Novel use of Finesse Flex loop for macular hole retinal detachment

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Purpose: To report a new surgical technique with a Finesse Flex loop during internal limiting membrane (ILM) peeling for a case of macular hole retinal detachment (MHRD).

Observations: A 55-year-old woman with a history of macular hemorrhage due to high myopia underwent 25-gauge vitrectomy combined with cataract surgery for MHRD. After core vitrectomy, ILM peeling was performed for macular hole (MH) closure with a novel use of a Finesse Flex loop. While holding down the detached retina with the Finesse Flex loop with one hand, ILM peeling was conducted from the temporal to nasal side with the other hand using ILM forceps. Inverted ILM flap technique was combined, and fluid-gas exchange with 12% octafluoropropane tamponade was performed. The MH was closed, and the retina was attached with no postoperative complication. The logMAR best-corrected visual acuity improved post-treatment.

Conclusions and Importance: The Finesse Flex loop can be used to control the retina when performing ILM peeling on a detached retina in MHRD patients.

1. Introduction

Vitrectomy with internal limiting membrane (ILM) peeling or inverted ILM flap technique for macular hole retinal detachment (MHRD) allows for a high rate of reattachment and macular hole (MH) closure. However, the technique is difficult to perform in MHRD patients because manipulation is required on the detached retina, unlike ILM peeling for idiopathic MH, where the retina is attached. In the cases of bulous retinal detachment, ILM peeling can sometimes be performed under perfluorocarbon liquid (PFCL). However, PFCL may cause complications, i.e., it may remain in the vitreous cavity or under the retina with a few bubbles. Therefore, we report a novel use of Finesse Flex loop for MHRD patients with fewer complications.

2. Case report

A 55-year-old woman presented with a visual field defect and decreasing visual acuity in her left eye. She had a history of submacular hemorrhage in the left eye due to high myopia (axial length: 32.24 mm) without choroidal neovascularization five years ago. The left logMAR best-corrected visual acuity (BCVA) was 1.3. She underwent vitrectomy combined with cataract surgery using chandelier illumination. Pars plana vitrectomy was performed using 25-gauge instruments with the Constellation® Vision System (Alcon Laboratories, Fort Worth, TX).

After vitrectomy, the ILM was stained with 0.25 mg/mL brilliant blue G solution, and the bullous detached retina was peeled. A bimanual technique was used for ILM peeling. While holding down the detached retina with the Finesse Flex loop with one hand, ILM peeling was performed from the temporal to the nasal side with the other hand using ILM forceps. This surgical technique for ILM peeling on detached retina is shown in Fig. 1 and Video.

Supplementary video related to this article can be found at https://doi.org/10.1016/j.ajoc.2020.100703

Inverted ILM flap technique was combined using hyaluronate sodium chondroitin sulfate ester sodium on the top of flap as a ballast. Subretinal fluid was drained through an intentional hole created at superotemporal arcade vessel, and fluid-gas exchange was performed with tamponade by 12% octafluoropropane gas at the end of surgery. After the surgery, reattachment and complete closure of the MH were confirmed by optical coherence tomography (OCT), and the logMAR BCVA improved from 1.3 to 0.4 during the 5-month observation period. The patient’s clinical course is shown in Fig. 2.

The postoperative Humphrey 30-2 visual field test (Humphrey Field Analyzer II, Carl Zeiss Meditec, Inc, Dublin, California) showed a
defect in the inferonasal area coincident with the intentional hole (Fig. 3a). The decline of sensitivity in Humphrey 10-2 5 months after the surgery may be associated with a history of submacular hemorrhage (Fig. 3b).

The OCT macula color map showed thinning of the temporal retina consistent with ILM peeling (Fig. 3c).

3. Discussion

In MHRD, generally, ILM peeling from the nasal to the temporal side,
on the detached retina is not very difficult. However, peeling the membrane from the temporal to the nasal side is difficult because the retina is more bullously detached with an increase in the distance from the optic nerve; therefore, counter traction is needed to stabilize the retina when peeling the ILM in the temporal macula compared to that in the nasal macula; the Finesse Flex loop can provide this counter traction.

Although it is possible to peel the ILM from the temporal side while holding the moving retina softly with a light pipe, this technique should be avoided because of the damage and phototoxicity caused by the pipe tip on the retina.

ILM peeling under PFCL in MHRD surgery requires a learning curve. There is also a risk of perfluorocarbon accumulating under the retina.

The advantage of this technique is that the Finesse Flex loop is a tool used to control the moving retina during ILM peeling from the temporal side.

The most important consideration in this method is to decide the area of the detached retina that is to be held down by the Finesse Flex loop and to evaluate the damage to the retina after surgery. As there are nerve fibers present under the peeled ILM, the non-peeled area should be held down. Furthermore, damage to the retina and its nerve fibers should be checked, although there can theoretically be no damage to nerve fibers at an 85% depth of the ILM.

In the current case, the reduced sensitivity of Humphrey 10-2 5 months after surgery may be associated with a history of submacular hemorrhage. The OCT macula color map showed thinning of the temporal retina, which is consistent with the previous report that the area of thinning of the ganglion cell complex was located temporal and inferior to the fovea after surgery in MH cases. This thinning is due to ILM peeling, which is different from the area that is touched by the Finesse flex loop.

The safety of the Finesse Flex loop for ILM peeling in typical MH surgery has been previously reported. The tip of the loop is designed to be as deep as 85% of the thickness of the ILM.

Uchida et al. reported that initiating the ILM peeling with a Flex loop is less damaging to the retina than starting the procedure directly with ILM forceps. However, Matoba et al. reported thinning of the retinal nerve fiber layer corresponding to the Flex loop contact site.

In our technique, the force applied by the Finesse Flex loop to the detached retina in MHRD surgery is weaker than the force applied to the attached retina in typical MH surgery.

It is necessary to evaluate and measure retinal visual sensitivity by performing a visual field test or microperimetry; however, the damage to the nerve fiber is predicted to be less, and the Finesse Flex loop can be used safely for detached retina in MHRD surgery.

4. Conclusions

This study described the efficacy of the novel use of a Finesse Flex loop for the treatment of an MHRD case. This Finesse Flex loop can be used in a new way to control the retina when performing ILM peeling on the detached retina. The post-surgical impact of the Finesse Flex loop on the retina should be evaluated, but the damage caused by this method is thought to be very less.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

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