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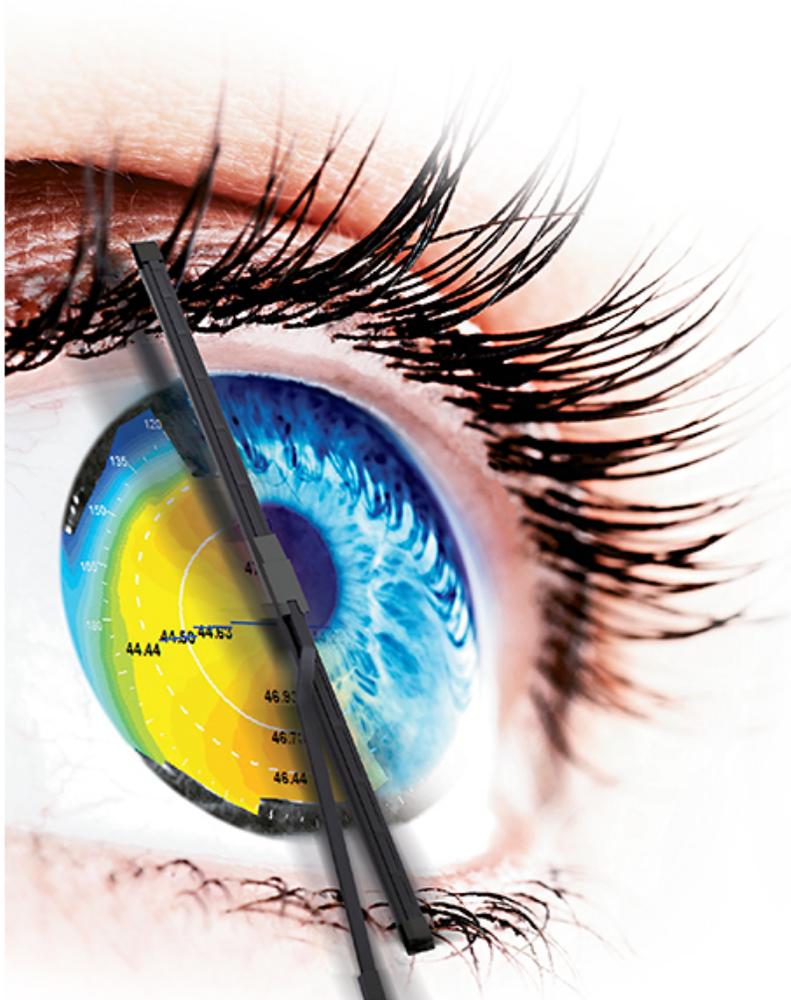
The new normal: An optimized surface

Cataract surgery isn't perfect without a perfect surface.

BY KENNETH BECKMAN, MD, FACS

Today's cataract surgeons enjoy unprecedented success with their outcomes for numerous reasons. The cataract surgical equipment has become incredibly efficient, surgical techniques have advanced to allow stellar precision and IOLs provide brilliant visual quality.

Despite this success, patient demands continue to rise. Surgeons can no longer settle for excellent best-corrected vision; the bar continues to move higher, which places tremendous pressure on cataract surgeons.



Most cataract surgeons spend a great deal of effort to perfect their surgical technique, but they often overlook many aspects of managing the cataract patient. In particular, establishing a healthy ocular surface is critical to achieve the optimal outcome. Often, busy cataract surgeons may think they have time to venture into a detailed ocular surface evaluation. Yet overlooking this part of the preoperative evaluation can lead to disastrous results.

Three compelling drivers

I believe there are three primary reasons to establish a healthy ocular surface before proceeding to cataract surgery.

- Decrease the risk of postoperative infection
- Allow accurate corneal measurements and subsequently accurate IOL calculations
- Avoid postoperative visual aberrations that may lead to unhappy patients despite the proper IOL selection.

Failure to establish a healthy surface pre-op may lead to any or all three of these complications. Also, maintaining a healthy surface after surgery helps to avoid late visual complaints.

Despite these concerns, many surgeons overlook the ocular surface, both in the preoperative evaluation and during the postoperative period.

The hunt begins

Thanks to the new understanding and emphasis on the surface prior to surgery, as well as new and improved diagnostic tests, evaluating and optimizing the ocular surface has become easier. In my practice, every cataract evaluation includes a dry eye and ocular surface evaluation, which always begins with a detailed history.

While we address the typical cataract symptoms, such as difficulty reading or driving, we've added an emphasis on the ocular surface. We ask about fluctuating vision, decreasing vision with prolonged activity and eye fatigue with overuse. These symptoms are considered to be tear film-related.

Following the history and refraction, my technicians typically perform tear film osmolarity testing (TearLab) prior to the patient seeing the physicians. Tear film hyperosmolarity is a validated marker of dry eye disease.¹ In addition, a high tear film osmolarity can be associated with unreliable and variable keratometry readings, which often lead to unreliable IOL calculations.² InflammDry MMP-9 (matrix metalloproteinase 9) testing (RPS), is another point-of-care test. MMP-9 is an inflammatory marker present at higher levels in the tear film in patients with dry eye.³ **(For more, see page 34.)**

Focus on keratometry

For cataract patients, we take three sets of keratometry readings: manual keratometry readings, corneal topography readings, and IOL master (Zeiss) readings. We pay careful attention to the regularity of the mires, as well as consistency of the measurements between tests. On slit lamp examination, we perform corneal staining with fluorescein. Conjunctival staining with lissamine green may also be performed. Additionally, the lid margins are expressed to evaluate the meibomian secretions.

Following this assessment, our physicians decide on the testing's reliability. If the mires appear irregular or the keratometry readings are not consistent, we initiate treatment and re-evaluated the patient at a later date. It may take several weeks for the surface to improve enough to allow for cataract surgery.

This also requires extensive patient education to help them understand that this treatment is necessary for their surgery to be successful.

The scrutiny pays off

A patient presented to our office and was evaluated for cataract surgery with a toric IOL. We performed preoperative topography on this patient, which showed astigmatism. On further evaluation, it was evident that the astigmatism was irregular. A "hot spot" on the topography at the 1:00 position corresponded to an irregularity in the mires on the placido image. This patient was found to have both lid margin disease and dry eye disease.

Following two weeks of treatment, we repeated the topography. The astigmatism was reduced to 0.5 D, the "hot spot" was resolved and the placido images appeared very regular. If this patient underwent surgery with toric IOL placement based on the initial measurements, the outcome would have been poor. By cleaning up the ocular surface, we obtained accurate measurements and found that the patient was not a toric candidate.⁴

It may seem that this evaluation is quite extensive, and most patients don't seem to need this amount

of detail on first glance. However, ocular surface disease is much more common than typically detected on a routine exam without testing as demonstrated in the PHACO study. In this study, 136 patients scheduled for cataract surgery were evaluated for dry eye disease. While only 22% of these patients were previously diagnosed with dry eye disease, 77% were found to have corneal staining, and 50% were found to have central corneal staining.⁵ Obviously, these patients are at high risk for inaccurate IOL calculations and for postoperative visual aberrations and would be particularly poor candidates for multifocal IOLs.

Conclusion

A poor ocular surface puts patients at risk for poor outcomes with cataract surgery. Ocular surface disease is often missed on routine exam and is much more prevalent than previously thought. Therefore, a detailed ocular surface evaluation is critical for achieving a successful surgical outcome. **OM**

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