

# Effectively Managing Ocular Surface Disease

A healthy ocular surface is critical to good outcomes in refractive and refractive cataract surgery.

BY CHRISTOPHER E. STARR, MD

In April 2008, when the Ophthalmic Devices Panel of the FDA held a meeting on quality of life after laser vision correction surgery, many former LASIK patients attended. Many were not there because of flap-related complications or corneal ectasia as might be expected. They were there to complain about how dry eye symptoms following LASIK had caused a deterioration in their vision and their quality of life.

This hearing was the result of an increasing awareness of the impact that LASIK can have on patients. Several years ago, some surgeons again became interested in surface ablation procedures after several published studies pointed to an increase in their rates of dry eye following LASIK.<sup>1-3</sup> Surface ablation can cause postoperative dryness too, but in my experience, not nearly to the extent of LASIK.

We ophthalmic surgeons know that dry eye becomes more pronounced after LASIK due to the loss of goblet cells and accessory lacrimal glands from the microkeratome's suction as well as to the cutting of corneal nerves for the flap and an altered corneal shape. The growing body of collective experience has alerted many surgeons to the effects of corneal surgery on the ocular surface. As a result, refractive surgeons are much more cautious about assessing the ocular surface before performing corneal refractive procedures and treating any problems prior to operating. A healthy tear film and ocular surface are crucial preoperatively in order to achieve accurate refractions, topographies, and wavefront data. A poor tear film will cause visual symptoms. Postoperatively, a healthy tear film and ocular surface are equally important because patients with severe dry eye are likely to be unhappy with suboptimal vision, night vision problems, refractive regression, and discomfort.

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## CATARACT SURGERY AND THE OCULAR SURFACE

Although ophthalmic surgeons now put a great deal of emphasis on screening for and treating ocular surface disease prior to corneal refractive surgery, most have not approached cataract surgery in the same way. This is likely due to the traditional method of cataract surgery and a patient population that has not had the same high visual expectations as refractive surgery patients. In the LASIK population, surgeons are dealing with younger patients who typically see well with glasses or contact lenses and so expect to see as well, if not better, after LASIK surgery. Even mild dryness disrupts these patients' visual quality. Traditional cataract surgery patients, on the other hand, do not see as well preoperatively and therefore tend to appreciate the improvement in their vision, even if they still need spectacles.

The age of refractive cataract surgery with presbyopia-correcting IOLs has changed the traditional dynamic of cataract patients' expectations. Those who opt to pay for the implantation of a premium IOL as part of their cataract procedure expect an exceptional, spectacle-free visual outcome. Many phacorefractive procedures therefore include long limbal relaxing incisions and/or a laser vision enhancement, which, by traumatizing corneal nerves, increases the risk of significant postoperative dry eye and suboptimal visual outcomes.

Surgeons adopting the new paradigm of refractive cataract surgery must look critically at the ocular surface during the preoperative examination and treat any surface disease aggressively. Otherwise, refractive cataract patients, like LASIK patients, will also from dry-eye symptoms such as foreign body sensation and grittiness. More importantly, they will often be dissatisfied with their vision due to fluctuations in clarity, reductions in contrast sensitivity, and night-vision disturbances.<sup>4,5</sup>

## WORKUP

As with our laser vision correction patients, when a patient wants premium cataract surgery, my colleagues and I apply the same rigorous screening approach to make certain the quality of the ocular surface is excellent before proceeding with IOL power calculations, planning for limbal relaxing incisions, and surgery. If the preoperative examination reveals even the slightest dryness, dysfunctional tears, or blepharitis, we immediately stop the workup and focus on diagnosing and treating the problem in order to get the ocular surface healthy again.

## DIAGNOSIS

My colleagues and I rely on a combination of symptoms and physical findings. These include assessing the tear film and ocular surface with lissamine green and fluorescein staining, observing the tear lake and tear film breakup time, and conducting Schirmer testing on all patients. We evaluate the meibomian glands and inspect the eyelids for signs of blepharitis.

It is also very important to ask patients whether they have experienced any visual fluctuations during the day or night. When the ocular surface is not in optimal condition, patients will often experience visual fluctuations between blinks. Although more important in LASIK, I like to document and characterize in the chart any pre-existing visual disturbances such as glare, halos, and starbursting in my refractive cataract surgery patients.

## MANAGEMENT

Once we diagnose dry eye, blepharitis, or dysfunctional tears, we follow an aggressive treatment regimen that includes warm compresses, omega-3 fatty acids (oral supplements), lids scrubs (OcuSoft; OcuSoft Inc., Richmond, TX), a mild corticosteroid q.i.d. (Lotemax; Bausch & Lomb, Rochester, NY), cyclosporine A b.i.d. (Restasis; Allergan, Inc., Irvine, CA), and artificial tears (I prefer Blink tears [Abbott Medical Optics Inc., Santa Ana, CA] because of its long retention and the high quality of vision it provides). If staphylococcal blepharitis, meibomian gland dysfunction, or rosacea is also present, then I will also treat

the patient with azithromycin ophthalmic solution 1% (AzaSite; Inspire Pharmaceuticals, Inc., Durham, NC) and occasionally low-dose oral doxycycline (Alodox; Ocusoft Inc.).

With this approach, we can restore virtually every ocular surface to a normal state in approximately 4 to 6 weeks. At this time, the ocular surface is healthy enough to permit high-quality and reliable preoperative measurements for accurate surgical planning. Following surgery, we keep these patients on a similar treatment schedule for up to 6 months, regardless of whether or not they are symptomatic after surgery. The first 3 to 6 months after corneal surgery are the most critical period for the development of dry-eye problems. At the 6-month mark, the innervation of the cornea is often improved as the cornea approaches its preoperative state of sensation, and the dry eye regimen can often start to be tapered. It is important to realize that, in phacorefractive surgery, not all postoperative visual complaints and night vision problems are due to the premium IOL. Often, they are simply due to a dry ocular surface and can be successfully treated without further surgical intervention.

## CONCLUSION

By recognizing, diagnosing, and treating the problems of ocular surface disease prior to refractive corneal and refractive cataract surgery, my colleagues and I have been able to reduce the rate of postoperative dry eye in these patients to virtually zero. The result is significantly healthier eyes and much happier patients. ■

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