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ORIGINAL ARTICLE

Frequency of Pseudophakic Glaucoma in Patients with Cataract Surgery

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ABSTRACT

Aim: To determine the frequency of pseudophakic glaucoma in patients who underwent cataract surgery.
Study Design: Cross-sectional
Place and Duration of Study: Department of Ophthalmology, Shaikh Zayed Hospital Lahore from 1st July 2020 to 31st December 2020.
Methodology: Ninety five patients of both genders with cataract surgery were enrolled and ages between 45 to 75 years. After taking written consent detailed demographics including age, sex, body mass index, intraocular pressure, and mode of surgery were recorded. Pseudophakic glaucoma was labelled in case of cataract surgery with intraocular lens implantation and intraocular pressure >21 mmHg or more in one eye along with glaucomatous optic disc or retinal nerve fiber layer defect on optical coherence tomography (OCT).
Results: There were 58 (61.05%) males and 37 (38.95%) patients were females. Mean ages of patients were 62.36±9.44 years. Sixty two (65.26%) patients had extracapsular cataract extraction and 33 (34.74%) patients had phacoemulsification. Mean intraocular pressure was 19.33±8.56 mmHg. Pseudophakic glaucoma was found in 32 (33.68%) patients.
Conclusion: The frequency of pseudophakic glaucoma was high in patients with extracapsular cataract surgery.
Keywords: Cataract surgery, Pseudophakic glaucoma, Intraocular pressure (IOP)

INTRODUCTION

Glaucoma is the world's second largest cause of blindness.[1] It affects 60 million people worldwide and accounts for 12% of global blindness.[2] The term 'pseudophakic glaucoma' refers to the growth of glaucoma after a cataract operation with intraocular lens implantation. It may occur within a few hours or several weeks to months after cataract surgery. Pseudophakia is not directly responsible for glaucoma formation, but multiple mechanisms are involved in the onset of glaucoma, such as anterior chamber distortion, bleeding, inflammation, pigment dispersion, anterior chamber vitreous, pupil block, malignant glaucoma and Nd YAG laser capsulotomy.[3,4]

Pseudophakic glaucoma incidence is widely different worldwide. Different studies have recorded 5-41% incidence of pseudophakic glaucoma in complicated operations. The prevalence of chronic pseudophakic glaucoma has been registered between 2.1-4% and 11.3 % in secondary anterior chamber implants after a normal extracapsular cataract surgery.[5]

The post-operative inflammation is associated with cataract surgery. After surgical trauma, the outpouring of inflammation cells in the anterior chamber contributes to trabecular mesh work obstruction. Increased intraocular pressure is followed by glaucoma. Another source of pseudophakic glaucoma may be the rupture of the posterior capsule and retained lens matter. Viscoelastic materials such as sodium hyaluronate and methylcellulose can lead to temporary obstruction of trabecular meshwork and a rise in the intraocular post-operative tension during cataract operations.Viscoelastics protect the corneal endothelium and preserve depth of anterior chamber.[6]

Intraocular anterior chamber implanted lenses, malpositioned and incorrectly large anterior intraocular chamber lenses lead to uveitis-glaucomahyphema (UGH) syndrome.[7] The anterior chamber intraocular lens (IOL) is often used as a result of vitreous humor in the anterior chamber or development of anterior peripheral synechia. YAG laser capsulotomy is associated with a temporary increase in intraocular pressure in post-capsular opacification and can become a chronic problem. A proper history of cataract surgery and careful examination including slit lamp examination, tonometry applanation, gonioscopy, fundoscopy, perimetry and optical coherence tomography will diagnose pseudophakic glaucoma. Pseudophakic glaucoma treatment depends on the process by which it is caused.[6]

Pseudophakic glaucoma is misdiagnosed and misunderstood often. A detailed postoperative examination will help to diagnose the disease in a timely manner. We conducted present study with aim to determine the incidence of pseudophakic glaucoma in patients with cataract surgery.

MATERIALS AND METHODS

This cross-sectional study was conducted at Department of Ophthalmology, Shaikh Zayed Hospital Lahore from 1st July 2020 to 31st December 2020. A total 95 patients of both genders with cataract surgery were enrolled. Patient's ages were ranging between 45 to 75 years. After taking written consent detailed demographics including age, sex, BMI, intraocular pressure, and mode of surgery were recorded. Patients with primary open angle, primary angle closure, traumatic glaucoma, diabetes mellitus and hypertension were excluded. Pseudophakic glaucoma was labelled in case of cataract surgery with intraocular lens implantation and intraocular pressure >21 mmHg or more in one eye along with glaucomatous optic disc or retinal nerve fiber layer defect on optical coherence tomography. The duration for inclusion criteria was from 6 weeks to 5 years

post operatively. All the data was analyzed by SPSS 24.

RESULTS

There were 58 (61.05%) males and 37 (38.95%) patients were females. Mean ages of patients were 62.36±9.44 years. 62 (65.26%) patients had extracapsular cataract extraction and 33 (34.74%) patients had phacoemulsification. Mean intraocular pressure was 19.33±8.56 mmHg. Mean body mass index of all the patients was 25.36±2.85 kg/m^2. Mean Duration of surgery was 2.85±2.16 years (Table 1).

Pseudophakic glaucoma was found in 32 (33.68%) patients while 63 (66.32%) patients had no glaucoma finding. Patients who received ECCE had high rate of glaucoma 28/62 (45.16%) as compared to phacoemulsification in 4/33 (12.12%) patients (Tables 2-3).

Table 1: Demographic information of the patients (n=95)

Variable	No.	%
Gender		
Male	58	61.05
Female	37	38.95
Mode of Surgery		
Phacoemulsification	33	34.74
ECCE	62	65.26
Mean age (years)	62.36±9.44	
Mean BMI (kg/m^2)	25.36±2.85	
Mean surgery duration	2.85±2.16	
Mean IOP	19.33±8.56	

Table 2: Frequency of pseudophakic glaucoma among all the patients

Pseudophakic glaucoma	No.	%
Yes	32	33.68
No	63	66.32

Table 3: Association of pseudophakic glaucoma with mode of surgery

Pseudophakic glaucoma	Phacoemulsification	Extracapsular cataract extraction
Yes	4 (12.12%)	28 (45.16%)
No	29 (87.88%)	34 (54.84%)
P value	<0.05	

DISCUSSION

Glaucoma is one of the most common congenital cataract surgery complications. It can appear shortly after surgery as angle closure glaucoma or later as an open angle form.[8] The exact mechanism is still unclear although various pathogenetic mechanisms have been suggested.

The reported incidence ranges from 6-58.7% depending on the follow-up length.[9,10] Glaucoma has a slow and gradual path in these eyes. It can occur years after the procedure and it is also difficult to diagnose.[11] Majority of patients were males 61.05% while females were 38.95%. Mean age of patients was 62.36±9.44 years. Sixty two (65.26%) patients have extracapsular cataract extraction and 33 (34.74%) with phacoemulsification. Mean IOP was 19.33±8.56 mmHg. Mean body mass index of all the patients was 25.36±2.85 kg/m^2 and mean duration of surgery was 2.85±2.16 years. These results were comparable to some international studies in which males were predominant with 60-70% and the average age of patients was 60 years. Studies demonstrated that average duration of surgery was 2.5 years.[12,13]

In the present study we found that the frequency of pseudophakic glaucoma was 32 (33.68%) while 63 (66.32%) patients had no glaucoma finding. Patients who received ECCE had high rate of glaucoma 28 (45.16%) as compared to phacoemulsification in 4 (12.12%) patients. A study conducted by Bazaz et al[14] reported that the incidence of glaucoma after cataract surgery was 17.4%. Another study by Ardia et al[15] demonstrated that out of 641 cataract surgeries secondary glaucoma was found in 9.1% patients and mean duration was 4.3 years. In 82 patients who underwent cataract surgery before the 10 years of age,[16]glaucoma progressed from 5 months to 13.1 years after surgery in 13 of them (15.8%). Thirteen years after cataract extraction, the authors estimated a 30% prevalence of glaucoma. Asrani and Wilensky[17] also observed glaucoma after 10 years of age in 42 eyes (65.6%) with an average 12.2 years period between cataract and glaucoma.

Many of previous studies[18,19] demonstrated that the incidence of glaucoma was higher in patients who received ECCE as compared to phacoemulsification. The difference was reported statistically significant and this showed similarity to the present study.

CONCLUSION

Glaucoma is one of the most common complications after cataract surgery. The incidence of glaucoma in pseudophakic eyes were 33.68% and the incidence was higher in patients who received extracapsular cataract extraction.

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