Managing retinal detachment: tips for the beginners

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Introduction
In the portfolio of a vitreo-retinal surgical practice, management of retinal detachments occupies the premium position. The following serves as an introduction with a philosophical slant rather than as a detailed listing of the dos and don’ts.

Is it retinal detachment?
While most often the diagnosis of retinal detachment is straightforward, there could be confusion on occasions. Conditions that can be confused with retinal detachment are retinal oedema (as in Berlin’s oedema), retinoschisis, choroidal detachment, thick vitreous membranes (as in Uveitis), altered blood, etc. Evaluation should include careful slit lamp biomicroscopy, indirect ophthalmoscopy and where needed ultrasonography (even when there is view of some fundus details).

Is it rhegmatogenous retinal detachment?
In most cases, the rhegmatogenous nature of retinal detachment is obvious from the appearance of the retinal detachment as well as the presence of retinal break. There are, however, situations when this may not be that obvious. Chronic retinal detachments can, on occasion, have some tendency towards shifting fluid and can be confused with secondary retinal detachments. Retinal detachments in the milieu of uveitis can sometimes cause confusion since a retinal break can occur due to the traction caused by the vitreous membranes (due to uveitis) and can actually be rhegmatogenous in nature. If the break is not obvious, it may be wrongly treated with steroids and immunosuppression. Indicators as to the true nature of the problem are relatively quiet eye, undulations in retinal surface, extent of retinal detachment following Lincoff’s rules, pigment in vitreous cavity, etc.

There are several instances of retinal detachments secondary to tumours such as melanoma having been subjected to scleral buckling. This error in judgment can occur especially, when the surgeon did not evaluate the eye in detail before surgery and relied upon the input from less experienced personnel. This is one instance where ultrasonography is valuable in the presence of clear media.

Discussion with patient/relatives
In the discussion with the patient, it is important one is able to indicate broadly the approach to surgery, the expected success in terms of reattachment of retina, the expected recovery of vision if surgery is successful, any limitations in travel, risks of surgery including risk of loss of existing vision, need for multiple surgeries (if anticipated), etc. The patients often misinterpret expression of percentage of success as the expected visual improvement. This can become very important while operating on eyes with chronic retinal detachments.

Planning the approach
There is no confusion in case of obviously complicated cases where in vitreo retinal surgery would be the only approach possible such as in cases of gross proliferative vitreoretinopathy, giant retinal tears, posterior retinal tears, macular holes with retinal detachment, colobomas with retinal detachment, vitreous haemorrhage with retinal detachment, etc.

In case of simple retinal detachments, the options one faces are between pneumatic retinopexy, scleral buckling and pars plana surgical approach. A lot would depend on one’s training and individual discretion. The following guidelines may be helpful if one has an open mind to choose between the three options:

a) If choosing pneumatic retinopexy, note that the entire retina can be evaluated well with binocular indirect ophthalmoscope and scleral indentation to exclude additional retinal breaks, especially inferiorly. Even minimal vitreous haemorrhage or peripheral cortical cataract can interfere with proper visualization all round. Just because there is an obvious horse-shoe tear superiorly, does not mean there are no other less obvious breaks elsewhere. Failure to identify the additional breaks is the most common cause for failure of pneumatic retinopexy, unfairly blamed on new breaks/proliferative vitreoretinopathy (PVR), etc.

b) Avoid pneumatic retinopexy in relatively large breaks. Chances of sub-retinal migration of the bubbles are high.

c) Retinal detachments due to retinal dialysis are mostly managed with scleral buckling. There are several advantages to managing them with scleral buckling instead of performing vitreo-retinal surgery.

d) Retinal detachments clearly related to lattice degeneration with atrophic holes are again best managed with scleral buckling. Even eyes with some amount of intra-retinal and sub-retinal gliosis can do well with scleral buckle in these circumstances.
Pseudophakic eyes with retinal detachment caused by retinal tears (not atrophic holes) are best managed by pars plana route. The addition of encirclage is optional but avoided if possible.

The addition of encirclage to pars plana surgery would be preferred in eyes where vitreous cannot be closely shaved (as in phakic eyes), and inferior retinal breaks that could potentially lift up because of contracture of residual vitreous.

Choice of gas tamponade after vitrectomy: simple rhegmatogenous retinal detachments with superior breaks distributed in not more than one quadrant can be managed with short-acting gases such as SF6. Eyes with wider distribution of breaks or relatively inferior breaks are best managed with longer-acting gases such as C2F6 or C3F8.

Importance of preoperative detailed evaluation

One cannot over emphasize the need for detailed preoperative evaluation. A detailed retinal drawing is optional but valuable, especially when scleral buckling is performed. The conditions during the surgery may not be as good as in the clinic from the perspective of indirect ophthalmoscopic visualization. In addition to the physical impediments caused by the operation theatre set up, trolleys and sterile draping, the cornea can become oedematous and the pupil may constrict causing sub-optimal visualization. The presence of a detailed drawing can function as an excellent road map to help localize the lesions under these circumstances. In addition, the act of performing a detailed retinal drawing forces the novice surgeon to become familiar with the retinal condition so well that surgical time can actually be shortened.

Issues that could potentially compromise the final outcome

1. Decision to do scleral buckling when the visualization is inadequate.
2. Attracted by one obvious large tear and missing the other tiny tears along the vitreous base.
3. DACE technique (Drain–Air injection–Cryo–Exoplant) that has gone awry: too many bubbles of air that interfere with proper localization of break as well as appropriateness of the buckle location.
4. Not evaluating the location of the break vs. buckle relationship at conclusion (after drainage) and performing corrective measures if needed. In some cases, the break may fall just at the edge of buckle and may not be adequately supported. If identified during surgery, what is needed is a small additional step of shifting the buckle posteriorly to avoid recurrences.
5. Not placing an adequately wide buckle: there is a general tendency to choose the buckles with narrow width (#276/#277) since it makes it easier to place the mattress sutures. However, this choice should not be at the expense of inadequate coverage of the break. One should not hesitate to place a broader buckle such as #279 if needed.
6. Sub-retinal bleed at conclusion of SRF drainage: this is not an often-predictable problem. Contrary to intuitive thinking, significant bleeds can occur at conclusion of drainage even in younger age groups and in non-myopic eyes. Cauterization of the knuckle of choroid does not always prevent the bleed. Most significant bleeds occur at conclusion of drainage when the pressure is released suddenly, even before the sutures can be tightened. One way out can be to do controlled drainage. Drainage some amount—inject BSS—drain more and then tighten the buckle sutures. If despite the precautions bleed occurs and has migrated into sub-retinal space, one can inject a bubble of C3F8 and place patient prone to permit the blood to shift away from macula.
7. Inadequate cryo-induced chorio-retinal adhesion around the retinal break: this situation can arise when the retina in the area of break is highly elevated and the ice ball formed by the cryoprobe is not reaching the retina. Theoretically freezing the choroid—RPE complex should be enough to cause adequate chorio-retinal adhesion once the retina is reattached; however, due to the high degree of parallax, the freezing may not be under the edge of break—as desired. One can supplement with postoperative laser as long as there is no fluid around the break.
8. Fish mouthing: this is not an uncommon complication after placing circumferential buckles for large horseshoe tears. Injecting a bubble of gas and positioning the patient can easily remedy this complication.

The use and misuse of silicone oil

In addition to more common indications such as severe PVR, coloboma-related retinal detachments, large giant retinal tears (180° and more), etc., one may have to use silicone oil in patients who cannot posture themselves, patients who need to
fly immediately after surgery, one eyed patients (for early visual rehabilitation), etc.

One should not take usage of silicone oil lightly. Once injected, we have committed the patient for at least one more surgery. The worry of facing a recurrent total retinal detachment after gas tamponade should not push novice surgeons to overuse silicone oil. With use of silicone oil, we postpone the issues but do not get rid of them. Long-term complications are well known.2 Shallow inferior retinal detachments may go unnoticed.

There is a tendency to postpone removal of silicone oil even when retina is well attached—for fear of facing possible recurrence after removal of silicone oil. Some surgeons keep convincing themselves that it is OK to leave the oil in till it causes complications. Some surgeons place silicone oil for inferior breaks, where gas tamponade with additional encirclage would have sufficed—just to avoid converting so-called suture less vitrectomy to a sutured one.

**Adopting new techniques**

Change is a constant phenomenon and this applies to the field of vitreo-retinal surgery as well. Adopting a new technique does not mean one should forget an old technique, especially one as robust as scleral buckling. It is accepted that scleral buckling is less forgiving but the tendency to manage all cases of retinal detachment with the pars plana approach should be abhorred.

The new technique of using a 25-G chandelier light along with the wide-angle visualization system (BIOM) and performing scleral buckling has certain advantages.3 Unlike with indirect ophthalmoscopy, the image of the retina can be magnified making it easier to localize smaller lesions. The use of this hybrid technique may be the best way of bringing some of the young surgeons back to scleral buckling.

**References**


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