UTTAR PRADESH JOURNAL OF ZOOLOGY

41(24): 33-36, 2020
ISSN: 0256-971X (P)

COMPARATIVE EVALUATION OF DRY EYE BEFORE AND AFTER MANUAL SMALL INCISION CATARACT SURGERY

GIRISH GADRE[1*], GAYATHRI MOHAN[1], B. S. JOSHI[1], GAURAV S. PARANJAPE[1] AND M. M. ALATE[1]

[1]Department of Ophthalmology, Krishna Institute of Medical Sciences Karad, India.

AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. Authors GG and GM designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors BSJ, GSP and MMA managed the literature searches. All authors read and approved the final manuscript.

Article Information

Editor(s):
(1) Dr. Sirigireddy Sivajothi, Sri Venkateswara Veterinary University, India.
Reviewers:
(1) Ana Didović Pavičić, General hospital Zadar, Croatia.
(2) Yasir Iqbal, Watim Medical College, Pakistan.

Received: 22 October 2020
Accepted: 27 December 2020
Published: 23 January 2021

Original Research Article

ABSTRACT

Dry eye is a multifactorial and visual surface condition that outcomes in side effects of pain, vision inability, and tear film brokenness with possible surface unsettling influence of the eye. The reason for this examination is to decide the extent of dry eye when manual minor incision cataract medical procedure utilizing a corneoscleral tunnel. A hospital-based experimental study was conducted from January 2015 to June 2017, in the Eye Institute of the Krishna Institute of Medical Sciences, Karad, patients undergoing small incisional cataract surgery. All dry eye testing done on eyes undergoing cataract surgery indicated deterioration after surgery. Early identification of improvements in tear film status following cataract surgery tends to improve postoperative conditions with respect to the quality of patient's life.

Keywords: Dry eye disease; tear break up time; ocular surface disorder index; schirmer's test; tear film.

1. INTRODUCTION

Many changes are observed in the eye after cataract surgery, one of them being onset of dry eye or change in the status of pre-existing dry eye. According to the International Dry Eye Work Shop in 2007, "Dry eye is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance and tear film instability with potential damage to the ocular surface". It is characterized by significant osmolarity of the tear film and inflammation of the surface of the eye [1].

2. AIM AND OBJECTIVE

To assess the seriousness of dry eye indications utilizing Ocular Surface Disease Index when manual small incision cataract medical procedure with corneoscleral tunnel.

**Corresponding author: Email: Girishgadre@outlook.com;*

3. REVIEW OF LITERATURE

Cataract is any opacity in the lens or its capsule, whether developmental or acquired. Cataract is the main cause of curable blindness worldwide, with the developing world accounting for three quarters of blindness [2]. Recent WHO estimates show that 47.8% of global blindness is due to cataract, while 51% of blindness is due to cataract in South Asia, including India. In India, there are 12.5 million blind and it is estimated that 50%-80% of the are blind due to cataract [3]

The French ophthalmologist Jacques Daviel (1696-1762) was the main current European doctor to effectively extricate cataracts from the eye. He played out the primary extra-capsular waterfall extraction on April 8, 1748 [4]. This was the first significant advance in cataract surgery since couching was invented. He had used a lower limb incision approach as during those times surgery was done without anaesthesia and the patient's defence mechanism Bell's phenomenon would allow the surgeon only this approach.

Li XM et al. [5] observed that since cataract surgery, the rate of dry eyes rose significantly. Tear river was narrowed, Break up time and Schirmers test I were decreased and shorted in patients after cataract surgery. Impression cytology examination showed that there was serious squamous metaplasia in the epithelial conjunctiva layer. YK Cho et al. [6] studied effect of cataract study on tear film in previously dry eye and non dry eye subjects.

Khanal S et al. [7] on a study showed The physiology of tears improved around 1 month. Corneal affectability didn't continue normal levels in 3 months, however there was a development towards complete recuperation. The effect of post-surgical changes in tear physiology and corneal sensitivity has not been shown to saline and tear lubricant.

A study was carried by Sitompul R et al. [8] showed Corneal affectability didn't continue normal levels in 3 months, however there was a development towards complete recuperation. The effect of post-surgical changes in tear physiology and corneal sensitivity has not been shown to saline and tear lubricant. Intergroup difference in corneal sensitivity was significant on days 1, 7 and 15. Patient conditions rose in both groups by day 1 and the difference remained significant in both groups on day 15.

A clinical study done by Sun XG et al. [9] showed Two types of dry eye after cataract surgery, early dry eye and persistent dry eye. The majority of the early dry eye cases, typically with regular lacrimal emission before surgery, were reversible and caught in a portion of the factors related with surgery and post-surgery drugs. However, most cases of chronic dry eye may suffer from ocular surface diseases associated with permanent dry eye disease, with irregular lacrimal secretion or the "borderline condition" of the lacrimal secretion test before surgery.

4. MATERIALS AND METHODS

Hospital based Quasi experimental study was performed. Patients undergoing Small Incision Cataract Surgery at the Department of Ophthalmology, KIMS, Karad from January 2015 to June 2017. 110 eyes of 110 consecutive patients were enrolled in this study.

5. OBSERVATIONS AND RESULTS

In the Table 1, Patient distribution according to age and sex is shown. It was found that most of the patients belonged to the age group of 61-70 years (46.36%), followed by the age group of 50-60 years (34.54%). The mean age among patients was 65.10 ±8.18 years.

The Table 2, shows number of patients with pre-existing systemic conditions. 29.09% of patients had Diabetes Mellitus, 21.81% of patients had hypertension, 11.82% of patients had dyslipidemia, 8.18% of patients had ischaemic heart disease, and 3.63% of patients had chronic obstructive pulmonary disease.

The Table 3. Shows the number of patients with pre-existing dry in systemic conditions. 21.87% of diabetics had dry eye.12.5% of hypertensives having dry eye.

Table 1. Distribution according to age

Age Group	Males	Females	Total	Percentage
50-60	15	23	38	34.54
61-70	20	31	51	46.36
71-80	10	7	17	15.45
>80	3	1	4	3.63
Total	48	62	110	100

Table 2. Distribution according to associated systemic conditions

Diseases	No. of patients	Percentage
Diabetes Mellitus	32	29.09
Hypertension	24	21.81
Dyslipidemia	13	11.82
IHD	09	08.18
COPD	4	3.63

Table 3. Distribution according to pre-existing dry eye in systemic diseases

Diseases	No. of patients	Percentage
Diabetes Mellitus	7	21.87
Hypertension	3	12.5
Dyslipidemia	1	7.69
IHD	0	0
COPD	0	0

Table 4. Distribution according to Schirmer's Test values pre-operative

Schirmer's Test (ST)	No. of patients	Percentage
10-25mm (Normal)	57	51.81
5-10 mm (Borderline)	45	40.90
<5mm (Hyposecretive)	8	7.27
Total	110	100

The above Table 4, baseline evaluation of Schirmer's test values prior to surgery. It was normal in 51.81% of cases, borderline In 40.90% of cases and hyposecretive in 7.27% of cases. The mean Schirmer test value pre-operative among patients was 12.10 ±7.67 mm.

6. DISCUSSION

The current study was performed to determine the proportion of dry eye before and after manual small incision cataract surgery. All the patients satisfying the inclusion criteria visiting the Ophthalmology OPD in the Krishna Institute of Medical Sciences, Karad were enrolled in the study. The sample size was 110 patients. Patients with and without pre-existing dry eye were examined. Complete ophthalmic examination was done and patients were categorized according to the severity of dry eye.

Kavitha CV et al [10] concluded that there was dryness after manual cataract surgery with corneo scleral tunnel incision which correlates with our study. In our study we observed that there was worsening of values of OSDI, ST-1, TBUT of dry eye three weeks after cataract surgery compared to pre-operative values.

A study by Gantela et al. [11], showed that cataract surgery may lead to or aggravate dry eye. OSDI, ST-I, TBUT, tear meniscus height and Fluorescein Stain Grading were measured in the preoperative and 1 week, 1 month and 3 months in postoperative period. All the values peaked at one month post operative period and improved gradually in the three months post operative period.

7. CONCLUSION

In the study, observed a worsening of OSDI, ST-1 and TBUT three weeks post operatively. As per OSDI scores, a comparison done pre-operatively and six weeks post operatively shows a rise in the number of patients with dry eyes. When Schirmer's test-1 values were compared pre and post operatively after six weeks the difference was statistically significant with a p value=0.021 indicating a worsening of dry eye after SICS. In comparison of the TBUT values, the difference pre and six week post operatively was a p value-0.022, which was statistically significant. Early detection of changes in the tear film status after cataract surgery aids in better post operative results with regard to quality of life of the patient. Before medical procedure patient should be educated about the conceivable disturbance of dry eye manifestations and artificial tears should be prescribed as and when indicated.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Lemp A, Baudouin C, Baum J et al. The definition and classification of dry eye disease: report of the definition and classification subcommittee of the international Dry Eye Work Shop. Ocular Surface. 2007;5(2):75–193.
2. Schaumberg DA, Sullivan DA, Buring JE, Dana MR. Prevalence of dry eye syndrome among US women. Am J Ophthalmol 2003;136:318-26.
3. Bukhari A, Ajlan R, Alsaggaf H. Prevalence of dry eye in normal population in Jeddah, Saudi Arabia. Orbit. 2009;28:329-7.
4. Cataract Surgery in the modern era. American Academy of Ophthalmology; 2008. Available:http://www.aaofoundation.org/what/heritage/exhibits/online/cataract/mo dern.cfm. Accessed May 25, 2008.
5. Li XM, Zhao X, Hu LZ, Wang W. Clinical observation of dry eye in patients before and after cataract surgery. Zhonghua Yan KeZaZhi. 2008;43(1):10-3.
6. Yang KC, Man SK. Dry after cataract surgery and associated intra operative complications. Korean J Ophthalmol. 2009; 23(2):65-73.
7. Khanal S, Tomlinson A, Esakowitz L, Bhatt P, Jones D, Nabili S, Mukerji S. Changes in corneal sensitivity and tear physiology after phacoemulsification. Ophthalmic physiol Opt. 2008;28(2):127-34.
8. Sitompul R, Sancoyo GS, Hutauruk JA, Gondhowiardjo TD. Sensitivity change in cornea and tear layer due to incision difference on cataract surgery with either manual small-incision cataract surgery or phacoemulsification. Cornea. 2008;27 Suppl 1:513-8.
9. Sun XG, Shi YY, Zhang C. Not to ignore the dry eye of cataract patients after surgery. Zhonghua Yan KeZaZhi. 2008; 44(4):291-2.
10. Kavitha CV, Pavana AK, Chandan N. Evaluation of dryness of eyes after manual small incision cataract surgery with corneo-scleral tunnel incision. Journal of Clinical and Diagnostic Research. 2012;6(6):1029-1033.
11. Comparative evaluation of dry eye parameters in patients before and after small incision cataract surgery. Gantela Sirisha, Ch. Triveni, Lakshmi N. Chowdary. International Journal of Current Medical And Applied Sciences. 2016;11(1):57-59.