

5 THINGS YOU NEED TO KNOW

IOL Selection in Patients With DED

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The Ocular Surface Frailty Index can direct surgeons toward the best lens for each patient.

How can we meet the needs of patients with dry eye disease (DED) who undergo cataract surgery? The answer is simple: Scrupulous workups. It is more involved than that, of course, especially for premium IOL patients, and this article presents five topics related to meeting the needs of these patients.



No. 1: Why are we concerned about DED in relation to cataract surgery?

Phacoemulsification with IOL implantation is the most commonly performed ophthalmic surgical procedure in adults in developed countries.¹ DED is also a highly prevalent ocular condition, one that is often experienced by patients presenting for cataract surgery.

The Tear Film and Ocular Surface Society's Dry Eye Workshop II (TFOS DEWS II) defined DED as a "multifactorial disease of the ocular surface characterized by a loss of homeostasis of the tear film and accompanied by ocular symptoms,

in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities play etiologic roles."²

We are concerned about DED in relation to cataract surgery for four key reasons.

- They are both common conditions, especially in the elderly;
- IOL selection becomes more difficult with a poor ocular surface (more on this later);
- Cataract surgery can induce DED or, worse, exacerbate existing DED; and
- Patients' quality of life can be compromised by DED after surgery, and their quality of vision can be affected.



No. 2: Recognize the importance of the ocular surface in preoperative planning for cataract surgery.

There is increasing demand for spectacle independence after cataract surgery, and medical engineers are continually developing new IOLs to help surgeons

and patients achieve this goal. Today, there are multiple surgical solutions for myopia, hyperopia, astigmatism, and presbyopia. As surgeons, we must be familiar with all of them to best advise our patients.

But even the best technology will not satisfy patients if our initial IOL selection is wrong. One of the biggest mistakes we can make is to underestimate the importance of the ocular surface in preoperative planning, including determining IOL power.

The PHACO study evaluated the incidence of DED in patients prior to cataract surgery and found that more than 75% had signs consistent with DED.³ Studies have shown that an impaired ocular surface adversely affects IOL calculations, determination of toric IOL axis and magnitude readings, keratometry (K), and topography measurements.⁴

Preoperative topography enables the surgeon to determine whether a patient is an appropriate candidate for an advanced technology IOL, such as a toric or multifocal IOL. This diagnostic

imaging modality also enables the surgeon to identify corneal conditions that are contraindications to certain types of IOLs, especially as many corneal conditions are not visible on slit-lamp examination.⁵

The administration of a single drop of balanced saline solution or other eye drop before performing topography is not the solution to optimizing the ocular surface for preoperative examination. A group at Vejle Hospital in Denmark demonstrated that variability in K values was not significantly changed by administration of any of the eye drops they tested; these authors suggested that artificial eye drops do not affect K measurements or improve IOL power prediction.⁶

Tear osmolarity is another important evaluation for determining the repeatability of K readings. A higher variability in average K and anterior corneal astigmatism has been observed in hyperosmolar patients, with resulting significant errors in IOL power calculations (> 0.50 D).⁷

Another consideration is that contrast sensitivity can be reduced in patients with multifocal IOLs, despite good visual acuity, and this can affect the quality of vision.⁸ DED can also reduce contrast sensitivity,⁹ and our patients with DED may therefore be unhappy with a multifocal IOL because of poor postoperative contrast.

Finally, it should be noted that the continual change in the tear film associated with DED can cause variability in astigmatism, so choosing the right toric IOL can be difficult in patients with DED.



No. 3: Before you plan anything, diagnose and treat DED. As outlined in point No. 2, optimization of ocular

biometry is the first step for good cataract surgery. It is preferable to obtain corneal topography—even

STEPS FOR IOL SELECTION IN PATIENTS WITH DED

- ▶ Assess the ocular surface preoperatively
- ▶ Treat ocular surface pathologies, if any, before scheduling preoperative evaluations
- ▶ For preoperative ocular biometry, seek minimal difference between repeated measures
- ▶ Perform corneal topography to evaluate the regularity of the ocular surface
- ▶ When in doubt about repeatability of keratometry values, or if the values between biometry and topography are very different, start over again and search for the problem; IOL calculation can be severely affected by a fast tear breakup time
- ▶ Consider that monofocal IOLs have less severe vision-related side effects than multifocal IOLs in patients with DED
- ▶ Preoperative toric IOL calculation (Figure) can be challenging, and postoperative results can vary after every blink, depending on tear film stability
- ▶ Multifocal IOLs can reduce contrast sensitivity that is already negatively affected by DED, resulting in unhappy patients; spend a lot of chair time informing patients about the possibility of an IOL exchange if needed

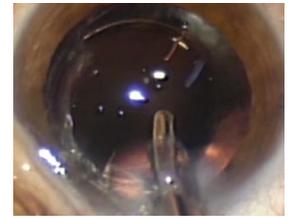


Figure. Implantation of a toric IOL.

better, tomography. But before performing these examinations we must, for the reasons outlined previously in this article, diagnose and treat all ocular surface pathologies.



No. 4: Follow a systematic set of steps for IOL selection in patients with DED.

There are no official guidelines for IOL selection in patients with DED, but I suggest the steps outlined in the accompanying sidebar based on my own experience.



No. 5: A new method for evaluation of DED before cataract surgery, the Ocular Surface Frailty Index (OSFI), could be

helpful to select the right IOL for the patient. The recently published OSFI evaluates 10 deficits in ocular surface health, factors potentially able to affect ocular surface health, or both.¹⁰ In its infancy, this index has been shown to predict the presence of DED symptoms after cataract surgery. Therefore, the potential of this index is also in its function to help direct the surgeon toward the best IOL selection for each patient.

CONCLUSION

Can we meet the expectations of DED patients with premium IOLs? How can we best improve IOL selection and final results? Further studies are needed, but the first step is a scrupulous approach to preoperative assessment, as outlined in the points provided here. And for tips on presurgical management of DED, see the article on pg 36. ■

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- Financial disclosure: None