

To Study the Dry Eye Prevalence Following Phacoemulsification Surgery

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Abstract

Background: To study dry eye following phacoemulsification surgery

Methods: This prospective observational study was performed after selecting 100 consecutive patients over 45 years of age with senile cataract, without preexisting dry eye and other ocular disorders.

Results: All the tests performed preoperatively and postoperatively showed incidence of dry eye to be 10.00%.

Conclusion: We concluded that cataract surgery can cause dry eye. However, before surgery, preoperative assessment of all patients should be done properly. Patients must be informed about the possible occurrence of dry eye symptoms postoperatively and should be managed accordingly.

Keywords: Dry Eye, Phacoemulsification surgery, Tear Film Break Up Time

Introduction

Dry eye is a disorder of the tear film which occurs due to tear deficiency or excessive tear evaporation; it causes damage to the interpalpebral ocular surface and is associated with a variety of symptoms reflecting ocular discomfort.¹

Dry eye syndrome, also known as keratoconjunctivitis sicca (KCS), is a common condition reported by patients who seek ophthalmologic care and is characterized by inflammation of the ocular surface and lacrimal glands.²

Dry eye symptoms may be a manifestation of a systemic disease, therefore timely detection may lead to recognition of a life-threatening condition. Additionally, patients with dry eye are prone to potentially blinding infections, such as bacterial keratitis² and also at an increased risk of complications following common procedures such as laser refractive surgery.³⁻⁴

Denervation of the corneal nerves by incision, production of free radicals due to ultrasound energy, microscope light exposure time during surgery and pre- and post-operative medications have been implicated as the possible causes of dry eye disease following phacoemulsification surgery.

Materials and Methods

Prior informed consent was obtained from each subject, inclusion criteria being subjects over 45 years of age with senile cataract, without preexisting dry eye and other ocular disorders. Subjects with disorders of eyelids, past ocular surgeries, pre-existing ocular or systemic diseases, history of taking ocular or systemic medications and smoking were excluded from the study.

General patient information and detailed history of systemic and ocular diseases was recorded, and thorough evaluation was carried out in all the patients. 2 days before the cataract surgery, ST-I,

TBUT, and TMH were measured. First, ST-I was evaluated without corneal anesthesia by using a standardized tear strip (Bio division Ltd., UK).

Results

In our study, the average age was 60.02 ± 5.12 years. There were more females (60.00%) as compared to males (40.00%).

On preoperative examination, the mean of Schirmer I test was 20.02 ± 6.02 , On day 1 - 19.01 ± 5.01 , On day 7 - 18.55 ± 5.21 , On Day 30 - 19.50 ± 5.80 , On Day 90 - 20.10 ± 6.18 .

On preoperative examination, the mean of Schirmer II scores was 18.56 ± 1.05 . On day 0, the mean was 17.02 ± 1.12 . On day 7, the mean was 16.04 ± 1.03 . On day 30, the mean was 16.32 ± 0.98 . On day 90, the mean of Schirmer II score was 16.96 ± 0.67 . According to pattern of Schirmer 2 scores, dry eye patients peaked at day 7 and scores gradually improved over follow up. On preoperative examination, the mean of Tear Film Break Up Time scores was 13.26 ± 0.47 . On day 1, the mean was 12.10 ± 0.52 . On day 7, the mean was 10.23 ± 0.64 . On day 30, the mean was 11.46 ± 0.71 . On day 90, the mean of tear film break up scores was 11.89 ± 0.61 . According to the pattern of tear film break up scores, dry eye patients peaked at day 7 and the scores gradually improved over follow up days. On preoperative examination, the mean of Ocular Surface Disease Index scores was 13.12 ± 0.52 . On day 1, the mean was 13.09 ± 0.59 . On day 7, the mean was 26.52 ± 1.89 . On day 30, the mean was 23.13 ± 1.52 . On day 90, the mean of OSDI score was 19.22 ± 1.06 . According to pattern of Ocular Surface Disease Index scores, dry eye patients peaked at day 7 and scores remained nearly the same on follow up. On preoperative examination, the mean value of Rose Bengal staining scores was 0.36 ± 0.05 . On day 1, the mean was 0.71 ± 0.155 . On day 7, the mean was 0.95 ± 0.218 . On day 30, the mean was 0.81 ± 0.183 . On day 90, the mean value of Rose Bengal staining scores was 0.67 ± 0.13 . According to pattern of Rose Bengal staining, dry eye patients on day 7 had confluent

staining with more number of patients having higher scores and on follow up days, the staining scores of patients decreased.

Discussion

Dry eye can develop often after various types of ophthalmic surgeries such as photorefractive keratectomy and laser-assisted in situ keratomileusis (LASIK). After LASIK, dry eye can persist for up to 6 months or more with an incidence of 20%.⁵

Various factors might affect the ocular surface environment after cataract surgery. Most important is corneal desensitization.⁶

Superficial punctate keratitis, recurrent filamentary keratitis, secondary infections including conjunctivitis, infective keratitis, persistent or recurrent epithelial defects, stromal keratolysis and corneal ulceration have been reported in dry eye patients after cataract surgery notably conventional extracapsular cataract extraction (ECCE) by Ram et al in 2002.⁷

Conclusion

We concluded that cataract surgery can cause dry eye. However, before surgery, preoperative assessment of all patients should be done properly. Patients must be informed about the possible occurrence of dry eye symptoms postoperatively and should be managed accordingly.

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