Agreement and Precision of Wide and Cube Scan Measurements between Swept-source and Spectral-domain OCT in Normal and Glaucoma Eyes

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STUDY PURPOSE

To evaluate the agreement of wide scan measurements between Triton™ SS-OCT and Maestro™ SD-OCT and to assess the repeatability and reproducibility of measurements from the wide scan and the macula/optic disc cube scans of the two devices in normal and glaucoma eyes, and to further evaluate the interoperability of these two technologies.

OVERVIEW

STUDY DESIGN

Prospective

STUDY DEVICE(S)

- DRI OCT Triton™ (Topcon, Tokyo, Japan)
- 3D OCT-1 Maestro (Topcon, Tokyo, Japan)

OF EYES/PATIENTS

- 25 normal eyes & 25 glaucoma eyes

OUTCOME MEASURES

- cpRNFL(circumpapillary retinal nerve fiber layer), macular GCL + IPL (GCL+), macular GCL + IPL + RNFL (GCL++)

RESULTS

- GCL++ thickness measurements from both the wide scan and the macular cube scan on the Triton showed CV (coefficient of variation) within 1 % for repeatability and reproducibility for both normal and glaucoma groups.
- GCL+ thickness measurements from both the wide scan and the macular cube scan on the Triton showed CV within 1 % for repeatability and reproducibility for the normal group.
- RNFL thickness measurements from both the wide scan and the optic disc cube scan on the Triton showed CV within 3.4 % for both repeatability and reproducibility for the glaucoma group and a CV within 2.4% for the normal group.
- Wide scan measurements from both devices have shown excellent agreement with each other (intercepts did not significantly differ from 0 and the slopes did not differ significantly from 1)
- The differences between Triton and Maestro (mean difference of all measurements <3 µm) were less than the axial resolution in tissue (Triton axial resolution 8 µm, Maestro axial resolution 6 µm), and smaller than the corresponding reproducibility limits.

CONCLUSIONS

- Wide scan measurements from both devices have shown excellent agreement with each other in both normal and glaucoma eyes.
- Wide scans including the ONH and the macula may provide benefits for glaucoma diagnostics, as they reduce the workflow burden and provide widefield thickness maps uncovering defects potentially missed distant to the ONH.