

OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY (OCTA) FOR SCLERAL VASCULATURE IMAGING IN THYROID EYE DISEASE (TED) PATIENTS

Purpose: To describe a novel use of OCTA in imaging scleral vasculature of a TED patient with secondary raised intraocular pressure (IOP) before and after orbital decompression

Method: A 45-year-old patient with active TED and secondary raised IOP was scanned with a commercially available AngioVue OCTA system (Optovue, Inc., Fremont, CA) which had an anterior segment lens adapter to delineate increased episcleral venous flow. Scans from superior, inferior, nasal, and temporal quadrants in each eye were obtained by a trained, independent operator before and after orbital decompression. Depth and extent of venous congestion, flow speed in cross sectional OCTA B-scans were studied.

Results: Increased venous flow was confirmed to be within the congested episcleral network. Extent of venous congestion and cross sectional OCTA flow speeds were reduced post orbital decompression.

Conclusion: OCTA scanning has been largely optimized for posterior segment imaging. However recent validated applications for anterior segment imaging has opened up possibilities for assessment of inflammation in TED.

Raised IOP in TED has been attributed to venous outflow disturbances with resultant increased episcleral venous pressure. This is the first report to describe OCTA features in active TED, confirming its location in the episcleral venous plexus and showing reduction in flow speeds and congestion post decompression.

OCTA's rapid and non-invasive acquisition of images allows for further studies in correlating inflammatory scores with venous congestion and in doing so deciphering differences in activity in thyroid patients and serving as a useful imaging adjunct modality.

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