

Choosing the IOL

Real-world algorithms for lens choice and counseling that prevents regret.

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CRST: How do you choose the right IOL technology for each patient given today's breadth of options?

Uday Devgan, MD, FACS, FRCS: The most helpful way to understand IOL options is to remember that the amount of light (photons) entering the eye is fixed; what changes is how that light is distributed. In youth—without a cataract and with true accommodation—the eye can dynamically shift light energy to any focal range. Ophthalmologists cannot restore perfect, young vision, just as a plastic surgeon cannot recreate a youthful face.

Monofocal IOLs, including monofocal-plus designs, focus available light at a single distance (usually far), maximizing image clarity and contrast sensitivity. Because light is not split between focal points, these lenses offer the best night vision and the least glare or halos, but most patients need spectacles for near tasks.

Extended depth of focus (EDOF) IOLs broaden the focal range to provide some intermediate and near vision by spreading light across a wider zone. They preserve more light per image than trifocal IOLs, offering a balanced trade-off between contrast and functional range.

Trifocal IOLs split incoming light into three focal points—distance, intermediate, and near—providing excellent spectacle independence. The trade-off is reduced contrast sensitivity and a higher likelihood of halos, glare, and suboptimal night vision because each focal point receives fewer photons.

Thinking in terms of light distribution helps align the choice of lens with the patient's priorities.

John F. Doane, MD, FACS: During the past 4 years, my focus during IOL selection

has shifted to quality of vision, which has left me with essentially two options for the majority of my patients and two alternatives for a small minority of my patients. For someone seeking relative freedom from spectacles and contact lenses, I favor the Light Adjustable Lens (LAL; RxSight) because I find the high refractive accuracy and quality of vision that can be achieved with this IOL afford patients the best UCVA and lowest amount of dysphotopsias. With any IOL technology that splits light, the degradation of contrast sensitivity was too great for my liking. With the LAL, I have been able to deliver what patients like at the highest level I have ever been able to achieve. This IOL also allows the most precise astigmatism correction of any lens I have ever used.

The rare patient of mine who does not receive a monofocal spherical lens

Courtesy of Brian Shafer, MD

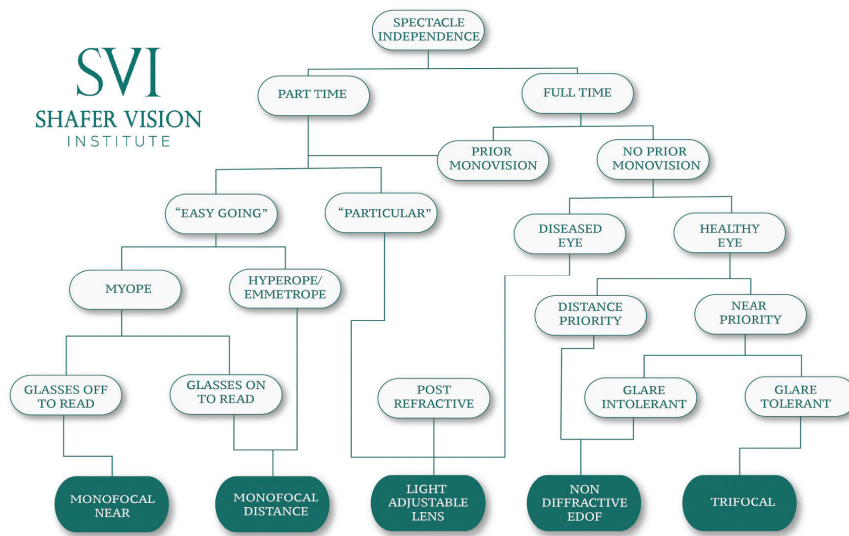


Figure. Dr. Shafer's flowchart for IOL decision-making.

or LAL either has high astigmatism or is functionally monocular and does not want to wear glasses to see at any focal distance. A trifocal IOL is the only implant that can provide all three focal points. When offering this lens option, I inform patients of the incidence of positive and negative dysphotopsias that could be problematic for them postoperatively.

Tal Raviv, MD: I strongly believe refractive cataract surgeons should be familiar with the IOL offerings of at least three US platforms. Limiting IOLs to one platform will limit your success, especially as new presbyopia-correcting IOLs are launched.

If you are not one to immediately use a newly approved presbyopia-correcting IOL, then voraciously learn about it—ideally from colleagues who have implanted it and whom you trust. Once you use the new IOL, be sure to see your own postoperative patients. Subtle differences exist among multifocal and EDOF IOL options. I find that checking near vision myself in these postoperative patients—and refracting

them when necessary—helps close the feedback loop on IOL performance.

When a patient desires as much spectacle independence as possible, I select a multifocal, EDOF, or monofocal-plus blended-vision option based on four factors:

- No. 1: Patient lifestyle and activities;
- No. 2: Patient tolerance of side effects and willingness to undergo an IOL exchange, if necessary;
- No. 3: Ocular comorbidities—primarily of the cornea, retina, or optic nerve; and
- No. 4: The likelihood of achieving a plano result with minimal residual cylinder.

The fourth factor is important because, even if the first three point to a diffractive multifocal, I will often offer alternative guidance (ie, to an LAL with postoperatively adjusted blended vision) for a patient with high hyperopia, high myopia, or significant higher-order aberrations from prior refractive surgery.

Finally, if a diffractive multifocal is selected, subtle differences among the Clareon PanOptix Pro (Alcon), enVista Envy (Bausch + Lomb),

and Tecnis Odyssey (Johnson & Johnson Vision) IOLs direct my choice, and I will not hesitate to pair two different multifocals if needed. Some presbyopia-correcting IOLs offer slightly better distance visual acuity, slightly better near visual acuity, a slightly better dysphotopsia profile, or better tolerance of residual refractive error.

We must all be lifelong students of evolving IOL technology to best serve our patients.

Luke Rebenitsch, MD: When I finished training more than 10 years ago, we did not have nearly the number of options we do today. It is one reason we started a fellowship in my practice: to pass along the knowledge and experience we have gained over the past decade.

Even among monofocal IOLs, not all technology is created equal. We match the lens—even a monofocal—to the cornea and the patient. If the cornea is virgin and healthy, most platforms perform well. That said, lenses from Bausch + Lomb, such as the enVista or LI61AO (SofPort AO), can provide a greater depth of focus because of differences in spherical aberration.

After myopic LASIK, I typically choose an aspheric lens with negative spherical aberration from Johnson & Johnson Vision or Alcon to complement the cornea and gain depth of focus from the delta in spherical aberration. After hyperopic LASIK, I favor a lens with zero spherical aberration or, in some cases, a lens with positive spherical aberration to counterbalance the corneal optics.

Brian Shafer, MD: I use a flowchart (Figure) to guide my decision-making process for most patients. I am open to all critiques of it. I share it with my referral network so that they can understand my decision-making, and it is company agnostic to allow for future technologies that fit within the same classes.

Blake K. Williamson, MD, MPH: I start with the patient's ocular health and visual goals. I ask how important spectacle independence (distance and near) is, what they do for work,

and what they enjoy for leisure. Then, I match the lens technology to the lifestyle they want with the fewest trade-offs. All lenses involve trade-offs. I am explicit about which

compromises a given patient is willing to accept—reading glasses, dysphotopsias, or some reduction in contrast sensitivity—and select accordingly.

CRST: What is your go-to presbyopia strategy for cataract patients, and what is the one trade-off about which you are the most explicit?

Dr. Doane: I offer laser vision correction (LVC) and refractive lens surgery. For the past 8 years, laser-assisted lenticule extraction—specifically the SMILE procedure (Carl Zeiss Meditec)—has constituted approximately 95% of my corneal LVC procedures. PRK is an option for patients who are not ideal lamellar surgery candidates. I offer LASIK to patients with mixed astigmatism and those who do not meet the current parameters for SMILE. I reserve EVO ICL (STAAR Surgical) implantation for patients with refractive errors of -9.00 D and higher but also implant this lens in lower powers if the cornea is thin or abnormal. Refractive lens exchange is the primary option for patients with hyperopia or presbyopia.

Dr. Rebenitsch: In the presbyopia-correcting space, options are even more exciting for patients who want spectacle independence. The advent of trifocal and EDOF lenses has allowed us to make more patients satisfied with their range of vision.

Historically, we have tried both mixing and matching as well as placing the same lens in each eye. There is no perfect lens; I have implanted the enVista Envy, Clareon PanOptix, and Tecnis Odyssey and been happy with all three.

That said, our happiest patients are those for whom we prioritize quality distance vision in the dominant eye and greater depth of focus in the nondominant eye. This does not necessarily mean a monofocal lens

in one eye and a multifocal lens in the other. Our typical approach is to implant an EDOF lens in the dominant eye and a trifocal lens in the nondominant eye. My go-to EDOF IOL is a Tecnis Symphony OptiBlue (Johnson & Johnson Vision), though many surgeons use a Clareon Vivivity (Alcon). For the trifocal, we favor the Odyssey because of its tolerance of residual refractive error and provision of good distance visual acuity with acceptable near visual acuity when a proper refractive target is achieved.

Many of my colleagues use the Envy or PanOptix with great success. To be a candidate for a multifocal lens, the patient should have a virgin cornea or have a low amount of higher-order aberrations, a healthy macula, and a sufficiently clear vitreous status post myopic LASIK.

For patients who have a history of myopic LASIK or radial keratotomy, our go-to is the LAL. Preoperatively, I explain to patients that the refractive target may not be hit initially because of the prior refractive surgery but that we find the LAL offers the best path to the vision they want. Because the LAL has negative spherical aberration, it complements these corneas well.

I generally avoid multifocal lenses for patients who have a history of hyperopic LASIK. Instead, I typically recommend a monofocal IOL with zero spherical aberration and mild blended vision. I counsel patients that a laser enhancement or, rarely, a piggyback lens or IOL exchange may be required to achieve the final result they desire.

It is an exciting time to be a refractive cataract surgeon.

Ehsan Sadri, MD, FACS: When I sit with a cataract patient, I am reminded how fortunate we are to have a wide range of IOL technologies. That variety is powerful, but it also increases the responsibility to personalize treatment. I start with lifestyle—night driving, work demands, reading, digital device use—and then narrow the offerings to what will serve the patient best.

The trade-off I am most explicit about is dysphotopsias. Patients can usually accept readers in certain settings; halos or glare at night are harder to live with. Framing expectations early—this is part of the adaptation curve rather than a complication—builds trust.

For presbyopia correction, I often rely on a combination of EDOF lenses and mini-monovision. It provides functional range without overpromising. I describe the goal as designing vision for how you live, not trying to re-create 20-year-old eyes. Patients respect that honesty, and it supports outcomes that are both visually and emotionally satisfying.

Dr. Shafer: Generally, patients are trifocal IOL candidates until proven otherwise. Exclusionary factors include ocular pathology, binocular vision problems, and an overly demanding personality.

For candidates, my conversation centers on aiming for a full range of vision, with only rare, task-related

spectacles for fine near tasks such as needlepoint, in exchange for some noticeable—but typically tolerable—glare and halos when driving at night.

If the patient is not a candidate, I move quickly toward the LAL, assuming they demonstrate adequate pupillary dilation and the ability to adjust their schedule for the involved postoperative

period. In that scenario, I never promise complete spectacle independence, and I remind patients that every eye, visual pathway, and personality is different, so not everyone adapts to blended vision.

CRST: Mix-and-match, mini-monovision, LAL: Which strategies are you employing?

Y. Ralph Chu, MD: One of the most important innovations my colleagues and I have embraced as refractive cataract surgeons is the LAL. We view it not as a monofocal with a bit of added depth of focus but as a true refractive technology. In our practice, it is not limited to post-LVC patients or those with unusually high expectations—it is a versatile tool that lets patients test-drive their vision. The adjustability gives patients confidence and a sense of control while allowing the surgeon to fine-tune outcomes in a way no other IOL currently permits.

We do not present the LAL as our “best reading lens,” because we also offer trifocal and multifocal options. Still, our patients consistently appreciate the combination of high-quality vision and a customized refractive result. The key to success is a well-trained team—one that understands each patient’s visual goals, performs precise refractions before adjustments, and clearly communicates the benefits and limitations of the technology. This collaborative approach has produced a highly satisfied, empowered patient population.

Dr. Shafer: All of these strategies have a place in my practice. For patients who are intolerant of glare but insist on maximizing their spectacle independence, I place an EDOF lens in the dominant eye and a trifocal lens in the nondominant eye. (I am currently conducting a 376-patient investigator-initiated trial in this population compared with a bilateral trifocal cohort.) A mini-monovision strategy is most common in my nondiffractive EDOF and LAL populations. Overall, 72% of my LAL patients end up with at least a mild blend, and 28% choose an equal target.

CRST: EDOF versus trifocal versus monofocal-plus: Where are you drawing the line today and why?

Dr. Sadri: Right now, EDOF lenses are my workhorse. They provide great distance and intermediate performance with enough near vision to cover most day-to-day needs, and patients adapt quickly. That said, trifocals remain an excellent option for highly motivated patients who want the least dependence

on glasses and are willing to accept some halos or a period of neural adaptation. The key is personality fit—I do not recommend them for patients who are risk-averse or perfectionistic.

Monofocal-plus lenses, especially combined with mini-monovision, are effective for patients who want sharp

optics but hesitate to take on the side effects of presbyopia-correcting technology. I do not present all these lenses as better or worse; I present them like different floor plans for a house. Each has strengths, and each entails trade-offs. My role is to help patients choose the floor plan that matches how they want to live.

CRST: What do you say before surgery that prevents regret after?

Dr. Rebenitsch: This topic is central in our practice: about 80% to 85% of patients receive a multifocal or

EDOF lens. We are proactive about expectations. We tell patients that every individual will experience halos

and glare—often large halos in the early postoperative period. It may look like Christmas at first. With neural

adaptation to the new optics, these phenomena typically diminish over about 2 months, and by 1 year, only about 2% of patients still notice or are bothered by the phenomena.

Because this is an investment in their vision, we emphasize that we will stand by patients throughout the process. We see them at 1 month and again 3 to 4 months after implantation. At the latter visit, if LVC is required, it is included as part of their package—we do not consider it a complication. If, despite LVC (ideally before an Nd:YAG laser capsulotomy) and addressing issues such as floaters, a patient remains unhappy (a small minority of our patients), we offer an IOL exchange at no additional cost. Often, we maintain a multifocal lens in one eye and place a monofocal IOL in the fellow eye, or we convert to blended vision or full distance as appropriate.

We also perform a fair amount of monovision/blended vision with the LAL or with a combination of a monofocal and a multifocal lens. Counseling is similar: neural adaptation typically takes 2 to 12 months. If fine-tuning is required at 3 to 4 months, LVC is included. Among our patients who cannot tolerate monovision, about 2% prefer full distance correction with readers, which we provide at no additional cost.

Bottom line: if patients invest their time, money, and trust in us, we stay with them until they are satisfied.

Dr. Sadri: The most important way to prevent regret is to discuss visual phenomena before surgery, not after. Rings, glare, and halos are not complications; they are part of the process.

I explain, “Your brain is the best lens you have. At first, it will notice rings and glare, but over time, it will learn to filter them out.” Because I have normalized the experience, my patients go into surgery expecting it, and they rarely feel disappointed. I use real-world comparisons—adjusting

to progressive glasses or tuning out background noise—to make the concept relatable. When patients understand that adaptation is a natural process, they feel reassured and less anxious. In my experience, dissatisfaction rarely stems from the lens itself but from unmet expectations. When I set the stage before surgery, patients almost always adapt, and satisfaction follows.

Dr. Shafer: I inform all trifocal patients that, to provide a full range of vision, we must split light. As a natural consequence of splitting light, it is common to notice some glare and halos around point light sources, such as headlights. I emphasize that, if patients notice dysphotopsias, it is not a problem; it means the lens is functioning as intended. I also remind them that most patients can continue to notice halos if they look for them, but the phenomenon typically fades into the background after a couple of months.

Dr. Williamson: For trifocal candidates, I state plainly that achieving a full range of vision requires splitting light and patients will notice halos, glare, or starbursts around point light sources, especially at night. I avoid minimizing language such as “you might notice” and instead set firm expectations.

I frame dysphotopsias as a sign the optics are functioning as intended and explain that most patients find these phenomena fade into the background over the first few months. I also use memorable phrasing such as *no rings, no read* to connect the presence of rings with the benefit of near visual function without reading glasses. ■

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