FROM THE EDITOR

The burden of too many intraocular lens choices

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Choosing an intraocular lens (IOL) 5 or 10 years ago was in many ways simpler than today given that we had fewer choices to consider. Thanks to the hard work and research in the field of cataract and refractive surgery over the past 10 years, we now have a broad IOL portfolio, making it more likely to find a more perfect fit for each patient. This, however, means the surgeon ultimately bears the burden of obtaining precise IOL calculation estimations and filtering through the new technology to select the correct lens for each patient.

For presbyopia-correcting IOLs, we historically had monofocal or multifocal lenses to choose from. Monofocal IOLs offer a full range of vision through monovision, but often at the cost of losing some depth of perception and reduced visual acuity. Multifocal IOLs offer relatively high spectacle independence, offer a full visual range, and allow patients to focus on images in multiple focal planes. However, multifocal IOLs use diffractive or refractive technology that can result in visual disturbances such as halos and can cause contrast sensitivity loss.

The extended depth-of-focus (EDOF) IOLs are a popular choice and effectively bridge the gap between monofocal and multifocal IOLs in that they provide good visual acuity at intermediate distances with less severe and fewer optic disturbances. But as with all new technologies, after simulation on the bench only trial and error can determine the effectiveness of new products and experience ultimately provides a definition of what it is (and what it is not). To this end, the American Association of Ophthalmology Task Force has helped by setting parameters that require EDOF IOLs to be within 1 line of best-corrected visual acuity of monofocal IOLs; to be at least 0.50 diopter (D) greater than defocus of multifocal IOLs at 20/30 level (approximately 1.25 D defocus); and last, that 50% of patients should be better than 20/30.

Within the EDOF category are many IOLs with emerging technologies. In this issue, Kohnen and Suryakumar (page 298) categorize EDOF IOLs in 4 types of lenses: (1) small-aperture, (2) bioanalogic, (3) diffractive optics, and (4) nondiffractive optical manipulations. Also in this issue, Darian-Smith and Versace (page 179) present the interesting results of a capsule-fixated IOL, the FEMTIS® Comfort MF15, EDOF version (OSD Medical GmbH). This IOL was attached to the anterior capsulorhexis and reported a stable position with excellent refractive predictability, functional range of vision, and minimal unwanted visual phenomena.

Other emerging lens technologies yet to be tested in clinical practice are the wavefront-correcting IOL (Vivity, Alcon Laboratories, Inc.) and the continuous-range-of- vision IOL (TECNIS Synergy, Johnson & Johnson Vision Care, Inc.). These are exciting new IOLs that have yet to prove themselves. Clinical trials of these and other new IOLs are most welcomed for submission!

Of course, we all know that selecting the best-suited lens is only half the battle. To achieve the targeted refractive result and the perfect surgical outcome it is also necessary to ensure the patient’s overall satisfaction. The challenge of managing expectations begins once the IOL is selected. Some of the patients undergoing presbyopic surgery have already had refractive surgery once, meaning these patients have altered corneas, most commonly flattened cornea after myopic corrections, and less predictability of the IOL calculation estimates. Furthermore, these patients tend to have higher expectations because they have previously experienced one successful refractive surgery, meaning evaluating and managing expectations is just as important as ensuring satisfactory results.

At the moment, IOL choices for our patients are numerous and selecting the best IOL seems to be based too much on physician experience. Patient-reported outcome measures may help to improve our decision-making in the IOL selection process, and other options, such as artificial intelligence, are certain to follow. As always, we must continue to push the field forward by measuring new technologies and possibilities against tested and proven scientific standards.

Disclosures: The author has no financial or proprietary interest in any material or method mentioned.

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