

Correspondence address:

Fabio Patelli
Fellow of EVRS
Co-founder of YEVRS
Vitreoretinal Surgeon
Via Pietro Mascagni 20
20122 Milan
ITALY
Email: f.patelli@tiscali.it

**EDITOR'S
VOICE**

A New Age In Vitreoretinal Surgery?

Patelli F

Fellow of EVRS, Co-founder of YEVRS, VitreoRetinal Surgeon, Via Pietro Mascagni 20, 20122 Milan, Italy.

Since the introduction of pars plana vitrectomy in the early 1970s by Machemer,^{1,2} advances in the field of vitreoretinal surgery have been dramatic. Surgeons and specialized industries developed many instruments for optimize vitrectomy. They focused their studies on cutters, forceps and scissors. Vitrectome probes have increased aspiration rate and cutting speed reaching 2500 cpm (cuts per minute). In some vitrectome machines the surgeon can use alternatively the peristaltic or Venturi aspiration system. Endovitreal forceps and scissors have been created as needed. Endolaser fibers are now straight or angled and if necessary scissors and forceps are illuminated. With all these different kind of instrumentation all vitreoretinal pathologies are treatable nowadays.

Nevertheless till few years ago the surgical approach to the vitreous and retina was always the same. After conjunctival peritomy, a 0.9 mm (20 gauge) scleral incision was made. A complete vitrectomy was performed for every kind of vitreoretinal pathology and scleral and conjunctival sutures were placed at the end of the surgery.

Recently a less invasive transconjunctival sutureless vitrectomy (TSV) has been introduced.^{3,4} As every vitreoretinal surgeon knows, this surgical system utilizes fine instruments of 0.7 and 0.5 mm (23 and 25 gauge) which are inserted into the vitreous cavity through cannulas, placed transconjunctivally using proper trocars. Today many vitreoretinal surgeons are using these 23 and 25 gauge TSV in their clinical practice.

Now that all the surgical instrumentation is complete for these new finest systems which one is the real advantage in using them?

There is no doubt that with these new techniques the surgical trauma is dramatically reduced thanks to the absence of conjunctival peritomy and scleral incisions. Scleral and conjunctival sutures are not required. This permits also a reduction or absence of postoperative patient's discomfort.

The vitreous base is protected by the cannulas during the introduction and removal of the instruments.

Thanks to the smaller infusion line the intraocular fluid exchanges are extremely reduced. This permits a more stable intraocular pressure during surgery with a consequent reduction of the eye wall trauma. Another important advantage for 25 gauge TSV only (not yet for 23 gauge system) is the possibility of shifting the position of the instruments and the infusion cannula, for a better approach to the superior sectors of the eye. With the 25 gauge TSV a complete vitrectomy is very difficult because the flexibility of the instruments and the presence of the cannulas make the vitreous base impossible to remove. Nevertheless some surgeries, above all macular surgery, with a limited vitrectomy are given excellent results. This means that the complete vitreous removal not always is necessary.

The 23 gauge TSV utilizes a stiffness instrumentation similar to 20 gauge system. It is less traumatic then 20 gauge and a complete vitrectomy

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Surgeon, Via Pietro
Mascagni 20, 20122 Milan,
Italy.

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is possible. It looks like with 23 gauge system a wider field of vitreoretinal pathology are treatable than with 25 gauge.

What is more convenient to use, 20 gauge, 23 gauge or 25 gauge?

Even if 20 gauge system looks like to be a past procedure, I believe it will never disappeared. There are some pathologies like ocular trauma with intraocular foreign body, or cataract dislocated into the vitreous cavity that can be treated with 20 gauge system only. Moreover heavy silicone oil or silicone oil with a viscosity more than 1000 cs cannot be injected through a small gauge cannulas.

For the others vitreoretinal pathologies, what is better to use, 23 gauge or 25 gauge?

Actually in USA the 25 gauge system is preferred, because is thought to be less invasive then 23 gauge. In Europe 23 gauge system is preferred, because is thought to be the better compromise between 20 and 25 gauge. I believe the most important thing is what's the best for the patient, not what is easier for the surgeon. It is always better to use the safe and less invasive procedure if the same results are reachable.

There is another important aspect to be considered: economic interests. Some industries have big interests in promoting one or another system and this could influence the surgeon choice. These systems are also very expensive and not all the surgeon can use them. This is a big limit in developing and optimizing new techniques.

Is it really a new age in vitreoretinal surgery?

The approach to vitreoretinal pathologies is really changed. Today the vitreoretinal surgeon has different surgical system for approaching a pathology. Maybe is still not a new age but for sure something is changed in vitreoretinal surgery.

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