

ILM Peeling in a Detached Retina Without the Use of PFCL

BY RAJU SAMPANGI, MD, DNB; AND B.C. HEMALATHA, MS, FMRF

In this issue of Retina Today, Raju Sampangi, MD, DNB, and B.C. Hemalatha, MS, FMRF, describe a technique for internal limiting membrane peeling in a detached retina without the use of perfluorocarbon liquid.

We extend an invitation to readers to submit pearls for publication in Retina Today. Please send submissions for consideration to Dean Elliott, MD (dean_elliott@meei.harvard.edu); or Ingrid U. Scott, MD, MPH (iscott@hmc.psu.edu). We look forward to hearing from you.



— Dean Elliott, MD; and Ingrid U. Scott, MD, MPH

Internal limiting membrane (ILM) peeling is a challenging step during macular surgery. Various surgeons use different techniques to achieve the desired endpoint. Although ILM peeling is primarily performed in patients with macular hole, it is considered for many other indications. We perform ILM peeling for the following conditions apart from macular hole: (1) chronic diabetic macular edema not responding to intravitreal anti-VEGF or steroid therapy; (2) epiretinal membrane (ERM) in the macular region; (3) significant macular wrinkling but no visible ERM; and (4) chronic or recurrent retinal detachments that have inner retinal wrinkling, retinal stiffness, or apparent intrinsic contracture.

Sometimes patients with the aforementioned indications may have associated retinal detachment involving the posterior pole, necessitating ILM peeling in a detached retina. Performing the ILM peel in the presence of posterior pole detachment is more challenging than in an attached retina. This can be attributed to the fact that there is a lack of countertraction when removing the ILM in a mobile detached retina.

Perfluorocarbon liquid (PFCL) can be used to stabilize the posterior pole; however, the inherent weight of PFCL can make the initiation of ILM peel difficult. Also, in patients with a large macular hole or myopic macular hole with posterior staphyloma, there is a risk of subretinal migration of PFCL. We initially used PFCL but later observed that it leads to the ILM flap

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These reservations prompted us to try ILM peeling in detached retinas without using PFCL. This article details the steps that we follow when using this technique.

STAINING

In our initial surgeries, we stained the ILM with trypan blue under air (Figure 1A) and later began using brilliant blue G (Ocublue Plus; Aurolab, India). It is important to remember 2 properties of brilliant blue G dye: it stains ILM well and quickly, without the need for fluid-air exchange, and it stains the vitreous if left for some time. This dye is very useful for identifying vitreoschisis in patients with myopia and patients with diabetes, but it can sometimes mislead one to think

that the ILM has been peeled when actually it is a thin posterior hyaloid. We sometimes stain multiple times using very little dye, just 3 to 4 small streams over the area of interest. This helps confirm adequate removal of membranes, especially in patients with diabetes.

DRAINING SUBRETINAL FLUID

For patients in whom ILM peeling is indicated, if the detachment extends to the midperiphery or beyond, we usually drain the subretinal fluid through a separate retinotomy. This process of flattening the retina may stretch the membranes and help to create some loose areas that may aid in peeling. It also makes the retina less mobile, as the amount of subretinal fluid has been reduced. Even when staining with brilliant blue, one can create a small retinotomy and try a fluid-fluid exchange to reduce the amount of subretinal fluid.

INITIATING THE PEEL

Where?

The most critical part of this step is to lift the initial edge of the ILM. The trick to achieving a good grasp of the ILM is to look carefully at the retinal surface for ILM wrinkling; the ILM is usually loosely attached at the wrinkle, and one can initiate the peel at this location. More often, we find initiating the peel is easier nasal to the fovea in the area of the papillomacular bundle (Figure 1B). It is better to initiate the peel nasal to the fovea and carry it temporally; it is difficult to do the same in the opposite direction in a detached retina.

How?

We employ the direct pinch technique using Eckardt ILM forceps (DORC International) to initiate the edge. It is important to carefully pinch and do some slight lifting movements before the peeling movement to ensure that only the ILM has been engaged. This helps to reduce the chances of creating a retinal break.

COMPLETING THE PEEL

Once the edge is initiated, it is not difficult to peel. We have found it is important to re-pick the ILM closer to the retinal surface and make some minor adjustments as we peel to reduce any undue traction on the

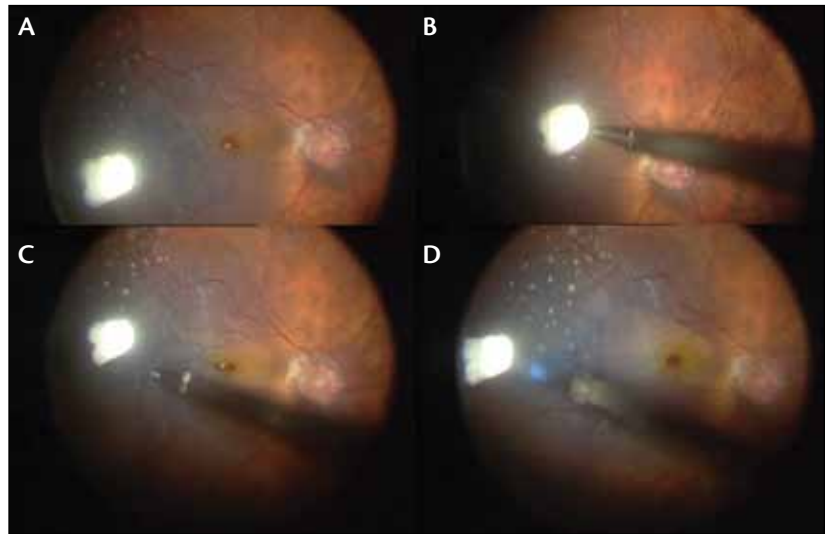


Figure 1. Intraoperative photographs of a patient with macular hole and posterior pole detachment after staining with trypan blue (A); initiating the ILM peel nasal to the fovea (B); extending the ILM peel temporally (C); and after completing the ILM peel (D).

mobile retina. As the retina is bulging upward due to the detachment, the edge of the ILM also bulges toward the surgeon, making it easier to grip. With regard to the extent, we try to peel as much as possible surrounding the hole. Usually, we try to extend it up to the arcades and at least a couple of disc diameters away from the hole on the temporal side, especially in large macular holes (Figures 1C and 1D).

VIEWING SYSTEM

Successful ILM peeling requires good visualization. We have used various viewing systems and personally prefer the OMS-800 OFFISS (Topcon) and the Resight 500 (Carl Zeiss Meditec) with the macular lens for ILM peeling.

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When performing ILM peeling in a detached retina, do you typically use PFCL?

- ☐ Yes
☐ No

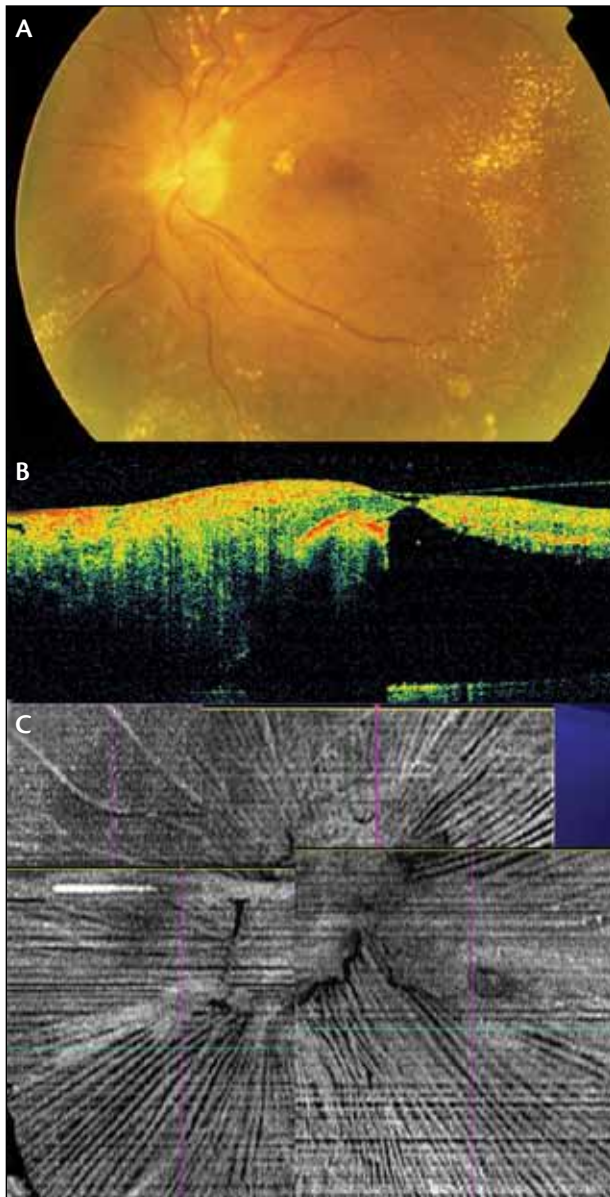


Figure 2. A fundus photograph of a diabetic patient with tractional retinal detachment (A). The spectral-domain OCT line scan shows the ERM and subretinal fluid (B), and the montage of C-scan enface images at the level of the ILM show surface wrinkling and tangential traction areas around the optic disc (C).

In the preoperative period, it is advantageous to maximize the amount of information that can be obtained from optical coherence tomography (OCT). Often, OCT is performed by ophthalmic assistants, and the surgeon looks only at the printout or final reports. In patients who require surgery, we usually perform and analyze the OCT images ourselves, which has helped in surgical planning.

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Looking at the whole area of the macula rather than at a particular cut section as seen in the reports, the wealth of information that can be deciphered is enormous, and it gives us a better understanding of the disease processes. For example, a cut section of 1 patient with tractional retinal detachment (Figures 2A, 2B, and 2C) shows an ERM with macular detachment. However, using the advanced visualization available with the Cirrus SD-OCT (Carl Zeiss Meditec), one can understand the tractional forces and the extent of tractional membranes very clearly. Using this information, one can plan where to initiate the peeling, whether it is for the ERM or the ILM.

CONCLUSION

ILM peeling can be performed safely in detached retinas without the use of PFCL. In our experience, we have not faced any complications using the technique described. ■

Raju Sampangi, MD, DNB, is the Director of and a Vitreoretinal Consultant at Netraspandana Eye Hospital in Bangalore, India. Dr Sampangi states he has no financial interests or relationships to disclose. He may be reached via email at: rajusampangi@hotmail.com.



B.C. Hemalatha, MS, FMRF, is an Assistant Professor at MS Ramaiah Medical College and a Vitreoretinal Consultant at Netraspandana Eye Hospital in Bangalore, India. Dr Hemalatha states she has no financial interests or relationships to disclose.

Dean Elliott, MD, is Associate Director of the Retina Service, Massachusetts Eye and Ear Infirmary, Harvard Medical School, and is a Retina Today Editorial Board member. He may be reached by phone: +1 617 573-3736; fax: +1 617 573- 3698; or via email at dean_elliott@meei.harvard.edu.

Ingrid U. Scott, MD, MPH, is a Professor of Ophthalmology and Public Health Sciences, Penn State College of Medicine, Department of Ophthalmology, and is a Retina Today Editorial Board member. She may be reached by phone: +1 717 531 8783; fax: +1 717 531 5475; or via email at iscott@hmc.psu.edu.