Section: Ophthalmology

Original Research Article

DRY EYE POST CATARACT SURGERY: REPORT FROM DARBHANGA MEDICAL COLLEGE, LAHERIASERAI, DARBHANGA, BIHAR

Shikha Shalini[1], Saket Bihari Choudhary[1], Randhir Kumar[2], Alka Jha[3]

[1]Junior Resident, Department of Ophthalmology, DMCH, Laheriaserai, Darbhanga, Bihar, India
[2]Assistant Professor, Department of Ophthalmology, DMCH, Laheriaserai, Darbhanga, Bihar, India
[3]Professor, Department of Ophthalmology, DMCH, Darbhanga, Laheriaserai, Bihar, India

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Corresponding Author:
Dr. Randhir Kumar,
Email: jr2675@gmail.com

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Abstract

Background: Dry eye is a multifactorial disease of the tear film and the ocular surface, that results in symptoms of discomfort, visual disturbance, and tears film instability, with potential damage to the ocular surface as reported. The current study envisages on dry eye occurring after phacoemulsification performed at Darbhanga medical college of Bihar. **Materials and Methods:** This prospective observational study was conducted at a tertiary care hospital between April 2022 to March 2023. The study was approved by institutional ethics committee. The study sample was drawn from patients reporting with visually significant cataract to the ophthalmology OPD. A total of 100 patients, aged 40-80 years were included in the study. All patients underwent a detailed ocular examination including slit lamp examination as a part of work up for cataract surgery and also to rule out any ocular surface disorder. The study parameter for documenting dry eye was the Schirmer's strip wetting at the end of 5 min (basal and reflex). Schirmers test was done at baseline before surgery and at one month and 3 months after surgery in the operated eye. Schirmer test value less than 10 mm was taken as dry eye. Dry eye was graded as mild, moderate and severe based on Schirmer's test values 7- 9 mm, 5-7 mm and< 5 mm respectively. **Result:** Out of 100 patients 92 underwent phacoemulsification surgery, 7 underwent SICS while ECCE was done only for single patient. The cumulative incidence of dry eyes at the end of three months was 21%. 46 patients were found to have dry eyes at 1 month of which 32 resolved and 14 persisted at 3 months and 7 more new patients developed dry eyes at 3 months. Majority of patients had mild dry eyes. **Conclusion:** Dry eye is known to have various etiological factors out of which cataract surgery is one of the factors predisposing to dry eye. Eyes with post operative dry eye may also have lesser visual recovery compared to those who do not develop significant dryness.

INTRODUCTION

Excellent visual outcomes that are usually expected after cataract surgery can sometimes be affected by occurrence of dry eye as has been reported by several studies.[1-3] Dry eye is a multifactorial disease of the tear film and the ocular surface, that results in symptoms of discomfort, visual disturbance, and tear film instability, with potential damage to the ocular surface as reported.[4-6] the dry eye occurring after cataract surgery is hypothesized to be due to the changes in the ocular surface due to the surgical trauma and post operative inflammation.[7] However despite cataract surgery being so common, large studies on post cataract surgery dry eye is scarce and symptoms attributable to dry eye are not specifically documented. After cataract surgery many patients complain of foreign body sensation, irritation, redness and blurring of vision which are considered as unwanted effects of the surgery.[8] These effects are worse in the elderly population and in some cases may persist and develop into a full-fledged dry eye syndrome requiring treatment. Thus, in spite of a perfect cataract surgery and a good snellen's visual acuity the patients may remain dissatisfied. Occurrence of dry eye following cataract surgery can affect the functional recovery and therefore it is important to know the incidence of dry eye after cataract surgery and the factors associated with this type of dry eye.[9] The current study envisages on dry eye occurring after phacoemulsification performed at Darbhanga medical college of Bihar.

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MATERIALS AND METHODS

This prospective observational study was conducted at a tertiary care hospital between April 2022 to March 2023. The study was approved by institutional ethics committee. The study sample was drawn from patients reporting with visually significant cataract to the ophthalmology OPD. A total of 100 patients, aged 40-80 years were included in the study. All patients underwent a detailed ocular examination including slit lamp examination as a part of work up for cataract surgery and also to rule out any ocular surface disorder. Those with pre-existing dry eyes (schirmers less than 10 mm), Sjogren's syndrome, pre-existing ocular diseases like glaucoma, uveitis, disorders of lid and nasolacrimal pathway, ocular allergies, pterygium and previous ocular surgeries were excluded from the study. The study parameter for documenting dry eye was the Schirmer's strip wetting at the end of 5 min (basal and reflex). Schirmers test was done at baseline before surgery and at one month and 3 months after surgery in the operated eye. Schirmer test value less than 10 mm was taken as dry eye. Dry eye was graded as mild, moderate and severe based on Schirmer's test values 7- 9 mm, 5-7 mm and< 5 mm respectively. In addition, data was maintained separately for each individual regarding age, gender, pre operative and post operative vision and type of surgery. The results were analyzed at one month and three months of follow up.

Statistical evaluation was done with SPSS for IBM version 20. Chi square tests and Fischer's exact tests were used for testing statistical significance and p value less than 0.05 was taken as significant.

RESULTS

A total of 100 patients were included in the study. Maximum patients were in the 7th decade of their life. Mean age was 58.7 years with a SD of 8.2 years. There was male predominance among the study population. The male to female ratio was 1.37:1. Out of 100 patients 92 underwent phacoemulsification surgery, 7 underwent SICS while ECCE was done only for single patient. The cumulative incidence of dry eyes at the end of three months was 21%. 46 patients were found to have dry eyes at 1 month of which 32 resolved and 14 persisted at 3 months and 7 more new patients developed dry eyes at 3 months. Majority of patients had mild dry eyes. [figure 1] Incidence of dry eyes was compared with various related variables. [Table 1] Analysis of visual recovery between patients who developed dry eyes after surgery versus those who did not have dry eyes, showed visual recovery significantly worse in those who developed dry eyes with vision below 6/12 more often seen in patients with dry eyes. [Table 2] However, the very poor vision seen in 6 cases (<6/24) was due to age related macular degeneration and not related to dry eye.

Table 1: Distribution of cases of dry eyes post cataract surgery across various variables.

Variable	Group	Number	P value
Age	<50 years	21	>0.05
	>50 years	79	
Gender	Male	56	>0.05
	Female	44	
Surgery	Phacoemulsification	92	<0.05
	SICS	7	
	Conventional ECCE	1	

Table 2: Post cataract surgery recovery of Vision: dry eye versus without dry eyes

Vision	Number of cases		P value
	With dry eyes	Without dry eyes	
6/9 or above	6	10	<0.05
6/12	5	4	
6/18	3	2	
6/24	0	1	
6/60	0	1	

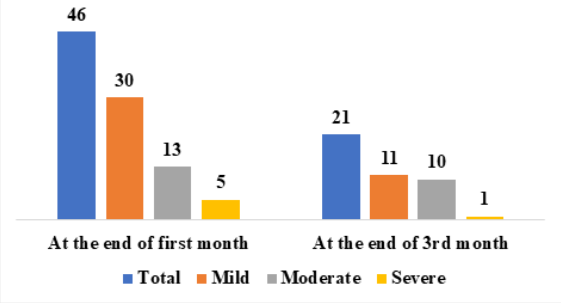

Figure 1: Distribution of cases based on the severity of their symptoms

DISCUSSION

This prospective study carried out to estimate the incidence of dry eyes after cataract surgery reiterates findings of previous studies and also brings out important variations in comparison to similar studies on post cataract surgery dry eyes.[10-12] We have also compared the dry eye incidence between phacoemulsification and SICS. On extensive literature search only one study by Sinha et al is found in which SICS and phacoemulsification were

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compared for development of dry eye post-surgery which were 43.5% and 56.5% respectively.[10]

Visual acuity for each patient at post-operative 3 month with snellen's chart showed that maximum patients had 6/9 vision, followed by 6/12 vision in 138 patients. Intermittent blurring of vision as the tear film breaks in between the blinks has been reported in cases of post cataract surgery dry eyes but in our study we found there is diminution of vision or failure to gain complete visual recovery post cataract surgery in cases of dry eyes. The reported incidence of dry eye after cataract surgery varies from 9.8% to 66.2% depending upon whether it was predominantly phacoemulsification or SICS. Kasetsuwan Ngamjit, et al showed that the incidence of dry eye in patients who all underwent phacoemulsification was 9.8%.[11] Kavitha et al found that after manual small incision cataract surgeries with corneoscleral tunnel incisions, 66.2% of the patients had dry eyes, which was relatively high.[12] The 21% incidence in our study is in between the above quoted studies as our sample consisted of both SICS, phacoemulsification and conventional ECCE of which phacoemulsification constituted the majority. The difference in incidence could also be due to the criteria used for diagnosis of dry eyes. In a study using impression cytology for detecting dry eyes in cases who underwent either SICS or phacoemulsification, the incidence of dry eyes was similar to our study though we have used schirmer's test to diagnose dry eyes.[10] In our study, age did not have a significant association with incidence of dry eyes after cataract surgery. Kamla Dodia et al reported post phacoemulsification cataract surgery showed association of dry eye with higher age (>65 years).[13] Cataract and dry eye eyes both are age related and the association in that study could be just incidental rather than causal. We did not find any significant difference for the occurrence of dry eyes post cataract surgery between the two genders. This contrasts with other studies which have reported a higher prevalence of the dry eye in females than in males in the general population.[14,15] An association of dry eyes with postmenopausal females is well known. The results in our study may have been influenced by a larger number of males undergoing SICS as compared to females. A stronger association of SICS with development of dry eye is in consonance with study by Kavitha et al who showed a strong association of SICS having with development of dry eye.[12] This may be due to shorter duration of phacoemulsification, shorter microscope light exposure and the faster visual rehabilitation permitting rapid tapering of topical medications. A larger incision in SICS leads to more corneal denervation resulting in tear film abnormality and dry eye.

CONCLUSION

Dry eye is known to have various etiological factors out of which cataract surgery is one of the factors predisposing to dry eye. This study showed 21% cumulative incidence of dry eye in patients operated for cataract. In our study phacoemusification was the predominant surgery done in the study sample so the incidence in our study mainly reflects dry eye after phacoemulsification but there was a statistically significant association of SICS with postoperative dry eye as compared to phacoemulsification. Eyes with post operative dry eye may also have lesser visual recovery compared to those who do not develop significant dryness.

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