

To Evaluate the Incidence And Severity Pattern of Dry Eye After Cataract Surgery

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Abstract:

Introduction: Damage to any component of the lacrimal function unit can destabilize the tear film and it can lead to ocular surface disease that expresses itself as dry eye. Many factors can cause dry eyes in patients after cataract surgeries. In a developing country like ours, the most common, efficient and economical cataract surgery is the manual small incision cataract surgery which is done with a corneoscleral tunnel incision. The environmental exposure to wind, sunlight and a high temperature causes dry eyes, which can be aggravated after cataract surgeries.

Aims: To evaluate the incidence and severity pattern of dry eye after cataract surgery

Subjects and Methods: Samples were collected from 300 uncomplicated cataract patients who were 50 years old and above who have undergone Manual small incision cataract surgery during the period from January 2017 to May 2017 Dry eye incidence and pattern were analyzed at days 0, 30 and 60 days after cataract surgery and the results noted.

Results: Out of 300 patients, 186(62%) patients had dry eyes. Among them, 58.06% had mild grade, 24.19% had moderate grade and 17.74% had a severe grade of dryness. 38% patients did not have dry eyes. 67.7% of the male patients and 64.9% of the female patients had dry eyes.

Conclusion: After manual small incision cataract surgeries with corneoscleral tunnel incisions, there was dryness of eyes in a majority of the patients and a majority of them had the mild grade of dry eyes.

Keywords: Dry eye, Manual small incision cataract surgery, Tear film, Corneoscleral tunnel

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I. Introduction

“Dry eye is a multifactorial disease of the tears and the ocular surface, that results in symptoms of discomfort, visual disturbance, and tear film instability, with potential damage to the ocular surface. Dry eye is thought to be a disturbance of the Lacrimal Functional Unit (LFU), which comprises of the lacrimal glands, the ocular surface lids, and the sensory and the motor nerves that connect them [2]. which can destabilize the tear film and lead to ocular surface disease that expresses itself as dry eye. The epithelial injury caused by dry eye stimulates the corneal nerve endings, leading to symptoms of discomfort, increased blinking and compensatory reflex lacrimal tear secretion. In developing countries like ours, the most efficient and the economical means of doing a cataract surgery is manual small incision cataract surgery with a corneoscleral tunnel incision. So, we felt that there was a need to evaluate the dryness of the eye after manual small incision cataract surgery using corneoscleral tunnel incision.

II. Subjects And Methods

We conducted a prospective study in 300 eyes after getting the approval of the Institutional Ethical Committee (IEC). A case study proforma was designed for each patient and the data was collected. The information of the date of the surgery, the post-operative duration and the eye which was operated on, were obtained. The symptoms which were relevant to the dry eyes were noted. Slit lamp examination, marginal tear strip height, Schirmer's test-I and tear film break-up time were evaluated in this order. The data were collected from the patients who came for follow up, following manual small incision cataract surgeries with corneoscleral tunnel incisions, to the Out Patients Department (OPD), Department of Ophthalmology, Government general hospital, GMC, Guntur. from January 2017 to May 2017

The following data were collected in this order:

1. The patients' symptoms were thoroughly evaluated and recorded and the symptoms which were relevant to the dry eyes were analyzed.
2. The marginal tear strip height was recorded by using a slit lamp.
3. The Schirmer's test-I was done and the readings of all the patients were noted and analyzed. It was done to assess the basal and the reflex secretions of the tears by placing the Schirmer's strip, which is made up of the Whatman no. 41 filter paper .
4. The tear film break-up time assessment was done and the readings were analyzed. It was done to assess the stability of the pre-corneal tear film.

Dry eye incidence and pattern were analyzed at days 0, 30 and 60 days after cataract surgery All the patients who underwent uneventful and uncomplicated manual small incision cataract surgeries with corneoscleral tunnel incisions were included and the patients with surgical complications, pre-existing dry eyes, Sjogren's syndrome and other autoimmune disorders and pterygium are excluded in this study.

III. Results

The symptomatology analysis showed that of the 300 patients, 186 patients had complained of symptoms which were related to dry eyes and that the rest of the 114 patients had no symptoms which were related to dry eyes. The Schirmer's test-I analysis showed that the lowest value of the Schirmer's test-I was 1mm and that the highest was 35mm. The tear film break-up time analysis showed that the tear film break-up time ranged from a minimum of the immediate breakup of the tear film to a maximum of 23 seconds. The marginal tear strip height analysis showed that all the patients had a marginal tear strip height between 0.5mm to 1mm. The comprehensive grading of the dryness showed that of the 300 patients, 186 (62%) patients had dry eyes and that 114(38%) patients did not have any dry eyes. The gender comparison of the dryness of the eyes showed that 31 patients were males and that 37 patients were females. The p value was 0.3922

IV. Discussion

This study was done to evaluate the dryness of the eyes after manual small incision cataract surgeries with corneoscleral tunnel incisions. The aetiology of the dry eyes following cataract surgeries may be due to any of these mechanisms [4]:

1. The chronic use of eye drops after cataract surgeries can lead to toxic changes in the cornea and the conjunctiva due to the presence of preservatives in them, especially benzalkonium chloride [4-6].
2. The tear film instability in the operated eyes can result either from a surface irregularity at the site of the incision, which causes the tear film to break up faster than usual.
3. The exposure to light from the operating microscope might also be associated with post-operative dry eyes [4].
4. The decreased corneal sensation disrupts the cornea lacrimal gland loop, resulting in reduced tear secretion [7]. The incision wound can result in severing of the corneal nerves as a result of the corneal section, which causes a decreased corneal sensation.
5. The environmental exposure to excessive wind, sunlight and a high temperature increases the dry eye status [9].

In our study, we found that after manual small incision cataract surgeries with corneoscleral tunnel incisions, 62% of the patients had dry eyes, which was relatively high. Among the patients who had dryness of the eyes, a majority (58.06%) had mild grade, 24.19% had moderate grade and 17.74% had the severe grade of dryness. The findings of the analysis of the symptoms, the Schirmer's test and the tear film break-up time were consistent with those of a study which was conducted by Srinivasan R et al., in which the tear film break-up time was reduced in pseudophakic eyes after phacoemulsification [10]. This indicated that there was a tear film instability in the operated eyes. Significantly reduced tear film break-up times and Schirmer's test-I scores were found on the post-operative day 30 in a study which was done by Liu Z et al., [11]. When we compared the dryness of the eyes post-operatively in males and females, we found that the dryness in the female patients was less than that in the male patients and this difference was not statistically significant, with a p-value of 0.3922. Most of the studies have reported a higher prevalence of the dry eyes in females than in males in the general population [9,13,14]. But our study showed a marginal increase in the dryness post-operatively in males. This could probably be because of the more exposure to sunlight, high temperature and excessive wind [15]. This region being a predominant agricultural area and males being more involved in agricultural work, the dryness could be more prevalent in males.

V. Conclusion

After manual small incision cataract surgeries with corneoscleral tunnel incisions, there was dryness of the eyes in majority of patients and a majority of them had mild grade of dry eyes.

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