

# Personal Experience With 27-gauge Nonvitrectomizing Epiretinal Membrane Peeling

BY FABIO PATELLI, MD

**M**icroincision vitrectomy surgery (MIVS) was first introduced several years ago: in 2002, Fujii et al<sup>1</sup> introduced 25-gauge three-port pars plana vitrectomy (PPV), and in 2005, Eckhart<sup>2</sup> introduced 23-gauge PPV. As microincision techniques have evolved and become more prevalent, specific benefits and drawbacks of MIVS have become evident. The sutureless aspect of the surgery results in several advantages.

Because a peritomy is not performed and conjunctival and scleral sutures are often not needed, operative times may be shorter. In addition, the lack of sutures may result in less postoperative inflammation, less astigmatism, and improved postoperative comfort.<sup>3-6</sup>

The incidence of cataract progression, however, a major postoperative complication of vitrectomy, remains high even with small-gauge instrumentation.<sup>7</sup> To prevent postoperative cataract progression, in 2007 Sakaguchi and co-workers<sup>8</sup> proposed a nonvitrectomizing vitreous surgery (NVS) for epiretinal membrane removal using a 27-gauge lightpipe and forceps. The use of NVS in cases with epiretinal membrane has been reported to be safe and efficacious compared with conventional 20-gauge instrumentation.<sup>9,10</sup>

In this article, I report my personal experience using 27-gauge transconjunctival NVS for epiretinal membrane (ERM) removal.

## PATIENT SELECTION

In order for a minimally invasive approach to facilitate preservation of lens clarity, patient selection is particularly critical for 27-gauge NVS surgery for ERM removal. The eye must, of course, be phakic with a clear lens, and the ERM must be well visualized and not too thick or multi-



Figure 1. Twenty-seven-gauge chandelier probe is directly inserted transconjunctivally at the superotemporal (LE) or superonasal (RE) pars plana region.



Figure 2. Twenty-seven-gauge fiber optic can be inserted directly transconjunctivally without a pre-sclerotomy.

layered. The surgical approach will also be easier if the posterior vitreous is detached, but this is not an absolute requirement. The patient must not be symptomatic for vitreous floaters because this surgery may increase the presence of floaters.



Figure 3. On the right, the 27-gauge forceps are inserted directly through the conjunctiva without any cannula. A pre-sclerotomy is made with a 27-gauge needle.

### SURGICAL TECHNIQUE

The surgical technique is the same reported by Sakaguchi and coworkers.<sup>8</sup> The illumination system employed is a 27-gauge chandelier probe (Synergetics, O'Fallon, MO) anchored transconjunctivally at the superior pars plana region (Figure 1).<sup>11</sup> A 27-gauge fiber optic (Synergetics) can be also used and inserted directly through the conjunctiva without any pre-sclerotomy (Figure 2). After one scleral penetration using a 27-gauge needle, the 27-gauge microforceps are directly introduced into the vitreous cavity through the sclerotomy without a transscleral cannula (Figure 3). The 27-gauge chandelier offers clear fundus visibility with sufficient endoillumination driven by a xenon light source. The rigid shaft of the microforceps allowed intraocular manipulation without prior cutting of the vitreous. The tip of the grasping end is sufficiently fine to grab the edge of the ERM, allowing easy peeling of the membrane from the retinal surface without use of additional instruments such as a microhooked needle (Figure 4). The membrane is then pulled through the sclerotomy site. After removing the microforceps and chandelier probe, the sclerotomy self-seals, and the surgery concludes without further manipulations.

### PERSONAL DATA

In the past 24 months, eight eyes affected by idiopathic ERM were eligible for 27-gauge NVS. All of the eyes underwent a complete ocular examination including visual acuity, optical coherence tomography, and lens status using the Lens Opacities Classification system III. Patients were followed up at 1, 3, 6, and 12 months after surgery. Intraoperative and postoperative complications were recorded.



Figure 4. The ERM is easily grasped with Tano-shaped 27-gauge forceps (Synergetics).

### RESULTS

Mean preoperative visual acuity was 20/50, and mean patient age was 55 years. All eight eyes completed 12 months of follow-up. The ERM was successfully peeled in all the eyes, but it was necessary to convert to conventional 25-gauge surgery in two eyes. One of these eyes had retinal hemorrhage during peeling, and because there is no infusion with this technique a decision was made to remove the premacular blood with the vitrector and intraocular infusion. In the other eye, the membrane slipped from the forceps during removal and could not be regripped. It must be noted that, with this technique, it is difficult or impossible to remove a membrane from the formed vitreous because the vitreous pushes the membrane away from the forceps.

No postoperative complications were seen. At 12 months follow-up, mean visual acuity was 20/30, and only one patient, who had been converted to vitrectomy, developed a cataract at 10 month's follow-up.

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## FINAL CONSIDERATIONS

Twenty-seven-gauge NVS for idiopathic ERM appears to be a safe and effective procedure. We recognize that the number of patients in our study was small, but the absence of early cataract progression in these eyes is most encouraging. Only two patients in our series required intraoperative conversion to full 25-gauge vitrectomy, and the original plan to avoid vitreous removal was accomplished in the remaining six patients.

In my opinion, 27-gauge vitrectomy is much less invasive than 25-gauge, and fully preserves the globe pressure. The peeling, however, is more difficult due to the flexibility of the forceps and the friction at the scleral entry point, which renders the fine intraocular movement of the forceps more complicated.

For these procedures, it is important to select patients carefully and to prepare them for the small possibility of postoperative floaters. One may find the initial peeling itself more challenging in the presence of vitreous; it is not yet possible to stain and remove ILM with a 27-gauge technique.

The 27-gauge technique is promising due to the greatly minimized surgical trauma. Like all new techniques, it presents several initial difficulties; however, these may be overcome with additional study and with improvements in the very fine forceps. ■

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