Lens Expands Reach of Presbyopia Correction

With uncompromised distance, more patients may benefit

BY MATTHEW D. HAMMOND MD, FACS, PCEO

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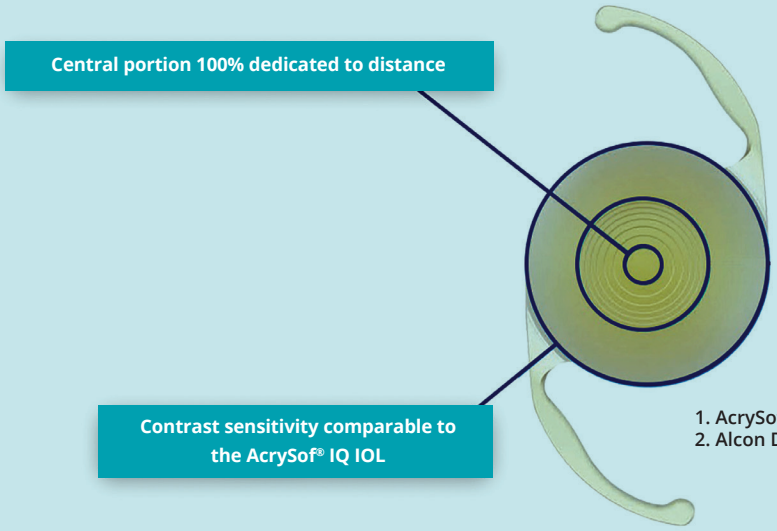
When we think of correcting presbyopia with cataract surgery, we have tended to focus on near vision. After all, that's the problem with presbyopia. However, in my experience, presbyopic patients also value intermediate and distance vision, perhaps more than ever given their likelihood to be tech-savvy and to have active lifestyles. While I've been a believer in multifocal IOL technology since its debut, I hadn't been using it in patients who wanted excellent distance vision. The AcrySof® IQ ReSTOR® +2.5D IOL with ACTIVEFOCUS™ design (Alcon) has completely changed this. I wholeheartedly recommend this lens for patients who want excellent distance vision, and I don't hesitate to recommend it for those who also want to see the computer screen without eyeglasses. It has expanded the pool of patients I consider potential candidates for a premium lens in another significant way as well. I no longer automatically disqualify patients only because they've previously undergone LASIK. In fact, I recently used the lens in a post-RK patient who experienced a great outcome.

Uncompromised Distance

The ReSTOR® +2.5D IOL with the ACTIVEFOCUS™ design may be suitable for more patients than other presbyopia-correcting IOLs because the center of the lens is dedicated 100% to distance vision (Figure 1), providing comparable contrast sensitivity to a monofocal lens.[1-3] Seven gradual steps in the diffractive portion of the optic produce balanced performance at near and intermediate focal points. At the same time, a large peripheral zone allocates more light to the distance focal point at every pupil size, especially in mesopic conditions. Light distribution through a 3.0-mm pupil is 69.4% for distance and 18.0% for near, for a total of 87.4%.[3]

I was the first surgeon in Utah to implant the AcrySof® IQ ReSTOR® +2.5D IOL with the ACTIVEFOCUS™ optical design and I've never looked

Figure 1. Designed for Distance Vision[1,2]



1. AcrySof® IQ ReSTOR® +2.5D Multifocal IOL Directions for Use
2. Alcon Data on File. (11 Apr 2016)

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back. The three cases below illustrate the outcomes I've been able to provide for my patients. All three of these patients had corneal astigmatism, and two of the patients had previously undergone LASIK. I managed the astigmatism with incision placement and limbal relaxing incisions created with a femtosecond laser. For the post-LASIK patients, I used the HICSOAP nomogram. For all three patients, I used my usual surgeon-adjusted Holladay 2 IOL formula and further refined the lens choice with intraoperative aberrometry (ORA SYSTEM®, Alcon). The refractive outcomes here reflect the patients' vision after surgery in both eyes, with time in between. In all three cases, I used my preferred refractive strategy of implanting the dominant eye with the ReSTOR® +2.5D IOL with ACTIVEFOCUS™ design and the non-dominant eye with the AcrySof® IQ ReSTOR® +3.0D IOL. In my hands, this leads to the widest range of high-quality vision from near to distance.

"I focus my education and expectation-setting on what patients do care about, which is their results."

— MATTHEW D. HAMMOND MD, FACS, PCEO

Case 1

A 61-year-old male presented with complaints of worsening vision, both at night and during the day. He noted that reading was difficult and his job required long hours working on a computer, causing headaches. In 2005, he had undergone LASIK with monovision, with his left eye corrected for near.

Prior to cataract surgery, his visual acuity (VA) without correction was 20/40 OU. Best-corrected visual acuity (BCVA) was 20/30 OU (with glare 20/60 OU). Except for 2+ nuclear sclerotic cataract OU, his exam was unremarkable. Both LASIK flaps were clear and well-centered.

In two uncomplicated cataract surgeries, the patient received the ReSTOR® +2.5D IOL with the ACTIVEFOCUS™ design in his dominant right eye and an AcrySof® IQ ReSTOR® +3.0D IOL in the left eye.

Thirty days after his second surgery, he was extremely happy with his uncorrected postoperative vision, which is 20/25 OU at distance, J1+ at near, and 20/20 at intermediate.

Case 2

A 62-year-old female presented complaining of difficulty driving, watching TV, and reading. She noted that she uses the computer for several hours each day and is a heavy reader. She had LASIK in 2000.

Upon examination, the LASIK flap in each eye was clear and well-centered. A 2+ nuclear sclerotic cataract and cortical changes were present OD, and a 1+ nuclear sclerotic cataract with cortical changes was present OS. Uncorrected VA was 20/80 OD and 20/30 OS. BCVAs measured 20/40 OD and 20/25 OS (with glare 20/100 OD and 20/30 OS). The exam was otherwise unremarkable.

The patient received a ReSTOR® +2.5D IOL with the ACTIVEFOCUS™ design in her dominant right eye and an AcrySof® IQ ReSTOR® +3.0D IOL in her left eye. I also performed a LASIK "touch-up" to treat residual astigmatism. Thirty days later, this patient was extremely happy with her vision. She sees uncorrected 20/20 OU at distance, J1+ at near, and 20/20 at intermediate.

Case 3

A 66-year-old female patient presented with complaints of difficulty driving at night, glare, and difficulty watching TV. She also reported being an avid reader and having trouble reading even with her glasses. She'd had no prior eye surgery.

Her examination revealed 2+ nuclear sclerotic cataract in both eyes, uncorrected vision of 20/30 OU (with glare 20/60 OU), and no improvement with correction.

After uncomplicated surgery in the right (dominant) eye, which received a ReSTOR® +2.5D IOL with the ACTIVEFOCUS™ design, and in the left eye, which received a ReSTOR® +3.0D IOL, this patient's uncorrected vision was a very satisfying 20/20 OU at distance, J1 at near, and 20/20 at intermediate.

Discussing the ACTIVEFOCUS™ Difference With Patients

As these three cases show, the strategy of implanting the dominant eye with the ReSTOR® +2.5D with the ACTIVEFOCUS™ optical design and the non-dominant eye with the ReSTOR® +3.0D IOL produces a great range of vision that is highly satisfying for patients. Most of my patients report being glasses-free approximately 80% of the time. Because this point has held true consistently, I include it in my preoperative discussion with my patients who qualify

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for this IOL. I also make sure they understand this means approximately 20% of the time they may need glasses for some near vision tasks. I discuss with my pateints the potential for visual disturbances due to the multifocality of the IOL; however, I am happy to report very few complaints about halos and glare with the ACTIVEFOCUS™ design.

In my experience using presbyopia-correcting lenses, I've learned that patients aren't interested in the technical aspects of IOLs. As such, I focus my education and expectation-setting on what they do care about, which is their results — in other words, how they will see after surgery. I make my IOL recommendation based on what they do in their daily lives. When the choice is the ReSTOR® +2.5D IOL with the ACTIVEFOCUS™ design, I explain that we'll insert in their dominant eye a lens that will give them sharp distance vision and good computer vision. (This is something I hadn't been able to say about other presbyopia-correcting lenses.) I explain that in the other eye, we'll insert a lens that will give them good distance vision, not quite as good as the first eye, which is intentional, but very good reading vision. And without necessarily using the technical term binocular summation, I let them know that with both eyes open, the eyes will work together, and they'll experience the full range of vision. It's important, too, to ensure that patients understand they may not experience the full benefits of their cataract surgery until both eyes are done. I want them to know from the start that it's a process. For example, I inform patients who are having their non-dominant eye operated on first that their distance vision may be a bit "smudgy" until we do the second eye. And if I expect a patient to have residual astigmatism after femtosecond laser LRIs, he or she will be expecting a post-cataract surgery LASIK or PRK to address it. In addition, we now have the option of using the ReSTOR® +2.5D Multifocal Toric IOL with the ACTIVEFOCUS™ optical design.

We also discuss the potential for glare or halos at night, although most of my patients who experience these optical effects at all mostly stop reporting them after 3 to 6 months. While the ACTIVEFOCUS™ design hasn't made glare and halos completely an issue of the past, when they do occur, they don't seem to be as life-altering as they once were. Another key explanation I provide for my patients is how postoperative vision is about points of focus rather than zones of focus, meaning they have to learn to hold objects and reading material at the distance(s) that are comfortable for them.

Happy Patients, Happy Surgeon

In my experience, the chair time associated with IOLs with the ACTIVEFOCUS™ design is less than with other presbyopia-correcting lenses. It's still necessary to screen patients with unstable refractions, highly aberrated corneas or other pathologies, a high level of coma, or a high angle kappa, and my discussions with patients still include topics such as the potential for nighttime halos and the importance of good lighting at home. However, because this lens has been so successful for my patients, the entire process is simply smoother for them and me. The support provided by the lens manufacturer has made my life easier as well. Several hours of education were provided for my surgical coordinator; therefore, she understands the lens. That knowledge, along with my enthusiasm for the lens, makes it easy for her to conduct her discussions with patients, too. On my first day using the lens, two company representatives were on hand all day to ensure everything went well. Using an IOL with the ACTIVEFOCUS™ design has gone very well for me, my staff and our practice, and expanded the number of patients who can benefit from refractive cataract surgery, from that day forward.

References

1. Vega F, Alba-Bueno F, Millán MS, Varón C, Gil MA, Buil JA. Halo and through-focus performance of four diffractive multifocal intraocular lenses. *Invest Ophthalmol Vis Sci.* 2015;56(6):3967-3975.
2. AcrySof® IQ ReSTOR® +2.5D Multifocal IOL Directions for Use.
3. Alcon Data on File (11 Apr 26).

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ORA SYSTEM® IMPORTANT PRODUCT INFORMATION

CAUTION: Federal (USA) law restricts this device to the sale by or on the order of a physician.

INDICATIONS: Federal (USA) law restricts this device to sale by, or on the order of, a physician.

INTENDED USE: The ORA SYSTEM® uses wavefront aberrometry data in the measurement and analysis of the refractive power of the eye (i.e. sphere, cylinder, and axis measurements) to support cataract surgical procedures.

CONTRAINDICATIONS: There are no known contraindications for this device.

WARNINGS AND PRECAUTIONS: The following conditions may make it difficult to obtain accurate readings using the ORA SYSTEM® • Patients having progressive retinal pathology such as diabetic retinopathy, macular degeneration, or any other pathology that the physician deems would interfere with patient fixation;

- Patients having corneal pathology such as Fuchs', EBMD, keratoconus, advanced pterygium impairing the cornea, or any other pathology that the physician deems would interfere with the measurement process;
- Patients for which the preoperative regimen includes residual viscous substances left on the corneal surface such as lidocaine gel or viscoelastics;
- Visually significant media opacity, such as prominent floaters or asteroid hyalosis, will either limit or prohibit the measurement process; or
- Patients having received retro or peribulbar block or any other treatment that impairs their ability to visualize the fixation light.
- Use of iris hooks during an ORA SYSTEM® image capture will yield inaccurate measurements.

In addition:

- Significant central corneal irregularities resulting in higher order aberrations might yield inaccurate refractive measurements.
- Post refractive keratectomy eyes might yield inaccurate refractive measurement.
- The safety and effectiveness of using the data from the ORA SYSTEM ® have not been established for determining treatments involving higher order aberrations of the eye such as coma and spherical aberrations.
- The ORA SYSTEM® is intended for use by qualified health personnel only.
- Improper use of this device may result in exposure to dangerous voltage or hazardous laser-like radiation exposure. Do not operate the ORA SYSTEM® in the presence of flammable anesthetics or volatile solvents such as alcohol or benzene, or in locations that present an explosion hazard.

ATTENTION: Refer to the ORA SYSTEM® Operator's Manual for a complete description of proper use and maintenance, as well as a complete list of contraindications, warnings and precautions.

ACRYSOF® IQ RESTOR® FAMILY OF MULTIFOCAL IOLS IMPORTANT PRODUCT INFORMATION

CAUTION: Federal (USA) law restricts this device to the sale by or on the order of a physician.

INDICATIONS: The AcrySof® IQ ReSTOR® Posterior Chamber Intraocular Multifocal IOLs include AcrySof® IQ ReSTOR® and AcrySof® ReSTOR® Toric and are intended for primary implantation for the visual correction of aphakia secondary to removal of a cataractous lens in adult patients with and without presbyopia, who desire near, intermediate and distance vision with increased spectacle independence. In addition, the AcrySof® IQ ReSTOR® Toric IOL is intended to correct pre-existing astigmatism. The lenses are intended to be placed in the capsular bag.

WARNINGS AND PRECAUTIONS: Careful preoperative evaluation and sound clinical judgment should be used by the surgeon to decide the risk/benefit ratio before implanting a lens in a patient with any of the conditions described in the Directions for Use labeling for each IOL. Physicians should target emmetropia, and ensure that IOL centration is achieved. Care should be taken to remove viscoelastic from the eye at the close of surgery. The ReSTOR® Toric IOL should not be implanted if the posterior capsule is ruptured, if the zonules are damaged, or if a primary posterior capsulotomy is planned. Rotation can reduce astigmatic correction; if necessary lens repositioning should occur as early as possible prior to lens encapsulation. Some patients may experience visual disturbances and/or discomfort due to multifocality, especially under dim light conditions. A reduction in contrast sensitivity may occur in low light conditions. Visual symptoms may be significant enough that the patient will request explant of the multifocal IOL. Spectacle independence rates vary; some patients may need glasses when reading small print or looking at small objects. Posterior capsule opacification (PCO), when present, may develop earlier into clinically significant PCO with multifocal IOLs. Prior to surgery, physicians should provide prospective patients with a copy of the Patient Information Brochure available from Alcon informing them of possible risks and benefits associated with the AcrySof® IQ ReSTOR® IOLs. Do not resterilize; do not store over 45° C; use only sterile irrigating solutions such as BSS® or BSS PLUS® Sterile Intraocular Irrigating Solutions.

ATTENTION: Reference the Directions for Use labeling for each IOL for a complete listing of indications, warnings and precautions.

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