

# Changing Surgical Approaches for Retinal Detachment

Ever-present challenges in vitreoretinal surgery for complicated retinal detachment include visualization, hemorrhage and re proliferation.

BY DONALD J. D'AMICO, MD

**S**urgeons have several options when performing vitreoretinal surgery for primary retinal detachment. The available choices include observation, laser delimitation, pneumatic retinopexy, vitrectomy, scleral buckle, Lincoff balloon and combinations of the aforementioned.

## RARELY SELECTED OPTIONS

Simply observing a peripheral and demarcated retinal detachment may have a limited role in the elderly or in debilitated asymptomatic patients with detachments anterior to the equator. This path requires careful patient education and follow-up.

Laser delimitation is occasionally selected as a treatment option for small, flat detachments, such as a retinal tear with some amount of surrounding fluid. The use of laser delimitation in more extensive detachments is again restricted to elderly or debilitated patients, and usually in the setting of an inferior detachment. This procedure also requires careful patient education and follow-up.

Although the Lincoff balloon demonstrated outstanding proof of concept for retinal detachment, this technique has never gained wide usage. This is probably due to the involved nature of the procedure as well as the fact that it is unattractive for the patient. This technique, however, may have a role in the management of inferior detachments with a single tear.

A combination of procedures is typically too invasive and not necessary for primary retinal detachment.

## PRINCIPAL CHOICES

**Pneumatic Retinopexy.** Pneumatic retinopexy is an extremely viable option for primary retinal detachment, depending on the following considerations: location and

number of breaks, lattice degeneration, lens status and the patient's ability to understand and cooperate. Currently, at least 60% of primary detachments in the United States appear to be managed in this fashion.

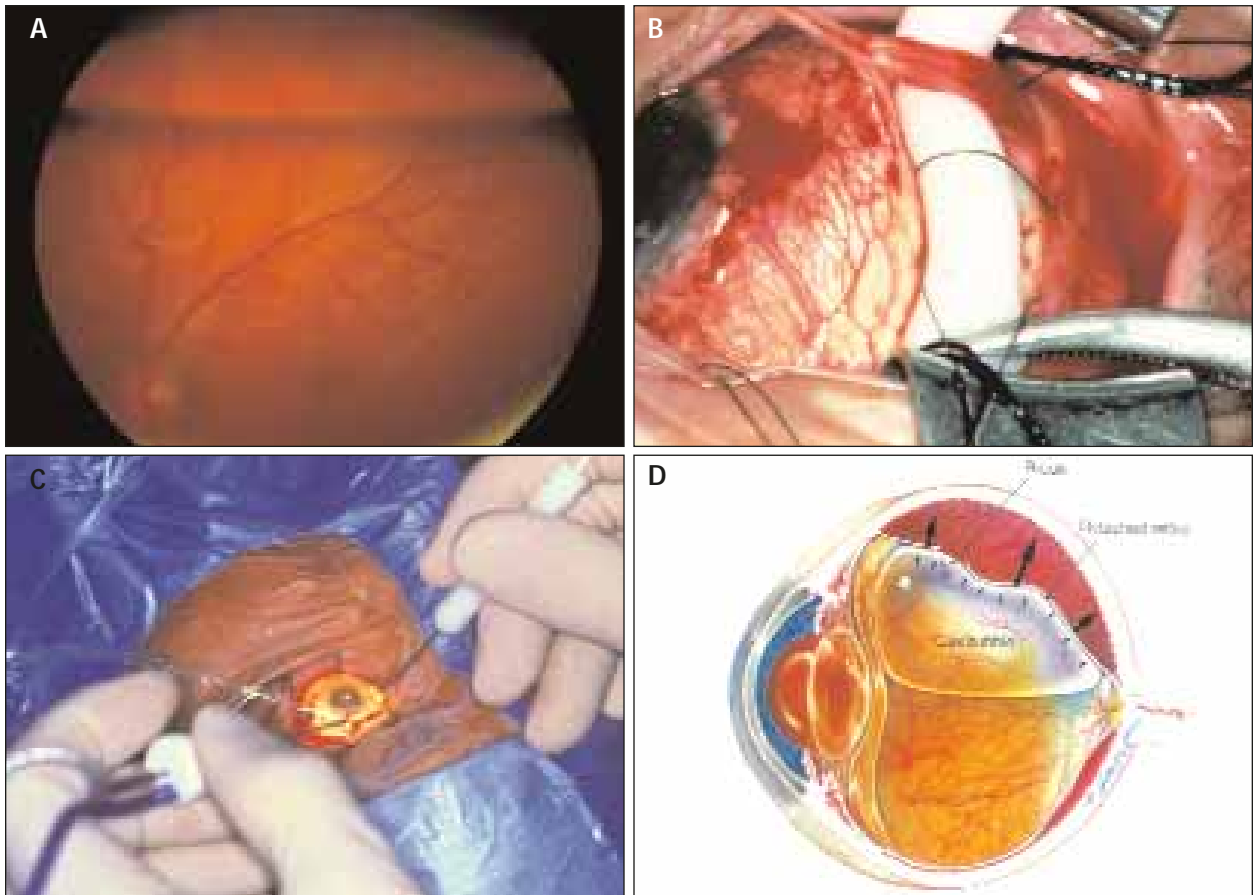
**Scleral Buckling.** Scleral buckling is a pathway of proven success in the management of retinal detachment, but its utilization in the management of primary retinal detachment has been greatly reduced over the past 2 decades. This is due to many factors, including the availability of pneumatic retinopexy and vitrectomy as attractive alternatives, and the overall reduction in primary retinal detachments due to improvements in small-incision cataract surgery.

Scleral buckling for a primary detachment is most frequently considered for cases with multiple tears in more than one quadrant, for inferiorly located tears, for pseudophakic cases or for retinal detachments in young patients in whom maintaining the lens status is critical. Nevertheless, many of these same cases can also be managed by vitrectomy or pneumatic retinopexy, further eroding the role of buckling for primary detachment.

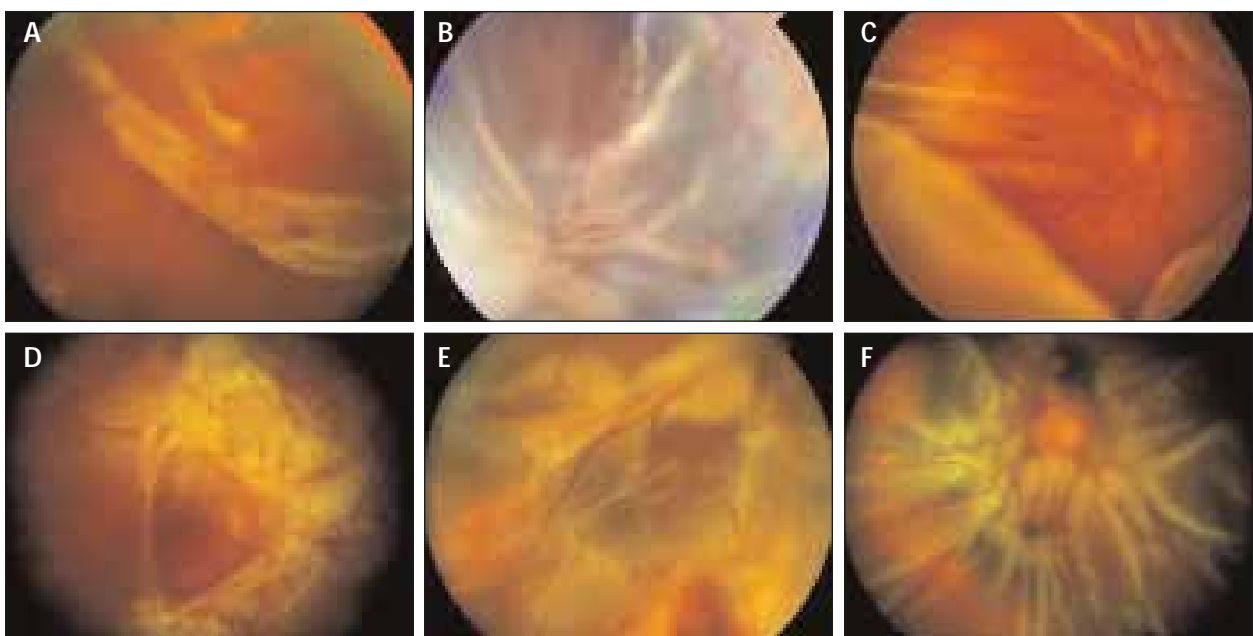
**Vitrectomy.** Vitrectomy for primary retinal detachment is also an attractive option for many cases. The main considerations with this surgical technique include concern for the lens, the ability to visualize and work in the far periphery, management of subretinal fluid and the selection of tamponade (Figure 1).

**Management of Subretinal Fluid.** Just as there are several options for overall retinal detachment treatment, there are several options for the management of subretinal fluid during vitrectomy for retinal detachment. These options include

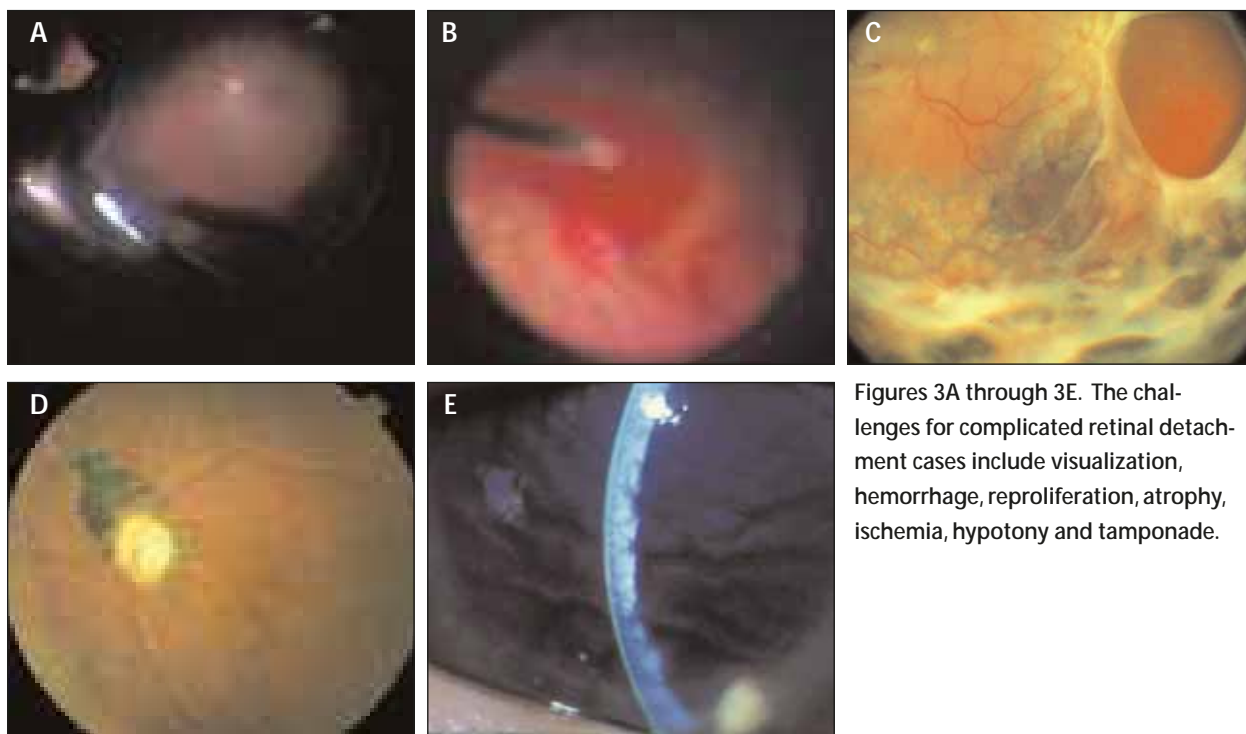
- observation,



Figures 1A through 1D. Trends in primary retinal detachment (A) include the evolutionary, such as the shift from scleral buckling (B) to vitrectomy (C), as well as the revolutionary, such as the shift from scleral buckling or vitrectomy to pneumatic retinopexy (D).



Figures 2A through 2F. These photos show various examples of complicated retinal detachments.



Figures 3A through 3E. The challenges for complicated retinal detachment cases include visualization, hemorrhage, re proliferation, atrophy, ischemia, hypotony and tamponade.

- gas tamponade without drainage (possible using expansile concentrations),
- endodrainage through a posterior retinotomy (and/or preexisting posterior break),
- endodrainage with an extending subretinal snake cannula,
- expression of subretinal fluid through the breaks with perfluorochemical, and
- external drainage (rarely an attractive option).

### COMPLICATED RETINAL DETACHMENT

The elements of repair for complicated retinal detachment (Figure 2) include

- vitrectomy,
- scleral buckle,
- lens/IOL removal,
- membrane peeling,
- retinotomy/retinectomy,
- perfluorochemical use,
- endodrainage/diagnostic air/fluid exchange,
- retinopexy (laser/cryo),
- tamponade (SF6, C3F8, silicone oil), and
- postoperative air/fluid exchange and postoperative laser.

In vitrectomy for complicated retinal detachment, the lens or IOL should be removed in the majority of cases. It is better to have an aphakic success than a pseudophakic failure. The retina can be mobilized by the use of membrane peeling and retinotomy.

It is no longer necessary to revise a buckle for the majority of recurrent primary or complicated retinal detachments. Buckling may also be omitted in many cases if one is also performing a vitrectomy, except for the following situations:

- Primary proliferative vitreoretinopathy (that is, proliferative vitreoretinopathy [PVR] presenting without prior surgery);
- PVR in pseudophakic eye with a good chance of success without IOL removal;
- Certain giant tears in which buckling is selected over lens removal for initial surgery;
- Detachments in children or very young patients for whom keeping the lens is critical; and
- Rare cases with complex anterior segment issue.

There continue to be challenges in vitreoretinal surgery for complicated retinal detachment (Figure 3). These challenges include visualization, hemorrhage, re proliferation, atrophy, ischemia, hypotony and tamponade. ■

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