

Association of axial length and cortical vitreous morphology as assessed by Swept Source Optical Coherence Tomography

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Purpose

To retrospectively analyze structural features of the posterior vitreous and its correlation with axial length using swept-source optical coherence tomography (SS-OCT).

Methods

SS-OCT scans were acquired as described previously¹ and analyzed according to five grading criteria as follows:

- 1) Vitreous degeneration describing the premacular bursa and its relationship to anterior lacunae and degenerative cleavage planes. ¹
- 2) Posterior hyaloid status with respect to its vitreofoveal and vitreopapillary adhesions.
- 3) Directionality of vitreous fibers with respect to optically empty vitreous spaces.
- 4) Qualitative assessment of cortical vitreous reflectivity as follows: not observable, homogenous, optically empty, laminated, heterogenous.
- 5) Presence of vitreous cisterns or lacunae.

Results

Sixty-four eyes of 32 subjects with mean age 40.7 ± 14.2 years were examined. Average axial length was 25.6 ± 2.4 mm. There was no statistical correlation of axial length with grading of vitreous degeneration ($p=0.109$), posterior hyaloid status ($p=0.097$), directionality of vitreous fibers ($p=0.936$), or presence of vitreous cisterns/lacunae ($p=0.839$). There was, however, significantly higher levels of laminated reflectivity noted in eyes with longer axial lengths (figure 1) ($p=0.041$).

Conclusions

Increasing axial length correlated with laminated reflectivity of the cortical vitreous in this study, indicating possible stretch-induced cleavage causing multiple planes within the vitreous cortex. This may be a precursor of vitreoschisis and myopic traction maculopathy. It may have surgical implications in vitrectomy as removal of an anterior cleavage plane may falsely suggest vitreous detachment while adherent posterior lamellae may persist. Future imaging studies and correlation with intra-operative OCT may increase our understanding of this novel finding.

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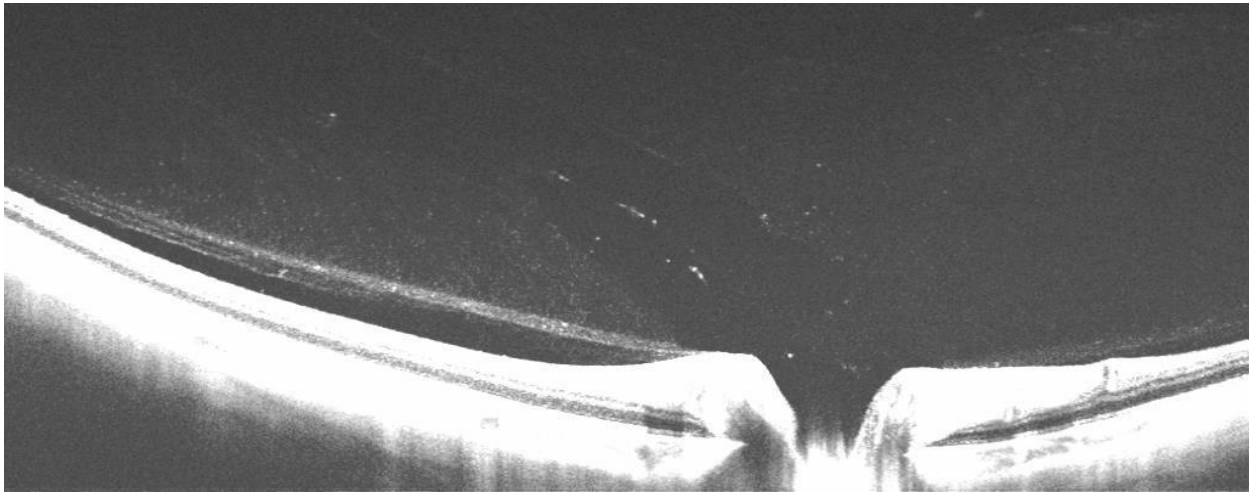


Figure 1: Laminated reflectivity of cortical vitreous in an eye with axial length of 25.31mm.