

# Easier LRIs and Capsular Protection

Useful instruments for LRIs and nuclear disassembly in cataract surgery.

BY R. BRUCE WALLACE III, MD

*In this article, Dr. Wallace shares his approach to cataract surgery with astigmatic keratotomy, a combined operation that I introduced in the early 1980s for the reduction of pre-existing astigmatism. It was, perhaps, the first step toward achieving “refractive” cataract surgery. Dr. Wallace has used his longstanding experience to create these instruments that really facilitate precise LRIs, a key to accurate outcomes. I wholeheartedly agree that the contemporary cataract surgeon should incorporate both incisional and toric lens options into his or her armamentarium.*



—Robert H. Osher, MD



Astigmatic keratotomy is a very useful procedure for correcting corneal astigmatism and helping patients achieve their target refraction, but it can be somewhat daunting for surgeons to perform. A few years ago, I was looking for an effective yet uncomplicated method for making limbal relaxing incisions (LRIs), which I found lacking at the time. I thought most of the approaches to creating LRIs were rather confusing and time consuming and therefore prohibitive for many surgeons to adopt. With help from Bausch + Lomb/Storz Ophthalmics (Rochester, NY), I designed a three-instrument LRI set that could be autoclaved separately from the cataract set. The LRI set includes the Colibri 0.12-mm corneal forceps (ET3199;



Figure 1. The Colibri 0.12-mm corneal forceps (ET3199).

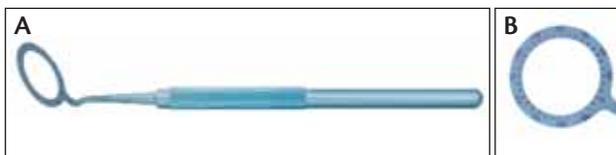


Figure 2. The Wallace Mendez Degree Gauge (ET2425).



Figure 3. The Wallace LRI Diamond blade (E0126).

“You can learn how to make LRIs properly and effectively without necessarily attending a course or a wet lab.”

Figure 1) that, unlike a straight Castroviejo-style forceps, makes it easy to see the marks as you make them. There is a Wallace Mendez Degree Gauge (ET2425; Figure 2A and B), which I find valuable for finding the position of the axis. Finally, the kit includes the 600- $\mu$ m Wallace LRI diamond blade (E0126; Figure 3A and B) with a single footplate and a relatively thin handle for easy manipulation when making these small cuts.

You can learn how to make LRIs properly and effectively without necessarily attending a course or a wet lab. I have a three-part video series available online at [www.eyetube.net/series/limbal-relaxing/single-and-paired-lri-procedure/](http://www.eyetube.net/series/limbal-relaxing/single-and-paired-lri-procedure/), and there is also a wet lab video available at [www.youtube.com/watch?v=yxHL25F8dcU](http://www.youtube.com/watch?v=yxHL25F8dcU). I recommend practicing on pig eyes (available from a local butcher), which are similar to human eyes.

## LRI PROCEDURE

I perform LRIs at the beginning of the cataract or refractive lens exchange procedure, because the corneal epithelium is healthy and the globe's IOP is normal. I found that LRIs made at the end of the procedure were less precise. Also, making LRIs at the start of surgery eliminates the risk of forgetting to perform them at the end of surgery due to unforeseen events.

The first step in creating LRIs is to mark the cornea and determine the axis on which you are going to make



Figure 4. The author makes a hash mark at the axis and then marks 60° to 90° in each direction.

the incision(s). I use the Wallace LRI nomogram ([www.storzeye.com/PDF/Wallace%20Nomogram.pdf](http://www.storzeye.com/PDF/Wallace%20Nomogram.pdf)) to decide the appropriate size of LRI to treat a given amount of astigmatism. I prefer single-incision LRIs versus paired LRIs for lower degrees of astigmatism. Paired incisions are not always necessary, especially with lesser amounts of astigmatism, and they may encroach on the phaco or sideport incisions.

Once I have determined the size and location of the LRI(s), I mark the axis on the cornea with the Mendez marker. Then, I turn the marker to make a hash mark at the axis, and I count off two to three 30° distances in each direction from the central axial mark (Figure 4). I mark these degrees with the 0.12-mm forceps. I simply indent the cornea; there is no reason to use dyes. Next, I dry the marks off with a Weck-Cel sponge (Beaver-Visitec International, Inc., Waltham, MA) so I can see them better, and I use the same instrument, the 0.12-mm forceps, to fixate the globe and advance the 600- $\mu$ m diamond knife toward fixation, as Douglas D. Koch, MD, originally taught.

The slim handle of this knife makes it easy to twirl the blade and make a crescent-shaped incision rather than a straight cut. The most challenging part of making LRIs can be following the corneal curvature, particularly with the rule of astigmatism underneath the lid speculum. I pull the globe down slightly in order to access that area. Otherwise, this procedure is fairly easy to perform, and it gives rapid, dependable results. I give the eye a dose of an NSAID (q.i.d for 3 days) at the end of the procedure to minimize any discomfort for the patient.

I feel that LRIs are an important procedure to know how to perform, even for surgeons who prefer implanting



Figure 5. The Wallace Guardian chopper (ET0735).

toric IOLs. LRIs are ideal for treating amounts of astigmatism too small for a toric implant. LRIs can also expand the population of candidates for presbyopia-correcting IOLs.

### THE WALLACE GUARDIAN CHOPPER

I got the idea for the Wallace Guardian Chopper (ET0734 and ET0735; Storz Ophthalmics) from Howard Gimbel, MD. I read an article in the *Journal of Cataract and Refractive Surgery* in which he described using a second instrument to protect the posterior capsule from the phaco tip.<sup>1</sup> He used a blunt-tipped spatula. I wanted something a little more effective, so I started modifying other instruments until I arrived at the Wallace Guardian chopper (Figure 5A and B). The primary benefit of this instrument is that it facilitates stop-and-chop or hemidissection of the nucleus by providing countertraction for the phaco tip. The Guardian is ideal for divide-and-conquer techniques, although it does have a sharp chopper on one side for performing quick chop and similar maneuvers. As I extract each nuclear fragment, I place the Guardian chopper directly behind the phaco tip to shield the posterior capsule. This maneuver is critical when removing the last fragments, because positive vitreous pressure can draw the posterior capsule into the phaco tip. Even in laser cataract procedures, where the surgeon phacofragments the nucleus outside the OR and only enters the eye to remove it, having a blunt chopper to shield the phaco tip will be helpful. This instrument has been quite valuable to me. ■

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1. Gimbel HV. Down slope sculpting. *J Cataract Refract Surg.* 1992;18(6):614-618.