Relationship between preoperative foveal microstructure and visual acuity in macula-off rhegmatogenous retinal detachment : imaging analysis by swept source optical coherence tomography

Abbreviated title:

SS-OCT in retinal detachment

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Competing interests

Conflicts of Interest:

There are no conflicting or proprietary interests to declare for any of the authors.

Financial disclosure:

None of the authors received funding for this work from any external organization.

Keywords

ellipsoid zone, external limiting membrane, foveal microstructure, rhegmatogenous retinal detachment, swept source optical coherence tomography

Brief summary statement

We visualized preoperative foveal microstructures of patients with macula-off rhegmatogenous retinal detachment using swept source optical coherence tomography and found that continuity of the external limiting membrane and the ellipsoid zone is a novel prognostic factor for postoperative visual acuity.

Abstract

Purpose: To visualize the foveal microstructures of macula-off rhegmatogenous retinal detachment (RRD) using swept source optical coherence tomography (SS-OCT) before and after surgery and to investigate the relationship between foveal microstructures and postoperative visual acuity.

Methods: We retrospectively analyzed 42 eyes of 42 consecutive patients diagnosed as macula-off RRD who underwent anatomically successful repair surgery and were followed up for 6 months. We used SS-OCT to investigate the relationship between pre- and postoperative continuity of both the external limiting membrane (ELM) and the ellipsoid zone (Ez) and pre- and postoperative best-corrected visual acuity (BCVA).

Result: Both preoperative ELM and Ez were continuous in 9 eyes (21%; ELM+/Ez+ eyes), only the ELM was continuous in 25 eyes (60%; ELM+/Ez- eyes), and neither were continuous in 8 eyes (19%; ELM-/Ez- eyes). The postoperative BCVA in ELM+/Ez+ eyes (-0.05±0.04 in logarithm of the minimum angle of resolution units, Snellen equivalent 20/18) was significantly better than that in both ELM+/Ez- eyes (0.16±0.16, 20/29; P=0.03) and ELM-/Ez- eyes

(0.86±0.37, 20/145; P<0.001). The postoperative BCVA was significantly better in ELM+/Ez- eyes than ELM-/Ez- eyes (P<0.001).

Conclusion: In eyes with macula-off RRD, preoperative continuity of the ELM and the Ez may be a predictor of postoperative BCVA.