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AUTHORS

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Commercial Relationships Disclosure (Abstract): Lennart Husvogt: Commercial Relationship: Code N (No Commercial Relationship) | Eric Moult: Commercial Relationship: Code N (No Commercial Relationship) | ByungKun Lee: Commercial Relationship: Code N (No Commercial Relationship) | Nadia Waheed: Commercial Relationship(s);Carl Zeiss Meditec Inc.:Code F (Financial Support) ;Iconic Therapeutics; ThromboGenics:Code C (Consultant) | Joachim Hornegger: Commercial Relationship(s);Royalties from property owned by MIT and licensed to Optovue:Code P (Patent) | Richard Spaide: Commercial Relationship(s);Topcon Medical Systems, Genentech Inc.:Code C (Consultant) ;Rotalties from Topcon Medical Systems:Code P (Patent) | Andreas Maier: Commercial Relationship: Code N (No Commercial Relationship) | James Fujimoto: Commercial Relationship(s);Optovue Inc.:Code I (Personal Financial Interest) ;Royalties from intellectual property owned by MIT and licensed to Carl Zeiss Meditec Inc., Optovue:Code P (Patent)

Study Group:

ABSTRACT

TITLE: SlicerOCT: A 3-D visualization platform for orthoplane viewing of OCT(A) datasets

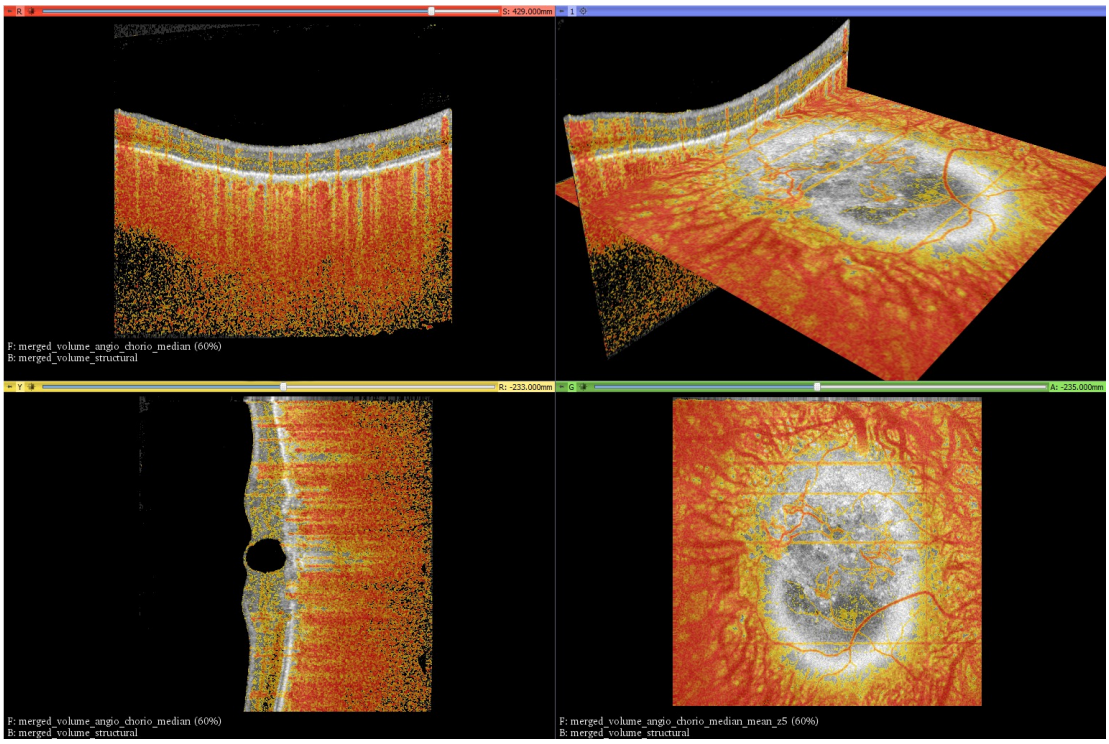
ABSTRACT BODY:

Purpose: 3D Slicer is a visualization platform for radiographic data (computed tomography, magnetic resonance imaging, ultrasound). The purpose of this study is to extend 3D Slicer to enable simultaneous, orthoplane viewing of volumetric optical coherence tomography (OCT) and OCT angiography (OCTA) data.

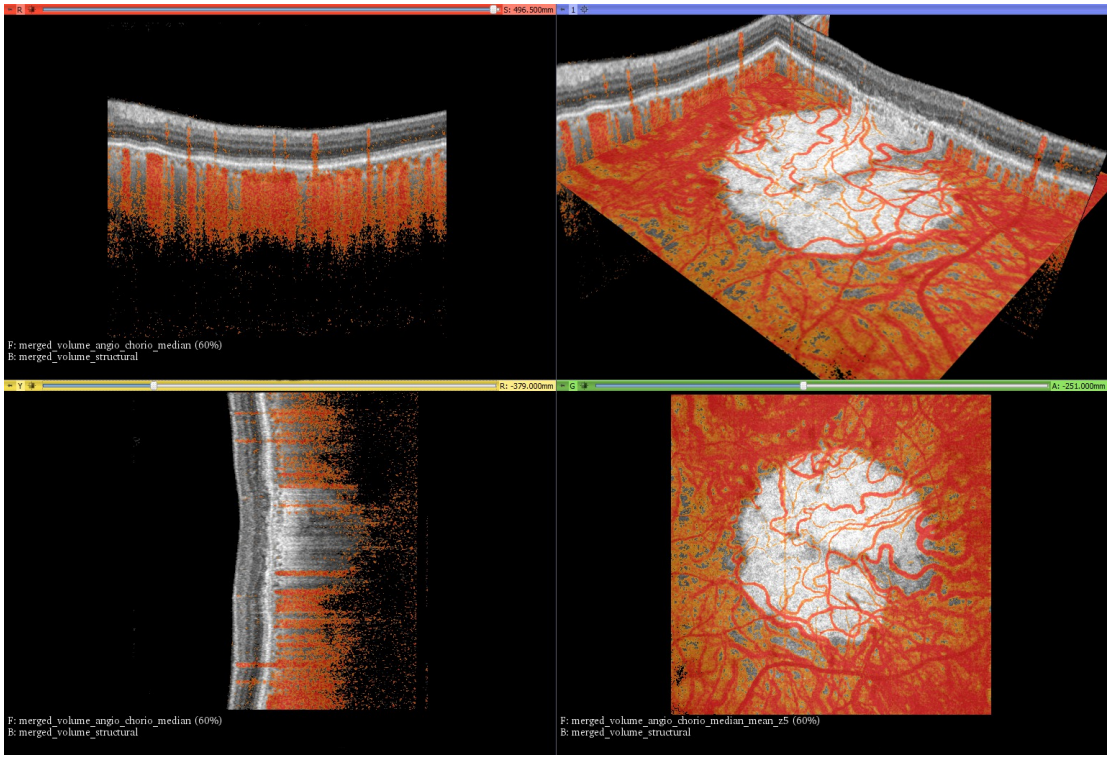
Methods: We propose an OCT specific module, “SlicerOCT,” which leverages 3D Slicer’s existing capabilities for orthoplane viewing and volume rendering. OCT and OCTA data are stored in different layers, which allows simultaneous display; layers can be toggled on and off. OCT specific functions, such as volume projection and OCTA thresholding, are available. Orthoplane views can be scrolled through in a manner analogous to a conventional radiology viewer and data can be rendered volumetrically.

Results: Figure 1 shows a SlicerOCT display of OCT and OCTA data from a patient with exudative age-related macular degeneration (AMD). The choroidal neovascularization (CNV) is clearly visible in the OCT angiograms and corresponding structural en face displays (right panels), while CNV location under the retinal pigment epithelium (RPE) and intraretinal cysts are visible in the OCT B-scan display (bottom left). Figure 2 shows a SlicerOCT display of OCT and OCTA data from a patient with geographic atrophy (GA). Areas of RPE alteration are visible on OCTA, while areas of choriocapillaris loss are seen on OCTA. Unlike traditional en face visualization of OCTA data, orthoplane viewing enables interpretation of individual OCTA B-scans, which can help identify artifacts, such as incorrect segmentation, signal attenuation, and decorrelation tails.

Conclusions: SlicerOCT enables simultaneous, orthoplane visualization of OCT and OCTA datasets, which promises to enable more accurate interpretation of OCTA data and is especially crucial for studying diseases whose progression alters both structure and blood flow.



SlicerOCT display of OCT and OCTA data from a 91 y/o Caucasian male with exudative AMD. OCT data are shown in gray; OCTA data are shown in red overlay, with brighter red indicating higher decorrelation. Cross-sectional view (lower left) shows an intraretinal cyst, while the OCTA data (lower right) visualizes the lesion. Field size: 6x6mm.



SlicerOCT display of OCT and OCTA data from a 77 y/o Caucasian male with GA. Combined OCT and OCTA views allow choriocapillaris loss to be associated with RPE atrophy. Field size: 6x6mm.

DETAILS

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Date Trial was Registered (MM/DD/YYYY) (Abstract):
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