Original Article

Frequency of Dry Eyes after Cataract Surgery and Effect of Gender, Duration of Cataract and Age on Dry Eye Symptoms after Phacoemulsification

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ABSTRACT

Purpose: To determine the frequency of dry eyes in patients after cataract surgery and to find out the effect of gender, duration of cataract and age on dry eye symptoms after phacoemulsification.

Study Design: Descriptive Observational study.

Place and Duration of Study: Layton Rehmatulla Benevolent Trust Free Eye and Cancer Hospital, Lahore from October 2015 to April 2016.

Methods: One hundred and twenty patients between 40-80 years of age and suffering from cataract were included. Past medical history and current medical information was recorded. To control bias, only one experienced surgeon carried out the procedures. Follow-up was done at 1st post-operative day, one week, one month and 3 months. Tear film break up time was noted at each visit. Quantitative variables like age and tear film break-up time (TBUT) were presented as mean ± SD. The Qualitative variables were presented as frequency and percentages. Data was stratified according to age, gender and duration of cataract. Post-stratification Chi-square test was applied and p-value ≤0.05 was considered significant.

Results: Out of 120 patients, there were 47 (39%) males and 73 (61%) females. A total of 35 (29.2%) patients had dry eyes. Mean age was 59.11 ± 12.358 years while mean TBUT was 11.27 ± 2.582 seconds. There was no relation of dry eye with gender, duration of cataract and different age groups ($p > 0.05$).

Conclusion: Frequency of Dry eyes after cataract surgery was 29.2% (n = 35). There was no effect of gender, duration of cataract and age of the patient on the post-operative TBUT after phacoemulsification.

Key Words: Cataract, TBUT, Phacoemulsification, Dry eye disease.

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INTRODUCTION

According to WHO, 2.2 billion people have been suffering from vision impairment.[1] Among different causes of preventable blindness, cataract is one of the major reasons.[2] Cataract is a multifactorial disease in which early symptoms can be improved with the help of glasses, better lighting, anti-glare or magnifying lenses. However, the ultimate solution is cataract surgery. There are many post-operative complications of cataract surgery including dry eyes disease.

Dry eye disease (DED) is a condition, which results in discomfort, visual difficulty, and instability of tear film and damage to ocular surface. Severity in DED affects the ocular and general health of the patient and the quality of life.[3,4] Patient's ability to perform everyday work is badly affected. Recent researches have shown that dry eye symptoms are aggravated after cataract surgery.[5] Numerous epidemiological studies have reported that aging,

connective tissue disease, history of allergy or diabetes, use of antihistamines, and an ocular procedure, most commonly cataract or LASIK surgery are the major risk factors for developing DES or exacerbating pre- existing DES.[6]

Cataract surgery results in denervation of cornea and also impaired corneal sensation. Decreased corneal sensation may result in reduced tear production, which in turn can lead to irritation and dry eyesymptoms.[7,8]

Almost 40,000 cataract surgeries are performed each year in Layton Rahmatulla Benevolent Trust Eye and Cancer Hospital, Lahore. Due to this large number of cataract surgeries with associated increase in DED, it becomes important to study the frequency of dry eye symptoms in post-surgical patients. Local data is scarce in this regard. This study will indicate whether there is some relation of gender and different age groups with DED after cataract surgery.

METHODS

One hundred and twenty patients between 40 – 80 years of age and suffering from cataract were included. Patients with anterior chamber abnormalities i.e. pterygium, corneal edema (assessed by slit lamp examination), history of any medication which could cause dry eye (anti-histamines, anti- depressants, birth control pills, decongestants), any autoimmune or systemic diseases i.e. sarcoidosis, diabetes mellitus, complicated cataract surgery were excluded. The study was approved by the Ethical Review Committee. One hundred and twenty patients who fulfilled the inclusion criteria were recruited from the outpatient department of Layton Rahmatullah Benevolent Trust Eye Hospital, Lahore. Demographic information, past medical history and current medical information was recorded for each patient. Informed consent was taken. To control bias, only one experienced surgeon carried out the procedures. Phacoemulsification was done under Local anesthesia using lidocaine 4% and Bupivacaine 0.75%. Follow-up was done at 1st post-operative day, one week, one month and 3 months. Tear film break up time was noted at each visit. Dry eyes were labeled as per operational definition. Collected data was entered and analyzed using SPSS version 17. The Quantitative variables like age and tear film break-up time (TBUT) were presented as mean ± SD. The Qualitative variables like gender and dry eyes were presented as frequency and percentages. Data was stratified according to age, gender and duration of cataract. Post-stratification Chi-square test was applied and p-value ≤ 0.05 was considered significant.

RESULTS

Out of 120 patients, there were 47 (39%) males and 73 (61%) females. A total of 35 (29.2%) patients had dry eyes. Mean age in my study was 59.11 ± 12.358 years while mean TBUT was 11.27 ± 2.582 seconds. There was no relation of dry eye with gender, duration of cataract and different age groups ($p > 0.05$). The details of the results are presented in table 1.

Table 1: *Comparison of Dry eyes between Male and Female Patients.*

Dry Eyes	Gender		p-Value
	Male	Female	
Yes	12	23	0.48
No	35	50	

Table 2: *Comparison of Dry Eyes between Patients of different duration of Cataract.*

Dry Eyes	Duration of Cataract					p-Value
	≤ 1 Year	1 – 2 Years	2 – 3 Years	3 – 4 Years	4 – 5 Years	
Yes	7	9	6	10	3	0.28
No	27	16	10	16	16	

Table 3: *Comparison of Dry Eyes in patients belonging to different age groups.*

Dry Eyes	Age Groups				p-Value
	40 – 50 Years	50 – 60 Years	60 – 70 Years	70 – 80Years	
Yes	13	6	9	7	0.45
No	25	23	15	22	

DISCUSSION

In experienced hands, cataract surgery is usually without any complications. However, some complications have been reported in literature including dry eyes.[9,10]

Mean age in this particular study was 59.11 ± 12.358 years and the percentage of dry eyes was 29.2% (35 patients). In the study done by Venincasa, V. D. et al. mean age was 73.2 ± 10.7 years while mean tear film break up time was 8.86 ± 4.78 seconds

as compared to my study which had a TBUT of 11.27 ± 2.582 seconds.[11] This difference in the mean TBUT may be due to a smaller sample size with only 29 patients as compared to 120 patients, difference in demographics and epidemiology.

It was reported by another group of researchers that cataract surgery caused the onset or the worsening of dry eye and the use of artificial tears could reduce symptoms and signs of dry eye in patients after phacoemulsification.[12] We did not use any artificial tears in our study. It has also been reported that inadvertent use of eye drops after cataract surgery may also be a contributing factor in causing dry eye after phacoemulsification.[13]

Miyake et al found that dry eyes were found in 31% of patients after cataract surgery. This was very much close to our results of 29%.[14] In a prospective study of 86 patients, it was reported that 32% of the operated patients experienced symptoms of DED up to 6 months.[15] However, Kohli et al, and Cetinkaya et al, reported that the signs and symptoms of DED returned to pre-operative levels at 3 months after surgery.[16,17]

The condition is aggravated if the symptoms of DED are present before the cataract surgey.[18] We did not check the TBUT before surgery but earlier studies have compared pre-operative dry eye parameters with post-operative dry eye findings.[19]

Although our results showed that there was no effect of gender difference on the DED but Sajnani R et al described more DED related discomfort among the females.[20]

Limitations of our study were absence of a control group, use of ocular lubricants and limited duration of follow up. We only considered TBUT in our study, however, there are other DED parameters which can also be considered while doing research on dry eye.

CONCLUSION

In this study, the frequency of Dry eyes after cataract surgery was found to be 29.2% (n = 35). There was no effect of gender, duration of cataract and age of the patient on the post-operative TBUT after phacoemulsification.

Ethical Approval

The study was approved by the Institutional review board/Ethical review board **(No.2/Admn/Ex/Cer/LRBT-2015).**

Conflict of Interest: Authors declared no conflict of interest.

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Authors' Designation and Contribution

Usama Rahim; Consultant Ophthalmologist: *Concepts, Design, Literature search.*

Syed Abdullah Mazhar; Assistant Professor: *Manuscript preparation, Manuscript editing, Manuscript review.*

Nazish Mazhar Ali; Associate Professor: *Data acquisition, Data analysis, Statistical analysis.*
Nabeel Iqbal; Consultant Ophthalmologist: *Concepts, Design, Literature search.*

Moneeb Tariq; Consultant Ophthalmologist: *Data acquisition, Data analysis, Statistical analysis.*