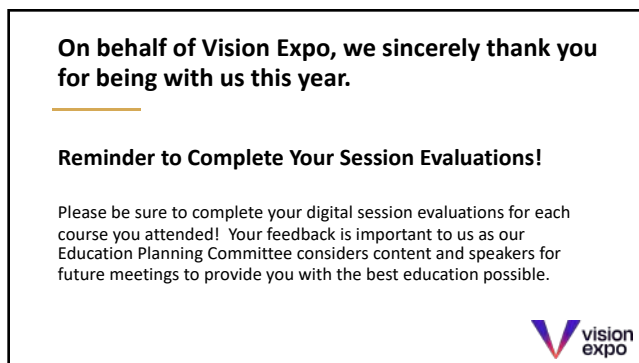
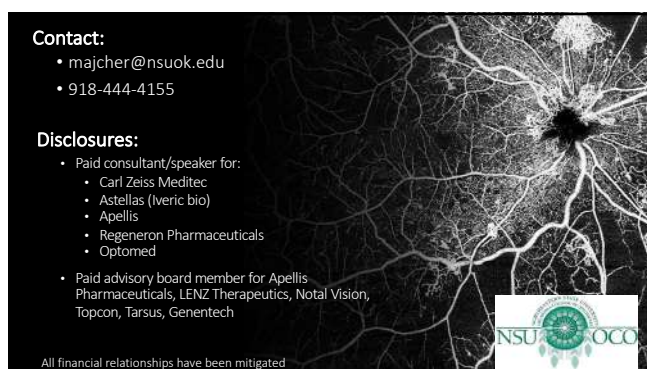


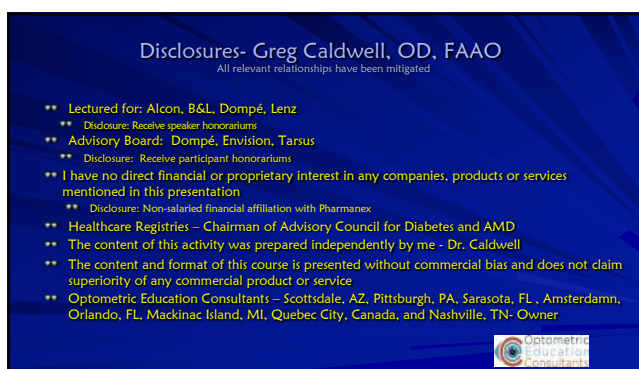
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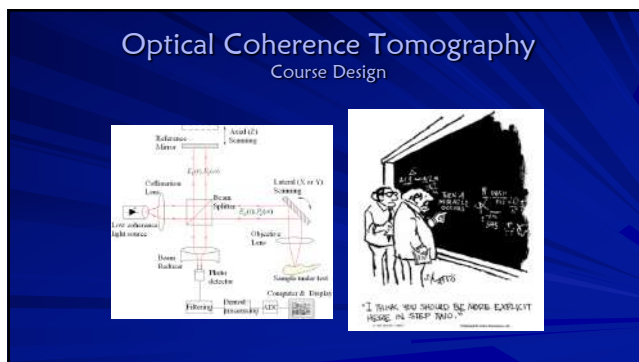
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4



5



6

## OCT and OCT Angiography

Both are Becoming Equally Important in  
Diagnosis, Management, and Treatment

7

## Optical Coherence Tomography

- ~ OCT is an optical signal acquisition and processing method
- ~ Time domain OCT
  - 15-16 microns of resolution
  - Stratus (Zeiss)
- ~ Spectral domain (SD-OCT) or Fourier domain OCT
  - Spatially encoded frequency domain OCT (SEFD-OCT)
  - 5-6 microns of resolution
    - Able to see photoreceptor morphology (inner/outer segments)
  - 50 times faster than time domain
- ~ Swept source OCT
  - Time encoded frequency domain OCT
  - 1 micron of resolution
- ~ Future of OCT- intraoperative imaging, blood flow and oxygenation measurements
- ~ May have the possibility to assess retinal pathology like a pathologist

8

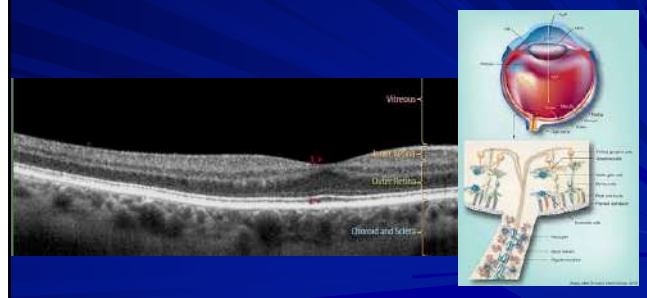
## OCT Angiography: the Next Chapter in Posterior Imaging

- ~ Images retinal microvasculature without dye injection
- ~ Displays structure and function from a single imaging system



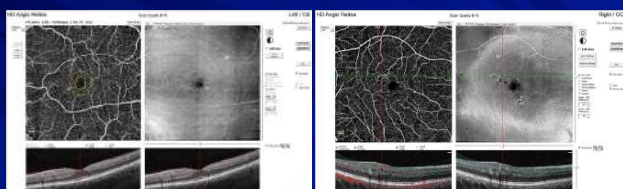
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## Inner Retina versus Outer Retina



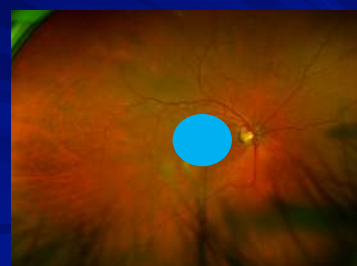
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## Diabetes



11

## Where is the macula?



12

## The Macula

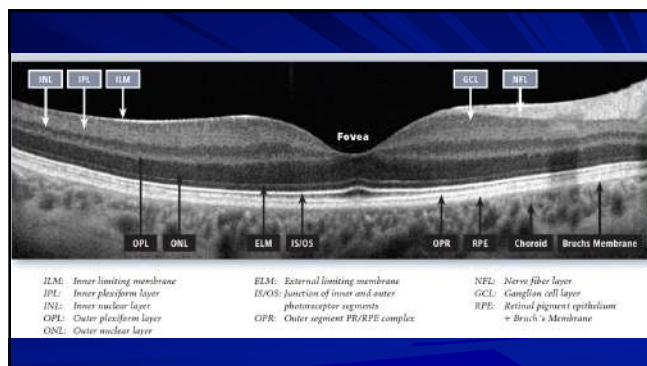


13

## How large is the macula?



14



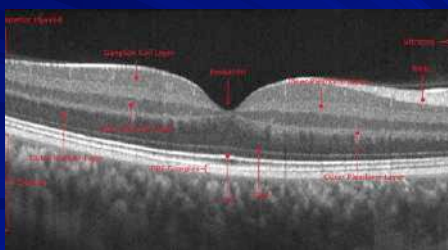
15

## What is this layer called?



16

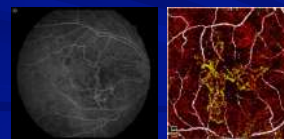
The ellipsoid zone (EZ) is considered to be formed mainly by mitochondria within the ellipsoid layer of the outer portion of the inner segments of the photoreceptors. However, it was previously known as the junction between the photoreceptor IS/OS.



17

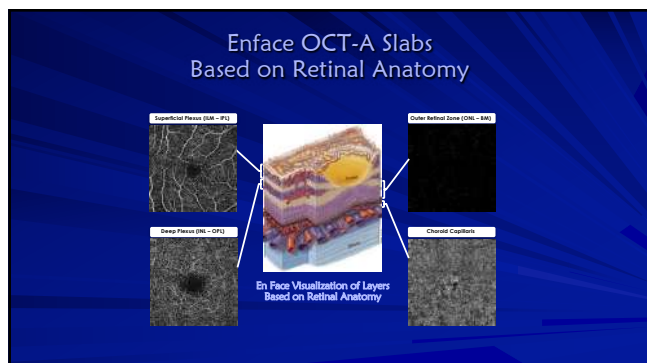
## OCT Angiography A New Approach to Protecting Vision

- 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

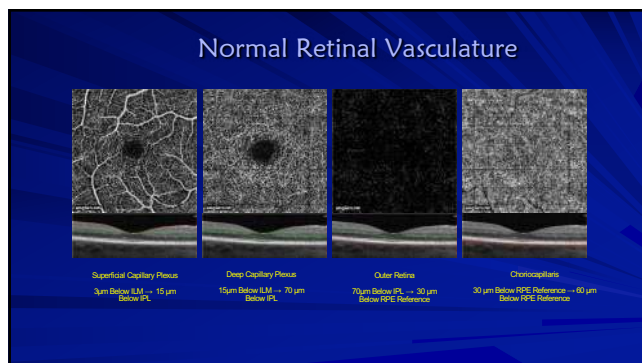


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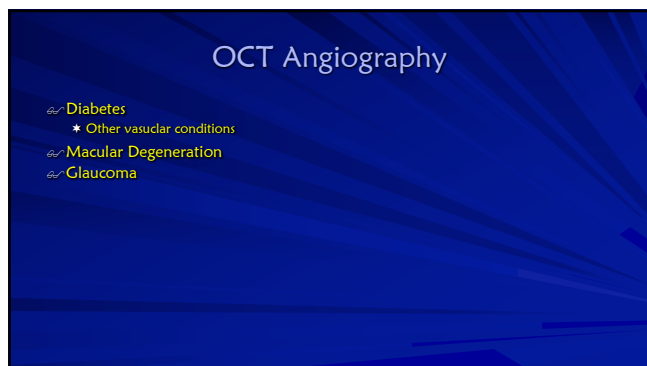




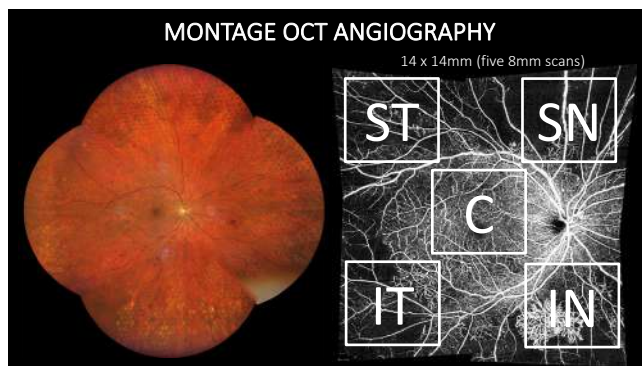
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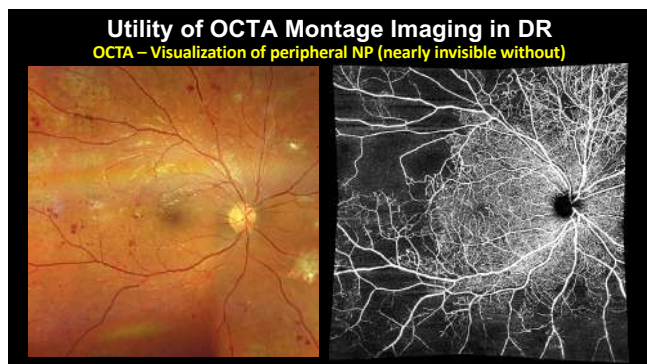
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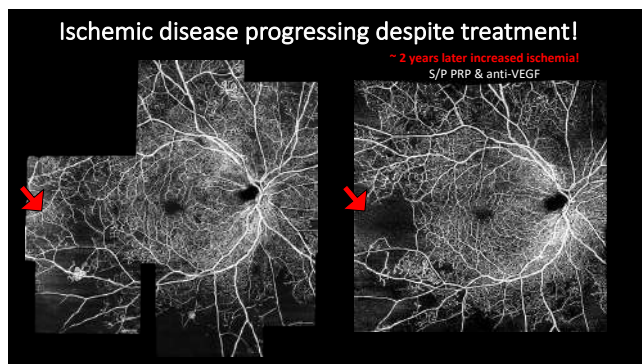
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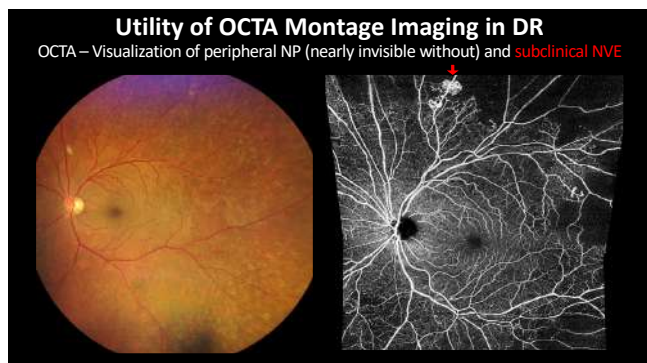
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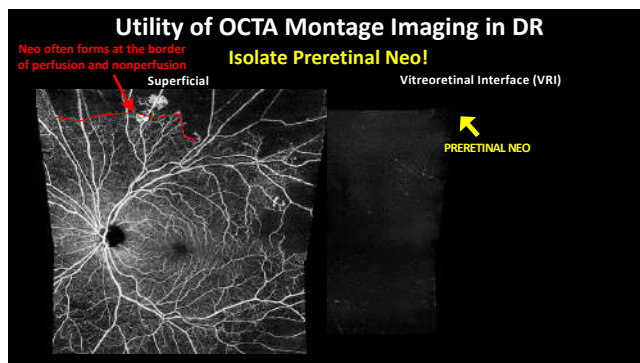
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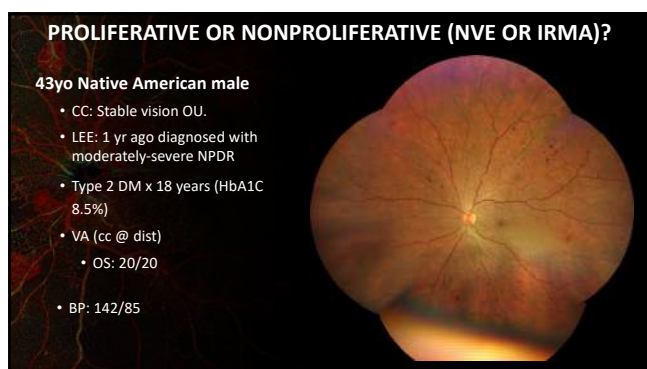
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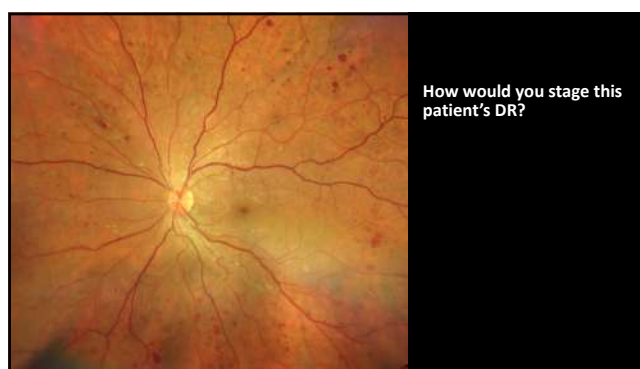
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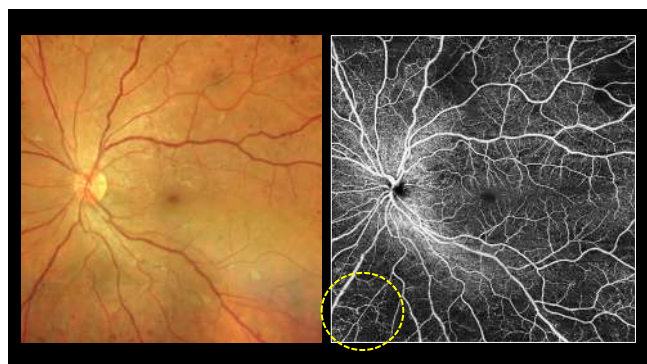
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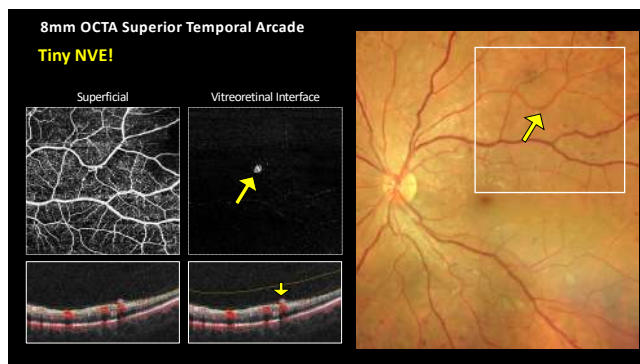
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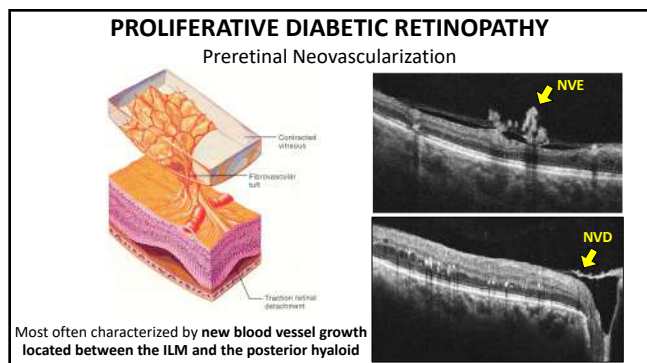
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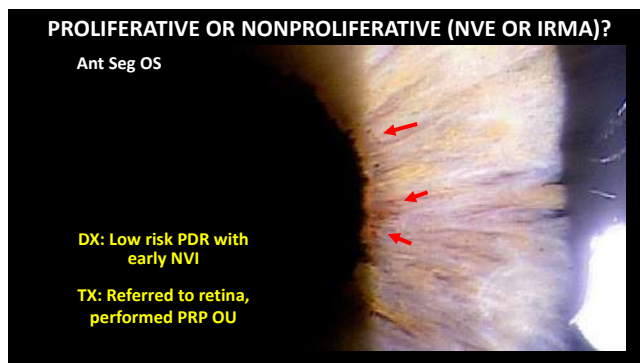
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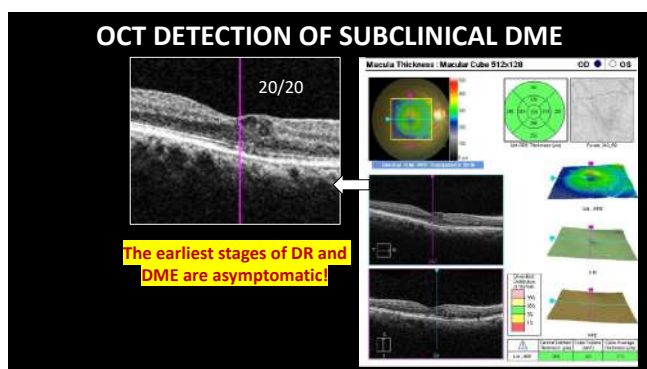
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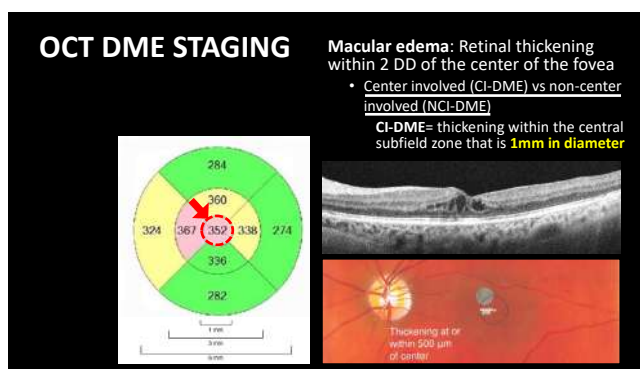
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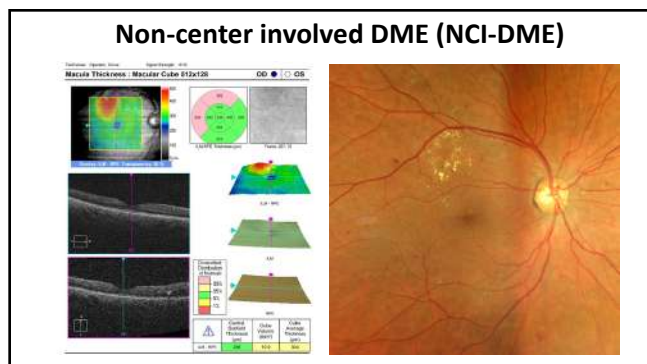
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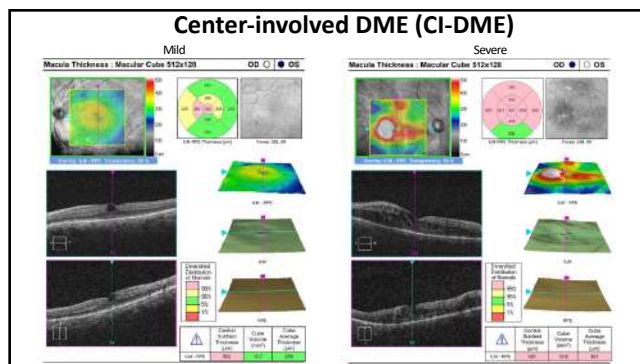
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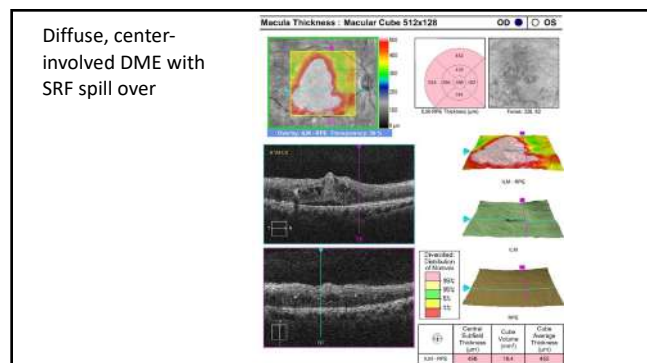


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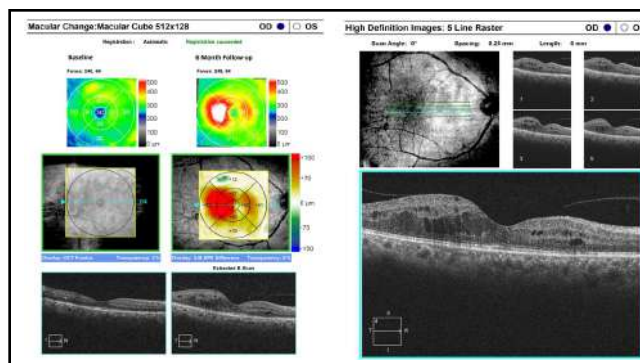


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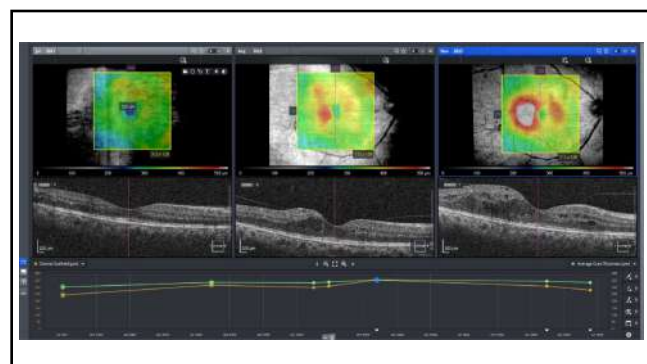




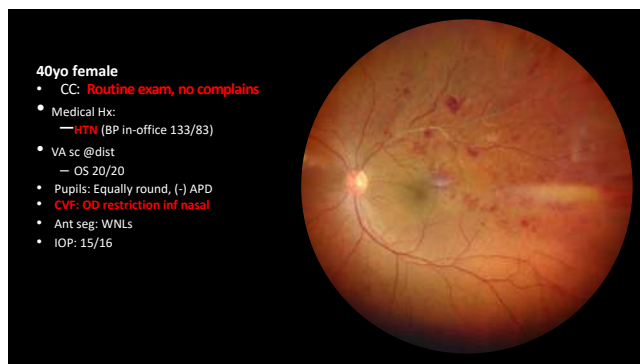
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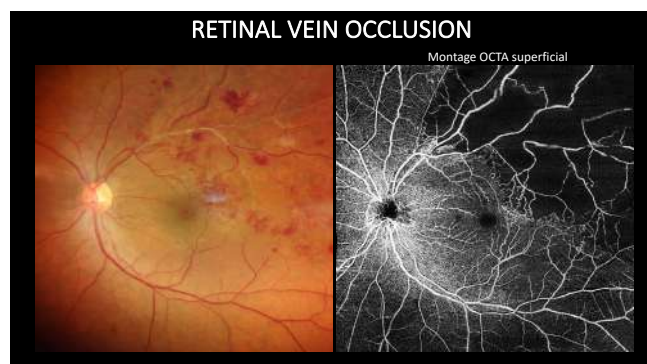
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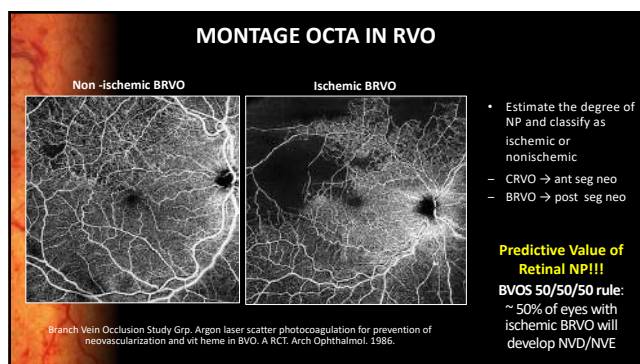
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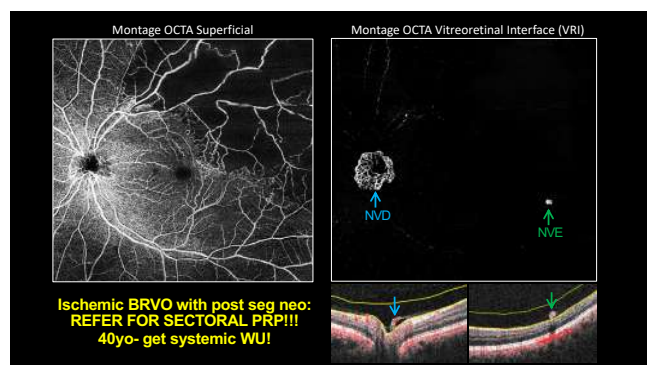
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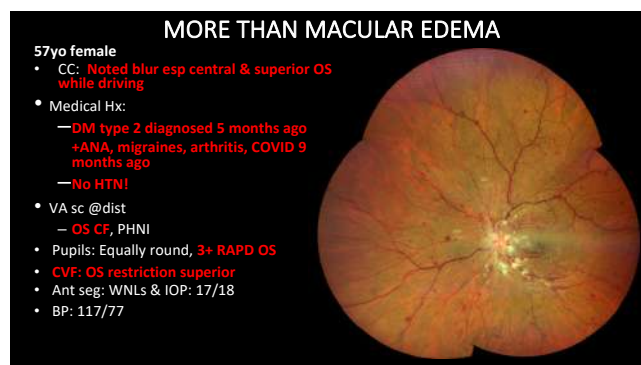
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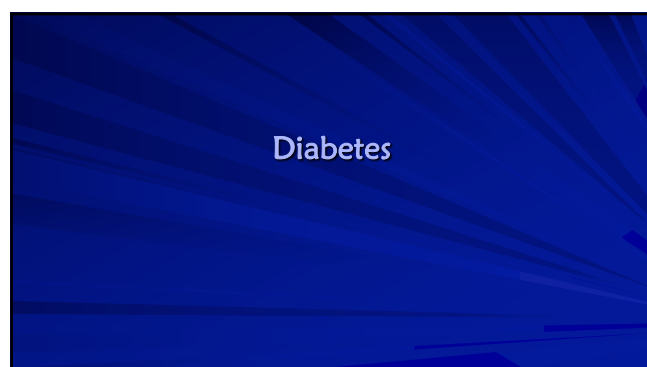
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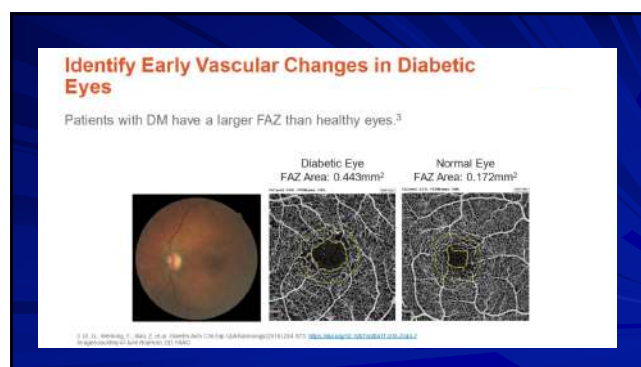
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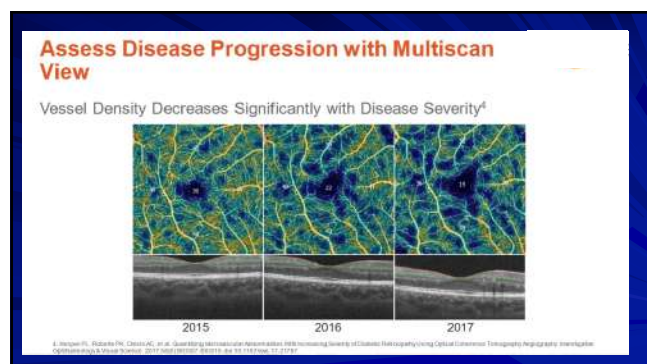
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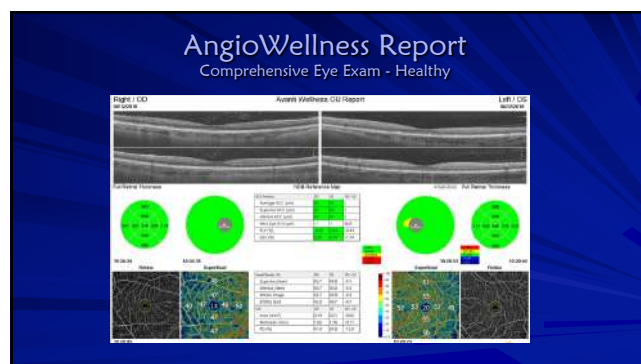
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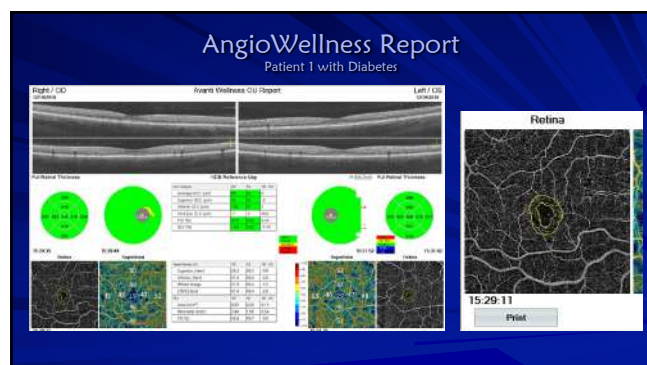


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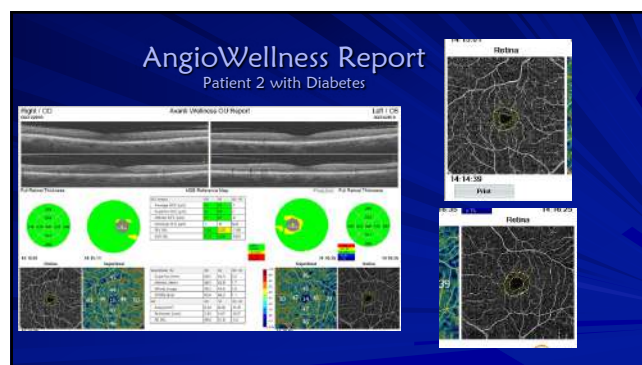


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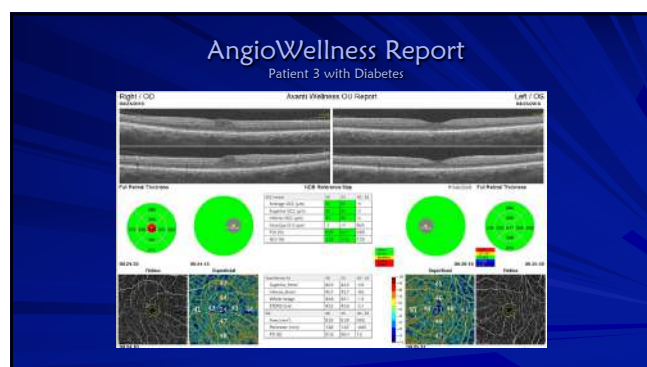




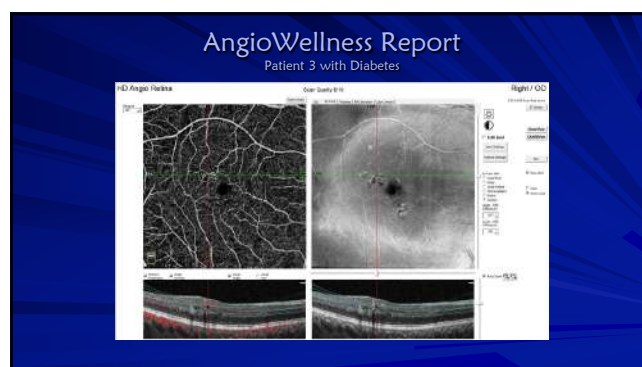
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50



51

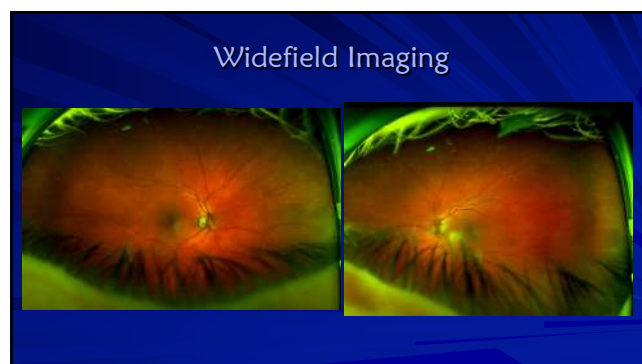


52

58-year-old man with diabetes

- New patient to the practice
- BS: unsure, last HbA1c unsure
- DM meds: metformin, glyburide, Invokana
- Vision 20/20
- Anterior segment: normal

53



54

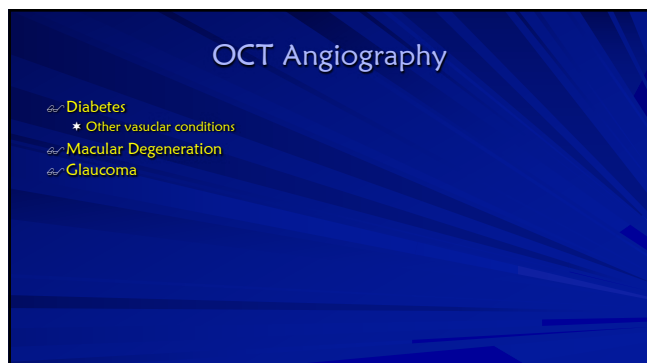


- BS: 134 this AM, last HbA1c 8.0
- DM meds: Novolog and Amaryl
- Vision 20/20
- Anterior segment: normal

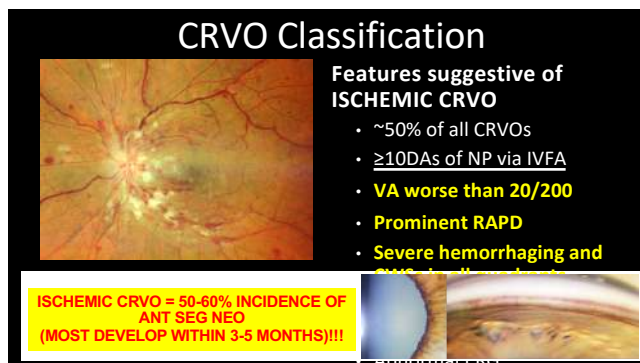




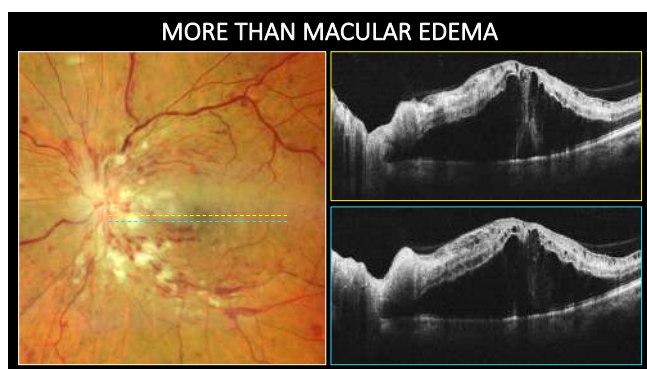




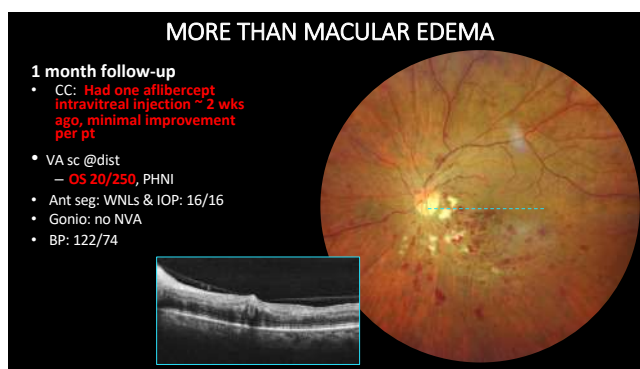
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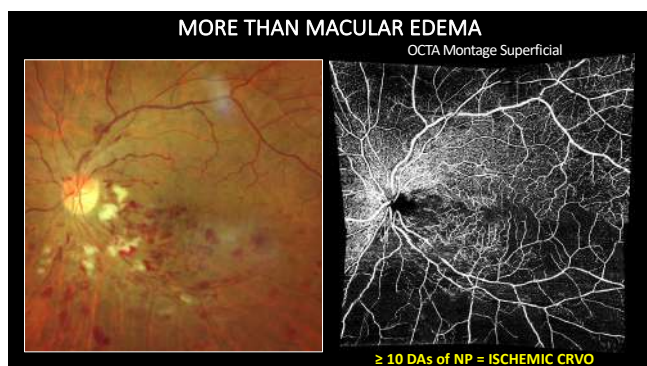
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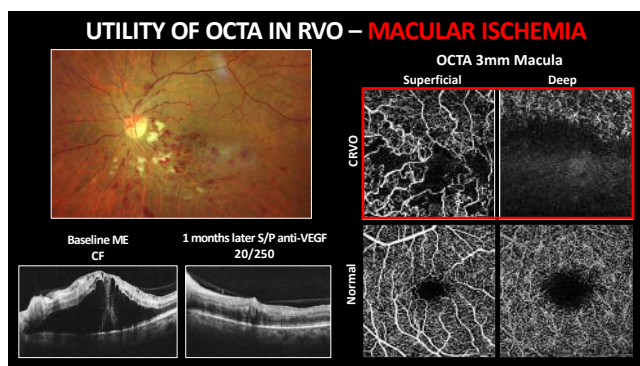
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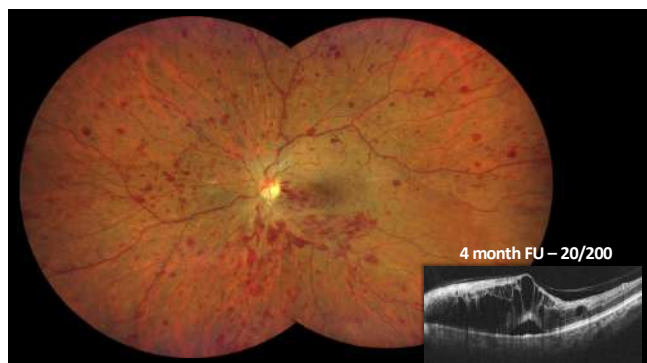
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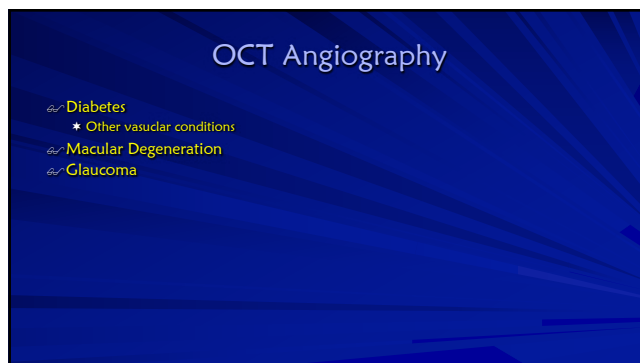
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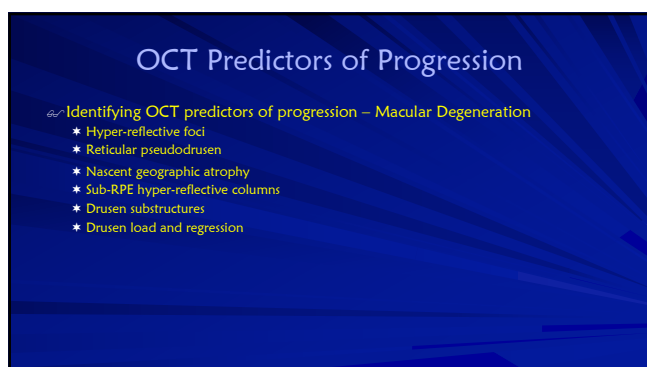
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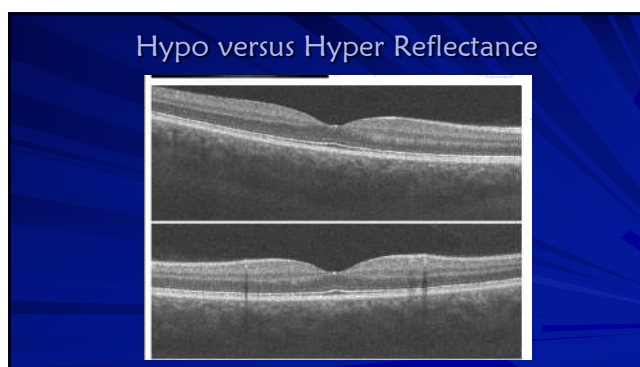
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74



75



76

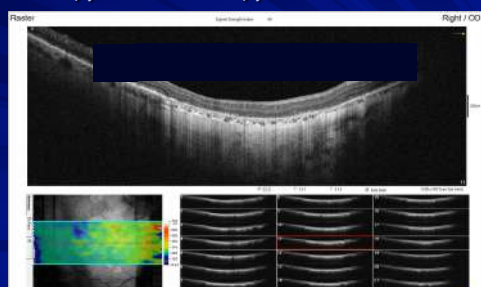


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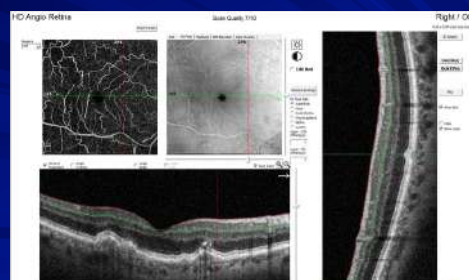
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### Hypo versus Hyper Reflectance



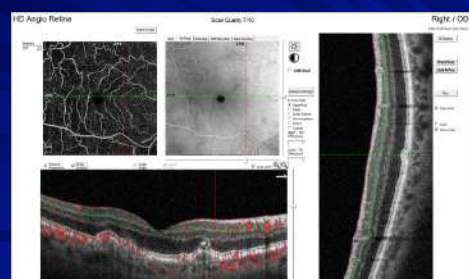
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### OCT Predictors of Progression



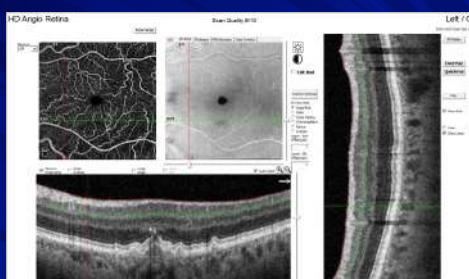
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### OCT Predictors of Progression



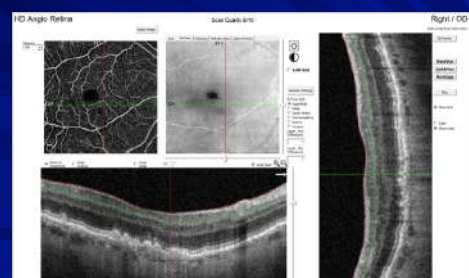
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### OCT Predictors of Progression



82

### OCT Predictors of Progression



83

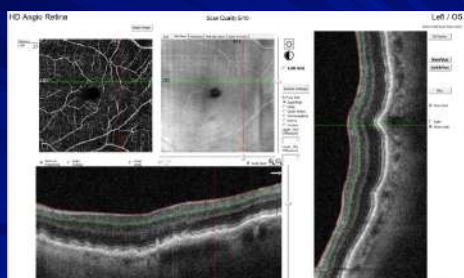
### OCT Predictors of Progression



84

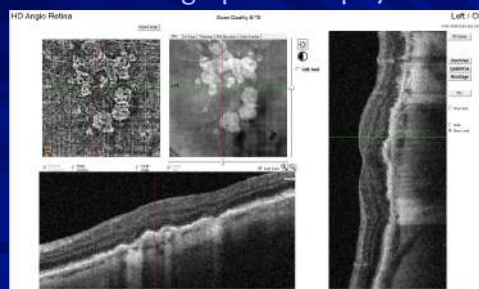


## OCT Predictors of Progression



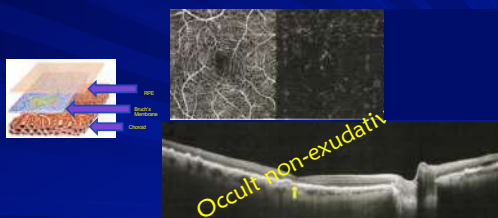
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## Geographic Atrophy



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## Type 1 "Occult" CNV

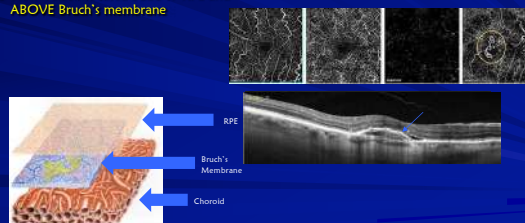


- ▶ New vessels develop in the choroid
- ▶ New vessels located below RPE and above Bruch's membrane

87

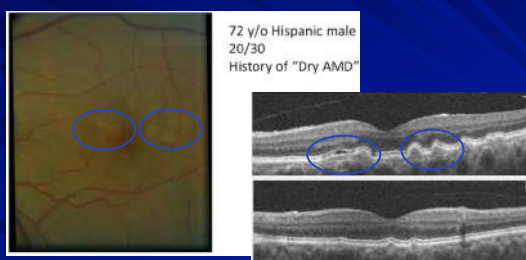
## Type 1 "Occult" CNV

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



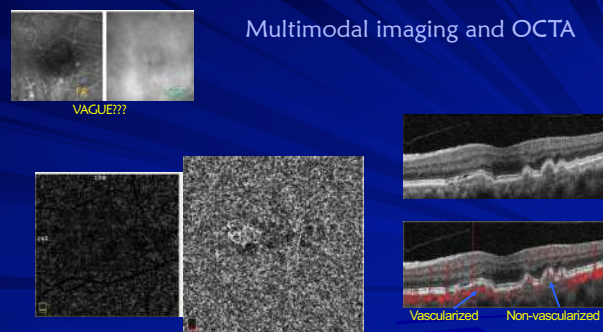
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## CNV?



89

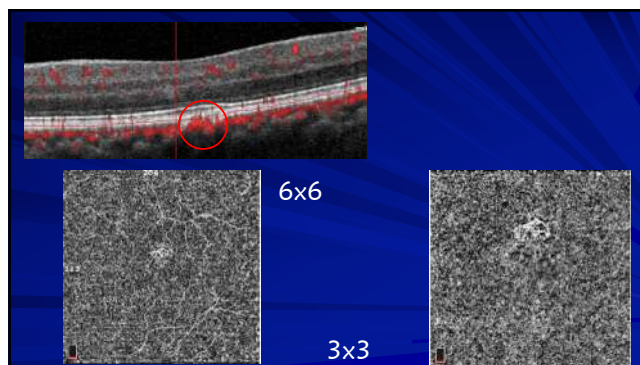
## Multimodal imaging and OCTA



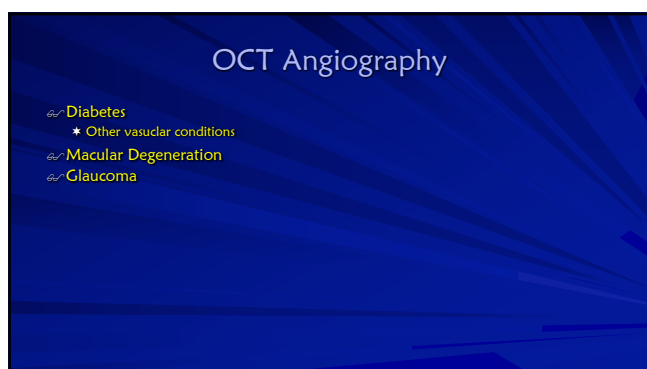
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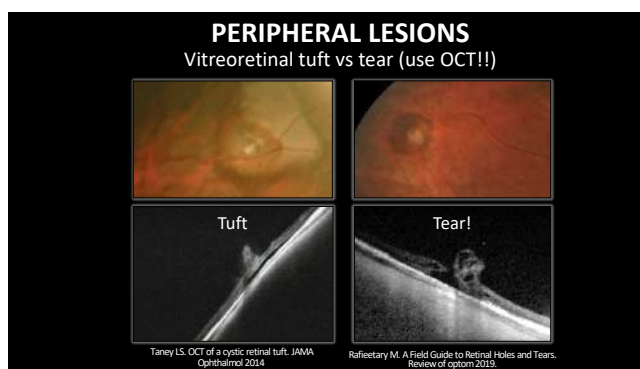
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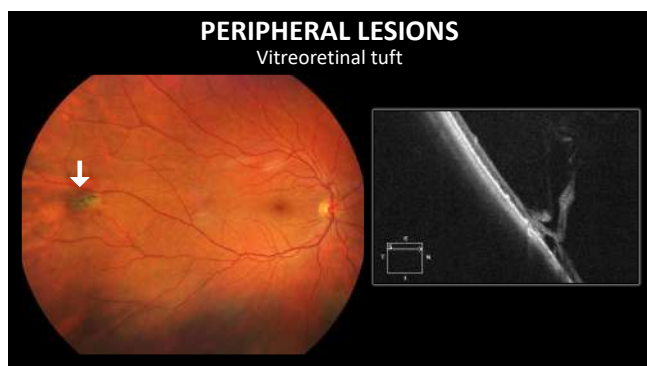
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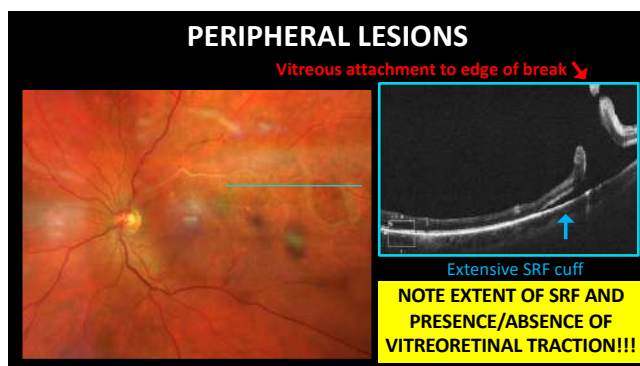
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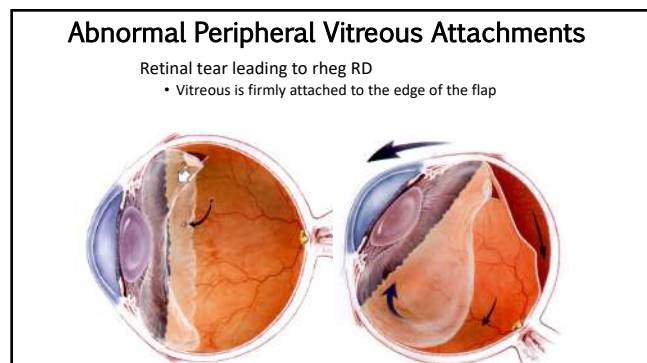
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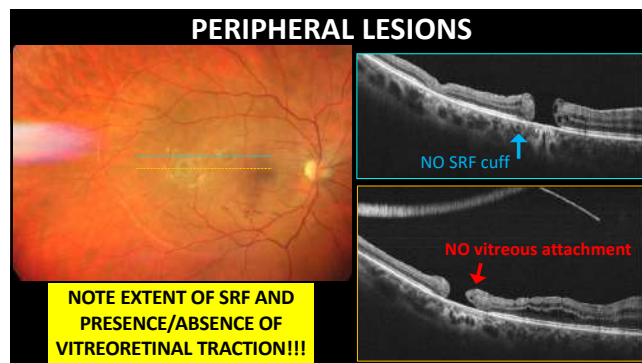
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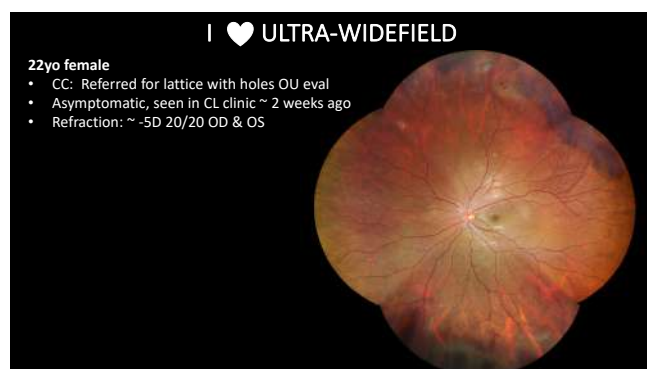
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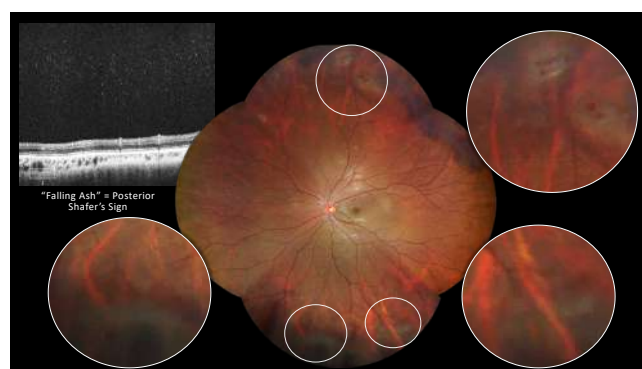
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98



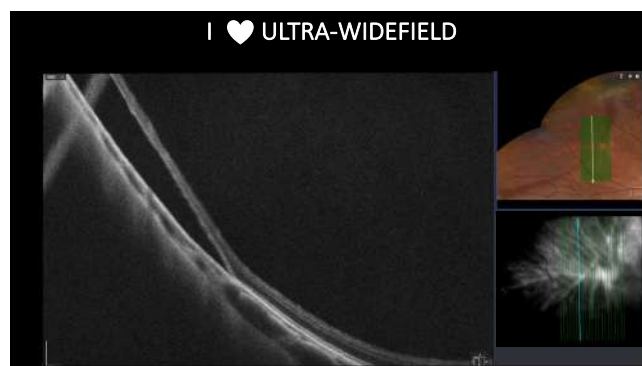
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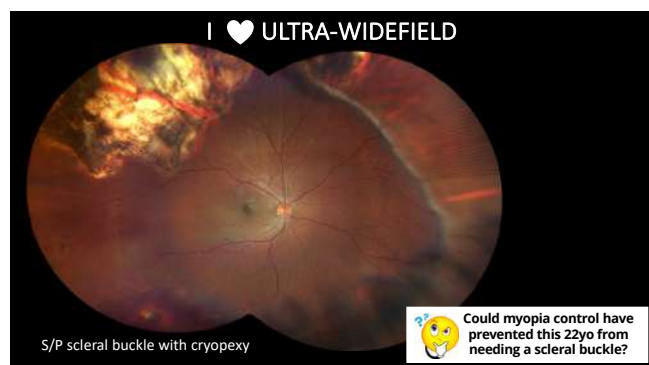


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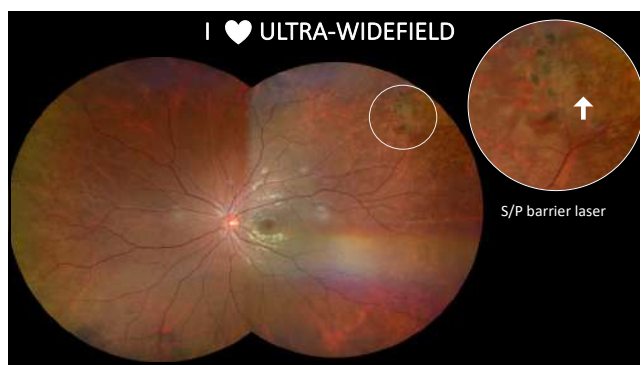


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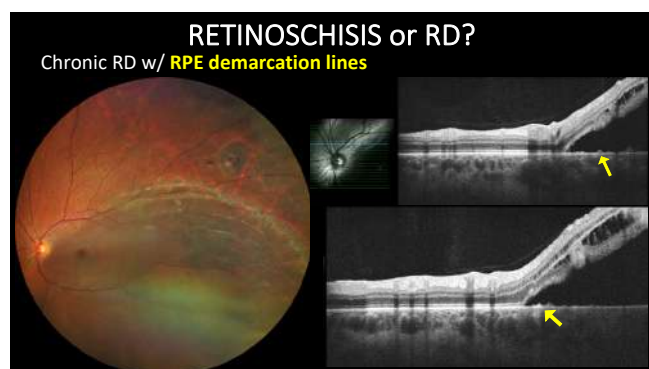




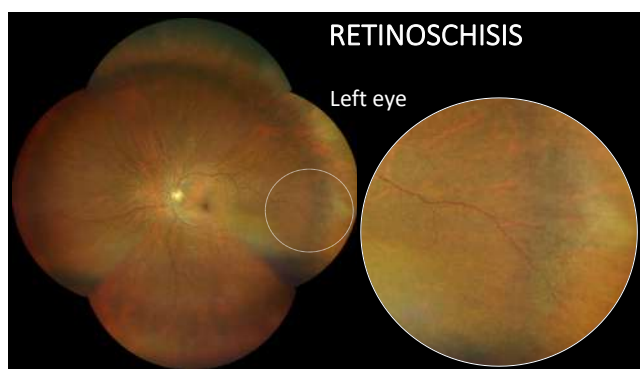
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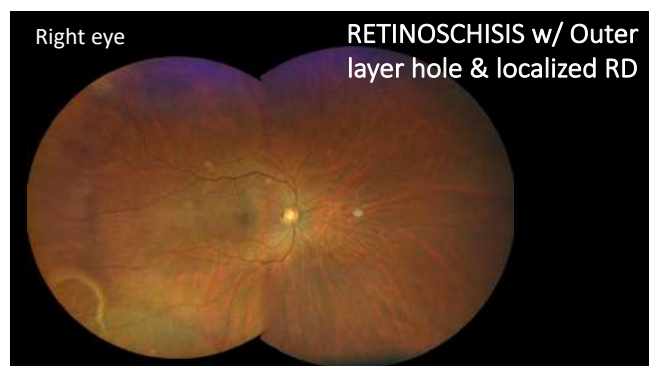
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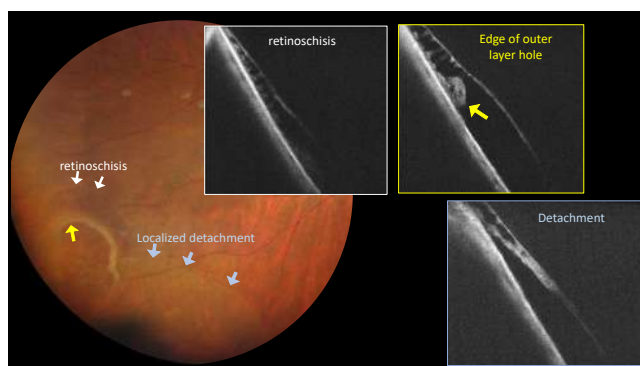
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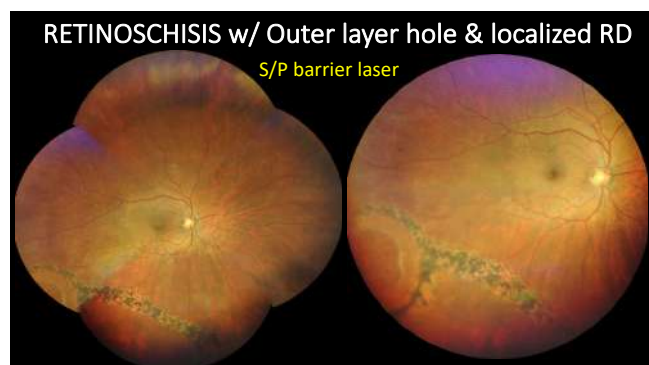
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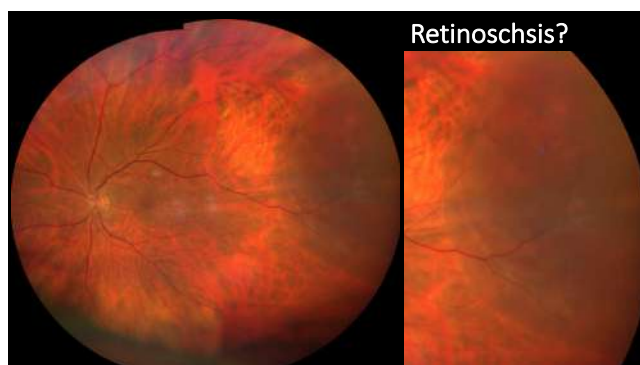
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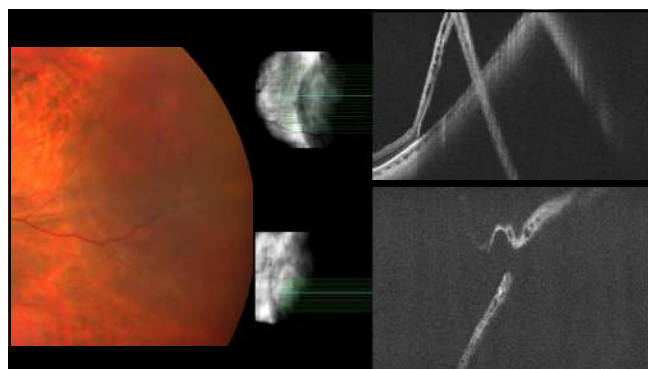
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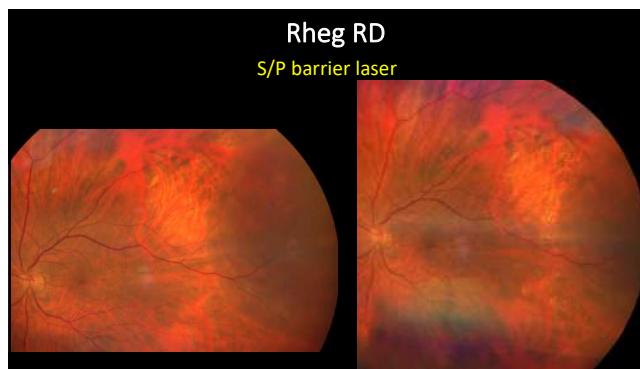
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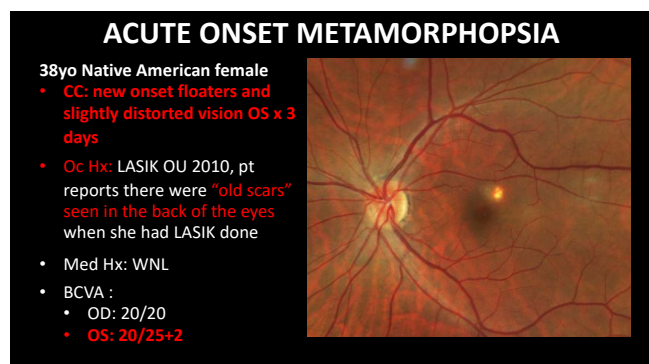
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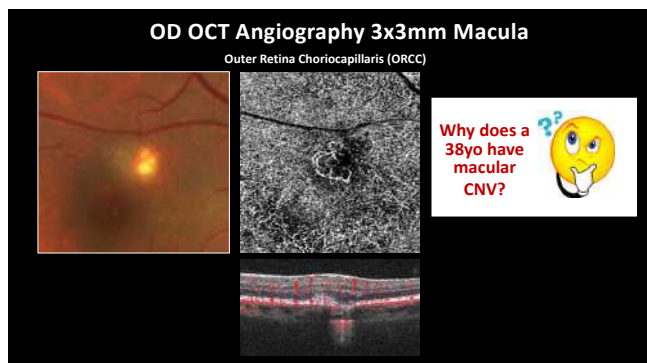
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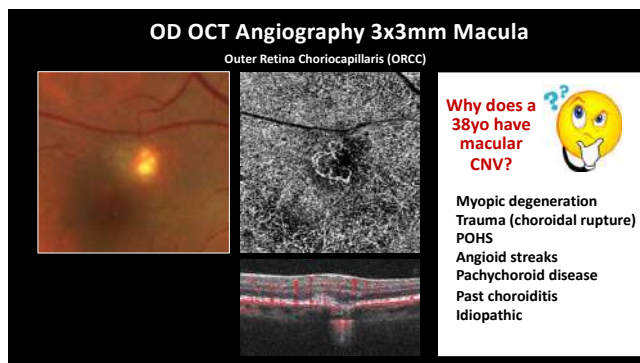
113



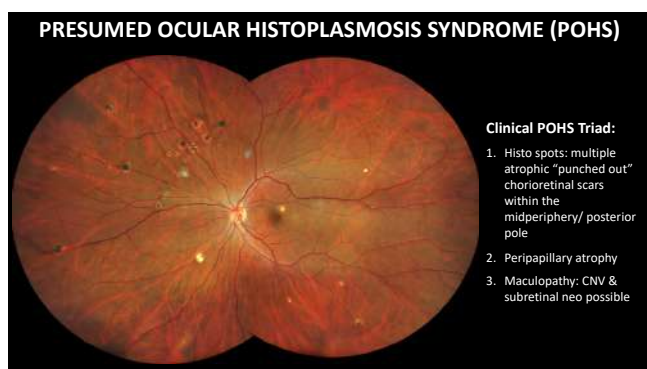
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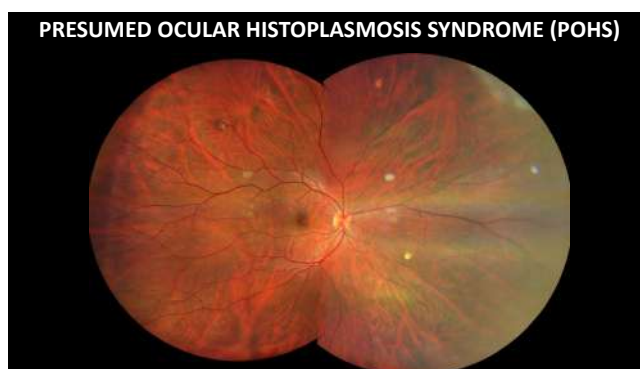
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116



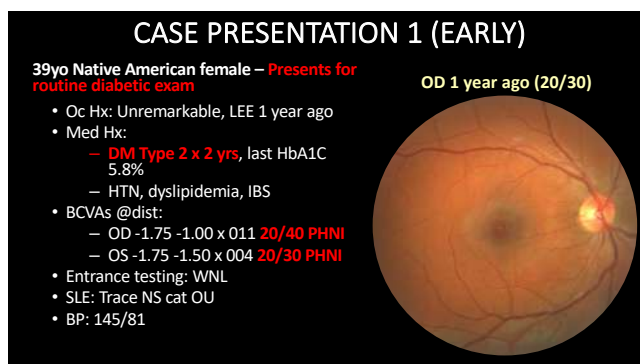
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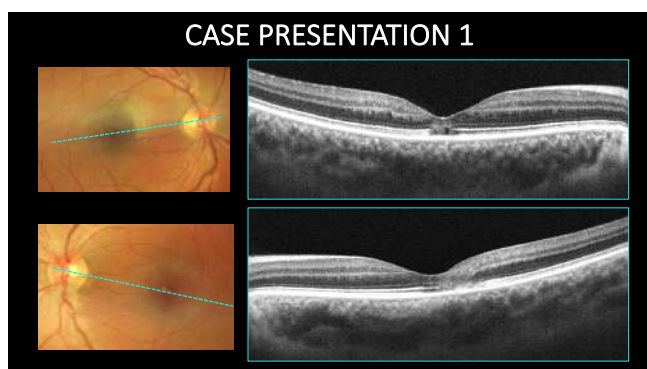




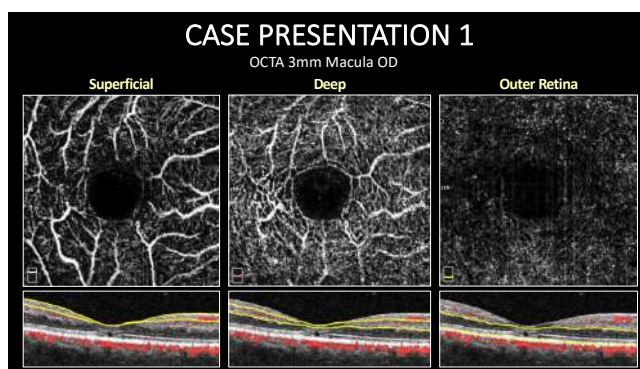
121



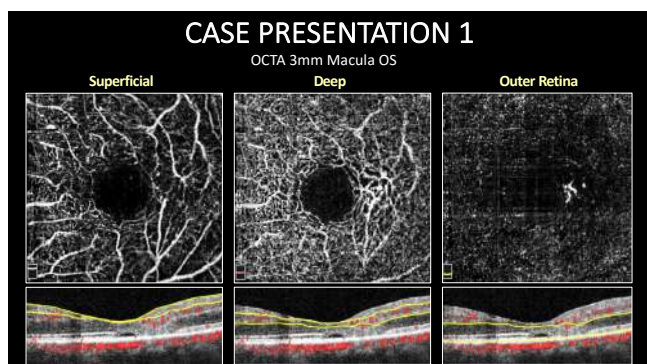
122



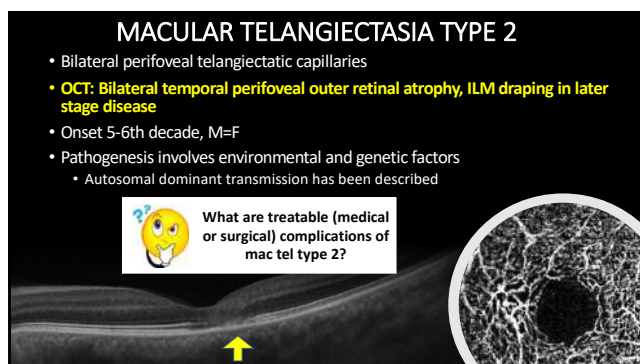
123



124



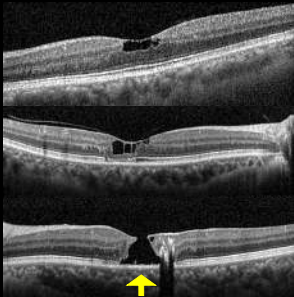
125



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### MACULAR TELANGIECTASIA TYPE 2

- No effective FDA-approved tx for non-proliferative mac tel type 2
- For eyes with active SRN, intravitreal anti-VEGF therapy is usually instituted although high-quality guiding evidence is lacking
- May eventually be complicated by **full thickness macular hole (FTMH)** formation
- refer FTMHs for consideration of surgical repair!




Kim, Y.H., et al. OCT features of mac tel type 2: Korean Macular Telangiectasia Type 2 Study—Report No. 1. Sci Rep 2020

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### Proliferative Mac Tel Type 2

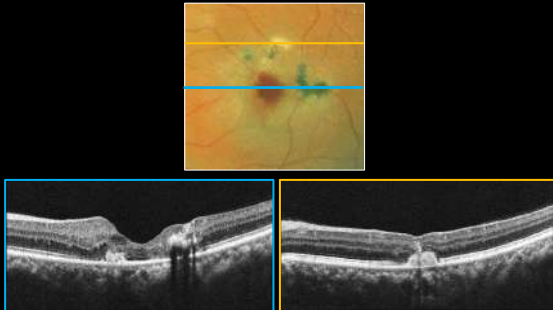
57yo Hispanic female – Referred from primary care for possible macular dystrophy/macular scarring OU

- CC: gradually progressive vision loss OU x several years
- Oc Hx: No known illness or fam Hx. No prior surg or trauma.
- Med Hx: Unremarkable
- BCVAs @dist:
  - OD 20/100 PHNI
  - OS 20/200 PHNI
- Entrance testing: WNL
- SLE: 1-2+ NS cat OU



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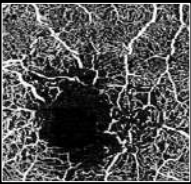
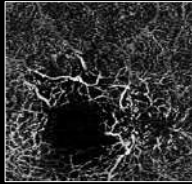
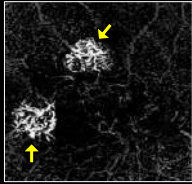
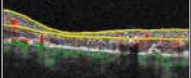
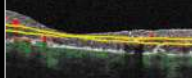

### Proliferative Mac Tel Type 2



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### Proliferative Mac Tel Type 2

OCTA 3mm Macula OS

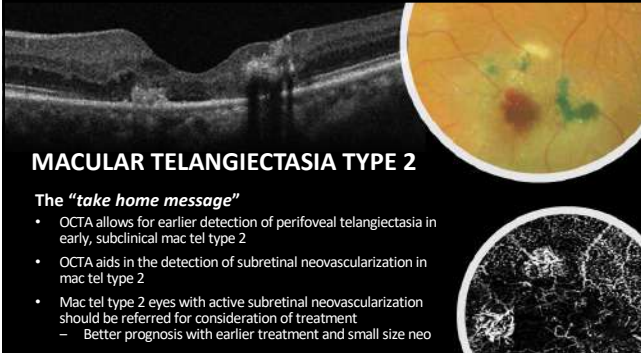
| Superficial  | Deep  | Outer Retina (Custom)   |
|--|---|---|
|   |   |   |
|  |  |  |

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### MACULAR TELANGIECTASIA TYPE 2

The "take home message"

- OCTA allows for earlier detection of perifoveal telangiectasia in early, subclinical mac tel type 2
- OCTA aids in the detection of subretinal neovascularization in mac tel type 2
- Mac tel type 2 eyes with active subretinal neovascularization should be referred for consideration of treatment
  - Better prognosis with earlier treatment and small size neo




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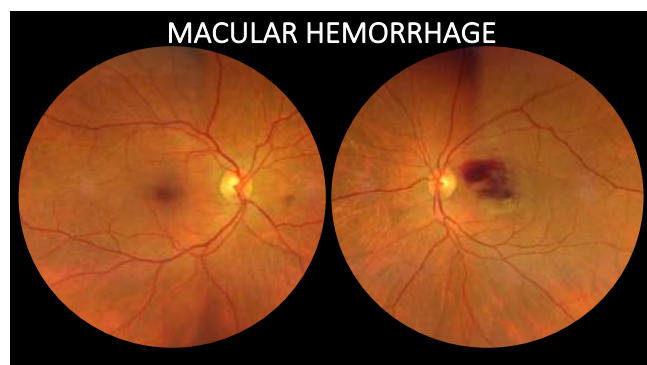
### MACULAR HEMORRHAGE

70yo female –blur and ↓vision OS for about 2-3 months

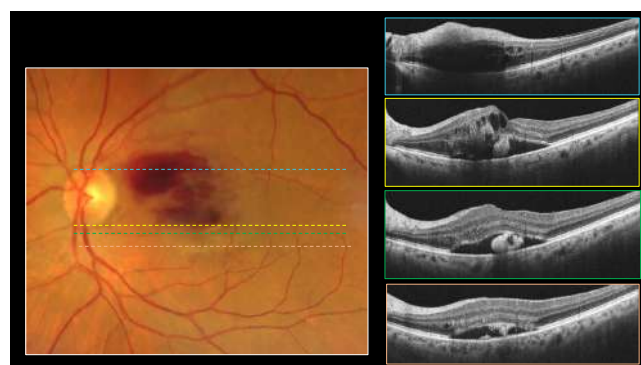
- Med Hx:
  - HTN (in office BP 131/83)
  - Type 2 DM x 12 yrs (last A1c 6.5%)
  - OSA on CPAP, ↑ chol, stage 3 CKD
- BCVAs @dist:
  - OD 20/20<sup>+</sup>, OS 20/150 PHNI
- Entrance testing: all WNLs other than central scotoma with facial amsler OS
- SLE: NS 1 cat OU
- IOPs: OD 12/ OS 14 mmHg



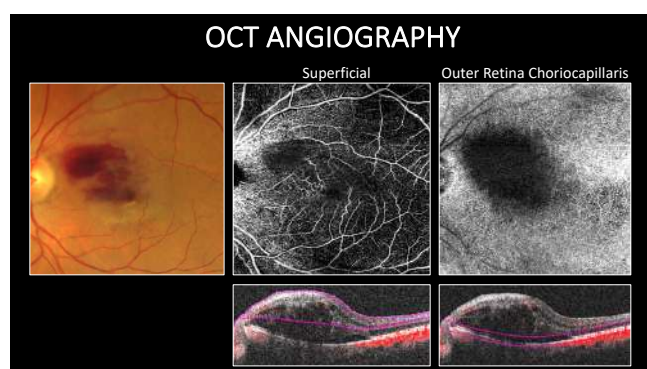
132



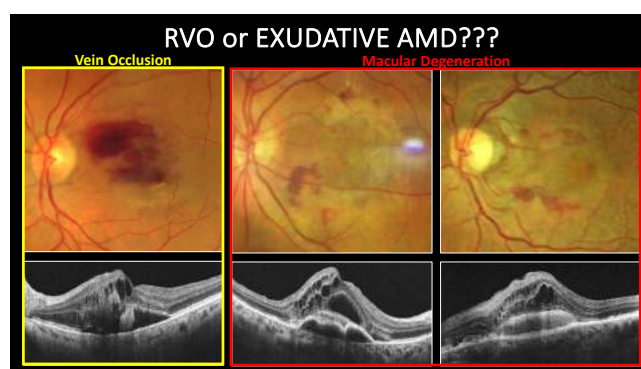
133



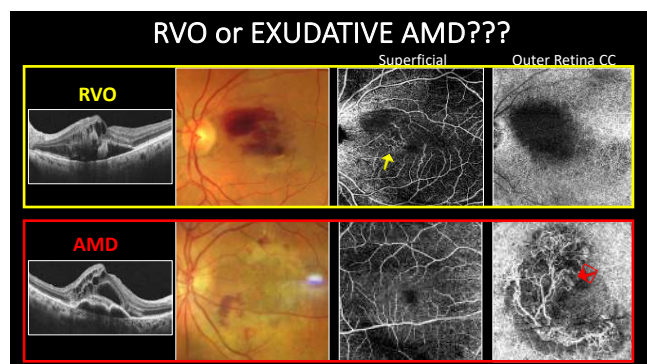
134



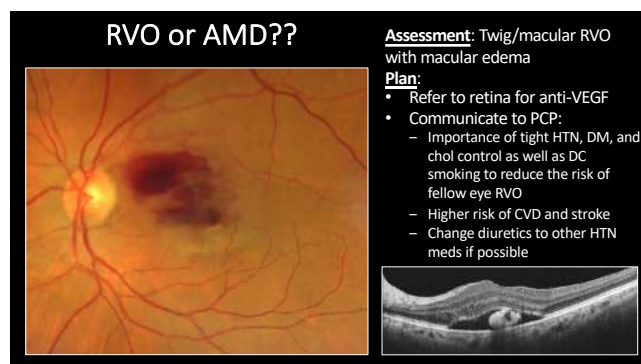
135



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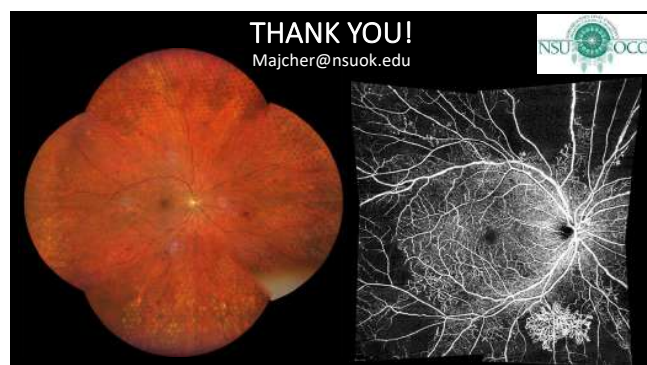


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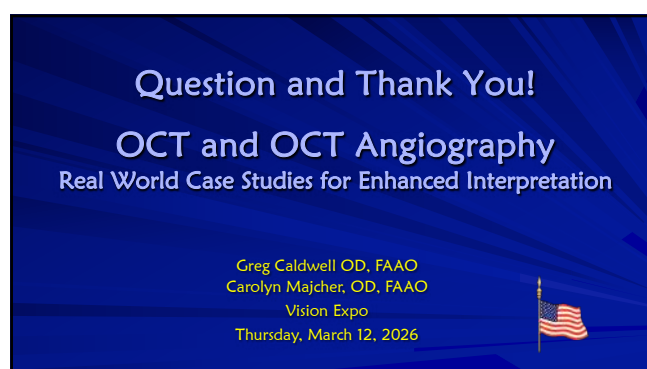
**On behalf of Vision Expo, we sincerely thank you  
for being with us this year.**

**Reminder to Complete Your Session Evaluations!**

Please be sure to complete your digital session evaluations for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.



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