Lower tear meniscus measurements using a new anterior segment swept-source optical coherence tomography and agreement with fourier-domain optical coherence tomography

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Purpose
To assess intraobserver repeatability and interobserver and intersession reproducibility of lower tear meniscus height (LTMH) measurements obtained using the new anterior segment swept-source (SS) optical coherence tomography (OCT) DRI OCT Triton (Topcon, Inc., Tokyo, Japan). Agreement with Fourier-domain (FD) OCT (Spectralis) was also examined.

Methods
In an observational cross-sectional study one eye of 29 healthy subjects was randomly imaged with both devices at our centre. Two examiners then randomly took LTMH measurements using the software´s callipers. To assess intraobserver repeatability and interobserver and intersession reproducibility within-subject standard deviation (Sw), test-retest repeatability, coefficients of variation (CoV) and intraclass correlation coefficients (ICC) were 2 calculated. Agreement between both devices was also determined in Bland-Altman plots.

Results
Mean LTMH for SS-OCT and FD-OCT were 276.6□87.57 microns and 280.31□79.99 microns, respectively. Using the SS-OCT device, intraobserver CoV, interobserver CoV and intersession CoV were □16.9%, □7.2% and □11.5% respectively. ICCs for these parameters were □88%, □97% and □94%, respectively. Bland-Altman analysis indicated poor agreement between SS-OCT and FD-OCT, and correlation was low (CoV 34.5%, ICC 0.36).

Conclusion
SS-OCT LTMH measurements showed excellent interobserver and intersession repeatability along with good intraobserver reproducibility. Agreement between the devices was poor.

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