Welcome to ReSOURCE!

This marks the inaugural issue of ReSOURCE—a content-specific digital newsletter which will be presented quarterly. This newsletter will provide the latest news and information about Presbyopia Correcting Intraocular lenses (PCIOLs).

We have recruited some of the leading ophthalmology surgeons in practice today to present to you over the course of the next year up-to-date information on cataract surgery and lens replacement options. We will also cover several additional important areas such as diagnostics, patient selection, patient education and journey and even some implantation pearls. Our goal is to keep you fully informed, start the conversation on these topics, and help educate you with the latest available content.

We hope you find this newsletter an informative, entertaining and helpful experience. It is our pleasure to provide it to you as yet another way Alcon seeks to support the vision goals of your patients and your practice.

Thank you for reading!

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The Role and Importance of Corneal and Biometry Measurements Prior to Lens Replacement Surgery
Joseph Sokol, MD
Determining Patient Candidacy for Multifocal Lenses

Contributing Writer: Jonathon Talamo, MD

It is critical for surgeons to determine if a patient would be a good candidate for multifocal lenses. This is an important first step that should be discussed during the pre-surgery counseling process. If not, patients with unrealistic expectations could become dissatisfied. Surgeons should take the time to explain what these lenses will and will not accomplish. For instance, the surgeon should explain to the patient that, while multifocal intraocular lenses (IOLs) represent a ground-breaking technological advance in cataract surgery, they are not appropriate for everyone but can be extremely beneficial for those who are. It is helpful for the surgeon to explain how the lens works and how different focusing functions tend to work best in different lighting conditions (e.g. reading is best in good light and more difficult in dim light, where vision is often more important). Even if a patient appears to be a good candidate for a multifocal lens, he or she should be counseled that a number of tests must be performed first as only the proper tests can determine their candidacy. These tests are usually conducted over one or two additional office visits.

Step One:
First, there has to be a desire from the patient to want independence from their spectacles. If they prefer to keep their glasses or contacts they may not get far in the counseling process.

Step Two:
Patients will receive information that provides an overview of the surgery and different IOL options, which they may receive prior to their visit. They will be asked to complete a visual needs or lifestyle questionnaire that will provide the surgeon with an overview of their lifestyle and personality. It is important for the lens counselor to have an honest conversation with the patient. This conversation should inform the patient of all of their options and make them aware that surgery will be tailored to their needs.

Step Three:
Keratometry, corneal topography, aberrometry and pupillometry tests are performed to generate important data on how the lens implant will interact with the patient’s eye. These tests will also determine if astigmatism correction is required, as 0.5 D or less of refractive cylinder is generally needed for an optimal post-operative outcome. A-scan measurements must be precise; multifocal IOLs perform best when minimal spherical equivalent correction remains less than 0.5 D manifest refraction spherical equivalent (MRSE). Inaccuracy in the A-scan measurements can cause poor outcomes, which may lead to the mistaken assumption that the IOL is to blame. In general, optical biometry is preferable to ultrasound biometry, but the latter may be helpful in some instances, especially if the cataract is dense or the signal-to-noise ratio of the Zeiss IOLMaster® or Haag-Streit LENSTAP® is weak. Optical coherence tomography of the macula is important to exclude occult retinal disease, which may negatively impact outcomes. Specular microscopy of the cornea is also important to rule out endothelial dystrophy. The data obtained will help solidify if a patient is an ideal candidate and help the surgeon to recommend a specific lens.

Step Four:
A follow up conversation with the patient should be conducted to review results from previous discussions, the lifestyle questionnaire and the diagnostic tests. This will provide the surgeon and patient with the opportunity to discuss the patient’s multifocal IOL candidacy and next steps.

The ideal candidate for a multifocal lens, such as AcrySof® IQ ReSTOR® has:

- A healthy ocular surface
- No corneal or macular disease
- Appropriate sized pupils
- Desire for spectacle independence
- Astigmatism that can be managed to less than 0.50 D
- Quality for bilateral implantation
- Realistic expectations identified and categorized from a comprehensive visual goals and lifestyle questionnaire

It is extremely important for the surgeon to ensure that a patient has realistic expectations. This conversation between the patient and surgeon on possible side effects and trade-offs of multifocal lenses needs to occur before surgery. The patient needs to understand that the potential for side effects, such as glare, halos, blurred vision and light sensitivity, exists but these effects generally subside with time. The surgeon should also make the patient aware that the specifics of surgery may be different for each individual. For some patients, it may take 4 to 6 weeks after surgery for their range of vision to improve greatly but for many others it takes 2 weeks or less. Although there are no guarantees of complete spectacle independence or perfect outcomes, patients should understand the benefits that multifocal IOLs present. It is essential for patients to recognize that it will take time for them to become accustomed to the new lenses and that they should refrain from judging the outcome until both eyes have been treated and several weeks have elapsed. Proper pre-surgery counseling helps patients feel more comfortable during their journey through the practice and will allow them to make more informed decisions about their vision, which will impact patient satisfaction.

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The Role and Importance of Corneal and Biometry Measurements Prior to Lens Replacement Surgery

Accurate measurements of the eye are essential to achieve successful results in patients undergoing cataract surgery. The formulas used to calculate intraocular lens (IOL) power rely on several variables. Early generation formulas relied on three major measurements: keratometry (K) or the curve of the cornea, anterior chamber depth (ACD), which is the distance from the cornea to the anterior lens capsule, and axial length (AL) the total length of the eye. Therefore, in order to have patients see well without glasses after surgery, it is important to obtain accurate measurements for at least three of these variables used to calculate IOL power. Newer generation formulas such as those devised by Jack Holladay (Holladay 2) and Thomas Olsen (PhacoOptics) take into account a greater number of variables and measurements of the eye and therefore may be preferable to older or prior generation formulas. This becomes especially important in certain types of eyes, such as those that are very short or very long, where the internal geometry of the eye or more specifically where the lens sits can vary.

Errors in IOL power calculation can lead to myopia, hyperopia or astigmatism in post-operative results. A K reading that is off by 1 D will translate into a lens power that is also off by approximately 1 D. Having an axial length measurement that is off by 1 mm can result in a lens power that is off by as much as 3 D.1

In order to accurately measure AL of the eye, optical biometry is evolving into the gold standard in terms of accuracy. While immersion ultrasound done by an experienced sonographer may be as good, application biometry will often lead to a greater number of measurement errors.

While inaccurate Ks can affect the IOL power calculation, automated keratometers are increasingly replacing manual keratometry. These automated keratometers included in the newer optical biometry units, such as the LENSTAR® and IOLMaster®, make measurements easier to obtain and are often just as good if not better. It is usually not necessary to use multiple methods or machines to obtain these measurements. Multiple K measurements are only required in certain instances. Examples of these situations include patients wearing contact lenses just prior to having measurements taken, patients having had prior corneal or vision correction laser surgery, and patients with significant dry eye or other corneal surface pathology. In these instances steps may need to be taken to improve the corneal surface, re-measure the patient or use different machines to achieve reliable results.

At times the following conditions may make it difficult to obtain accurate measurements:1
- A patient’s inability to hold still
- A patient’s not ceasing use of contact lenses prior to measurements
- The presence of dry eye disease
- Previous corneal surgery and/or scarring
- Dense cataracts

The patient’s inability to hold still can also affect the ability of the technician to record accurate measurements. It is important that patients stop wearing soft and hard contact lenses entirely for two and three weeks respectively prior to getting measured. While patients often do not like this, it is important because the lenses themselves can mold the cornea, altering its shape and preventing accurate measurement. Discontinuing lens use and repeating serial measurements until the results stabilize are recommended. Dry eyes or corneal scarring can distort the corneal surface and even mimic astigmatism. Previous corneal surgery can result in a falsely flat or steep reading. Patients with dense cataracts or central posterior capsular opacities may be unable to undergo optical biometry as the laser is unable to penetrate the lens. These patients often must be measured by standard immersion or application ultrasound biometry, which may or may not be as accurate.

As with any procedure, in order to obtain the best results, surgeons and their staff should take the time to help walk their patients through each step of the journey. The more patients understand about the procedures that will be performed and the reasons behind them, the more comfortable they will be and the more likely they will try to cooperate. The more smoothly the measurement process goes, the easier it will be for the surgeon to obtain the information necessary to achieve the best possible visual outcomes for their patients.

**Patients should be sure to provide full disclosure of any prior refractive surgeries (PRK, LASIK, etc.) or these previous surgeries may alter results.**


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Please see page 9 for Important Safety Information.
The patient journey is the progression of how patients experience their disease or condition from their first symptoms through cataract surgery and post-surgery recovery. This series of steps is designed to provide patients with a greater understanding of their eye health and cataract surgery. This process is a key resource to help patients in their decision-making process. Education enables patients to develop the knowledge and confidence to proactively manage their treatment, which will drive better outcomes. While different practices might offer different approaches towards patient education and the patient journey, the following are generally the steps involved:

Cataract Diagnosis and Referral:
The patient journey, in many cases, begins with the visit to an optometrist (OD), who may practice inside or outside of the ophthalmology practice. The OD will perform a complete eye examination, including visual acuity and glare testing, slit-lamp examination, tonometry and dilation, while checking for cataracts and other possible causes of poor vision. Once the diagnosis is made, the OD will initiate the patient education process and provide a general overview of cataract surgery, potential side effects and expectations of postoperative outcomes. The OD will begin the discussion on lens replacement options and may be the first person to introduce multifocal intraocular lens (IOL) technology to the patient. Finally, the OD will refer the patient to an ophthalmologist. While many patients begin their journey with a referring OD, many patients also begin their journey directly with an ophthalmologist. For those practices that do not use a referring OD, the patient journey is similar but is the ophthalmologist who performs the associated exams.

Patient Check-In:
Upon check-in, the patient will receive brochures on lens options to review while waiting. Wall posters, videos or tablet video while dilating. The DVD or tablet video provides an overview of the available lens options that will be discussed with the surgeon afterwards.

Surgeon Recommendation:
After dilation, the patient will meet with the cataract surgeon, who will perform an examination to confirm candidacy for surgery and discuss lens options. The results from the specialty diagnostic testing will help the surgeon determine if the patient is a candidate for a multifocal IOL, such as AcrySof® IQ ReSTOR®. AcrySof® IQ ReSTOR® can help meet or exceed the expectations of the patient by providing two focusing zones, far and near, simultaneously. If the patient with cataract(s) and otherwise healthy eyes desires reduced spectacle-dependence, the selection of a multifocal lens offers a strong possibility to reduce or eliminate the need for glasses after surgery.

Education enables patients to develop the knowledge and confidence to proactively manage their treatment, which will drive better outcomes.

While accurate measurements are naturally important for optimal results, the patient’s lifestyle needs must also be factored in for the surgeon to recommend the particular lens that will best suit the visual needs and goals of the patient and that will produce the best outcomes for the patient. The surgeon will clearly outline the benefits versus the risks of ATIOl options and inform patients of what these lenses can and cannot do for the patient in order to best manage their expectations. After meeting with the cataract surgeon the patient will be well-informed of their situation and the lens that is best suited for them.

Meeting the Lens Counselor:
While the lens counselor’s role may occur throughout the patient journey, usually the patient will meet the lens counselor (again) after receiving the surgeon’s recommendation. The lens counselor will follow-up with the patient and answer any additional questions the patient may still have about their lens choice. Once the patient is comfortable with their lens selection, the patient will meet with a scheduler to set up their cataract surgery appointment.

Implantation Pearls: When to Consider a Multifocal Intraocular Lens
Contributing Writer: Andy Maxwell, MD
An estimated 20.5 million (17.2%) Americans 40 years and older have a cataract in one or both eyes and the total number of people who have cataracts is estimated to increase to 30.1 million by 2020. It is estimated that 6.1 million (5.1%) have had their lenses removed operatively and the number of cataract surgeries performed in the United States continues to grow. With a growing aging population, the estimated number of cases of presbyopia is also expected to rise to 1.4 billion cases in 2020.

For many decades monofocal intraocular lenses (IOLs), which are the most basic option available, have been the most commonly used lens. However, to meet expanded patient needs, both multifocal and multifocal lenses have become available to these patients. Both monofocal and multifocal lenses yield distinct results for the patient.

Monofocal lenses can provide very good vision after surgery but generally only for seeing things clearly at one particular distance, either near, intermediate or far, which means these will leave a patient glasses-dependent either some or most of the time post-surgery. For a patient who has their IOLs set to distance vision, they will still require reading glasses for near distances, whereas for those who have their IOLs set to near distance, they will still require glasses to see distant objects clearly.

Cataract surgery with a multifocal lens provides two focusing options, which allows a patient to see both near and distant objects simultaneously. This feature offers the opportunity for the recipient to be less dependent on corrective lens wear; about 80% of patients who receive multifocal lenses do not require glasses post-surgery.

The ideal candidates for a multifocal lens are patients who:
- Have no other significant disease of the eye or ocular system
- Have a small amount of astigmatism (≤1 D) either measured before surgery or estimated to be < 0.5 D after surgery
- Qualify for bilateral implantation
- Wish to reduce or eliminate their dependence on eyeglasses
- Can give appropriate informed consent
- Understands the options for visual rehabilitation after cataract surgery
- Set realistic expectations and understand that surgery doesn’t guarantee perfect vision

As with any surgery, patients might encounter some side effects. Most commonly after cataract surgery, patients may see a ring or halo around light sources at night. This is most commonly experienced during nighttime driving and is caused by a distinct refractive pattern.

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1. AcrySof® IQ ReSTOR® IOL. [Directions for Use]. Fort Worth, TX: Alcon; 2009.

In order to ease the surgeon’s transition to multifocal lenses, here are some implantation tips that may help:

- Review the patient’s lifestyle and wants
- Explain to your patient you are trying to present an added value with a multifocal option. Educate them on the benefits
- If patients are not suitable for AcrySof® IQ ReSTOR® lenses, the rationale for exclusion must be explained to the patient with alternative options provided
- Realize that you must be able to accurately determine success with the patients’ surgery
- Acknowledge and disclose to your patient that if they have an astigmatism, a frontal second laser procedure might be needed
- Set expectations appropriately
- Make a strong recommendation

New advances will continue to increase patient expectations with respect to cataract surgery. It is important that every surgeon understand the options available to help determine which lens will provide the best result for their patients’ visual goals.

3. AcrySof® IQ ReSTOR® IOL [Directions for Use]. Fort Worth, TX: Alcon; 2009.

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Important Safety Information

AcrySof® IQ ReSTOR® Intraocular Lenses

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 or without presbyopia, who desire near, intermediate and distance vision with increased spectacle independence. This lens is intended to be placed in the capsular bag.

WARNING/PRECAUTION:
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 consider the following risks and benefits associated with the AcrySof® IQ ReSTOR® lens.

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., diabetes, 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.

AcrySof® IQ Toric Intraocular Lenses

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

INDICATIONS:
The AcrySof® IQ Toric posterior chamber intraocular lenses are intended for primary implantation in the capsular bag of the eye for visual correction of aphakia and pre-existing corneal astigmatism secondary to removal of a cataractous lens in adult patients with or without presbyopia, who desire improved uncorrected distance vision, reduction of residual refractive cylinder and increased spectacle independence for distance vision.

WARNING/PRECAUTION:
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. Toric IOLs 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 be attempted as early as possible prior to lens encapsulation. All viscoelastic should be removed from both the anterior and posterior sides of the lens; residual viscoelastic may allow the lens to rotate.

Optical theory suggest, that, high astigmatic patients (i.e. > 2.5 D) may experience spatial distortions. Possible toric IOL related factors may include residual cylindrical error or axis misalignments. 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 Toric Intraocular Lenses.

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., diabetes, 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.

Please contact your Alcon Sales Representative for more information.