

Why My Choice Is the AcrySof IQ IOL

This lens' unique characteristics make surgery smooth and predictable, with excellent visual outcomes.

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After years of evaluation, advancement, and refinement, cataract surgery has evolved from mere removal of the natural lens to an elegant procedure with a range of state-of-the-art IOL options. Every aspect of the surgery has been designed in meticulous detail to

achieve the best visual outcomes. IOLs have advanced in many ways as well. Now implanted in millions of eyes, the IOLs available to us today are well-engineered optical devices that work with the human anatomy to achieve various important goals for optical quality and visual performance.

In my career, I have used virtually every IOL that has come to market in the United States, including lenses that are not widely used, yet **AcrySof IQ** IOL (Alcon) remains my monofocal lens of choice (Figure). The lens has been around for almost 25 years, with over 100 million implanted worldwide. I choose the **AcrySof IQ** IOL because it is elegantly engineered, performs exceptionally well during surgery, and gives my patients excellent visual outcomes.

UNIQUE MATERIAL AND FILTERING

The **AcrySof** platform's biocompatible hydrophobic acrylic polymer is different from other lens materials, because it offers a high level of fibronectin, which helps bind the IOL to the capsule. In my experience, that biocompatibility and binding ability may help decrease complications, such as posterior capsular fibrosis, following surgery.

A review of literature evaluating implants of brands of IOLs implanted worldwide showed the incidence of posterior capsular fibrosis ranged from around 5 to 50%.¹⁻⁵ In general, posterior capsular fibrosis affects about 1 in 5 cataract patients, decreasing the quality of vision after surgery. With the material and square-edge design of the **AcrySof IQ** IOL, patients have clearer vision after surgery, which in turn reduces the number of secondary procedures I need to perform. Using the YAG laser after cataract surgery to perform a capsulotomy may increase the risk of retinal detachment, and an open capsule makes it very difficult to remove or reposition an implant. In my hands using the **AcrySof IQ** IOL, I've experienced a low YAG rate of about 2%, which is consistent with the reported YAG rates for this lens. (Range from 1.6 to 2.2% at approximately 1.5 years).⁶ I believe this is due to the unique material and the lens edge design.

Another important **AcrySof IQ** IOL feature I appreciate are the BioOptics, which play an important role in functional vision. The **AcrySof IQ** IOL is available with ultraviolet (UV) filtering and a yellow chromophore to filter short-wavelength blue light, as well as with UV filtering alone. The yellow chromophore's ability to filter blue light mimics the filtering of a youthful adult's lens. Blue light filtering in the



Figure. The AcrySof IQ IOL.

AcrySof IQ lens has been shown to help improve functional vision and aid photostress recovery versus UV-only IOLs.^{7,8} In addition, in night-time driving simulations, patients with the **AcrySof IQ** lens with blue light filtering showed improved reaction times and hazard detection versus the UV-only IOL.⁶ While research is ongoing on the effects of UV and blue light exposure, it is known that excessive exposure to blue light, in particular, can impair circadian rhythms and disrupt sleep.⁹ Lack of these filters may contribute to choroidal melanoma and changes to the retinal pigment epithelium.¹⁰⁻¹²

The AcrySof IQ IOL hits the mark with a comforting predictability that has allowed me to count on this lens for many of my patients.

DESIGN AND MECHANICS

Cataract surgery has become extremely sophisticated, with every critical element mapped out for optimal outcomes. Incisions are designed to leave the smallest optical footprint, minimizing surgically induced astigmatism. To insert the lens through the smallest incision possible, we rely on the thin design and elasticity of our IOLs. The more elastic the lens is, the easier it is to fold it and insert it into the eye.

The AcrySof IQ lens has a higher refractive index versus other aspheric IOLs and has excellent elasticity, allowing me to fold it easily without kinking or twisting. I implant this IOL through a 2.2-mm incision using the UltraSert Pre-loaded IOL Delivery System (Alcon). The single-use injector has a smooth feel and a depth-guard nozzle to help ensure accurate and consistent placement. Although the AcrySof IQ lens material is malleable, the lens and its haptics have shape memory. As the IOL slowly unfolds, it assumes its optimal form inside the capsular bag.

The design and mechanics of this IOL help with precise centration. The STABLEFORCE haptics limit both rotational and axial movement with contraction of the capsular bag in the postoperative period. Controlling stability ensures effective lens position leading to the best optical predictions and outcomes. In fact, when we use the AcrySof IQ toric lens in my practice, about 94% of eyes had rotated less than 5° from the same axis at 1 to 6 months postoperatively.

The AcrySof IQ IOL is a very forgiving lens for novice surgeons. After surgeons master the IQ base lens, they can incorporate optics to correct astigmatism and presbyopia. In my experience, the lens is not difficult to reposition, but the material's "sticky" quality makes it unlikely that repositioning will be required.

STRATEGIC ASPHERICITY

The aspheric IQ lens mimics the human crystalline lens shape to help achieve the best optical quality for patients. Aspheric lenses are designed to reduce spherical aberrations (halos) and improve contrast sensitivity. This is particularly useful to patients as they read or perform tasks in dim lighting.¹³

In the young eye, positive corneal aberrations are compensated by negative spherical value in the crystalline lens. As the eye ages, the

spherical value of the lens gradually becomes positive, causing image quality to be less clear on the periphery in eyes with pupils that are 4 mm or larger. An aspheric IOL is designed to work much the same way as a young lens works to negate some of the eye's positive spherical value. This improves image clarity and contrast sensitivity, particularly on the perimeter.

The cornea's positive spherical aberration averages about +0.274 μm .³ The AcrySof IQ IOL has a negative asphericity of -0.2 μm , which brings the average eye to +0.074 μm . Retaining some positive spherical value is the goal, as studies have shown a small positive spherical aberration represents optimal vision.^{14,15} The moderate -0.2 μm asphericity of the AcrySof IQ IOL makes the lens a good choice for a wide range of patients, resulting in minimal over or under-correction.

OUTCOMES

At the end of the day, cataract surgery is about patient outcomes. Patients want to perceptually see the best they can. On the first post-operative day with the AcrySof IQ IOL, my patients literally exclaim, "Wow!" They realize how much visual quality they have been missing, and that the AcrySof IQ lens has restored that vision for them. The AcrySof IQ IOL hits the mark with a comforting predictability that has allowed me to count on this lens for many of my patients. ■

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