



PREVALENCE OF MEIBOMIAN GLAND DYSFUNCTION IN PATIENTS UNDERGOING CATARACT SURGERY IN A TERTIARY CARE CENTER IN BARABANKI

Ophthalmology

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ABSTRACT

Introduction- Modern cataract surgery despite having favourable outcome in most of the aspects, comes with an unavoidable complication i.e. dry eye. Dry eye syndrome is an ocular surface disease either due to lacrimal undersecretion or overevaporation. Obstructive meibomian gland dysfunction (MGD) is the most common cause of evaporative dry eye disease, characterized by stagnation of meibomian gland lipids with or without qualitative/quantitative changes in meibum. Hyposecretion of lipids may result in tear film instability, ocular irritation, and ultimately ocular surface disease. **Aim:** To study the prevalence of meibomian gland dysfunction in patients undergoing cataract surgery in A Tertiary Care Center in Barabanki. **Materials and method:** The present study was Cross sectional and was conducted from September 2021 to November 2022. It included 130 patients presented to ophthalmology department with the chief complaint of diminution of vision and was evaluated thoroughly under slit lamp for cataract and MGD and underwent a series of tests like Schirmer's Test, TFBUT, Ocular Protection index, MGD grading and DEQS. **Result:** After examining 130 patients with varying cataract status, MGD (Dry eye) was found to have a prevalence of 49.2% (59 out of 120). The mean age of the study participants was 57.54 (7.67) years. Among the patients, 30 (25.0%) were of aged 40-50 years, 45 (37.5%) were aged 51-60 years, 43 (35.8%) were aged 61-70 years and rest 2 (1.7%) were of aged more than 70 years. Among the study participants, 65 (54.2%) were males and 55 (45.8%) were females. **Conclusion:** Addressing MGD and DED before cataract surgery is important to achieving the best visual outcomes. To achieve optimum patient compliance and quality of life post-operatively, screening for dry eye should be made part of the protocol for pre-operative evaluations.

KEYWORDS

MGD, Dry Eye, Cataract Surgery

INTRODUCTION

Modern cataract surgery is one of the most successful surgical procedures performed today. In spite of excellent postoperative distance visual acuity obtained for most patients, some are distracted and dissatisfied because of tear film dysfunction, poor near vision, or reduced contrast sensitivity.^[1-6]

Dry eye syndrome is an ocular surface disease, and two classic mechanisms are described: dryness due to lacrimal undersecretion and dryness due to overevaporation, primarily associated with Meibomian gland dysfunction. Obstructive meibomian gland dysfunction (MGD) is the most common cause of evaporative dry eye disease, characterized by stagnation of meibomian gland lipids with or without qualitative / quantitative changes in meibum. Hyposecretion of lipids may result in tear film instability, ocular irritation, and ultimately ocular surface disease.^[7-9]

MGD is a major cause of patient dissatisfaction after cataract surgery. Previous studies indicate that the prevalence of dry eye increases after cataract surgery. Patients without dry eye before the operation often develop dry eye after cataract surgery.^[10-13]

The International Workshop on Meibomian gland dysfunction (MGD) defined MGD as "a chronic, diffuse abnormality of the meibomian glands, commonly characterized by terminal duct obstruction and/or qualitative/quantitative changes in the glandular secretion. It may result in alteration of the tear film, symptoms of eye irritation, clinically apparent inflammation, and ocular surface disease".^[14]

MATERIALS AND METHODS

Patients from regular OPD of Ophthalmology of Hind Institute of medical sciences, Barabanki were included. A total of 130 patients undergoing cataract surgery were selected for the study randomly.

Dry Eye questionnaire Score was used to evaluate the symptoms. The subjects were divided into two groups according to MGD Diagnostic Criteria:

In group A, 59 patients (59 eyes) 29 males (29 eyes) & 30 females (30

eyes) were diagnosed with MGD. In group B, 61 patients (61 eyes) 35 males (35 eyes) and 26 females (26 eyes) were the control group.

The patients were also subjected to the following tests for the diagnosis of MGD

1. Slit lamp examination

The eyelid was evaluated for blepharitis and lid margin thickening. The meibomian gland orifices were examined for capping.

2. Schirmer's Test

It was done to determine the production of aqueous component of the tear film [Score Key- >10mm: Normal, <10mm: Deficient aqueous production]

3. Fluorescein staining

The patient's cornea was stained with fluorescein to find presence of corneal abrasions and to determine height of the tear film meniscus.

4. Tear break up time (TBUT)

The patient's eye was evaluated for tear film break up time using fluorescein stain. [Score Key TBUT >10 seconds: normal, TBUT < 10 seconds positive].

Inclusion criteria

- Patients between age group of 45 years and above planned for Cataract Surgery coming to HIMS Ophthalmology OPD.
- Patients having unilateral or bilateral age related cataract with or without dry eye symptoms.

Exclusion

- Age < 45 years
- Pseudophakia in other eye
- Cataract Caused By an etiology other than age e.g. trauma, uveitis, drug induced.
- Pre-existing Ocular diseases Glaucoma, Disorders Of lid, Conjunctiva, Cornea and sclera.
- Use of Contact Lens.
- Patients On Chronic Ocular Medications.

- Patients who have undergone corneal refractive surgery.
- Patients who had ocular allergies, pterygium, or blepharitis.
- Any Systemic diseases like Sjogren's Syndrome, Rheumatoid Arthritis, Systemic Lupus erythematosus or medications like anti-glaucoma like brimonidine and lubricating eye drops containing BAC.

RESULT

The results of this study was described under following sections :

1. Socio-demographic profile of the study participants
2. Clinical profile of the study participants
3. Prevalence of post surgery MGD among the study participants
4. Correlation between type of cataract surgery with MGD

A total of 130 patients were included in this study. Among them, due course of the study, 10 participants were becoming loss to follow up. Hence, excluding those patients form analysis, the information of 120 patients were considered for analysis.

1. Sociodemographic profile of the study participants

Age distribution of the study participants

Table 1: Age distribution of the study participants

	Overall (N=120)
AGE	
Mean (SD)	57.54 (7.67)
Range	40.00 - 75.00
Age group	
40-50 Yrs	30 (25.0%)
51-60 Yrs	45 (37.5%)
61-70 Yrs	43 (35.8%)
>70 Yrs	2 (1.7%)

The mean age of the study participants was 57.54 (7.67) years. Among the patients, 30 (25.0%) were of aged 40-50 years, 45 (37.5%) were aged 51-60 years, 43 (35.8%) were aged 61-70 years and rest 2 (1.7%) were of aged more than 70 years.

Sex distribution of the study participants

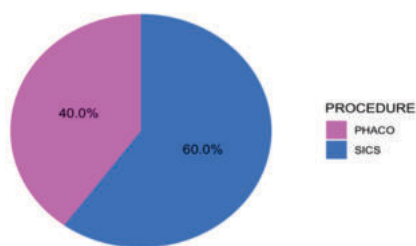
Table 2: Sex distribution of the study participants

	Overall (N=120)
GENDER	
Female	55 (45.8%)
Male	65 (54.2%)

Among the study participants, 65 (54.2%) were males and 55 (45.8%) were females

2. Clinical profile of the study participants

Procedure of cataract surgery performed among the study participants



Surgery performed among the study participants

Clinical symptoms among the study participants

Table 4: Clinical presentation of the study participants

	Overall (N=120)
BLEPHARITIS	
Absent	61 (50.8%)
Present	59 (49.2%)
LID_MARGIN_THICKENING	
Absent	61 (50.8%)
Present	59 (49.2%)
CAPPING	
Absent	61 (50.8%)
Present	59 (49.2%)

Among the patients, Blepharitis, Lid margin thickening and capping were the major symptoms. Blepharitis, lid margin thickening and capping was observed in 59 (49.2%) patients.

3. Prevalence of MGD among the study participants

Table 5: Prevalence of MGD among the study participants

	Overall (N=120)
Group	
Group-A	59 (49.2%)
Group-B	61 (50.8%)

Table-5 illustrated the prevalence of meibomian gland dysfunction. The prevalence of MGD was observed in 59 (49.2%) of the study participants and rest were (50.8%) normal

4. Correlation between types of cataract surgery and MGD

Table 6: Correlation between type of surgery with MGD status

	PHACO (N=48)	SICS (N=72)	Total (N=120)	P value
Group				0.82
Group-A	23 (19.2%)	36 (30.0%)	59 (49.2%)	
Group-B	25 (20.8%)	36 (30.0%)	61 (50.8%)	

Table-6 described the correlation between the type of surgery performed and the proportion of patients had MGD post-surgery. Out of total 120 patients, 48 had PHACO and 72 had SICS surgery. The proportion of MGD in PHACO group was 19.2% and among SICS, it was 30.0%. However, the difference of MGD proportion between two groups was not significant in relation to the type of surgery performed for cataract

DISCUSSION

Cataract surgery can worsen blepharitis and meibomian gland function during the postoperative period to result in increased ocular discomfort and decreased vision and patient satisfaction. This phenomena has also been observed in previous studies.

It has been reported that the cataract surgery worsens eyelid margin abnormalities and meibomian gland function, including meibum quality and quantity. Anterior blepharitis and MGD worsen after cataract surgery for several reasons. First, all patients are advised not to get water in their eyes and not to rub their eyes after cataract surgery, while the recommended duration varies from hospital to hospital.^[15-16]

The present study subjects were of middle aged who underwent cataract surgery during their 50s (Mean age of the study participants 57.54 years and 37.5% were of aged 51-60 years) which was similar to the reported findings where majority of the study participants were of aged 50 or above.^[17]

Population-based studies of MGD prevalence have reported conflicting results with respect to age and sex.

It was documented that the MGD was more prevalent in men, where as others have not supported the association with sex.^[18]

In our study, the proportion of patients undergone SICS surgery was higher as these compared to the PHACO surgery for the cataract. These findings were also similar with the reported studies.

The global DED prevalence is 5–50%. We observed that 49.2% of patients presenting for cataract surgery have DED because of Meibomian Gland Dysfunction, highlighting the importance of perioperative DED management in addressing postoperative patient dissatisfaction and decreased QOV. Similar proportion of MGD among the study population was observed in the previous study.^[19-21]

In our study, it has been found that there was no correlation of MGD with the type of surgery performed for cataract operation($p=0.82$) where as, An association of types of cataract surgery and the occurrence of MGD among the patients were reported. But similar findings were observed in the another study.^[22-25]

In this study, there was a significant difference in DEQS score between two groups ($p<0.001$) during pre and post operative time various time interval. This findings was similar to the observation of various studies as documented earlier.^[26]

The similar findings with respect to blink rate between group-A and group-B patients at various time intervals have observed. These similarity also reported in previous studies.^[27]

In the present study, it has been observed that, post cataract surgery, there was nearly 50% chance of having MGD and this get worsen as the day progress. However, the limitation of this study was that it was meant for to observe the prevalence of MGD among the patients undergoing cataract surgery. Further longitudinal study is recommended for further evaluation of the hypothesis.

CONCLUSION

Dry eye disease is a common ophthalmic problem, with a cause that is often multifactorial. Meibomian gland dysfunction is an important contributor to DED, owing to an imbalance in lipid secretion that affects the rate of tear evaporation. When tears evaporate quickly, tear osmolality increases, resulting in DED.

There are many risk factors that contribute to onset of both DED and MGD, many of which may overlap between these diseases. A clear diagnosis is vital when managing DED. Various treatment options are available for DED and MGD, and a stepwise staged approach is often crucial for ensuring appropriate management.

The results suggest that the MGD is one of the main Cause of Dry eye in patients presenting for cataract surgery. The main cause could be attributed to deficient aqueous layer of tear, the cause of which could probably be dehydration, or age related. Addressing MGD and DED before cataract surgery is important to achieving the best visual outcomes. Diagnostic and treatment decisions can be simplified and protocolled to allow rapid diagnosis and intervention.

This study observes that most patients approach hospitals only with reduced vision and ignore the symptoms of dry eye. To achieve optimum patient compliance and quality of life post-operatively, screening for dry eye should be made part of the protocol for pre-operative evaluations. Excellent counseling is also vital to setting reasonable expectations for patients prior to a surgical procedure

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