The main aim of retinal detachment surgery is relieving the vitreous traction on the retinal break, opposing the retinal break to the retinal pigment epithelium and achieving retinopexy by laser or cryotherapy. The principles remain the same but the surgical treatment has evolved from the time scleral buckling (SB) technique was popularized by Charles Schepens to the introduction of parsplana vitrectomy by Robert Machemer. Furthermore, refinement of surgical procedures, instrumentation, technological advancement in vitrectomy machines, lasers, microscopes and skill enhancement of surgeon has ensured almost 100% success rate of reattachment. The purpose of this interview was to explore how the practice pattern in vitreoretinal surgery is evolving across generations in India. We sought to know the current trends in management from the experiences of vitreoretinal specialists of three different generations in India.

Atul Kumar, MD, FAMS is chief & professor of ophthalmology at Dr R.P. Centre for Ophthalmic Sciences All India Institute of Medical Sciences, New Delhi. He pursued his vitreo-retinal fellowship at the University of Maryland, Baltimore. He is a vitreoretinal surgeon par excellence and has been in this field for more than 25 years.

Ashish Vaidya MS, FRCS (Edin), FMRF has been in retinal practice for the past 20 years in Mumbai at Nethra Retina and Laser Centre and is attached to Lilavati Hospital. He had his training in vitreoretina at Sankara Nethralaya.

Amit Jain, MS, FMRF has completed fellowship in vitreoretina from Sri Bhagwan Mahavir Vitreoretinal Services, Sankara Nethralaya and represents the youngest generation of vitreoretinal surgeon in this interview. He is presently working as an associate consultant in the Department of Vitreoretinal Services at Shri Ganapati Nethralaya, Jalna since 2016.

What are the current treatment modalities for managing rhegmatogenous retinal detachment?

Amit Jain: Rhegmatogenous retinal detachment (RRD) treatment modalities include laser barrage for peripheral, subclinical RD, pneumatic retinopexy, SB and primary vitrectomy with tamponade.

Ashish Vaidya: Most common in my practice would be vitrectomy with silicone oil followed by vitrectomy with gas, scleral buckle and the least common would be pneumoretinopexy.

Atul Kumar: There are three primary modalities for the treatment of RRD in the modern era—SB, primary vitrectomy with endotamponade and pneumatic retinopexy. A combination of SB and vitrectomy (vitrectomy-buckle) is also a popular modality.

In brief, what are the tips to choose a particular modality (SB/pneumatic retinopexy/primary vitrectomy) for managing a case of RD?

Amit Jain: For any patient presenting with RRD in OPD, my first thought is ‘Is it Bucklable’. If it’s a yes, then scleral buckle (SB) is my procedure of choice. My criteria for SB are peripheral depressible break/breaks, PVR (proliferative vitreo-retinopathy) not more than grade C1 (ideally PVR B or less), absence of PVD in young patients and pediatric cases. Also in cases with extensive sub-retinal gliotic bands, where removal of bands would be difficult via vitrectomy, I prefer SB, as adequate indent and treatment of breaks obviates the need for removal of these bands in many cases. I have a very high threshold for pneumatic retinopexy which include single superior break in a relatively fresh RD. Primary vitrectomy would be used in all cases which doesn’t fit the SB criteria.

Ashish Vaidya: In today’s era, primary vitrectomy would be the procedure of choice. The factors pushing me not to do a vitrectomy would be phakic patient, young patient, absence of a posterior vitreous detachment in which case I would do a buckle. Pneumoretinopexy would be restricted to single superior breaks and a very cooperative patient in terms of understanding the procedure and willing for resurgery.

Atul Kumar: Vitrectomy as a primary modality works well in most cases, especially pseudophakic...
RDs. At times, it is the only modality of use in cases such as those with extensive PVR, choroidal colobomas, choroidal detachments, giant retinal tear with rolled flap and open globe injuries, and macular pathologies induced RDs. SB is a good choice in young, phakic patients who are likely to have a tightly adherent posterior hyaloid. The single operation success rate is comparable for both modalities. Pneumatic retinopexy has an unacceptably high failure rates for use as primary modality except in select cases where retinal breaks are perfectly aligned to the vertical or horizontal meridian.

**What is the role of encirclage in RD in the era of MIVS (micro-incisional vitrectomy surgery)?**

**Atul Kumar:** Complete vitrectomy is almost impossible to achieve and for me it is here that encirclage still holds a big role in the management of RRD as it helps support the ora and vitreous base thus minimizing the risk of traction and resultant break from the residual vitreous. I usually pass encirclage in almost all my RRD cases unless it is difficult to pass the encirclage due to extensive scarring (in previously operated scleral tear cases) or where 360° relaxing retinotomy is done.

**Ashish Vaidya:** I would still do an encirclage in inferior breaks and if the patient has PVR.

**Atul Kumar:** MIVS has allowed shaving vitreous close to the retina and a safe vitreous base dissection. This reduces the postoperative incidence of PVR. Nevertheless, in cases with intrinsically contracted retina, anterior PVR failed surgeries or in phakic patients with multiple peripheral breaks, an encircling element together with vitrectomy will help achieve successful retinal reattachment and avoid chances of re-detachment secondary to PVR.

**What is the most important factor in improving the surgical outcome in a case of RD?**

**Amit Jain:** I would like to divide into two parts:

- Disease factor: absence of PVR.
- Surgeon factor: appropriate planning of technique and commitment to the approach used helps in improving the surgical outcome.

**Atul Kumar:** removing all traction on the break is the most important factor for improving surgical outcome in a case of RD. ‘Do it right, the first time’.

**What are the current indications for using heavy density vitreous substitutes?**

**Amit Jain:** With no personal hands on experience with heavy density vitreous substitutes, I would like to try them in cases of inferior breaks or recurrent inferior RRDs.

**Ashish Vaidya:** I would use them in recurrent inferior detachments.

**Atul Kumar:** Earlier silicone oil, which is heavier than water, was considered useful in the treatment of complex RDs (such as those associated with extensive PVR and open globe injury) with retinal breaks and PVR primarily located in the inferior quadrant. But, in the modern era, even these cases can be adequately managed with combined vitrectomy and encirclage along with lighter than water silicone oil.

**When would you use PFCL for managing an RD?**

**Amit Jain:** absolute indications (almost): In GRT to flatten the posterior retina, in extensive PVR (PVR C.D) during membrane peeling, during ILM peeling in cases with macular hole. Relative use: PFCL is used to flatten the retina and drain subretinal fluid through primary peripheral break and thus avoid making an additional posterior drainage retinotomy.

**Ashish Vaidya:** I primarily do a posterior retinotomy and do a fluid-gas exchange. PFCL would be used for a giant retinal tear or with other adjunctive conditions like a nucleus or a lens drop or in management of intraocular foreign body.

**Atul Kumar:** PFCL is a useful adjuvant in the management of RD and acts as a ‘third hand’ of the surgeon. It is of invaluable use in the management of detachments with giant retinal tears, dislocated lens or IOL and retained intraocular foreign body. It is also useful during ILM peeling in detached retina, for placing ILM flaps over macular holes in myopic macular hole retinal detachments and in the management of subretinal bleeding.

**What are the factors for choosing silicone oil versus gas as tamponade?**

**Amit Jain:** Personally prefer oil in almost every case unless it is a case of simple RRD with macular hole as gas provides better tamponade for macular hole closure.

**Ashish Vaidya:** In the Indian scenario with patients not complying for positioning and poorer follow-ups, I would prefer silicone oil in most patients. It also gives them earlier visual rehabilitation than gas. Gas would be the first choice for superior or posterior retinal breaks.

**Atul Kumar:** The choice of tamponade depends on the age of the patient, ability to maintain postoperative positioning, location and extent of the break, PVR at the time of surgery, presence of choroidal detachment, phakic status and fellow eye status. (Silicon oil may be preferred in
pediatric patients, complex RDs like GRT and RD with CD and in one-eyed patients.)

**What are the major innovations in the management of RD in the new millennium?**

**Amit Jain:** Use of 23–27G MIVS surgery with better instrumentation provides superior fluidics and reduces surgical trauma and hastens post-operative recovery.

1. Addition of valves to the trocar system thus allowing a closed-system vitrectomy surgery.
   New cutter designs with larger port areas to fasten vitrectomy, location of port closer to the tip allowing it to be used even in membrane dissections along with increased stability when around mobile retina. Higher cut rates and varying duty cycles with open or closed bias help in extensive vitreous shaving or membrane dissection.

2. Advances in the viewing systems with newer wide-angle contact and non-contact systems.

3. Higher lumen light sources provide excellent view. Chandelier also comes with advantage of bimanual surgery in difficult situations/extensive PVR.

4. Postoperatively, OCT has become an important diagnostic tool to look for residual subretinal fluid in chronic RD cases where functional outcome is not in accordance with anatomical success.

5. Macular buckle in cases of RD associated with high myopia and macular hole-history revisited.

**Ashish Vaidya:** MIVS with safer and faster vitrectomy and more delicate control in which one can go close to the retina and shave the vitreous base has tremendously changed the outcome of the surgeries. Also one must keep in mind that patient awareness is increasing and we are seeing more patients with a recent decrease in vision. More patients are seen with pseudophakia and RD. MIVS enables us to do a better vitrectomy and also reduces the lens-related complications like cataract or lens touch which were more common earlier.

**Atul Kumar:** The development of high-speed (upto 10,000/- cuts per min) small-gauge duty cycle-controlled vitrectomy systems with better fluidics is the only significant and path breaking development in the last two decades in the management of RD.

**Innovations in buckling:**

1. Chandelier-assisted buckling

2. Suprachoroidal buckling (Injecting hyaluronate in suprachoroidal space corresponding to retinal break.

**Innovations in vitrectomy:**

1. Macular buckle for macular hole RDs

2. Use of microscope-integrated intraoperative OCTs (MiOCT)

3. Ngenuity Heads-up digital-assisted vitrectomy surgery

4. High-frequency electric welding for retinopexy

**What are the preoperative evaluations and checks that are specific for managing RD in paediatric patients?**

**Amit Jain:**

1. Age of patient as positioning won’t be possible in very small kids.

2. Cause of RD—trauma, etc.

3. Associated syndromes—Marfan syndrome, Stickler syndrome, etc.

4. Associated ocular anomalies—microcornia, coloboma.

5. Location of breaks.


7. Grade of PVR

**Ashish Vaidya:** A complete paediatric systemic evaluation and fitness for anaesthesia would be a must for these patients including an X-ray chest. The surgery also needs to be done in a set-up which is geared for giving general anaesthesia to children and has an ICU facility at hand.

**Atul Kumar:** Preoperative evaluation for cause of RD and confirming existence of RRD, rule out tumour, evaluation of extent of PVR (if required with the help of ultrasound biomicroscopy for identifying anterior PVR), lens status and evaluation of fellow eye. Wide field imaging and angiography (Retcam or UltraWide field imaging) may help to document and rule out secondary causes. An examination under anaesthesia may help to formulate the plan.

---