ORIGINAL RESEARCH PAPER

Volume-8 | Issue-1 | January-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

DRY EYE STATUS IN POST CATARACT SURGERY PATIENTS

Ophthalmology

Dr Anju S Narayanan Senior Resident Government Medical College Alappuzha, Kerala

Dr Jasmin LB* Assistant Professor, Department of Ophthalmology, RIO, Government Medical College Trivandrum Kerala. *Corresponding Author

Dr PS Girijadevi Professor, Department of Ophthalmology, RIO, Government Medical College Trivandrum Kerala.

ABSTRACT

Introduction Various factors play a role in outcome in patients with or without dry eye that have cataract surgery . Different measurements are used to assess the incidence and severity pattern of dry eye syndrome in cataract surgery patients and to compare the dry eye status after phacoemulsification and SICS(small incision cataract surgery).

AIMS AND OBJECTIVES To study the effect of cataract surgery on dry eye status based on change in the ocular surface disease index score

To compare the dry eye symptom score between SICS (Small incision cataract surgery) and phacoemulsification surgeries

MATERIALS AND METHODOLOGY Patients attending a particular unit in Regional institute of ophthalmology out patient department under a particular surgeon during the study period are initially evaluated at the time of admission for cataract surgery using a semi structured Questionnaire so as to assess whether they already had dry eye symptoms or not and to assess whether the dry eye symptoms occurred after surgery or not. Then OSDI (Ocular Surface Disease Index) score was calculated which is based on the parameters-Schirmer values 1 &2, Fluorescein score and tear film break up time. On follow up, OSDI score of patients are calculated and assessed

CONCLUSION No association was found between the type of cataract surgery and the development of dry eye.Those patients who had previous dry eye got aggrevated through out the follow up period after cataract surgery.

Presence of Diabetes mellitus,Depression, certain drugs like oral hypoglycemic agents,antihistamines,antidepressant and usage of mixed medications showed significant association with the development of dry eye through out 3 months follow up period.

But patients with Scleritis and Rhuematoid arthritis showed association with dry eye upto one month follow up but not at three months follow up.

KEYWORDS

Phacoemulsification,Dry eye,Ocular Surface Disease Index Score.

INTRODUCTION

Dry eye is a multifactorial disease of tears and ocular surface. Ocular symptoms such as pain, irritation and poor vision can result from dry eye. Severe dry eye affects patient's ocular and general health well being and quality of life. Complications such as dry eye syndrome can occur after an extracapsular cataract extraction because a large incision is created in the eye during the procedure that can sometimes damage the cornea. Phacoemulsification is commonly performed worldwide wherein a smaller incision is created and ultrasonic driven oscillating tips are used to emulsify or fragment the crystalline lens. various factors play a role in outcome in patients with or without dry eye that have cataract surgery. Most important is post operative corneal desensitization. Studies shows that loss of corneal sensitivity after cataract surgery often persists for more than 2 years and can be permanent. Corneal sensitivity impairment after surgery is dependent on the extent of corneal incision. In addition, topical anaesthesia and eye drops containing preservatives like benzalkonium chloride have effect on corneal epithelium. Exposure to light from operating microscope might also be associated with post operative dry eye. Furthermore,use of ultrasound in cataract surgery may damage corneal structures such as epithelium,stroma ,keratocyte, endothelium and nerve plexuses. Ocular surface complications are much rarer following small incision phacoemulsification. Shorter duration of phaco is accompanied by shorter microscope light exposure and faster visual rehabilitation permits rapid tapering of topical medications. Studies showed that grooved incisions are associated with more dry eye than a single plane incision. Rationale of this study lies in the fact that numerous studies have reported ageing, connective tissue diseases ,history of allergy, diabetes ,use of antihistamines as risk factors but much studies have not been done regarding cataract surgery and dry eye, eventhough many patients who have undergone cataract surgery have complained of dry eye and symptoms of irritation post operatively.In the current study, Various measurements are used to assess the incidence and severity pattern of dry eye syndrome in cataract surgery patients and to compare the dry eye status after phacoemulsification and SICS(small incision cataract surgery).

AIMS AND OBJECTIVES

To study the effect of cataract surgery on dry eye status based on change in the ocular surface disease index score.

To compare the dry eye symptom score between SICS (Small incision cataract surgery) and phacoemulsification Surgeries.

MATERIALS AND METHODOLOGY

STUDY DESIGN

Experimental pre post test

INCLUSION CRITERIA

Patients in the age group 50-70- years attending Regional Institute Of Ophthalmology out patient department in a particular unit under a particular surgeon for cataract surgery during the study period

EXCLUSION CRITERIA

- Patients who had already undergone any type of ocular surgery before.
- Patients not willing for the study.

Follow up period- Patients are followed up 1 week after cataract surgery, 1 month and 3 months after cataract surgery

SAMPLE SIZE

Sample size was calculated using the formula

$N=(Z_{alpha} + Z_{1-beta})^2 /d^2 + (Z_{1-alpha/2})^2 /2$

Final sample size fixed for the present study =50.

Consecutive cases till 50 phacoemulsification cases were analyzed

SAMPLING TECHNIQUE

Consecutive cases satisfying the sample size

DATA COLLECTION

Data collection done through interview, laboratory investigations and clinical examination.

TOOLS

- Semi structured Questionnaire
- Slit lamp

- Fluorescein strips(impregnated with 2% fluorescein)
- No.41 Whatman filter paper
- Local anaesthetic drops
- Timer.

STUDY PROCEDURE

Patients attending a particular unit in Regional institute of ophthalmology out patient department under a particular surgeon during the study period are initially evaluated at the time of admission for cataract surgery using a semi structured Questionnaire so as to assess whether they already had dry eye symptoms or not and to assess whether the dry eye symptoms occurred after surgery or not. Then OSDI (Ocular Surface Disease Index) score was calculated which is based on the parameters-Schirmer values 1 &2, Fluorescein score and tear film break up time. On follow up, OSDI score of patients are calculated and assessed.

SCORING SYSTEM	
Schirmer test1 value	Score
<5	2
5-10	1
>10	0
Schirmer test 2 value	Score
<5	2
5-10	1
>10	0

Fluorescein pattern	Score
Punctate staining present	1
No punctate staining	0
Tear film break up time	Score
5-10	4
11-15	3
16-20	2
21-25	1
>25	0

Total of these score is taken as OSDI score

DRY EYE STATUS	OSDI
No dry eye	<5
Mild dry eye	5-10
Moderate dry eye	10-15
Severe Dry eye	15-20

Data analyzed using descriptive statistics, Repeated measures Anova or Friedman used depending on the normality of values obtained

RESULTS AND ANALYSIS

Patients included in the study belonged to the age group 50 to 70 years . Majority of patients belonged to age group of 66 to 70 years.

In this study 61% males and 51% patients underwent cataract surgery for right eye. Majority of the patients did not have any systemic disease. 12% of the study group were hypertensives while 9.3% were diabetic.

Majority of the study population had no addictions while 7.3% were smokers,4.7% were alcoholics and 4% were both smokers and alcoholics

Majority of the study population did not use any medications, 10% of patients used antihypertensives,7% of patients used oral hypoglycaemic agents, 7% of patients used mixed medications. Majority of patients in the age group 66 to 70 years underwent SICS type of cataract surgery while majority of patients below 60 years underwent phacoemulsification type of cataract surgery.

Patients with rheumatoid arthritis and depression were found to have statistically

significant association with the development of dry eye before cataract surgery.

The use of antihistamines, antidepressants and mixed medications (combination of any of the above drugs) were found to have statistically significant association with the development of dry eye before cataract surgery.

Scleritis was found to have statistically significant association with the development of dry eye before cataract surgery

DISCUSSION

The study was done in 50-70 year old patients attending Regional institute of ophthalmoiogy Out patient department under a particular surgeon to study the effect of cataract surgery on dry eye and to compare the dry eye symptom score between SICS and phacoemulsification type of surgeries based on OSDI score.

Dry eye evaluation before cataract surgery

In our study patients with ,rheumatoid arthritis (p value0.000) and depression (p value0.005) were the only comorbidities found to have statistically significant association with dry eye.

The use of medications like antihistamine (p value0.000), antidepressant (p value0.005) and the use of mixed medications (p value0.008) were found to have significant association with development of dry eye.

The presence of scleritis (p value0.000) and the use of mixed addictions (p value 0.001) were found to have statistically significant association with the development of dry eye even before cataract surgery.

The presence of having professional job (p value0.516) did not show any statistically significant association with the development of dry eye.

Dry eye evaluation one week after cataract surgery

In our study, patients with rheumatoid arthritis (p value0.002) and depression (p value 0.047) continued to show statistically significant association with the development of dry eye one week after cataract surgery

Patients using antihistamines (p value 0.000), antidepressant (p value 0.047) and those using mixed medications (p value 0.000) continued to show significant association with the development of cataract one week after cataract surgery.

The presence of scleritis (p value0.002) and intake of mixed addictions (p value0.000)

continued to show significant association with the development of dry eye.

Interestingly the type of cataract surgery (p value0.371) and having professional job (p value0.371) did not show any significant association with the development of dry eye one week after cataract surgery.

Dry eye evaluation one month after cataract surgery

In our study, the presence of co morbidities like rheumatoid arthritis (p value0.041) depression (p value 0.004) continued to show significant association with the development of dry eye even at one month after cataract surgery.

Depression (p value 0.000) also showed significant association with the development of dry eye one month after cataract surgery.

In addition to the use of antihistamines (p value 0.000), antidepressants (p value0.004), mixed medications (p value0.000), the use of oral hypoglycaemic agents (p value 0.000) also showed significant association with the development of dry eye one month after cataract surgery.

The presence of scleritis (p value 0.004) and the use of mixed addictions (p value 0.000)continued to show significant association with the development of dry eye one month after cataract surgery

The type of cataract surgery (p value0.642) and the having occupation (p value0.645) did not show any statistically significant association with the development of dry eye one month after cataract surgery.

Dry eye evaluation three months after cataract surgery

In our study, the presence of diabetes mellitus (p value0.008) and depression (p value 0.041) continued to show significant association with the development of dry eye but rheumatoid arthritis (p value 0.146) failed to show any significant association with the development

of dry eye on follow up.

The use of medications like oral hypoglycaemic agents (p value 0.009), antihistamines (p value0.004) , antidepressants (p value 0.041) and use of mixed medications (p value 0.007) continued to show significant association with the development of dry eye at 3 month after cataract surgery.

The presence of scleritis (p value 0.150) and the use of mixed addictions (p value 0.074) did not show any statistically significant association with the development of dry eye.

The type of cataract surgery (p value 0.361) and the having professional job (p value0.361) did not show any statistically significant association with the development of dry eye at three month after cataract surgery.

This study was done to analyze the effect of cataract surgery on dry eye status and to compare the dry eye symptom score between SICS and phacoemulsification No significant association was found between the type of cataract surgery and dry eye. Of the various risk factors analyzed ,comorbidities like depression, diabetes mellitus and rheumatoid arthritis showed significant association with dry eye.

The type of occupation did not show any association with dry eye development.

The use of medications like anti-histamines, antidepressants,oral hypoglycaemic agents and the use of mixed medications showed association with dry eye.

In our study, only the use of mixed addictions showed significant association with dry eye, smoking or alcoholism alone showed no association with the development of dry eye.

Presence of ocular illness like scleritis showed association with dry eye development.

Limitations of the Study

Study duration was short, longer duration would have got more significant results. Sample size was small , a larger sample study would have been of more significance

CONCLUSION

- The presence of co morbidities like depression showed association with the development of dry eye throughout 3 months follow up period.
- The presence of rheumatoid arthritis showed significant association with dry eye development up to one month after cataract surgery but did not show much association at 3 month follow up period.
- The presence of diabetes mellitus showed association with development of dry eye at about one month and at three month after cataract surgery.
- The use of medications like antihistamines, antidepressant and mixed medication use showed significant association with the development of dry eye throughout the three month follow up period
- The use of oral hypoglycaemic agents showed association with dry eye development at one month and three month follow up period
- No association was found between the type of cataract surgery and the development of dry eye
- The presence of scleritis showed significant association with the development of dry eye upto one month follow up period but not at three month follow up period
- The usage of mixed addictions showed showed significant association with the development of dry eye upto one month follow up period but not at three month follow up period.
- The presence of having any occupation (nonprofessional or professional) did not show any significant association with the development of dry eye throughout the follow up period.
- Only three persons had dry eye even before cataract surgery, of which two of them underwent SICS while the remaining one person underwent phacoemulsification surgery .In all the three persons, the dry eye aggrevated throughout follow up time period after cataract surgery.

REFERENCES

1. Ram J, Guphtha A, Brar G(2002) Outcomes of phacoemulsification in patients with dry eye.J Cataract Refract surgery 28:1386-9
2. Cho YK,Kim MS (2009) Dry eye after cataract surgery and associated intraoperative risk factors.Korean J Ophthalmol-23:65-73
3. Schiffman RM,Christianson MD, Jacobsen G, Hirsch JD, Reis BL(2000)Reliability and validity of ocular surface disese index.Arch Ophthalmol 118:615-21
4. Li XM, Hu L, Hu J,Wang W(2007) Investigation of dry eye disease and analysis of pathological factors in patients after cataract surgery.Cornea26(9)
5. Liu Z, Luo L,Zhang Z, Cheng B(2002) Tear film changes after phacoemulsification.
6. Zabel RW,Tuft SJ (1989) Corneal toxic changes after cataract extraction ,Can J Ophthalmol24:311-6
7. Ram J,Guphtha A Outcomes of phacoemulsification in patients with dry eye.J Cataract Refeact surg28:1386-9
8. Khanal S, Jones D(2008) Changes in corneal sensitivity and tear physiology after phacoemulsification.Ophthalmic Physiol Opt28:127-34
9. Sitompul R(2008) Sensitivity change in cornea and tear layer due to incision difference on cataract surgery with either manual SICS or phacoemulsification
10. Roberts CW, Elie ER(2007) Dry eye symptoms following cataract surgery. Insight 32:14-21
11. Liu ZG(2009) Dry eye relevant to ocular surgery 45:483-5
12. Hardten DR(2008)Dry eye disease in patients after cataract surgery Cornea 27:855.