



Importance of the inner limiting membrane in adults

We have read with interest the recent publication concerning the inner limiting membrane (ILM) and agree with many of the observations. We are concerned, however, about the statement that the “*ILM appears dispensable in adulthood*”.

Throughout the world, vitreo-retinal surgeons safely perform chromodissection peeling of the ILM in cases of macular hole and other vitreo-maculopathies (Haritoglou and Sebag, 2014; *Retin Physician*, 11, 34–39). This dissection is curative by assuring removal of the outer vitreous and associated pathologic tissues. Unless too much ILM is peeled, patients tolerate this procedure well, in part because the ILM protects the inner retina.

It is well-known that the ILM is a multi-laminar structure (Halfter et al., 2014; In: *Vitreous - in Health & Disease* (J. Sebag, ed.); Springer, New York, 165–192). Thus, peeling is only benign when the innermost (anterior) laminae are removed. Too deep a plane of dissection risks removing the outermost (posterior) laminae, injuring the underlying retinal nerve fiber layer (RNFL). This was found to be the case in a series of patients who failed initial surgery and underwent repeat vitrectomy with chromodissection peel less than 6 months later (Pan et al., 2014; *Invest Ophthalmol Vis Sci*, 55, 6756–6764). In these cases, there was significant RNFL thinning on OCT imaging and positive staining for neurofilaments in the excised tissue. Post-operative vision was very poor. In contrast, re-operations that occurred longer than 6 months after the initial surgery (controls) resulted in far better post-operative vision, normal RNFL thickness, and negative neurofilament staining. The condition was termed Inner Retinal Optic Neuropathy (IRON) to reflect that although the optic nerve is outside the eye and the RNFL is inside, they are components of the same cell and their loss looks very similar. It was hypothesized that in the cases that did poorly, not enough time had elapsed following the initial surgery to re-form a protective ILM with a safe cleavage plane for any subsequent chromodissection. Indeed, studies in monkeys determined that it takes 6 months for the ILM to regenerate after chromodissection peeling (Nakamura et al., 2003; *Curr Eye Res*, 27, 395–399), explaining the aforementioned clinical findings.

Thus, it would appear that the ILM is important in adults, at least to protect the inner retina during re-operations for vitreo-maculopathies, and not entirely “*dispensable in adulthood*”. We emphasize this for fear that readers may mis-interpret the published comment. We further

caution that strategies to bypass the ILM barrier during novel therapies of the retina should heed over-zealous elimination of the ILM. Lastly, we should all refer to vitreous as a “body” (corpus vitreum, corps vitré, etc.) and not a “cavity”, since vitreous is an organ, not any empty space (Sebag, 2014; *Vitreous – in Health & Disease*. Springer, New York). Moreover, vitreous isn’t even remotely similar to dental pathology, and nomenclature indeed matters.

“Science must consist of 3 things: facts, which are the objects of science, the ideas which represent these facts, and the words by which these ideas are expressed the word ought to produce the idea, and the idea be a picture of the fact.”

Antoine-Laurent Lavoisier

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