

High definition optical coherence tomography angiography B-scans for clinical interpretation of choroidal neovascularization

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PURPOSE

Interpretation of choroidal neovascularization (CNV) lesions can be challenging when the quality of the B-scan is not adequate. Instead the clinician may prefer the enface flow image; which is highly dependent on the segmentation of the layers and can be time consuming. In this study we demonstrate the advantage of high quality structural B-scans with OCTA flow overlaid in the interpretation and visualization of CNV.

METHODS

- Five eyes with CNV were imaged on the PLEX® Elite 9000 swept-source OCT (ZEISS, Dublin, CA) using a new scan pattern consisting of 51 high resolution structural and high-resolution flow B-scans. Each high resolution B-scan was generated from averaging 20 angio B-scans consisting of 512 A-scans over a 6 mm segment.
- Appropriate balance of scan resolution and scan time leads to higher density of B-scans with 20 μm spacing in the central 0.5 mm and 210 μm elsewhere.
- Projection-artifact removal was applied to the flow data followed by segmentation of the retinal pigment epithelium (RPE) layer to differentiate flow below and above the RPE.

CONCLUSION

High-definition OCTA B-scans improve the visualization of CNV and could be valuable for the interpretation of the lesions.

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RESULTS

Figure 1 shows an example of a high resolution structural and flow B-scan for an eye with CNV. Higher concentration of flow along with proper projection artifact removal clearly reveals the presence of neovascularization above the RPE and below the Bruch's membrane as shown by the arrow. Figure 2 shows the same B-scan from an Angio 6x6 mm scan. For all 5 eyes with CNV, the grader found it was easier to identify the lesion from the high resolution OCTA B-scans

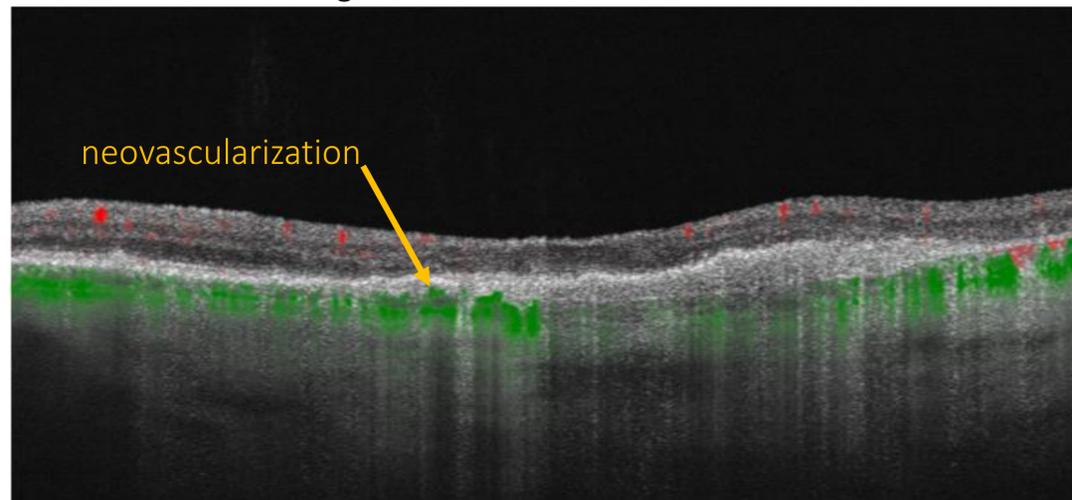


Figure 1: high resolution structural and flow B-scan of an eye with CNV. Green overlaid indicates flow below the RPE, red overlaid indicates flow in the Superficial and Deeper retinal layers

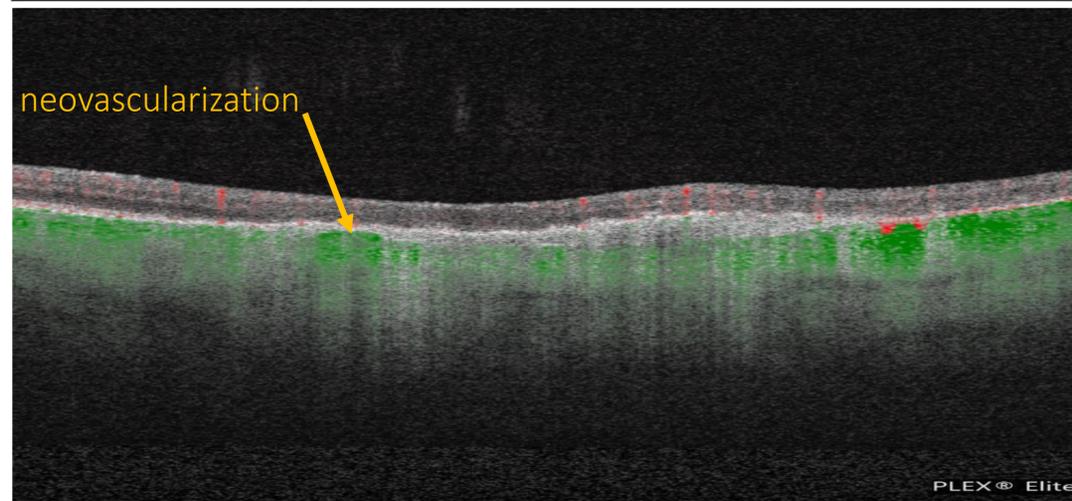


Figure 2-a: B-scan of the same eye imaged with a 6x6 angio scan. The structure and flow components of the B-scans have lower contrast and higher noise compared to figure 1.

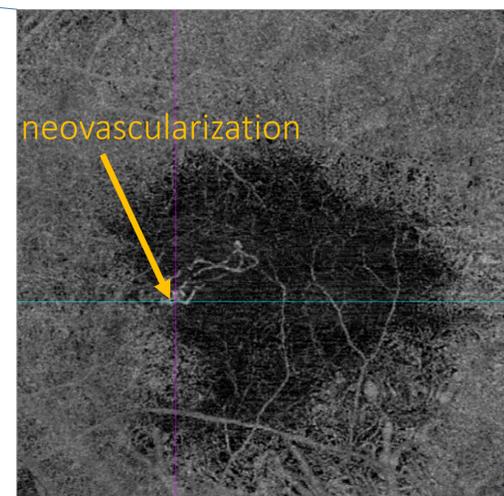


Figure 2-b: Corresponding enface flow image with boundaries defined from the RPE to Bruch's membrane confirms the presence of the CNV