Commentary: Customized extended peeling of the internal limiting membrane

Since its introduction by Kelly and Wendel, vitrectomy with internal limiting membrane (ILM) peeling and gas tamponade has become the treatment of choice for closure of full thickness macular holes.[1] With various further modifications, the reported success rate of the surgery is nearly 90%.[2] However, large macular holes >500 μ in size pose a challenge. A study found the success rate of ILM peeling to be 88% in holes >550 μ versus 95% in holes <550 μ.[3]

For large macular holes, either a larger area of ILM peeling or the use of the inverted ILM flap technique has been suggested. However, contradictory results have been reported by various researchers. A study comparing the outcome after three different techniques, namely, a free ILM flap, inverted flap, and ILM peeling alone, found the success rate to be 86% after a free flap and 92% after conventional ILM peeling as well as inverted flap.[4] However, authors noted that the inverted flap technique lead to faster and more significant recovery. In very large MHs > 800 μ, the inverted ILM flap had better success rate of 89% versus 78% after ILM peeling.[5] Contrary to this, Boral *et al*.[6] reported better visual outcomes with enlarged ILM peeling. In a novel video overlay guided technique, the enlargement of ILM peel over 3 DD in size was shown to have

better functional improvement compared to the conventional inverted ILM flap for large macular holes. The hole closure rate was marginally higher in the inverted flap technique (96.92% versus 93.55% for enlarged ILM peeling).

Shukla *et al*.[7] made an interesting observation. They found the macular holes to be horizontally oval and suggested the enlargement of ILM peeling only on the temporal side. With this simple modification, the authors reported a success rate of 95.2% (20/21 eyes). It seems logical to enlarge the area of ILM peeling in the horizontal direction when the obvious traction is in the horizontal direction resulting in a horizontally oval hole. On the nasal side, the optic nerve head limits the area of ILM peeling and thus the traction relief has to be on the temporal side. Preoperative measurement of both horizontal and vertical diameters of the macular hole would be beneficial in this regard.

Although ILM itself does not have contractile properties, myofibroblasts use it as a scaffold which can contract and exert traction on the edges of the macular hole. Apart from the traction relief several other morphological and functional changes are induced by ILM peeling. The ILM, which is considered to be a basement membrane of the Muller's cells, is connected to the foot plates of photoreceptors. ILM peeling disrupts these connections and can lead to nerve fiber layer disassociation and swelling.[8] This can potentially lead to microscotoma in the parafoveal field of vision. In one study, significant shortening of papillofoveal distance with foveal displacement toward the disc was noted.[9] A larger area of ILM peeling was seen to be associated with reduced sensitivity in the central macula.[10]

Nevertheless, it appears to be a simple solution for the closure of moderately large macular holes between 500 and 800 μ, especially if they also happen to be horizontally oval. For very large holes > 800–1000 μ, it would be better to go with the inverted flap technique.

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