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Cataract & Refractive Surgery Today

WIDEN THE PATH

Multifocal IOLs
in Your Practice



Patient Selection and Education

BY DEREK N. CUNNINGHAM, OD



I have never understood why many surgeons say that multifocal lenses do not work. I think it is because of poor patient selection or inadequate patient education.

PATIENT SELECTION

The most important factor with patient selection is to make sure that the patient has no preexisting ocular surface disease along the optical pathway that will disturb the light. I am very picky with our topographies. I use multiple technologies to make sure I understand what kind of cornea I am dealing with from the front side and the back surface of the cornea. I also perform an extensive dry eye evaluation to make sure that there are no corneal dystrophies or epithelial membrane dystrophies or other issues that will permanently affect the optics of the eye. On top of that, I spend quite a bit of time taking care of blepharitis. If I suspect vitreomacular interface issues or anything around the macula, I will always do optical coherence tomography to be certain that I know of any preexisting disease and its severity level. I also evaluate patients earlier for glaucoma, because it may affect the outcome that the patient receives from a multifocal lens.

PATIENT EDUCATION

We do not sell lenses; we sell vision. I do not spend a lot of time talking about the technology of the lens; instead, I talk about how patients will see following the surgical procedure. Then, I spend time detailing the limitations of the lens, which my patients appreciate. I let them know that they may get some halos at night but that they usually are not that significant. I tell patients that this is not a perfect technology, but it is a great technology that is going to afford them more spectacle independence for the rest of their lives. The key to their satisfaction is educating them on what they are going to get and what they are not going to get.

I do not like the term *premium product*. I prefer to say to patients, "Do you want to see far away or up close or both?" It is my job to explain it on a level that they will understand. I think we should get away from this premium idea and instead focus on giving patients varying degrees of vision. Patients will usually select the fullest range of vision that is appropriate for their eyes or the so-called premium IOL.

INTERMEDIATE VISION

In the past, a limiting factor for multifocal lenses was offering patients good intermediate vision. Patients are getting lenses

"Patients value this service, because it allows them to be less dependent on spectacles, and it potentially frees them from presbyopia for the rest of their lives."

put in at younger ages, and they are far more dependent on smartphones and tablets. They are in dynamic environments that require intermediate vision. The launch of Tecnis low-add multifocal IOLs (Abbott Medical Optics) with the option to tailor the multifocal power towards patients' needs has been very significant for me. It is an opportunity to expand the market into the younger age demographic.

I find the multifocal lens material to be very consistent. It is not associated with glistenings, and night halos have decreased in our experience. It is easy for my surgeon to put in, and I get very consistent results every time. Unlike the other technologies in the premium market, the multifocal lens is relatively easy to use. The biggest challenge is making sure the lens is centered. Centration is always an important issue with any lens but especially with a multifocal lens. If you use proper surgical technique and understand what you are doing, it is a straightforward lens to put in and manage perioperatively.

I strive to consistently achieve the same results, which takes time and effort. It is not something that you can do one or two surgeries and expect to achieve excellent patient experiences. But, if you make a commitment to this, you will provide a valuable service that very few are offering. Patients value this service, because it allows them to be less dependent on spectacles, and it potentially frees them from presbyopia for the rest of their lives. It is a big deal. You can build your practice around this technology. ■

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Flexibility and Preoperative Planning

BY STEVEN J. DELL, MD



Most surgeons believe that there are significant compromises in visual quality that come with multifocal IOLs. I do not think this perception is accurate when it refers to the latest generation of multifocals.

ADDED FLEXIBILITY

I started years ago with the ReSTOR multifocal IOL (Alcon), which was the first of the modern diffractive multifocals available. The Tecnis multifocal +4.0 D IOL (Abbott Medical Optics) was a big step up in visual quality over the ReSTOR. I continue to use the Tecnis multifocal +4.0 D IOL to this day, but it has good reading at about the 13-inch zone, which was fairly widely separated from the distance point of focus, so there would be a gap in the middle in the intermediate range where vision really was not that great. Patients either had to get closer to or farther away from an object to see it.

The two additional powers of multifocal lenses from Abbott Medical Optics, the Tecnis low-add multifocal IOLs (Abbott Medical Optics), give me a lot more flexibility as to where to place the patient's near vision. With the +3.25 D and the +2.75 D lenses, I can customize the solution according to the patient's lifestyle. If we have a patient who spends a lot of time on a desktop or a laptop and wants vision closer to 20 inches or 16 inches, I can select an appropriate multifocal for that range. If you have someone who is 5 feet tall with short arms who likes to sew, that individual might want to have his or her near point placed closer to his or her eye, whereas if you have a person who is over 6 feet tall who spends a lot of time on a tablet, it might be more appropriate to place that patient's near point of focus farther away from his or her eye.

PLANNING AND SURGICAL TECHNIQUE

Premium lens patients need particular attention paid to their ocular surface. I am vigilant about diagnosing and treating ocular surface diseases such as dry eye or allergy. It is important to identify preoperative retinal conditions like epiretinal membrane or macular edema with the clinical examination or through optical coherence tomography.

I also have to consider his or her degree of astigmatism and overall corneal power. It is important to have a strategy in place to deal with residual refractive error in these lenses. Specifically, if a patient has a leftover glasses prescription, you, the surgeon, need to have a way to deal with that, through laser vision correction, IOL exchange, astigmatic keratotomy,

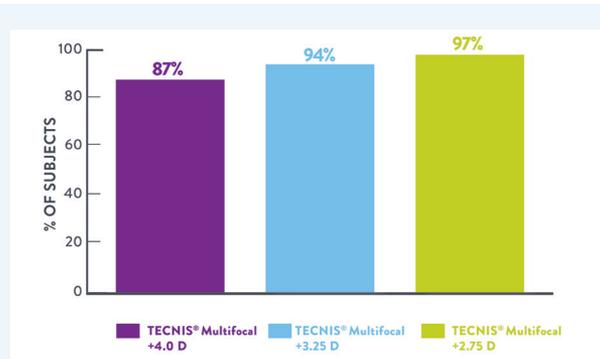


Figure. Patient satisfaction with Tecnis multifocals: +4.0 D, +3.25 D, and +2.75 D.

or a referral. If you leave patients with an unclosed refractive loop, which is essentially leaving them only partially treated, that really reduces the level of patient satisfaction with these implant lenses.

The techniques I use to implant these multifocal lenses are familiar to any cataract surgeon. I find it is helpful to stay within a particular lens platform throughout the various offerings that we have for cataract surgery. For example, I will use a monofocal and a toric lens that are based upon the same 1-piece Tecnis platform, and it helps to have my surgical staff trained on the same technique, the same injectors, regardless of whether it is a multifocal, a toric, or a standard monofocal IOL. Centration of a multifocal is important, so I endeavor to place it as closely aligned with the visual axis as I can get it.

It has been somewhat revolutionary for my practice to have these low-add multifocal IOLs available, because the satisfaction with them has been remarkable. That is borne out by the data from the clinical trial leading to their approval, where you saw very high levels of patient satisfaction (Figure) and very high levels of patients who indicated that they would have the same lens again if they had to do it all over again.¹ ■

1. Updated DFU for the Tecnis Multifocal Foldable Acrylic Intraocular Lens. Abbott Medical Optics. 2014. www.accessdata.fda.gov/cdrh_docs/pdf/P980040S049d.pdf. Accessed February 22, 2016.

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Patient Screening and Surgical Technique

BY NICOLE R. FRAM, MD



The most important criteria in patient selection for a multifocal IOL are a comprehensive history and evaluation. I begin by assessing the patient's needs and daily activities. If a patient desires spectacle independence and understands the caveats of IOL technology, then I begin the discussion regarding multifocal IOLs.

PATIENT SCREENING

The next step is to carefully examine the ocular surface for the presence of pathology such as dry eye or corneal irregularities. Specifically, I determine whether the patient has regular or irregular astigmatism by obtaining corneal topography. Typically, if the corneal astigmatism is greater than 1.50 D and cannot be easily corrected with limbal relaxing incisions, I do not move toward multifocal IOLs. Emmetropia is the most important factor in establishing patient satisfaction when using multifocal technology. Unless I can treat most of their refractive error in the immediate postoperative period, it is my experience that patients will not be happy with the results of a multifocal IOL.

I am obsessive about preoperative planning and use multiple technologies to confirm IOL selection. I run various formulas on both an IOLMaster (Carl Zeiss Meditec) and a Lenstar LS900 (Haag-Streit). I also use wavefront aberrometry to investigate the optical pathway, higher-order aberrations, and angle kappa. In addition, I carefully examine the retina and optic nerve. All patients are examined with a careful fundoscopic examination and spectral domain macular OCT. I will avoid multifocal implementation in patients with maculopathy, including drusen and epiretinal membranes. Further, it is extremely comforting to see that a patient has a posterior vitreous detachment preoperatively, as he or she is less likely to develop an epiretinal membrane postoperatively that may interfere with optical quality after multifocal implantation.

SURGICAL TECHNIQUE

For most patients, I perform laser cataract surgery with the Catalys Precision Laser System (Abbott Medical Optics) that offers the scanned capsule centration of the capsulotomy. This allows for centration of the capsulotomy on the center of the capsular bag rather than the pupil. I use intraoperative aberrometry to confirm the lens power selection and residual

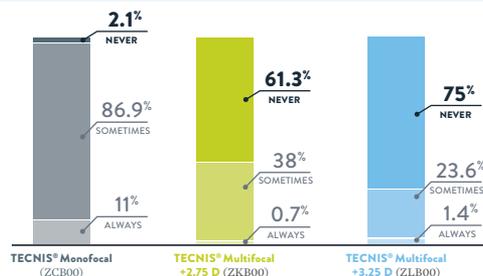


Figure. Spectacle independence for patients with Tecnis monofocal, multifocal +2.75 D, and multifocal +3.25 D.

corneal astigmatism. After implantation of the lens, I use the centration technique described by Daniel Chang, MD, and George Waring, MD, using the coaxial light of the microscope, the patient's corneal light reflex, and the purkinje images to center the lens. All of these measures increase reliability in my surgical outcomes.

CUSTOMIZING VISION

The low-add multifocal IOL platform allows the surgeon to achieve quality of vision across near, intermediate, and distance with customization of the range of vision. I tell patients that a multifocal lens will allow for more flexibility in their vision. They may occasionally need glasses for distance driving or reading up close for a long time. However, many patients find that they rarely need to wear their reading glasses (Figure).

The most common complaints from the previous generations of multifocals were halos and problems with intermediate vision. With the Tecnis low-add multifocal IOLs (Abbott Medical Optics), I hear fewer complaints about halos and have more flexibility in the intermediate range. In my practice, I have primarily used the +2.75 D lens. If a patient needs a little bit closer range, I can move up to the +3.25 D lens. With careful patient selection, I have found that patients are thrilled with the full range of vision. ■

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INDICATIONS: The OptiMedica Catalys Precision Laser System is indicated for use in patients undergoing cataract surgery for removal of the crystalline lens. Intended uses in cataract surgery include anterior capsulotomy, phacofragmentation, and the creation of single-plane and multi-plane arc cuts/incisions in the cornea, each of which may be performed either individually or consecutively during the same procedure. See indications and important safety information continued on page 7.

Solving the Vision Gap and Standardizing the Educational Process

BY DAMIEN GOLDBERG, MD



The adoption rate of multifocal lenses is low. It speaks to surgeons' comfort level with the technology in terms of counseling the patient and managing the outcomes. Nevertheless, it can be an excellent technology if used in the right patient population.

THE IDEAL CANDIDATE

To determine the good candidates, I perform topography to find any irregularities in the cornea. I then perform optical coherence tomography to make sure the retina looks healthy. I also perform a full examination to determine if there is anything unusual in the anatomy of the lens that would affect the outcome or anatomy of the cornea. If the patient has macular degeneration or a macular pucker, I explain why he or she is not an ideal candidate.

A SOLUTION TO THE VISION GAP

I was an early adopter of multifocal technology. When the early multifocals came out, the first comments from our patients were, "It is good, but I have this gap in my vision. I just feel like there is something missing." Tecnis low-add multifocal IOLs (Abbott Medical Optics) provide the +2.75 D and +3.25 D lenses that meet this need. Nowadays, intermediate vision is even more important, because most patients are on smartphones or tablets.

If patients want a full spectrum of vision, I recommend the +2.75 D lens. I like to put it in the dominant eye and see how the patient adjusts. Based on his or her feedback, I can make adjustments for the fellow eye. Daniel Chang, MD, who is really a guru in this space, recommended that I try putting the +2.75 D lens in both eyes, and my patients have been very happy with the outcomes.

Overall, I feel more confident because the gap issue has really been addressed by the +2.75 D and +3.25 D lenses. It gives me more options: I now have a multifocal for the person who wants good reading, and I have a multifocal for the person who wants to function more at work.

EDUCATING PATIENTS

Because I have been using multifocals for 10 years, my surgery coordinators already know how to present the different lenses to patients. It is important that the educational process be standardized, starting with the office staff and continuing with your technicians.

The best way to educate patients is to hand them information while they are in the dilating process or mail them a simple packet prior to coming into the office. Without it being overwhelming, the information should focus on the different technologies that are available. When the patients are in the office, I encourage them to watch a short video that explains the different choices: a basic cataract implant, an all-distance package, and then a full-range vision package. I then break it down into a few more categories so the patient can understand the different choices. If patients are educated before I walk into the room, it makes my time with them more valuable.

I also ask patients about their needs. Do they want great distance vision? Are they okay with wearing reading glasses? Does the idea of reducing their need for glasses sound appealing? If the patient wants to have increased spectacle independence, the multifocal is a great option.

I encourage those of you who may have felt frustrated with the earlier generations of multifocals to take a look at the Tecnis low-add multifocals. I have confidence in my ability to help patients with the +2.75 D and the +3.25 D lenses. Patients will find that their intermediate vision is good, and you may be surprised by how many of them will have great reading vision as well. I cannot say enough good things about these two lenses. Patients are thrilled with what they can do. ■

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Getting Past the Obstacles

BY FRANCIS MAH, MD



There are three main obstacles for surgeons who want to include multifocal IOLs in their practice. First, most cataract surgeons believe they have to invest in the latest diagnostic devices in order to get decent results. Second, some surgeons may have had poor patient outcomes with the older multifocal technology lenses and have now sworn off all multifocal lenses. Third, some surgeons may feel awkward speaking to patients about multifocals because money is involved.

THE TECHNOLOGY MYTH

There is a misperception that surgeons have to invest in expensive technology to get started with multifocals and premium IOLs in general, but most of the technology that they need is already in their practices. The typical eye examination that they do every day is all that is needed to evaluate the overall health of the eye. If there is a concern about a loss of contrast sensitivity such as drusen, macular pucker, or moderate to advanced glaucoma, a multifocal should be avoided. In terms of corneal health, a simple topographer is all that is typically needed to assess that the cornea is regular. In order to optimize surgical outcomes, surgeons should have an optical biometry machine such as the IOLMaster (Carl Zeiss Meditec) or Lenstar LS900 (Haag-Streit) with optimized A-constants. Fortunately, most surgeons have one of these devices or have access to them. You can obtain good results without investing in technologies such as the ORA System (Alcon), femtosecond lasers, Verion Image Guided System (Alcon), and Cassini (i-Optics). These technologies can improve outcomes once the surgeon has decided to include multifocals in the practice; however, early on these technologies are not an absolute necessity.

A RANGE OF LENSES TO MEET PATIENT EXPECTATIONS

The Tecnis low-add multifocal IOLs (Abbott Medical Optics) really enhance the surgeon's ability to more closely meet the demands and expectations of the patients. For example, if a patient is requesting a multifocal lens, I typically implant the +2.75 D lens. I choose that one because it has excellent distance-dominant vision, and it has a lower

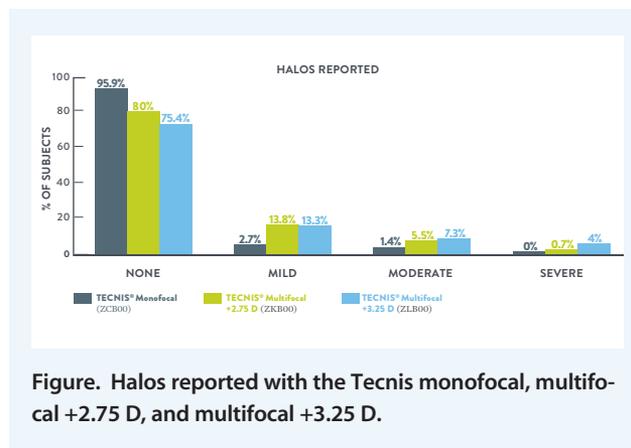


Figure. Halos reported with the Tecnis monofocal, multifocal +2.75 D, and multifocal +3.25 D.

reported incidence of difficulty with night vision than the original Tecnis multifocal (+4.0 D). Less than 10% of patients reported any difficulty at all with nighttime vision with the +2.75 D lens.¹ Most of my patients are quite happy with the +2.75 D lens. The key is really being able to refine and meet the patient's expectations.

The biggest advancement with the low-add lenses is the reduction of halos (Figure) and glare at night compared to the +4.0 D. More patients are able to enjoy the technology due to the broad range and improvements. In the past, with other multifocal lenses, many patients complained about waxy vision, vision that was not sharp either at near or at distance. It was very discouraging. The older multifocal lenses also had a gap where intermediate vision was not as great. The Tecnis multifocal full range of adds has changed all that. Patients' satisfaction has been through the roof in my practice. It is fantastic technology that has broadened the number of patients who benefit from multifocal technology.

PATIENT SELECTION

I do not use multifocals on patients with retinal conditions or anything that compromises contrast sensitivity. Patients with advanced glaucoma, macular degeneration, or significant drusen in the macula are not good candidates. Also, I do not use multifocals in patients with symptomatic epiretinal membranes that are causing distortion or in patients with macular edema. Patients with irregular astigmatism, or those who have had a significant

WARNINGS: Some visual effects associated with multifocal IOLs may be expected because of the superposition of focused and unfocused images. These may include a perception of halos/glare around lights under nighttime conditions. It is expected that, in a small percentage of patients, the observation of such phenomena will be annoying and may be perceived as a hindrance, particularly in low illumination conditions. On rare occasions, these visual effects may be significant enough that the patient will request removal of the multifocal IOL. See indications and important safety information continued on page 7.

keratorefractive correction with older-technology lasers or radial keratotomy who now have an irregular pattern of astigmatism, are also not ideal candidates. Before implanting an IOL, I make sure the eye is healthy. I have found these low-add lenses are much more inclusive. You still need to be cautious and make sure to eliminate potential pitfalls, but in general, these low-add lenses have allowed more patients to benefit from multifocals.

TALKING ABOUT OPTIONS, NOT MONEY

The low-add lenses allow for a much easier conversation when explaining multifocals to patients because you will be a believer in the technology. You will be much more passionate. I believe in them so much that, if I needed cataract surgery, I would get them. I would choose to have these implanted in myself, in my mother, and in my father.

Instead of thinking it is a conversation with your patients about money, think of it as an informed consent discussion about all the possible options. You are making sure that your patients are aware of all of the technology that is available to them, which includes an improved

range of vision. The discussion then shifts from selling to a conversation about new technology and options that will potentially enhance their vision.

Ignoring the technology is a huge mistake. It is a disservice to our patients and to our profession. I would encourage all ophthalmologists to at least follow the technology, even if they choose not to incorporate it at this time. ■

1. Updated DFU for the Tecnis Multifocal Foldable Acrylic Intraocular Lens. Abbott Medical Optics. 2014. www.accessdata.fda.gov/cdrh_docs/pdf/P980040S049d.pdf. Accessed February 22, 2016.

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INDICATIONS AND IMPORTANT SAFETY INFORMATION for the TECNIS Multifocal Family of 1-Piece IOLs

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

ATTENTION: Reference the Directions for Use for a complete listing of Indications and Important Safety Information.

INDICATIONS: The TECNIS Multifocal 1-Piece intraocular lenses are indicated for primary implantation for the visual correction of aphakia in adult patients with and without presbyopia in whom a cataractous lens has been removed by phacoemulsification and who desire near, intermediate, and distance vision with increased spectacle independence. The intraocular lenses are intended to be placed in the capsular bag.

WARNINGS: Physicians considering lens implantation under any of the conditions described in the Directions for Use should weigh the potential risk/benefit ratio prior to implanting a lens. Some visual effects associated with multifocal IOLs may be expected because of the superposition of focused and unfocused images. These may include a perception of halos/glare around lights under nighttime conditions. It is expected that, in a small percentage of patients, the observation of such phenomena will be annoying and may be perceived as a hindrance, particularly in low illumination conditions. On rare occasions, these visual effects may be significant enough that the patient will request removal of the multifocal IOL. Contrast sensitivity is reduced with a multifocal lens compared to a monofocal lens. Therefore, patients with multifocal lenses should exercise caution when driving at night or in poor visibility conditions. Patients with a predicted postoperative astigmatism $>1.0D$ may not be suitable candidates for multifocal IOL implantation since they may not fully benefit from a multifocal IOL in terms of potential spectacle independence. Care should be taken to achieve centration, as lens decentration may result in patients experiencing visual disturbances, particularly in patients with large pupils under mesopic conditions. Multifocal IOL implants may be inadvisable in patients where central visual field reduction may not be tolerated, such as macular degeneration, retinal pigment epithelium changes, and glaucoma. Patients with certain medical conditions may not be suitable candidates for IOLs. Consult the Directions for Use for more information.

PRECAUTIONS: Prior to surgery, the surgeon must inform prospective patients of the possible risks and benefits associated with the use of this device and provide a copy of the patient information brochure to patient. There were no patients 21 years old or younger included in the clinical studies; therefore there are insufficient clinical data to demonstrate safety and effectiveness in this age group. The central one millimeter area of the lens creates a far image focus, therefore patients with abnormally small pupils (~1mm) should achieve, at a minimum, the prescribed distance vision under photopic conditions; however, because this multifocal design has not been tested in patients with abnormally small pupils, it is unclear whether such patients will derive any near vision benefit. Autorefractors may not provide optimal postoperative refraction of multifocal patients; manual refraction is strongly recommended. In contact lens wearers, surgeons should establish corneal stability without contact lenses prior to determining IOL power. Care should be taken when performing wavefront measurements as two different wavefronts are produced (one will be in focus (either far or near) and the other wavefront will be out of focus); therefore incorrect interpretation of the wavefront measurements is possible. The long-term effects of intraocular lens implantation have not been determined; therefore implant patients should be monitored postoperatively on a regular basis. Secondary glaucoma has been reported occasionally in patients with controlled glaucoma who received lens implants. The intraocular pressure of implant patients with glaucoma should be carefully monitored postoperatively. Do not resterilize or autoclave. Use only sterile irrigating solutions such as balanced salt solution or sterile normal saline. Do not store in direct sunlight or over 45°C (113°F). Emmetropia should be targeted as this lens is designed for optimum visual performance when emmetropia is achieved. Please refer to the specific instructions for use provided with the insertion instrument or system for the amount of time the IOL can remain folded before the IOL must be discarded. When the insertion system is used improperly, the haptics of the IOL may become broken. Please refer to the specific instructions for use provided with the insertion instrument or system.

ADVERSE EVENTS: The most frequently reported adverse event that occurred during the clinical trials of the TECNIS Multifocal lenses was surgical re-intervention, most of which were non-lens-related. Lens-related re-interventions occurred at a rate of 0.6% to 1.0%. Other surgical re-interventions included lens exchanges (for incorrect IOL power), retinal repair, ruptured globe repair, macular hole repair, removal of retained lens material, treatment injections for cystoid macular edema and iritis, and blepharoplasty.

INDICATIONS AND IMPORTANT SAFETY INFORMATION for the CATALYS Precision Laser System Rx Only

INDICATIONS: The OptiMedica Catalys Precision Laser System is indicated for use in patients undergoing cataract surgery for removal of the crystalline lens. Intended uses in cataract surgery include anterior capsulotomy, phacofragmentation, and the creation of single plane and multi-plane arc cuts/incisions in the cornea, each of which may be performed either individually or consecutively during the same procedure.

CONTRAINDICATIONS: Should not be used in patients with corneal ring and/or inlay implants, severe corneal opacities, corneal abnormalities, significant corneal edema or diminished aqueous clarity that obscures OCT imaging of the anterior lens capsule, patients younger than 22 years of age, descemetocoele with impending corneal rupture, and any contraindications to cataract surgery.

IMPORTANT SAFETY INFORMATION: Mild Pectchieae and subconjunctival hemorrhage can occur due to vacuum pressure of the suction ring. Potential complications and adverse events include any of those generally associated with cataract surgery.

ATTENTION: Reference the labeling for a complete listing of Important Indications and Safety Information.

