

# AMD and Presbyopia-Correcting IOLs: What Is the Best Course of Action?

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

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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.<sup>1</sup> 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.<sup>2,3</sup> AMD is responsible for 54% of all visual impairment in the United States and 23% of blindness in white individuals.<sup>2</sup> 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.<sup>3</sup> 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,

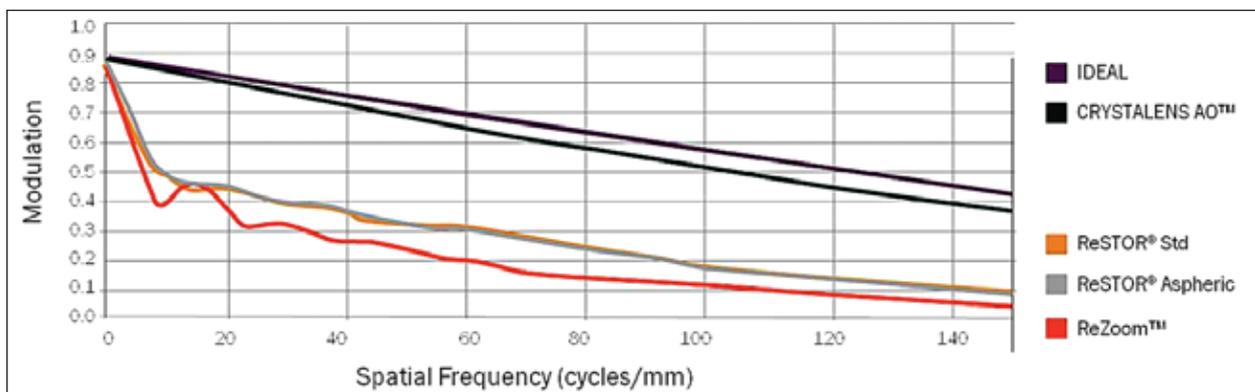


Figure 1. Modulation transfer function, with +22.00 D lenses and a pupillary aperture of 3 mm.

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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2. Congdon N, O'Colmain B, Klaver CC, et al. Eye Diseases Prevalence Research Group. Causes and prevalence of visual impairment among adults in the United States. *Arch Ophthalmol*. 2004;122:477-485.  
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**BRIEF SUMMARY**

**1 INDICATIONS AND USAGE**

NEVANAC<sup>®</sup> ophthalmic suspension is indicated for the treatment of pain and inflammation associated with cataract surgery.

**2 DOSAGE AND ADMINISTRATION**

**2.1 Recommended Dosing**

One drop of NEVANAC<sup>®</sup> should be applied to the affected eye(s) three-times-daily beginning 1 day prior to cataract surgery, continued on the day of surgery and through the first 2 weeks of the postoperative period.

**2.2 Use with Other Topical Ophthalmic Medications**

NEVANAC<sup>®</sup> may be administered in conjunction with other topical ophthalmic medications such as beta-blockers, carbonic anhydrase inhibitors, alp ha-agonists, cycloplegics, and mydriatics.

**3 DOSAGE FORMS AND STRENGTHS**

Sterile ophthalmic suspension: 0.1%

3 mL in a 4 mL bottle

**4 CONTRAINDICATIONS**

NEVANAC<sup>®</sup> is contraindicated in patients with previously demonstrated hypersensitivity to any of the ingredients in the formula or to other NSAID.

**5 WARNINGS AND PRECAUTIONS**

**5.1 Increased Bleeding Time**

With some nonsteroidal anti-inflammatory drugs including NEVANAC<sup>®</sup>, there exists the potential for increased bleeding time due to interference with thrombocyte aggregation. There have been reports that ocularly applied nonsteroidal anti-inflammatory drugs may cause increased bleeding of ocular tissues (including hyphemas) in conjunction with ocular surgery.

It is recommended that NEVANAC<sup>®</sup> ophthalmic suspension be used with caution in patients with known bleeding tendencies or who are receiving other medications which may prolong bleeding time.

**5.2 Delayed Healing**

Topical nonsteroidal anti-inflammatory drugs (NSAIDs) including NEVANAC<sup>®</sup>, may slow or delay healing. Topical corticosteroids are also known to slow or delay healing. Concomitant use of topical NSAIDs and topical steroids may increase the potential for healing problems.

**5.3 Corneal Effects**

Use of topical NSAIDs may result in keratitis. In some susceptible patients, continued use of topical NSAIDs may result in epithelial breakdown, corneal thinning, corneal erosion, corneal ulceration or corneal perforation. These events may be sight threatening. Patients with evidence of corneal epithelial breakdown should immediately discontinue use of topical NSAIDs including NEVANAC<sup>®</sup> and should be closely monitored for corneal health.

Postmarketing experience with topical NSAIDs suggests that patients with complicated ocular surgeries, corneal denervation, corneal epithelial defects, diabetes mellitus, ocular surface diseases (e.g., dry eye syndrome), rheumatoid arthritis, or repeat ocular surgeries within a short period of time may be at increased risk for corneal adverse events which may become sight threatening. Topical NSAIDs should be used with caution in these patients.

Postmarketing experience with topical NSAIDs also suggests that use more than 1 day prior to surgery or use beyond 14 days post surgery may increase patient risk and severity of corneal adverse events.

**5.4 Contact Lens Wear**

NEVANAC<sup>®</sup> should not be administered while using contact lenses.

**6 ADVERSE REACTIONS**

Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in the clinical studies of a drug cannot be directly compared to the rates in the clinical studies of another drug and may not reflect the rates observed in practice.

**6.1 Ocular Adverse Reactions**

The most frequently reported ocular adverse reactions following cataract surgery were capsular opacity, decreased visual acuity, foreign body sensation, increased intraocular pressure, and sticky sensation. These events occurred in approximately 5 to 10% of patients.

Other ocular adverse reactions occurring at an incidence of approximately 1 to 5% included conjunctival edema, corneal edema, dry eye, lid margin crusting, ocular discomfort, ocular hyperemia, ocular pain, ocular pruritus, photophobia, tearing and vitreous detachment.

Some of these events may be the consequence of the cataract surgical procedure.

**6.2 Non-Ocular Adverse Reactions**

Non-ocular adverse reactions reported at an incidence of 1 to 4% included headache, hypertension, nausea/vomiting, and sinusitis.

See full prescribing information for NEVANAC<sup>®</sup>.