

Course Title: OCT Workshop

Length: 2 hours

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Goal

To provide the workshop participant with clinically useful information and practical experience in the use of Optical Coherence Tomography (OCT) and OCT angiography (OCT-A).

Objectives

At the conclusion of this course, the participant will be able to:

1. Discuss the basic principles of OCT imaging, analysis, and interpretation.
2. Discuss the principles of OCT-angiography imaging, analysis, and interpretation.
3. Apply OCT and OCT-A to clinical cases of optic nerve disease, including glaucoma.
4. Apply OCT and OCT-A to clinical cases of vitreoretinal disease.
5. Apply OCT and OCT-A to clinical cases of choroidal disease.
6. Define multimodal diagnostic testing and clinical applications thereof.

Course Description

Over the past two decades, OCT has become the "Gold Standard" for the examination of the posterior pole. More recently, advances in OCT techniques, such as en face, enhanced depth, swept-source, and OCT-Angiography are revolutionizing our ability to visualize posterior segment microstructure. Optic nerve and retinal disease can now be analyzed and correlated in real time to the symptomatology and prognosis. This workshop provides the participant with clinically useful information and practical experience in the use of OCT and OCT-A.

Course Outline

- I. Introduction (10 min lecture)
 - a. Principals of diagnosis
 - i. Clinical Diagnosis Based on HPI, and Examination Findings
 - ii. Use of Ancillary Testing
 1. Ancillary Tests as Screening Devices
 2. Ancillary Test as Problem Oriented, Specific to Diagnosis Methodology
 - a. Imaging of the eye- contemporary methods
 3. Interpretation of Results
- II. Diagnostic Imaging Devices
 - a. Optical Coherence Tomography (OCT) (10 min lecture/20 min hands-on)
 - i. Principals of OCT
 - ii. Clinical Applications of OCT
 1. Thickness Map Analysis
 2. Cross Sectional Exam
 - a. Cross Sectional Anatomy of the macula
 - i. Vitreoretinal interface- case example
 - ii. Inner Retina
 - iii. Outer Retina
 - iv. RPE
 - v. Choroid
 1. Enhanced Depth Imaging (EDI)
 2. Swept Source Imaging
 - vi. Pathological Examples
 1. Conditions of vitreoretinal interface
 - a. VMA, VMT, ERM, MH
 2. Retinal Vascular Disease
 - a. Diabetic Retinopathy
 - b. Retinal Vein Occlusion
 - c. Retinal Artery Occlusion
 3. Degenerative Disease
 - a. AMD
 - b. Macular Dystrophies
 4. Inflammatory and Infectious Disease
 5. Neoplastic Disease

b. Optic Nerve

- i. Cross Section vs. NFL Thickness Analysis
- ii. Pathologic Examples
 - 1. Glaucoma
 - 2. Congenital ONH Disease
 - a. ON Pit
 - b. ON Coloboma
 - c. ON Drusen
 - 3. Parapapillary Atrophy vs. Tilted ONH
 - 4. Acquired ONH Disease
 - a. Disc Edema

c. Peripheral Retina

- i. Wide-field OCT
- ii. Pathologic Examples
 - 1. Retinoschisis
 - 2. Retinal Detachment
 - 3. Peripheral Retinal Degenerations

b. En Face OCT Imaging (5 min lecture/5 min hands-on)

- i. Principals
- ii. Clinical Utilization
 - 1. Retinal Disease
 - 2. Choroidal Disease

c. Ultrasonography (5 min lecture)

- i. Principles
- ii. Clinical applications

d. OCT-Angiography (OCTA) (10 min lecture/10 min hands-on)

- i. Principle of OCT Angiography
 - 1. Advantages
 - 2. Disadvantages
- ii. Retinal Segmentation
- iii. Clinical Examples
 - 1. Diabetic Retinopathy
 - 2. Choroidal Neovascular Membrane

e. Wide-Field and UWF Imaging (5 min lecture/10 min hands-on)

i. Color Photography

1. Principals and Clinical Utilization
2. Flash Photography
3. Wide-Field OCT and OCTA
4. Laser Scanning Ophthalmoscope
 - a. Confocal Scanning
 - b. Wide Field Scanning

f. Fundus Autofluorescence (FAF) (5 min lecture/10 min hands-on)

i. Principles of Imaging

ii. Instrumentation

iii. Clinical Application

1. Retinal Pigment Epithelium
2. Pathological Examples
 - a. Macular and Retinal Degenerative Disease
 - i. Age Related Macular Degeneration
 1. Drusen
 2. Lipofuscin
 3. Geographic Atrophy
 4. Choroidal Nonvascular Membrane
 5. Retinal Hemorrhages
 - b. Macular Hole
 - c. Miscellaneous Cases
 - i. Choroidal Nevus
 - ii. Choroidal Melanoma
 - iii. Inflammatory and Autoimmune Disease
 - iv. White Dot Syndromes

III. Conclusions and General Q and A (10 min discussion)