Preloaded injection system provides convenient way to implant hydrophilic acrylic IOL

Cynthia Matossian

The system ensures sterility and reduces the incidence of haptic or optic damage during IOL loading.

by Cynthia Matossian, MD, FACS

Lenstec introduced a new preloaded IOL injection system in the latter part of 2013. The Pre-Loaded Injector, or PLI, is one of three preloaded IOL injection systems available in the United States; the others are from Hoya Surgical Optics and Alcon.

The PLI comes packaged within a saline-filled tray ready for use upon removal from its packaging, bypassing the need to load the IOL into the cartridge. The technician uses that inner container to transport the PLI to the sterile field. The addition of an ophthalmic viscosurgical device is still required. The preloaded system ensures sterility from the manufacturing plant to the patient's capsular bag. Moreover, it reduces the incidence of haptic or optic damage during IOL loading.

The Lenstec Softec HD is the only hydrophilic acrylic IOL with a preloaded injector system in the U.S. market. It is a 5.75 mm × 5.75 mm round bi-aspheric, equiconvex uniplanar IOL with a zero spherical aberration optic. It has full optic power to the edge of the optic. Its index of refraction is 1.46. One of the advantages of the Softec HD is this low index of refraction. Studies have shown that low indices of refraction are associated with lower incidences of dysphotopic phenomena, relative to those IOLs that have higher indices of refraction.

The Lenstec HD IOLs in the PLI are available from powers of 10 D to 27 D.

From 15 D to 25 D, the Lenstec Softec HD in the PLI is available in 0.25 D steps with a manufacturing tolerance of 0.11 D. The Softec HD without the PLI has a broader range of 5 D to 36 D, of which 15 D to 25 D come in 0.25 D steps similar to the HD with the PLI.

Advantages of preloaded system

- The main advantage the PLI offers is maintenance of sterility directly from the manufacturing plant to inside the patient's eye.
- It eliminates technician variability in loading IOLs, especially in settings where the technicians rotate. With the preponderance of presbyopic OR technicians, a preloaded IOL gives the surgeon peace of mind that the implant will be loaded correctly and with ease each time. Therefore, technician experience and near visual ability, especially in dimly lit settings, will not be as critical for IOL loading.
- A preloaded IOL system speeds the loading process.
- The use of intraoperative aberrometry is increasing in the U.S., where real-time refractive measurements are captured to obtain more accurate postoperative outcomes. With a preloaded system, the technician can quickly open the appropriate preloaded IOL and hand it to the surgeon, without feeling pressured to load the IOL. With intraoperative aberrometry, the immediate need for IOLs ready for insertion is increased.

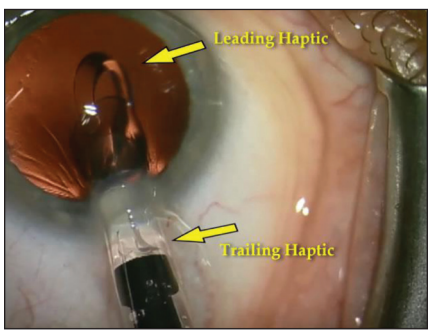
Insertion technique

- Before entering the eye, the surgeon needs to slowly advance the IOL with the plunger under the microscope, making sure the leading haptic is curled or knuckled and the trailing haptic is curled or pushed against the optic. There is clear visibility of both haptics with the PLI during this insertion process.
- Pump 1: This is the longest pump, in which the leading haptic exits the funnel and presents inside the capsular bag. The surgeon has to allow the leading haptic to unfold in its final plane. Then, the surgeon has to relax the plunger to stay behind the trailing haptic.
- Pump 2: The surgeon has to advance the plunger and deliver the optic in its entirety. It is best to wait for the optic to unfold completely, which happens relatively quickly. Then, the surgeon has to relax the plunger to stay behind the trailing haptic.
- Pump 3: The surgeon has to advance the plunger one final time to deliver the trailing haptic into the bag, then remove the inserter from the eye.

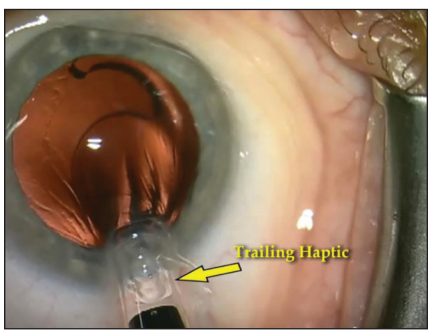
The required incision size for use of the PLI is 2.65 mm to 2.75 mm. Of importance is that the IOL, once clicked into place, is folded into a "taco-down" position (like an upside-down letter U), with the haptics tucked underneath the optic. This is in contrast to the usual "taco-up" position of the optic with both haptics folded on top of the optic.

The PLI is easy to use and reproducible. It is an added feature in the growing armamentarium of IOL insertion options for eye surgeons. OSN

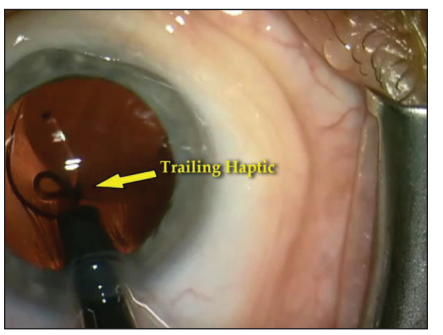
Images: Lenstec



Pump 1. The surgeon needs to slowly advance the IOL with the plunger under the microscope, making sure the leading haptic is curled or knuckled and the trailing haptic is curled or pushed against the optic.



Pump 2. It is best to wait for the optic to unfold completely, which happens relatively quickly. Then, the surgeon has to relax the plunger to stay behind the trailing haptic.



Pump 3. The surgeon has to advance the plunger one final time to deliver the trailing haptic into the bag, then remove the inserter from the eye.

References:

Akman A, et al. *Eur J Ophthalmol*. 2004;14(1);14-18.

Erie JC, et al. *J Cataract Refract Surg*. 2001;27(4):614-621.

Farbowitz MA, et al. *J Cataract Refract Surg*. 2000;26(9):1339-1345.

Hemmati HD, et al. *Semin Ophthalmol*. 2012;doi: 10.3109/08820538.2012.708809.

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Disclosure: Matossian is a speaker and/or consultant for Alcon and Lenstec.

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