

# High definition OCT of the aqueous outflow system in glaucoma and normal subjects

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Poster# PB0122

## PURPOSE

The aqueous inflow and outflow systems are crucial in maintaining intraocular pressure balance. Swept-source optical coherence tomography (SS-OCT) can be used to image the individual anatomical components of the outflow system. We conducted a clinical study to evaluate the ability of a SS-OCT device to acquire high definition images of these structures.

## METHODS

- A modified PLEX® Elite 9000 swept-source OCT system (ZEISS, Dublin, CA) was used to image 5 healthy volunteers and one glaucoma subject.
- Two scan patterns were used in this study:
  - Pattern 1: 3x3 mm field of view (FOV) with 300 A-scans/B-scan, repeated, registered and averaged 20 times, and a total of 51 B-scans
  - Pattern 2 : 16mm FOV, single B-scan with 1024 A-scans repeated, registered and averaged 20 times
- Pattern 1 was used to scan the limbus, while Pattern 2 was used to scan the ciliary body and the lens of the volunteers

## RESULTS

- Figure 1 : high-definition (HD) images of the trabecular meshwork (TM), Schlemm's canal (SC) and collector channels (CC).
- Figure 2 : HD images of the ciliary body (CB)
- Figure 3A and 3B present the HD image of the lens of a healthy volunteer, while 3C and 3D show pseudophakic eyes, all over 3 mm of depth
- Figure 3E: whole lens acquisition using 6mm of axial depth

## CONCLUSION

We have demonstrated the ability of a SS-OCT system to obtain HD structural images of the anterior segment. Outflow structures were clearly visible in normal eyes, while significantly decreasing in size in our glaucoma subject. Ciliary body and lens imaging was also successful, potentially allowing for the assessment of uveitis, tumors and cataract screening.

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Disclosures: SB (E), MC (E), JS (E): Carl Zeiss Meditec, Inc.

## OUTFLOW SYSTEM IMAGING

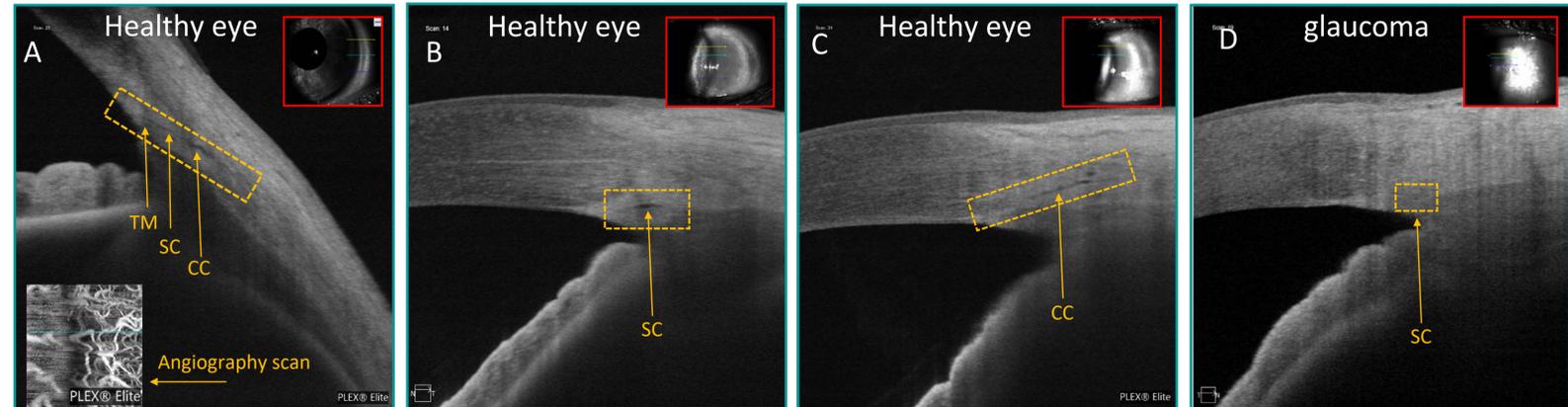


Figure 1

## CILIARY BODY IMAGING

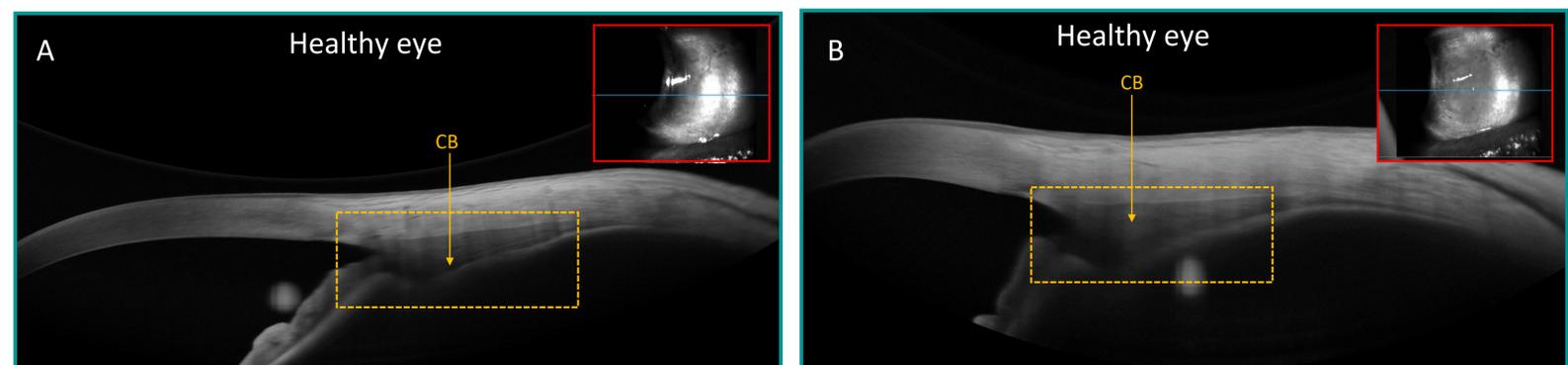


Figure 2

## LENS IMAGING

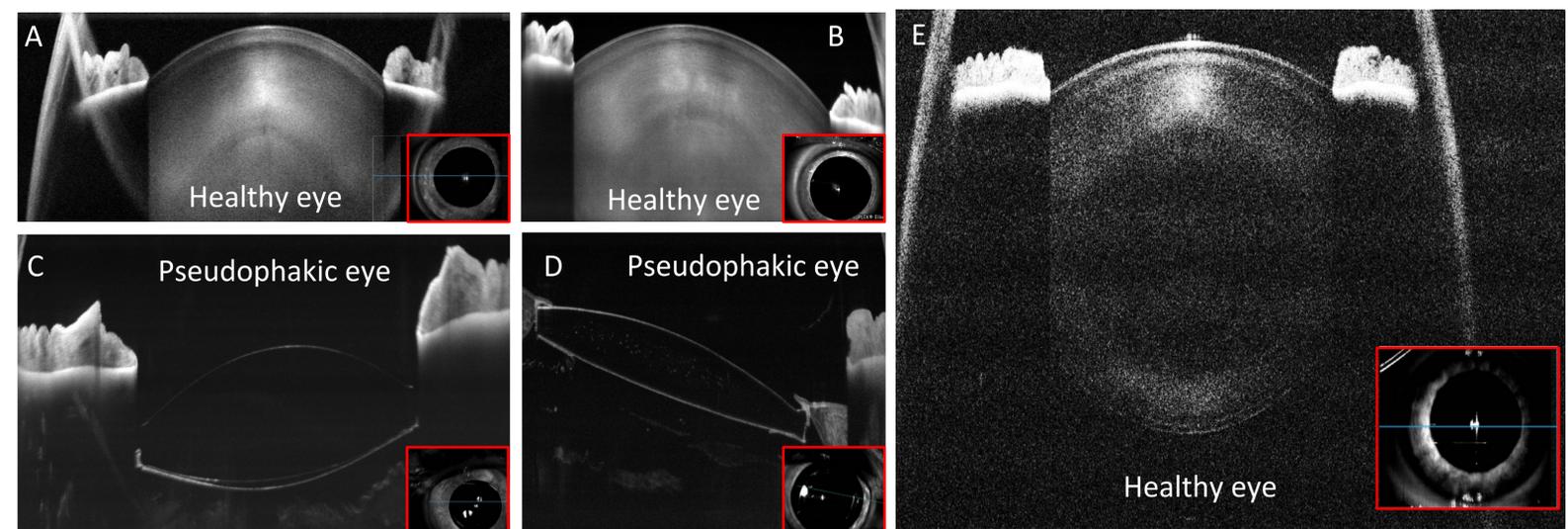


Figure 3