Aims: To compare the visibility of deep optic nerve head (ONH) structures and the visible area of the anterior surface of the lamina cribrosa (ASLC) with spectral-domain (SD) and swept-source (SS) optical coherence tomography (OCT).

Methods: Thirty-three glaucoma patients were imaged with SD-OCT (24 radial B-scans centered on the ONH) and SS-OCT (12 radial B-scans and a horizontal and vertical raster scan pattern containing 5 lines each, centered on the ONH). One of the SS-OCT horizontal and vertical raster scan lines that best matched the horizontal and vertical scan lines with SD-OCT was selected. All B-scans were then exported and de-identified.

An independent observer determined whether the posterior choroid, border tissue, anterior scleral canal opening (ASCO) and LC insertion into the sclera were detectable in the matched scan lines. Bruch’s membrane opening (BMO) and ASLC were segmented manually in radial scans. The segmented points were combined into a single plane and a linear interpolation was used to define BMO and ASLC areas.

Results: The posterior choroid, border tissue and ASCO were detectable in most patients (94-100%, 88-100% and 76-100%, respectively) and not different between SD-OCT and SS-OCT. The LC insertion detection rate was non-statistically higher for SS-OCT compared to SD-OCT (58-85% vs. 42-73%, p>0.10).

The mean (SD) ASLC visible area (percentage of the respective BMO area) was 124 (30)% with SD-OCT and 135 (32)% with SS-OCT (P<0.01).

Conclusion: SD-OCT and SS-OCT had comparable detection rates of deep ONH structures; however, a larger area of ASLC was visible with SS-OCT.