reaction while in group II, 49(98%) had no complication, 1 (2%) developed complication which is AC reaction. on third month In Group I 47(94%) had no complications and 3(6%) developed complications which are AC reaction 1(2%) and pigment on the IOL surface 2(4%) while in Group II, 48(98%) had developed no complications and 2(4%) patients had developed complications which are AC reaction 1(2%) and pigment on the IOL surface 1(2%). P values of all complications in Group I and Group II are insignificant.

Our results correlate well with those of Shastri L<sup>16</sup> which showed that intraoperative complications such as Zonular or capsular dehiscence were not seen in any eye. Postoperatively, IOP and aqueous cell response were comparable between group (P = .11 and P = 0.81, respectively) The visual outcome at 1 month was similar between groups.

Our results correlate with Menkhous S<sup>15</sup> which has mentioned that intraoperative complications such as rupture of the posterior capsule zonular dialysis and displacement of the lens into the vitreous body were similar in the two groups. Modern cataract surgery make it possible to achieve good operative results, even in risk patients. Preoperative presence of PEX had no influence on the complication rate of cataract surgery.

Our results also correlate with Dosso AA<sup>17</sup> in which it has been mentioned that intraoperatively, the incidence of zonular tears was the same in both groups (10%). In the 23 patients who had surgery one year later, no zonular tear occurred. The incidence of post-operatively complications was similar in both groups. Phacoemulsification with posterior chamber IOL implantation appears to be safe in eyes with Pseudoexfoliation syndrome.

Our study showed that in selective cases of pseudoexfoliation with experienced hands, is quite a safe procedure. Both intra and post-operative complications are almost.

## CONCLUSION

A planned approach to cataract surgery using the advanced techniques of phacoemulsification, significantly reduces the risk of complications during surgery. Therefore, phacoemulsification is a safe procedure in cataract without pseudoexfoliation syndrome and in selective cases of cataract with pseudoexfoliation syndrome.

### Author's Contribution:

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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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