INNOVATIONS IN IOL TECHNOLOGY

Know the latest advances so you can discuss options with your patients.

BY RICHARD BAKER, OD; SHAMA ESSA, OD; NANCY STEPHENS, OD; AND REBECCA MILLER, OD

Patients seeking cataract or lens replacement surgery today have better IOL options than ever before (see Options in IOLs). As primary eye care providers, optometrists are in prime position to guide patients through the process of learning about the lenses that best fit their lifestyles and can provide them with the vision they need for the rest of their lives. In this article, we review some of the options available for patients today and explain how we help patients at Slade & Baker Vision make these important choices regarding IOL preferences.

The best of today’s lenses can be separated into two groups: those that are adjustable and those that extend the patient’s range of vision. Standard monofocal and monofocal toric IOLs are still part of the mix, of course. But with the availability of the Light Adjustable Lens (RxLAL, RxSight),

the extended depth of focus (EDOF) Tecnis Symfony and Symfony Toric (Johnson & Johnson Vision) IOL, modern low-add multifocals, and now the AcrySof IQ PanOptix (Alcon) trifocal IOL, the range of premium IOL choices has never been broader. The improved nature of these lens designs, the RxLAL in particular, further elevates the role of the optometrist in recommending the best options for our patients.

HOW THE RXLAL WORKS

The RxLAL can change shape in response to UV light exposure after implantation. The patient undergoes routine cataract surgery and IOL implantation, and then, after the eye stabilizes for 2 to 3 weeks postoperatively, the lens is adjusted based upon postoperative refraction to the desired spherocylindrical power. The patient wears UV blocking glasses until the lens power has been locked in.

The RxLAL optic is monofocal. In our practice, we have seen patient

AT A GLANCE

- As primary eye care providers, optometrists are in the best position to guide patients through the surgical process, including choosing the best IOLs to fit their lifestyles.

- Advanced technology IOLs now include an adjustable option and lenses that provide an extended range of vision.

- It is best to under-promise and strive to over-deliver in order to best meet patients’ needs.
OPTIONS IN IOLs

### MONOFOCAL

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<th>Alcon</th>
<th>Johnson &amp; Johnson Vision</th>
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<th>RxSight</th>
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<tr>
<td>AcrySof IQ Monofocal IOL</td>
<td>Sensar</td>
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### MULTIFOCAL

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<tr>
<td>AcrySof IQ PanOptix (trifocal IOL)</td>
<td>Tecnis Multifocal IOL</td>
<td>Crystalens AO</td>
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<td>AcrySof IQ ReSTOR</td>
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### EXTENDED DEPTH OF FOCUS

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<td>Tecnis Symfony</td>
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### ACCOMMODATING

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### TORIC

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<td>Tecnis Toric 10L</td>
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<td>Trulign Toric</td>
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<td>Tecnis Symphony Toric</td>
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preferences with this lens lean toward mini-monovision with about 0.75 D to 1.00 D of myopia in the preferred near-vision eye. (This isn’t always the nondominant eye. With cataracts out of the way, patients can truly evaluate the vision they prefer.)

As one of the surgeons at our practice, Bennett Walton, MD, MBA, has said, “The significant advantage of the RxLAL, compared to all other lenses, is the ability to noninvasively change the patients’ prescriptions postoperatively. Not only is the accuracy better, but they get to trial their vision. Rather than guess what they’ll want or simulate through a cataract, it’s the real thing.”

**THE IDEAL RXLAL PATIENT**

The RxLAL is well suited for the person who is focused on clarity and accuracy of vision, not necessarily on reduction of dependence on glasses, although with mini-monovision we have patients who enjoy most of their daily activities without glasses. We counsel patients that getting distance glasses or a custom pair of near-task glasses can improve their vision for driving at night or reading fine print.

Patients with previous refractive surgery, such as RK and LASIK, have surgically altered corneas that can heal unpredictably compared with virgin corneas. These can also be the hardest patients to please. They remember their post-LASIK vision, and they want it back. Traditionally, for these patients, surgeons have performed multiple topographies and additional calculations to get the best outcomes possible. These are ideal RxLAL patients. We no longer have to rely solely on preoperative estimates because we can now postoperatively adjust the lens. A clinical trial specifically evaluating the RxLAL in post-myopic LASIK and PRK patients has already completed enrollment.

Slade & Baker Vision is a clinical trial site for use of the RxLAL in patients who have had refractive surgery. Our surgeons, Stephen G. Slade, MD, FACS, and Dr. Walton, are recommending the RxLAL to most of our postrefractive-surgery patients. The lens is changing the conversation for patients with these complex corneas; we can now postoperatively adjust the lens, rather than having to perform an additional surgery on the cornea.

When optometrists outside our practice work with Drs. Slade and
Walton on an RxLAL patient, we verify the patient’s candidacy for the lens by evaluating pupil size. In order to be able to optimally adjust the entire RxLAL optic, the patient’s pupil must dilate to 7 mm or greater. To ensure patients’ safety for the light adjustments and lock-in procedures, we review their systemic medications, as some can be photosensitizing.

**POSTOPERATIVE CONSIDERATIONS**

In counseling patients preoperatively, addressing one of their biggest worries—the accuracy of the visual outcome of surgery—is made easier by explaining our ability to adjust the IOL power postoperatively. The best part of this technology is the ability of the optometrist to be directly involved in the patient’s postoperative outcome. We work hand-in-hand with our trusted surgeons to achieve the best vision our patients can attain. Generally, after 2 to 3 weeks, the optometrist can measure the refraction, evaluate the visual target with loose lenses, and discuss the findings with the surgeon, who then uses that information to adjust the IOL power.

Patients and doctors must keep in mind that, although the RxLAL helps us to significantly improve the accuracy of outcomes, it is not a fountain of youth. It is important to keep patients grounded in reality and set clear expectations about what the lens can deliver and where this man-made technology has limitations. Currently, FDA labeling for the lens allows up to 2.00 D of spherical adjustment and 2.00 D of cylinder adjustment. In Europe, the labeling for the lens allows adjustment for an additional diopter of astigmatism.

**HOW EDOF WORKS**

The Tecnis Symfony and Symfony Toric EDOF IOLs work by creating a single elongated focal point to provide an extended range of vision. This technology can be a great choice for patients who desire improved spectacle independence and who have healthy eyes. The EDOF lens maintains monofocal-quality vision with a broader focal range than a monofocal IOL can provide.

We discuss with patients the possibility that they will perceive halos or spider-webs in their vision postoperatively. This can be noticeable when driving at night for the first few months as patients adapt to the IOL. We also let patients know that they may still benefit from glasses for reading fine print or reading in low light.

The Symfony lenses are not adjustable; therefore, patients must be made aware of the possibility that a corneal enhancement may be needed if their result is different from what was predicted. Dr. Slade is a coauthor on an impressive data presented at ASCRS in 2017 regarding use of the Symfony IOL in patients who have had refractive surgery; many do very well with the EDOF lens.

Drs. Slade and Walton are also participating in a clinical trial for a new EDOF IOL design that will add even more range of vision.

**MULTIFOCAL OPTIONS**

Multifocal IOLs have been in use for decades. In the United States, these have all been bifocal IOLs, providing near and distant foci through a variety of optical designs. Current low-add versions offer improved visual quality compared with high-add lenses, although their visual quality is not quite as high as that of the EDOF lens. Some patients with an EDOF lens in one eye enjoy excellent quality in that eye and might appreciate a little better near vision in the second eye provided by a bifocal IOL.

The surgeons in our practice are now implanting the AcrySof IQ PanOptix IOL, which received FDA approval earlier this year. Based upon personal communication, many European surgeons have moved from bifocals to trifocals because they provide slightly better range of vision and slightly less optical side effects. (In Europe, trifocal IOLs are available from a number of manufacturers, most of which do not distribute in the United States.) European surgeons report that patients are experiencing better distance, intermediate, and near vision with trifocal IOLs.

Like bifocals, trifocals are associated with some glare and halo side effects. Patient selection is still an important consideration with this technology, as patients must have healthy eyes. Patients with advanced glaucoma, early macular degeneration, or severe dry eye may not be the best candidates.

The limitations we face with EDOF and multifocal (including trifocal) lenses are why the RxLAL adjustable technology is significant. These complicated eyes with comorbidities are not ideal candidates for an IOL that separates light into more than one focus. But these patients can now get the best vision their eyes are capable of with the RxLAL’s postoperative adjustments.

**BE HONEST, BE REALISTIC**

One of the most common questions we hear from patients is, “Will I have to wear glasses after surgery?” Patients want our recommendations regarding which IOLs will be the best for them to potentially reduce their need for glasses after surgery.

As Dr. Slade has said, “We try to under-promise and over-deliver. We want all patients to know that we cannot promise they can throw away their glasses. While we have excellent rates of patients not needing glasses, we can never promise that. It is key to have as many options as possible. Each patient is unique, and the pathway to success is to match the best lens to the individual patient.”

As primary eye care providers for these patients, we optometrists are in the best position to guide them...
DECIDING WHICH LENS IS BEST

Has the cataract patient had RK or hyperopic LASIK/PRK?

Yes: Recommend LAL

If asked to choose, does the patient desire the best clarity and accuracy, or good clarity over a broader range?

Best clarity and accuracy: recommend LAL, especially if successful monovision in past

Good clarity over a broader range: recommend EDOF, trifocal, or low-add multifocal

through the surgical process, including choosing the best IOLs for their lifestyles (see Deciding Which Lens Is Best). We know what spectacle or contact lenses have been successful for these patients. We know whether they prefer monovision or multifocal contact lenses, or if they always go back to a flat-top bifocal. As managing doctors, we can build patient relationships by taking ownership of our patients’ outcomes and embracing conversations about cataract surgery and current IOL technologies.