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## Foveal Microstructure And Functional Parameters In Eyes With Lamellar Macular Hole

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### Abstract

**Purpose:** To evaluate the morphology of photoreceptor layer (by spectral-domain optical coherence tomography, SD-OCT) and the functional parameters in patients with lamellar macular hole (LMH).

**Methods:** Fifty-four patients with LMH were enrolled in the study. All patients underwent a complete ophthalmological examination including best correct visual acuity (BCVA) testing (LogMar), MP1 microperimetry and SD-OCT. For each patient, 2 experienced masked observers evaluated the integrity of photoreceptors inner segment/outer segment junction (IS/OS line) and external limiting membrane (ELM line). The reliability of IS/OS line and ELM line grading was determined with weighted k statistics and intraclass correlation coefficients (ICC).

**Results:** SD-OCT analysis showed in 40 eyes a complete integrity of IS/OS and ELM lines (group A), in 8 eyes a partial or complete disruption of IS/OS line with an intact ELM line (group B), and in 6 eyes an alteration of both IS/OS and ELM lines (group C). The ICC between observers for the grading of the IS/OS line was 0.955 and for the the ELM line was 0.815. The K coefficient for the status of the IS/OS line was 0.906 and for the status of the ELM line was 0.813. Mean BCVA, total retinal sensitivity, percentage of fixation points within 2 and 4 degree were significantly better in groups A and B than in group C ( $P < .01$ , Tukey-Kramer test), while there was no significant difference between group A and B ( $P =$  not significant). Mean central retinal sensitivity of Group A and B was significantly higher than Group C ( $P < .01$ , Tukey-Kramer test), and that of Group A was significantly higher than Group B ( $P < .05$ , Tukey-Kramer test). The degree of integrity of foveal photoreceptor layer was significantly correlated with mean BCVA ( $r = -0.568$ ;  $P < 0.000$ ), mean central retinal sensitivity ( $r = 0.519$ ;  $P < 0.000$ ), total retinal sensitivity ( $r = 0.444$ ;  $P = 0.001$ ), but not with fixation stability inside the 2 and 4 degrees.

**Conclusions:** In eyes with LMH, morphology of foveal photoreceptor layer is consistently correlated with BCVA and central retinal sensitivity. Preservation of the ELM is related to the maintenance of visual functions.

**Keywords:** macular holes \* vitreoretinal surgery \* retina