CONCURRENT DISPLACEMENT OF THE INNER AND OUTER LAYERS AFTER MACULAR HOLE SURGERY ASSESSED USING EN FACE OPTICAL COHERENCE TOMOGRAPHY IMAGES

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Purpose: The mechanism of metamorphopsia is still controversial after macular hole surgery. Although postoperative deformation of the macula was related to metamorphopsia, it was based on the assessment of the retinal vessels and the outer retinal layer was not studied. The present study was conducted to investigate the displacement of the outer retina after surgical closure of macular hole. Methods: Medical records of patients who underwent macular hole surgery were reviewed retrospectively. En face optical coherence tomography images were exported at the level of the choroid, ellipsoid zone (EZ), and inner plexiform layer (IPL) at baseline, 1, 3, and 6 months. The foveal center of the EZ and IPL was marked in the choroid en face image. The choroidal images were overlapped to match the vasculature in each patient, and the postoperative displacement of the foveal center was compared to baseline. Results: The study included 26 patients. The center of the EZ and IPL was displaced significantly towards the disc during the first 3 months. The mean horizontal displacement at 1, 3, and 6 months was 52.7, 112.5, and 115.4 µm, respectively, for the EZ and 73.8, 116.3, and 135.1 µm for the IPL. The location of the center was not significantly different between the EZ and the IPL. Conclusion: Concurrent displacement of the photoreceptor and inner retinal layers suggests that the outer retina would have important role in metamorphopsia related to macular deformation.