

OCTs: Not Just For Doctors

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1hr advanced technical

Course Description --- One of Optometry's most powerful tools is Ocular Coherent Tomography(OCT). It has arguably become the standard of care in evaluating ocular health. Although paraoptometrics perform the test, how much do you know about what the results show? OCT results of 10 major ocular problems will be presented to bring you "up to speed" in aiding your doctor. Your new skills will be reinforced with real patient cases.

1) OCT what is it?

A Technology – Ocular Coherence Tomography

uses low- coherence interferometry to produce a 2 dimensional image of optical scattering from internal tissue microstructures in a way that is analogous to ultrasonic pulse echo imaging. Simplified - OCT uses light, to visualize into tissues of the back of the eye, like ultrasound.

B OCT Brief History

- 1 1991 Huang MD et al, Science. 1991
- 2 1995 OCT1 (research related) 100 scans
- 3 2002 Stratus OCT (time domain) 500 scans
- 4 2007 Spectral OCT (fourier domain) 27,000 – 40,000 scans
- 5 2017 OCT-A - "synthetic" angiography (no needles)

C Ocular anatomy basics

1 landmarks

vitreous
retina
optic nerve
macula
bruchs membrane
chroid vasculature

- 2 - 10 retinal layers
 - internal limiting
 - nerve fiber layer
 - ganglion cell layer
 - inner plexiform layer
 - inner nuclear layer
 - outer plexiform layer
 - outer nuclear layer
 - external limiting membrane
 - photoreceptors
 - retinal pigment epithelium

D Retinal photography vs OCT normal views/correlation

E OCT printouts

- 1 Retinal scans
- 2 Enhanced HD Line scan
- 3 HD 21 line raster
- 4 HD 21 line raster comparison report
- 5 3D widefield
- 6 Enface image
- 7 Retinal scans change analysis
- 8 Glaucoma - GCC/ONH analysis programs
- 9 Anterior segment views
- 10 iWellness report “green is good, red is bad”

2) - 11 Conditions - OCT view/data printout interpretation

- 1 Posterior Vitreous Detachment
 - vitreous sac pulls free from retinal tissue
- 2 Vitreous Detachment with traction
 - vitreous sac partially pulls free, tugging on retina
- 3 Epiretinal membrane
 - internal limiting membrane “crinkles” retinal tissue
- 4 Cystoid Macular Edema
 - macular fluid leaking into mid retinal tissues

- 5 Central Serous Retinopathy
macular fluid leaking into deep retinal tissues
- 6 Macular hole
macula retina tissue tears – “Anvil” sign
- 7 Dry Macular Degeneration
drusen, and retinal pigment epithelium dimpling
- 8 Wet Macular Degeneration
drusen, fluid, and neovascular membrane
- 9 Glaucoma
ONH/GCC
TNSIT
Symmetry graph
Progressions maps
Anterior Segment - Angles – open vs narrow
- 10 Plaquenil toxicity
“Bull’s eye” maculopathy
Toxicity = dose mg/wt kg x years
% Risk over time determines WHO
Recommended screening protocol
“flying saucer sign”
- 11 Diabetic CNVM

3) Grand Rounds - 10 REAL Patient cases

