LAMELLAR MACULAR HOLE: A CLINICOPATHOLOGIC CORRELATION OF SURGICALLY EXCISED EPIRETINAL MEMBRANES

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PURPOSE: To correlate clinical and optical coherence tomographic (OCT) features with morphologic and immunohistochemical findings of epiretinal membranes (ERMs) in lamellar macular holes (LMHs).

METHODS: Nineteen specimens were removed from 19 eyes during vitrectomy for lamellar macular hole with ERM and internal limiting membrane peeling, and were processed for transmission electron microscopy and immunohistochemistry by cross-sectional and flat-mount preparation techniques. By using OCT criteria and intraoperative observations, ERM specimens were divided into two groups: 13 "dense" and 6 "tractional" membranes. Patients' records were reviewed.

RESULTS: "Dense" ERMs were seen with clusters of fibrous long-spacing collagen embedded in compactly folded native vitreous collagen strands. Posterior hyaloids were attached to the retina in the majority of cases. Both groups of ERMs showed positive immunoreactivity for glial fibrillic acidic protein and hyalocyte markers. Anti-α-smooth muscle actin labeling was most positive in "tractional" ERMs. Surgery resulted in improvement (74%) of visual acuity, with a mean gain of 2 Snellen lines in both groups. All other patients (26%) preserved vision. Three patients (16%) developed a full-thickness macular defect.

CONCLUSIONS: Morphologic components differ in epiretinal cell proliferations of LMHs. In association with degradation of vitreous collagen, glial cells and hyalocytes seem to play an important role in LMH development. Since functional benefit after surgery was limited and progression to a full-thickness macular defect was a notable complication, we recommend caution in proceeding with surgical intervention. Further investigations are needed to elucidate whether "dense" and "tractional" LMHs represent different disease entities or different stages of one disorder.