

Pearls for ILM Peeling

Lucke ILM Universal Forceps can be used for a variety of steps during the surgical process.

BY KLAUS LUCKE, MB ChB

In a private hospital setting, it is a hassle—not to mention expensive—to open five similar instruments for each operation. To overcome this inconvenience and save money in my own hospital, I designed forceps capable of performing a variety of functions. The Lucke ILM Universal Forceps (Rumex International Corporation, St. Petersburg, FL; Figure 1) can be used for internal limiting membrane (ILM) peeling, surgery to relieve vitreous traction, and repair of vitreous detachment with diabetic membranes and proliferative vitreoretinopathy (PVR). Currently, I perform approximately 90% of my procedures with a single Universal Forceps. This means that I will have only one pair of forceps to sterilize after surgery. In this article, I describe the characteristics of the Universal Forceps and discuss my technique for removing ILM as well as some other tidbits on my technique. Generally, I remove ILM to relieve traction caused by a contracted ILM, to mobilize the central retina such as in macular holes and cellophane retinopathy, as a prophylaxis against pucker formation in retinal detachment cases, and to treat macular edema.

CHARACTERISTICS

The tips of the Universal Forceps combine the qualities of Eckhardt-type forceps, with sharp pointed edges that oppose each other to allow a good pinching action, and crocodile forceps, which can handle strands of membranes. The handles move in a symmetrical action, which means when I press the two handles together the central shaft does not move. This makes for a much quieter tip than asymmetric forceps, which have a central shaft and a lever. With those instruments, when the lever is pushed towards the central shaft, the central shaft moves.

The tip is also twistable. All Rumex forceps have a little wheel that I can turn with my fingertip to orient the forceps in the direction in which I want to use them. The wheel saves me from having to turn my hands or wrist. Rather, my hands stay in place and my third finger moves the wheel to turn the forceps. This allows me to maintain calm and steady hands while the forceps rotate.

SURGICAL TECHNIQUE

Slit-lamp illumination. A slit lamp is mounted to my microscope. I place a contact lens on the cornea, switch on



Figure 1. The Lucke ILM Universal Forceps. The arrow points to the special nose for pinching and grasping ILM.

the slit lamp in high magnification, and have a perfect view of the macular area. In my opinion, slit-lamp illumination has two significant advantages over fiber-optic illumination. First, it is not phototoxic. With a fiber optic in the eye, the toxicity level increases exponentially with proximity to the retina. My light source is far from the retina; therefore, phototoxicity is not an issue. Second, with the light positioned off-center, I have a beautiful view of the membranes. I see the membranes in the surgical theater exactly as I do during an eye examination in the office. They are easy to discern, they glisten, and they are in high magnification. The only disadvantage of the slit-lamp approach is that it provides a limited field of view—to which one must become accustomed.

Vitrectomy. In cases without extensive traction, I open the conjunctiva and use 20-gauge instrumentation to make only two incisions in the sclera—one at 11 o'clock and the other at 1 o'clock—with a sutureless wedge technique (described by P. van den Biesen, MD, PhD). This approach allows me to perform a safe and efficient vitrectomy. With 20-gauge instrumentation, I can use curved instruments such as horizontal scissors. These instruments will not fit through trocars and are not available for transconjunctival surgery. In addition, 20-gauge instruments are more durable than 23- and 25-gauge instruments. The thinner the instrument, the easier it is to break. More durable instruments do not need to be replaced as often; again this saves money in the private hospital setting.

In most cases, I first perform phacoemulsification, lens implantation, and anterior vitrectomy. Then I check to see if the vitreous is detached. If it is, I immediately clean up the vitreous base. I clean all the way down to the vitreoretinal



Figure 2. Pinching and tearing the ILM with the specially designed tip.



Figure 3. Holding and peeling larger strands of membrane using the crocodile teeth.



Figure 4. The crocodile configuration of this forceps can grasp anything, even IOL haptics.

junction so that at the end of the surgery the eye is free of any vitreous that can cause trouble in the future. I do a total vitrectomy, leaving no vitreous that can cause traction.

If the vitreous is attached, I move to the posterior pole and detach the vitreous surgically. Then I return to the vitreous base and remove the vitreous. Most of the surgical time is spent in the anterior part of the vitreous cavity. Only after all of the vitreous is removed do I begin peeling membranes at the posterior pole.

Staining. For membrane peeling, I introduce indocyanine green (ICG) to the surface of the macula. For ILM removal I prefer ICG to other staining methods because it stains very well, allowing me to safely remove all of the ILM and with it all other membranes. It has been suggested that ICG might have some toxic effect on the pigment epithelium; however, I am strongly convinced that ICG is in no way toxic to the retina. In eyes in which the retina is compromised and the pigment epithelium is not exposed, I do not have second thoughts about using ICG. We have more than 7,000 cases with ICG at our institution and have absolutely no reason to believe that ICG is toxic to the retina.

In eyes with a macular hole, I try to avoid contacting the pigment epithelium with ICG because of possible toxicity. There is no clear-cut evidence at this time to prove that ICG is toxic to the pigment epithelium. As a preventive measure, however, I apply a small drop of methylcellulose onto the fovea before staining so that the ICG cannot reach the pigment epithelium. This has been an effective approach. In my opinion, the benefits of ICG outweigh the possible risks.

ILM peeling. With the nose at the tip of the Universal Forceps, I touch the ILM, pinch and squeeze it, and then tear the ILM and pick it up (Figure 2). If there are extensive pieces of ILM standing up, I pick up the larger pieces and pull them out of the eye using the crocodile teeth of the forceps (Figures 3 and 4). Once the ILM has been opened, I rotate the nose of the tip (with the wheel, not my hand) toward the edge of the ILM and pick up the edge without damaging the nerve fiber layer.

Closing the eye. At the end of the operation, I make sure that both sclerotomies are free flowing, meaning no vitreous is plugging them. If vitreous is present, it will cause trac-

tion. A sclerotomy plugged by vitreous is my definition of an open eye, and I like all of my eyes to be closed at the conclusion of surgery. Then I inject air to augment the closure of the wedge incisions. Finally, I close the conjunctiva and inject triamcinolone into the eye.

IMPROVED OUTCOMES

Our institution now has a 99% rate of macular hole closure with no later reopenings. Before we performed ILM peeling, our outcomes were not nearly as good (approximately 80% success rate and late recurrences). Our rate of macular pucker in eyes with retinal detachment has dropped to 0% with ILM removal.

We are quite aggressive with diabetic eyes at my hospital. Although we have no scientific proof, my experience suggests that our diabetic patients do much better with ILM peeling. A diabetic eye does beautifully with early vitrectomy and ILM removal. The eye needs far less laser, becomes stable, the edema subsides and it is no longer proliferative. Inflammation is also gone. Early surgery in a diabetic patient with good visual acuity, early edema and beginning proliferation will result in a much better long-term outcome than treating for years with conservative methods only to end up performing surgery anyway. If the patient has reached an age where the lens can be removed because accommodation has been lost already, there is no reason not to perform early surgery to save visual field and visual acuity. ■

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LM Peeling Using the 12-3044 Lucke ILM Universal Forceps

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Direct link to video: <http://eyetube.net/v.asp?renego>

