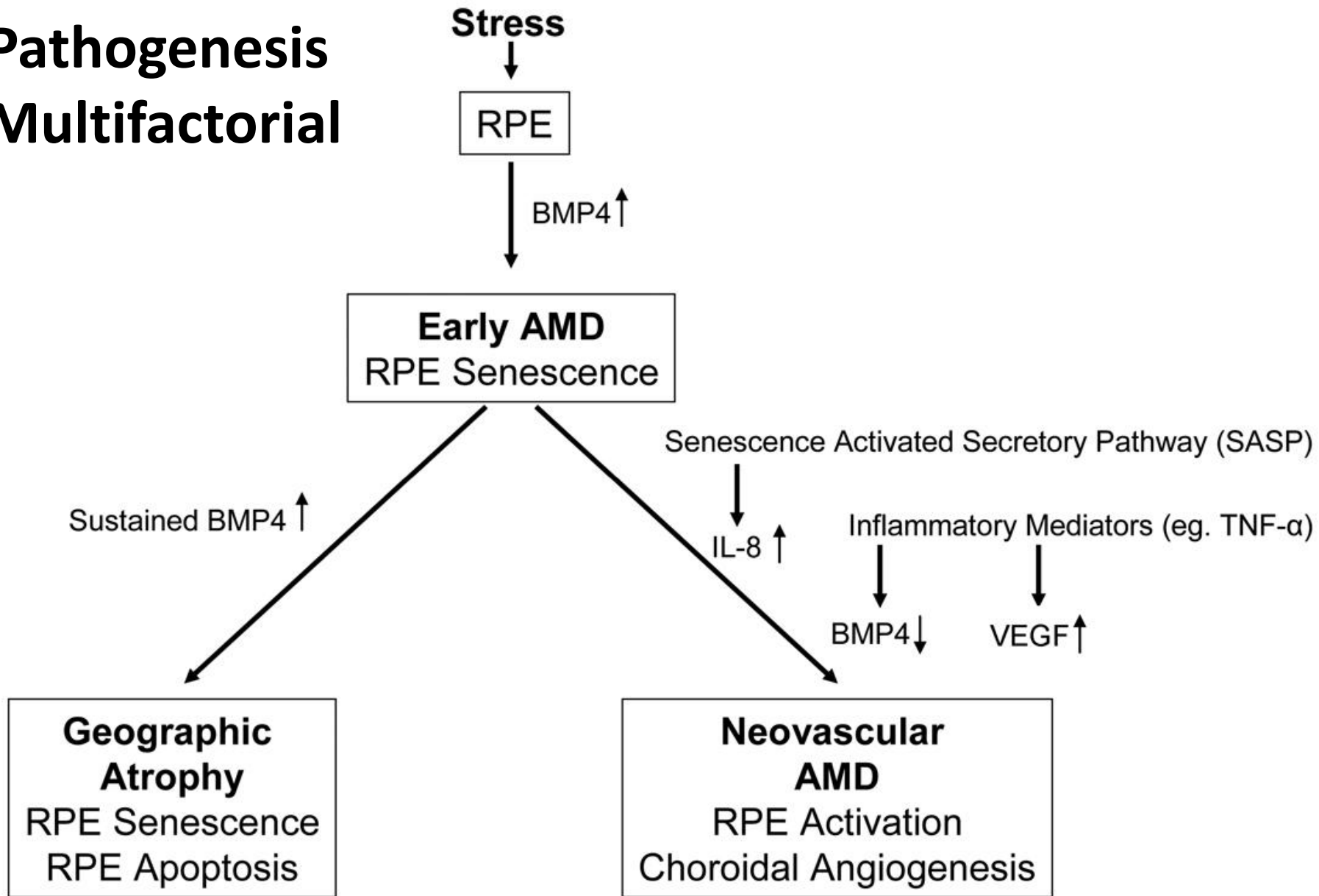


Wet Age-related Macular Degeneration Neovascular AMD

Mallika Goyal, MD
Apollo Hospitals, Hyderabad

Pathogenesis Multifactorial



Investigations

- Fundus Fluorescein Angiography FFA
- Optical Coherence Tomography OCT
- ICG

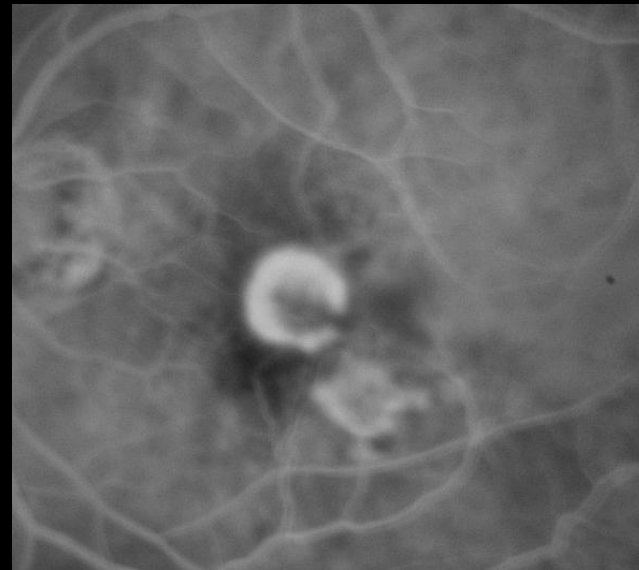
FFA in AMD

Indications

- At presentation only if doubt about diagnosis
- Identify lesion characteristics:
 - Polypoidal choroidal vasculopathy (PCV)
 - Retinal angiomatous proliferation (RAP)
 - CSCR
- When response inadequate
- Pre-PDT for lesion diameter

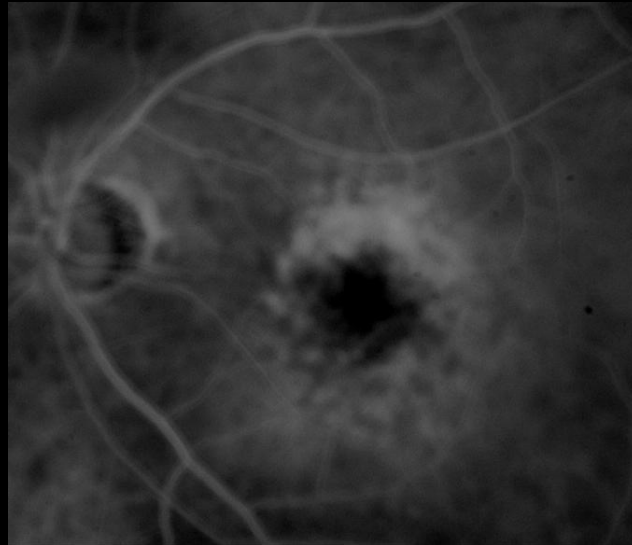
Classic CNVM

- Sub-neuroretinal / -sensory retinal
- Bright leak
- Borders distinct

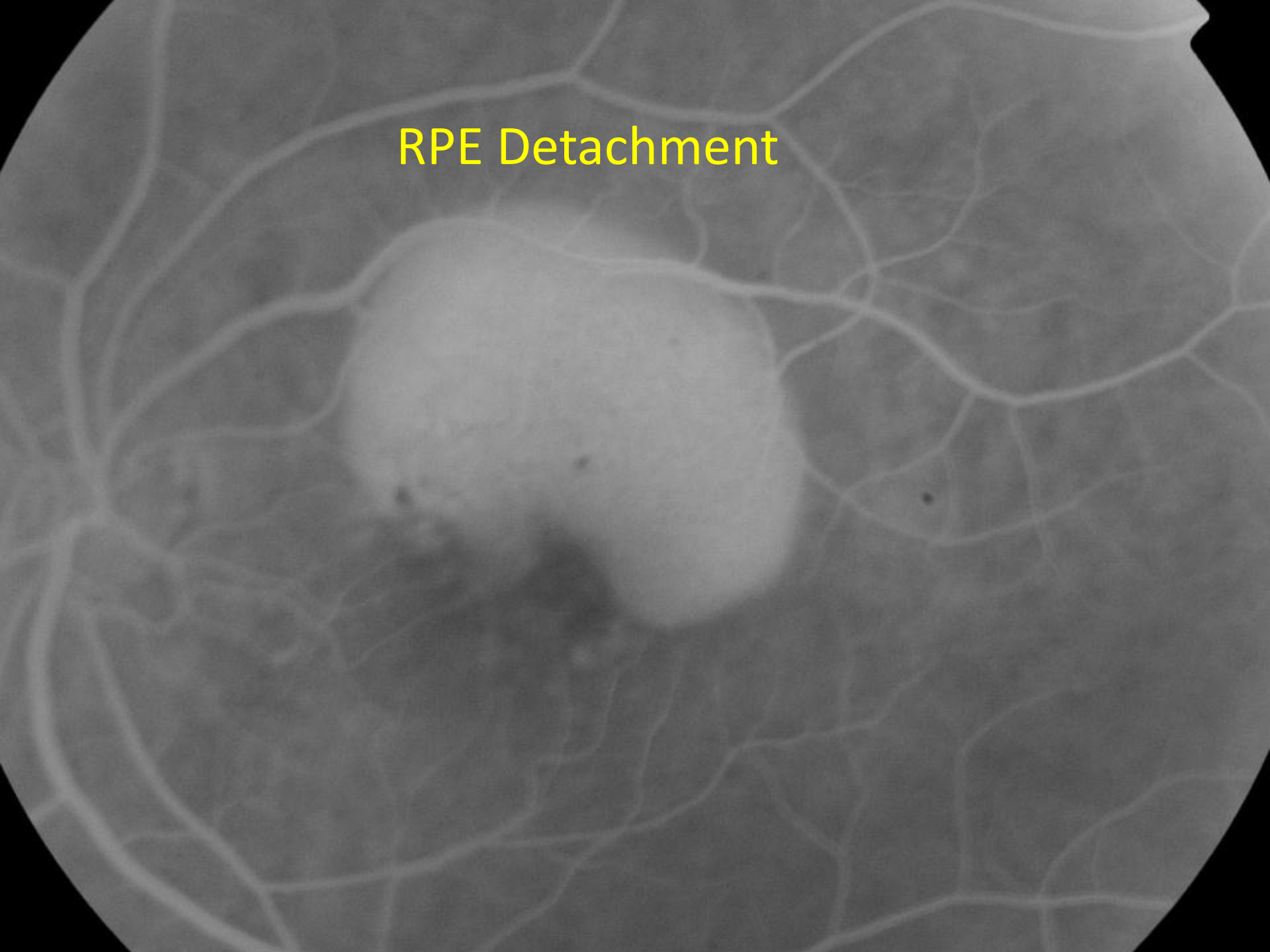


Occult CNVM

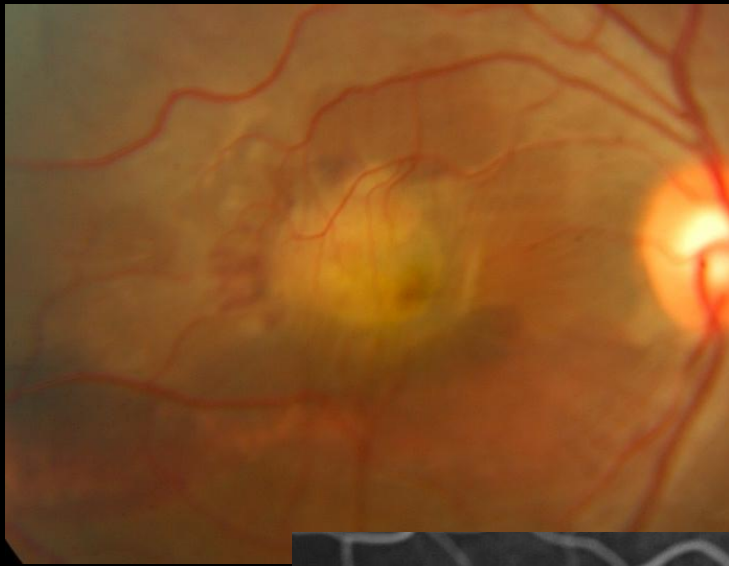
- Sub-RPE lesion
- Borders ill-defined
- Punctate hyperfluorescence
- Diffuse ooze membrane



RPE Detachment

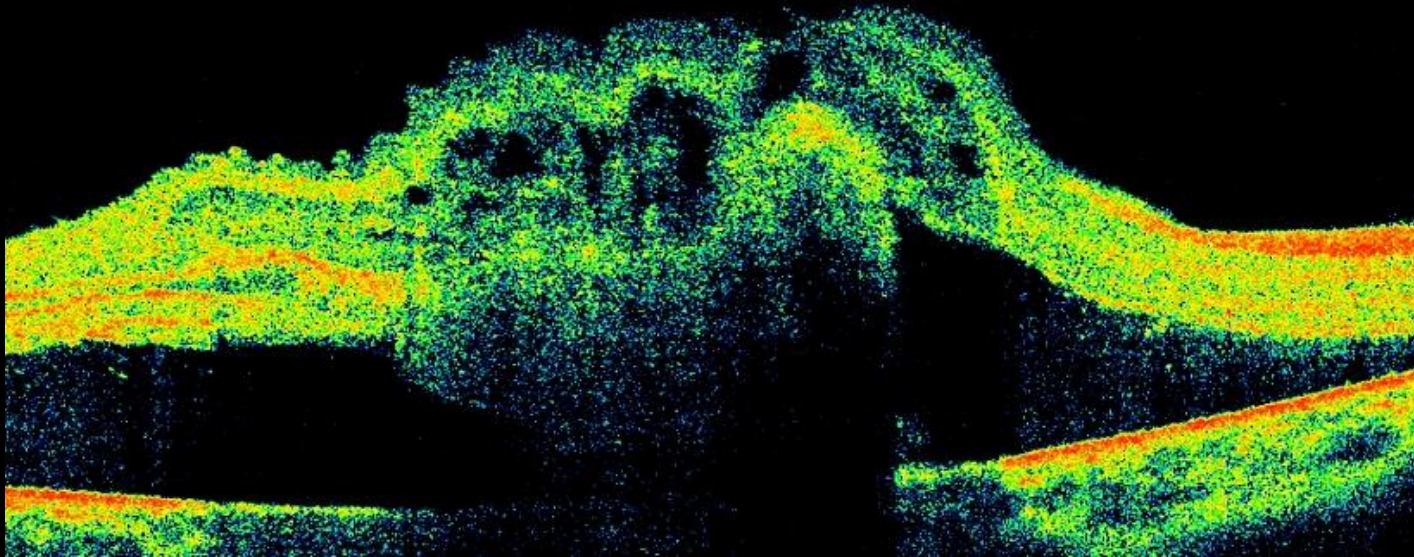


Retinal Angiomatous Proliferans (RAP)



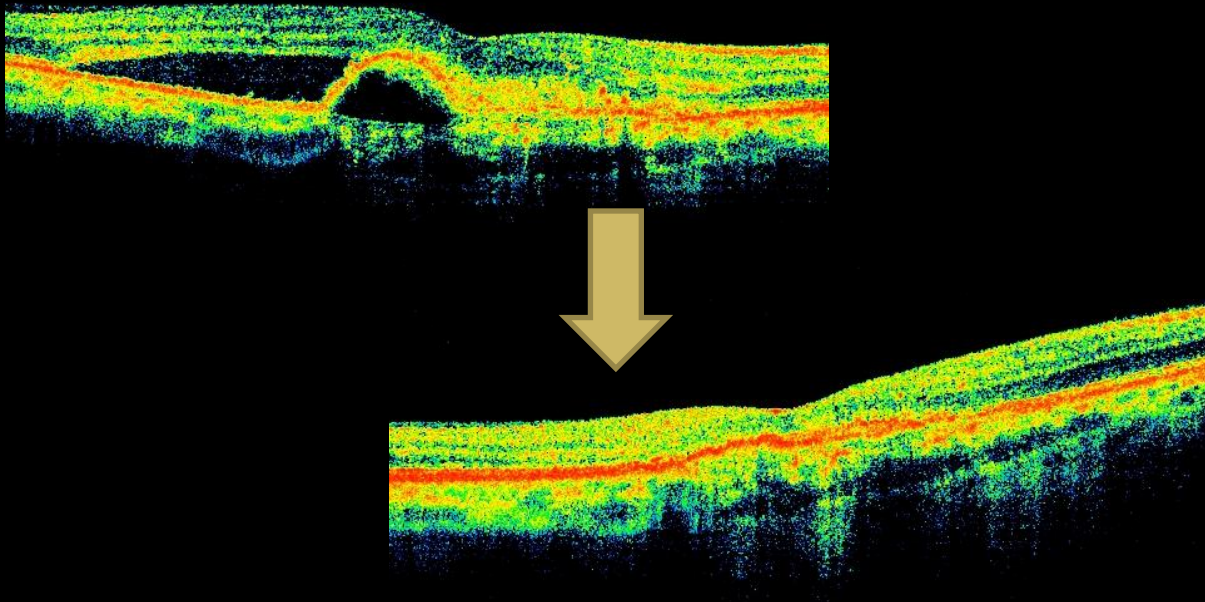
OCT RAP lesion

- Massive fluid in nuclear layers
- Hyper-reflective fluid
- Shadowing of outer layers, RPE



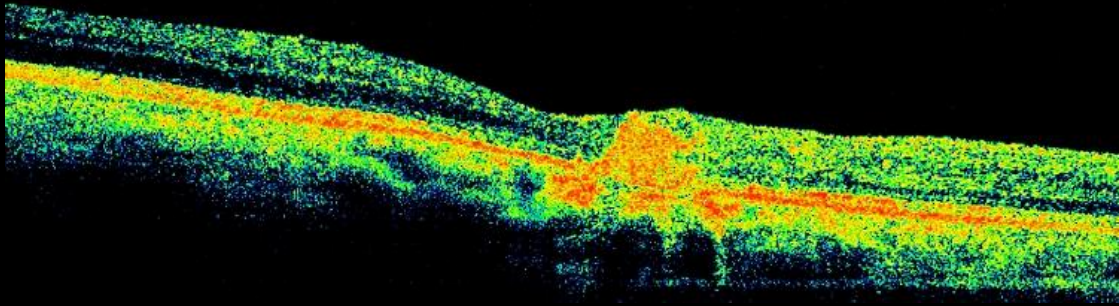
OCT

- High resolution tomogram 5 μm
- Picks up minimal amounts of fluid
- Differentiates scar from active CNVM
- Allows quick comparison on serial follow-up

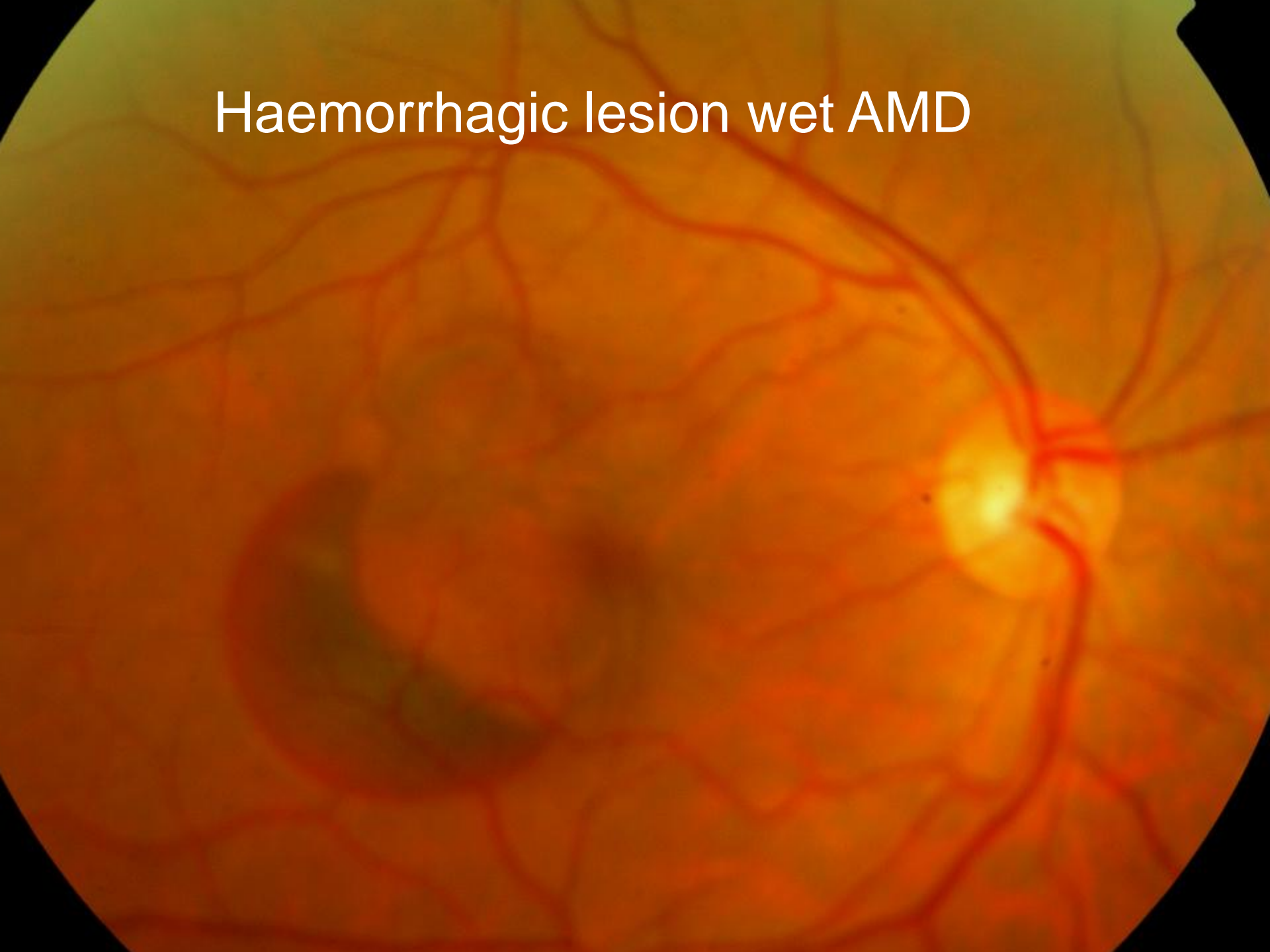


When to stop treatment

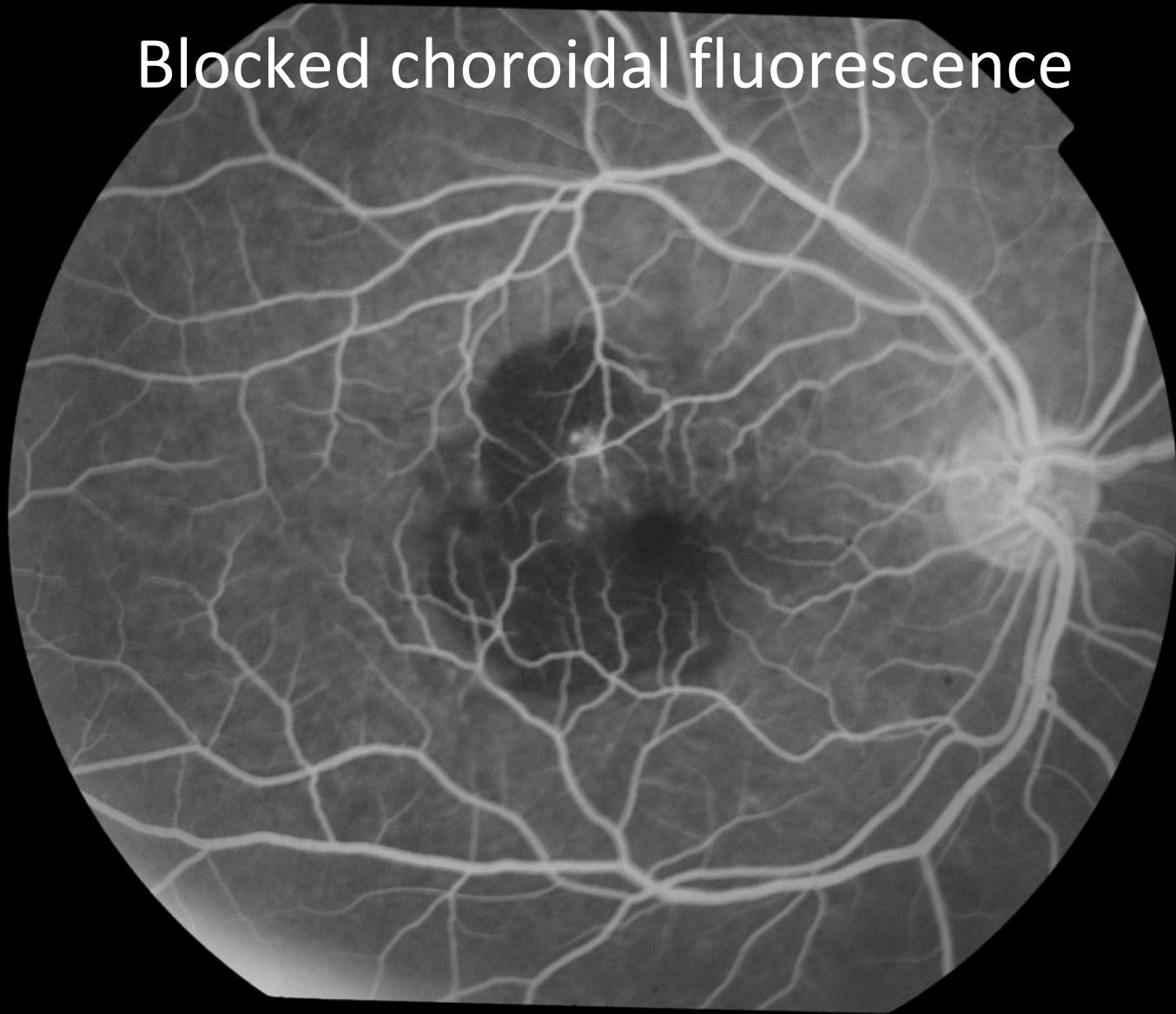
- No fluid: no activity, can observe



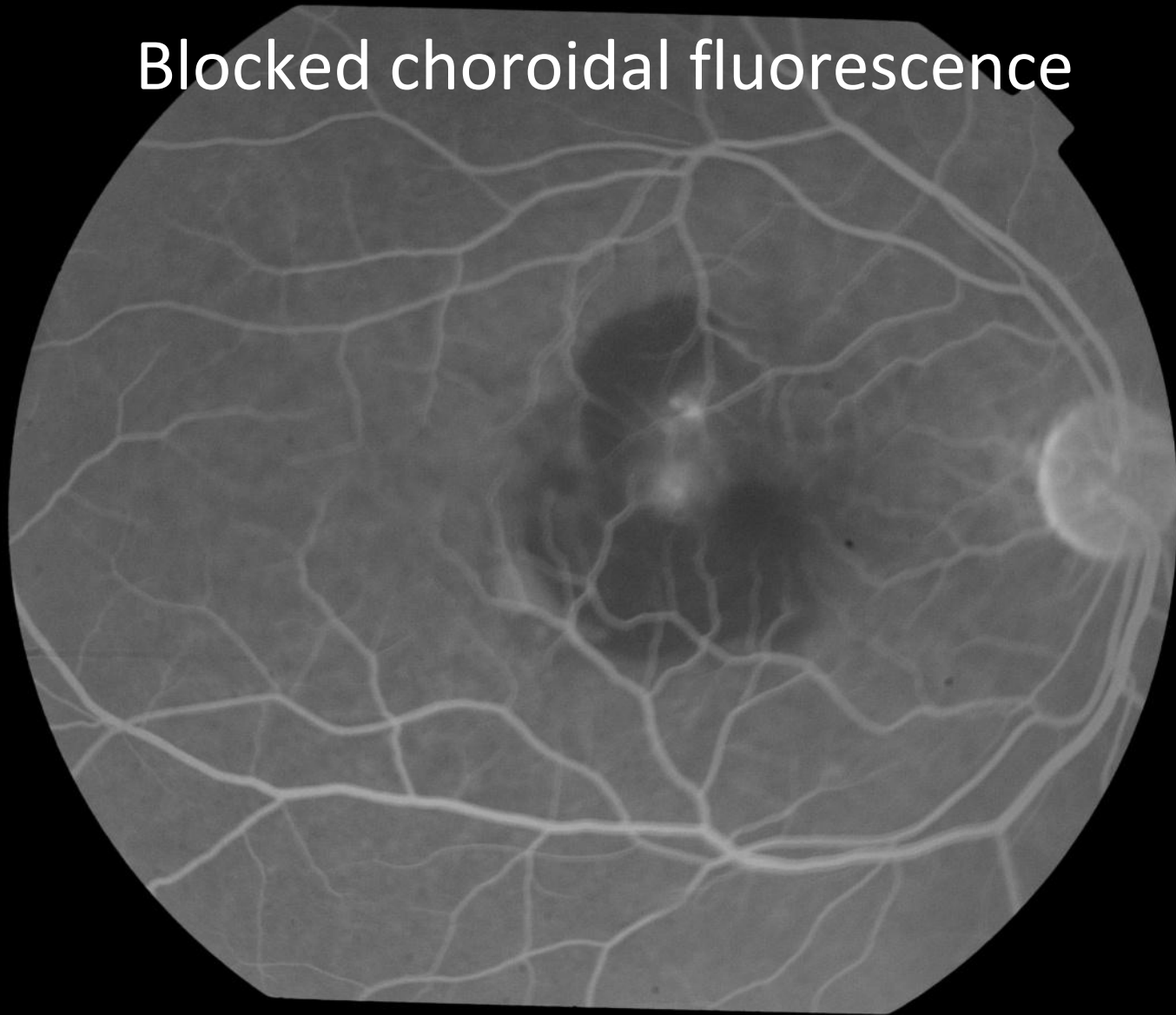
Haemorrhagic lesion wet AMD



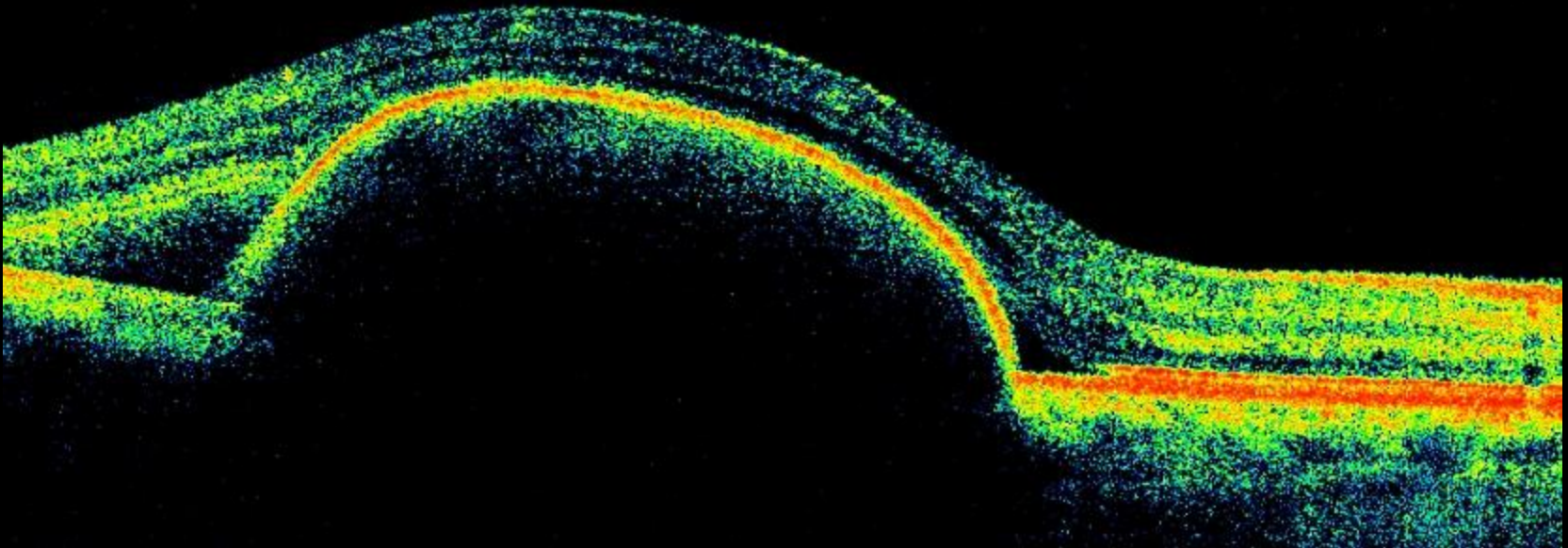
Blocked choroidal fluorescence



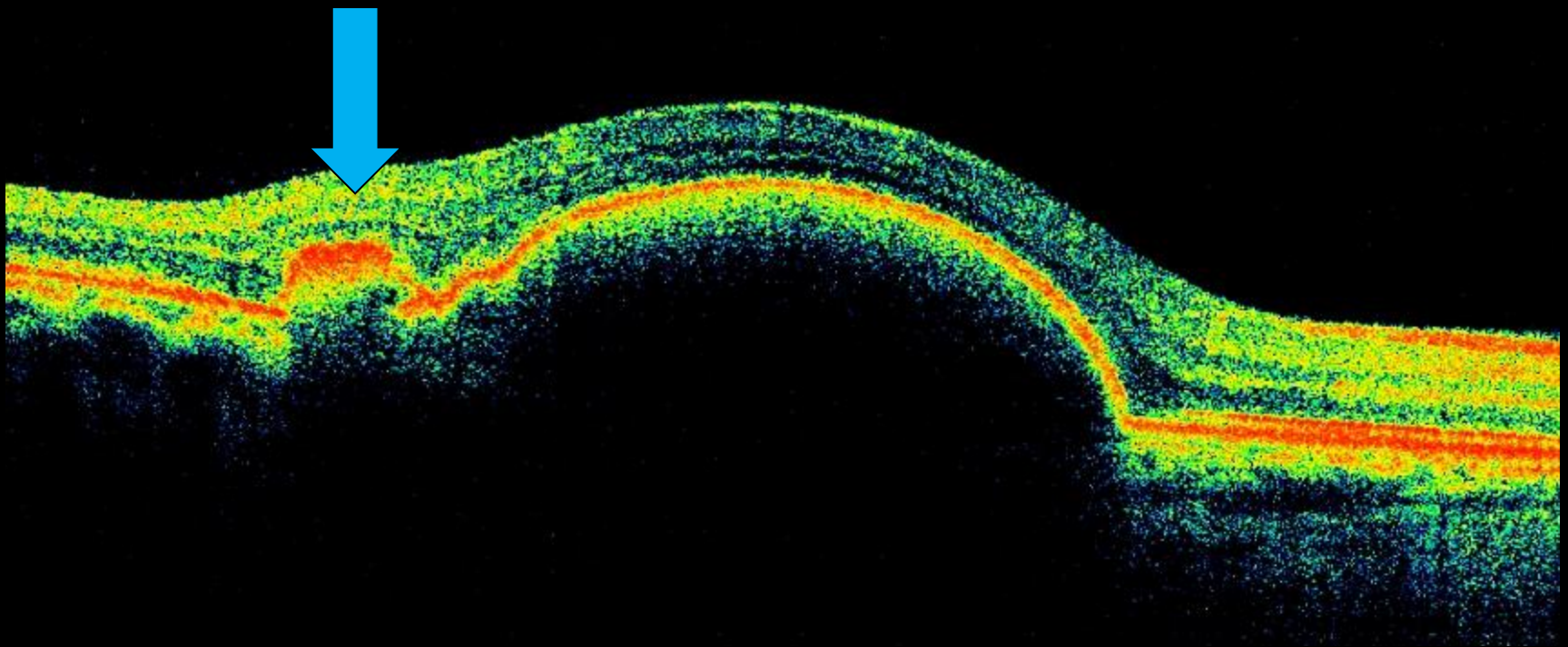
Blocked choroidal fluorescence



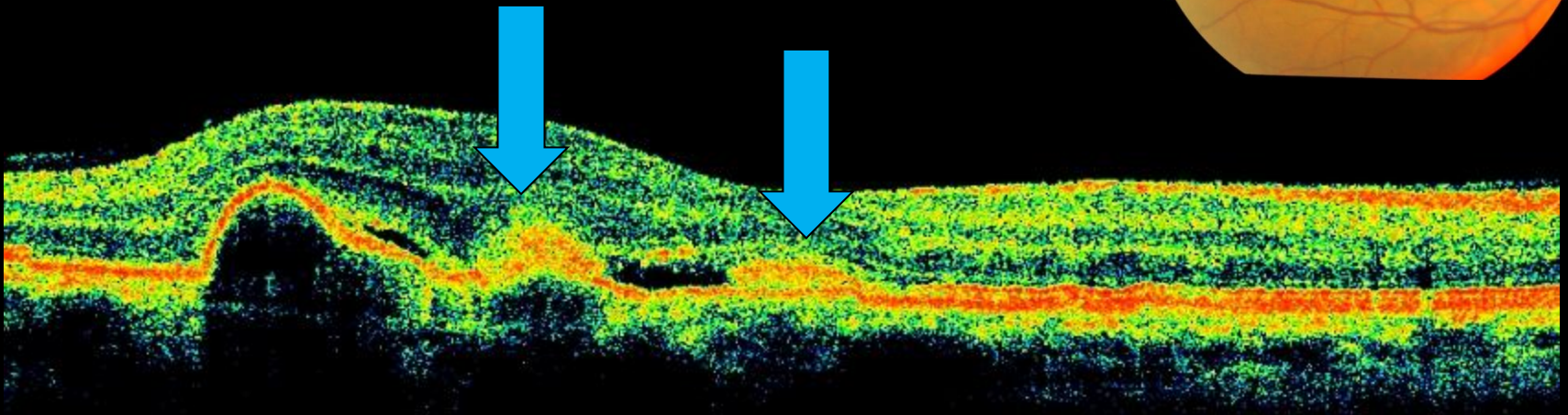
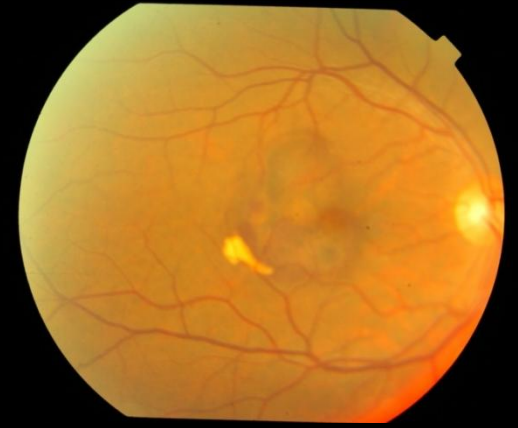
- Sensory retinal detachment
- All outer retinal layers compressed over lesion



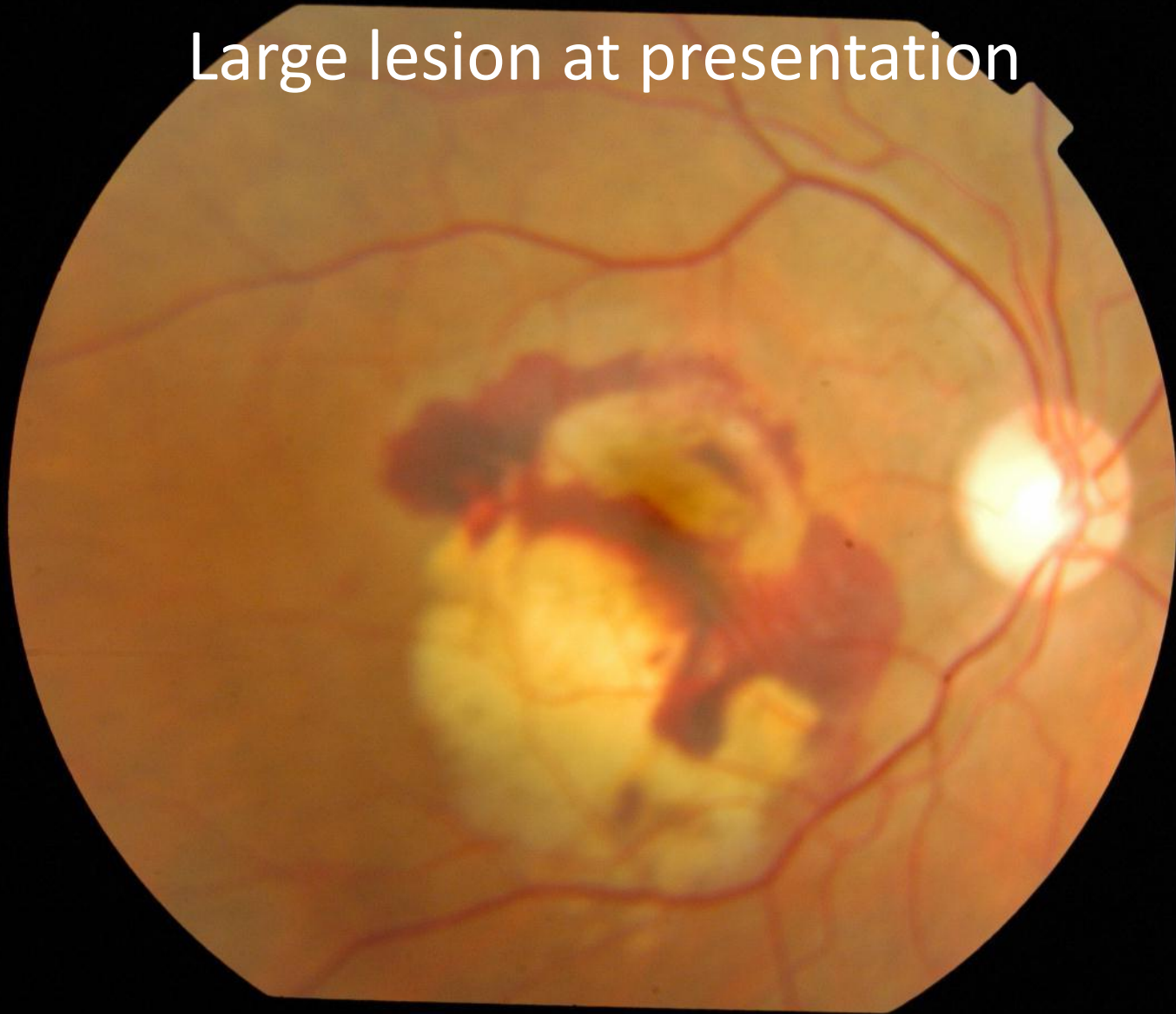
2 weeks post anti-VEGF



4 weeks post anti-VEGF



Large lesion at presentation

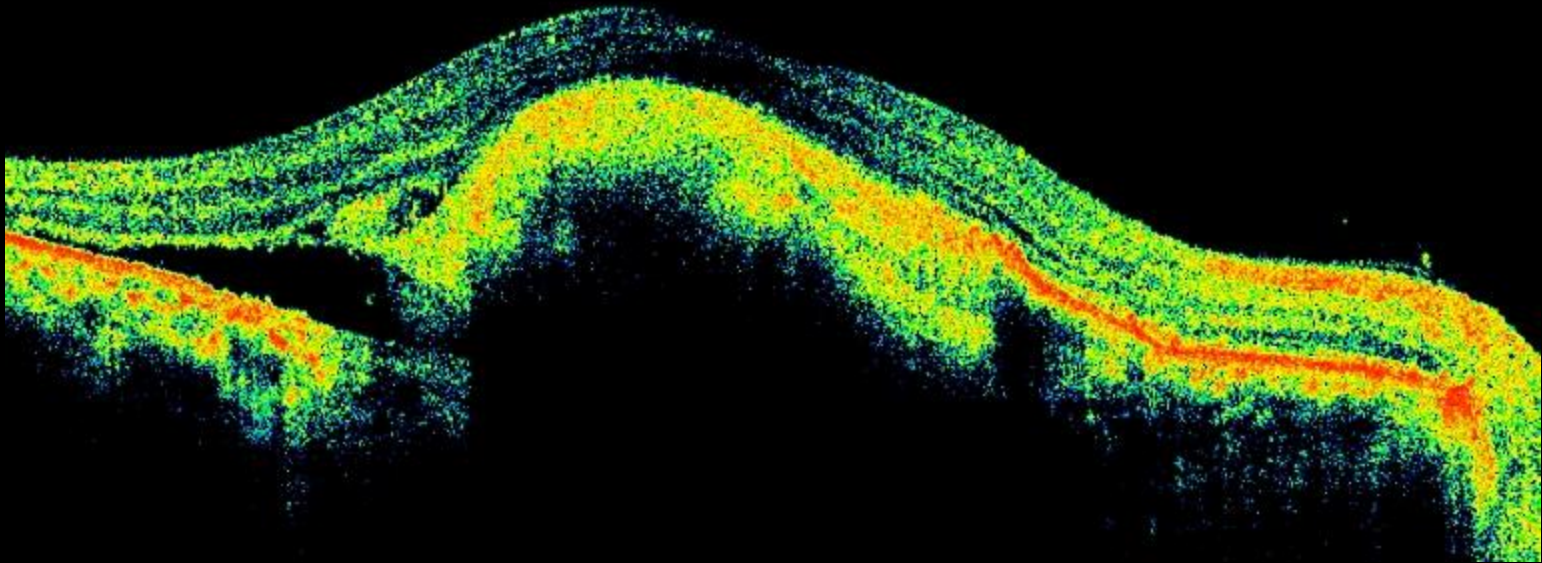






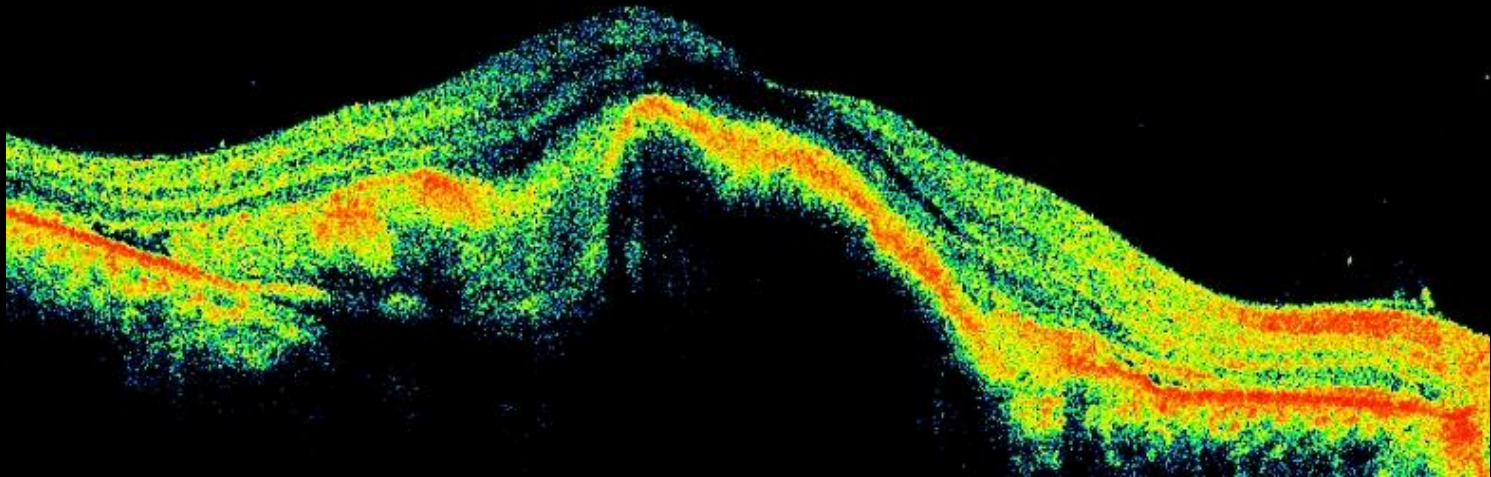
OCT more informative than FFA would be

- Large RPED
- Subretinal fluid
- Large scar



OCT more informative than FFA would be

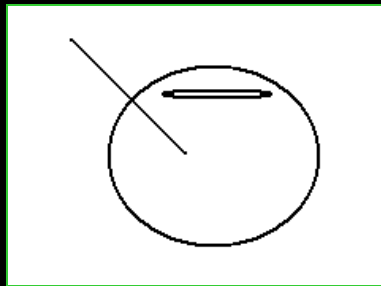
- Resolution of fluid on treatment



Anti-VEGF therapy

Therapy of first choice

- Ranibizumab (Lucentis): 0.3 /0.5 mg
- Bevacizumab (Avastin): 1.25 /2.5 mg
- Aflibercept (Eylea/ VEGF Trap) 2.0 mg



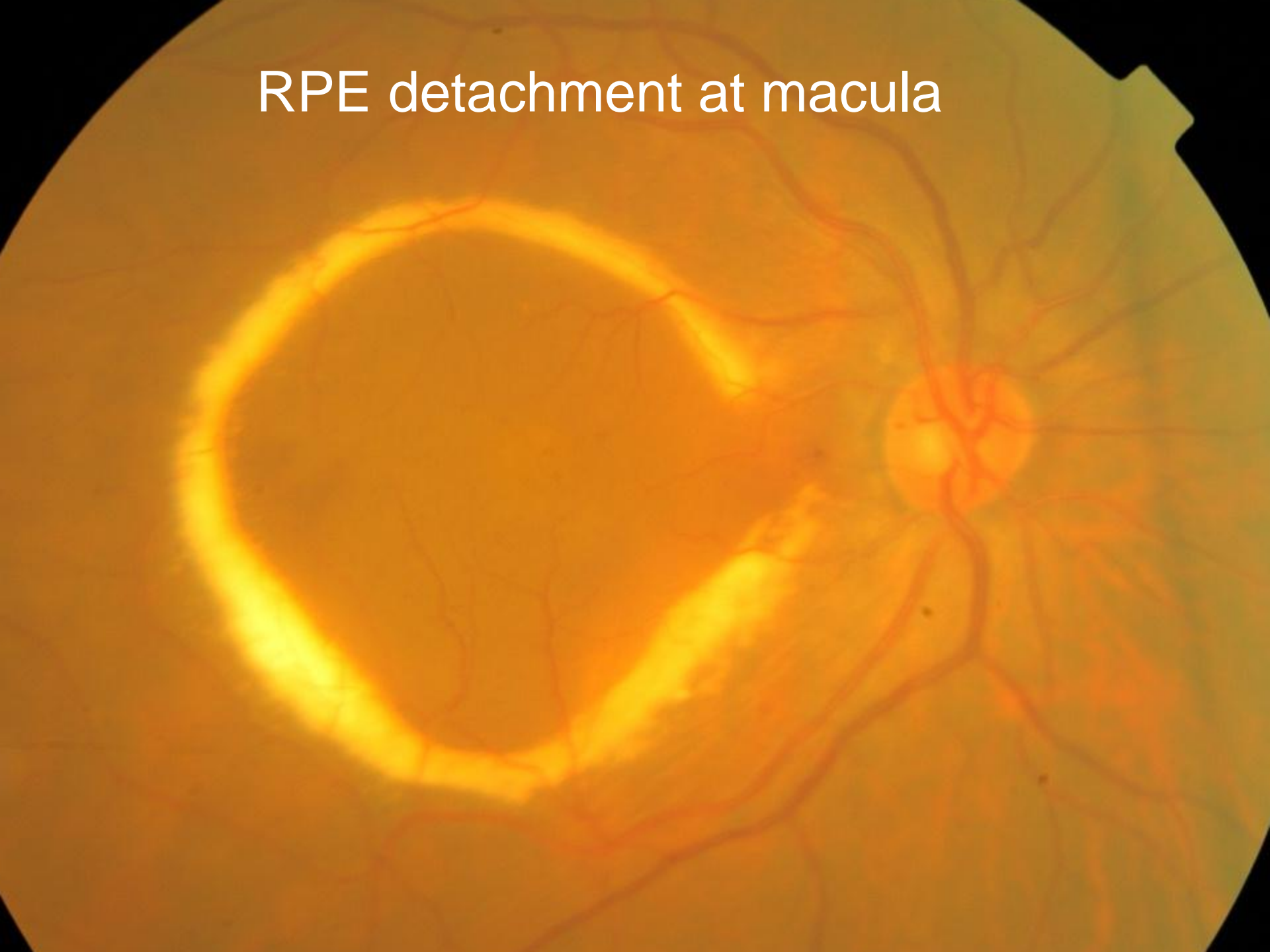
Complications of AMD Treatment Trial CATT

- Results support the use of either bevacizumab or ranibizumab for AMD
- As-needed regimen is an acceptable alternative to a monthly regimen
- Monthly evaluation necessary

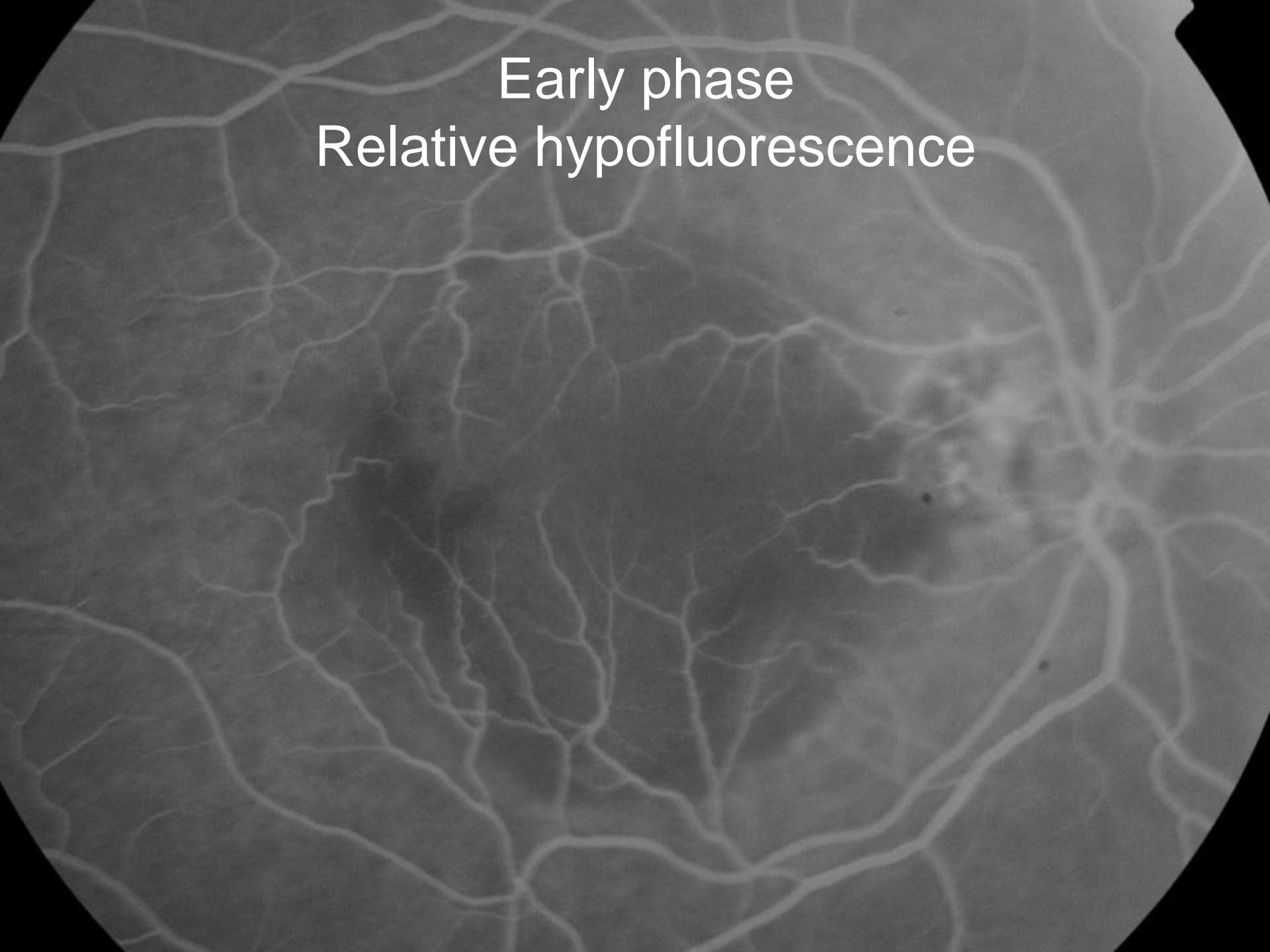
High dose Avastin

- 2.5 mg/ 0.1 ml every 2-4 weeks
- Regular dosing: 1.25 mg/ 0.05 ml every 6 weeks

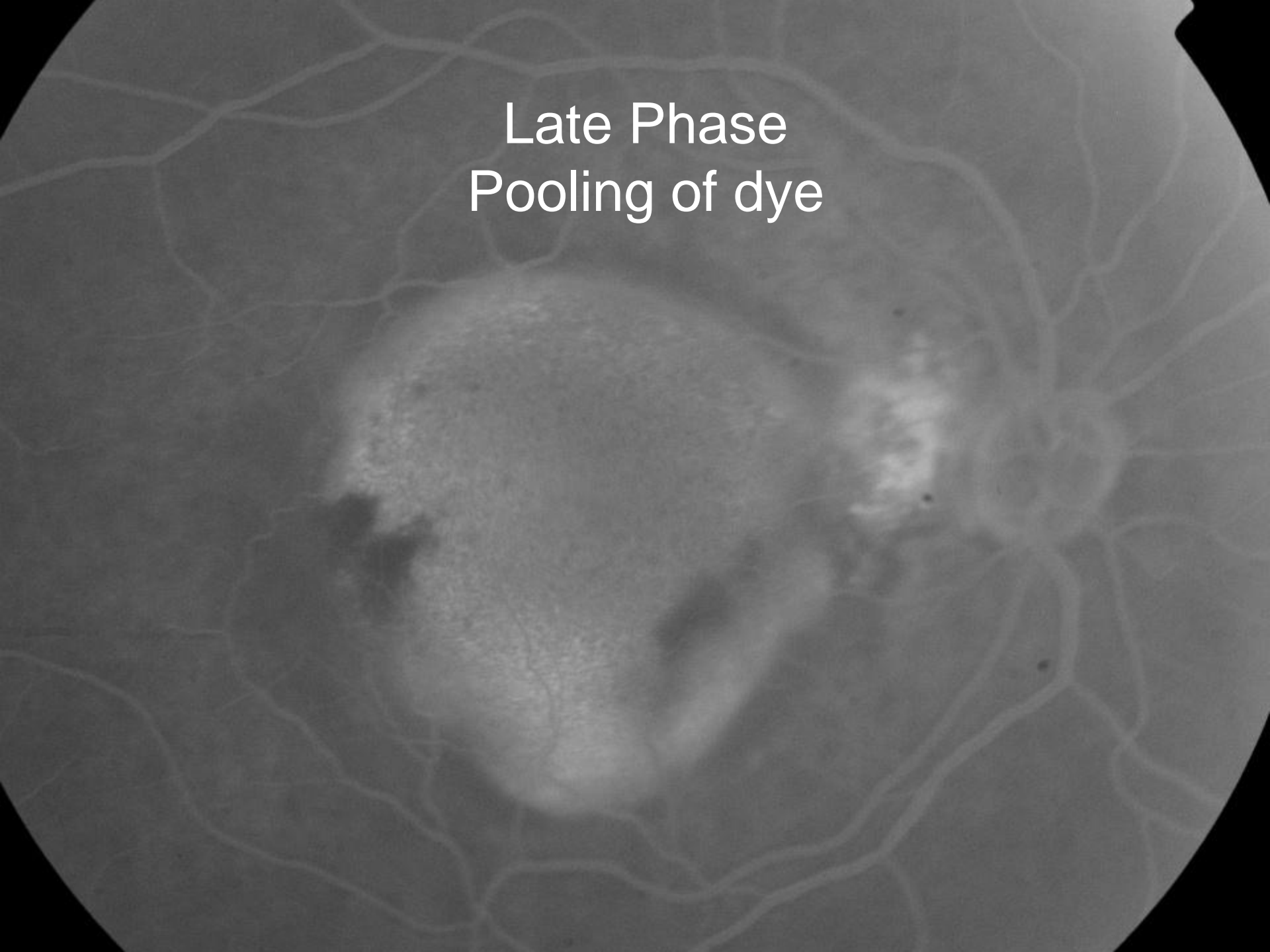
RPE detachment at macula

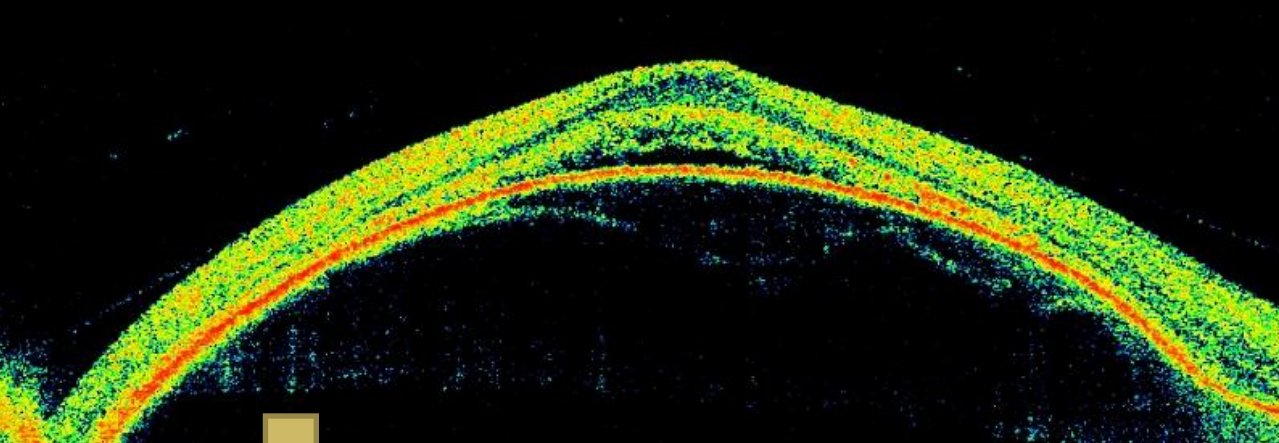


Early phase
Relative hypofluorescence

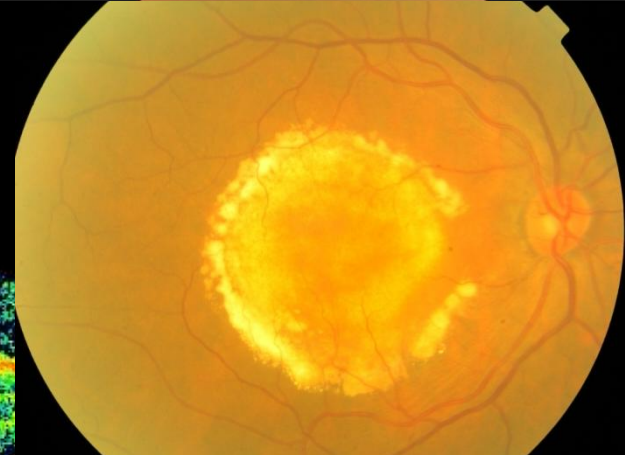
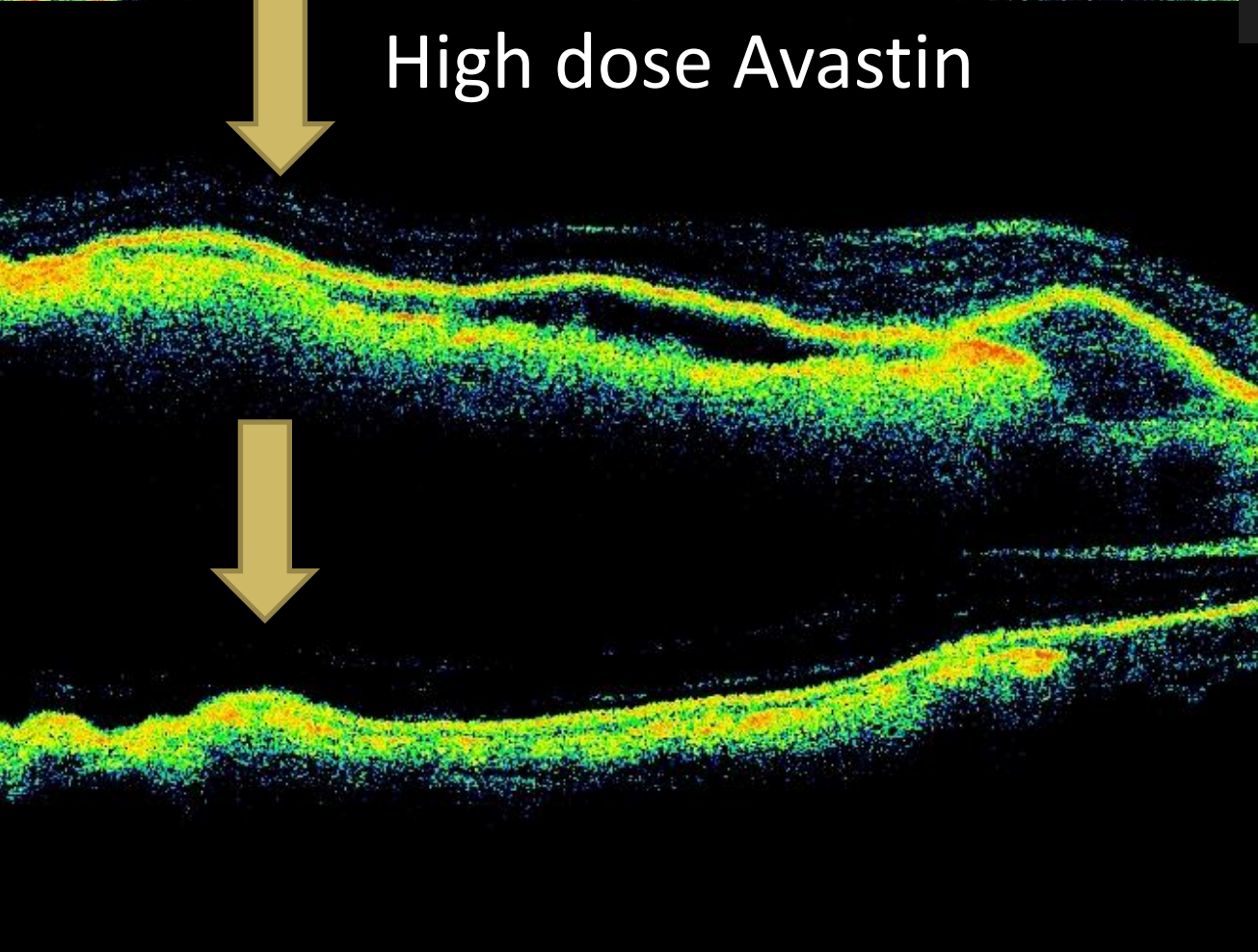


Late Phase
Pooling of dye



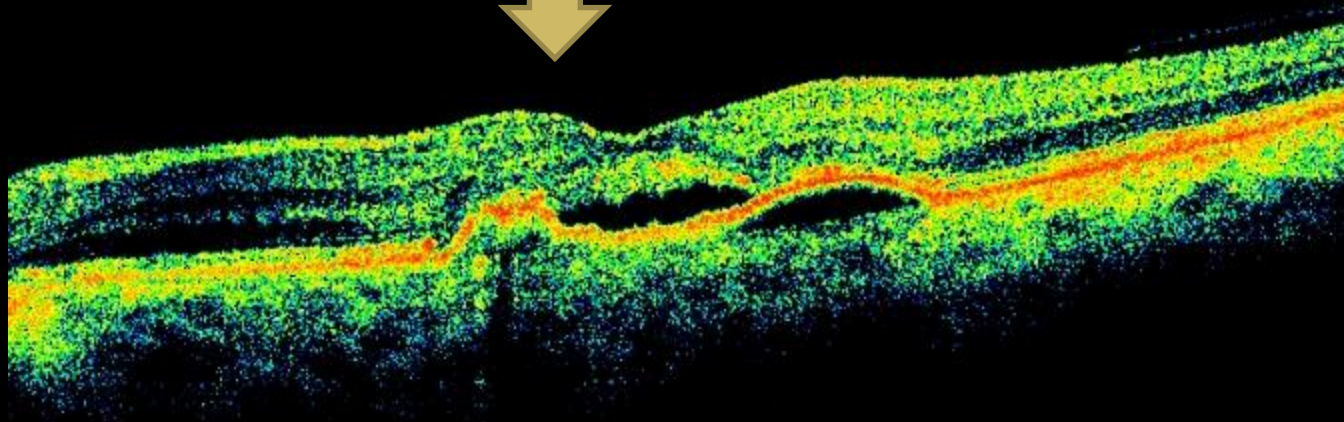
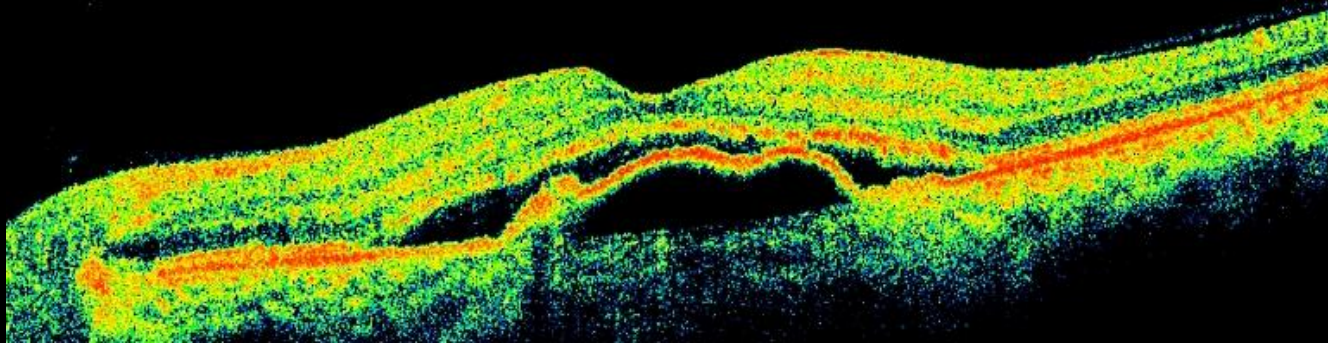


High dose Avastin

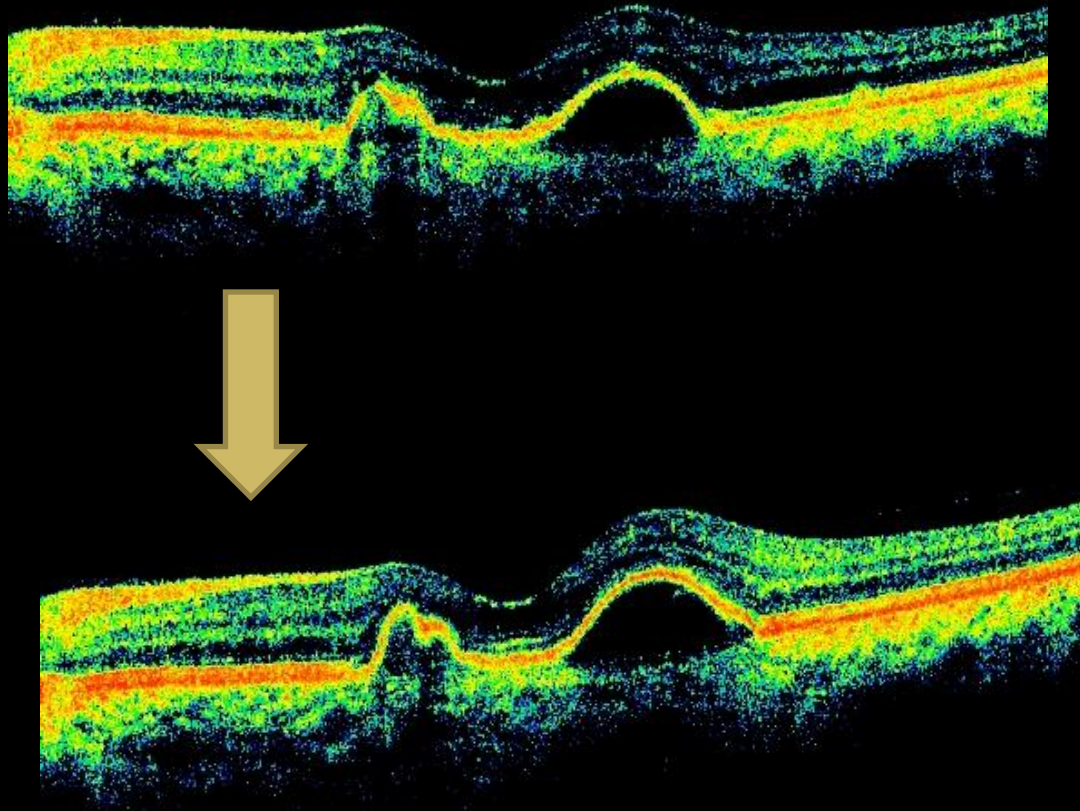


Anti-VEGF Switch

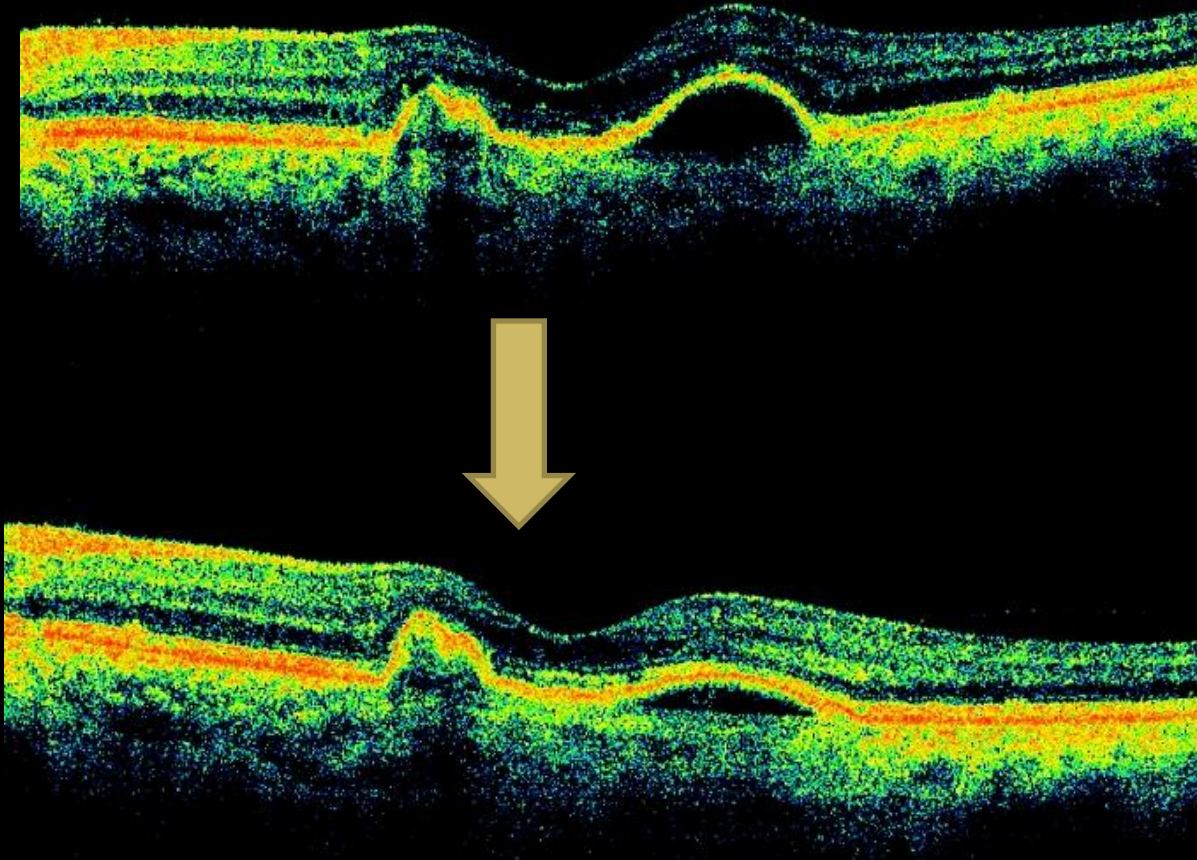
Mr Chatterjee
Within 2 months of Avastin



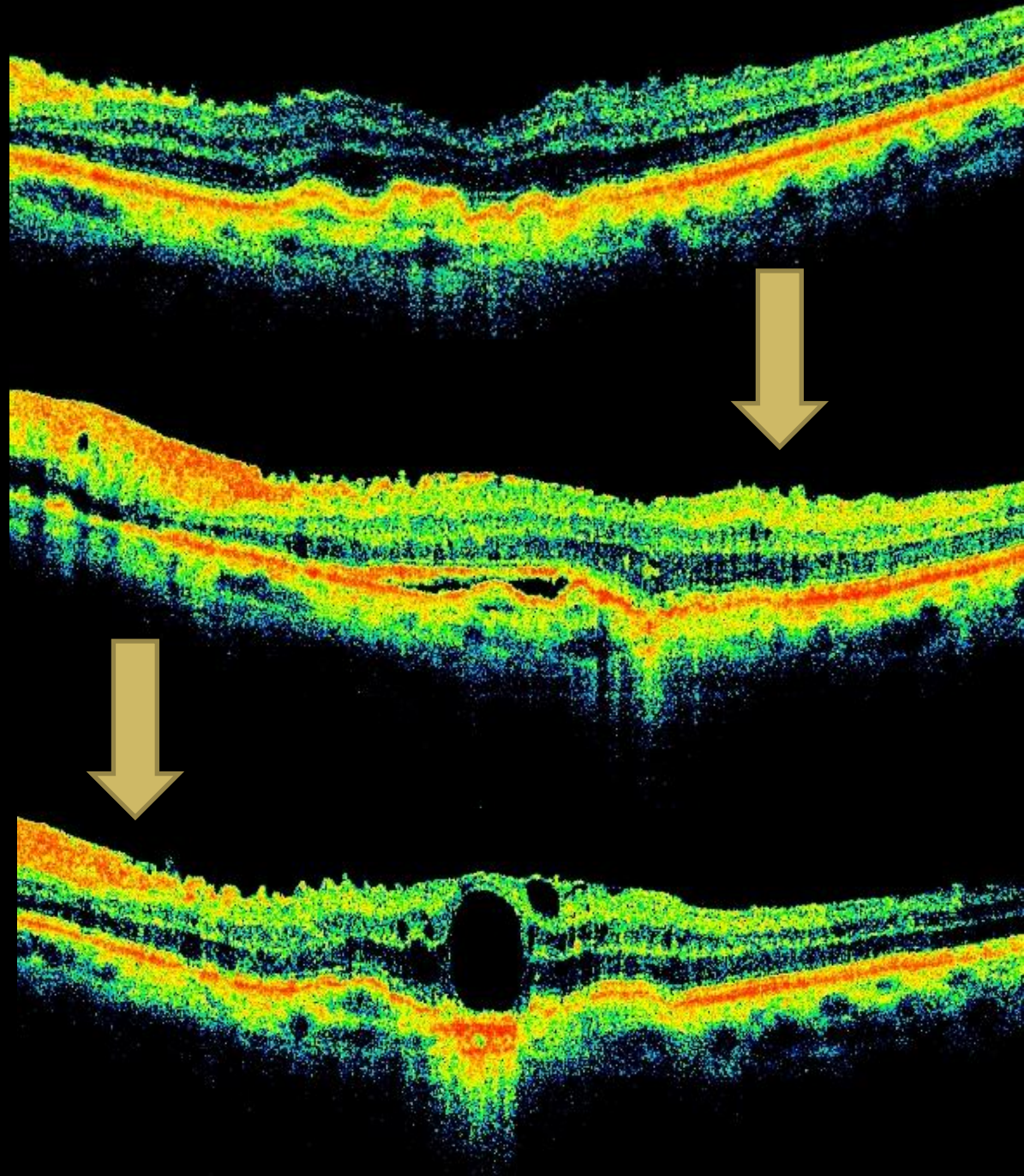
No change on High dose Avastin 1 year
Sep 2013 to Aug 2014



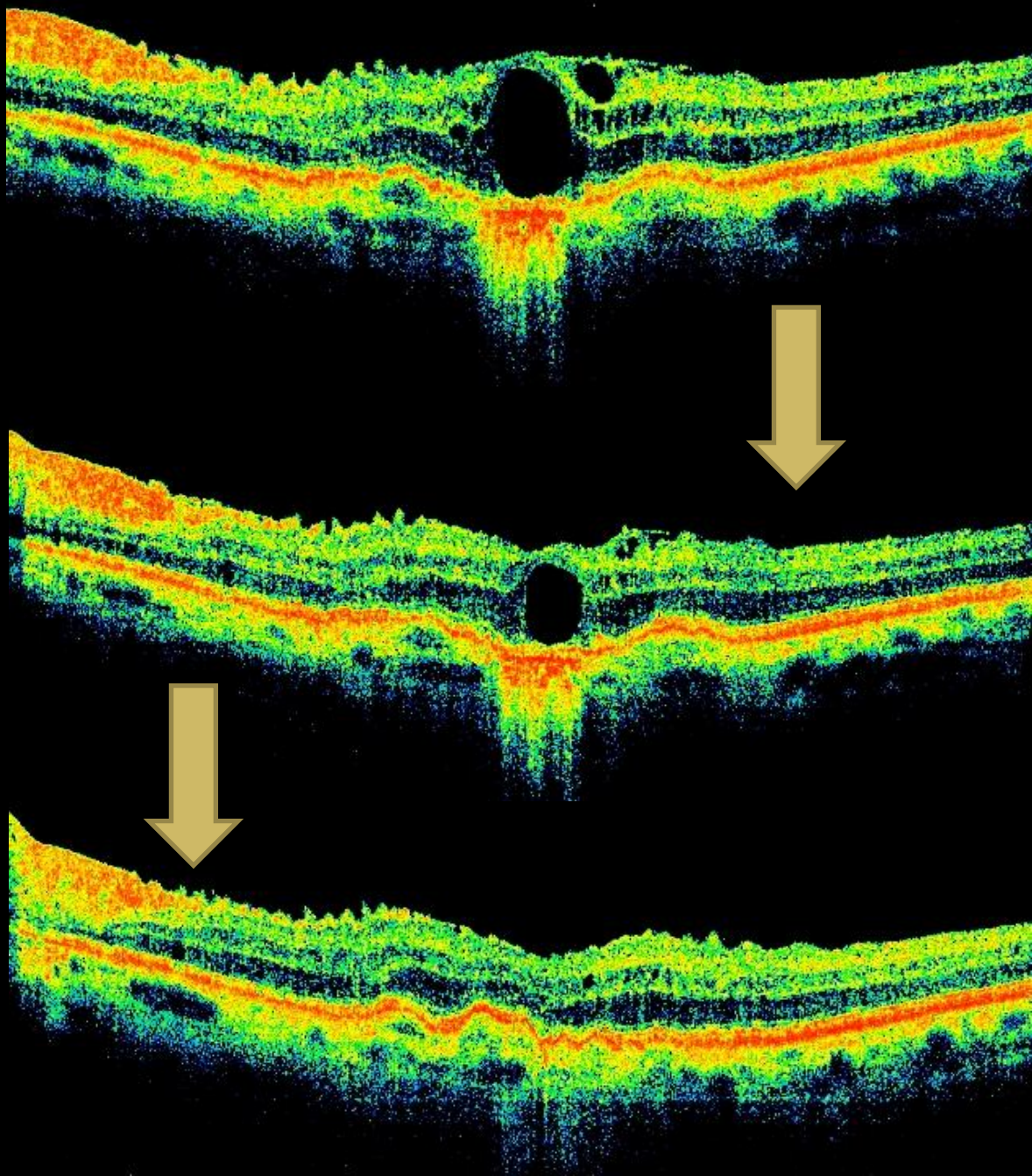
Following Lucentis Sep 4, 2014



Mr Chhatwal
Worsening on
Avastin



After 2 Lucentis



Photodynamic Therapy (PDT) with Verteporfin in AMD

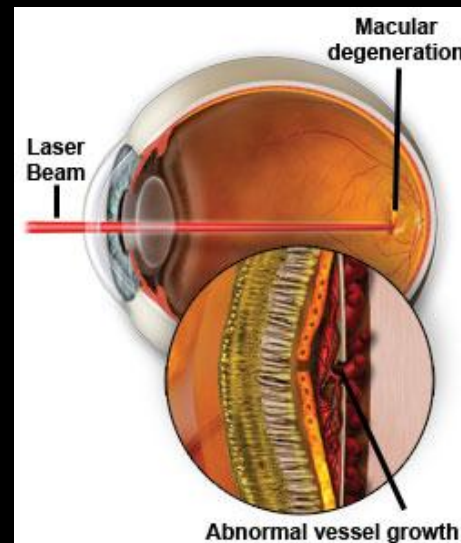
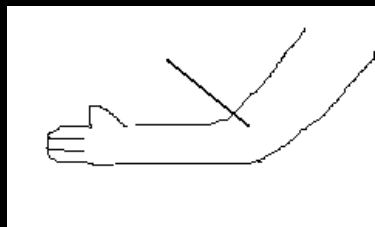
Combination Therapy

PDT + anti-VEGF therapy

- PDT addresses pre-existing CNVM
- Anti-VEGF prevents growth of new vessels

A 2-step Procedure

1. Verteporfin infusion over 10 minutes
(6 mg/m² BSA; 3 ml / minute)
2. Red Light 689 nm, 50 J/cm² light, 600 mW/cm²
for 83 seconds at 15 minutes



Indications for PDT in Macular Lesions

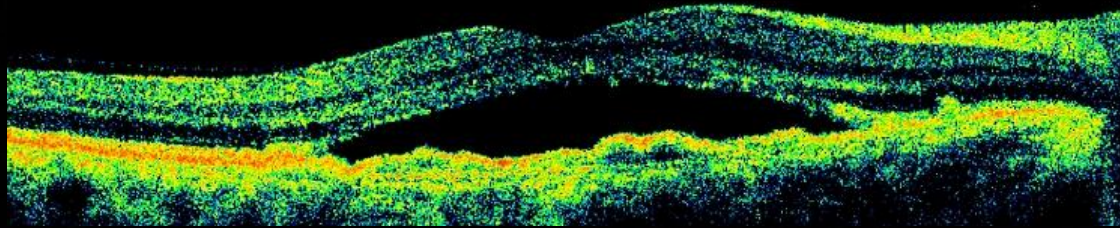
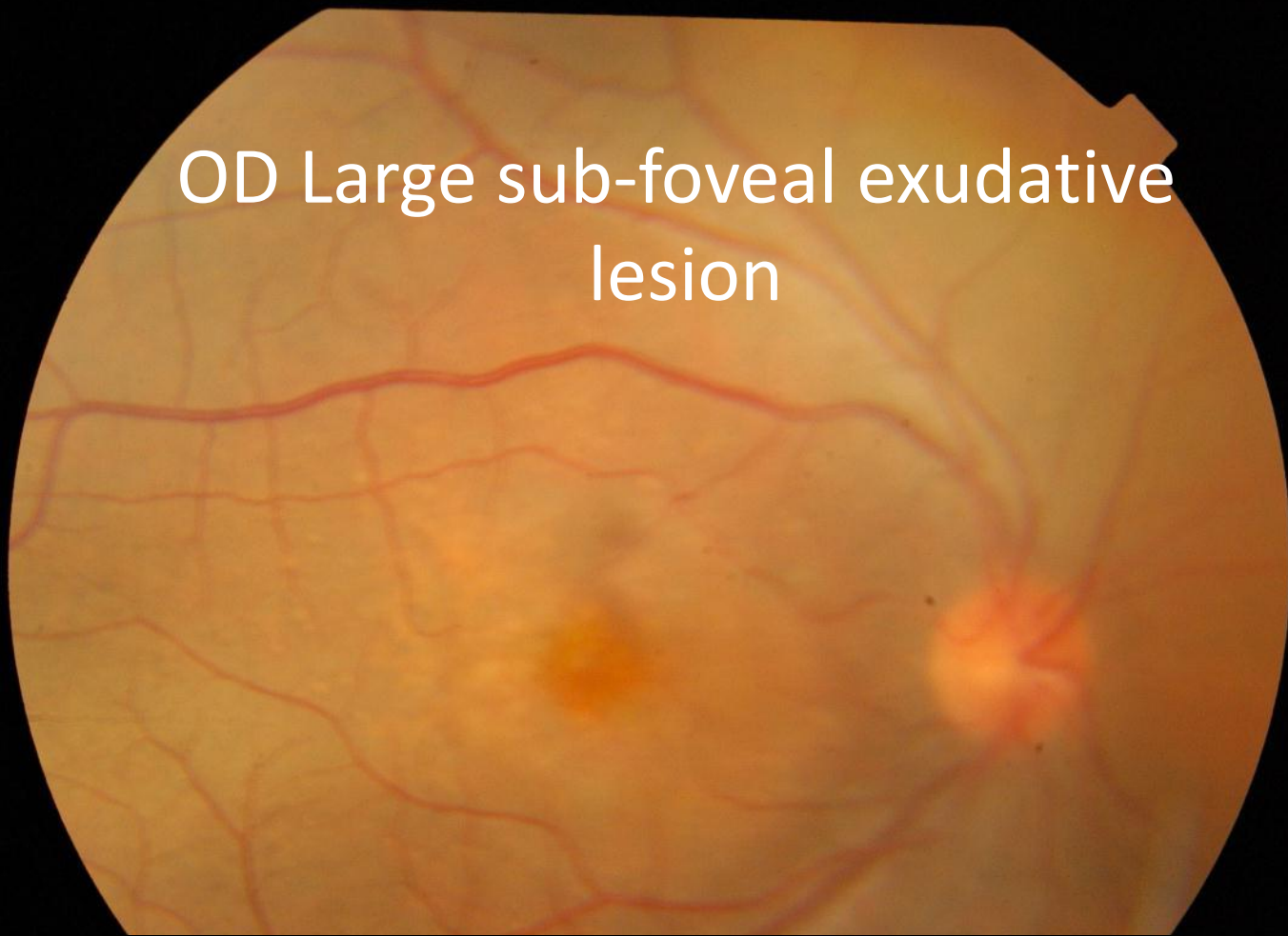
- CNVM non responding to anti-VEGF monotherapy
- RAP lesions
- PCV
- CSCR

Case 1. Presentation

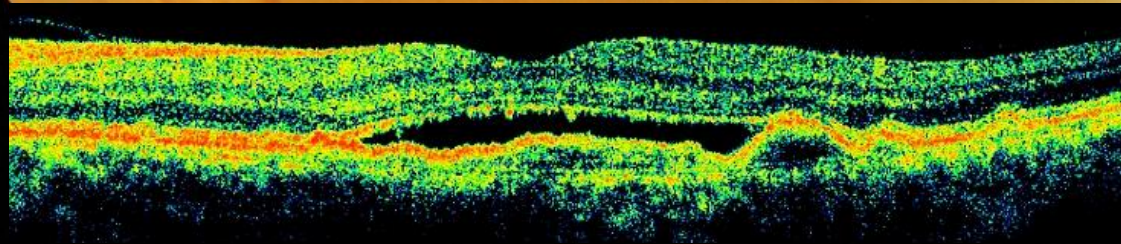
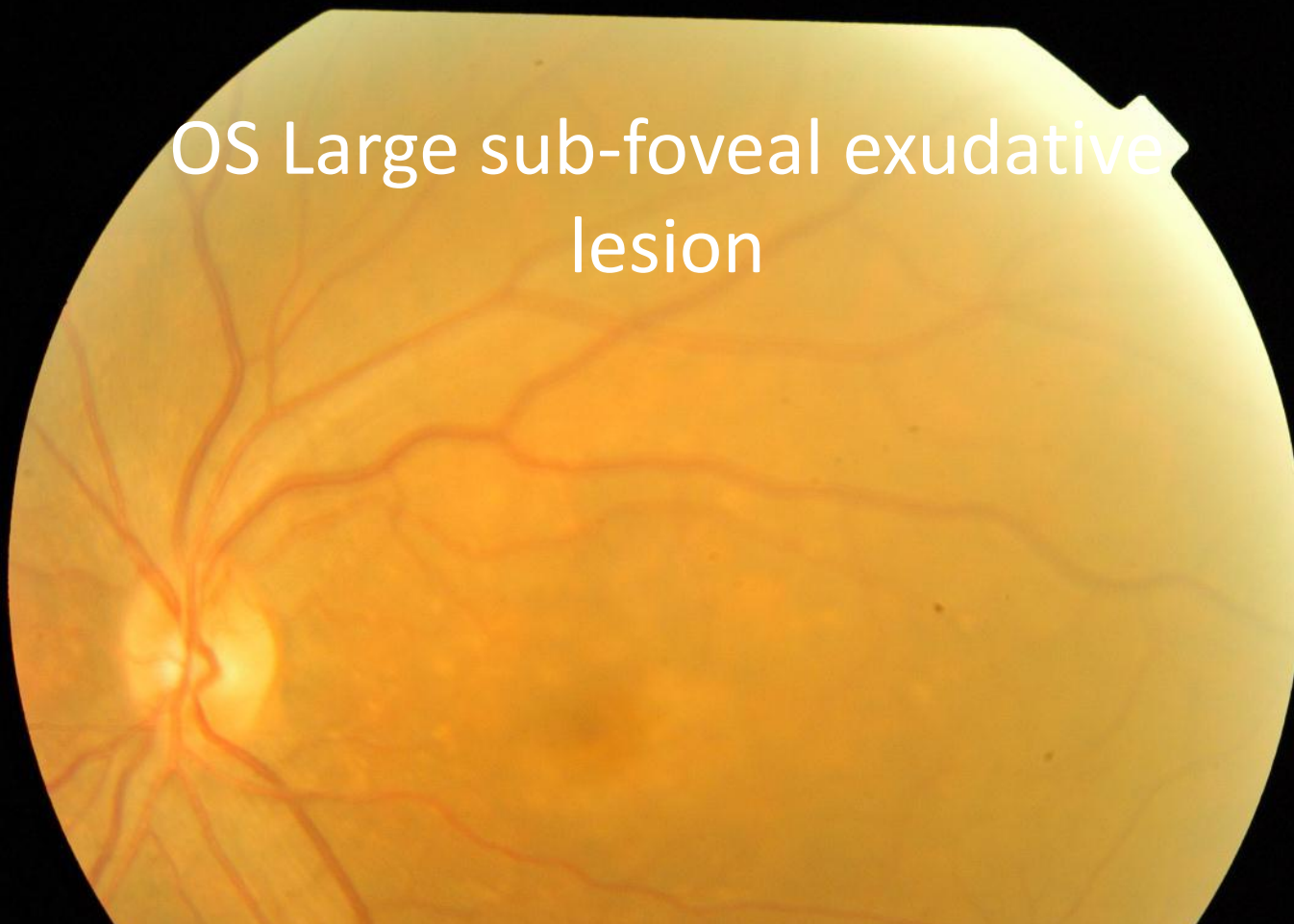
July 4, 2012

- 61 year old male
- c/o bilateral vision drop for several months
- Visual acuity was OD 20/100
OS 20/40

OD Large sub-foveal exudative
lesion



OS Large sub-foveal exudative lesion

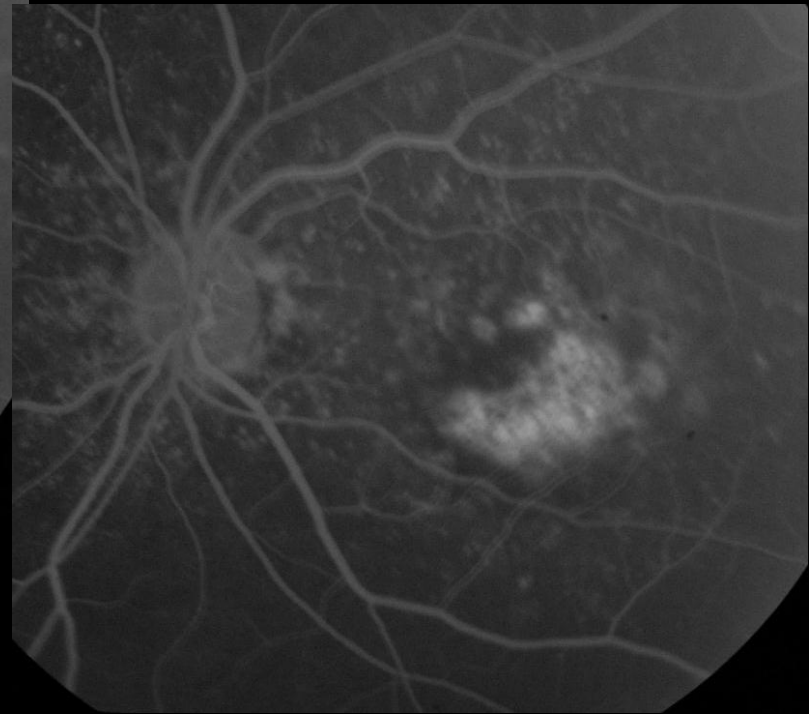
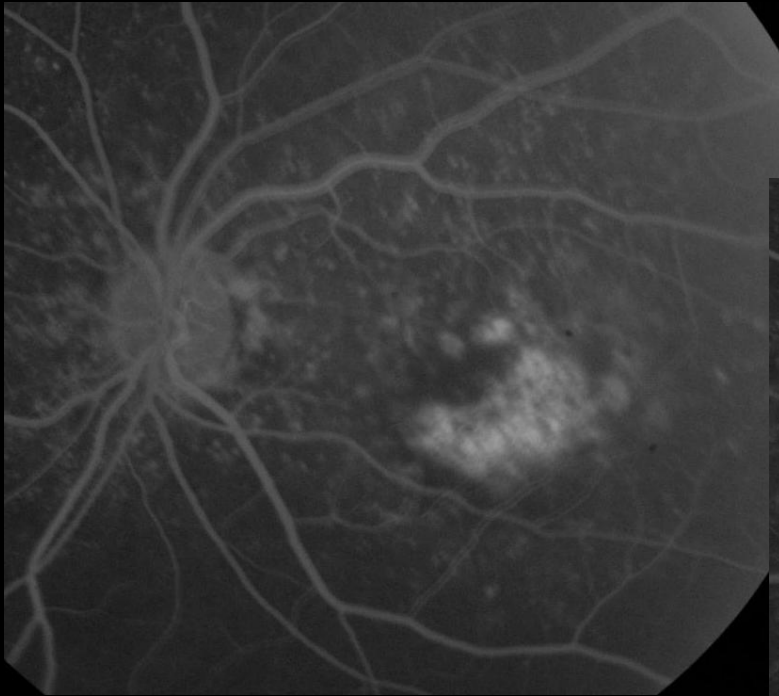


Fluorescein angiogram

OD Large classic CNVM

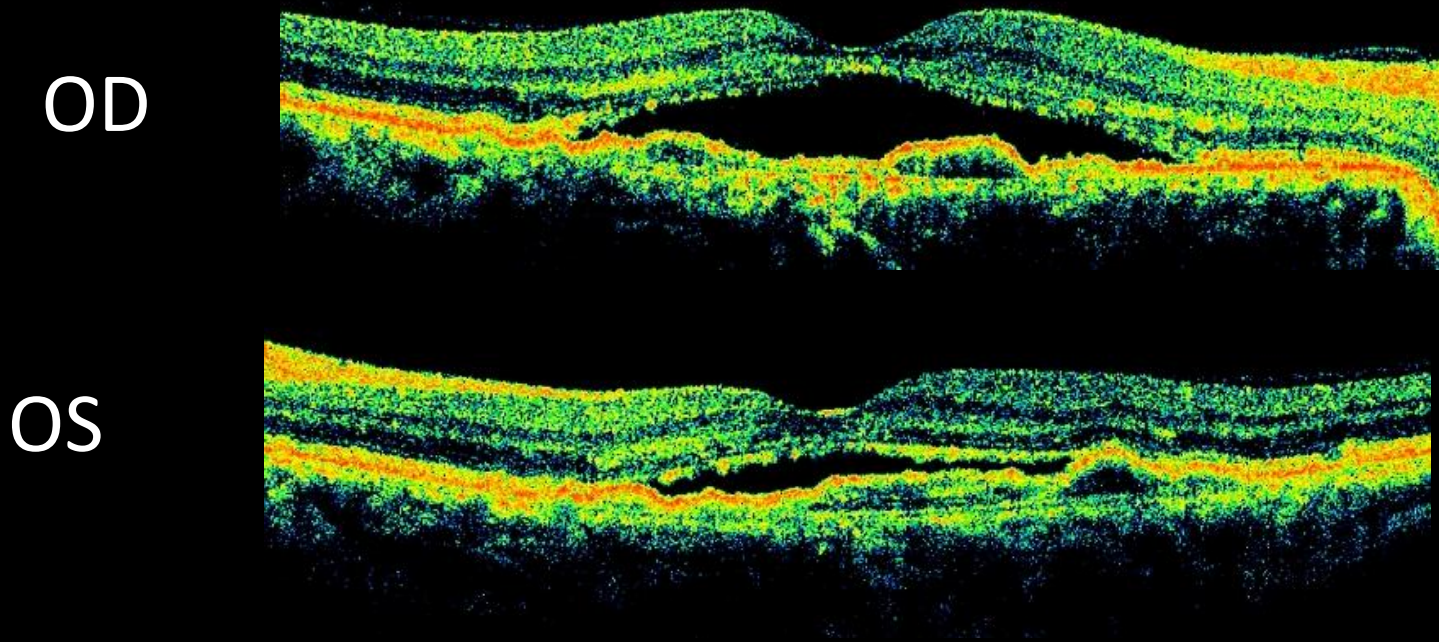


OS Large classic CNVM



Monthly Bevacizumab for 6 months

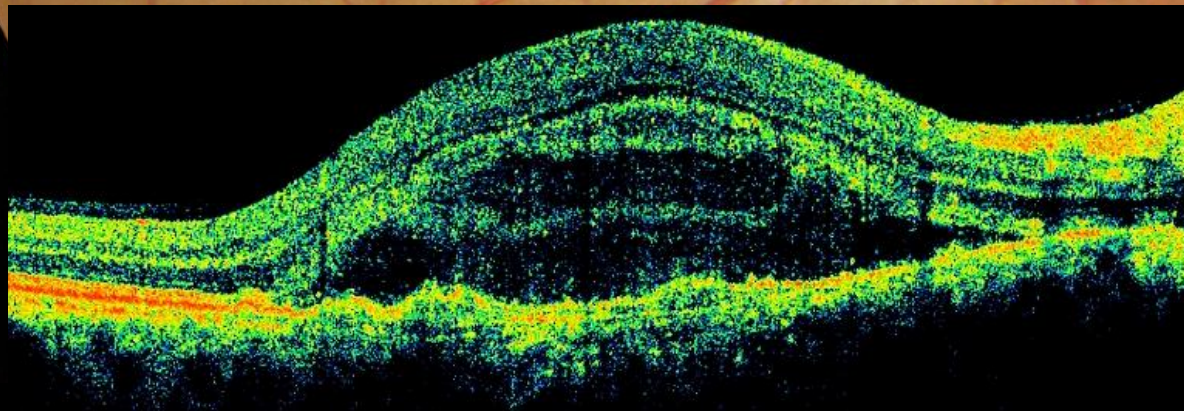
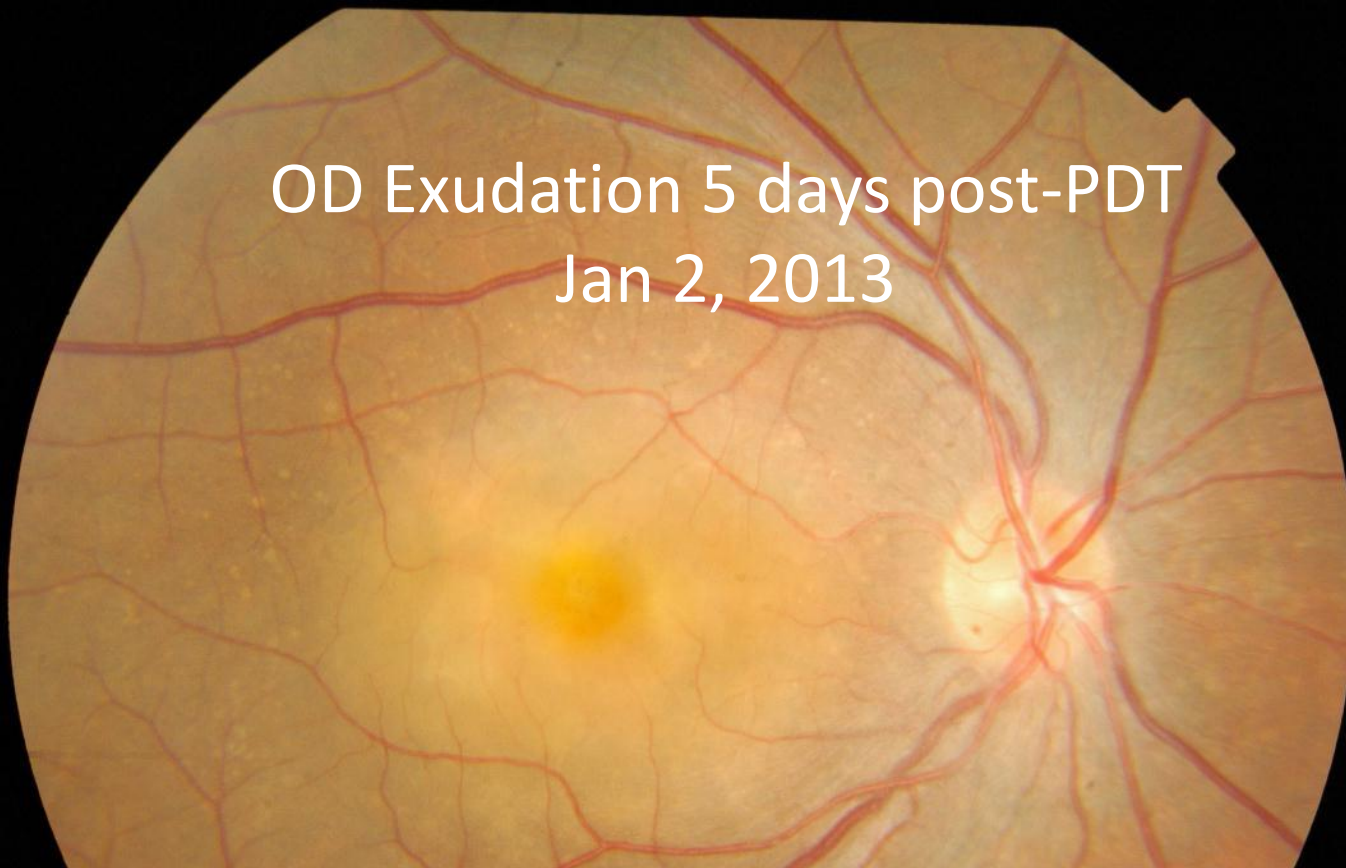
No Improvement



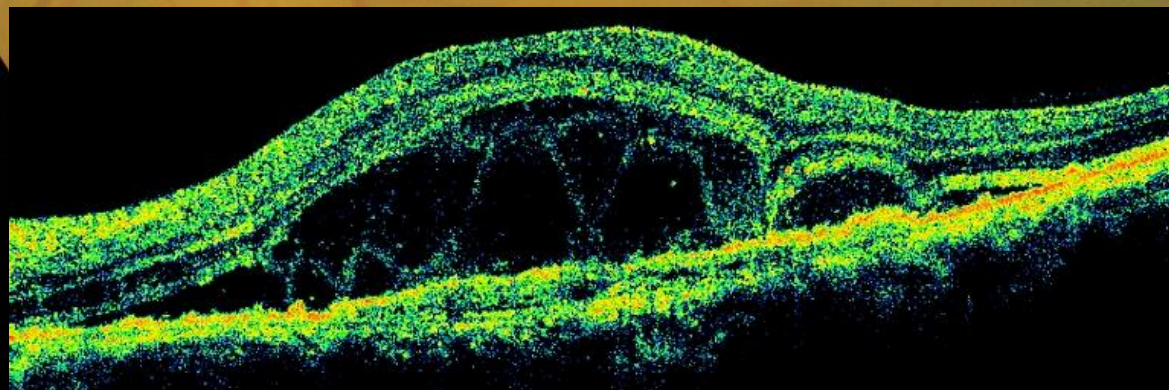
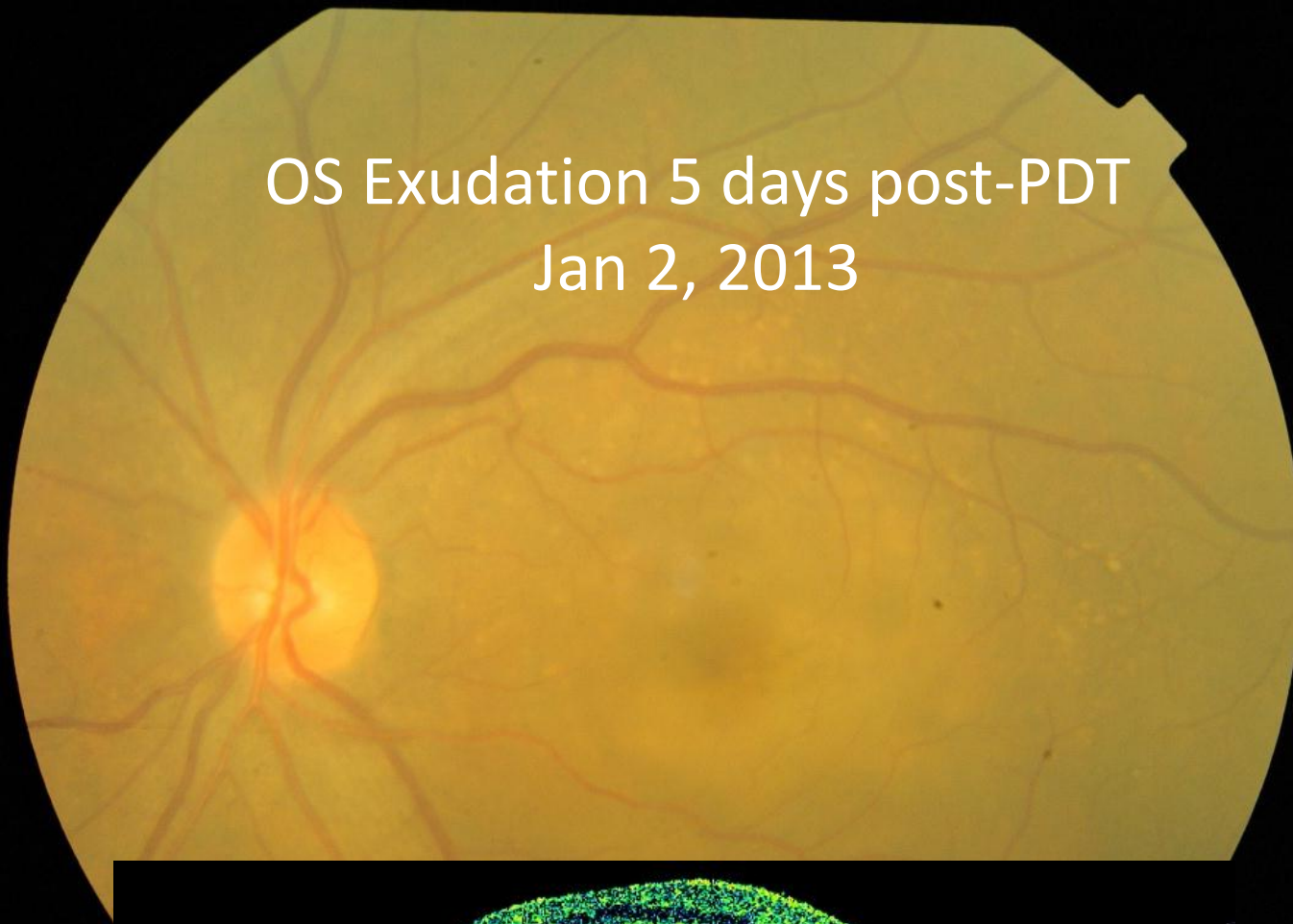
Dec 28, 2012

Bilateral Photodynamic Therapy Standard Fluence,
Spot Size 3500 μm

OD Exudation 5 days post-PDT
Jan 2, 2013

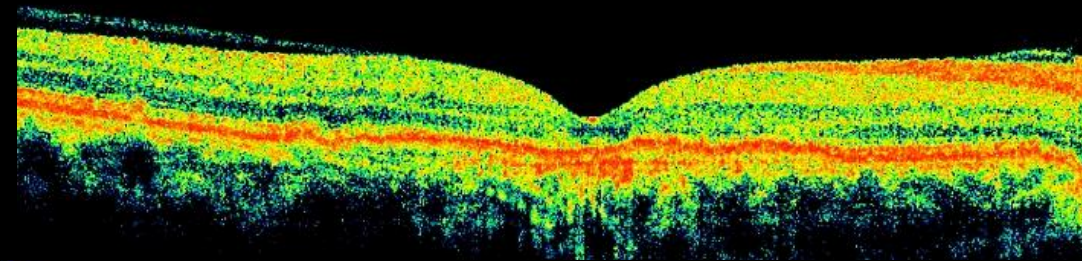


OS Exudation 5 days post-PDT
Jan 2, 2013

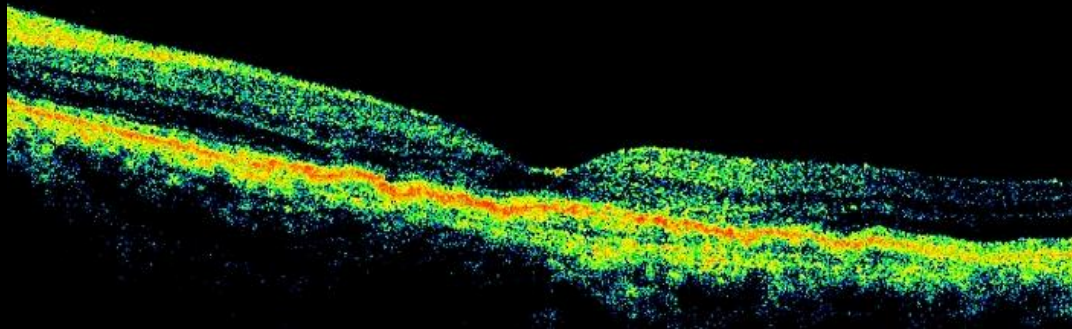


4 weeks post PDT, Feb 2013 to date
Maintained on anti-VEGF monotherapy

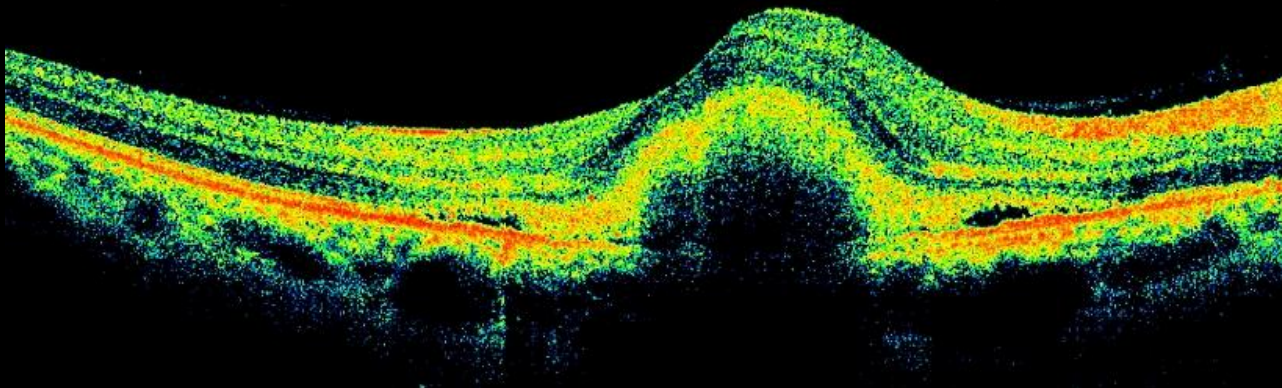
OD 20/80



OS 20/60



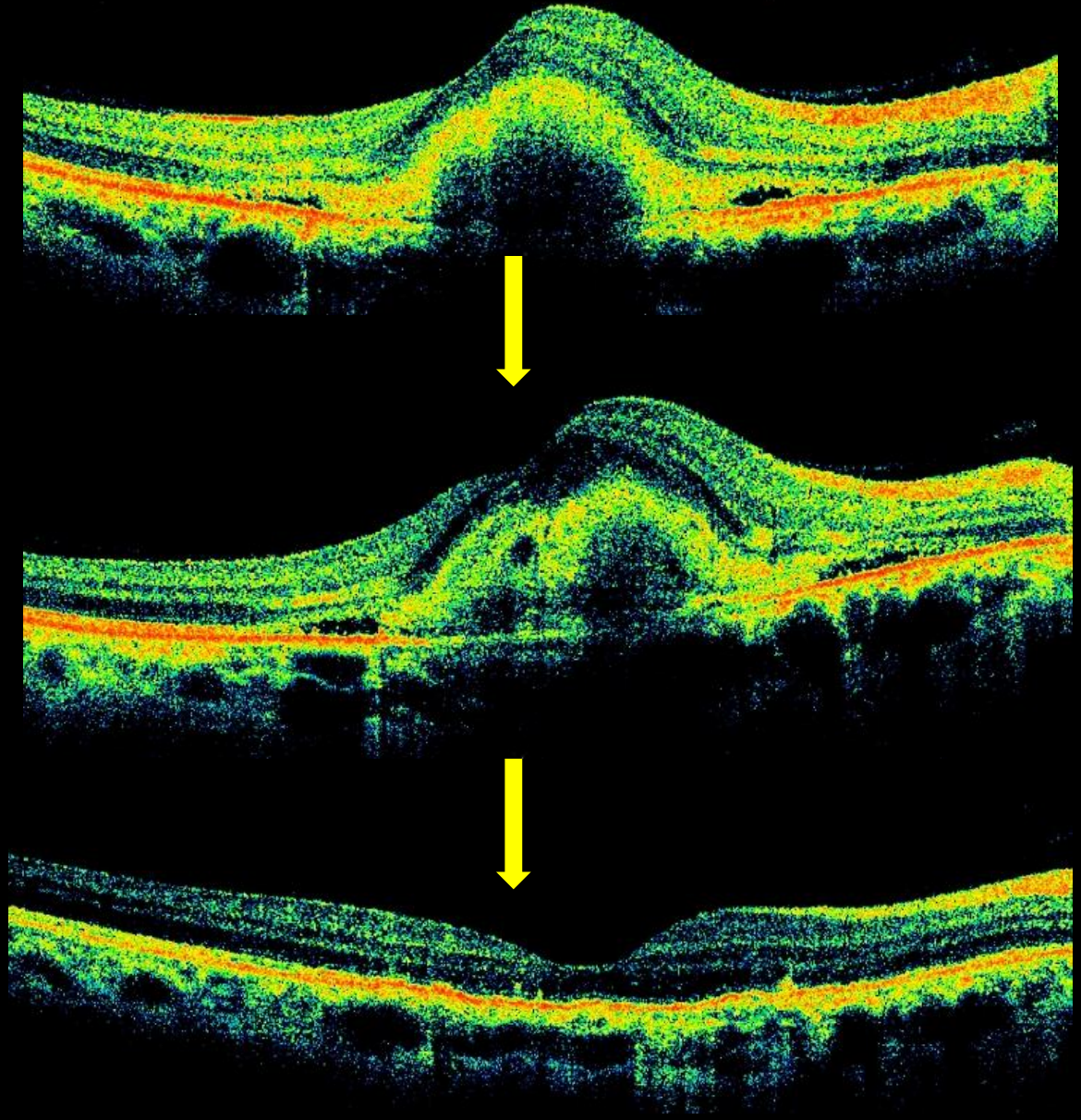
Case 2. Wet AMD, classic CNVM
Worsening on anti-VEGF therapy over 4 months



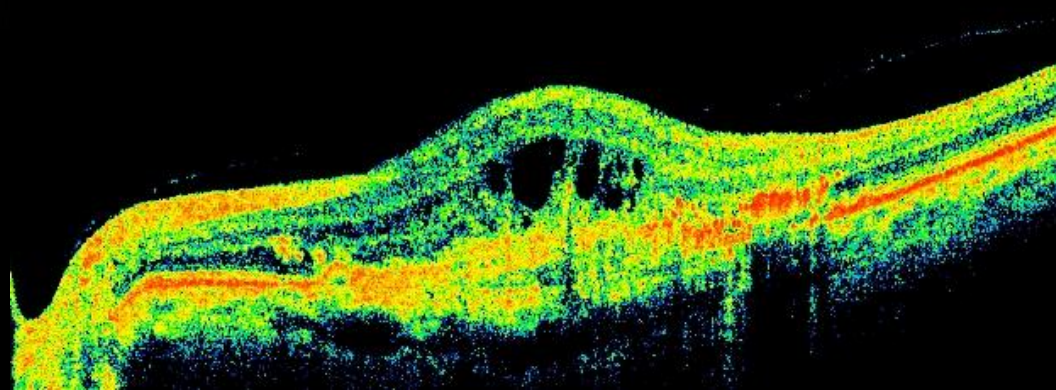
Case 2.

Increasing
fluid on
bevacizumab
over 4 months

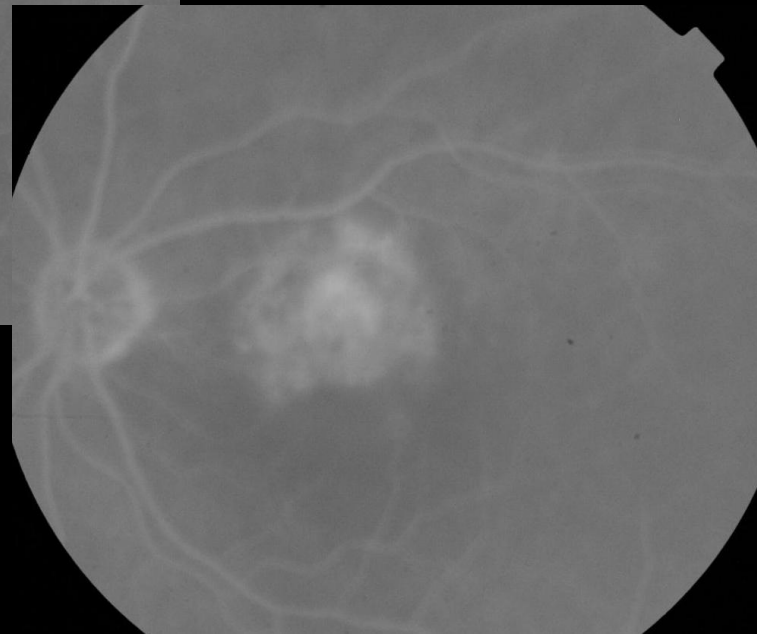
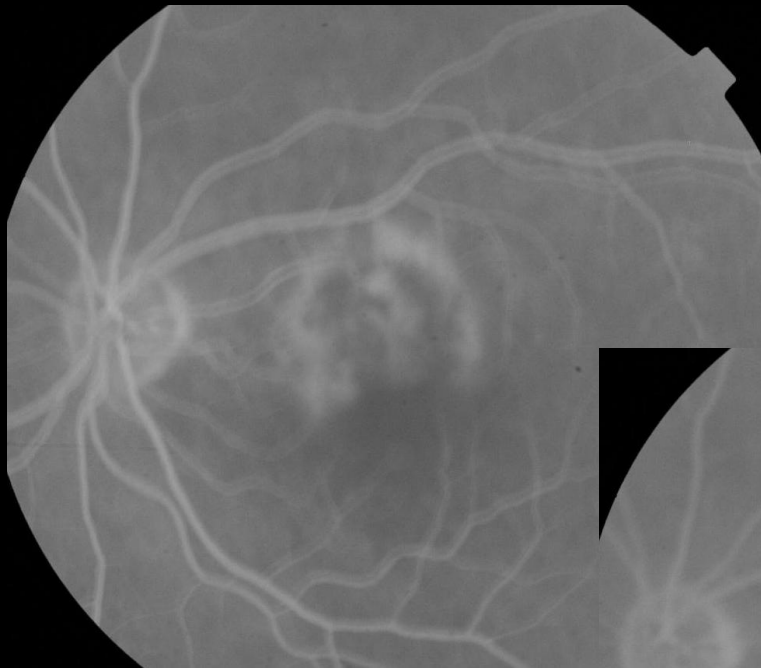
Complete
resolution
4 weeks
post-PDT



Case 3. Occult CNVM with exudates
Ms Leela Feb 2013



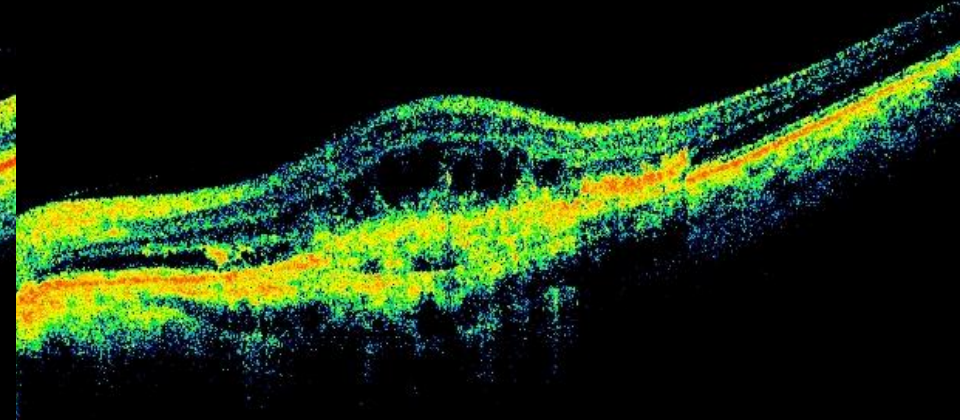
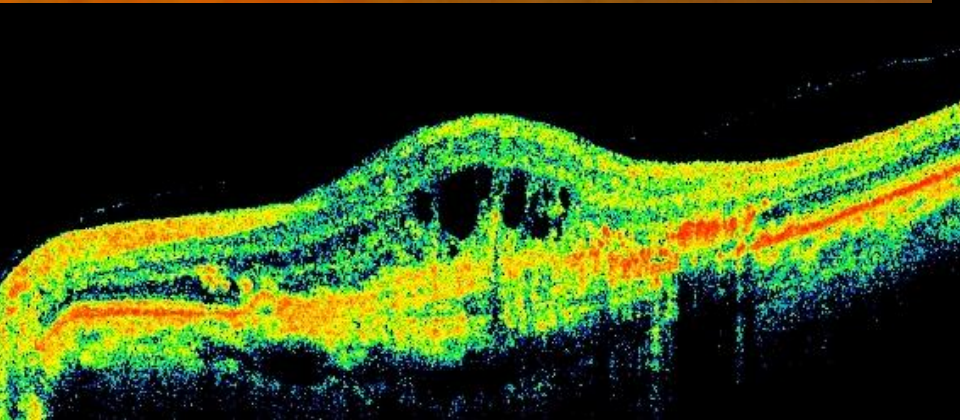
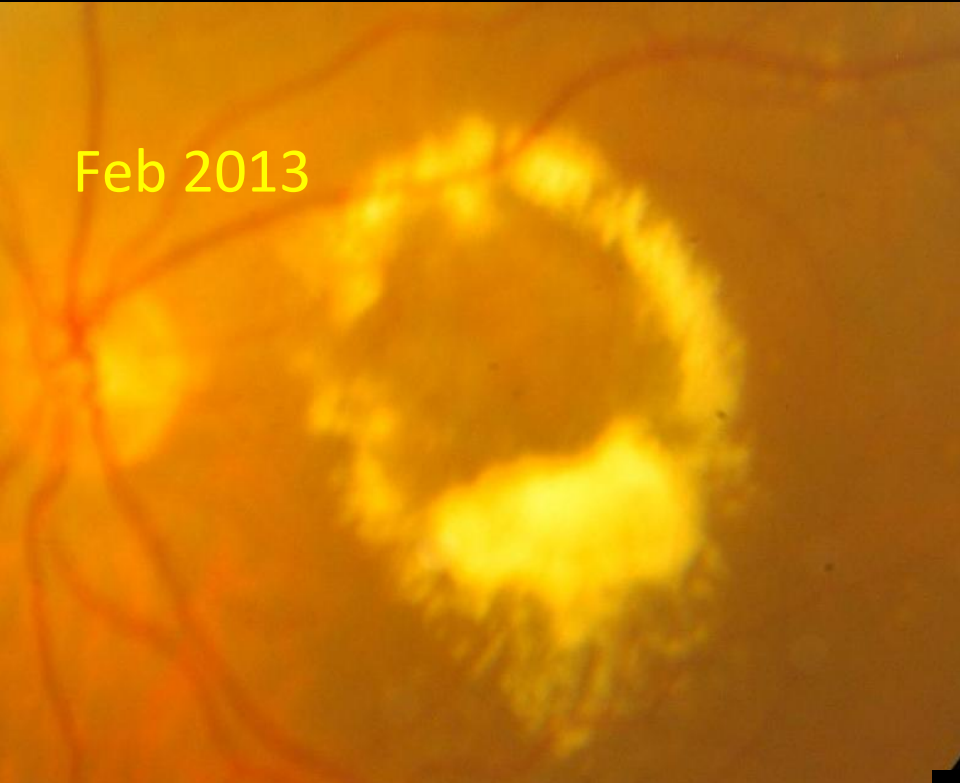
Occult CNVM



Comparative over 9 months Anti-VEGF monotherapy

Feb 2013

Nov 2013

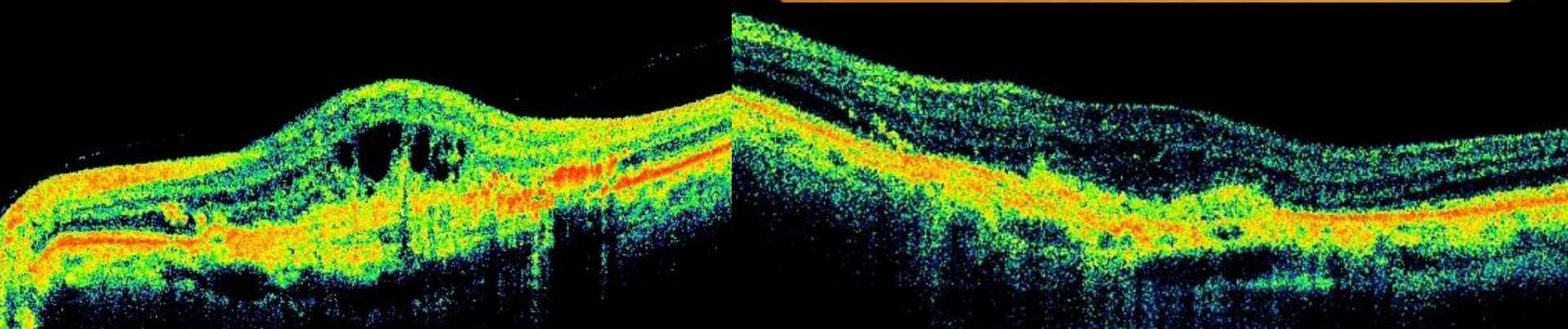
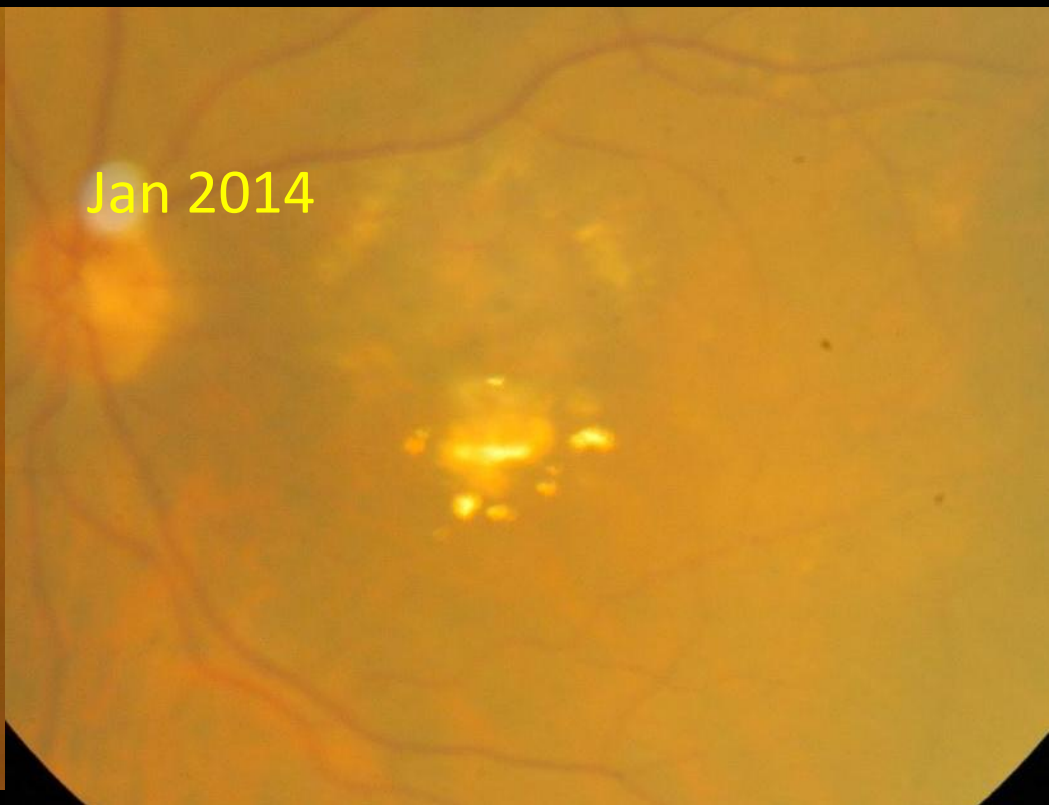


Post PDT 3 months

Feb 2013



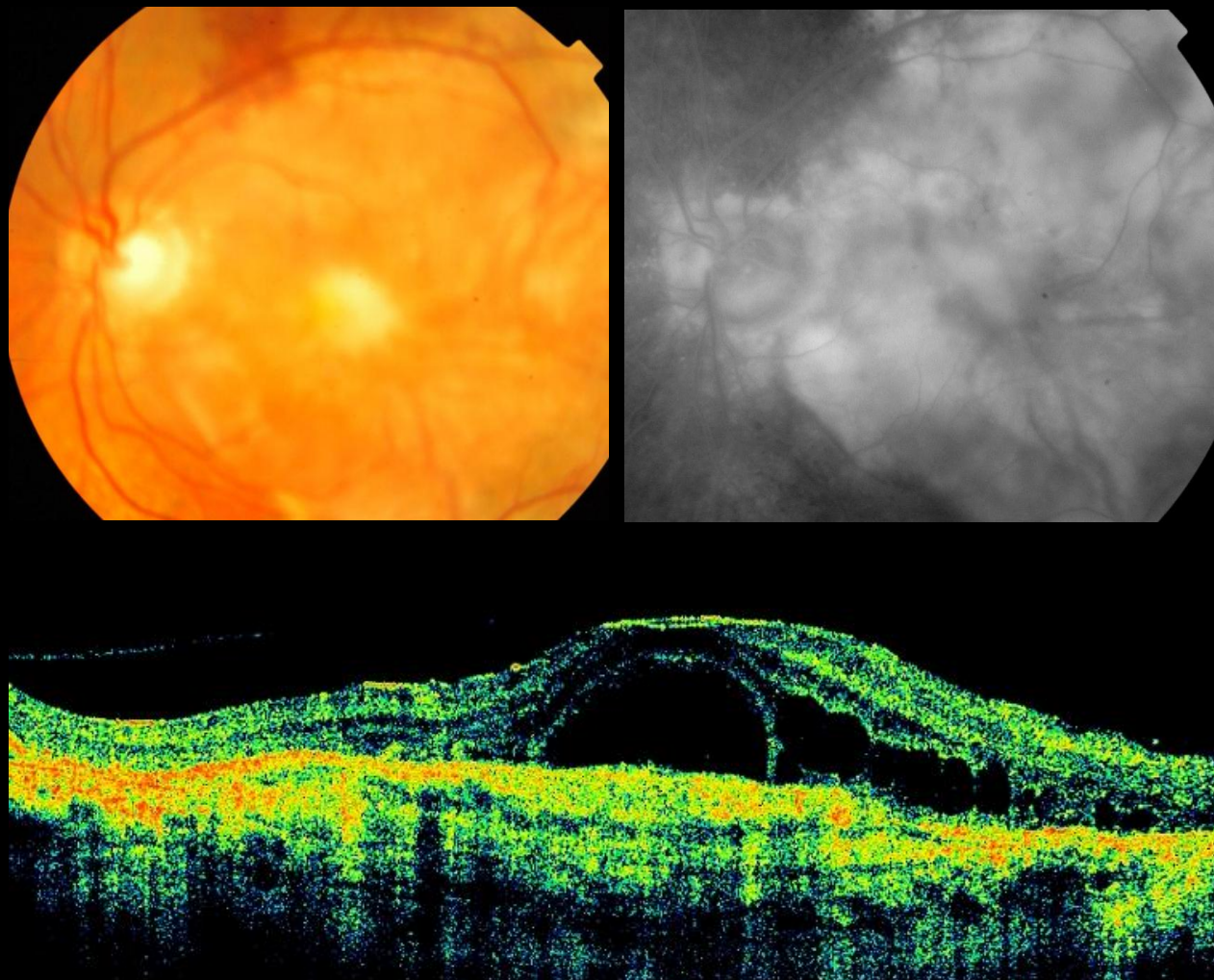
Jan 2014

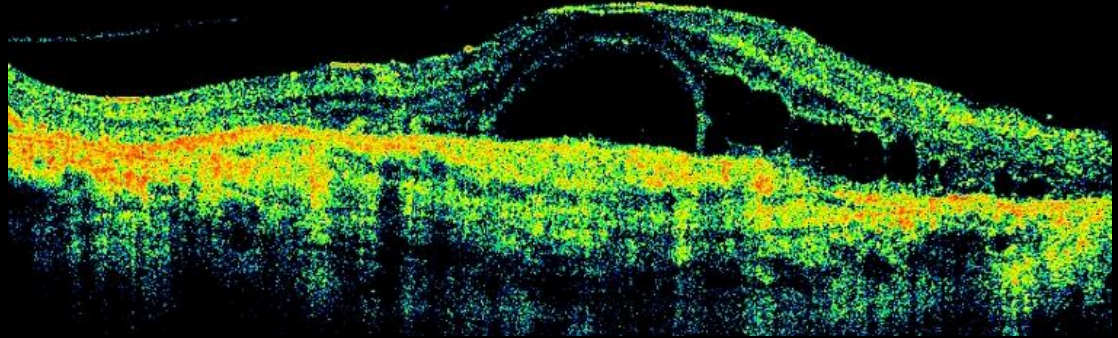


Steroids in wet AMD

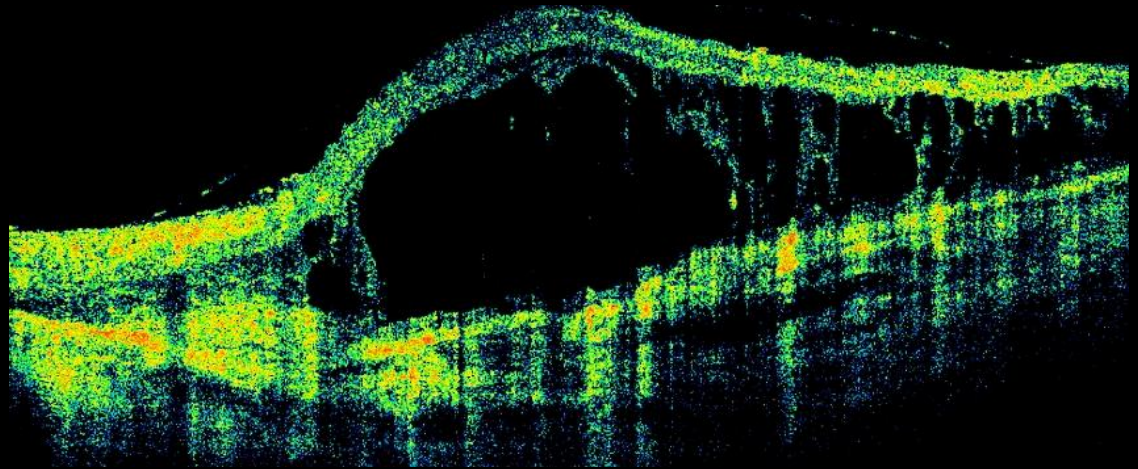
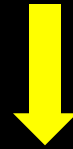
- Intravitreal steroid can be added to anti-VEGF therapy in some unresponsive cases

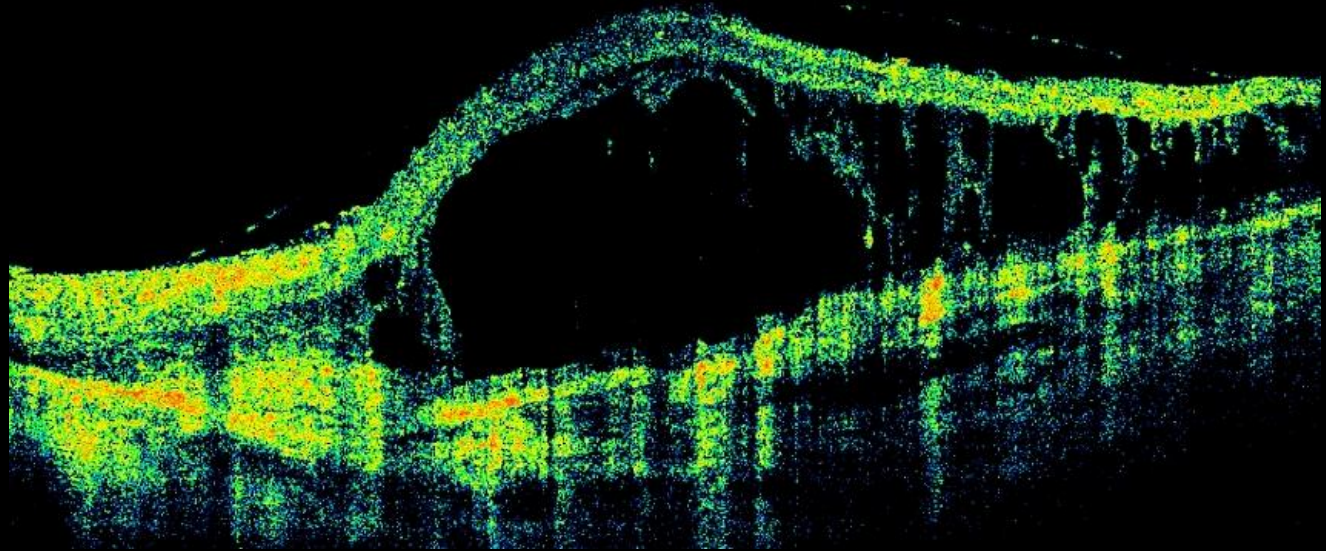
Case 1. Large exudative AMD lesion
Worsening on anti-VEGF therapy over 4 months



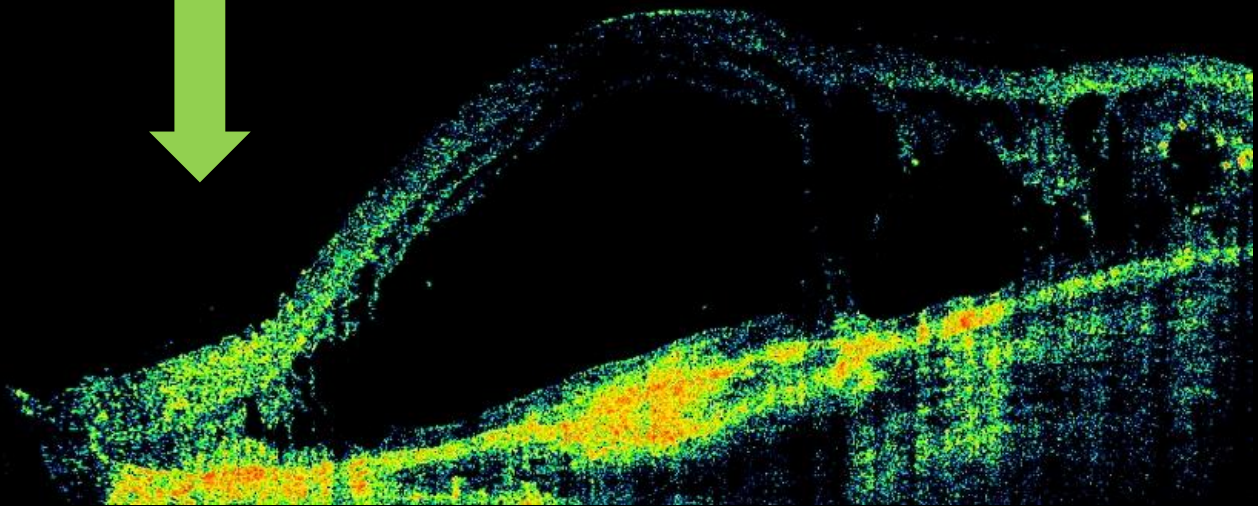


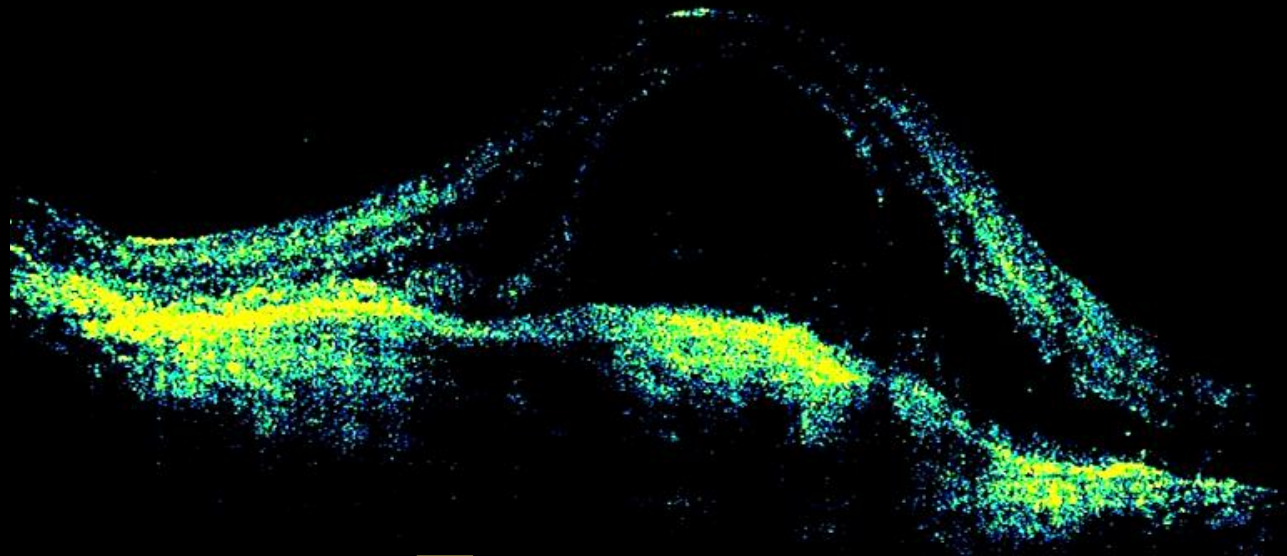
On Avastin for 4 months



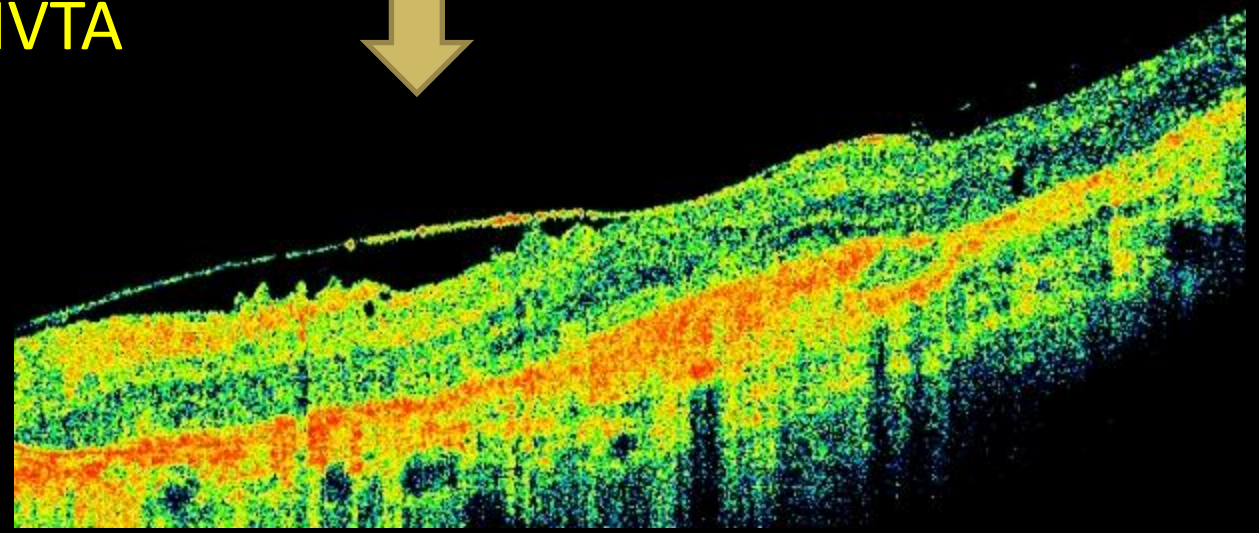


Post PDT

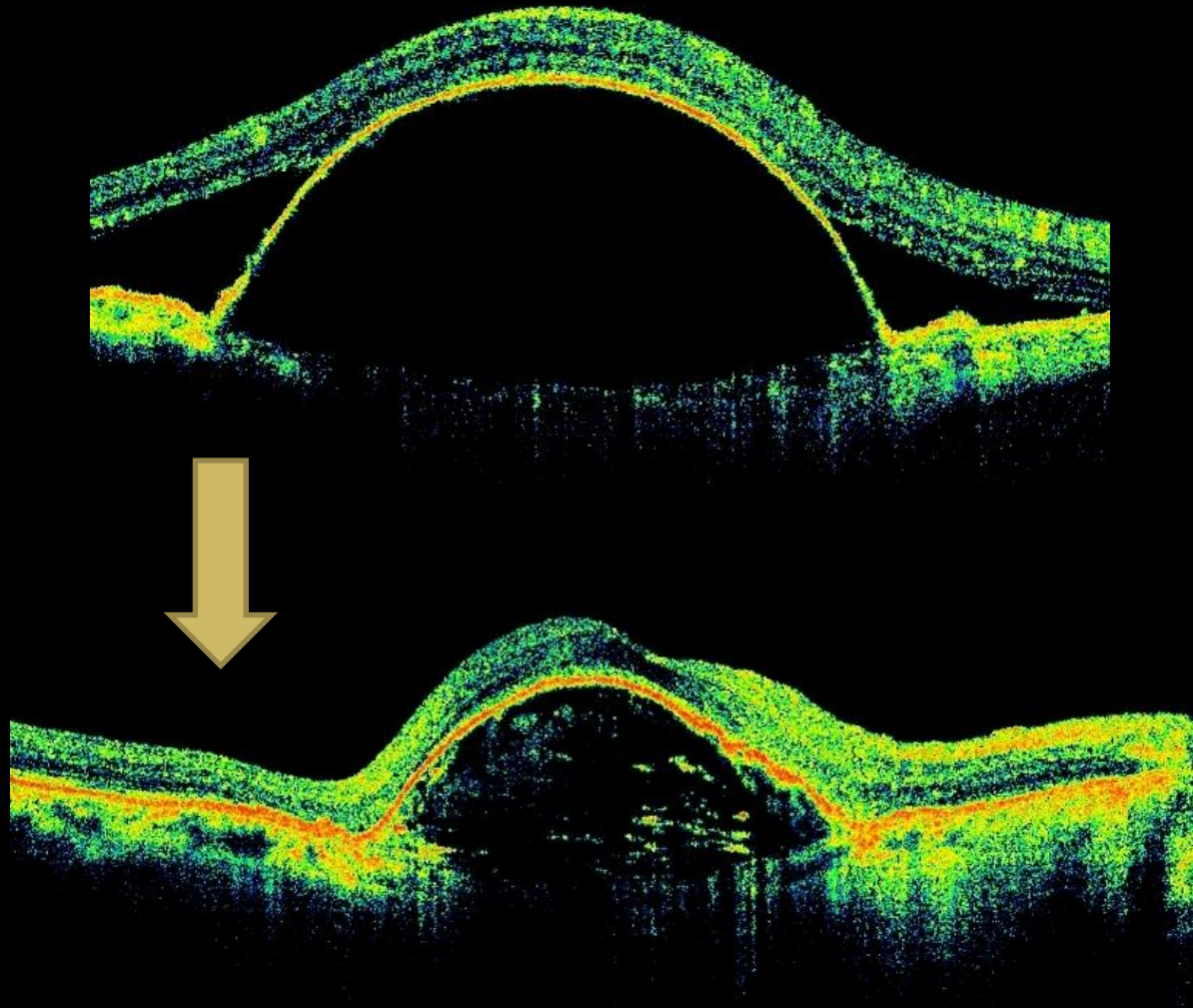




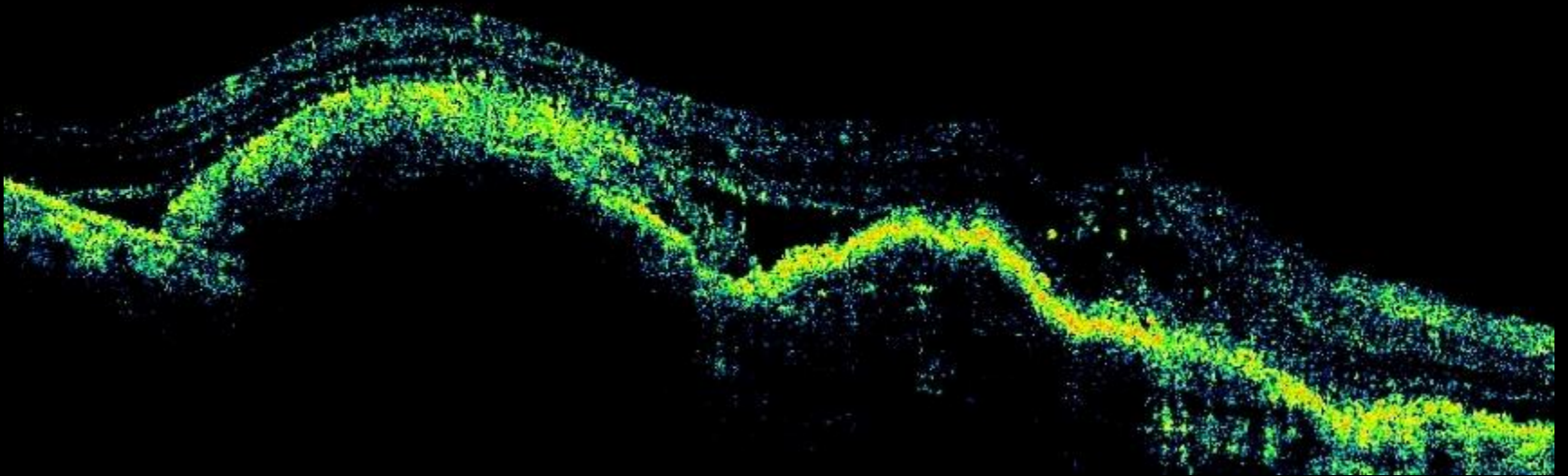
Avastin + IVTA



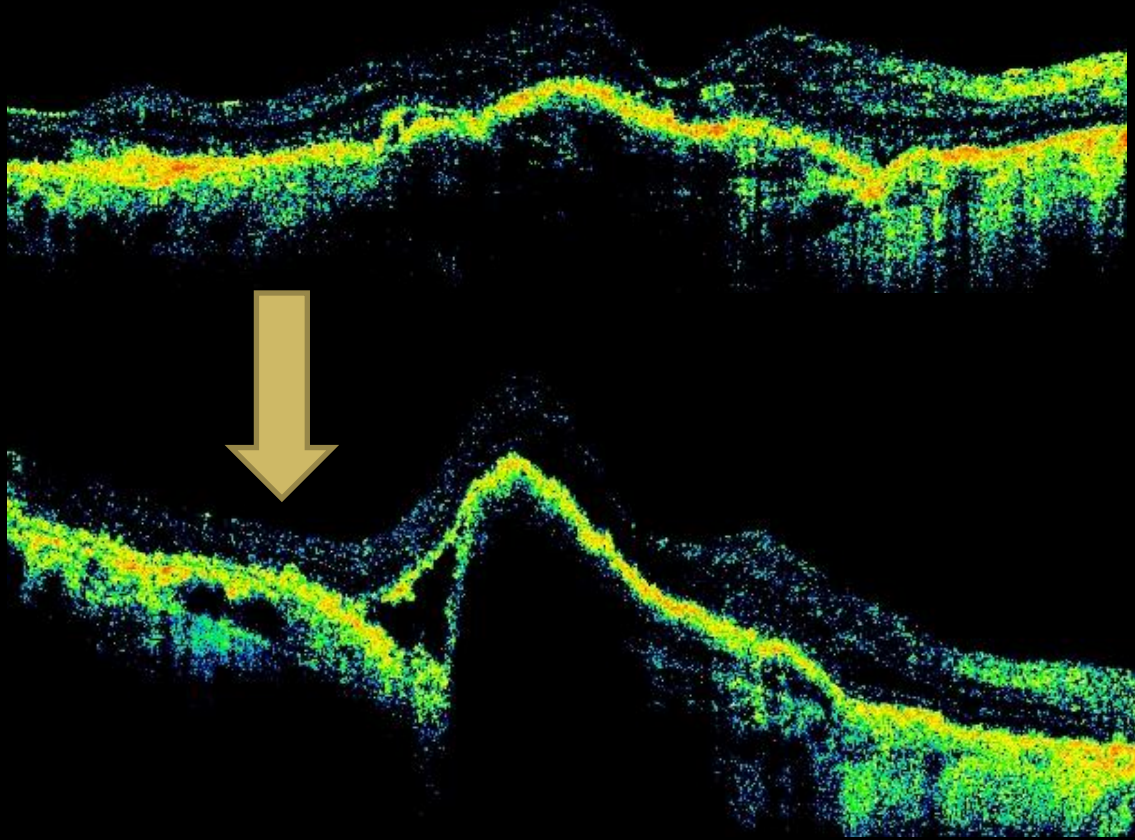
Case 2. Improvement with bevacizumab



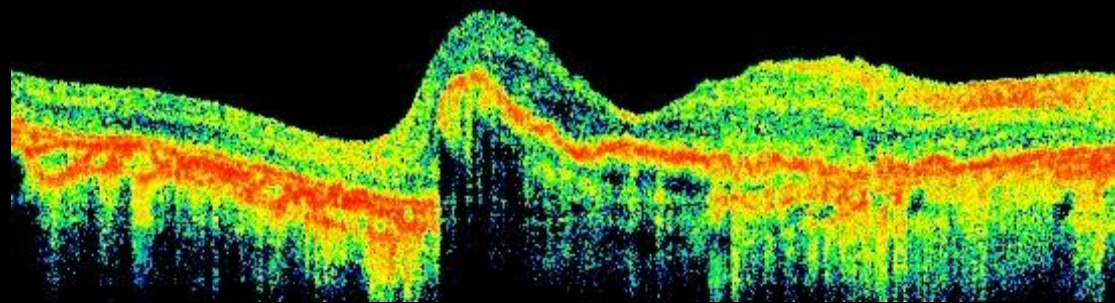
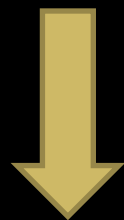
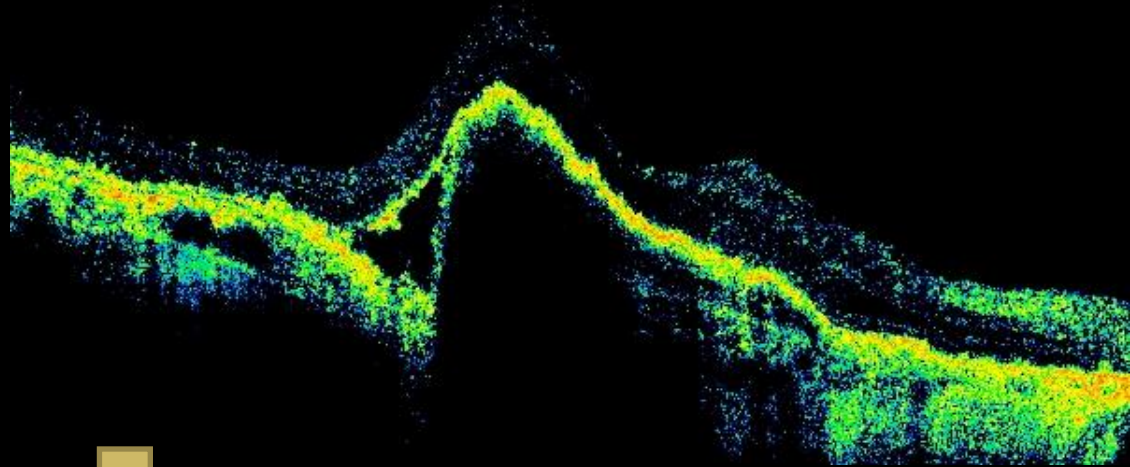
After a 9 month treatment free interval



Persistent fluid with avastin

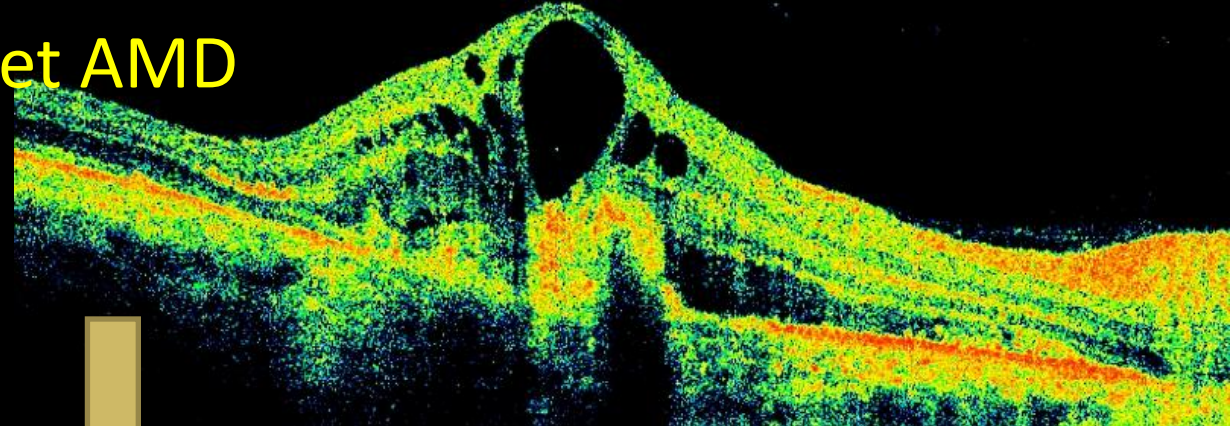


RE with steroid



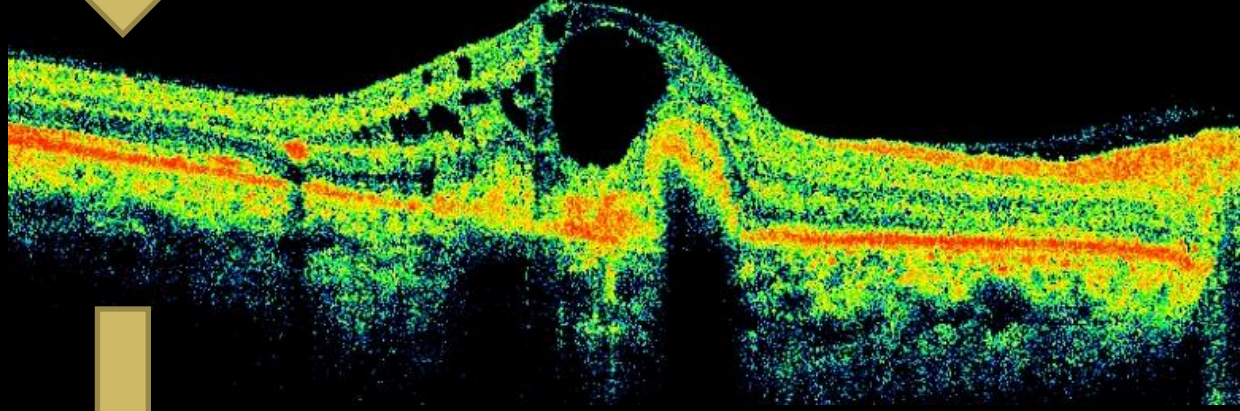
65 yo male with RE wet AMD

Feb 2014



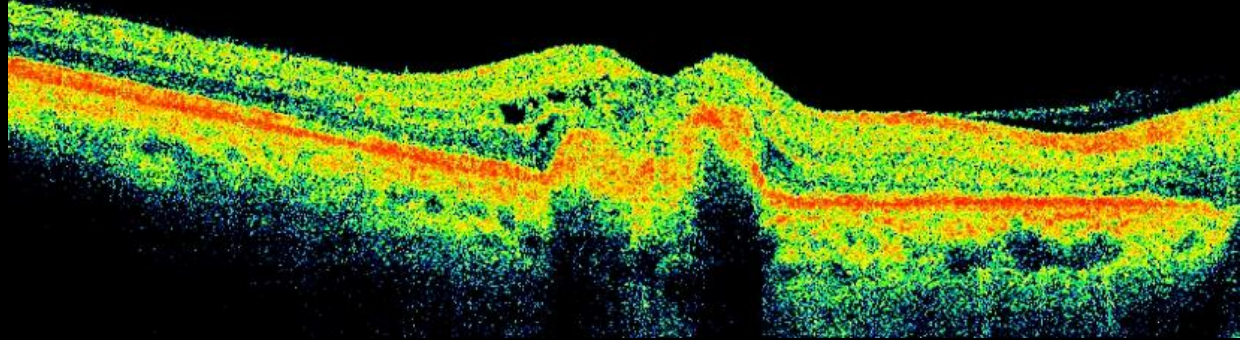
Avastin

March 2014



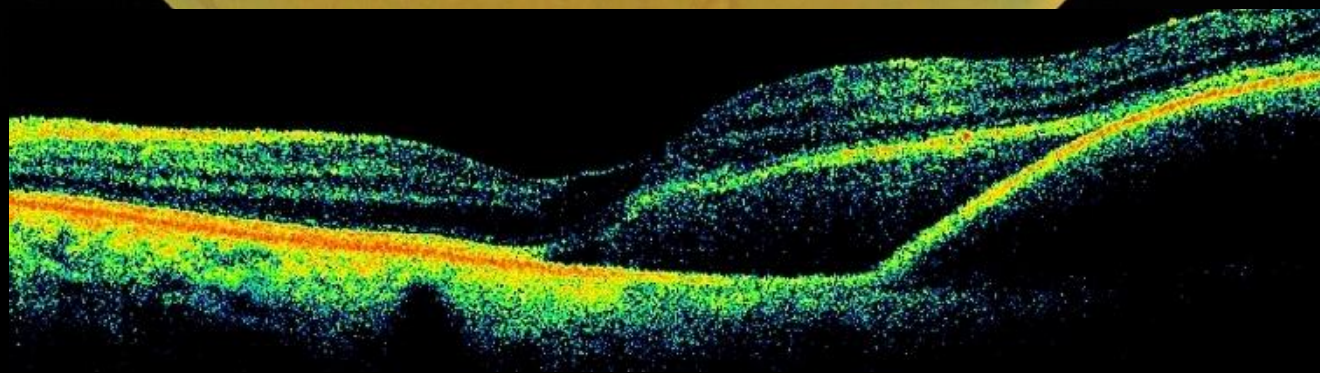
Avastin + IVTA

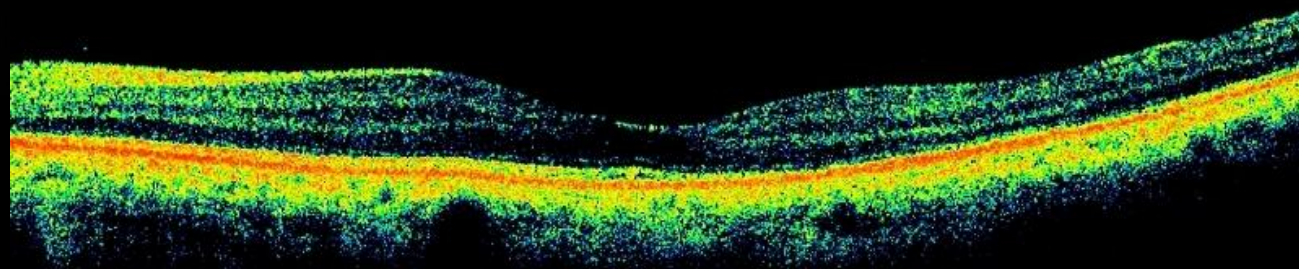
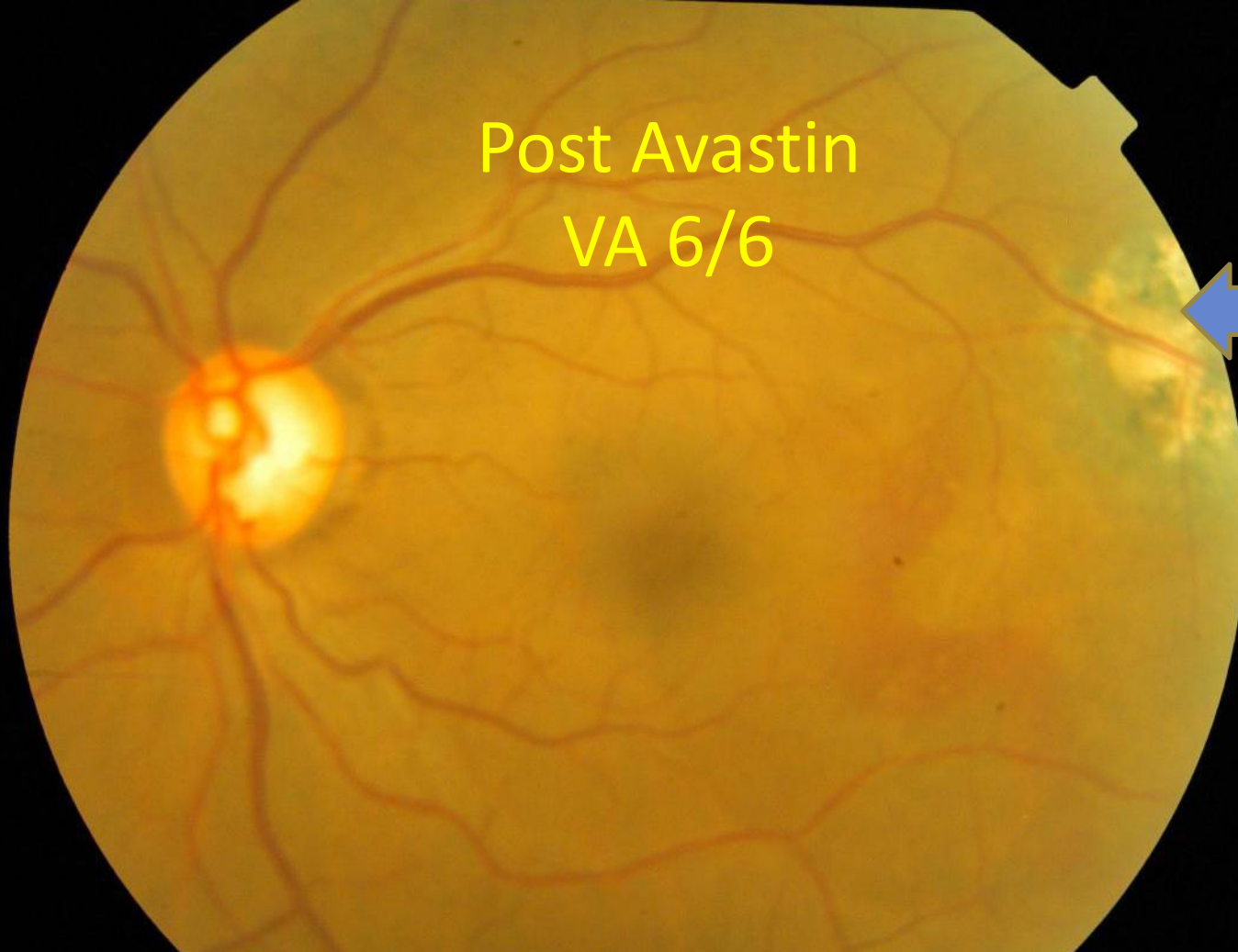
April 2014



Extramacular lesions not always safe

Bleed from lasered extramacular lesion
Case..VA 6/6

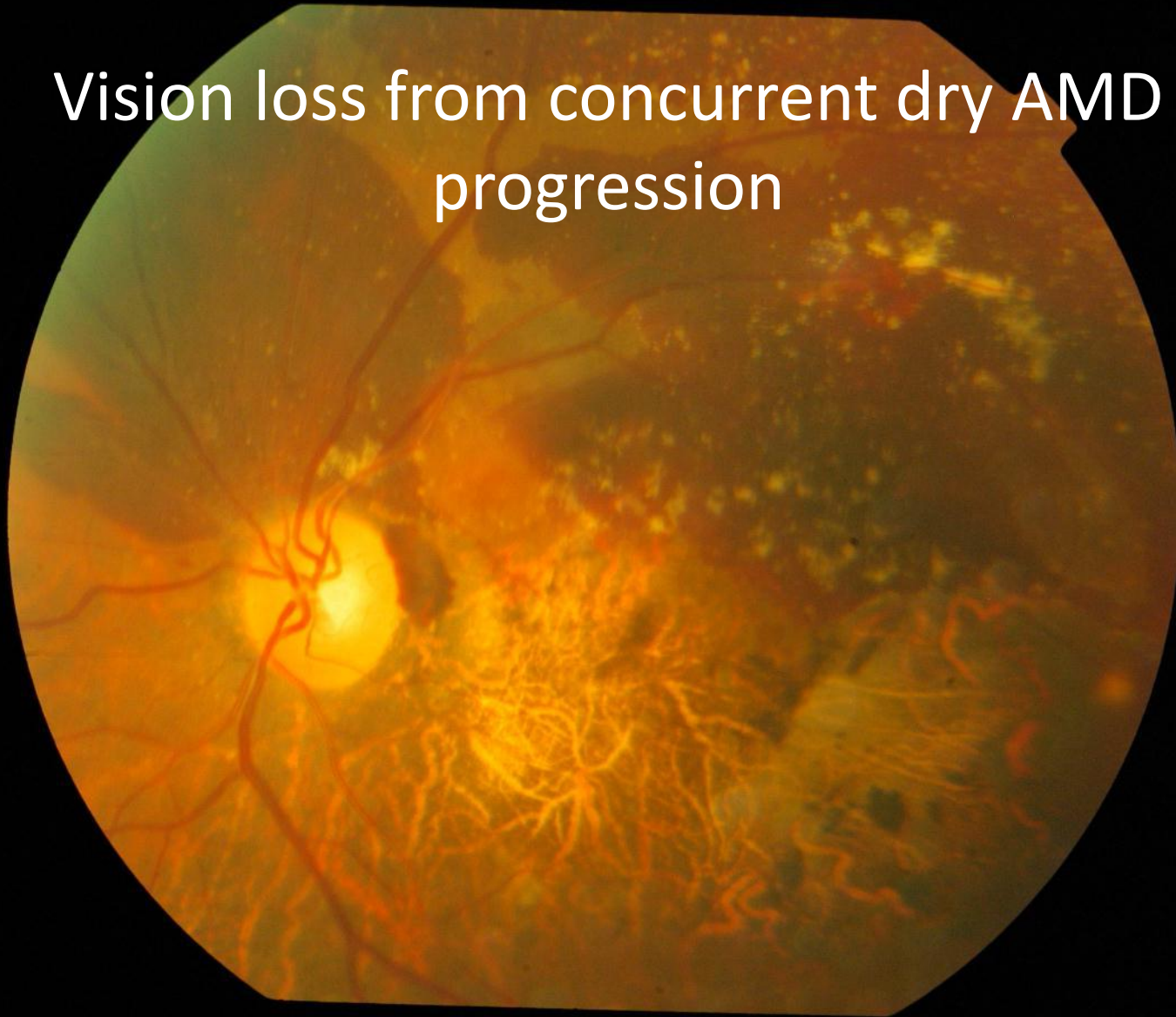




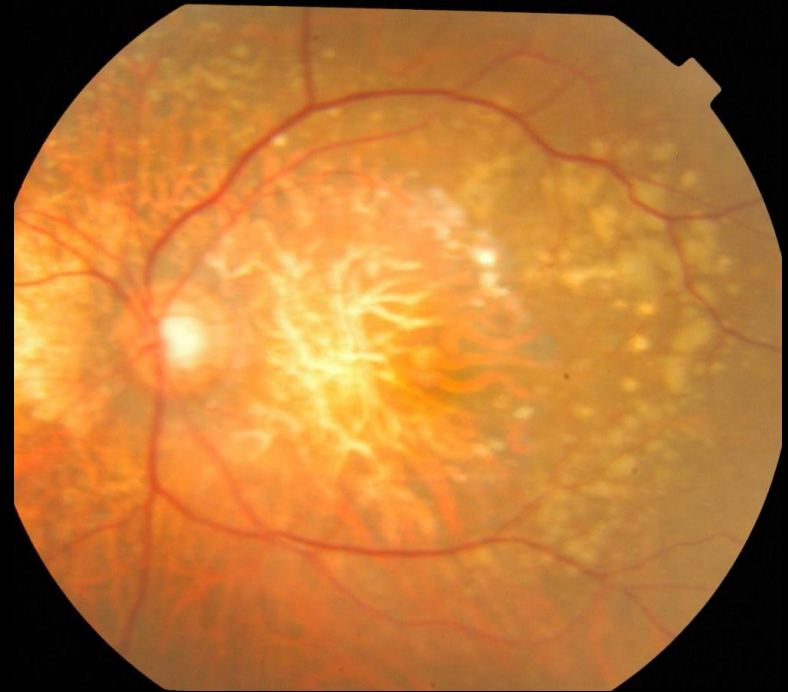
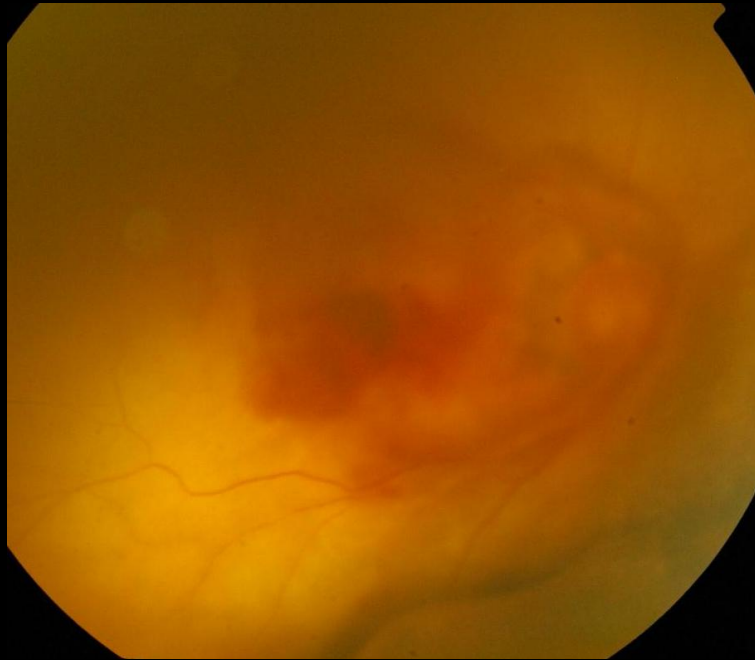
Concurrent Dry AMD Progression

- Antioxidants should continue

Vision loss from concurrent dry AMD
progression

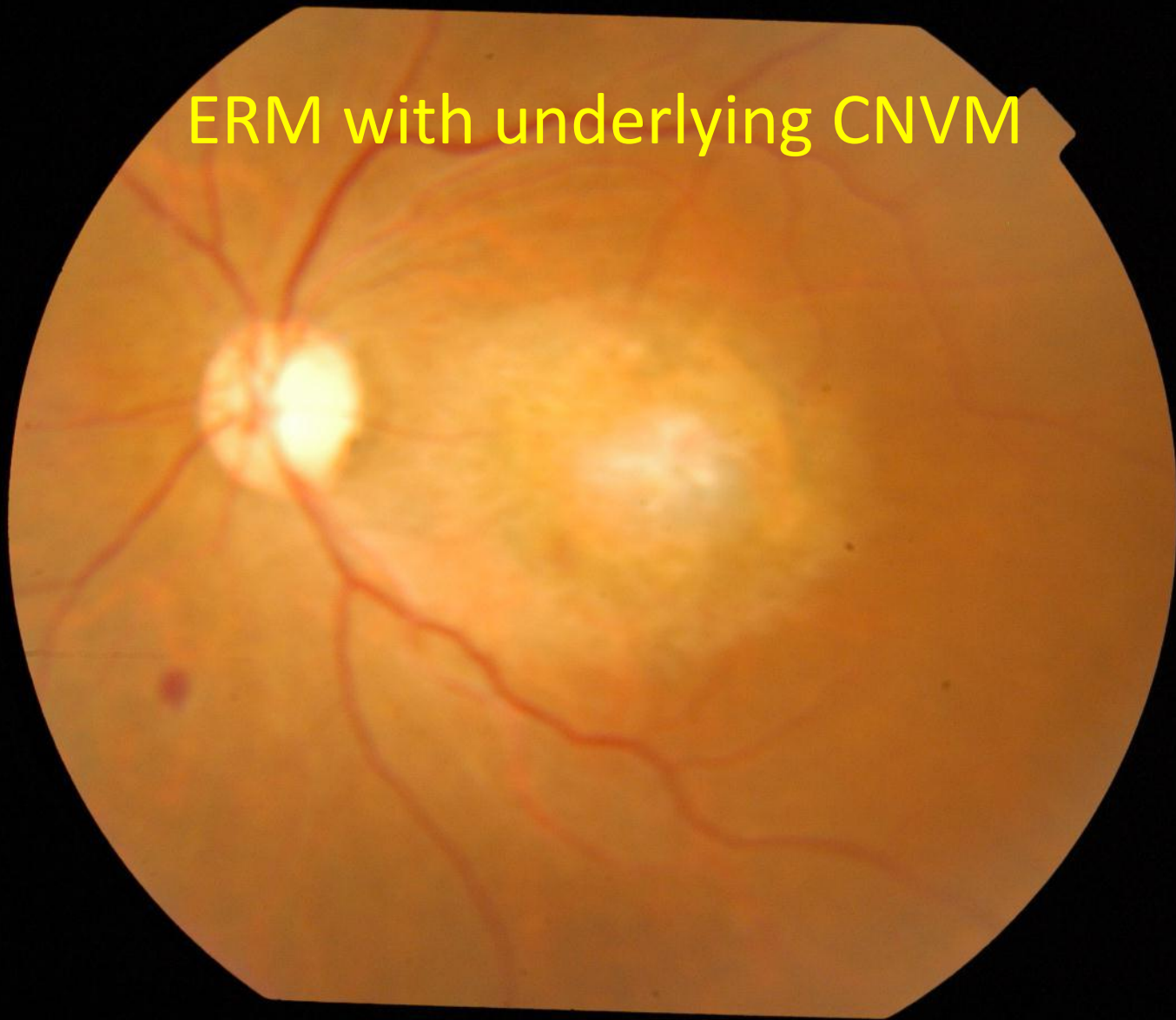


One eye wet AMD, other dry

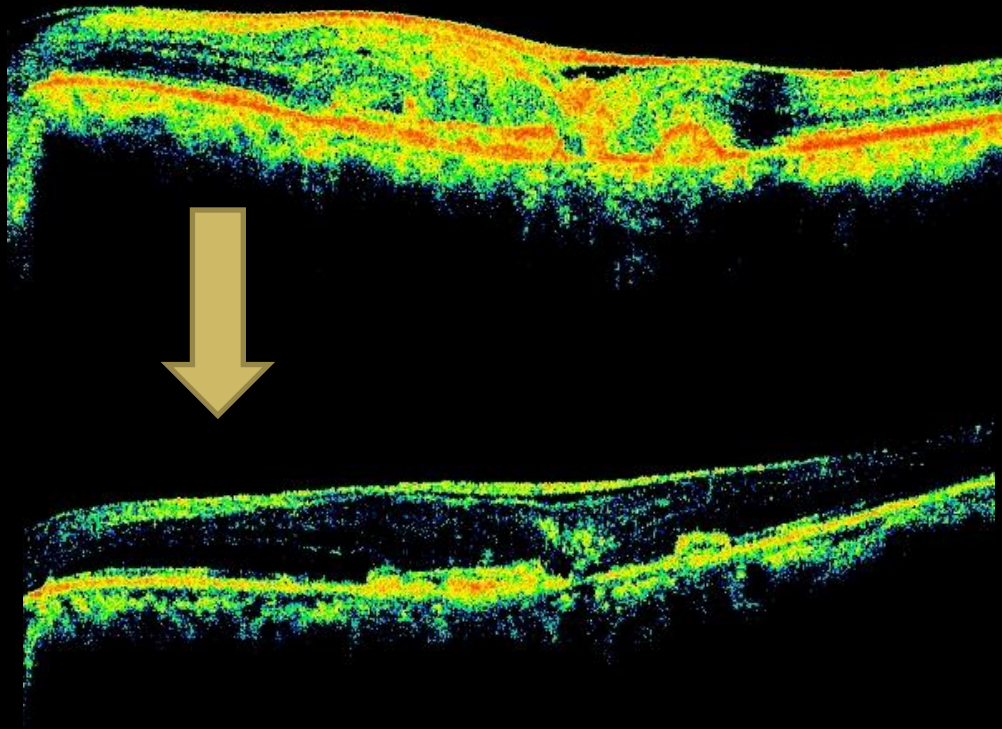


Co-existing Problems

ERM with underlying CNVM



Avastin
Sep – Jul 2014



Thank you!