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EDITORIAL

ILM peeling in macular hole retinal detachment: insert or not?

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Vitrectomy with internal limiting membrane (ILM) peeling has gained in popularity; it has become the most effective surgical approach for macular hole retinal detachment (MHRD), which is thought to result from tangential traction and anteroposterior traction of the macula. An alternative proposal was to use inverted ILM flap techniques to improve the success rates based on the mechanism that ILM may function as a scaffold for the proliferation and migration of Muller cells [1]. The concept was confirmed firstly by Michalewska et al. in larger macular hole (MH) to facilitate the healing process and now has been extended for use in treating MHRD [2]. However, vitreoretinal surgeons are still asking, "Is the inverted ILM flap technique still a preferable option for MHRD?" Previous direct comparison studies have suggested contradictory results [3–6]. On this issue, Wakabayashi et al. reported that the inverted ILM insertion technique seems to improve the anatomical results in terms of MH closure rate rather than the functional results of MHRD despite there being a tendency for better postoperative visual acuity in the inverted ILM insertion group.

For cases of MHRD in high myopia (HM), ILM peeling alone may not eliminate and compensate retinal tension, because they often coexist with posterior staphyloma, retinal pigment epithelium (RPE) atrophy, and choroidal atrophy. These factors may result in weakened retinal adherence and larger MH defects while flattening the back of the detached retina. It may be explained by the relatively high rate of MH closure using the inverted ILM insertion technique, in which the ILM acts simultaneously as a filler and scaffold. Although the association between MH closure and BCVA after vitrectomy in eyes with highly myopic MHRD is not consistent among different studies [7, 8], the aim of anatomical success with closed MH in the primary surgery is still important. It is mainly agreed that RPE or choroid atrophy with irreversible damage to the fovea photoreceptors that occurs before the initial surgery could lead to unrecoverable visual outcome; however, a closed MH at least lowers the risk of redetached retina.

Though current treatments for MHRD improve primary anatomical success, functional outcomes should be a future goal. Using the inverted ILM insertion technique obtained a high success rate based on anatomic results. However, fullness ILM tissue plugging in the fovea is readily visible postoperatively, which entails the risk of excessive gliosis. Not only may glial tissue interrupt retinal microstructure restoration but it also possibly has cytotoxic effects on retinal neurons if there is persistent activation of glial cells, inducing excessive gliosis [9]. So, the adequate amount of inverted ILM tissue used for insertion needs to be further studied and determined for this procedure. Additionally, the cytotoxicity of vital dyes while introducing the dye-stained ILM tissue into the subretinal space should not be ignored, as it may cause damage to the RPE and neurosensory retina. Thus, to avoid dye leakage into the subretinal space, new dyes, or dye-free techniques, have become an emerging issue to facilitate ILM removal and preservation in chromovitrectomy.

The authors of this study have done their utmost in researching MHRD. However, there remain many unanswered questions. Firstly, while performing fluid-gas exchange with subretinal fluid (SRF) drainage after the inverted ILM insertion, does the MH defect become enlarged with a free-floating ILM flap? Lai et al. suggested that SRF be maintained without intentional drainage, and that autologous blood clot be further used to stabilize and seal ILM flaps [10]. Although the SRF could be maintained for a certain amount of time, the fluid was eventually absorbed with improved VA. Secondly, can the outcomes be applied to a longer follow-up period? Do these two groups have different impact on the change of chorioretinal atrophy and posterior staphyloma after the surgery? Moreover, is it safe to make conclusions based on an uneven sample size? Although MHRD in HM is relatively

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rare, the inverted ILM insertion group and standard ILM peel group are uneven in extensive sample size.

There will be more publications using different ILM manipulation techniques that attempt to manage MHRD in HM. One consequence of the paper from Wakabayashi et al. is that the vitreoretinal surgeon should be aware that keeping the glial tissue within the MH may contribute to facilitating wound healing in myopic MHRD cases. On the contrary, it also exposes our lack of understanding of the ILM flap design. Many readers may be eager to know which way is more able to physiologically improve function restoring capability.

Further studies are required to identify a method to produce an environment that prevents excessive gliosis and promotes the survival of retinal neurons and photoreceptor cells while using alternative ILM flap techniques. It is also important to know if there is a possibility of using substances as adjuvants to assist in the biological processes when treating myopic MHRD.

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