Retractive Cataract Surgery: Success through TECNIS Personalized Vision

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Patients presenting for cataract surgery represent a heterogeneous group in regard to goals for postoperative vision. In general, today’s cataract surgery patients are more interested than previous generations in wearing glasses less often postoperatively. Different patients, however, have different vision needs because of their individual lifestyles. Recognizing this diversity within the cataract surgery patient population, I have found a personalized approach to pseudophakic correction that is consistent with the different functional profiles of available presbyopia-correcting intraocular lenses (IOLs) with patients’ vision needs, provides an effective strategy for meeting their goals, and achieves satisfaction after surgery. This personalized approach uses the TECNIS® portfolio of presbyopia-correcting lenses as its foundation and the TECNIS Symfony® IOL as its cornerstone.

TECNIS Symfony® IOL

The TECNIS Symfony® IOL is built on the familiar platform of other TECNIS® IOLs and is made of the same time-tested, clear hydrophobic acrylic material. Featuring a novel diffractive optic that combines two complementary proprietary diffractive technologies and includes compensation for positive corneal spherical aberration, the TECNIS Symfony® IOL is an extended-depth-of-focus lens that has been designed to provide quality vision over a continuous range from distance to near.

Unlike the bifocal optic of diffractive multifocal IOLs that splits light into two discrete foci, the TECNIS Symfony® IOL optic incorporates an echelle design elongating the focus, which results in a defocus curve with a single broad peak (Figure 1). Its second diffractive technology serves to enhance visual quality by reducing the eye’s intrinsic chromatic aberration, which causes blur and loss of contrast. As with all TECNIS® IOLs, the TECNIS Symfony® has ~0.27 μm of negative spherical aberration on its anterior surface that offsets the full spherical aberration of the average cornea for better quality of vision.

With a toric version of the TECNIS Symfony® IOL available in cylinder powers of +1.50 D to +3.75 D at the IOL plane, I can offer the benefits of this presbyopia-correcting lens to patients with significant pre-existing corneal astigmatism.

Results from the pivotal trial in the United States investigating the TECNIS Symfony® IOL show that it provides excellent uncorrected vision at intermediate and far distances. It also provides functional uncorrected vision at near, with a low incidence of nighttime visual symptoms.

The personalized strategy

Gathering information about a patient’s vision needs and goals is the first step in creating a personalized vision strategy. In my practice, patients who schedule a presurgical consultation visit are sent a packet that includes information about surgical and IOL options. The cover letter asks patients to review the materials and explains that there have been a lot of advances in cataract surgery recently and that new technologies are being used, including a laser for performing certain surgical steps and special lens options allowing patients to wear glasses less after the surgery.

The packet also contains the Johnson & Johnson Vision cataract patient survey. Featuring seven questions, this simple tool gives helpful insights into a patient’s vision needs, goals, current problems, and personality. More specifically to my practice, it allows me to start the conversation about IOL options at the consultation visit.

Patient responses on the cataract patient survey are consistent with the idea that more people are staying active as they age, continuing to work and drive, and relying on electronic devices (eg, computers, cellphones, tablets). Consequently, a large segment of cataract surgery patients are particularly motivated to have good uncorrected vision at far and intermediate distances. If these patients are willing to accept a need for glasses when reading fine print, I recommend bilateral TECNIS Symfony® IOL implantation.

For patients who depend more on near vision and are interested in wearing glasses less for all distances postoperatively, implanting the TECNIS Symfony® IOL bilaterally in a micromonovision approach or the TECNIS Symfony® IOL in the dominant eye and a TECNIS® multifocal IOL +3.25 D in the nondominant eye are excellent solutions in my experience. This personalized approach combining the TECNIS Symfony® IOL and the TECNIS® multifocal IOL +3.25 D is also supported by findings of a study conducted by Dr. Jeffrey Machat.2 The Canadian study included 24 patients who were followed prospectively. Results from binocular visual acuity testing performed at 90 days after surgery showed that 96% of patients saw 20/20 or better uncorrected at distance, the same percentage achieved 20/25 uncorrected intermediate vision, and 91% of patients saw 20/25 or better uncorrected at near.

Night vision needs are another consideration when recommending surgery with the TECNIS Symfony® and TECNIS® multifocal IOLs. Because the TECNIS Symfony® IOL is a diffractive lens, patients may perceive halos, glare, or starbursts around light sources at night. All patients are informed about these potential symptoms preoperatively. I explain that these are inherent to the lens design for improving near and intermediate vision and may improve with time. Patients who believe they might be significantly bothered by these symptoms may not be good candidates for the TECNIS Symfony® or TECNIS® multifocal IOLs.

Creating and refining the surgical plan

Delivering the desired functional outcome for patients involves choosing the right refractive target and hitting it postoperatively. When the goal is to maximize uncorrected intermediate and distance vision and I am implanting the TECNIS Symfony® IOL bilaterally, I generally aim for plano in both eyes. I also aim for plano in both eyes when combining a TECNIS Symfony® IOL with the TECNIS® multifocal IOL +3.25 D for patients wanting better reading vision. When planning to implant a TECNIS Symfony® IOL bilaterally in the latter cases, I plan plano in the dominant eye and low myopia, about −0.5 D, in the nondominant eye.

Although I try to set expectations for near vision with the TECNIS Symfony® IOL during the preoperative consultation, it is not until...
patients are able to experience the functional result that they can truly judge whether the lens will meet their needs. Therefore, I spend time evaluating visual performance and patient satisfaction after the first eye procedure and use the information to assess whether I should modify my original IOL strategy.

If I have planned for bilateral TECNIS Symfony® IOL implantation with a plano target in both eyes and the patient wants a little better reading vision but is still prioritizing quality vision for distance and intermediate, I will still implant the TECNIS Symfony® IOL in the second eye but aim for slight myopia. Alternatively, I will switch to the TECNIS® multifocal IOL +3.25 D if a patient expresses a strong interest in better reading vision.

To optimize refractive outcome predictability, I take care in all cases to get accurate measurements for the IOL power calculation. For IOL power calculation in nontoric cases, I use the Barrett Universal II formula unless the patient has a history of corneal compensation in this lens, refraction measured with an autorefractor is not recommended.

Refractive outcome predictability can also be improved by using data from refractive measurements to refine personal lens constants. It is important to note that a “push plus” technique should be used when refracting a patient with a TECNIS Symfony® IOL (Table). Because of the chromatic aberration compensation in this lens, refraction measured with an autorefactor is not recommended.

Table. Steps for measuring refraction after TECNIS Symfony® IOL implantation

1. Start with a sphere of +1.50 D and assess visual acuity
2. Start reducing in steps of −0.25 D until the patient sees the most number of letters with the least amount of minus
3. Affirm if after reducing sphere by another step or two of −0.25 D, visual acuity remains the same

Conclusion

The personalized vision approach to IOL selection using the TECNIS® portfolio of lenses is a patient-centered strategy that optimizes outcomes by taking advantage of the different performance profiles of the various IOLs. Being successful, however, also requires spending time with patients to explain the options, understand their needs, and assess their outcomes. Listening to patients is the key to their satisfaction. Not only is it the basis for creating a personalized surgical plan that will meet patient goals but it also has value for improving patient perceptions of the entire care experience.

REFERENCES

1. TECNIS Symfony® IOL DFU.
2. DOP2018CT4021.

INDICATIONS and IMPORTANT SAFETY INFORMATION for TECNIS Symfony® and TECNIS Symfony Toric Extended Range of Vision IOLs

INDICATIONS FOR USE

The TECNIS Symfony Extended Range of Vision IOL, Model ZXR00, is indicated for primary implantation 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 an extended depth of focus. Compared to an aspheric monofocal IOL, the lens provides improved intermediate and near visual acuity, while maintaining comparable distance visual acuity. The Model ZXR00 IOL is intended for capsular bag placement only. The TECNIS Symfony Toric Extended Range of Vision IOLs, Models ZXT150, ZXT225, ZXT300, and ZXT375, are indicated for primary implantation for the visual correction of aphakia and for reduction of residual refractive astigmatism in adult patients with greater than or equal to 1 diopter of preoperative corneal astigmatism, in whom a cataractous lens has been removed. The lens mitigates the effects of presbyopia by providing an extended depth of focus. Compared to an aspheric monofocal IOL, the lens provides improved intermediate and near visual acuity, while maintaining comparable distance visual acuity. The Model Series ZXT IOLs are intended for capsular bag placement only.

WARNINGS

Patients with any of the conditions described in the Directions for Use may not be suitable candidates for an intraocular lens because the lens may exacerbate an existing condition, may interfere with diagnosis or treatment of a condition, or may pose an unreasonable risk to the patient’s eyesight. Lenses should not be placed in the ciliary sulcus. May cause a reduction in contrast sensitivity under certain conditions, compared to an aspheric monofocal IOL; fully inform the patient of this risk before implanting the lens. Special consideration should be made in patients with macular disease, amblyopia, corneal irregularities, or other ocular disease. Inform patients to exercise special caution when driving at night or in poor visibility conditions. Some visual effects may be expected due to the lens design, including: a perception of halos, glare, or starbursts around lights under nighttime conditions. These will be bothersome or very bothersome in some people, particularly in low-illumination conditions, and on occasions, may be significant enough that the patient may request removal of the IOL. Rotation of the TECNIS Symfony Toric IOLS away from their intended axis can reduce their astigmatic correction, and misalignment >30° may increase postoperative refractive cylinder. If necessary, lens repositioning should occur as early as possible prior to lens encapsulation.

PRECAUTIONS

Interpret results with caution when refracting using autorefractors or wavefront aberrometers that utilize infrared light, or when performing a duochrome test. Confirmation of refractometry with maximum plus manifest refraction technique is recommended. The ability to perform some eye treatments (e.g. retinal photocoagulation) may be affected by the optical design. Target emmetropia for optimal visual performance. Care should be taken to achieve IOL centration, as lens decentration may result in a patient experiencing visual disturbances under certain lighting conditions. For the TECNIS Symfony Toric IOL, variability in any preoperative surgical parameters (e.g. keratometric cylinder, incision location, surgeon’s estimated surgically induced astigmatism and biometry) can influence patient outcomes. Carefully remove all viscoelastic and do not over-inflate the capsular bag at the end of the case to prevent lens rotation.

SERIOUS ADVERSE EVENTS

The most frequently reported serious adverse events that occurred during the clinical trial of the TECNIS Symfony lenses were cystoid macular edema (2 eyes, 0.7%) and surgical reintervention (treatment injections for cystoid macular edema and epiphiitis, 2 eyes, 0.7%). No lens-related adverse events occurred during the trial.

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

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

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 should weigh the potential risk/benefit ratio for any conditions described in the Directions for Use that could increase complications or impact patient outcomes. Multifocal IOL implants may be inadvisable in patients where central visual field reduction may not be tolerable, such as macular degeneration, retinal pigment epithelium changes, and glaucoma. The lens should not be placed in the ciliary sulcus. Inform patients about the possibility that a decrease in contrast sensitivity and an increase in visual disturbances may affect their ability to drive a car under certain environmental conditions, such as driving at night or in poor visibility conditions.

PRECAUTIONS: Prior to surgery, 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 the patient. The long term effects of intraocular lens implantation have not been determined. Secondary glaucoma has been reported occasionally in patients with controlled glaucoma who received lens implants. Do not reuse, resterilize or autoclave.

ADVERSE EVENTS: The rates of surgical re-interventions, most of which were non-lens related, were statistically higher than the FDA grid rate for both the ZMB00 (+4.00 D) and ZLB00 (+3.25 D) lens models. For the ZMB00, the surgical re-intervention rates were 3.2% for first eyes and 3.3% for second eyes. The reintervention rate was 3.3% for both the first and second eyes in the ZLB00 group.

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