

The Basics of Optical Coherence Tomography (OCT)

Marguerite Ball-Thomas, O.D., F.A.A.O.
Winter Park Vision Specialists
1935 State Road 436
Winter Park, FL 32792
407-671-0960 (work)/407-701-7701 (cell)
eyedr7868@gmail.com / mballwsurf@aol.com

Financial Disclosures:

I do not have any personal relevant financial or commercial interests to disclose. My husband has a salaried position at Heidelberg Engineering as a Clinical Development Manager. He works with researchers and did not have any direct or indirect influence on this lecture.

Course Description: Optical coherence tomography (OCT) has become the standard of care in not only the retinal or glaucoma specialist's office but also in the primary care eye physician's practice. OCT allows practitioners to view the various complicated structures in the eye and their relationship to one another, revealing information that would otherwise be invisible to the human eye. This course will provide an overview of basic OCT as it relates to the eye, the appropriate use of OCT as it pertains to patient diagnoses, as well as the appropriate follow-up OCTs necessary to care for patients in the primary eye care physician's office.

Learning Objectives:

1. To gain a basic understanding of what OCT is, as well as its past and present history.
2. To gain an understanding of the types of OCT scans and what ocular disease presentations are best managed with OCT.
3. Through case presentations and OCT examples, the attendee will gain a better understanding of the OCT presentation of certain disease states.
4. Through OCT case examples, the attendee will have a better understanding of the appropriate follow-up scans as well as interval standards necessary to appropriately follow-up patients.

Course Outline:

I. Optical Coherence Tomography Basics

- A. Definition: Non-invasive, high-resolution imaging
- B. History:
 1. Time Domain
 2. Spectral Domain

C. Applications

1. Optometry/ophthalmology:
 - a. Clinical
 - b. Surgical
 - c. Research
 - 1) Earth
 - 2) Space
2. Cardiology and intravascular applications
3. Oncology
4. Dermatology
5. Dentistry

D. Posterior segment imaging

1. Identifying posterior segment layers in OCT
 - a. Vitreous
 - b. Retina
 - c. Choroid
2. Posterior segment scans:
 - a. Macular scan: layers and thickness
 - b. Optic nerve scan: RNFL-thickness, layers
 - c. Autofluorescence: macula, optic nerve
 - d. OCT-A
3. Anterior segment scans
 - a. Cornea
 - b. Angle
 - c. Scleral contact lens imaging

E. Is an OCT instrument necessity or luxury?

F. When should an OCT be ordered?

II. OCT in Eye Care

- A. Macular pucker
- B. Vitreomacular traction or adhesion
- C. Macular hole
- D. Age-related macular degeneration
- E. Diabetic retinopathy
- F. Macular edema
- G. Central serous chorioretinopathy
- H. Plaquenil patients
- I. Glaucoma
- J. Optic neuropathy
- K. Scleral contact lens fitting