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ORIGINAL RESEARCH

Prospective Analysis of Postoperative Dry Eye Symptoms in Patients Undergoing LASIK Refractive Surgery

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ABSTRACT

Background: Over the last ten years, techniques for myopia-related corneal refractive surgery have been in constant development. LASIK and photorefractive keratectomy (PRK) are the two techniques most frequently employed today. The present study was analysis of postoperative dry eye symptoms in patients undergoing LASIK refractive surgery. **Materials & Methods:** 74 patients undergoing LASIK refractive surgery of both genders were selected. Frequency of dry eye symptom scores, frequency of visual fluctuation scores, severity of dry eye symptom scores and frequency of foreign body sensation scores were recorded at 1, 3, 6 and 12 months post-operatively. **Results:** Out of 74 patients, 40 were males and 30 were females. At 1 month, 3 months, 6 months and 12 months, dry eye symptom scores was 1.4, 0.7, 0.3 and 0. Visual fluctuation scores found to be 0.8, 0.4, 0.2 and 0 respectively. The difference was significant (P<0.05). **Conclusion:** Though dry eye symptoms gradually decrease post- operatively, these are commonly encountered in patients undergoing LASIK refractive surgery.

Keywords: Dry eye, LASIK, symptom scores

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INTRODUCTION

Over the last ten years, techniques for myopia-related corneal refractive surgery have been in constant development. LASIK and photorefractive keratectomy (PRK) are the two techniques most frequently employed today. Corneal curvature is altered by both procedures through the removal of corneal tissue with an ophthalmic excimer laser, thereby changing refractive power. The most frequently reported postoperative complications in patients who have LASIK and PRK are dry eye, visual fluctuations, and a sensation of a foreign body.¹

It is widely acknowledged that dry eye constitutes the most prevalent complication following LASIK.²One-week post-surgery, its incidence may reach approximately 47%.

While the pathophysiological aspects of dry eye following LASIK surgery are not fully understood, multiple studies have shown that it may result from damage to sensory nerves in the cornea and an inflammatory process involving T-lymphocyte activation and cytokine release.^{3,4} Factors that increase the risk of chronic dry eye development

following LASIK surgery include being female, being elderly, being of Asian descent, and requiring a greater degree of refractive correction.⁵

Symptoms indicative of dry eye that have been reported include ocular sensitivity to touch, acute pain, and eyelid adhesion to the eyeball.⁶ These symptoms and other signs of dry eye are primarily addressed with artificial tears. it is also possible to use eye drops with antibiotics and cortisone.⁷The present study was analysis of postoperative dry eye symptoms in patients undergoing LASIK refractive surgery.

MATERIALS & METHODS

The study was carried out on 74 patients undergoing LASIK refractive surgery of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. A thorough eye examination was carried out. Central corneal thickness, frequency of dry eye symptom scores, frequency of visual fluctuation scores, severity of dry eye symptom scores and frequency of foreign body sensation scores were recorded at 1, 3, 6 and 12

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months post-operatively. Results thus obtained were cosubjected to statistical analysis. P value < 0.05 was

considered significant.

RESULTS Table I Distribution of patients

Total- 74					
Gender	Gender Male				
Number	40	34			

Table I shows that out of 74 patients, 40 were males and 30 were females.

Table II Assessment of parameters

Parameters	1 month	3 months	6 months	12 months	P value
dry eye symptom scores	1.4	0.7	0.3	0	0.03
visual fluctuation scores	3.2	1.7	0.6	0.2	0.01
severity of dry eye symptom scores	1.3	0.8	0.4	0.1	0.02
foreign body sensation scores	0.8	0.4	0.2	0	0.05

Table II, graph I shows that at 1 month, 3 months, 6 months and 12 months, dry eye symptom scores was 1.4, 0.7, 0.3 and 0. Visual fluctuation scores was 3.2, 1.7, 0.6 and 0.2. Severity of dry eye symptom scores was 1.3, 0.8, 0.4 and 0.1 and foreign body sensation scores found to be 0.8, 0.4, 0.20 respectively. The difference was significant (P< 0.05).



Graph I Assessment of parameters

DISCUSSION

LASIK has become a very popular form of refractive surgery in recent years. This is because it is a safe, effective, and well-established procedure that offers many advantages over other types of refractive surgery, including fast and painless visual rehabilitation, less regression, and no subepithelial corneal haze.⁸ With improvement in the techniques and instruments used in LASIK, the incidence of complications has decreased.⁹ Clinical outcome, safety, and patient satisfaction from modern LASIK with advanced technology have been found to be significantly better than when LASIK was first introduced about 30 years ago. The symptoms of post-LASIK dry eye include typical dry eye symptoms, such as dryness, irritation, ocular fatigue, and red eye.¹⁰ We believe that decreased visual acuity is more pronounced in post-LASIK patients than in other patients with dry eye, possibly because patients who have undergone LASIK treatment are more attentive to their visual performance than others with dry eye. It should be noted that decreased visual acuity or residual refractive errors may be caused by post-LASIK dry eye, and could be corrected by treating the dry eye symptoms rather than by LASIK enhancement.¹¹ The present study was analysis of postoperative dry eye symptoms in patients undergoing LASIK refractive surgery. We found that out of 74 patients, 40 were males and

30 were females. Murakami et al^{12} compared postoperative symptoms of dry eye, visual fluctuations, and foreign body sensation in patients

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undergoing LASIK and photorefractive keratectomy (PRK). Sixty-eight eyes of 34 patients were treated with wavefront-guided LASIK and PRK. Methods: One eye was treated with LASIK and the fellow eye was treated with PRK. Eyes were randomized by ocular dominance. Patients completed a questionnaire preoperatively and at each postoperative visit evaluating symptoms of dry eye, dry eye severity, vision fluctuations, and foreign body sensation. Both groups of eyes experienced significant increases in symptoms of dry eye, vision fluctuation, and foreign body sensation after LASIK and PRK at postoperative months 1, 3, and 6. However, by the 12-month postoperative visit, there was no increase in dry eye symptoms over the preoperative baseline levels in either group. Patients undergoing PRK experienced significantly higher levels of vision fluctuation at postoperative month 1 than those undergoing LASIK. We found that at 1 month, 3 months, 6 months and 12 months, dry eye symptom scoreswas1.4, 0.7, 0.3 and 0. Visual fluctuation scores was 3.2, 1.7, 0.6 and 0.2. Severity of dry eye symptom scores was 1.3, 0.8, 0.4 and 0.1 and foreign body sensation scores found to be 0.8, 0.4, 0.2 and 0 respectively. Astakhovet al¹³assessed dry eye and ocular tolerability after LASIK in patients treated with a preservative-free lacrimal substitute (Hylabak®) or preserved lacrimal substitute (Systane®). In a single-center, investigatormasked, prospective, noninferiority, clinical study, patients undergoing LASIK surgery were randomized to receive Hylabak or Systane eye drops (one drop in each eye four times daily for 3 months). Fluorescein test scores were the primary efficacy variable and were similar on day 1 (mean 0.26 and 0.28 for Hylabak and Systane, respectively). At the final visit (day 84 ± 3) the fluorescein scores had improved to 0.11 and 0.04, respectively. The difference was not significant and thus noninferiority was established. A trend of more rapid improvement in the Hylabak group was evident. Both treatments were well tolerated and there were no serious adverse events, discontinuations for adverse events or other safetyrelated reasons, and no systemic adverse events. The results suggest that Hylabak is not less effective than Systane in reducing the symptoms of dry eye after LASIK surgery.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that though dry eye symptoms gradually decrease post- operatively, these are commonly encountered in patients undergoing LASIK refractive surgery.

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