



Optometric
Education
Consultants

AMD A-to-OCT-to-RI-to-Z What You Need to Know

Greg Caldwell, OD, FAAO
November 13, 20/20



Disclosures- Greg Caldwell, OD, FAAO

- 👁 Will mention many products, instruments and companies during our discussion
 - ★ I don't have any financial interest in any of these products, instruments or companies
- 👁 Pennsylvania Optometric Association –President 2010
 - 📅 POA Board of Directors 2006-2011
- 👁 American Optometric Association, Trustee 2013-2016
- 👁 I never used or will use my volunteer positions to further my lecturing career
- 👁 Lectured for: Alcon, Allergan, Aerie, B&L, BioTissue, Maculogix, Optovue
- 👁 Advisory Board: Allergan, Maculogix, Sun, Kala
- 👁 Envolve: PA Medical Director, Credential Committee
- 👁 HealthCare Registries: Consultant
- 👁 Optometric Education Consultants - Scottsdale, WDW, St. Paul, Quebec City, and Nashville, Owner



Financial Obligations



Course Description and Objectives

This course will evaluate Age Related-Macular Degeneration (AMD) from subclinical to advanced AMD. It will emphasize structure (OCT) and function (dark adaptation) testing to provide early detection and proper staging of AMD. Once accurately diagnosed the course will discuss applying current clinical guidelines in the treatment of subclinical to advanced AMD. The course will also call attention to OCT structural changes indicating progression.

Course Objectives:

- 🔗 Show how to diagnose the often missed subclinical or early AMD
- 🔗 Increase ones understanding on function testing for AMD
- 🔗 Increase ones understanding on the structure changes to properly stage AMD
- 🔗 Show how to treat subclinical or early AMD
- 🔗 Discuss OCT Angiography utilization in AMD
- 🔗 Review treatments for Intermediate AMD
- 🔗 Review treatments for exudative/choroidal neovascular AMD

Poll 1 The condition you see more in your practice:

- A. Glaucoma
- B. Diabetic retinopathy
- C. Macular degeneration

AMD Dominance

- ✎ In 2010, the World Health Organization estimated that 5% of the world's blindness was due to AMD
- ✎ Leading cause of blindness over 55-year-old in USA
- ✎ 11 million people in USA have AMD, 22 million by 2050
 - ★ Approximately 1 in 14 people over the age of 40 has some degree of macular degeneration
 - ★ Over 60, 1 in 8 (12.5%)
 - ★ Over 80, 1 in 3 (33 %)
- ✎ More cases of AMD than Alzheimer's, breast cancer, and Parkinson's combined
- ✎ The leading cause of blindness and vision loss in Caucasians
- ✎ Affect 1 in 5 families
- ✎ Hereditary strongest genetic linkage of any major diseases

Eye Care Professional Landscape

🕶️ 58,000 eye care professionals

- ★ 40,000 optometrists

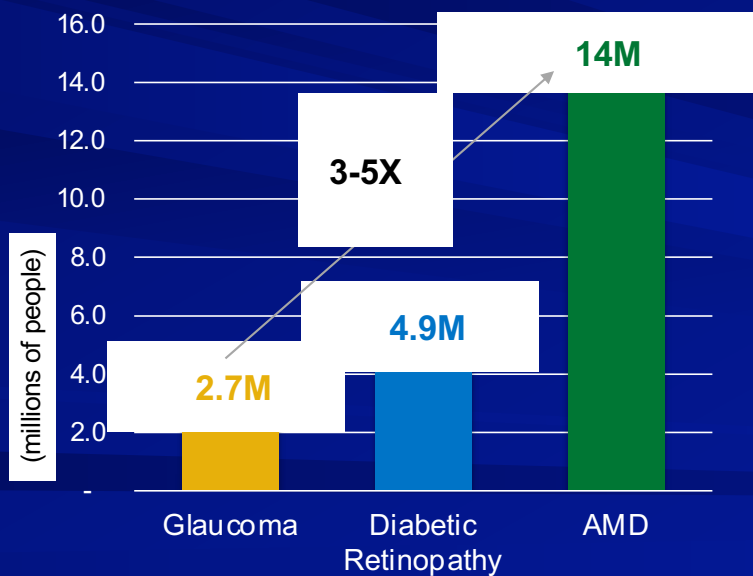
- ★ 18,000 ophthalmologists

 - 📋 About 10% are retinal specialists

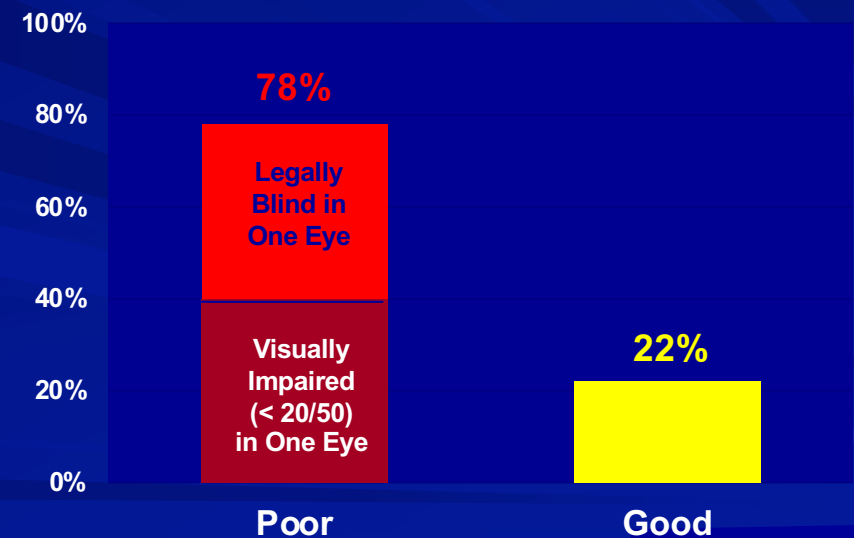
Age-Related Macular Degeneration is the Leading Cause of Preventable Blindness in the Western World

👁️ **Clinical AMD is more prevalent than Glaucoma and Diabetic Retinopathy combined**

PREVALENCE OF MAJOR EYE DISEASES (US)



CNV PATIENT OUTCOMES ON 1ST PRESENTATION FOR Anti-VEGF TREATMENT



References: <https://www.aao.org/newsroom/eye-health-statistics> | Neely D, et al. *Ophthalmol.* Published online April 27, 2017. | Klein R, et al. *Arch Ophthalmology.* 2011;129(1):75-80. | Chevreaud, O et al. *Eur J of Ophthalmology.* 2016;26(1):44-47. | Cervantes-Castañeda RA, et al. *Eye (Lond).* 2008;22(6):777-781. | Olsen TW, et al. *Ophthalmology.* 2004;111(2):250-255.

Primary Eye Care is Missing Visible Disease in 25% of Patients Using Standard Workup

JAMA Ophthalmology | Original Investigation

Prevalence of Undiagnosed Age-Related Macular Degeneration in Primary Eye Care

David C. Neely, MD; Kevin J. Bray, MD; Carrie E. Huisingsh, MPH; Mark E. Clark, BS;
Gerald McGwin Jr, PhD; Cynthia Owsley, PhD

1288 eyes from 644 people

- Mean age of 69.4
- 36% male

**Doctors were aware that they were
recruiting patients for an AMD study!!!**

- ✓ 25% of eyes consistent with AMD
- ✓ 30% of missed AMD eyes had large drusen (Intermediate AMD)
- ✓ Well-known risk factor for progression to advance disease
- ✓ ODs and MDs miss AMD diagnosis equally

Reference: Neely DC, Bray KJ, Huisingsh CE, Clark ME, McGwin G, Owsley C. Prevalence of Undiagnosed Age-Related Macular Degeneration in Primary Eye Care. *JAMA Ophthalmol.* 2017;135(6):570–575.

AMD Considerations and Pearls

- 👁️ There is currently no cure for AMD
 - ★ Proper detection and care may prevent significant visual acuity loss in many patients
- 👁️ Are anti-VEGF injections our patients' best hope?
- 👁️ Late-stage treatments, albeit necessary, they have little impact on central acuity
 - ★ Impacting our ability to intervene in early to intermediate AMD?

Optometrists and All Eye Care Professionals Responsibility

- 👁️ Rethink our responsibility related AMD diagnosis and management
- 👁️ Commit to that we will do better in
 - ★ Early detection
 - ★ Treatment
- 👁️ Know, execute, and employ current clinically appropriate Practice Guidelines
 - ★ Those that preserve vision
 - ★ Don't wait until vision has been lost
- 👁️ Closely monitor and treat the early detected disease
 - ★ If progresses to advanced AMD, better opportunity to save vision

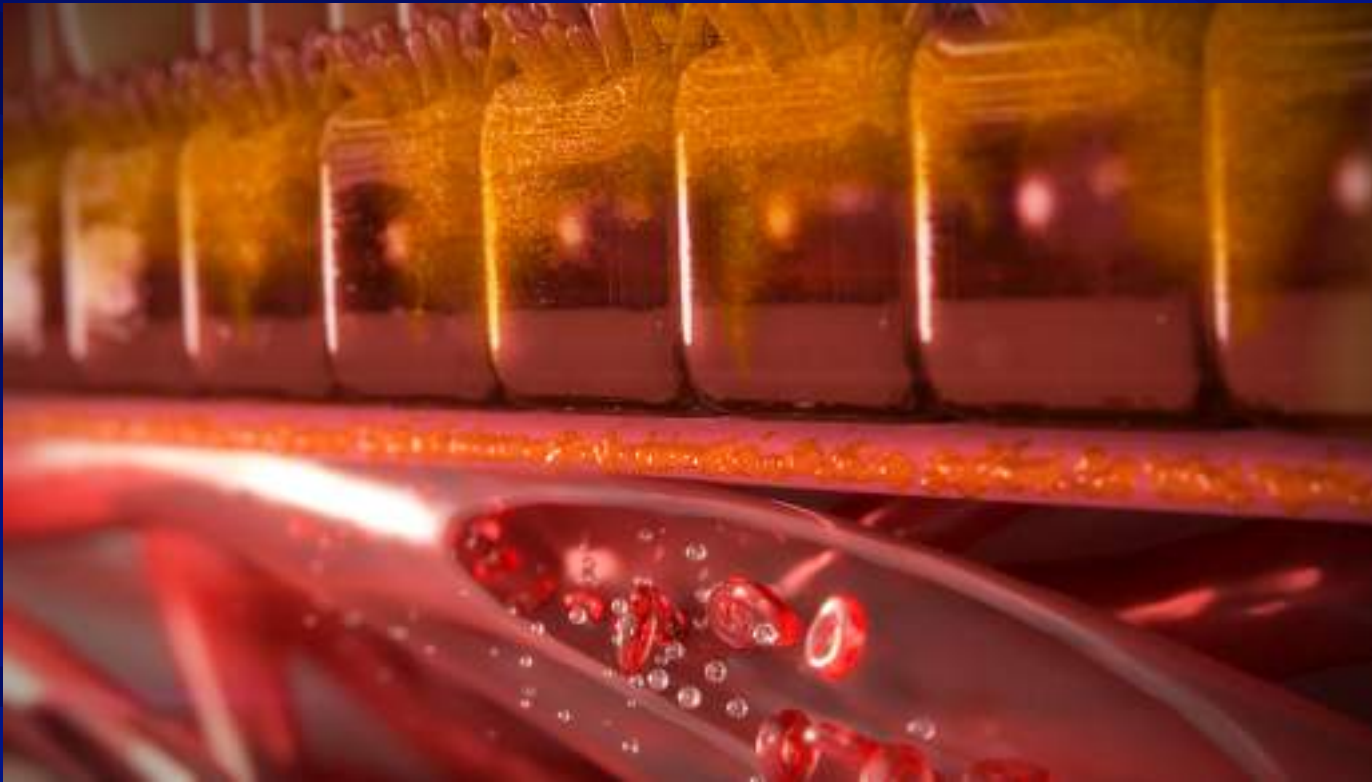
Early Onset Pathogenesis

- 👁️ Drusen small or large are not makers for early stage AMD
 - ★ Visible structural evidence of a pathological process
 - 📅 Underway for quite some time
- 👁️ Cholesterol deposits exist beneath the surface long before drusen form
 - ★ Cannot be seen with structure-based methods
 - ★ Cholesterol produced by RPE and deposits into Bruch's membrane
 - ★ Continue to layer in Bruch's membrane
- 👁️ As this cholesterol accumulates the process unfolds with compromise to the outer retina
 - ★ Inflammation
 - ★ Oxidative stress
 - ★ Disruption of oxygen and nutrients
 - ★ Drusen formation
- 👁️ Impaired Vitamin A across Bruch's membrane
 - ★ Functional impairment can occur to dark adaptation

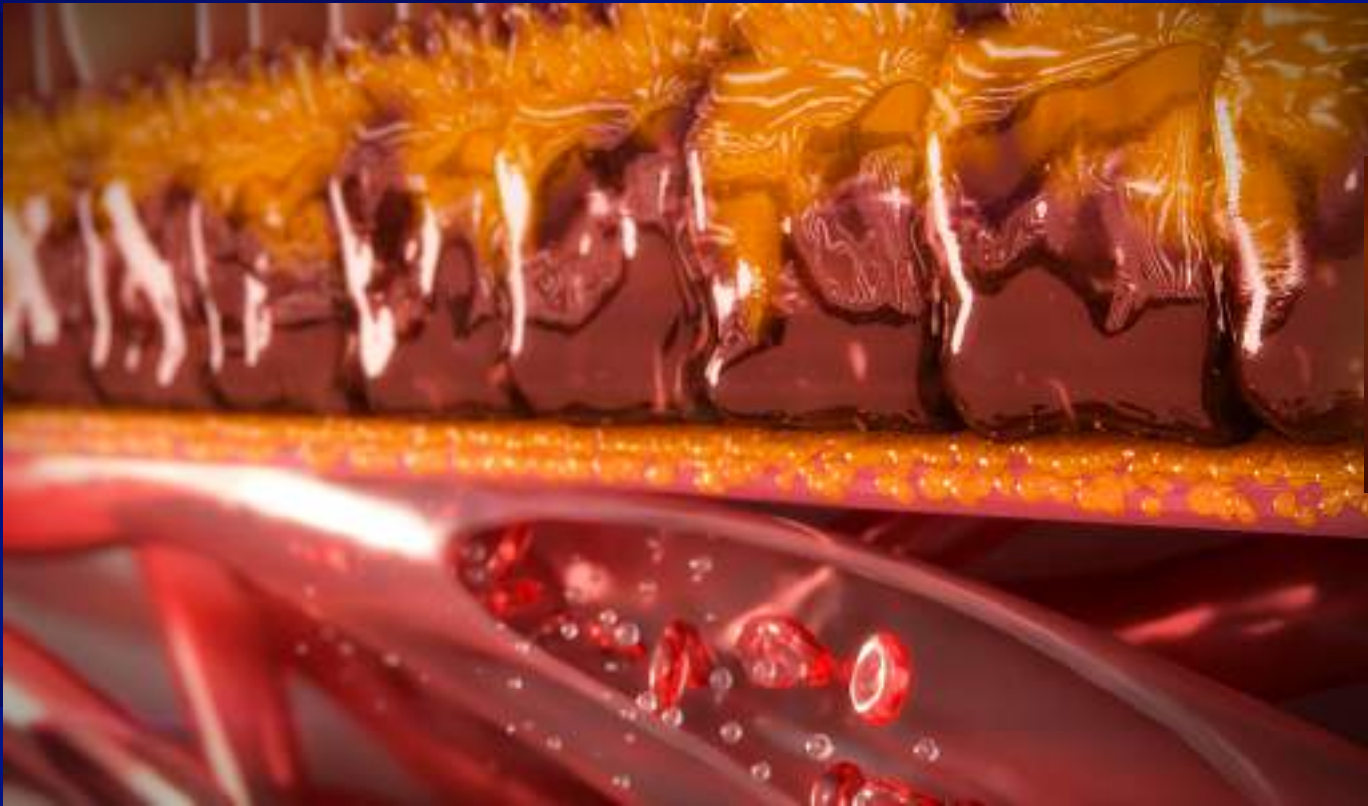
Healthy choriocapillaris, Bruch's, RPE, and Photoreceptors



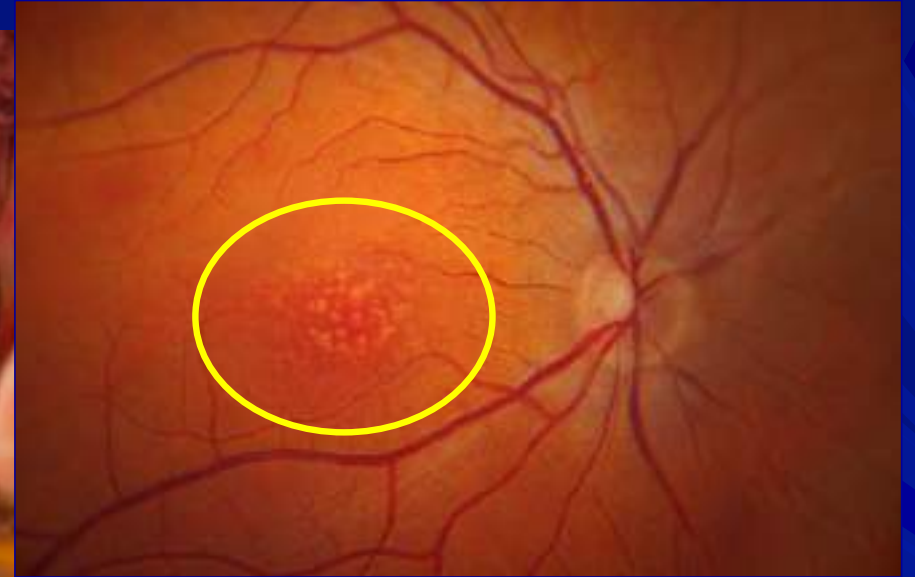
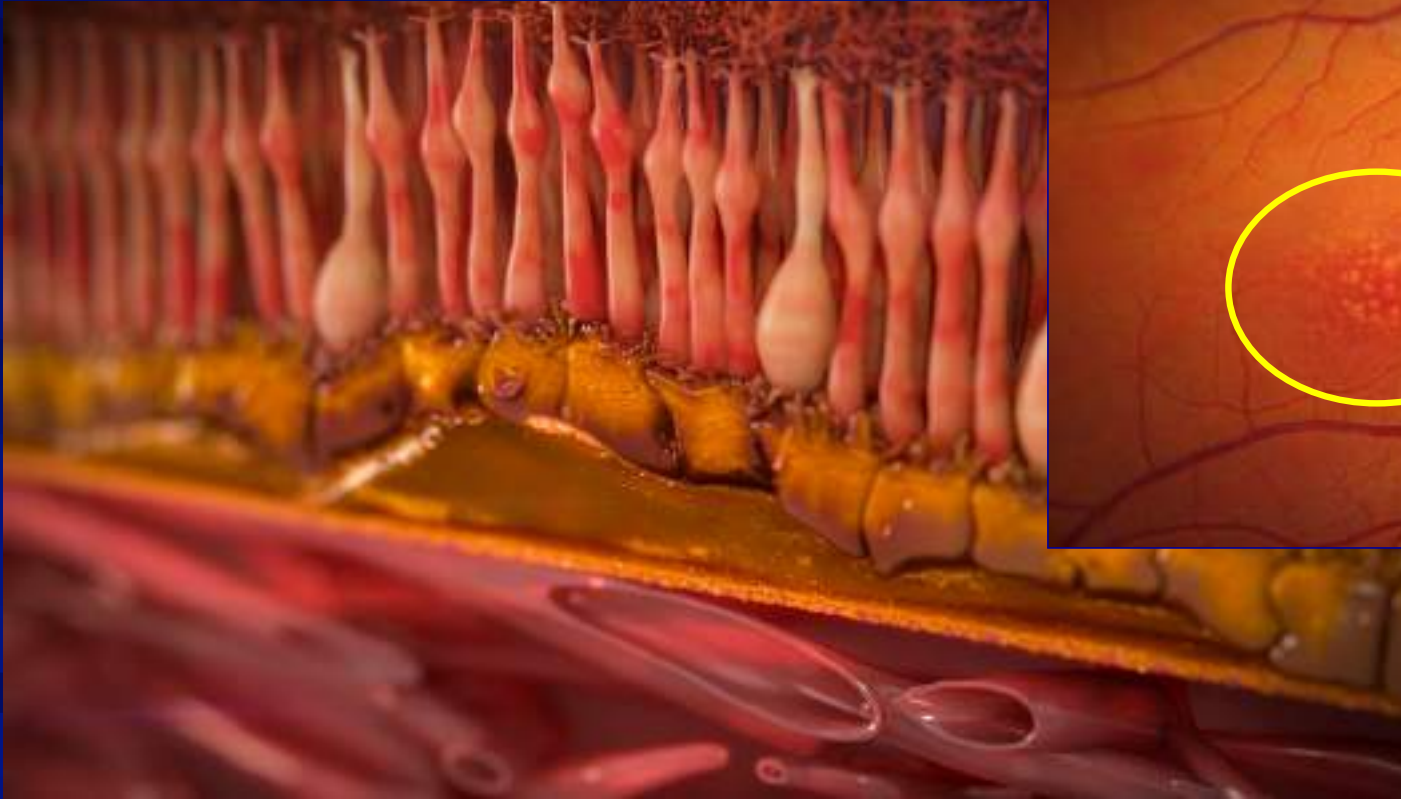
Cholesterol barrier deposited along Bruch's and RPE



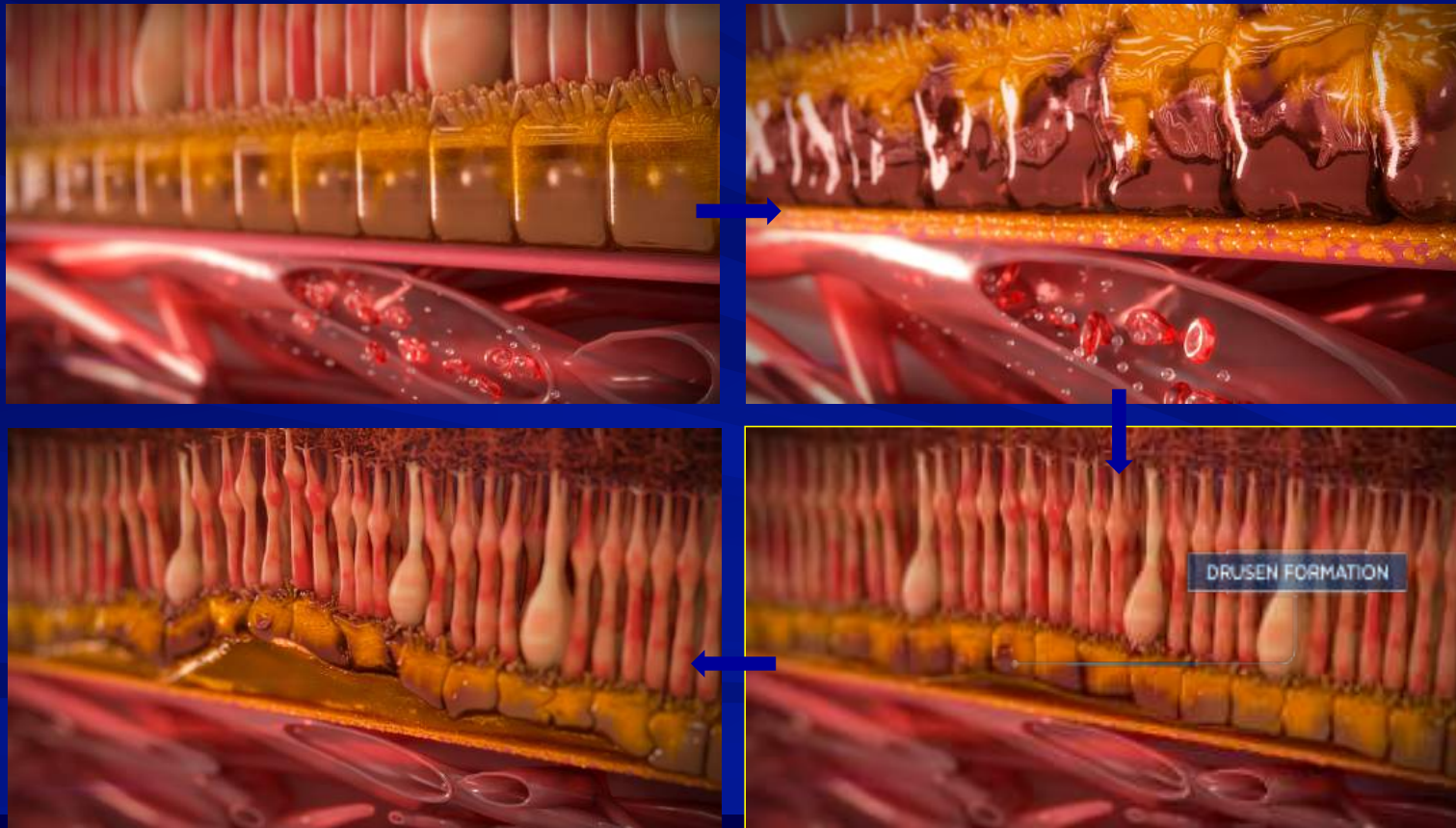
RPE Secretes even more cholesterol and degenerates



Finally, visibly evident drusen on fundus evaluation



AMD is a Disease Process that Starts Below the Surface



Polling Question 2

🔗 The best way to diagnosis subclinical or sub-structural drusen is?

- A. Threshold visual field (VF)
- B. Optical Coherence Tomography (OCT)
- C. Macular pigment optical density (MPOD)
- D. Dark Adaptation (DA)

Staging of Drusen

What method to detect?

🕒 Subclinical or sub-structural – cholesterol layer

🕒 Small drusen < 63 microns

🕒 Medium drusen > 63 – <125 microns

🕒 Large drusen > 125 microns

Functional

Exam, photos, SD-OCT

Exam, photos, SD-OCT

Exam, photos, SD-OCT

Beckmann Committee Classification of AMD

👁️ Based on presence of lesions within 2 DD of fovea in either eye

- ★ No AMD

- ☐ None or few small drusen, < 63 microns
- ☐ No AMD pigmentary abnormalities

- ★ Early AMD

- ☐ Medium drusen, > 63 – <125 microns
- ☐ No AMD pigmentary changes

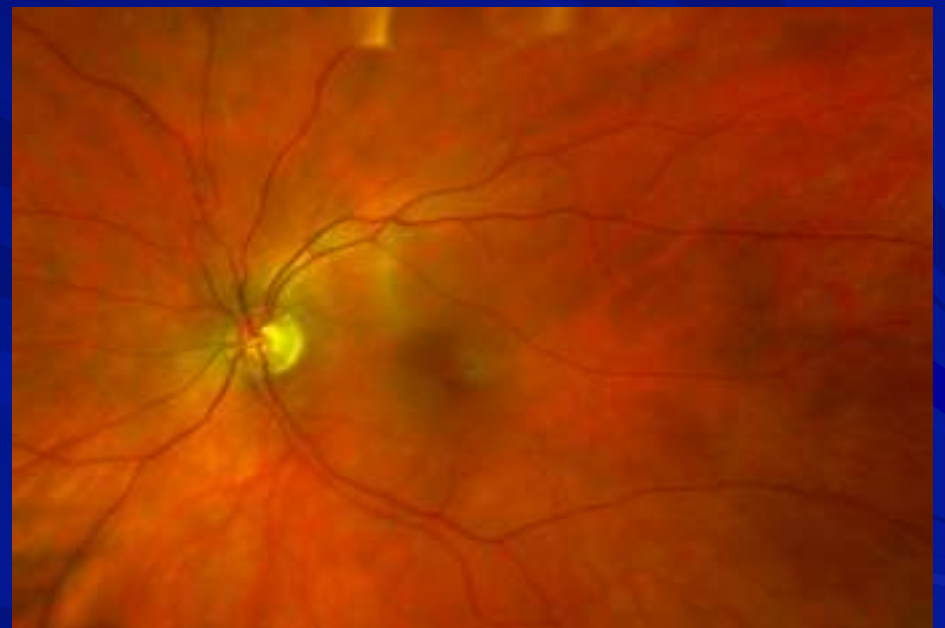
- ★ Intermediate AMD

- ☐ 1 large drusen, > 125 microns
- ☐ Any AMD pigmentary changes

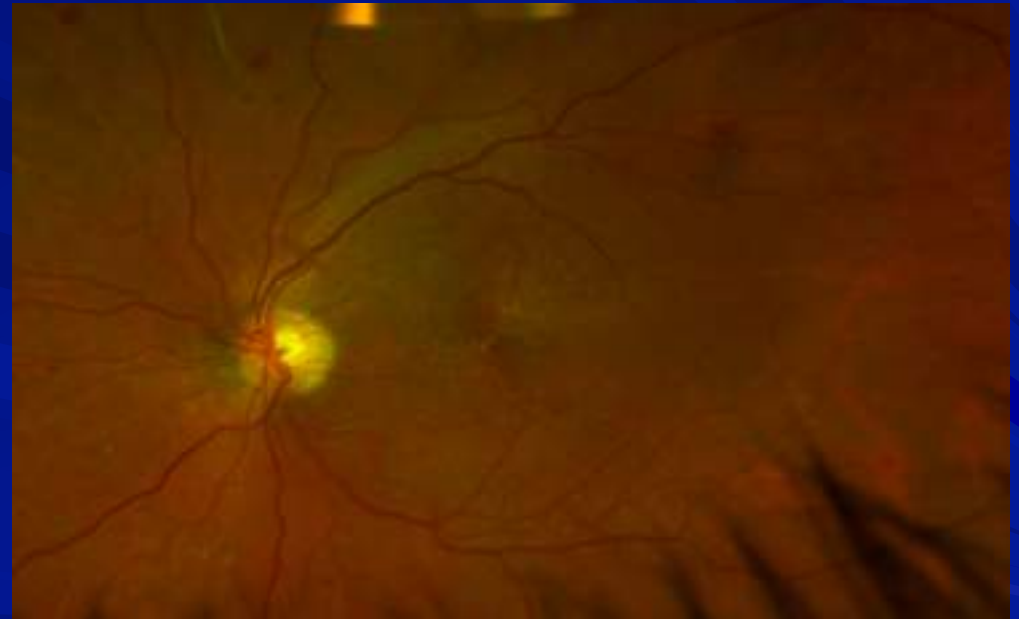
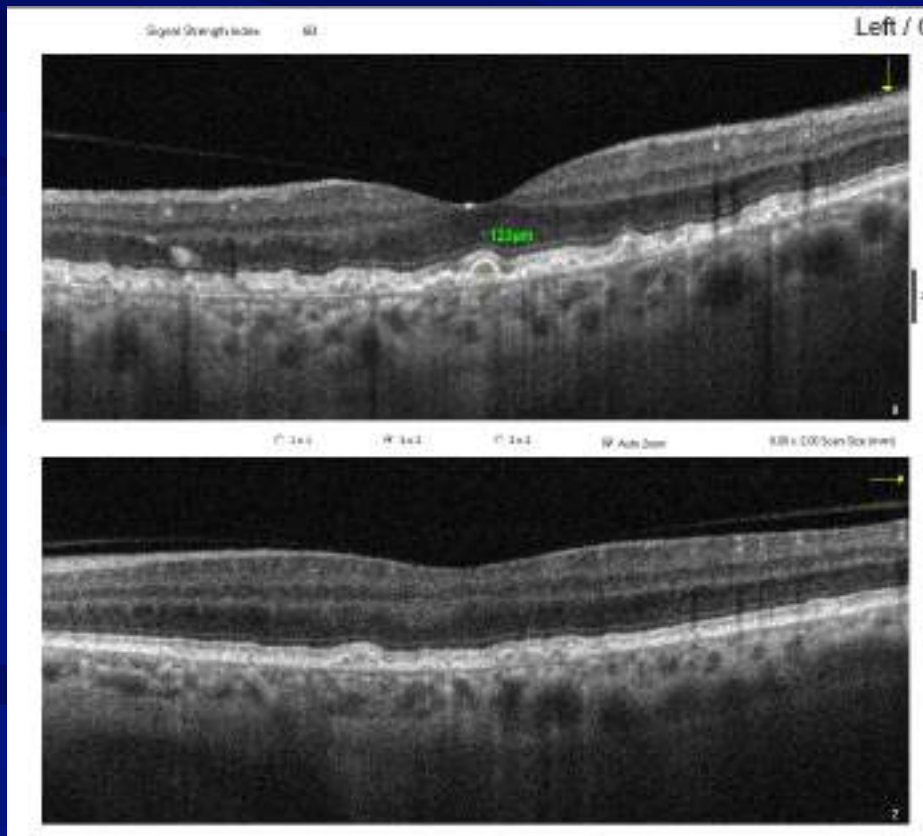
- ★ Advanced AMD

- ☐ Any geographic atrophy
- ☐ Choroidal neovascularization (CNV)

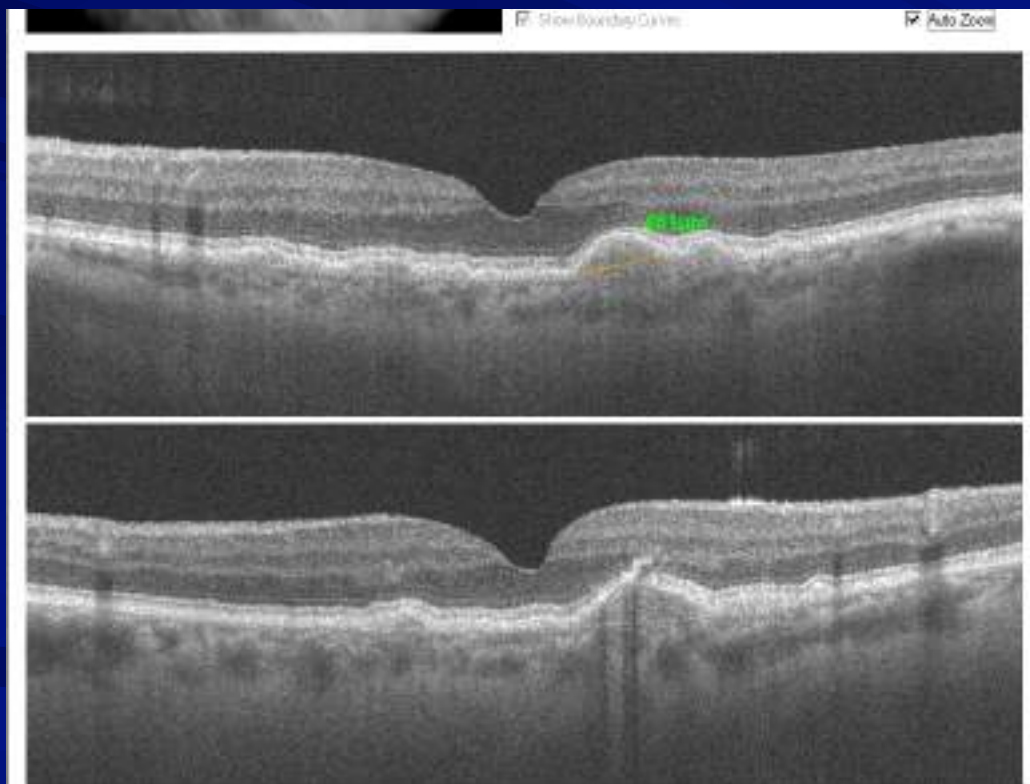
Measure the Drusen with Your OCT



Measure the Drusen with Your OCT



Measure the Drusen with Your OCT



Choroidal Neovascularization (CNV)

- 👁 Type 1 – Occult
- 👁 Type 2- Classic
- 👁 Type 3- RAP
- 👁 Type 4- Mixed

Predictors of Progressing to Advance Disease

- 👁️ Hyper-reflective foci
- 👁️ Reticular pseudodrusen
- 👁️ Nascent geographic atrophy
- 👁️ Sub-RPE hyper-reflective columns
- 👁️ Drusen substructures
- 👁️ Drusen load and regression
- 👁️ Vision loss from geographic or exudative/CNV

Tools for Diagnosis, Management, and Treatment of AMD

- 👁️ Comprehensive eye exam – structural, some functional
- 👁️ Fundus photography and FAF - structural
- 👁️ OCT and OCT Angiography – structural
- 👁️ Dark adaptation – functional

- 👁️ How about macula pigment density testing

Applying a Familiar Standard of Care: *Two Multifactorial Diseases*

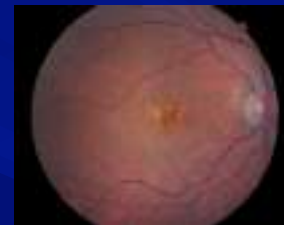
Glaucoma

AMD

Structure



Cup-to-disc
Ratio



Drusen

Function



Visual Field



Dark Adaptation

Risk

Intraocular Pressure (IOP)
Corneal Thickness
Age/race
Family history/etc.
Health and Lifestyle (Diabetes)



Age
Genetic Testing
Health and Lifestyle (Smoking)
Macular Pigment Optical Density (MPOD)
Contrast Sensitivity.

Dark Adaptation in AMD

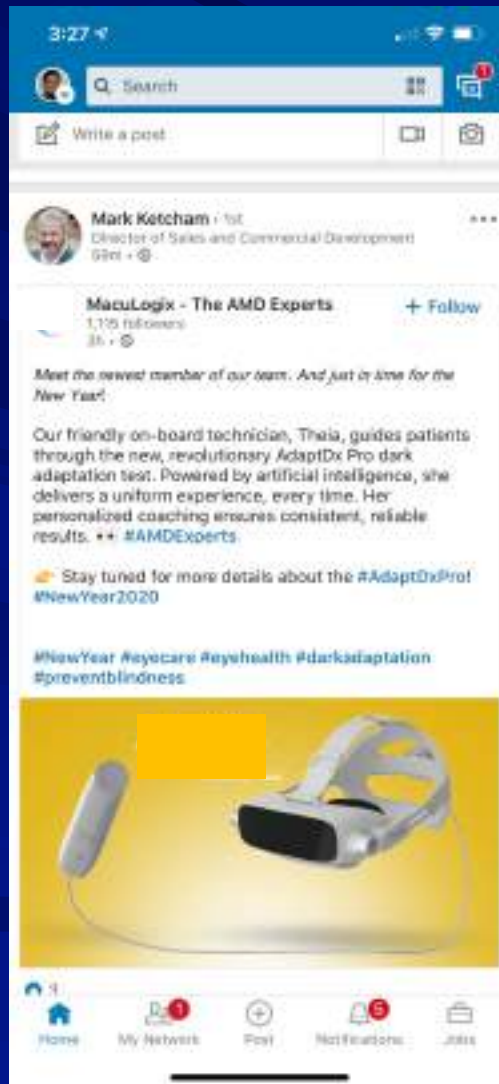
Function Test

- 👁 Measures how long to recover from bright light to darkness
 - ★ Rod intercept line (RI) time
- 👁 Functional test that can help overcome the challenges in diagnosing AMD
- 👁 Alabama Study on Early Age-Related Degeneration (ALSTAR)
 - ★ Able to detect subclinical 3 years before clinically visible
 - ★ 325 adults without clinically detectable AMD
- 👁 Rod deterioration happens in earliest stages of AMD
 - ★ Earlier detection before visual acuity
- 👁 AdaptDx 92284
 - ★ Sensitivity 90.6%
 - ★ Specificity 90.5%



Poll 3 I do dark adaptation testing in my practice:

- A. Yes
- B. No



Dark Adaptation in AMD

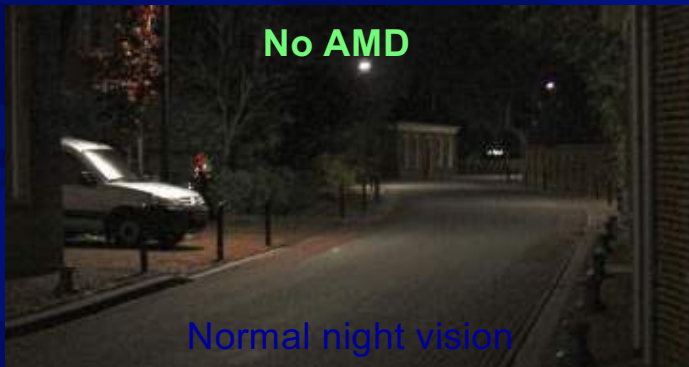
Function Test

January 1st, 2020

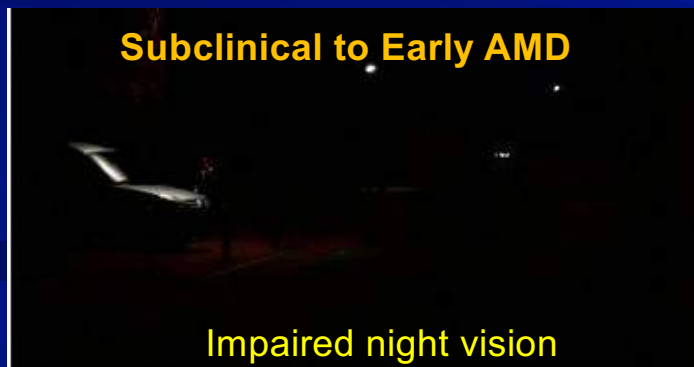
AdaptDx Pro Now Available for Clinical Use



This Means We Now Have an *Early* Symptom We Can Use to Help Diagnose AMD



- Night vision impacted in early AMD: 30+ studies
- AMD patients often give up driving at night
- Night vision is impaired before day vision
- Typically ECP's chalk this complaint up to cataracts

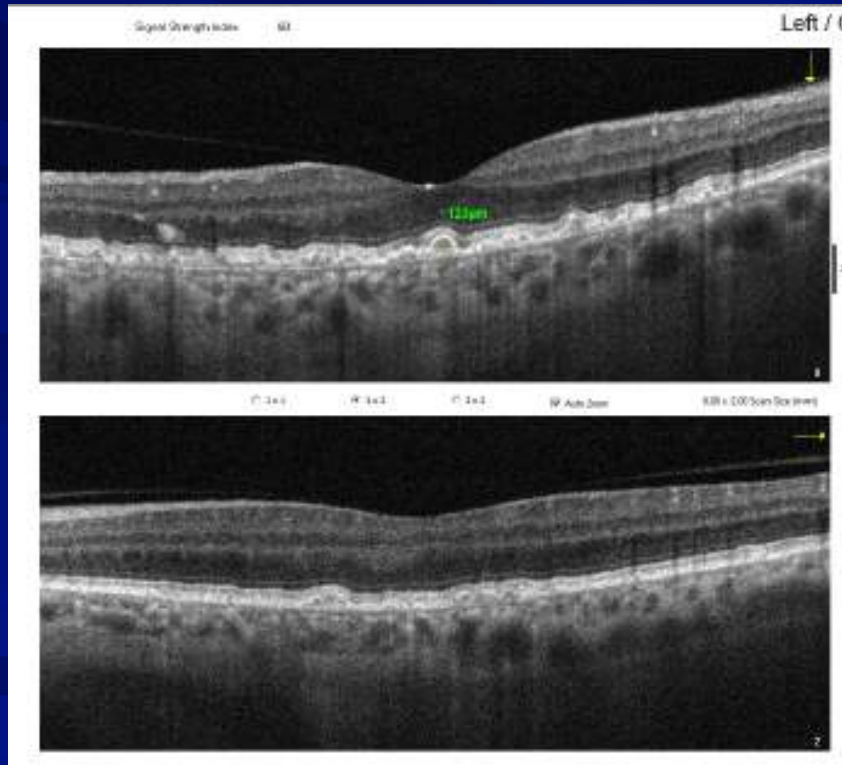


***Ask Every Patient Over 50
About Their Night Vision***

OCT in AMD

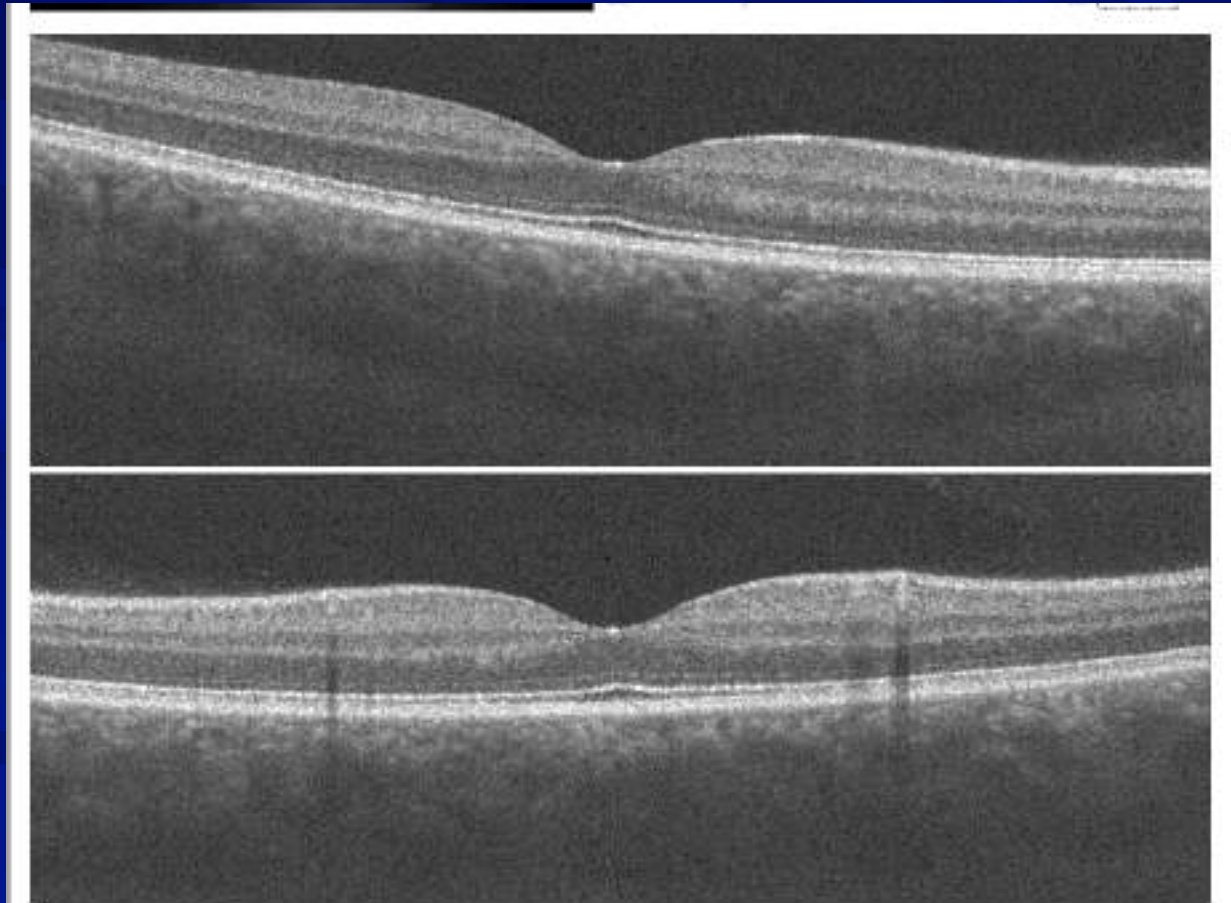
- 👁️ Need spectral domain to follow intermediate or worse AMD
- 👁️ Able to identify OCT predictors of progression
- 👁️ Especially in identifying OCT predictors of progression
 - ★ Hyper-reflective foci
 - ★ Reticular pseudodrusen
 - ★ Nascent geographic atrophy
 - ★ Sub-RPE hyper-reflective columns
 - ★ Drusen substructures
 - ★ Drusen load and regression

Polling Question 4



- 👓 This OCT is showing which predictor of progression quite well?
- ★ Reticular pseudodrusen
 - ★ Nascent geographic atrophy
 - ★ Sub-RPE hyper-reflective columns
 - ★ Drusen load and regression

Hypo versus Hyper Reflectance



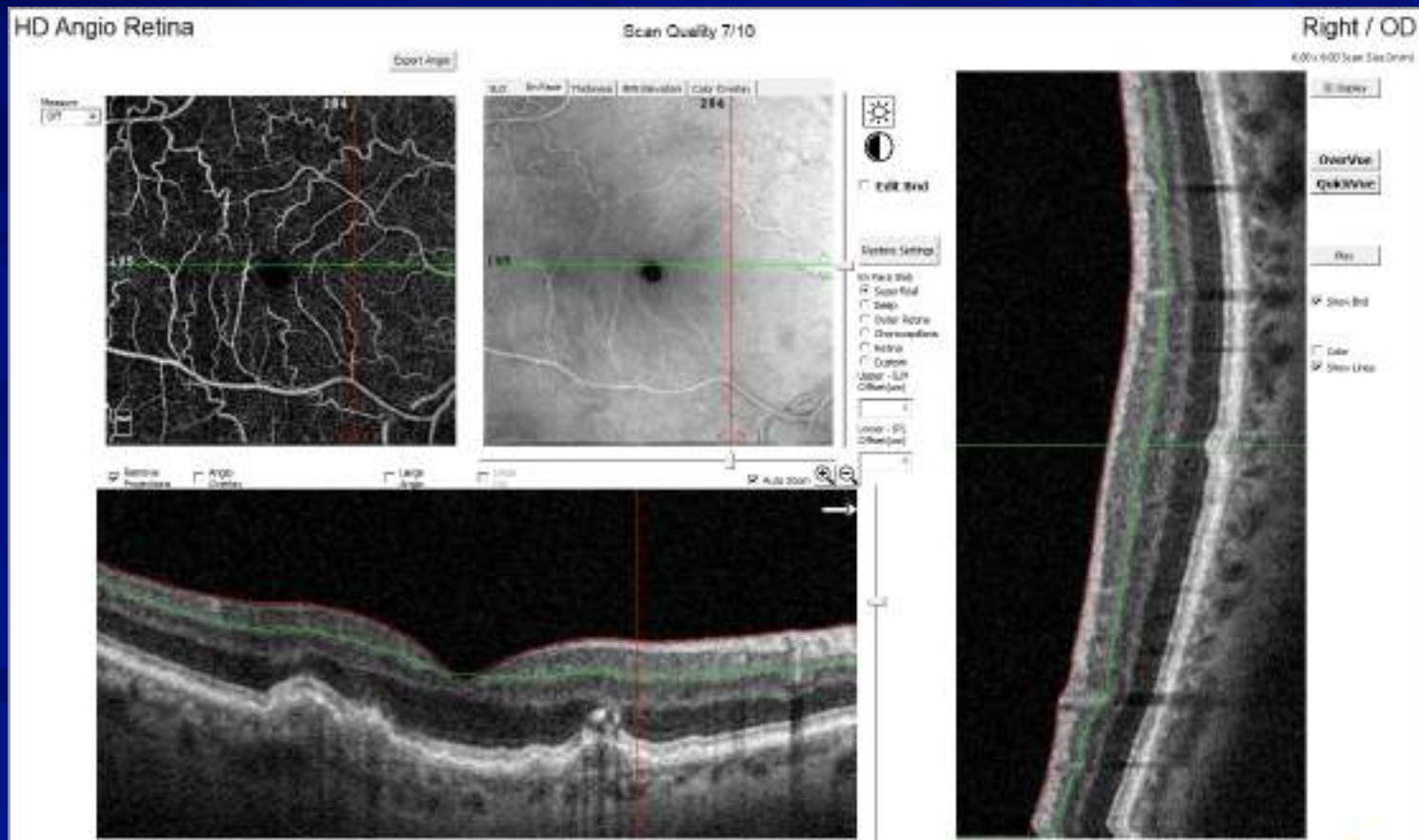
Can We Learn From These Pictures?



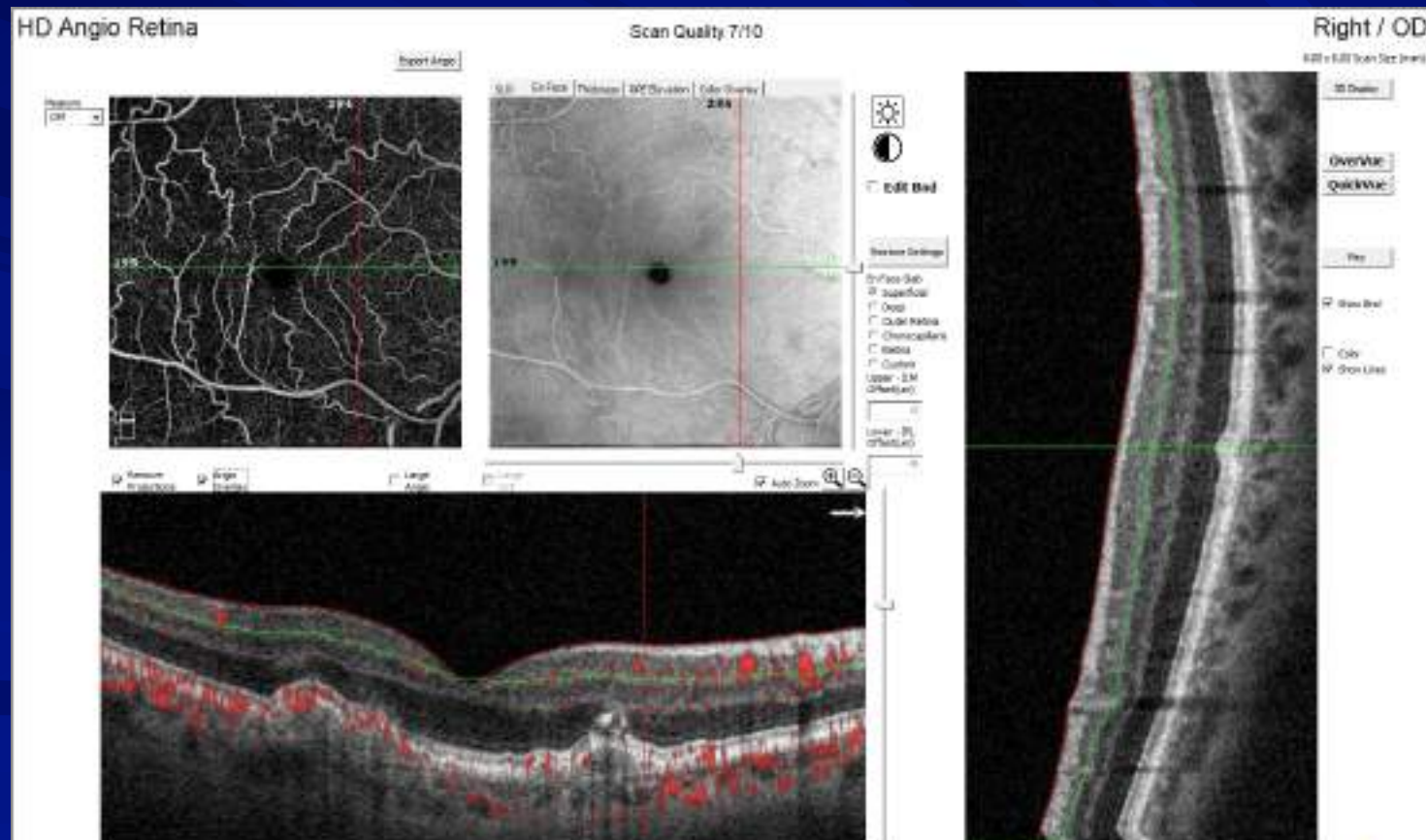
Can We Learn From These Pictures?



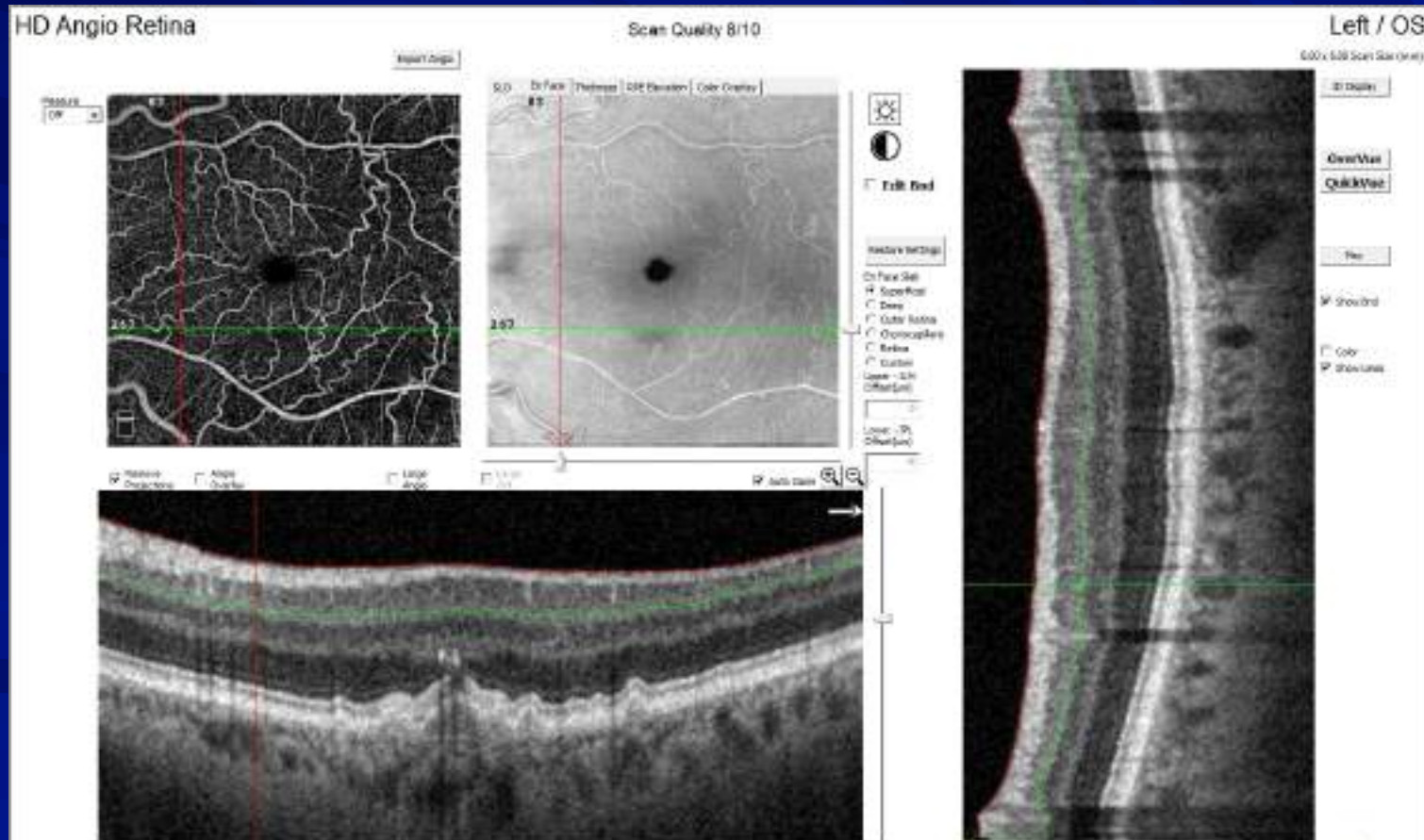
Case 1 - OCT Predictors of Progression



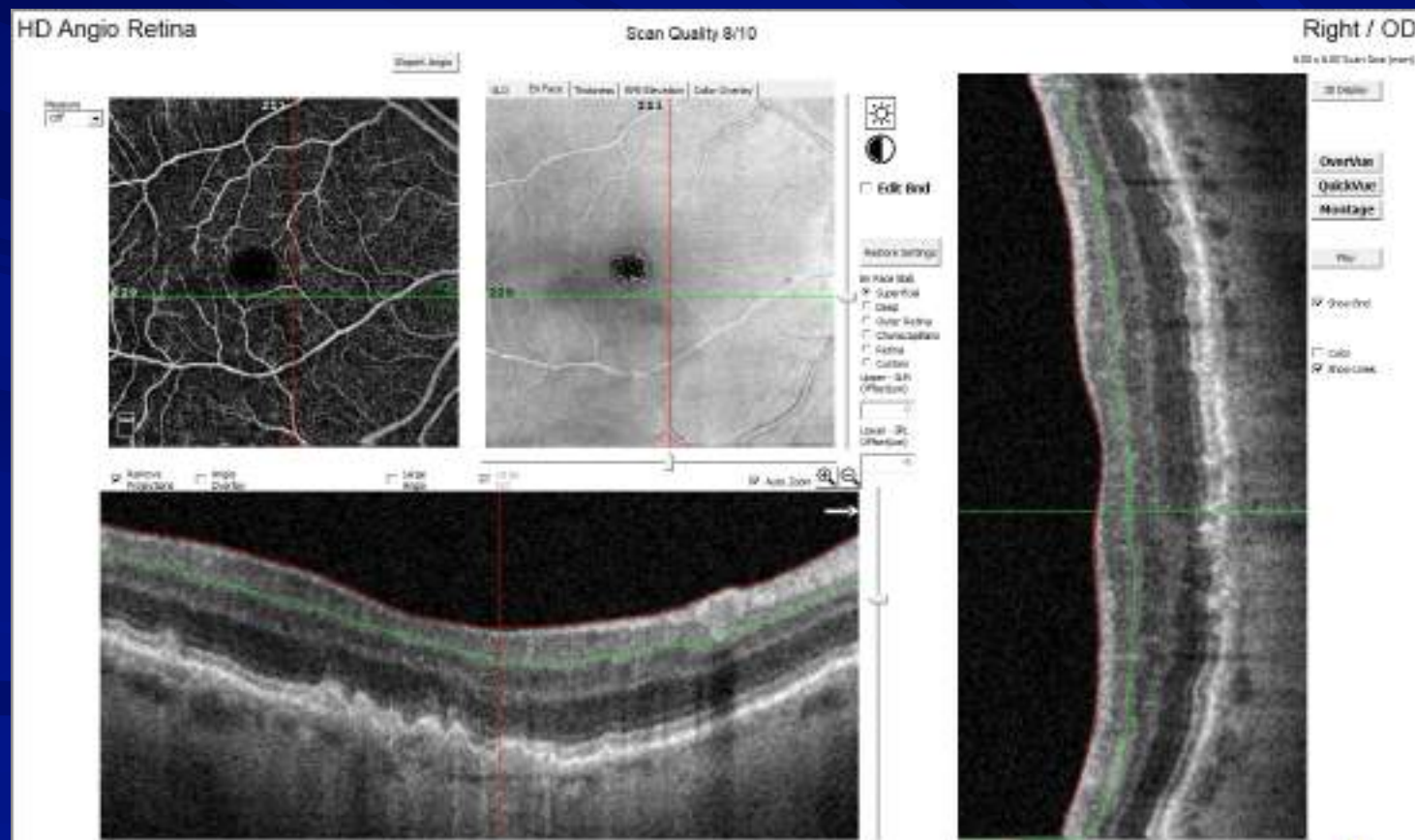
Case 1 - OCT Predictors of Progression



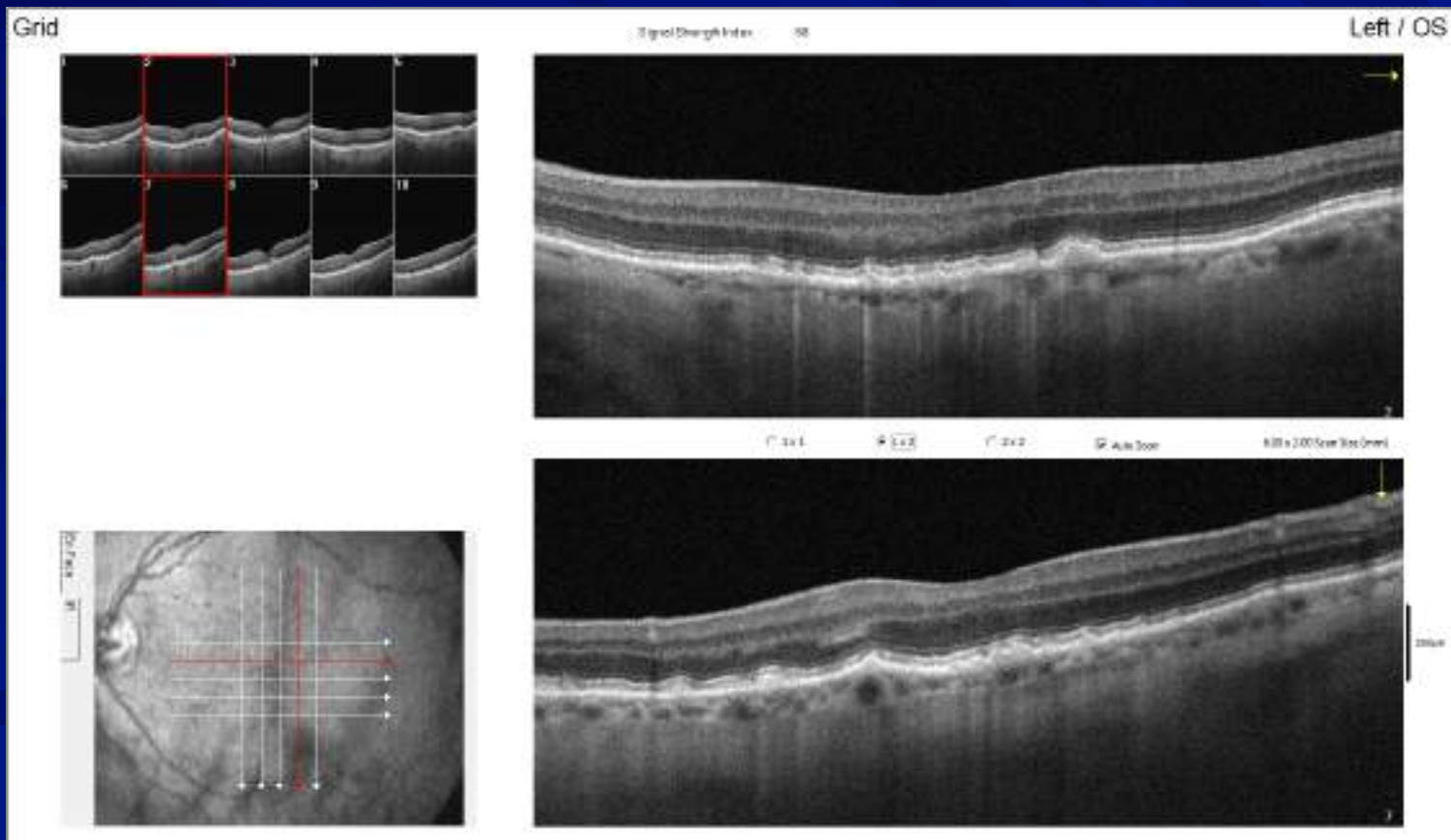
Case 1 - OCT Predictors of Progression



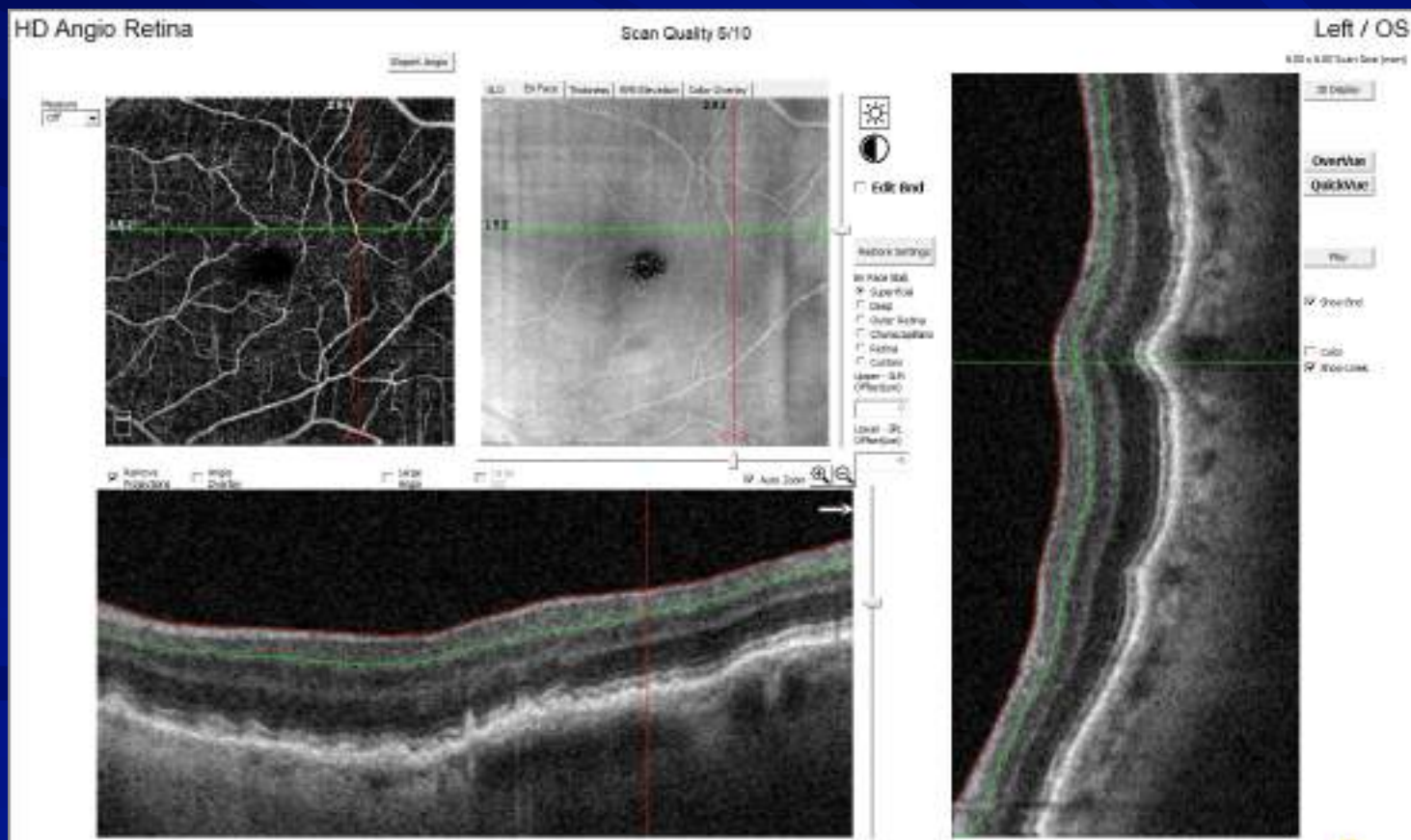
Case 2 - OCT Predictors of Progression



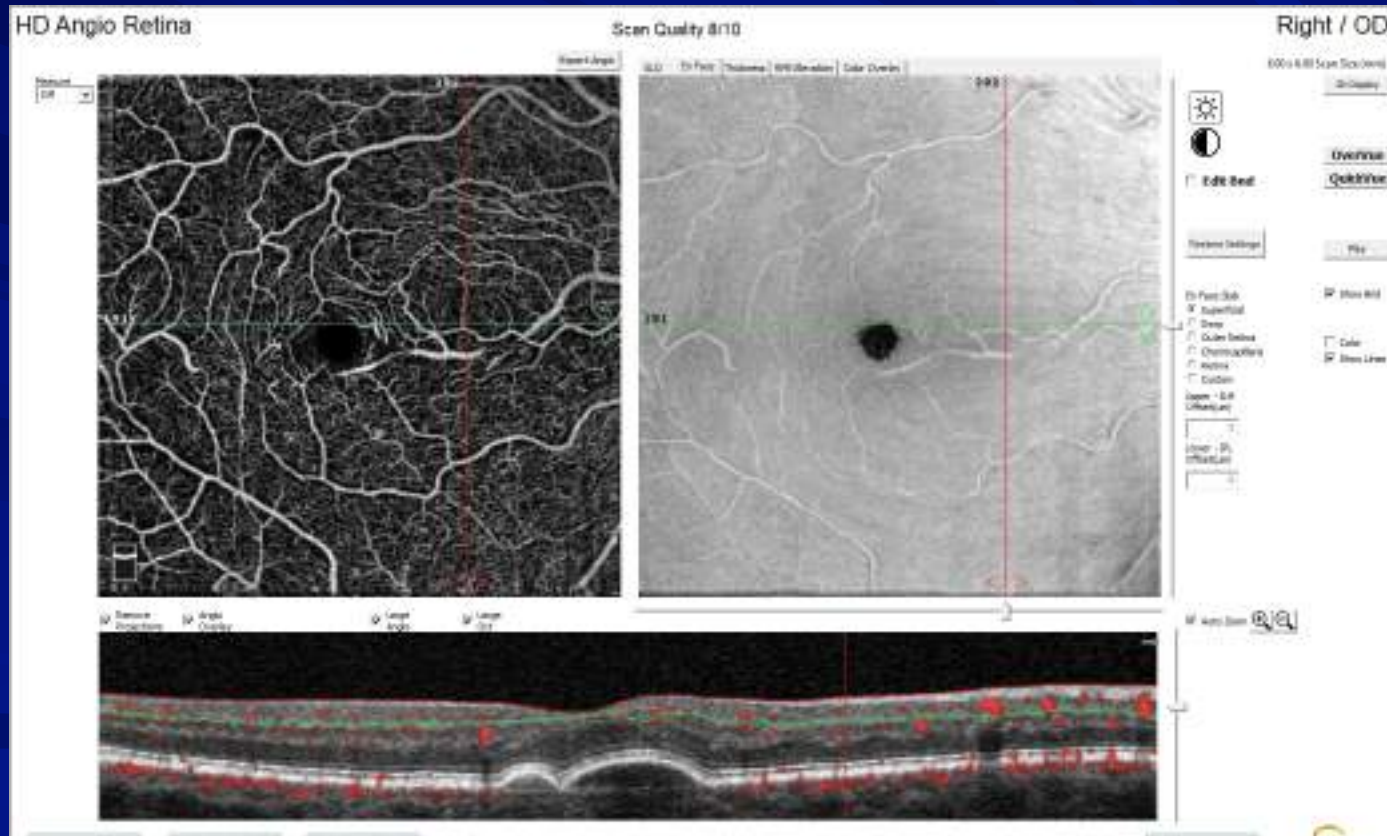
Case 2 - OCT Predictors of Progression



Case 2 - OCT Predictors of Progression



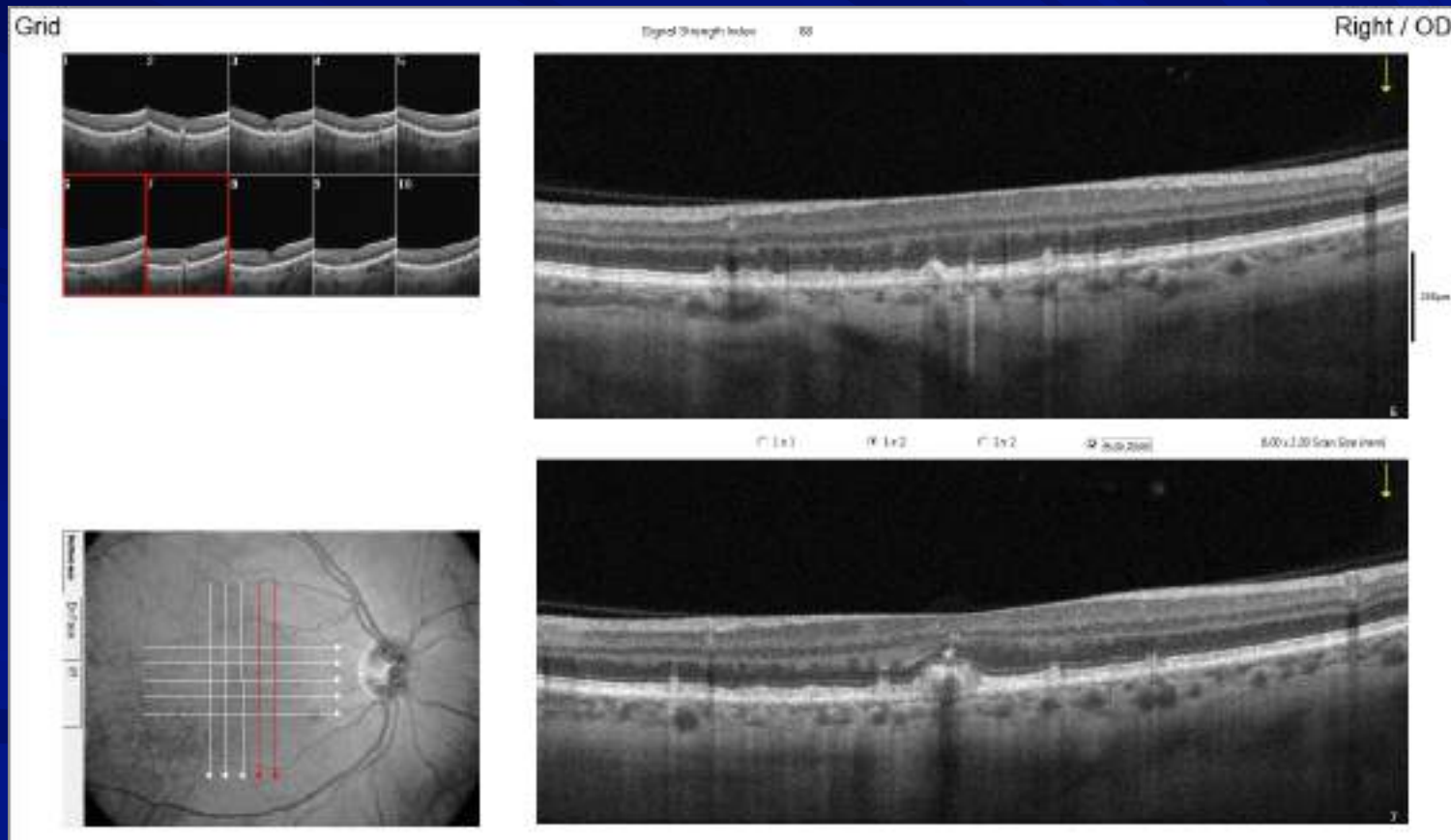
Case 3 - OCT Predictors of Progression



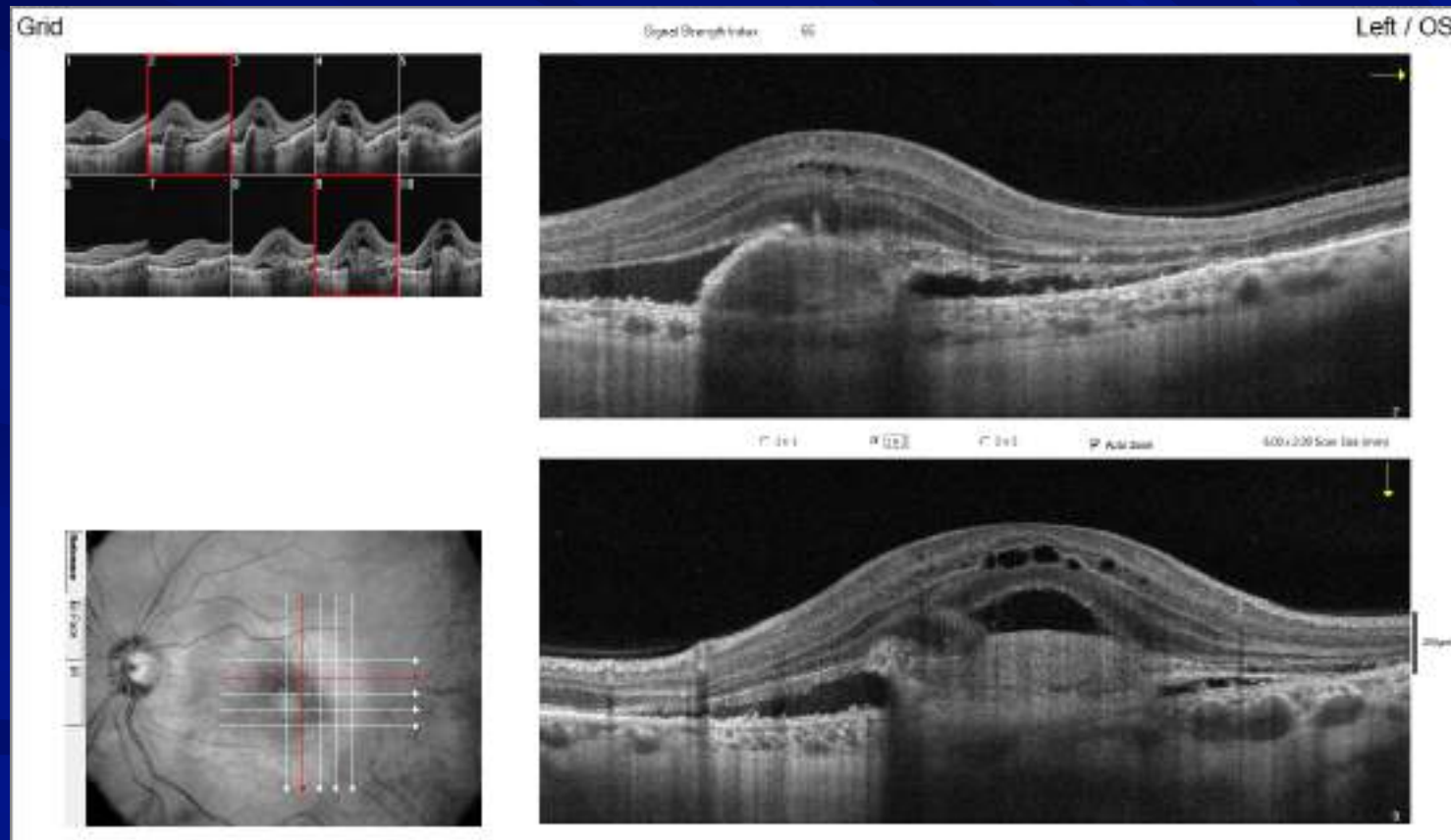
Case 5 - OCT Predictors of Progression



Case 5 - OCT Predictors of Progression



Case 5 - OCT Predictors of Progression



Poll 5 My office has:

- A. OCT
- B. OCT and OCT Angiography
- C. No OCT instrument at this time

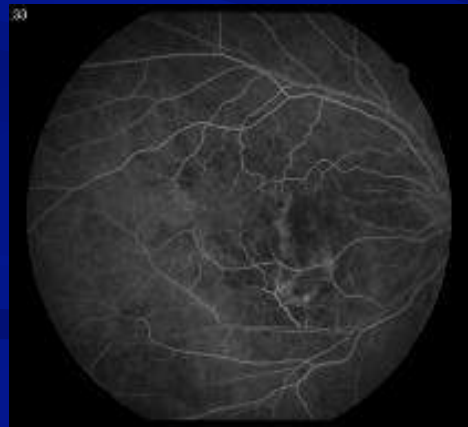
OCT Angiography in AMD

Structure Test

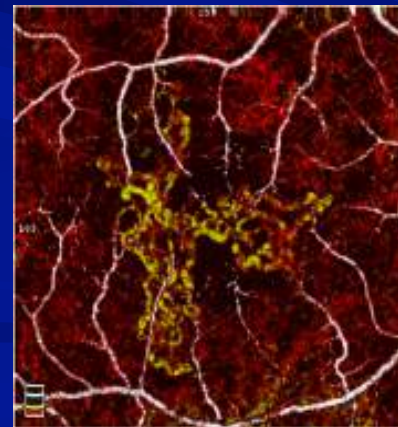
- ✍ Able to identify occult or classic CNV before they leak
- ✍ Non-invasive technique
- ✍ Subclinical CNV or “Occult non-exudative CNV”
 - ★ Risk of exudation at 12 months is 15.2 times greater compared to eyes without subclinical CNV

OCT Angiography A New Approach to Protecting Vision

- ▶ Non-invasive visualization of individual layers of retinal vasculature
- ▶ Pathology not obscured by fluorescein staining or pooling
- ▶ Image acquisition requires less time than a dye-based procedure
- ▶ Reduced patient burden allows more frequent imaging to better follow disease progression and treatment response

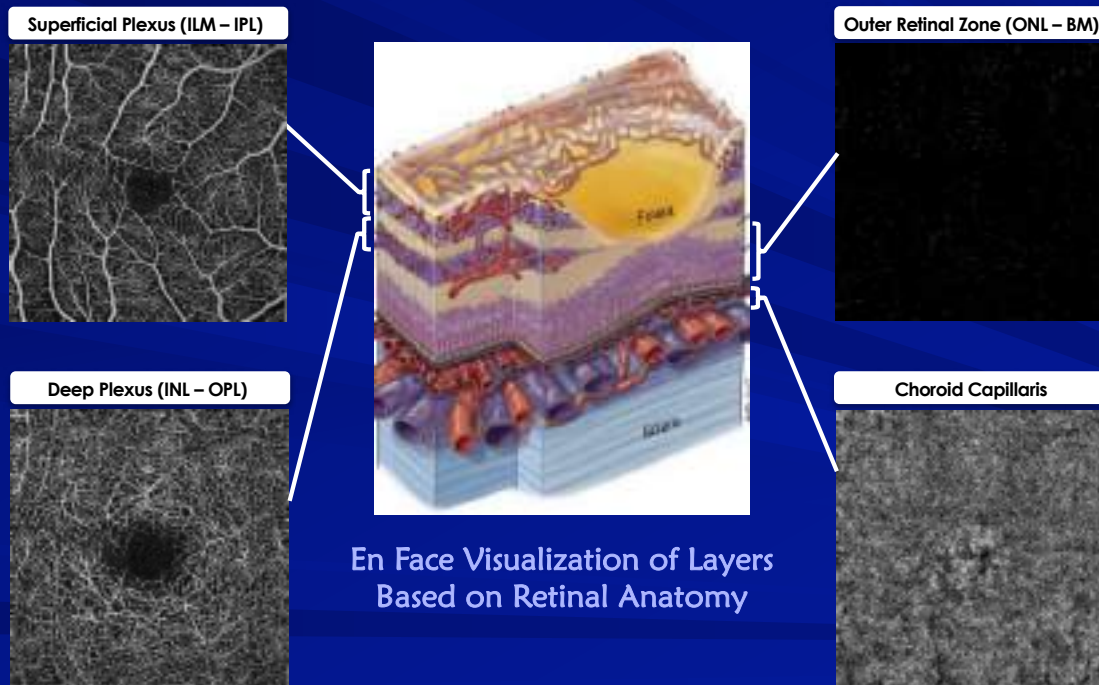


FA of CNV

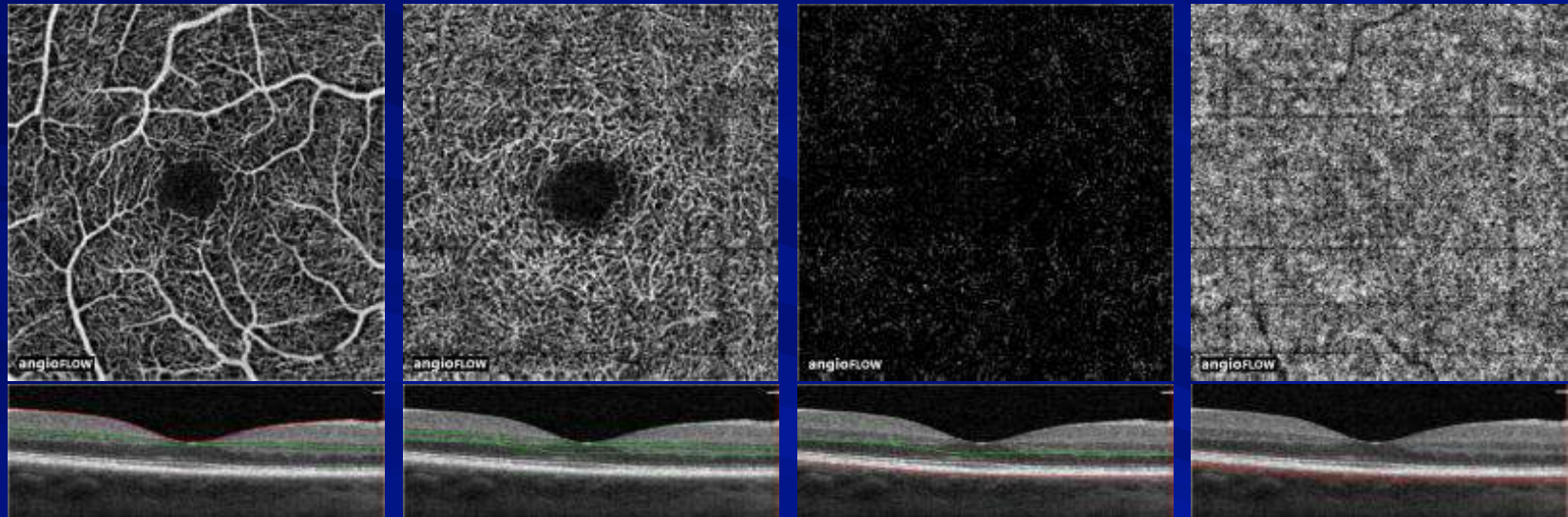


OCTA of CNV

Enface OCT-A Slabs Based on Retinal Anatomy



Normal Retinal Vasculature



Superficial Capillary Plexus

3 μ m Below ILM \rightarrow 15 μ m
Below IPL

Deep Capillary Plexus

15 μ m Below ILM \rightarrow 70 μ m
Below IPL

Outer Retina

70 μ m Below IPL \rightarrow 30 μ m
Below RPE Reference

Choriocapillaris

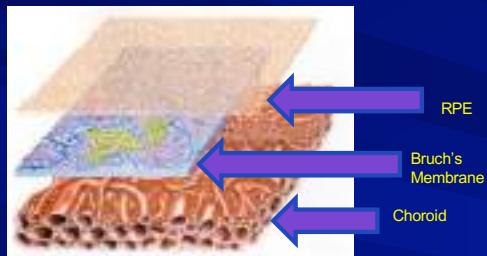
30 μ m Below RPE Reference \rightarrow 60 μ m
Below RPE Reference

Polling Question 6

🔗 OCT Angiography (OCT-A) has allowed us to detect a new finding in AMD. This finding would be?

- A. Subclinical drusen
- B. Hyperreflective columns
- C. Occult non-exudative CNVM
- D. Retinal angiomatous proliferations

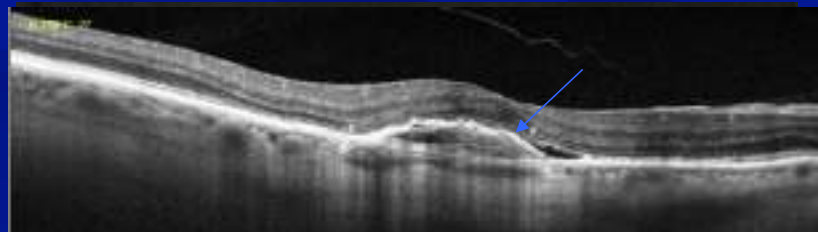
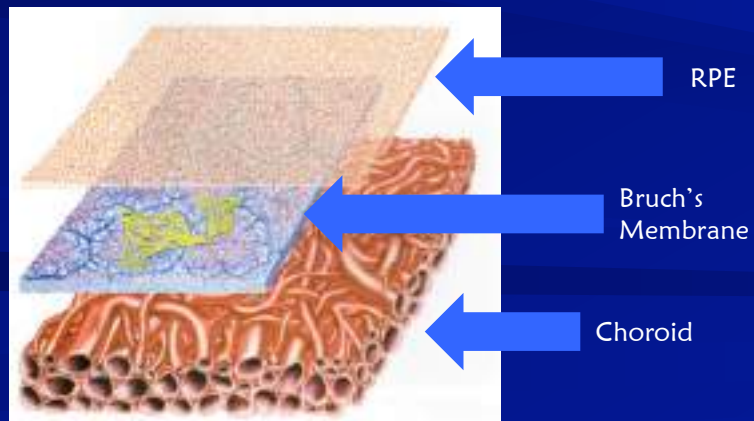
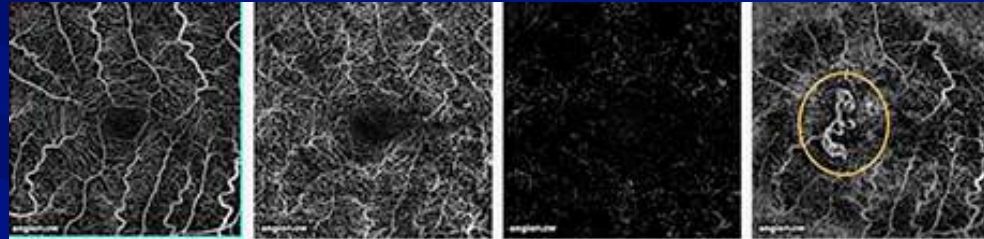
Type 1 “Occult” CNV



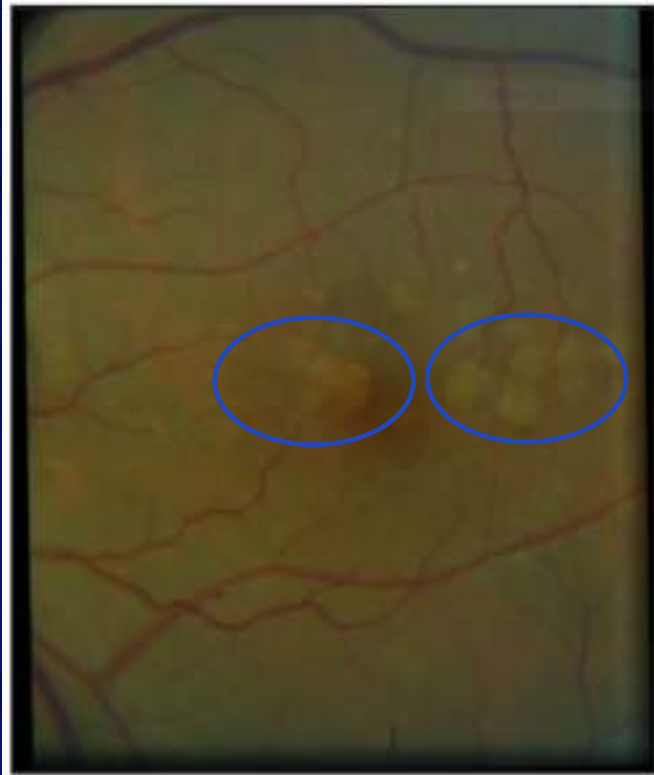
- ▶ New vessels develop in the choroid
- ▶ New vessels located below RPE and above Bruch's membrane

Type 1 “Occult” CNV

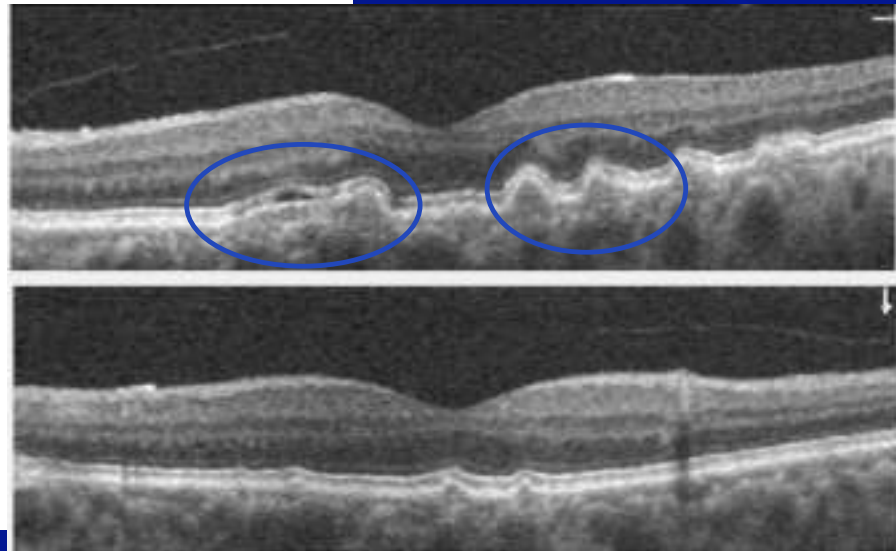
- ☞ New vessels develop in the choroid
- ☞ New vessels located **BELOW RPE** and **ABOVE** Bruch’s membrane



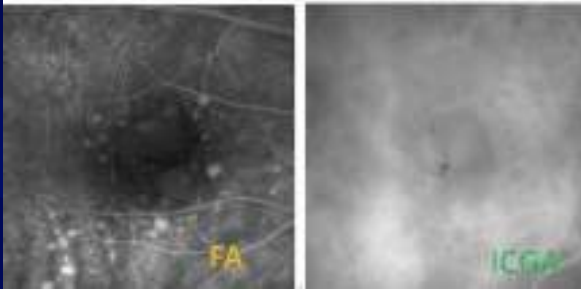
CNV?



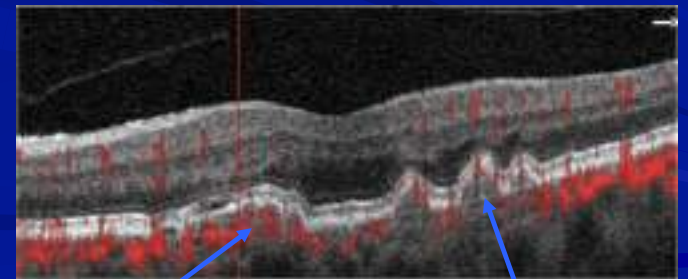
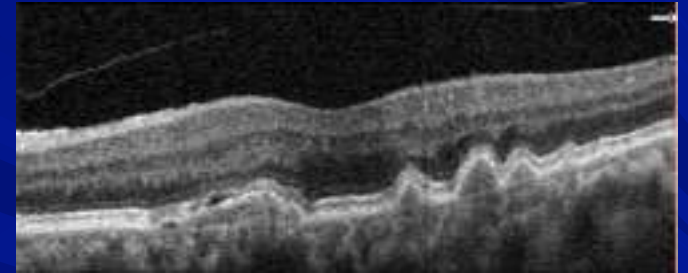
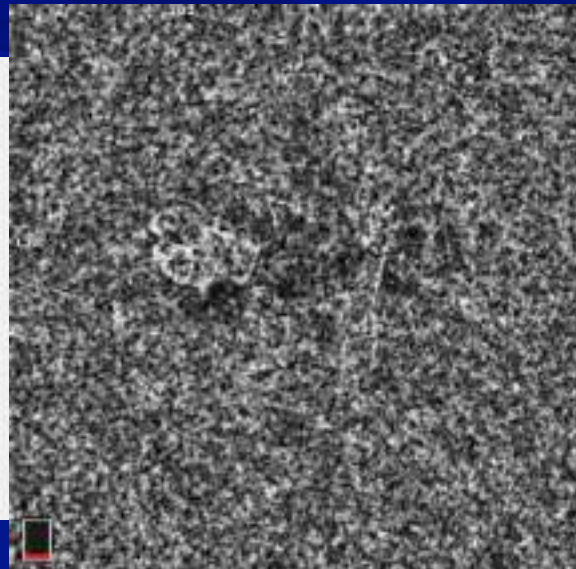
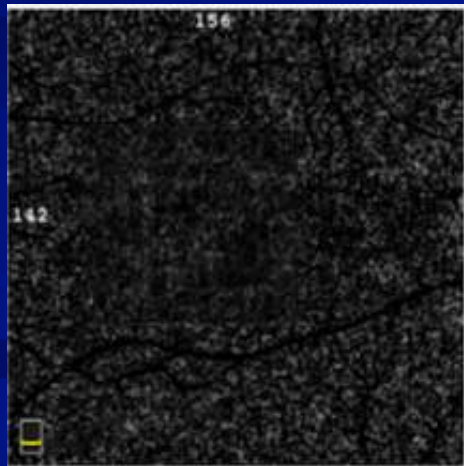
72 y/o Hispanic male
20/30
History of "Dry AMD"



Multimodal imaging and OCTA



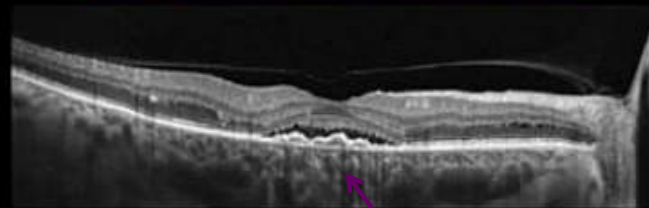
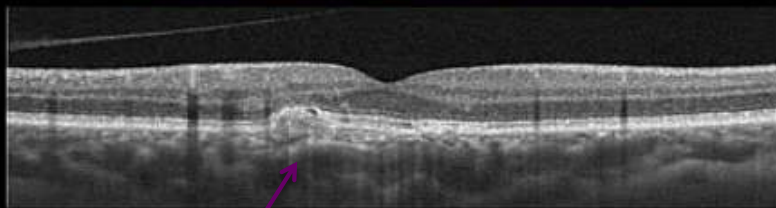
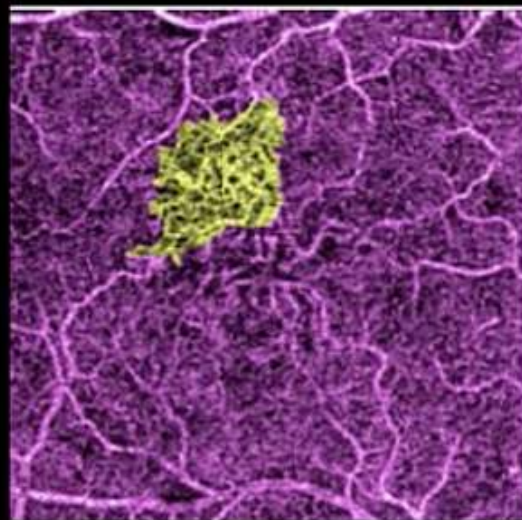
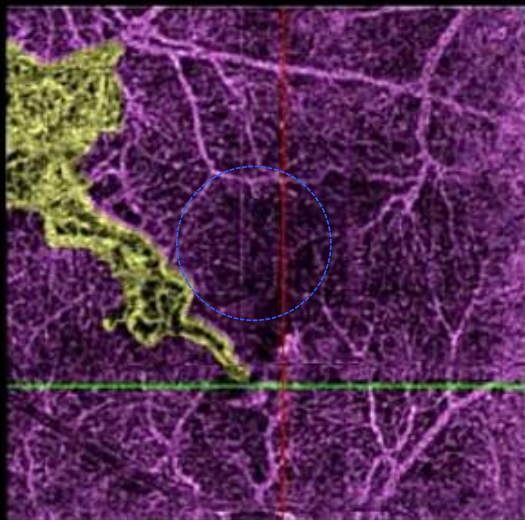
VAGUE???



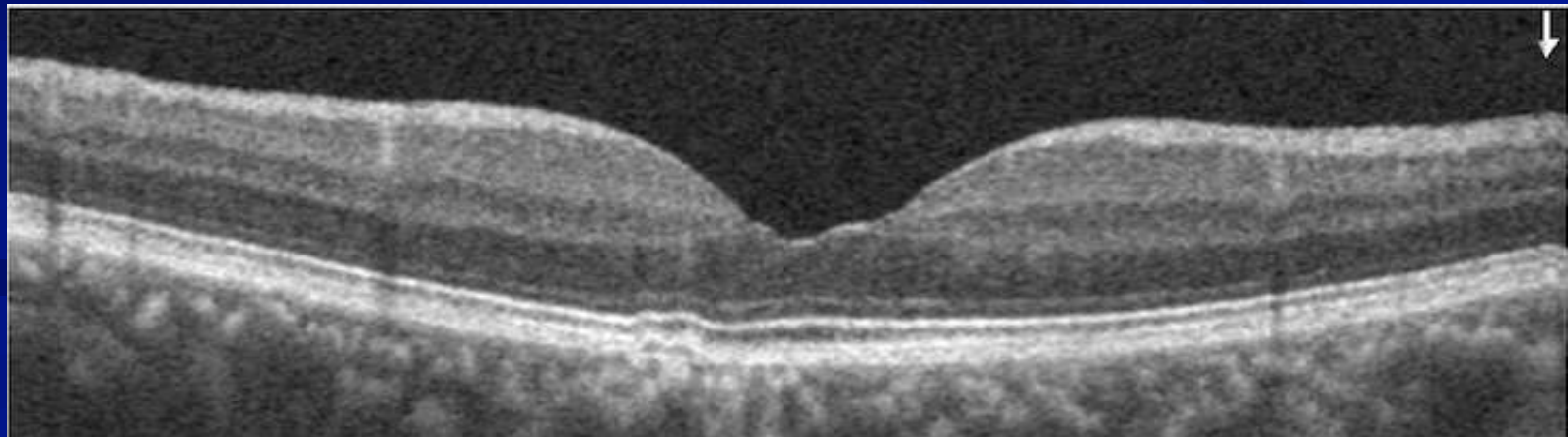
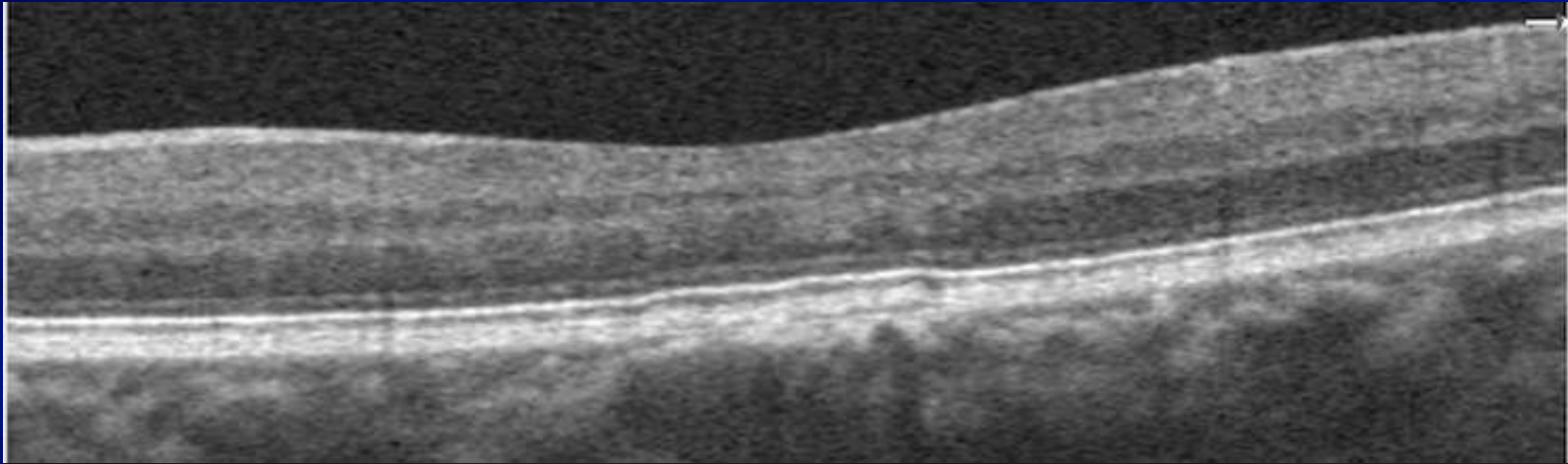
Vascularized

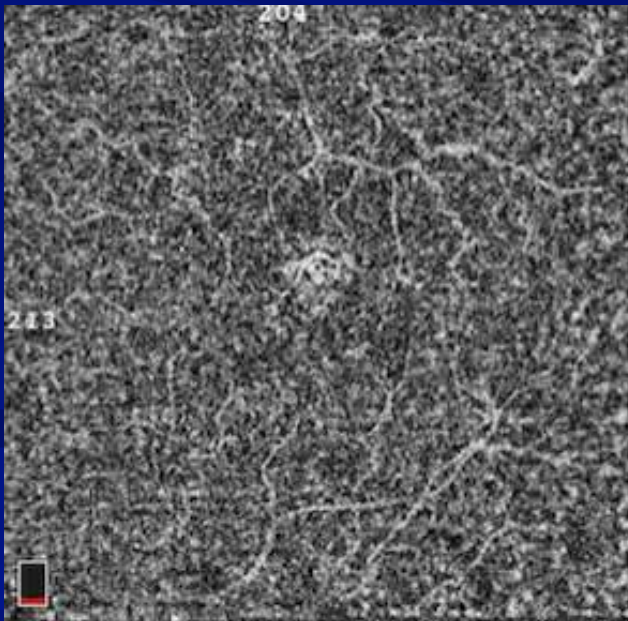
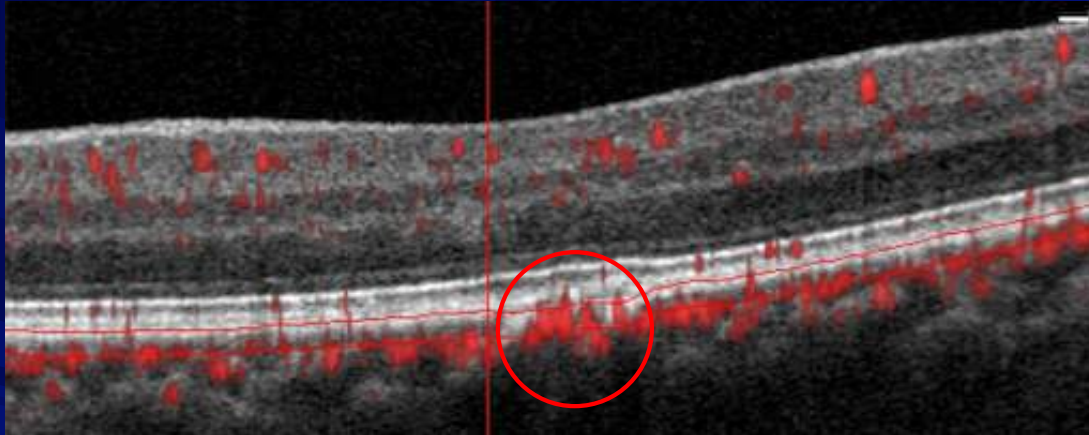
Non-vascularized

Type 1 CNV: Below RPE, Wider than Type 2, Avascular Zone Usually Not Involved



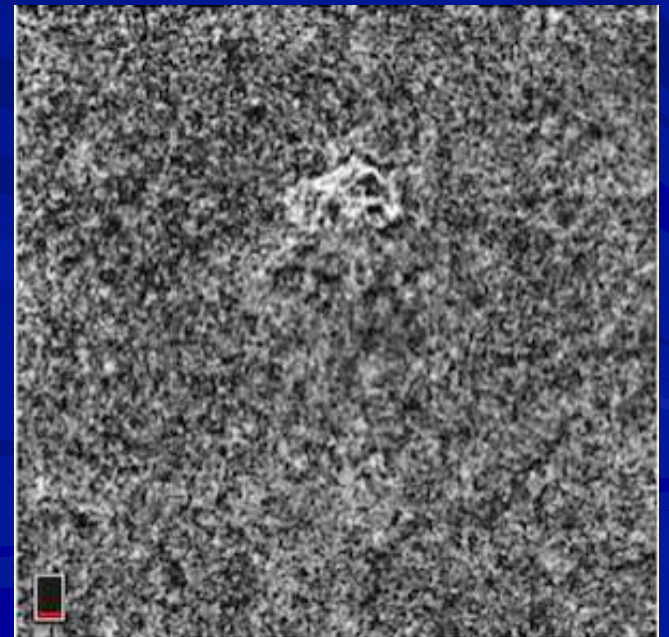
And the not so obvious ones...



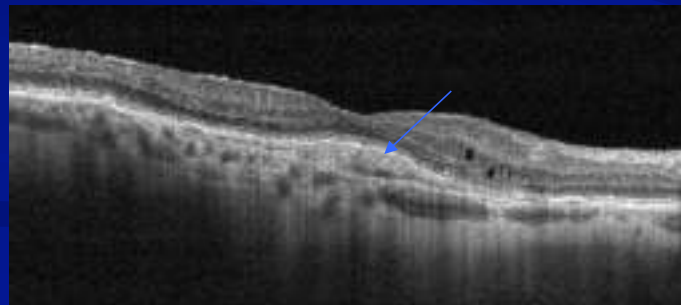
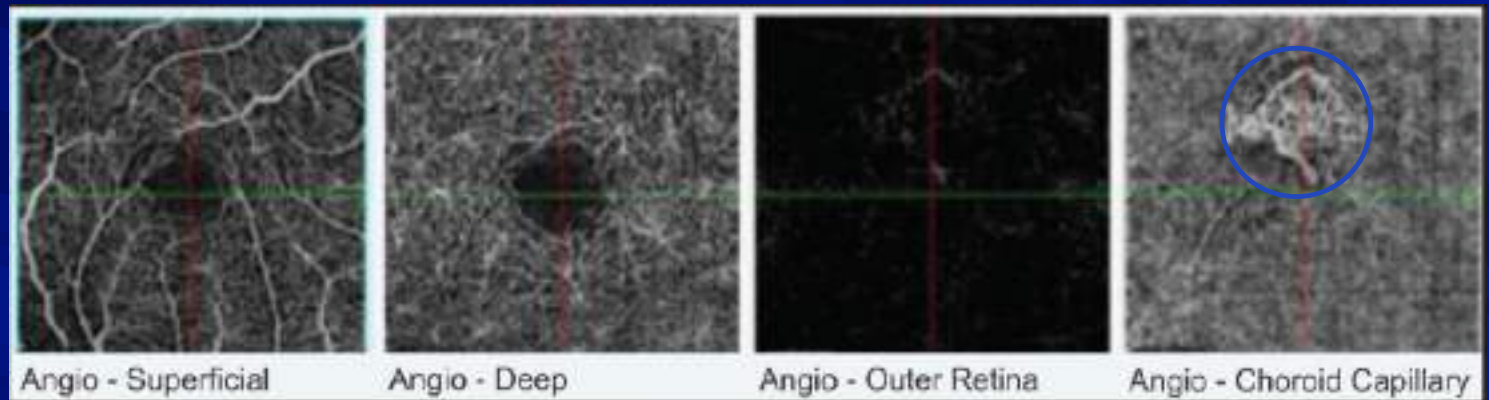
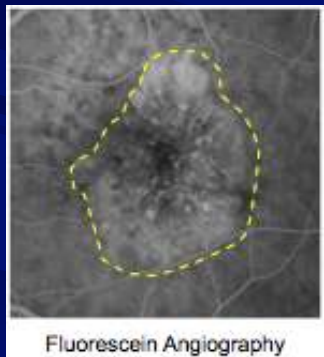


6x6

3x3



Case example: 70 y/o WM, AMD

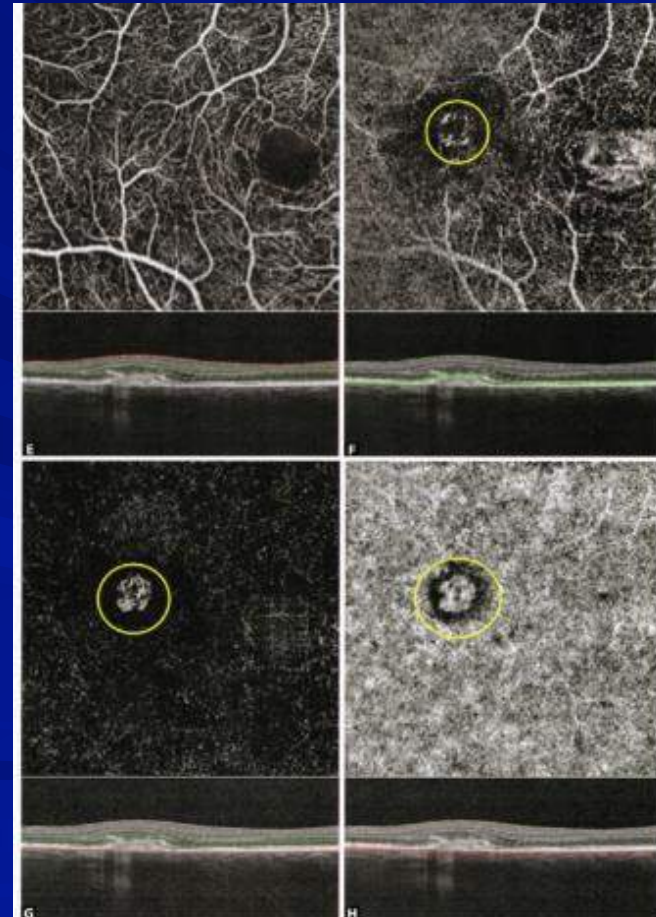


Below the RPE

Type 2 “Classic” CNV

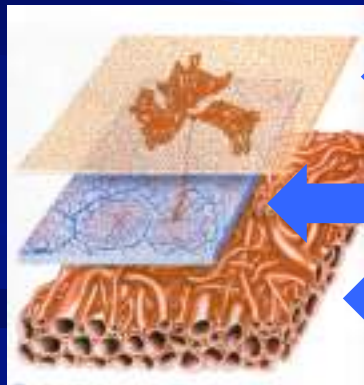


- ✍ New vessels develop in choroid
- ✍ New vessels located above the RPE and above Bruch's membrane



Type 2 “Classic” CNV

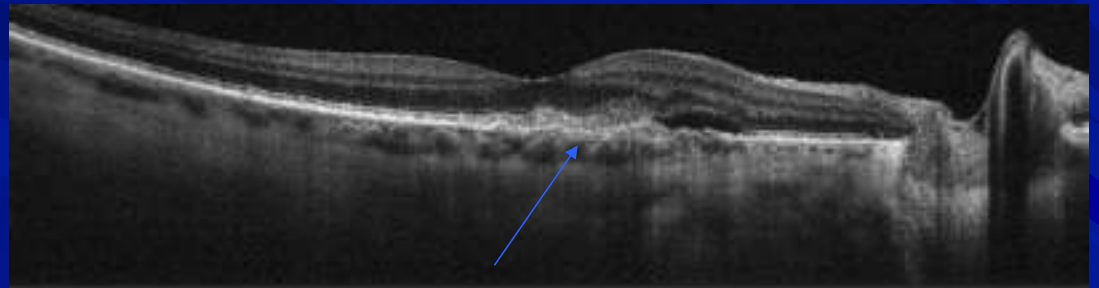
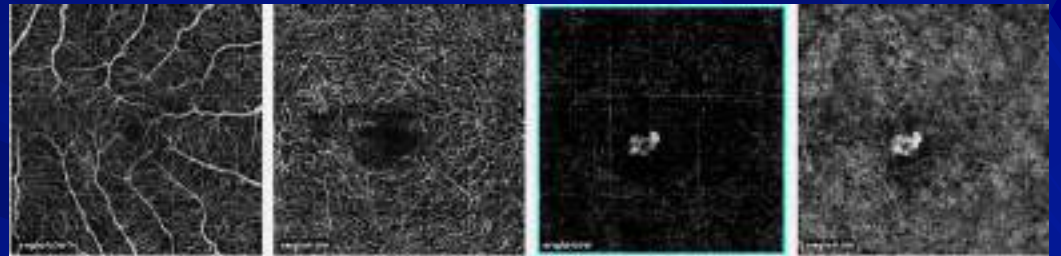
- ☞ New vessels develop in choroid
- ☞ New vessels located **ABOVE** the RPE and **ABOVE** Bruch’s membrane



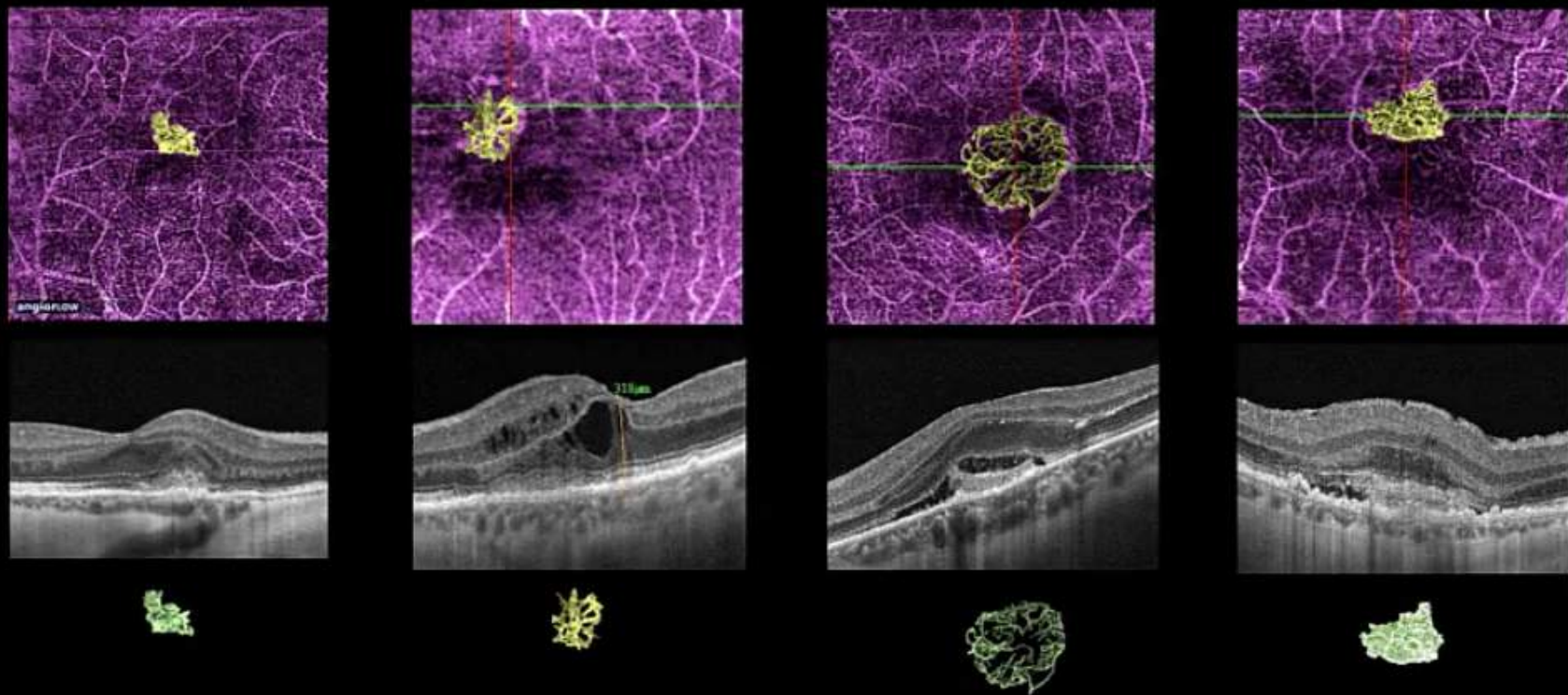
RPE

Bruch's Membrane

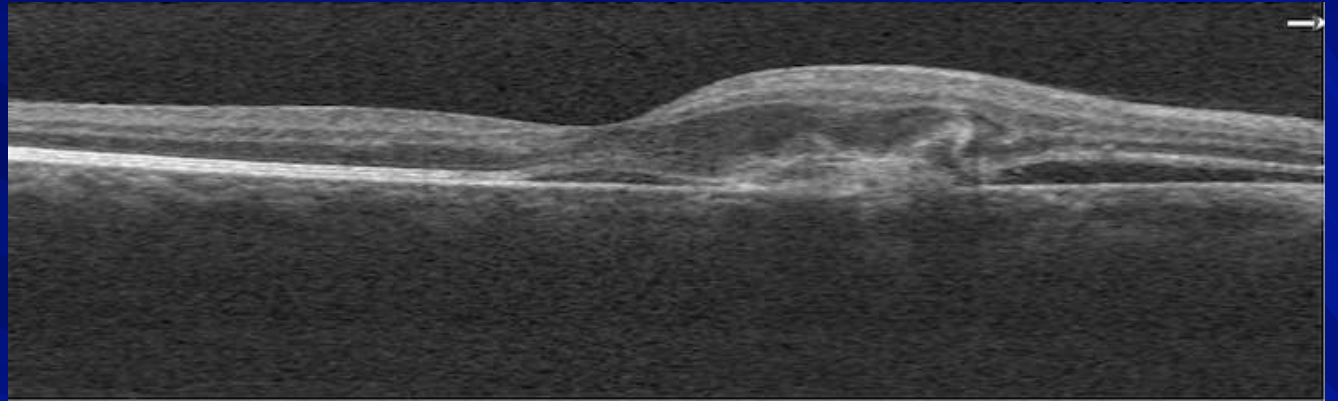
Choroid



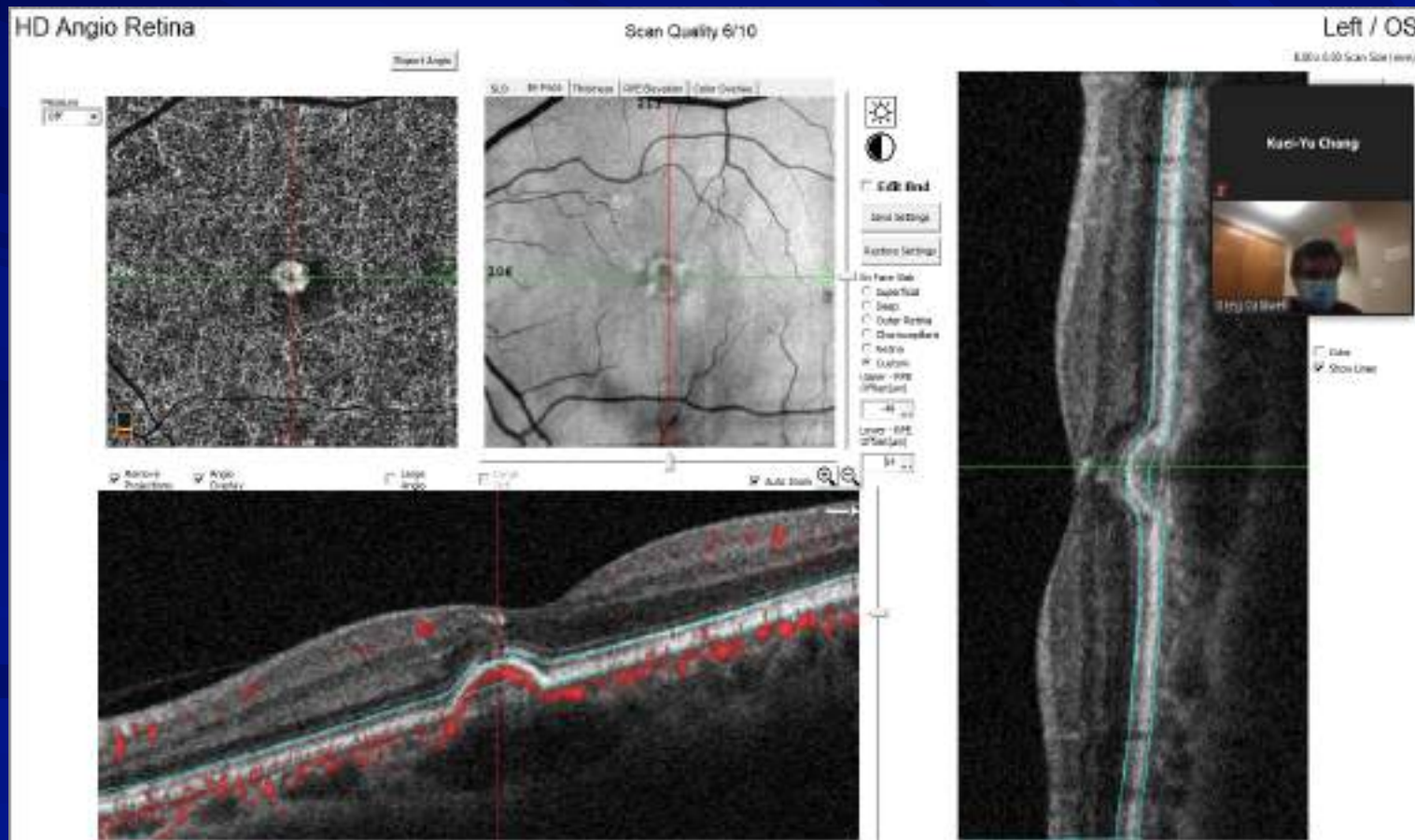
Type 2 CNV: Above RPE, Smaller than Type 1, Avascular Zone Always Involved.
Very Heterogeneous Shapes



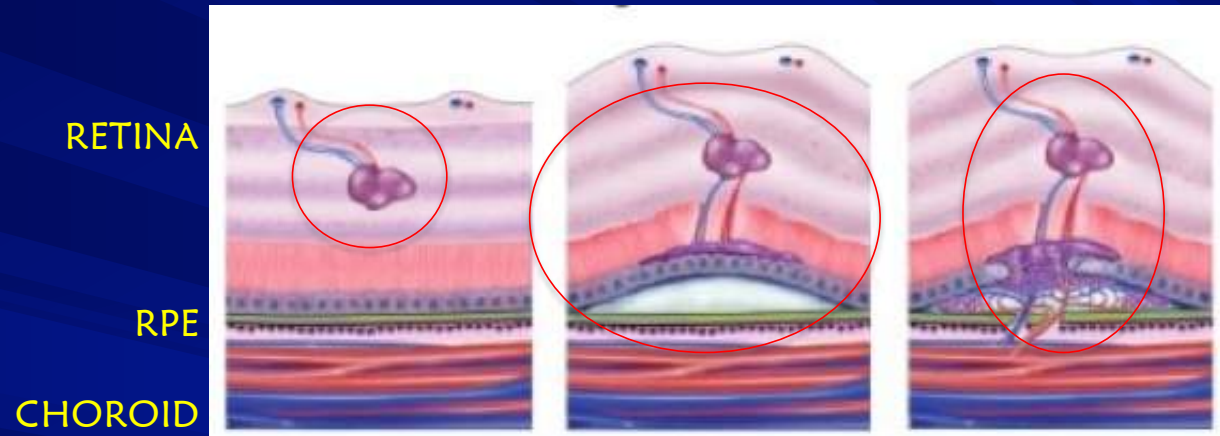
48 y/o WM 2 week history of “dark spot” OD



Why I Love to Teach



Retinal Angiomatous Proliferation



Stage 1

Intra-retinal
proliferation

- *Hemes
- *Edema
- *Exudate

Stage 2

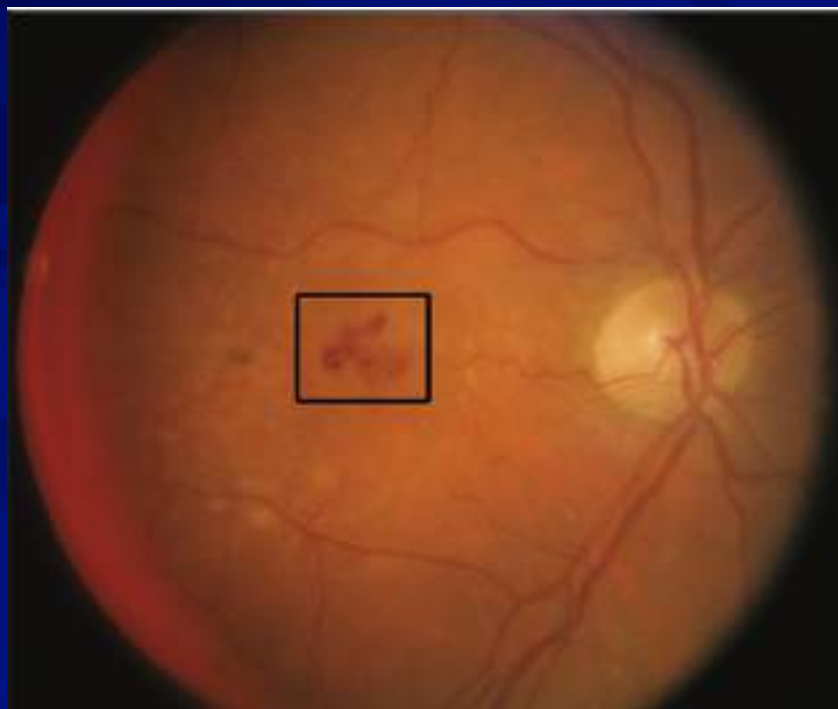
Neovascularization
penetrates the sub-
retinal space

- *Neurosensory
detachment
- *Serous PED

Stage 3

Neovascularization
penetrates the
RPE space

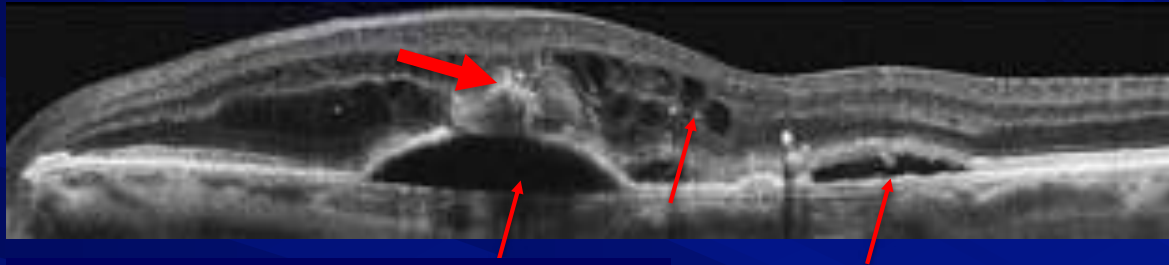
- *Vascularized PED;
CNVM



https://www.researchgate.net/figure/In-retinal-angiomatous-proliferation-fluorescein-angiography-FA-shows-a-hot-spot-in_fig8_264903506

<https://jamanetwork.com/journals/jamaophthalmology/fullarticle/42089>

Inspect the SD-OCT carefully!!



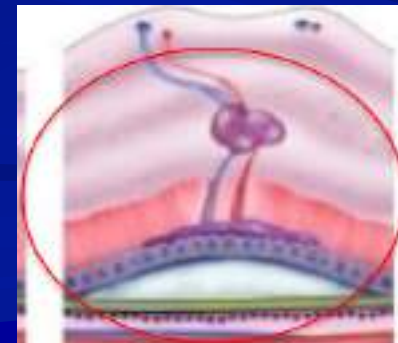
VA 20/40

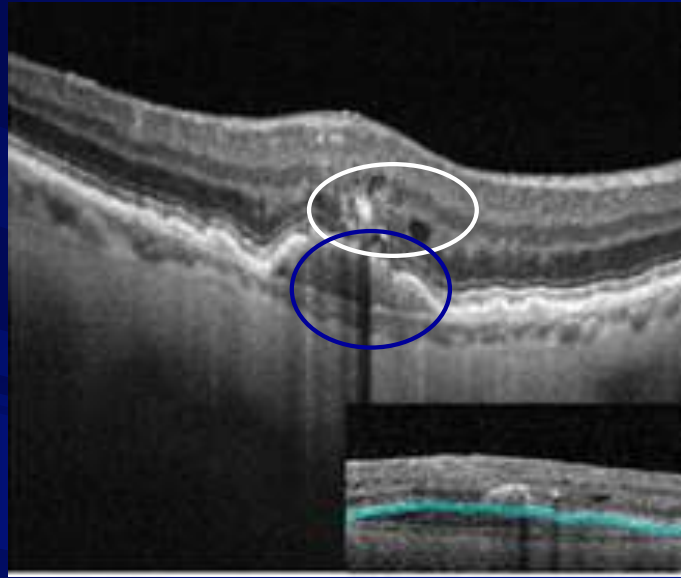
HYPER-REFLECTIVE lesion above
pigment epithelial detachment

Intraretinal cysts

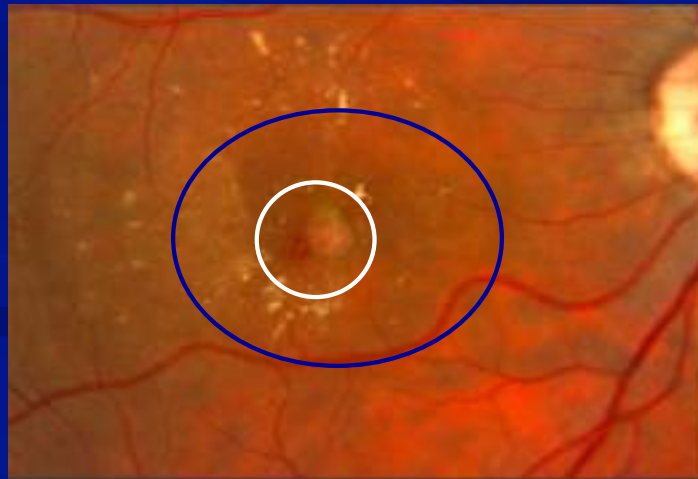
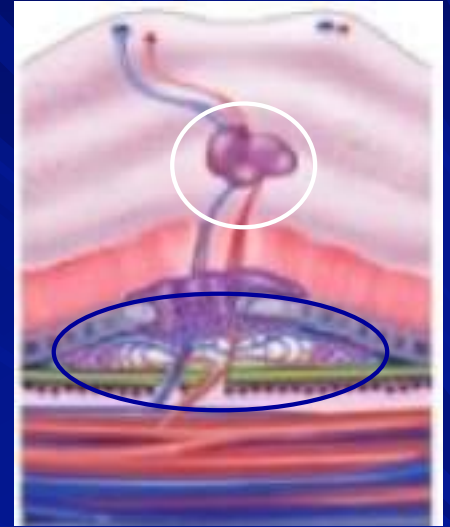
Serous pigment epithelial
detachment/ neurosensory
detachment

Stage 2





Stage 3



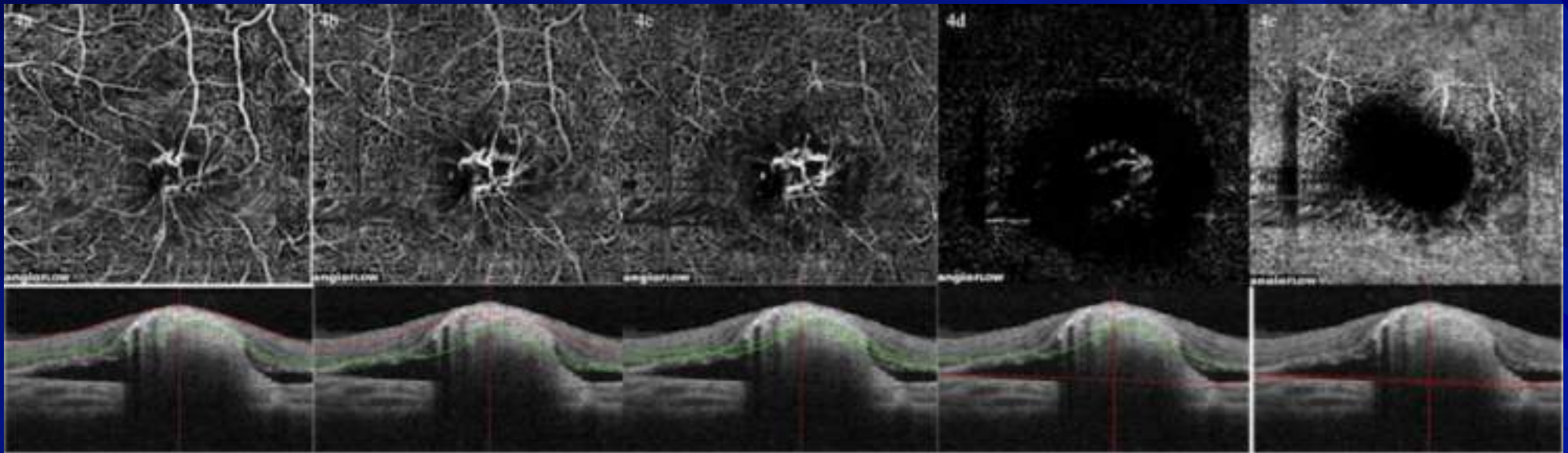
<http://imagebank.asrs.org/file/26943/retinal-angioma-tous-proliferation>
<https://www.ncbi.nlm.nih.gov.ezproxylocal.library.nova.edu/pubmed/29019795>

What about the OCTA?

OCT angiography demonstrates retinal angiomatous proliferation and choroidal neovascularization of type 3 neovascularization

Swamy Ramani - Vardhini Banath - Suresh Mukherjee - Ramesh Singh -
Yishai Gupta - Manoj K. Gupta - Anand Gupta

Type 3 CNV: Intraretinal Anastomosis: THROUGH RPE



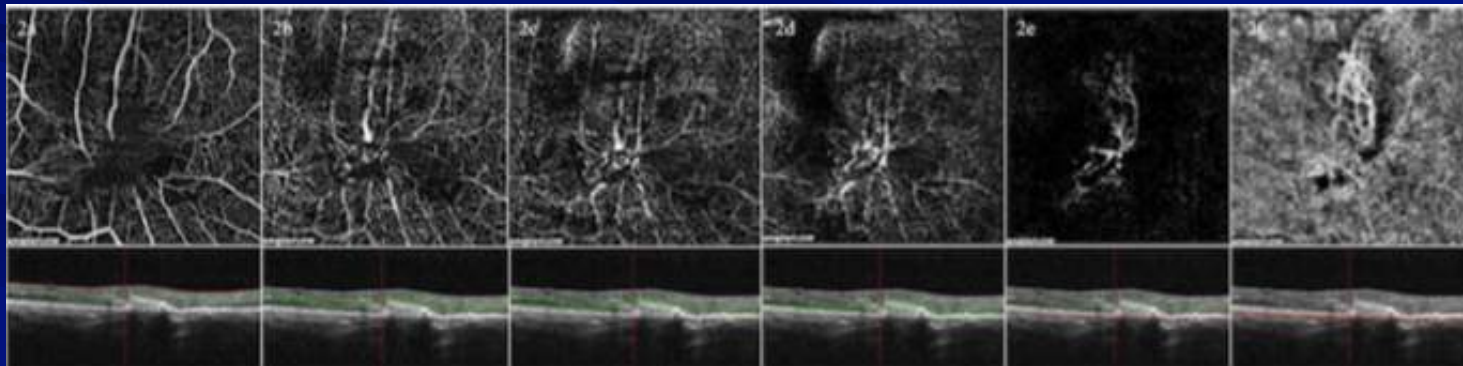
Inner retina (SCP+DCP) to Outer retina (Avascular/choriocapillaris)

What about the OCTA?

OCT angiography demonstrates retinal angiomatous proliferation and chorioretinal anastomosis of type 3 neovascularization

Shuang Renard - Nephthia Demuth / Sanyal Mukherjee - Ramakrishna Singh /
Yishai Gupta - Manoj R. Deyra - Anand Gupta

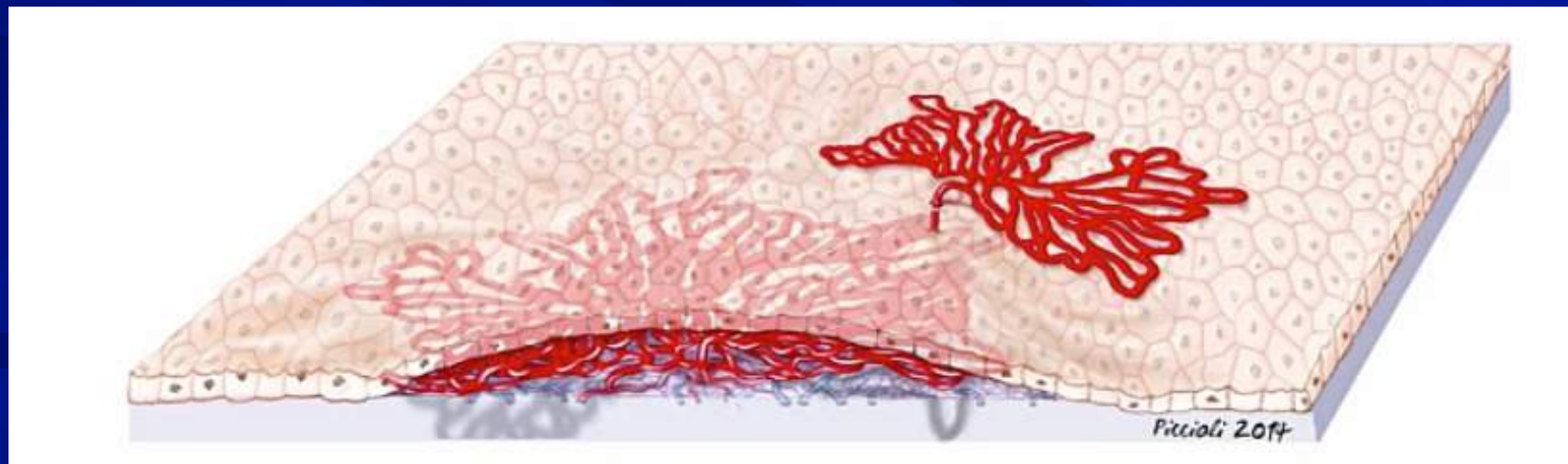
Type 3 CNV: Retinal/Choroidal Anastomosis: INTO CHOROID



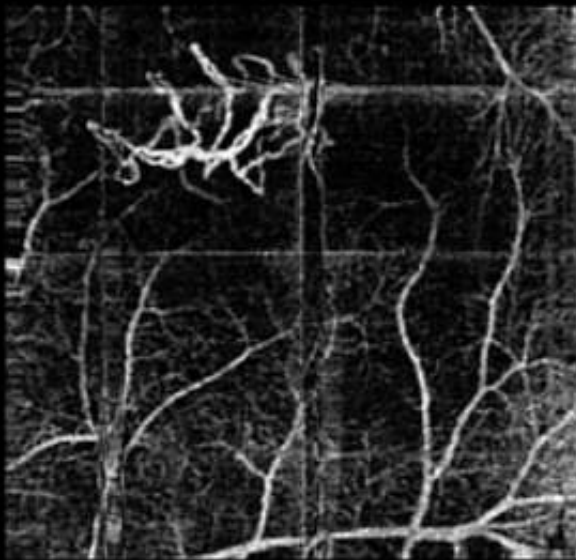
Inner retina (SCP+DCP) to Outer retina (Avascular/choriocapillaris)

Type 4 “Mixed”- Subretinal and Sub-RPE

- Two or more CNV layers
 - ★ One above the RPE, one below the RPE
- High flow lesions



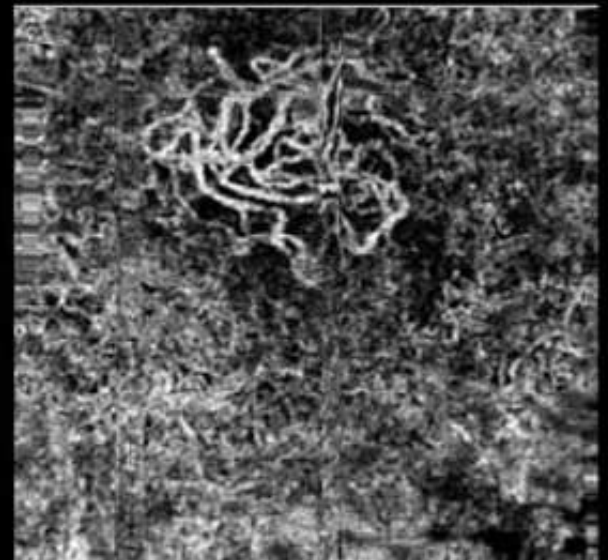
Type 4 CNV : Initially Located Below the RPE, NV Spreads into the Outer Retina



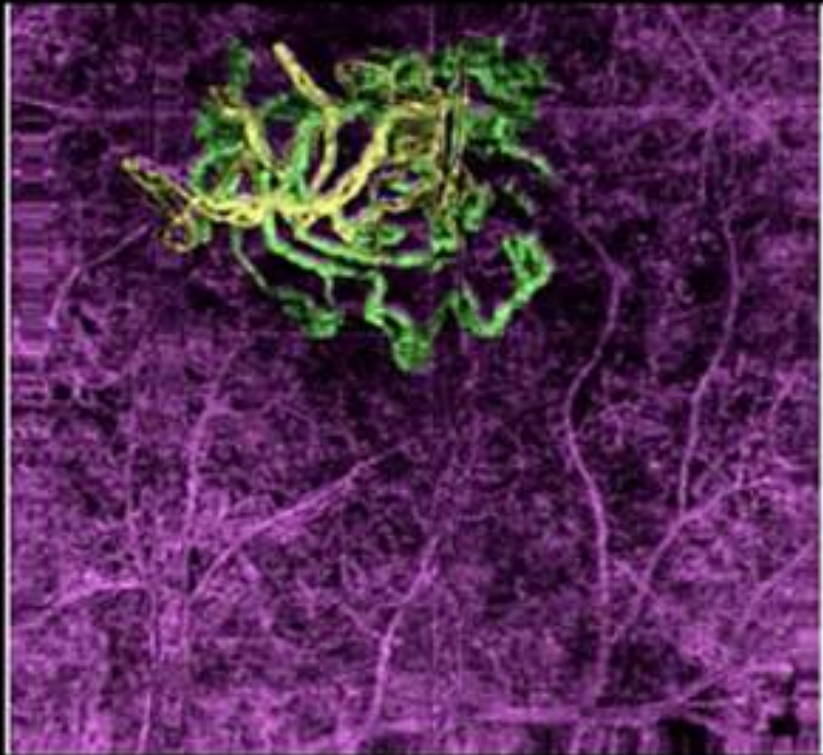
Angio - Deep



Angio - Outer Retina

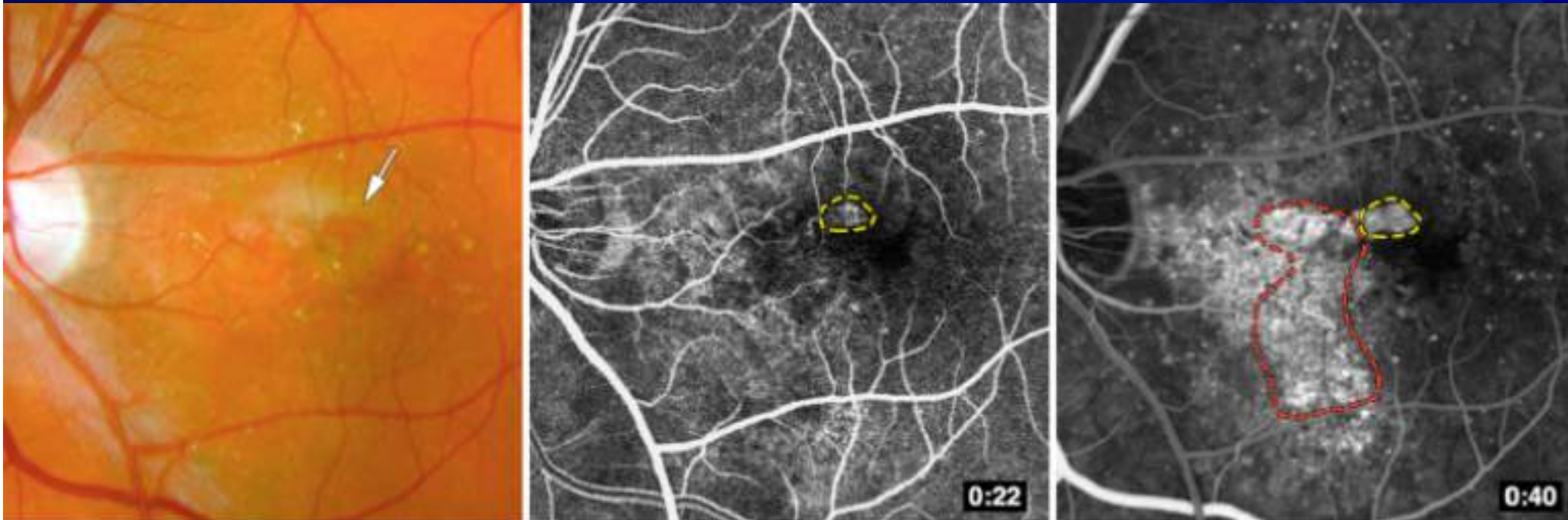


Angio - Choroid Capillary



Green: Type 1 (Sub RPE)
Yellow: Type 2 (Subretinal)

Case Example: Multimodal imaging of 66 y/o Caucasian male

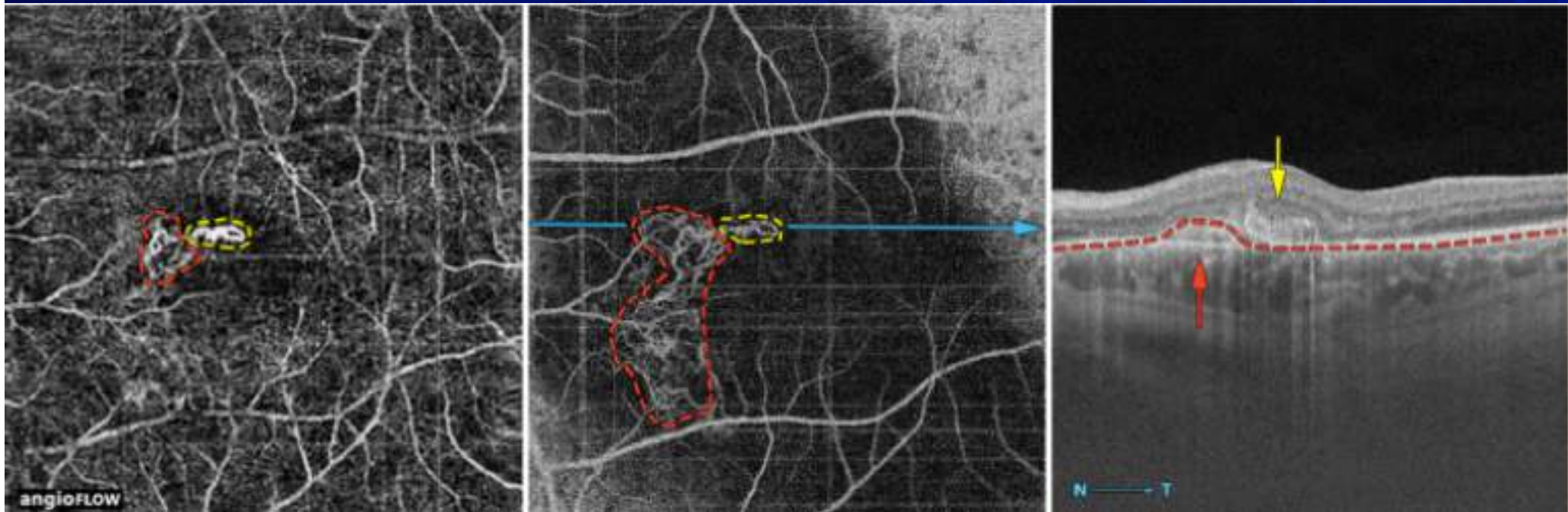


Fundus image
and Occult

FFA: Early; Classic component

FFA: Late; Classic

Courtesy of Novais et al.



Choriocapillaris

Red: Occult; Yellow: Classic

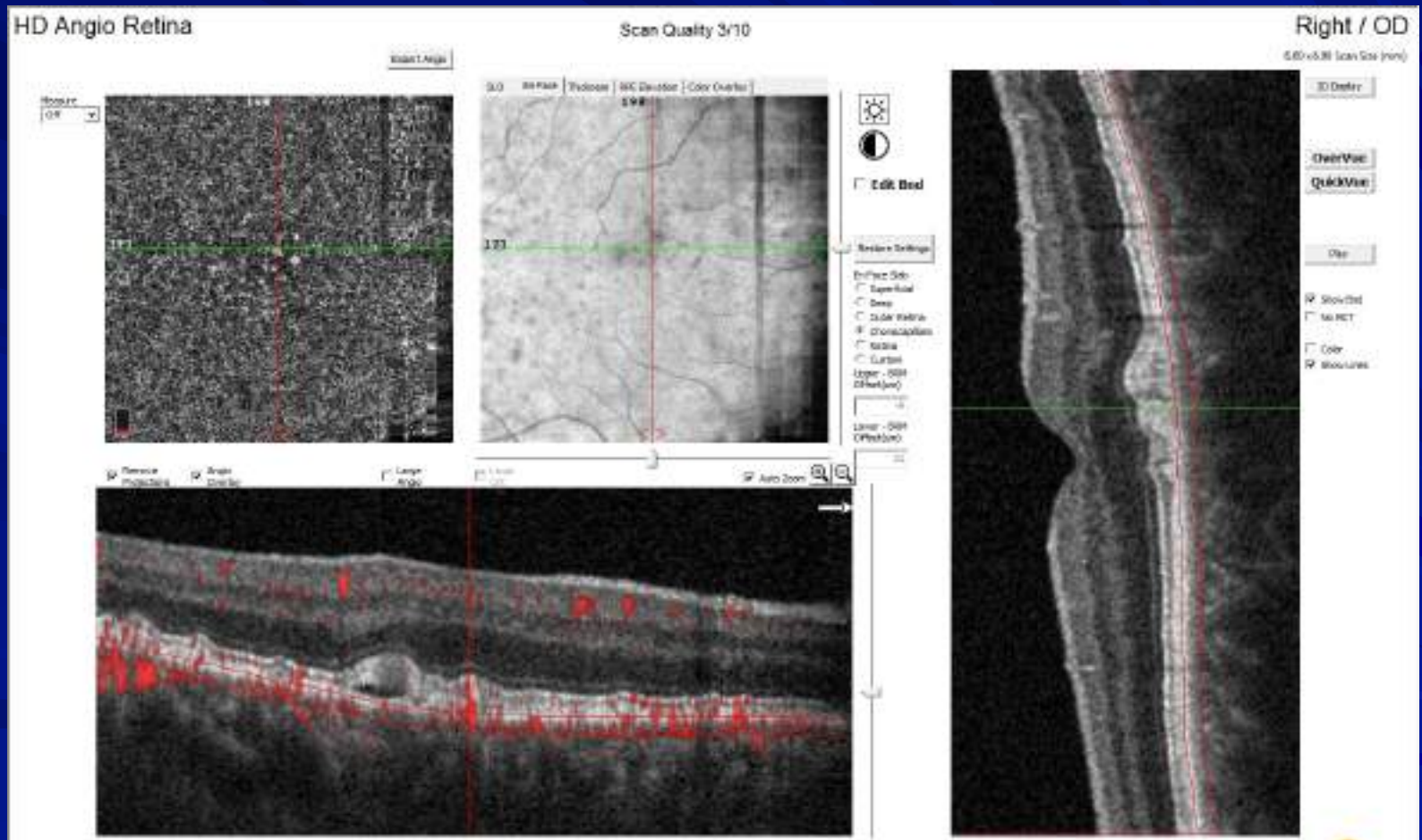
Courtesy of Novais et al.

OCT Angiography

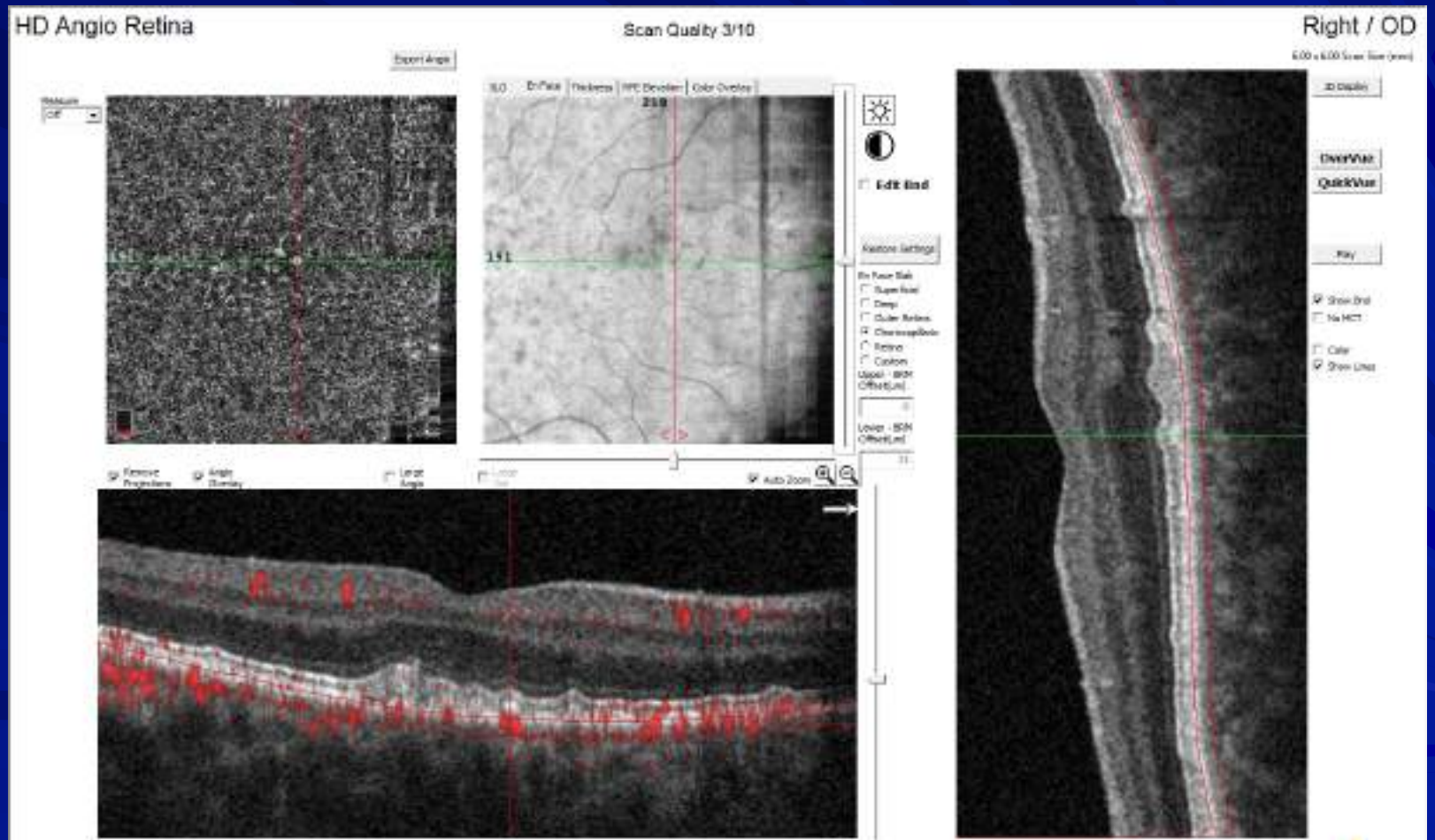
Subclinical CNV or “Occult non-exudative CNV”

Risk of exudation at 12 months is 15.2 times greater compared to eyes without subclinical CNV

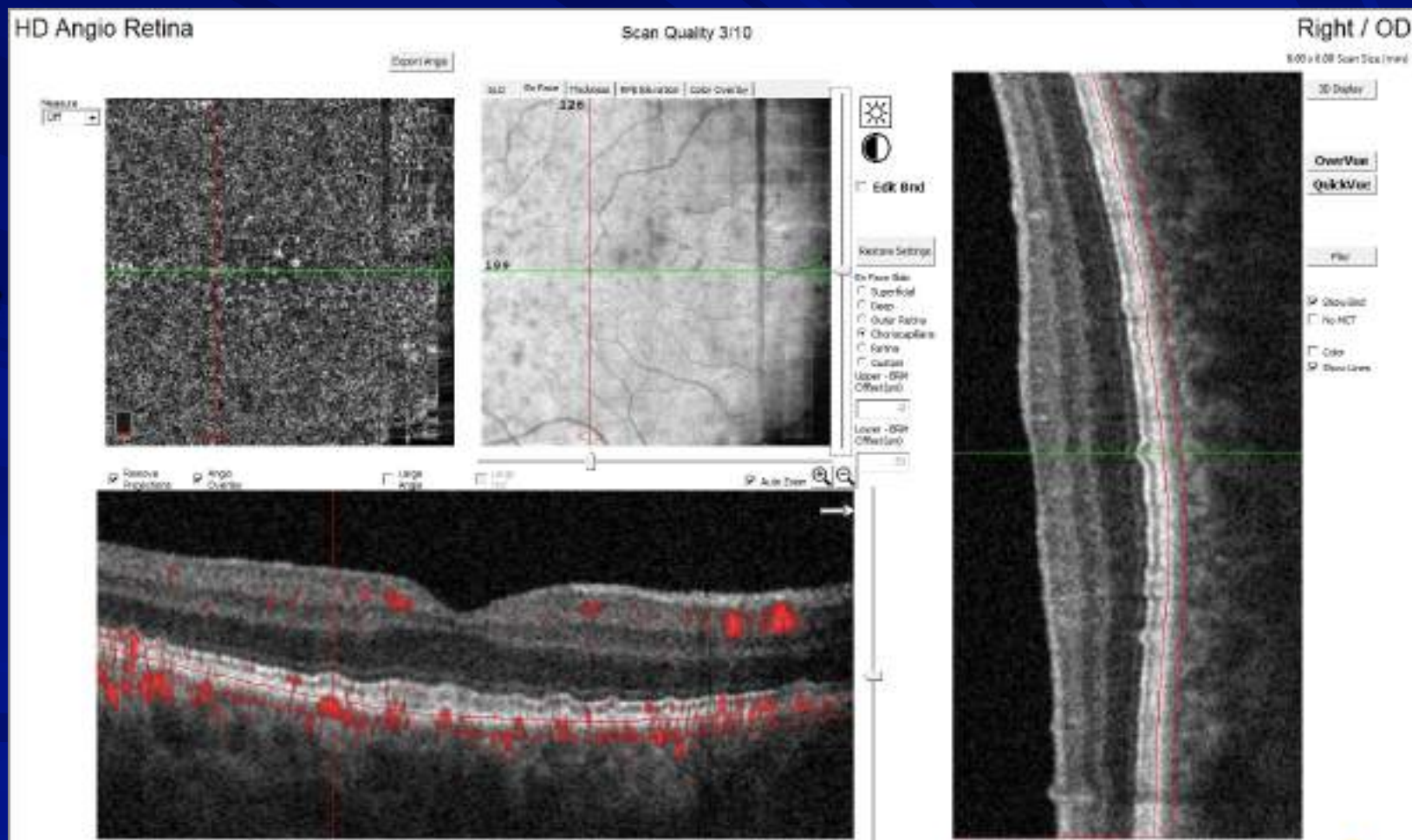
Occult
Non-Exudative
CNV
Patient A



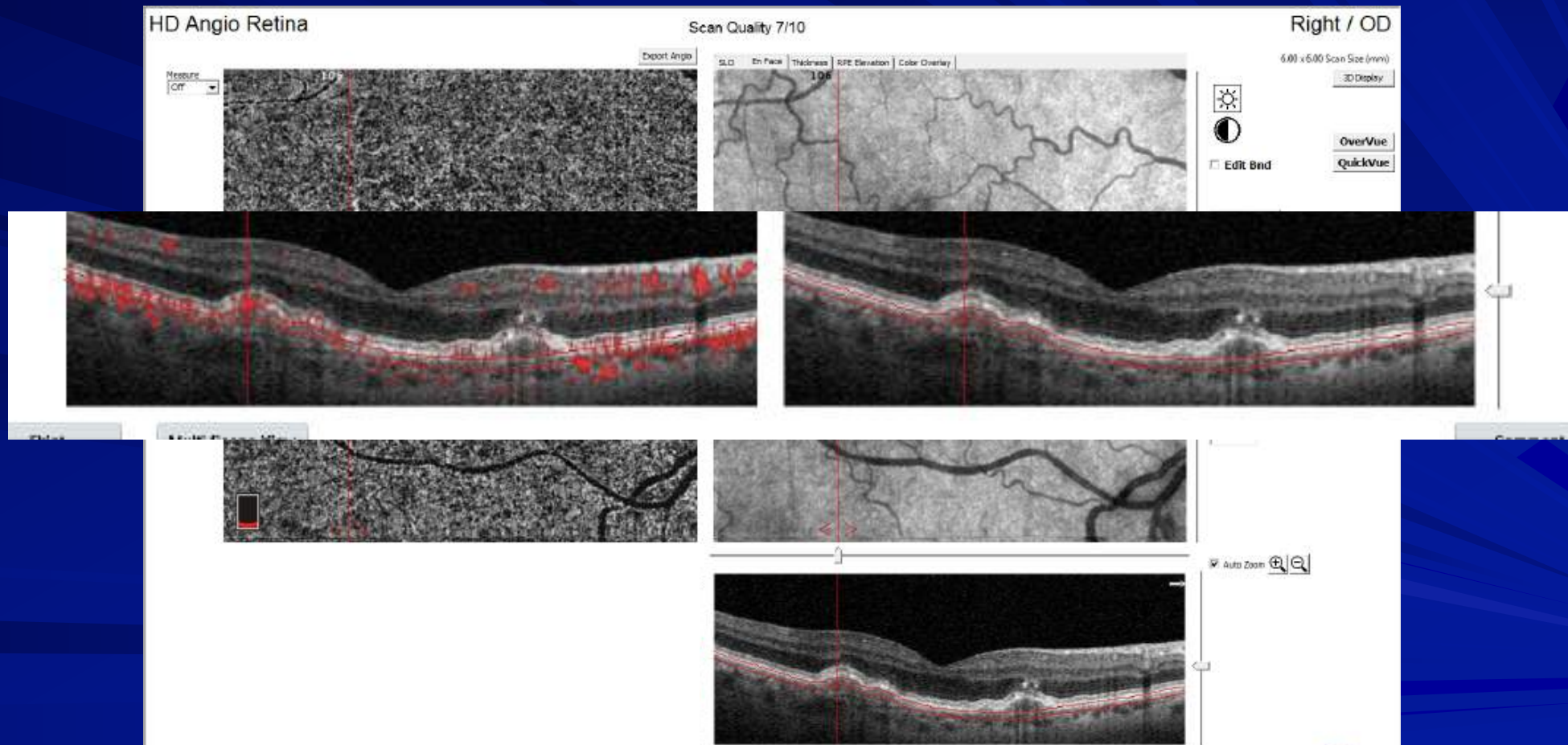
Occult
Non-Exudative
CNV
Patient A



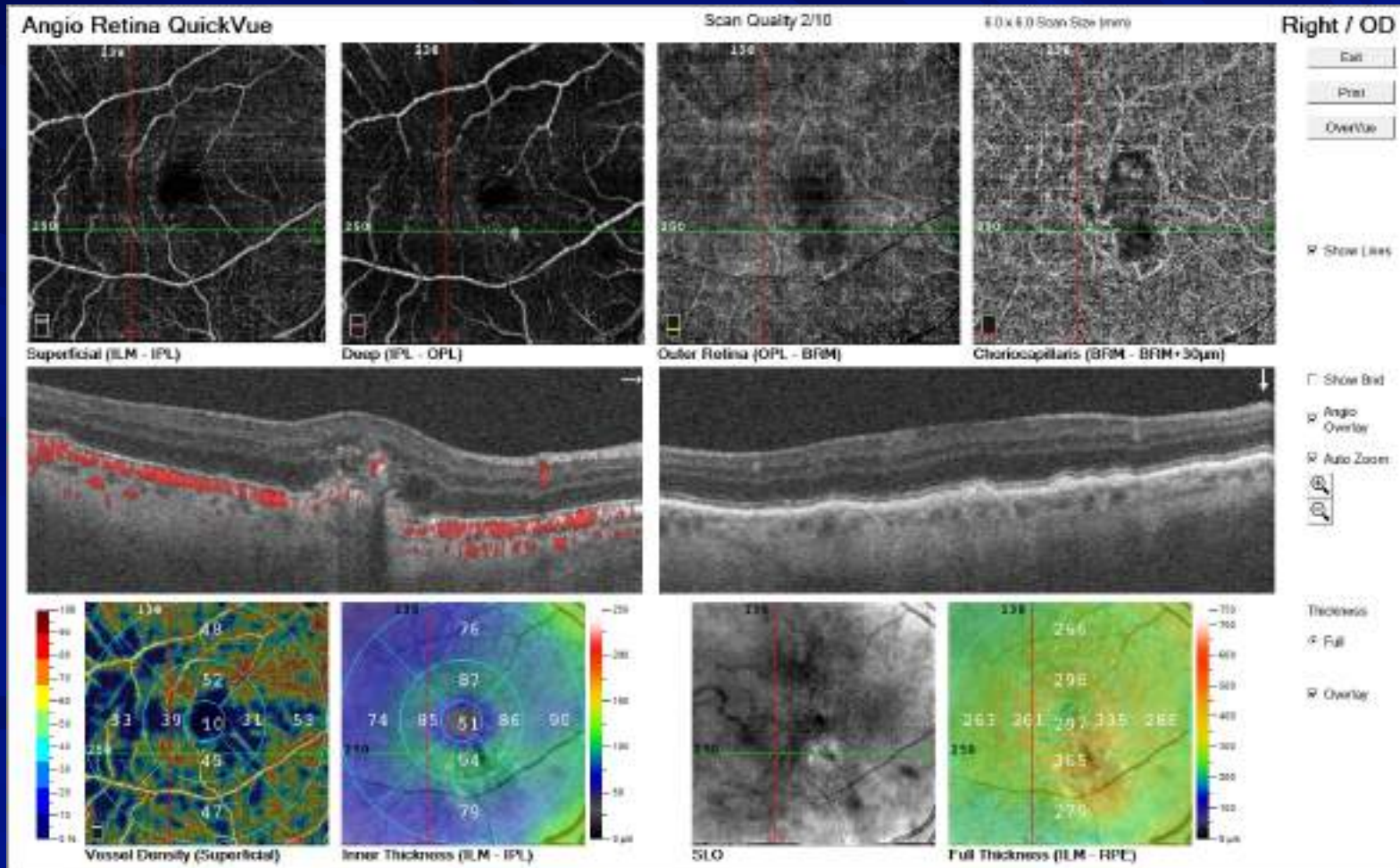
Occult
Non-Exudative
CNV
Patient A



Which is More Suspicious?

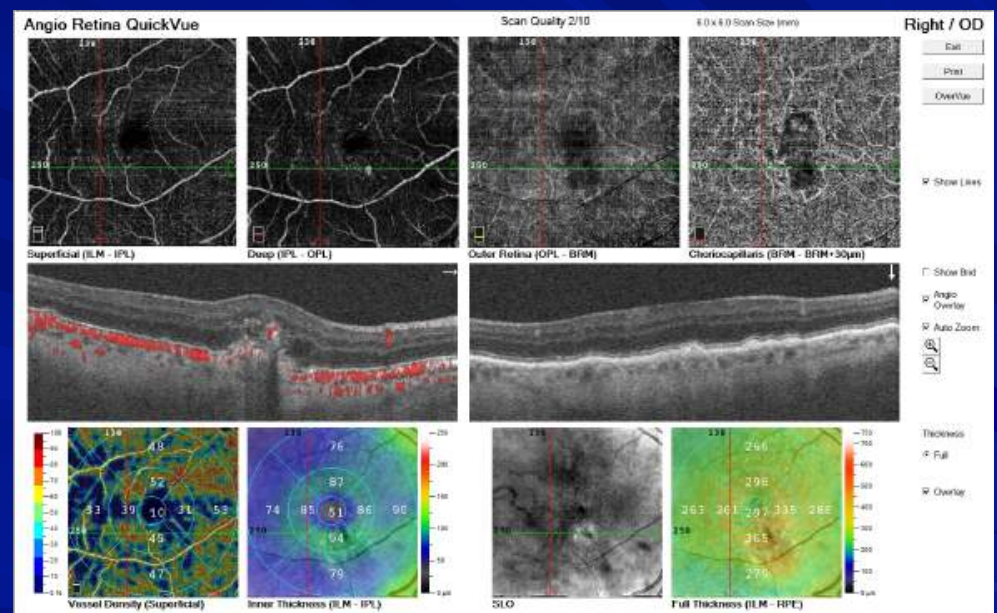
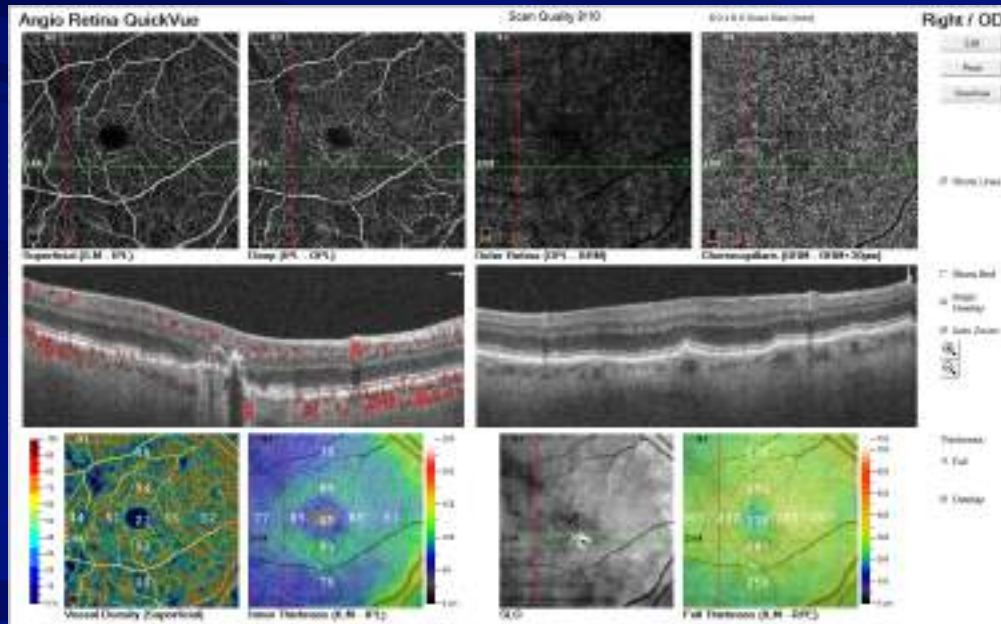


OCT Angiography Evaluation AMD



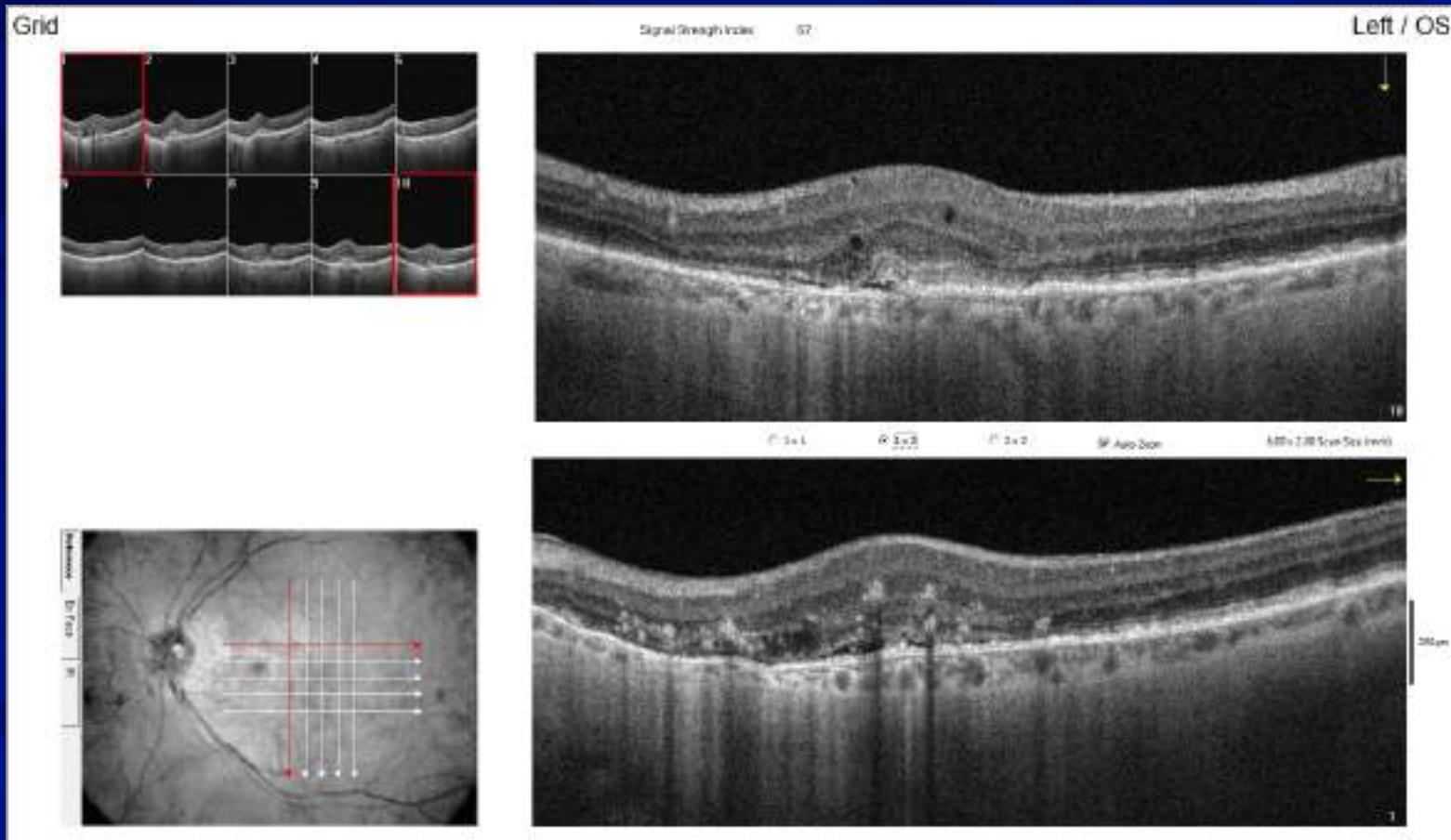
OCT Angiography Evaluation AMD

After and Before Bevacizumab (Avastin)



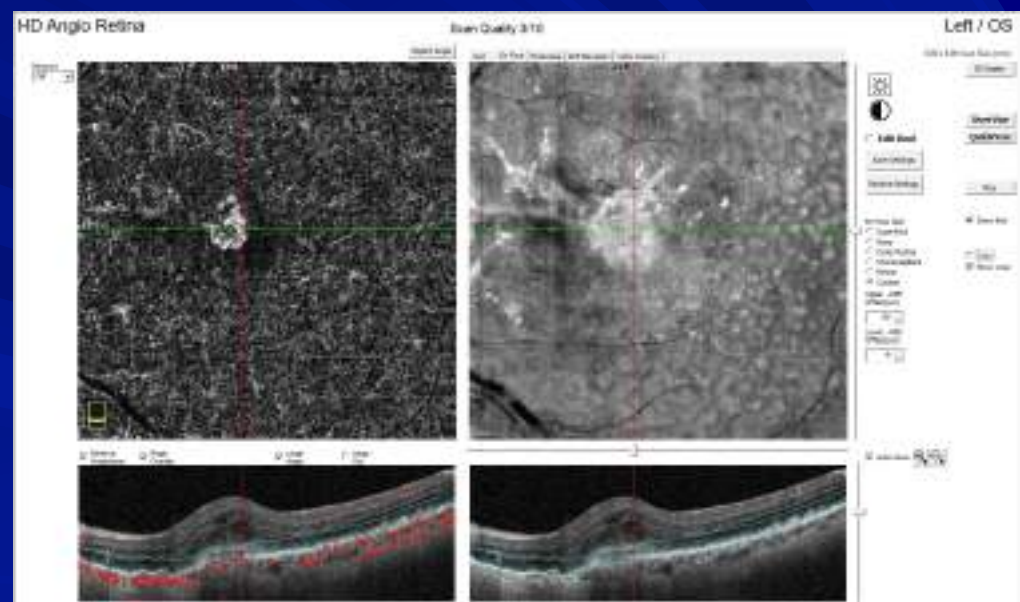
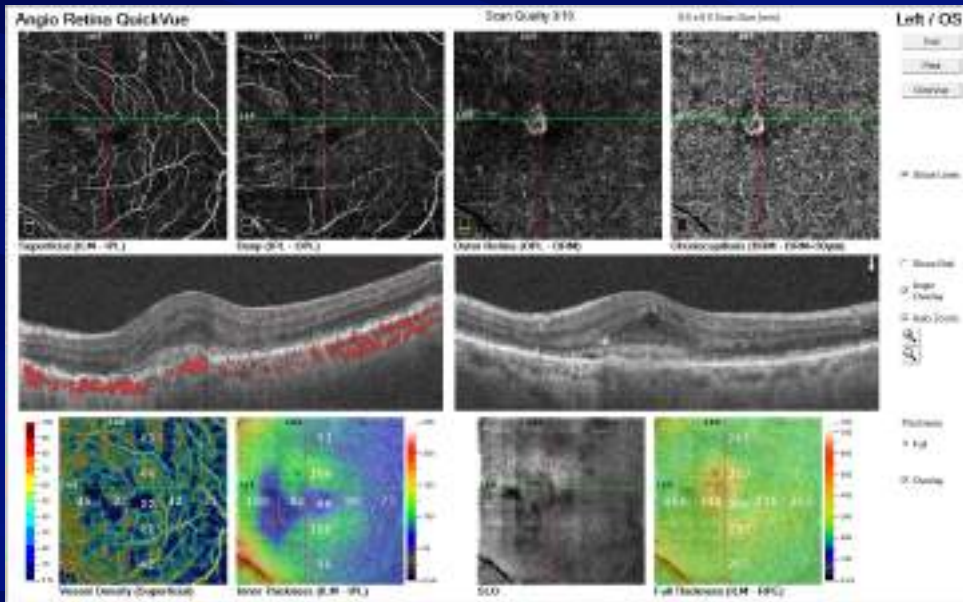
Evaluation AMD Patients for Neovascularization

OCT Grid



Evaluation AMD Patients for Neovascularization

Using OCT Angiography



Treatments for AMD

🕒 Early detection and meaningful treatments with significant value, do not cure, but have been shown to slow or halt progression. Not limited to early stages but all stages of AMD

- ★ Prescribe smoking cessation programs

- 📋 Smoking and AMD

- Depletes serum antioxidants
 - Decreases pigmentary density
 - Increases risk to advanced AMD

- ★ Lifestyle changes

- 📋 Diet

- 📋 Exercise

- ★ Systemic disease management

- 📋 Cardiovascular disease, DM, obesity, high cholesterol

Treatment for AMD

🕒 Nutritional supplements

★ Sub-clinical/sub-structural or early disease

- 📋 Controversy flourishes
 - No definitive guideline exists
 - Despite consensus evidence suggests using supplements

★ Intermediate – advance disease

- 📋 No controversy on advocating for supplements

★ AREDS 1

- 📋 Contains Beta-carotene and no lutein or zeaxanthin, no longer recommended
- 📋 Investigated early AMD, no statistically significant benefit

★ AREDS 2

- 📋 Recommended for intermediate and advanced AMD, study protocol

★ The Practical Guide for the Treatment of AMD - 3 primary options

- 📋 Macular pigment supplement
 - Carotenoids: lutein, zeaxanthin, meso-zeaxanthin
- 📋 Carotenoids, antioxidants, zinc, and vitamins C & E
 - AREDS 2
- 📋 Carotenoid macular supplement in subclinical and early AMD. Carotenoid and antioxidant is intermediate and AMD that is progressing

Treatment for AMD

Retinal light protection

- ★ Sun exposure

Closer follow up

- ★ 12 months is currently accepted as being too long to detect progression
- ★ 6 months or sooner based on risk of CNV

Low vision and rehabilitation consultation

Measuring Macular Pigment

👁️ Retina macula biopsy

👁️ Clinical Imaging

★ Subjective

📋 ZeaVision MPSII

📋 Guardion Mapcat SF

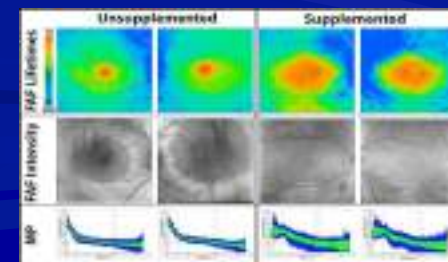
★ Clinical

📋 ZeaVision MPR

📋 Zeiss Visucam 200

📋 Spectralis HRA+OCT

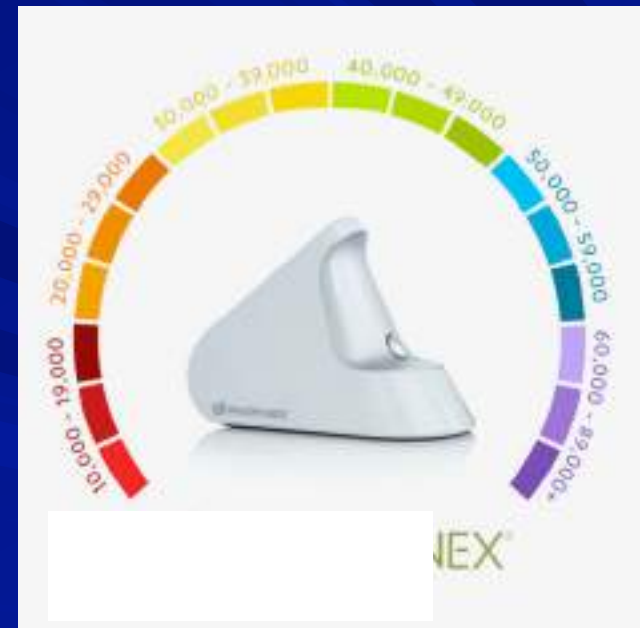
📋 Spectralis MPOV



Measuring Macular Pigment

Biophotonic Scanner

- ★ Measures carotenoids
- ★ Based on an optical method known as Resonant Raman Spectroscopy (RRS)
 - ☐ Used for many years in research laboratories
- ★ Skin RRS measurements
 - ☐ Noninvasive
 - ☐ Objective
 - ☐ Reliable methods to assess carotenoid levels
 - Ocular
 - Systemic



Treatments for Choroidal Neovascularization (CNV)

Current Anti-VEGF treatments

- ★ Bevacizumab (Avastin)
 - ☐ Humanized full length monoclonal antibody
 - ☐ AMD
- ★ Ranibizumab (Lucentis)
 - ☐ Humanized monoclonal antibody fragment
 - ☐ AMD, DME, DR, RVO
- ★ Aflibercept (Eylea)
 - ☐ Fusion protein
 - ☐ AMD, DME, DR
- ★ brolucizumab-dbll (Beovu)
 - ☐ Humanized single-chain antibody fragment
 - ☐ Up to 3 months dosing intervals, most are 4-6 weeks
 - 50% remained 3 months after 1 year
- ★ Pegaptanib (Macugen)
 - ☐ RNA aptamer
 - ☐ AMD

Polling Question 7

☞ Regarding Age Related Macular Degenerations

- A. I am better prepared to help prevent vision loss
- B. I am better prepared to defect progression
- C. I am better prepared to know how to find AMD earlier
- D. All the above
- E. AMD causes vision loss, and we can not help

Resource: OCT Community for OCT and OCT-A

The banner features a dark blue background with a subtle pattern of light blue lines and dots, resembling a circuit or network. Two stylized eyes, composed of concentric circles and lines, are positioned on the left and right sides. The text "OCT CONNECT" is prominently displayed in the center in a large, white, sans-serif font.

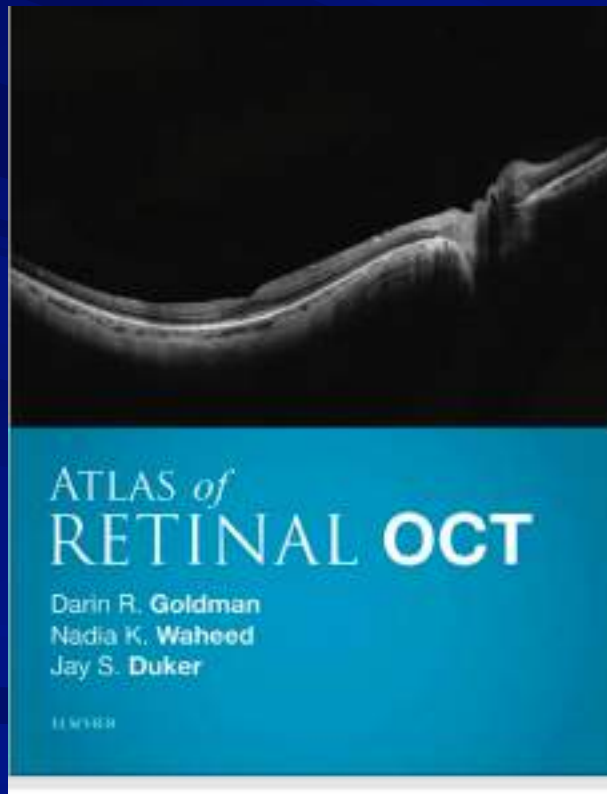
OCT CONNECT

Post your questions & cases so we can #OCTConnect!



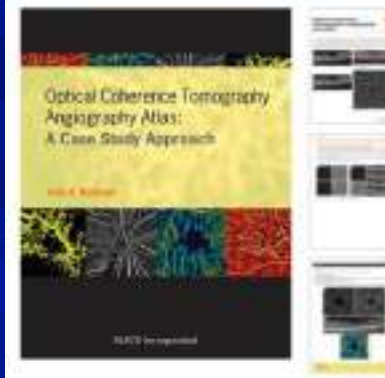
Join this group to become part of our
OCT Connect Family!

Book Resources



Optical Coherence Tomography Angiography Atlas: A Case Study Approach

Julie A Redman, OD MSc FAAO



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Questions



Optometric
Education
Consultants

AMD A-to-OCT-to-RI-to-Z
What You Need to Know

Thank You!!!

Hope You Enjoyed!