AMD and Presbyopia-Correcting IOLs:

What Is the Best Course of Action?

Coexisting ocular disease can reduce a multifocal IOL's functionality.

BY STEVEN J. DELL, MD, AND DEREK N. CUNNINGHAM, OD

Physicians are well aware of the aging of the baby boomer demographic. Nonetheless, the statistics are staggering: by 2050, the number of people 65 years of age or older will surpass 82 million (of a total expected population of 392 million, that is 21%). Of this group, 38 million will be 80 years of age or older.[1] These figures translate as a large number of cataract surgeries, and a significant proportion of these patients will develop a retinal disease such as age-related macular degeneration (AMD) or glaucoma. Both conditions make the selection of an appropriate IOL important.

The Beaver Dam Eye Study, the Age-Related Eye Disease Study (AREDS), and others have demonstrated that the risk for developing AMD increases significantly with age.[2,3] AMD is responsible for 54% of all visual impairment in the United States and 23% of blindness in white individuals.[2] Because of the risk of developing AMD or another ocular disease, clinicians need to carefully weigh the options each time they discuss vision correction with a cataract patient.

Per the FDA, the implantation of multifocal IOLs is contraindicated in patients with existing AMD, but what about those with very mild forms of the disease? The evidence suggests that it may not be advisable to implant these lenses in mild cases, either. In the Beaver Dam Eye Study, the rate of drusen went from 2% in patients aged between 43 and 54 years to 24% in those older than 75 years.[3] Until we have an accurate, affordable genetic test to screen for AMD and other diseases, identifying who will progress to visual impairment and who will not is a bit of a gamble.

SAFEGUARDS

Coexisting ocular disease could reduce the functionality of a multifocal IOL. To minimize the risk of a poor visual result, a thorough diagnostic assessment should be performed before a discussion of lens options with the patient.

In our practice, if a patient expresses interest in a presbyopia-correcting IOL, we conduct a full battery of tests. These include multiple topographies with different technologies such as the Pentacam Comprehensive Eye Scanner (Oculus Optikgeräte GmbH, Wetzlar, Germany) and the Nidek-OPD Scan II (Nidek, Inc., Fremont, CA) in order to get the most accurate assessment of the cornea and wavefront aberrations. With the device's OPD (optical path difference), we can obtain a map that plots the refractive error distribution of the eye's total aberrations, lower and higher order, in diopters. With the Pentacam, we get an analysis of the entire cornea, anterior chamber, and crystalline lens, including a measurement of the central radii,

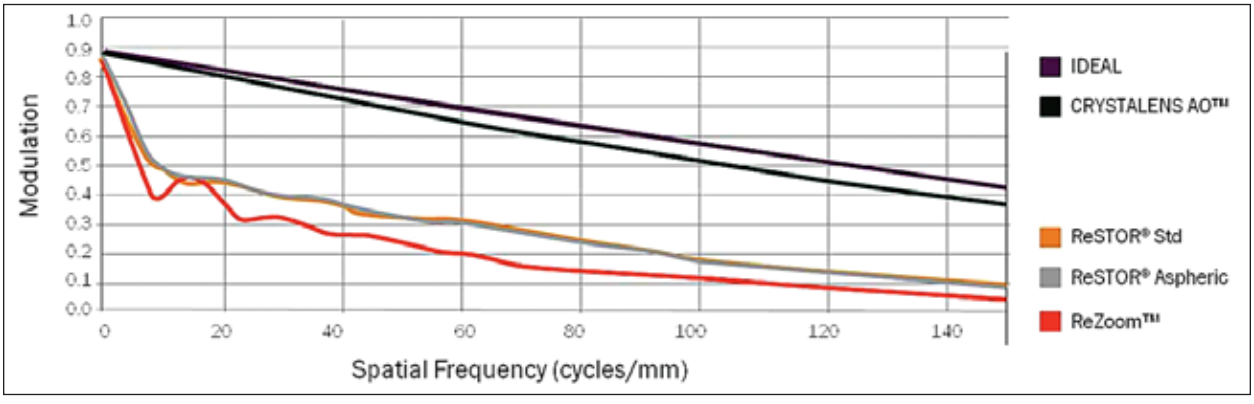

Figure 1. Modulation transfer function, with +22.00 D lenses and a pupillary aperture of 3 mm.

corneal asphericity, curvature and elevation, chamber angle, chamber volume, and chamber elevation as well as the lens' transparency. We find added value in instruments that can image the anterior chamber, like the Pentacam.

We perform an endothelial cell count on patients with abnormalities of the corneal endothelium. If there is an indication of macular abnormalities, we will perform optical coherence tomography. We have a low threshold for treating ocular surface disease and perform a careful assessment, including a measurement of tear breakup time. If patients show signs of dry eye or ocular surface disease, we often delay surgery and institute an aggressive treatment regimen. It typically begins with oral omega-3 fatty acid supplementation and frequent therapy with preservative-free artificial tears. The addition of steroids, immunomodulators, antibiotics, and punctal plugs is based on the patient's presentation and disease severity.

WEIGHING THE OPTIONS

Once we have made a thorough assessment, we discuss patients' expectations with them. If they are interested in a presbyopia-correcting IOL but we have detected the signs of early-stage AMD, we recommend the Crystalens AO (Bausch + Lomb, Rochester, NY). We believe a lens with an aspheric, monofocal optic is the best option for restoring a range of vision without risking a loss of contrast sensitivity. The Crystalens AO's design ensures that 100% of the light reaches the retina—an important point to consider when patients are faced with a loss of contrast sensitivity and progressive visual decline (Figure 1).

There is little doubt that physicians will be seeing ever-greater numbers of patients with retinal disease during the next decade and beyond. Through a thorough diagnostic assessment and the appropriate selection of candidates, practitioners can maximize the vision of patients who develop sight-threatening diseases. ■

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