

Cataract Surgery and Intraocular Lenses- What Are My Choices?

Once a visually disabling cataract is extracted, an intraocular lens (IOL) is placed into the space formerly occupied by the cataract to rehabilitate the patient's vision. A wider variety of IOLs are now available and can be classified based on focality, composition and design. A traditional IOL is monofocal, correcting for distance or near vision only. If both eyes undergo surgery, a monofocal IOL can provide good uncorrected binocular distance or near vision. So, a patient will still need corrective eyewear. To avoid dependence on glasses a patient may desire monovision (i.e., the dominant eye is corrected for distance and the other eye for near/intermediate vision with monofocal IOL). This is not for everyone, as depth perception is reduced.

Accommodative and multifocal IOLs provide the opportunity to see at various distances without correction. The Crystalens (Eyeonics) is the only FDA approved accommodative IOL that restores some of the eye's accommodative ability, which is lost with aging. It is flexible to facilitate forward movement within the eye and allow for more natural focusing at various distances than with monofocal IOLs.

Multifocal IOLs, like ACRYSOF ReSTOR® (Alcon) and ReZoom™ (AMO) provide highly functional uncorrected distance, intermediate and near vision. In the FDA approval study, 80% of ReSTOR® IOL recipients were spectacle independent in all activities. Having been the first eye surgeon in the central Kentucky area to implant the ReSTOR® IOL, I have been extremely pleased with the visual outcomes. Glare and

nighttime halos have been reported with accommodative and multifocal IOLs. Another potential drawback to the IOLs is their added cost. They are called “deluxe” IOLs meaning insurers view them as “nice to have” but not absolutely necessary. So, the patient must assume the additional fee which could be \$1500 or more for both eyes. Candidates should be screened for excessive pre-existing astigmatism (warping of the cornea) as it can result in an unsatisfactory result. Fortunately, a toric IOL (STAAR Surgical) may be used to correct significant astigmatism.

The design of a traditional IOL is spherical; it has a curved front surface which can reduce contrast sensitivity. However, an aspheric IOL with a flatter peripheral curvature, such as the SofPort® Advance Optics IOL (Bausch & Lomb) or ACRYSOF® SN60WF (Alcon) can actually improve contrast sensitivity. The Tecnis Z9000 IOL is a product of combining an aspheric design with wavefront analysis of human corneas to minimize visually limiting higher order aberrations in the visual system. It is the only IOL to receive FDA labeling asserting improvement in ability to see in conditions like rain, snow, fog, twilight and nighttime darkness.

The composite material of an IOL also influences IOL selection. Acrylic IOLs are associated with the lowest incidence of visually disabling posterior capsular opacification (PCO). Collamer IOLs (STAAR Surgical) are the most biocompatible and least likely to cause prolonged inflammation in the eye that can result in postoperative loss of vision. Adding a yellow tint to the ACRYSOF® Natural IOL (Alcon) filters out blue light that is thought to contribute to the onset of age related macular degeneration.

Some debate exists as to whether blue light is essential to nighttime vision for senior citizens.

Future advancements in IOL design include a lens which has its refractive power custom adjusted post operatively by a laser. Another lens is so compressible that it can be inserted through a surgical incision less than 1.0 mm thus minimizing postoperative astigmatism.

In summary, a thorough discussion of IOL options between the eye surgeon and patient is essential to ensure a mutually satisfactory visual outcome. Lifestyle considerations, cost, pre-existing systemic diseases and/or ocular conditions all impact the proper IOL selection. If you have further questions regarding cataract surgery, and IOL technology please contact me at (859) 257-2020 or by email at jdconk@uky.edu.