

# Piggyback IOLs: Common Indications, Preferred IOLs, and Surgical Techniques

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## R. BRUCE WALLACE III, MD

Piggyback IOLs have a somewhat mixed past but are probably underutilized in many cataract practices. Even the term *piggyback* sounds less than scientific when discussing this method with patients. With the technique's long track record of safety, however, many surgeons consider piggyback IOLs to be an asset when approaching difficult cases. Here are some ideas to consider.

Since many IOLs are now available up to a power of 40.00 D, the use of piggyback IOLs at the time of cataract surgery has become less common. I use this technique most frequently in post cataract surgery patients who had undergone RK and have unwanted spherical error, especially hyperopia. It is difficult to measure the corneal power preoperatively, and many of the fudge factors available are not as precise as for patients who have not had RK. I explain this to my patients preoperatively, because I will need to consider piggyback IOLs in a low percentage of eyes. The reason I prefer piggyback IOLs to an IOL exchange is that I like to wait at least 3 months for corneal stabilization in RK eyes, and at this point, the primary IOL is not as easy to manipulate and remove. I also inform the patient that implanting piggyback IOLs is a refractive procedure that may not be covered by insurance, which I document in the medical record prior to the cataract surgery.

My lens of choice for piggyback IOLs is the Clariflex (Abbott Medical Optics Inc., Santa Ana, CA). A number of clinical investigators, including Johnny Gayton, MD, have shown the disadvantage of using acrylic on acrylic intraocularly and the possibility of interlenticular membranes. Fortunately, it is unusual to see interlenticular membranes with silicone on silicone or silicone on acrylic. The Clariflex lens comes in half-diopter steps from -10.00 to

"Piggybacking an IOL can provide a more consistent result by avoiding corneal surgery."

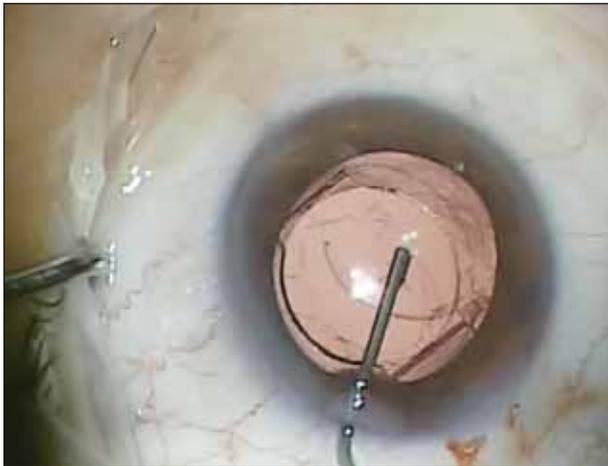
—William B. Trattler, MD

+10.00, so it has a slight advantage over the STAAR AQ5010V (STAAR Surgical Company, Monrovia, CA), even though the latter has a 6.3-mm optic and a broader haptic length, which is an advantage for sulcus placement.

As far as the surgical procedure itself, for most patients, it is possible to just re-establish the phaco and sideport incisions, inject a cohesive viscoelastic, and with a dilated pupil, use a standard lens injector. Instead of injecting the IOL into the capsular bag, however, I place it in the anterior chamber and then individually rotate each haptic into the ciliary sulcus with a Lester Hook (Bausch + Lomb/Storz Ophthalmics [Rochester, NY] or Katena Products, Inc., [Denville, NJ]). Next, I remove the viscoelastic and perform stromal hydration of the incision. A suture is generally unnecessary unless there is evidence of an aqueous leak with pressure applied using a Weck-Cel spear (Medtronic ENT, Jacksonville, FL). The patients typically have excellent visual acuity 1 day postoperatively, since corneal edema or significant inflammation is highly unlikely. For me, piggyback IOLs have been a nice safety net for many patients, especially those who have undergone RK.

## WILLIAM B. TRATTLER, MD

Piggyback IOLs are an extremely important surgical technique for addressing pseudophakic patients with



**Figure 1.** The surgeon back fills the sulcus starting directly across the eye from the entry point.

residual refractive errors. Although I recommend laser vision correction for most patients—especially those with significant astigmatism—some patients with residual refractive errors are more appropriate candidates for a piggyback IOL. The main issue for patients who are candidates for both procedures is that piggyback IOLs may be covered by insurance, whereas laser vision correction is an out-of-pocket charge.

For surgical planning, my first step is a careful preoperative evaluation. Corneal topography will reveal whether laser vision correction is an option. For patients with irregular astigmatism or forme fruste keratoconus, a piggyback IOL may be a better option than laser treatment. Other situations in which I choose a piggyback IOL over laser treatment include patients that have previous herpes simplex virus of their cornea, mild epithelial basement membrane dystrophy, and high refractive errors (such as significant hyperopia). My technique is very straightforward for patients who are pseudophakic with an acrylic IOL in the bag. After a careful refraction, I use the Holladay II formula (Holladay Consulting, Inc., Bellaire, TX) to calculate the power of the IOL. I have found the STAAR AQ5010V in the sulcus to be easy to use and effective. In summary, piggyback IOLs are a simple and effective technique for pseudophakic patients that are over- or undercorrected.

#### **KEVIN L. WALTZ, OD, MD**

Placing a piggyback IOL is very similar to placing a phakic IOL. With both procedures, you have a lens in the operative eye that you hope to keep in position. A piggyback IOL treats the eye's preoperative refraction, just like a phakic IOL. You are adding a lens to an existing system. You are not removing anything. The only preoperative data that are important are the refractions.

My most common indication for piggybacking an IOL



**Figure 2.** The surgeon injects the lens while watching the leading haptic open under the sulcus.

is changing the eye's refractive error without performing laser vision correction. Although laser treatment can provide a more precise refractive outcome, it requires a significant degree of corneal healing. Piggybacking an IOL can provide a more consistent result by avoiding corneal surgery. This is especially true for patients with hyperopic refractive errors.

I prefer to use a STAAR AQ5010V IOL for most piggyback procedures. The silicone optic is 6.3 mm with a narrow edge profile to minimize iris chafing. The lens is available in powers from +4.00 to -4.00 in whole-diopter steps.

My preferred injection technique for the STAAR AQ5010V is to place it into the anterior chamber directly and then manipulate the lens into the sulcus. I prefer this method because the haptics are stiff and can cause damage during insertion. Once in position, the stiff haptics tend to stay in position.

#### **JEFFREY WHITMAN, MD**

My most common indications for using piggyback IOLs are in hyperopic overcorrections of premium IOLs and over- or undercorrections in IOL cases with previous RK incisions. My lens of choice for piggybacking is the STAAR AQ5010V, which has a bit of posterior angulation that can reduce the risk of iris chafing. My other lens of choice is the Clariflex, which comes in half diopters.

I use the refractive vergence formula created by Warren Hill, MD, to be exact on power selection. Also, I typically perform an Nd:YAG capsulotomy of the posterior capsule prior to inserting the lens so that I can be sure that the refraction is stable. I make a 2.8-mm near-clear incision and paracentesis. While inserting my viscoelastic cannula through the paracentesis, I back fill the sulcus starting directly across the eye from the entry point (Figure 1). I then inject the lens in a very slow

manner, while watching the leading haptic open under the sulcus (Figure 2). These are thick lenses that will “explode” in the eye if injected quickly. I leave the trailing haptic out of the eye and manually drop it in the sulcus with forceps. Before removing the viscoelastic, I “paint” the iris with carbachol to bring the pupil down and lock in the lens. Then, a few seconds of low-vacuum I/A to remove the superficial viscoelastic is all that is needed prior to hydrating the wound. A video of this technique is available at <http://www.youtube.com/watch?v=4kKKWTIsTUs>. ■

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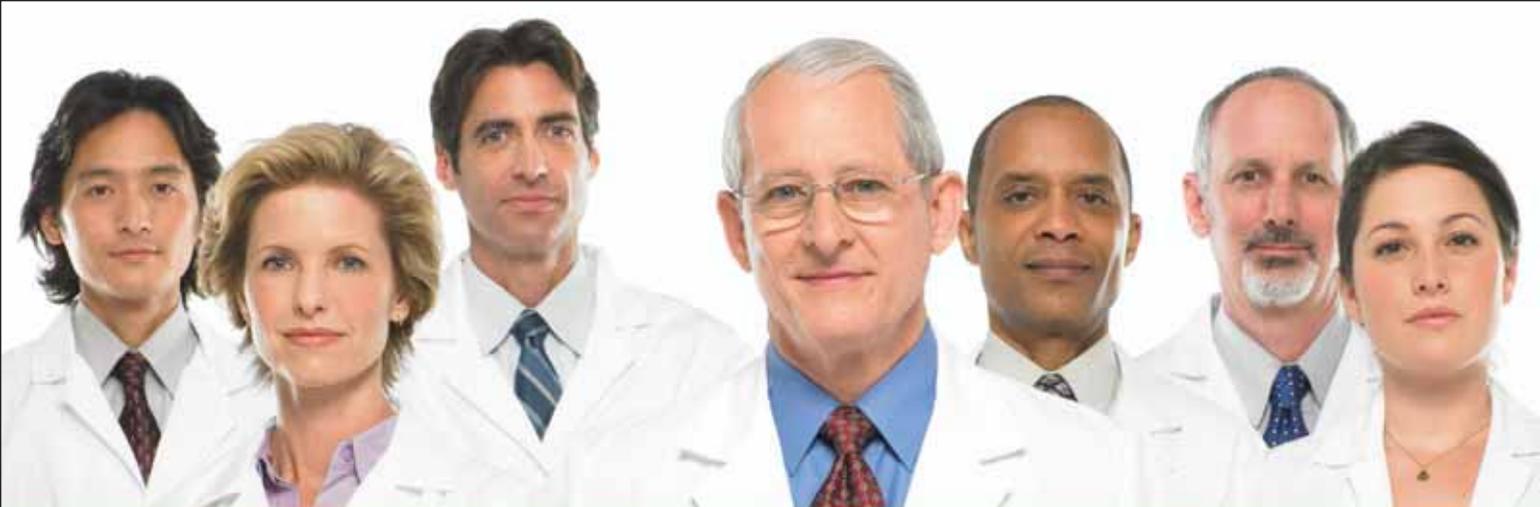
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