TIPS AND TRICKS FOR POLISHING YOUR RETINECTOMY SKILLS

These suggestions could help improve success rates.

BY JOHN D. PITCHER III, MD

Standard rhegmatogenous retinal detachments are typically straightforward to repair, but complex retinal detachments, such as those involving proliferative vitreoretinopathy (PVR), often require more advanced decision-making and technical prowess. If you are an avid reader of Retina Today, you may recall the insightful article by Charles C. Wykoff, MD, PhD, in the January/February issue on how to tackle recurrent retinal detachment due to PVR.¹ In that article, Dr. Wykoff reviewed several concepts and tactics for managing these difficult cases. This article expands on the details of performing a retinectomy, providing some pearls to guide you and some pitfalls to avoid in order to ensure the best possible outcomes.

PEARLS
Pearl No. 1: Stay Anterior
Assess the retinal detachment for the presence of both preretinal and subretinal membranes. Once you have completed your dissection, reassess for residual traction and intrinsic foreshortening of the retina that would prevent retinal flattening or could contribute to postoperative redelegation. If a retinectomy is deemed necessary to achieve the surgical goals, try to identify the most anterior path because contracture inevitably results in less remaining retina than was anticipated.

Pearl No. 2: Do Not Undercut
Although it is important to leave behind as much viable retina as possible, removing all areas of potentially problematic retina is equally crucial. Leaving behind significant preretinal membranes that cannot be peeled is often a mistake. If they do not involve the macula, they can be removed by including them in the retinectomized area. It is always best that the planned edge of the retinectomy be “fresh”—that is, free of any membranes, traction, or “rolling.”

AT A GLANCE
• If a retinectomy is deemed necessary, try to identify the most anterior path because contracture inevitably results in less remaining retina than was anticipated.
• Most circumferential retinectomies benefit from the use of heavy liquid (PFCL) as an adjuvant to flatten the retina.
• Silicone oil is your friend in complex retinal detachment repair.
levels of support from gas or oil tamponades. Often, a 180° inferior retinectomy is necessary.

**Pearl No. 3: Leave a Razor-Sharp Edge**

My partner, who recently saw one of my retinectomy patients on postoperative day 1 asked me how I got such a razor-sharp edge on the retina. The answer is simple, and it involves two key steps.

First, ensure that endodiathermy is used to create a well-defined line along the edge of where you want to perform the retinectomy. A line is preferable to a series of dots on the major vessels because the contiguous retinal whitening that is created becomes a stencil that can be followed with the vitrector. It also helps ensure complete hemostasis by avoiding capillary bleeding, as heme can contribute to future proliferation and contracture. You will find that the cauterized retina is easy to follow and remove with the vitrector.

Second, make sure that you do not leave any retina anterior to the cautery line because this will add to the area requiring laser.

**Pearl No. 4: Get Heavy**

Most circumferential retinectomies benefit from the use of heavy liquid (perfluorocarbon liquid, PFCL) as an adjuvant to flatten the retina. Attempting to perform air-fluid exchange without heavy liquid often results in postoperative retinal folds due to persistent subretinal fluid. Consider placing a bubble posteriorly before making the retinectomy to determine the dynamics and “tautness” of the retina. This can help guide your decision on how much retina must be removed (Video 1).

Tilting the eye away from the retinectomy while infusing PFCL helps to ensure that all subretinal fluid is squeegeed out. Making sure that anterior-posterior traction and tangential traction are removed prior to injecting PFCL will minimize the risk of subretinal migration of the heavy liquid. Do not be afraid to place a few drops of balanced saline solution posteriorly after air-fluid exchange to rinse out any retained PFCL. This remaining solution can then be reaspirated.

**Pearl No. 5: Maximize Air**

As in a giant retinal tear case, the air-fluid exchange is one of the most critical and underrated steps of retinectomy. As air is infused from above, aspiration should start at the top of the fluid phase. If PFCL was used, remove the aqueous phase first, starting at the most anterior portion of the retinectomy. As the exchange continues, deliberately move your extrusion cannula more posteriorly, making sure that you maximize removal of subretinal fluid at each position. You will have the least residual fluid if you rotate the eye in the direction of the retinectomy, similar to what you might do with a drainage retinotomy during a more routine rhegmatogenous retinal detachment repair. It is also beneficial to drain both sides of the retinectomy. For example, if an inferior 180° retinectomy was performed, make sure to extrude using the technique described above at both the 3- and 9-o’clock locations.
Pearl No. 6: Laser With Care

Common origins of redetachment are the lateral edges of a retinectomy. This may occur due to residual or recurrent traction, insufficient size of retinectomy, insufficient tamponade, or inadequate laser retinopexy. The latter has an easy fix. Typically, two rows of laser barricade should be placed along the posterior edge, carried all the way to the ora serrata. This almost always involves using scleral depression with an illuminated laser in a bimanual technique, or with a skilled assistant using the second hand as a light source. I usually increase the number of rows at the most anterior points of the retinectomy because these areas are notorious locations for failure (Video 2). Try to avoid applying excessive laser posteriorly, as a broad band will reduce the amount of residual viable retina, and hyperintense laser will increase inflammation without necessarily increasing the probability of success.

PITFALLS

Pitfall No. 1: Beware the Choroid

Sometimes you will find yourself, usually in a secondary operation, having to remove or cut retina that is firmly adherent to underlying structures. To avoid working in close proximity to the hypervascular choroid, use aspiration to elevate the retina from its iatrogenic attachments. If you are not able to easily free the retina, use care to avoid inadvertent choroidal injury (Video 3). Beveled-end vitrector probes, which are now becoming commercially available, can minimize the risk of this complication by decreasing the distance from the port to the choroid.

Pitfall No. 2: Clean up Residual Retina

Areas of anterior retina that are present after completion of the initial retinectomy line should be removed, if possible. These regions are devitalized and serve no visual or structural function. Residual necrotic retina can contribute to postoperative inflammation and can serve as a scaffold for proliferation. Posterior remnants may develop rolled edges due to membrane formation, which is a risk for redetachment. Residual retina near the ora serrata may contribute to development of anterior-loop traction, ciliary body dysfunction, and hypotony.

Pitfall No. 3: Avoid Tamponade Errors

Silicone oil is your friend in complex retinal detachment repair. Large retinectomies and eyes with abundant PVR will need adequate tamponade time to prevent recurrence. Inferior retinectomies, if midperipheral or equatorial, do not necessarily need an aggressive or 100% fill. Make sure to perform an inferior iridotomy in aphakic eyes or if pupillary block is a concern (Video 4). A brief period (eg, the first 24 to 48 hours) of
facedown positioning is useful to prevent the development of folds. Encourage the patient to avoid the supine position.

CONCLUSION
We all wish that rhegmatogenous retinal detachments were uniformly simple to repair. Unfortunately, both primary and secondary retinal detachments can hold challenges such as PVR and retinal contracture. Understanding how to assess these obstacles and use advanced techniques to overcome them is crucial to achieving a definitive surgical solution. Performing a retinectomy, although conceptually simple, requires attention to detail at each step to help ensure the best possible outcome for your patient.


John D. Pitcher III, MD
- retina specialist and partner, Eye Associates of New Mexico; assistant clinical professor of ophthalmology at The University of New Mexico, both in Albuquerque, N.M.
- financial interest: none acknowledged
- jd_pitcher@eyenm.com

Video 4. JIA and Retinal Detachment With Cyclitic Membrane
An aphakic pediatric patient with juvenile idiopathic arthritis (JIA) developed a primary retinal detachment with anterior PVR. Membrane peel partially relieved the traction, but a localized retinectomy was necessary to achieve reattachment. Prior to filling with silicone oil, an inferior iridectomy is performed to avoid the development of pupillary block.