DISCUSSION

Dry eye affects 10%-15% of adults.[9-13] It is essentially a clinical diagnosis, combining information obtained from both the history and the examination and performing 1 or more tests to lend some objectivity to the diagnosis.

This very common disorder of tear film results from decreased tear production, excessive tear evaporation, or abnormality in the mucin components of the tear film.[14,15]

Aqueous tear production is reduced in diseases that cause a decrease in corneal sensitivity.[16] Tear evaporation increases in diseases that involve the tear lipid layer such as meibomian gland dysfunction.[17-20] Mucin deficiency, as seen in Stevens-Johnson syndrome or after a chemical burn, leads to poor wetting of the corneal surface with subsequent desiccation and epithelial damage, even in the presence of adequate aqueous tear production.

Foreign body sensation is a symptom frequently associated with dry eye. Other complaints include burning, dry sensation, photophobia, and blurred vision. Certain environmental conditions can worsen these eye conditions. Among these are smoke, wind, dry air from heating and air conditioning, sunlight, lens care products, and continual close-up work on a computer that can reduce blinking and cause eyestrain.[21-24]

Wearing contact lens can also decrease the sensitivity of the cornea, which may lead to an insufficient production of tears.[25-28]

Some prescription drugs, such as antihypertensives, antidepressants, antiulcer agents, decongestants, antihistamines, and anesthetics, can worsen dry eyes.[29]

Many patients who desire to have LASIK cannot tolerate contact lenses because of dry eye syndrome or dry eye symptoms caused by contact lens use. Commonly, these patients continue to report dry eye symptoms after surgery.[8,30-33]

PRK is associated with a transient decrease in corneal sensitivity due to a reduction of the subepithelial nerve plexus.[34-37] Many reports have shown that tear secretion and tear breakup time are significantly reduced following PRK due to decreased corneal sensitivity.[30,38,39]

Although LASIK spares the subepithelial nerve plexus and Bowman's layer, a decrease in corneal and conjunctival sensation has previously been reported after LASIK.[31,32,34,40] The decreased corneal sensation after LASIK is due to surgical amputation with the microkeratome and laser ablation of the central corneal surface. The significantly decreased conjunctival sensitivity may be due to trauma to the perilimbal conjunctival nerves by the microkeratome suction ring.[40]

Our study indicates that dry eye symptoms are common after myopic LASIK surgery. LASIK significantly altered the tear breakup time values, Schirmer I test values, and basal tear secretion values for at least 6 months.

This significant decrease in tear secretion is probably related to sensory denervation of the ocular surface after LASIK, which can disrupt ocular surface tear dynamics, thus causing dry eye symptoms.[31]

The decrease in tear BUT was likely the result of operative trauma to the epithelium, which can alter the surface tension of the cornea. Other possible mechanisms include toxicity from topical eye drops, an inflammatory response to surgery with release of cytokines and immune mediators, and decreased corneal sensation with a poor blinking rate.[33,41]

These results indicate that careful observation and proper treatment of dry eye[42-47] are important following LASIK, particularly in the early postoperative period.

REFERENCES

1. Hill JC. An informal satisfaction survey of 200 patients after laser in situ keratomileusis. *J. Refract. Surg.* 2002;18:454-9.
2. Bower KS, Weichel ED, Kim TJ. Overview of refractive surgery. *Am. Fam. Physician.* 2001;64:1183-90.
3. Montard M, Queguiner F, Salame N, Perone JM. Comparison of PKR and LASIK for the treatment of low myopia: statistic study of refractive and optic results. *J. Fr. Ophtalmol.* 2002;25:31-8.