

PANOPTIX TRIFOCAL IOL PROVIDES DISTANCE, INTERMEDIATE, AND NEAR VISION

BY VANCE THOMPSON, MD; JOHN P. BERDAHL, MD; AND JUSTIN SCHWEITZER, OD, FAAO



Vance Thompson, MD, FACS; John P. Berdahl, MD; and Justin Schweitzer, OD, FAAO, who practice collaborative care at Vance Thompson Vision in South Dakota, answer questions about providing patients with continuous range of vision and the presbyopia-mitigating surgical options available.

What is the importance of distance, intermediate, and near vision in real-world terms for a patient?

Vance Thompson, MD, FACS: Cataract surgery was once delayed as long as possible and was largely considered a surgery for the elderly. At the time of surgery, most patients were legally blind, had lost all accommodation, and simple restoration of clear distance vision was a huge relief. This is no longer the case for a variety of reasons. Small incisions and advances in technology have brought us a procedure that is not only considered one of the safest in medicine, but

also brings exceptionally good outcomes. Presbyopia-mitigating IOLs and astigmatism correction have truly made cataract surgery a refractive procedure. In addition, the ability to diagnose optical scatter and an increased respect for the frustrations of early lens changes have contributed to the trend to perform cataract surgery in younger individuals.

Younger patients bring a new surgical experience and different outcome demands. Surgeons frequently remove the crystalline lenses that are somewhat cloudy, although they still have some accommodative range. When cataract surgery is performed on such a patient and he or she is implanted with a monofocal lens, that patient has sudden, absolute presbyopia. Patients may be surprised at how much function they have lost in the intermediate range. This is magnified by the fact that it is much more likely that these patients are still of working age, and patients of all ages now spend a significant part of their day using digital devices. An increasing number of individuals are not willing to lose the functionality of being able to see at a variety of distances. If a patient is not carefully counseled on accommodative loss, which could be real

accommodation or pseudo-accommodation, he or she can experience significant frustration following cataract surgery.

I discuss with all my patients how they use their near, intermediate, and distance vision. Professions, hobbies, reading habits, physical activities, computer usage, and many other aspects of daily life are taken into account, and we determine how much of each day patients would need to use glasses, and if this is acceptable to them. A patient may think he or she doesn't mind wearing glasses, but then realize that this means using bifocals the majority of the day and reconsider if a presbyopia-mitigating IOL (PCIOL) is a better investment. This is an essential conversation to have with every patient.

What are non-trifocal options for providing patients clear-functional vision at all distances?

John P. Berdahl, MD: The current most common approach to treat presbyopia is monovision. A patient is implanted with monofocal IOLs directed for distance vision in one eye, and intermediate or near vision in the other eye. This gives the patient good vision at two distinct distances. Extended

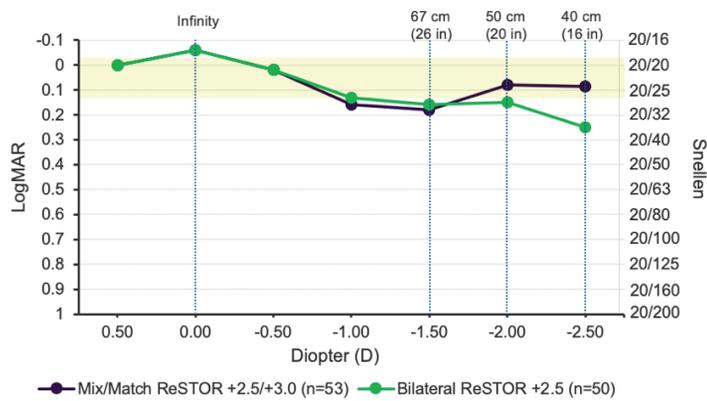


Figure 1. Binocular defocus curves at 3 months of bilateral ReSTOR +2.5 D IOL with ACTIVEFOCUS optical design implantation versus contralateral implantation of ReSTOR +2.5 D IOL with ACTIVEFOCUS optical design in the dominant eye and ReSTOR +3.0 D IOL in the fellow eye.³

depth of focus (EDOF) IOLs and multifocal IOLs have increased the options for vision across a range of distances. These lenses provide a greater range of vision than a standard monofocal IOL. The EDOF lenses provide good distance and intermediate vision, but do not provide sufficient near vision in many patients.¹ The moderate- to high-powered multifocals provide strong distance and near vision.²

Before PanOptix approval, my approach was to contralaterally mix and match lenses to achieve good vision at all three distances due to the overlapping of the defocus curves (Figure 1). However, there are still challenges because both eyes are not seeing the exact same image.

What is now the potential for clear vision with Trifocal IOLs?

Dr. Thompson: Multifocality requires the splitting of light, and by nature, that necessitates some compromises. That required the creation of a lens that provides high-quality vision across all three distances. Clinical data from both inside and outside the United States with Trifocal IOLs, such as the AcrySof PanOptix Trifocal IOL from Alcon, shows how trifocal IOL technology is designed to provide patients with distance, intermediate, and near focal points. The PanOptix Trifocal IOL splits light into three focal points: near (40 cm), intermediate (60 cm), and infinity. It transmits 88% of light at a 3-mm pupil size to the retina.⁴ The IOL has demonstrated the possibility of providing 20/20* or better vision at distance, intermediate, and near based on a 6-month binocular defocus curve in the PanOptix FDA registration study (Figure 2).

It is significant to note that the intermediate distance is 60 cm with the PanOptix Trifocal IOL and not 80 cm as is characteristic with other trifocal IOLs available in the global market.⁶ Sixty centimeters is the approximate typical distance at which one performs important intermediate distance tasks, such as cooking, taking something from the fridge, and using the computer.^{7,8} An intermediate working distance of 80 cm is atypical for the average person.⁹ The data from our international colleagues has been excellent, and my experience

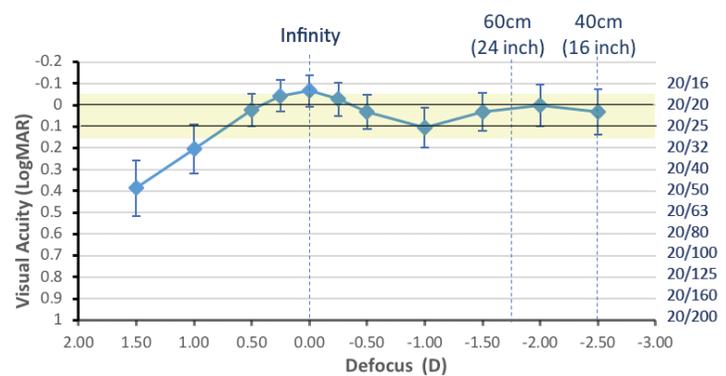


Figure 2. The binocular distance-corrected defocus curve of 127 patients implanted with the AcrySof IQ PanOptix Trifocal IOL at 6 months postoperatively.⁵

participating in the US FDA registration trial confirmed it. My patients had a very high rate of satisfaction with their vision and their reduced need for spectacles.⁵ To me, that is the most important indicator of success. I was also very pleased with the refractive accuracy and the quality of distance vision that is a result of the optics of this lens.

Can you elaborate on how the incorporation of a Trifocal IOL technology might impact your practice efficiency?

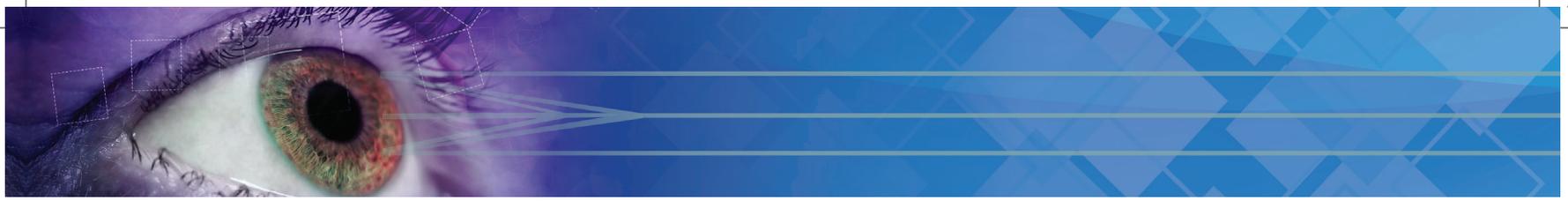
Justin Schweitzer, OD, FAAO: A mix-and-match approach with IOLs has some very distinct requirements when it comes to patient education. To make the best decisions in terms of which lens to use in which eye, it is absolutely essential to understand each patient's unique visual demands and true goals for surgery. It is common to implant one lens and then wait to see how a patient responds before making a final decision on an IOL for the fellow eye. In addition, mixing different lenses requires training the patient to always use both eyes together and preparing them for a visual adaptation period that can last for months or longer. Trifocal IOL technology may minimize all of this because the eyes have the same refractive target and work together. I think that is very powerful. PanOptix trifocal IOL is expected to offer the benefit of increased freedom from the need for spectacles or contact lenses, at a range of near to distance vision.

Dr. Berdahl: A single lens that provides quality vision at all distances has the potential to simplify our practice in a few ways. First, I believe it will debulk our consignment in a meaningful way by reducing the variety of lenses we need to have available in our surgical center. If this becomes our dominant lens choice, then we do not need to have so many other options available at all times to mix and match IOLs to achieve distance, intermediate, and near vision for patients. We will still need options for those who are not good candidates for multifocal IOLs, but there is a high likelihood that trifocal IOLs will become our go-to IOL technology in the future.

I also believe that it will simplify the conversations with referring optometrists and patients. We will not need to provide them with an exhaustive list of IOLs and explain how a combination of lenses is needed to achieve vision at all distances. A trifocal IOL that could enable a patient to see at distance, intermediate, and near is a simple

*Based on mean value of binocular defocus curve at near, intermediate, and distance at 6 months (n = 127).

[†]Snellen VA was converted from logMAR VA. A Snellen notation of 20/20-2 or better indicates a logMAR VA of 0.04 or better, which means 3 or more of the 5 ETDRS chart letters in the line were identified correctly.



conversation to have with all parties.

The Trifocal IOL represents a meaningful leap forward on the technology basis alone, and I am excited to offer this to my patients. ■

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AcrySof® IQ PanOptix® Family of Trifocal 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 PanOptix® Trifocal IOLs include AcrySof® IQ PanOptix® and AcrySof® IQ PanOptix® Toric and are indicated for primary implantation in the capsular bag in the posterior chamber of the eye for the visual correction of aphakia in adult patients, with less than 1 diopter of pre-existing corneal astigmatism, in whom a cataractous lens has been removed. The lens mitigates the effects of presbyopia by providing improved intermediate and near visual acuity, while maintaining comparable distance visual acuity with a reduced need for eyeglasses, compared to a monofocal IOL. In addition, the AcrySof® IQ PanOptix® Toric Trifocal IOL is indicated for the reduction of residual refractive astigmatism.

WARNINGS/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. Physicians should target emmetropia, and ensure that IOL centration is achieved.

For the AcrySof® IQ PanOptix® Toric Trifocal IOLs, the lens 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 visual effects may be expected due to the superposition of focused and unfocused multiple images. These may include some perceptions of halos or starbursts, as well as other visual symptoms. As with other multifocal IOLs, there is a possibility that visual symptoms may be significant enough that the patient

will request explant of the multifocal IOL. A reduction in contrast sensitivity as compared to a monofocal IOL may be experienced by some patients and may be more prevalent in low lighting conditions. Therefore, patients implanted with multifocal IOLs should exercise caution when driving at night or in poor visibility conditions. Patients should be advised that unexpected outcomes could lead to continued spectacle dependence or the need for secondary surgical intervention (e.g., intraocular lens replacement or repositioning).

As with other multifocal IOLs, patients may need glasses when reading small print or looking at small objects. Posterior capsule opacification (PCO), may significantly affect the vision of patients with multifocal IOLs sooner in its progression than patients with monofocal 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 PanOptix® Trifocal IOLs.

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

ACRYSOF® IQ RESTOR® FAMILY OF INTRAOCULAR LENSES 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 Lens (IOL) is 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. The lens is intended to be placed in the capsular bag.

WARNINGS/PRECAUTIONS: Careful preoperative

- Financial disclosure: Consultant (Alcon, Allergan, Aurea Medical, Avedro, Bausch + Lomb, Clarivista, Dakota Lions Eye Bank, DigiSight, Envisia, Equinox, Glaukos, Imprimis, Iantech, Johnson & Johnson Vision, New World Medical, Ocular Therapeutix, Omega Ophthalmics, Ocular Surgical Data, Sightlife Surgical, RxSight, Vitamed, Veracity); Equity owner (DigiSight, Equinox, Omega Ophthalmics, Ocular Surgical Data, Sightlife Surgical, Veracity); Lecturer (Alcon, Allergan, Glaukos, Iantech); Patent/Royalty (Imprimis)

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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. 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. Some patients may experience visual disturbances and/or discomfort due to multifocality, especially under dim light conditions. As with other multifocal IOLs, visual symptoms may be significant enough that the patient will request explant of the multifocal IOL. Spectacle independence rates vary with all multifocal IOLs; as such, some patients may need glasses when reading small print or looking at small objects.

Clinical studies with the AcrySof® ReSTOR® lens indicated that posterior capsule opacification (PCO), when present, developed earlier into clinically significant PCO. Prior to surgery, physicians should provide prospective patients with a copy of the Patient Information Brochure available from Alcon for this product informing them of possible risks and benefits associated with the AcrySof® IQ ReSTOR® IOLs.

Studies have shown that color vision discrimination is not adversely affected in individuals with the AcrySof® Natural IOL and normal color vision. The effect on vision of the AcrySof® Natural IOL in subjects with hereditary color vision defects and acquired color vision defects secondary to ocular disease (e.g., glaucoma, diabetic retinopathy, chronic uveitis, and other retinal or optic nerve diseases) has not been studied. 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 a complete listing of indications, warnings and precautions.