

Ultra-Widefield Steering-Based Spectral-Domain Optical Coherence Tomography Imaging of the Retinal Periphery

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Summary

Purpose

This study investigated the capabilities of the steerable SPECTRALIS[®] OCT device and the feasibility of acquiring quality images in the periphery (defined in this study as >200° field of view, as measured from the center of the eye, within a single, montaged image). Notably, this study was performed with a standard 30° lens without further modifications to the device or the software.

Methods

68 patients with no macular disease were included. Patients were first dilated (3 consecutive applications of phenylephrine/tropicamide). Peripheral retina scans consisted of a single line scan (ART set to 100), oriented to capture cross-sections of pathology. Images were registered to ultra-widefield pseudocolor images from an Optos[®] 200Tx, and montages were created in Adobe[®] Photoshop[®] 6.0.

Discussion

The authors identified 19 different pathologies in the 68 eyes scanned. Most prevalent were retinal holes, cystic retinal tufts, degenerative senile retinoschisis, pars plana, and typical cystoid degeneration. The authors claim that this is also the first published instance of using SD-OCT to image a handful of these pathologies in the periphery.

Conclusions

This study is important for setting the SPECTRALIS apart from competitor devices that are limited by a fixed scanning apparatus. An experienced photographer was able to capture beautiful images of pathology, many for the first time in the literature, using the steering abilities of the SPECTRALIS camera. When collected in this way, cross-sectional SD-OCT images can be useful to ophthalmologists in tracking disease progression, assessing treatment efficacy, and for early diagnostics of potentially asymptomatic pathologies in the peripheral retina.