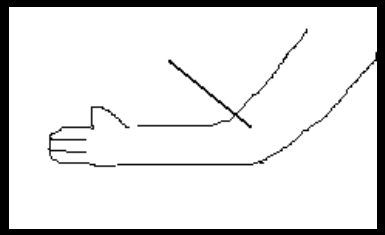
# Role of PHOTODYNAMIC THERAPY (PDT) with VERTEPORFIN in the Management of AMD

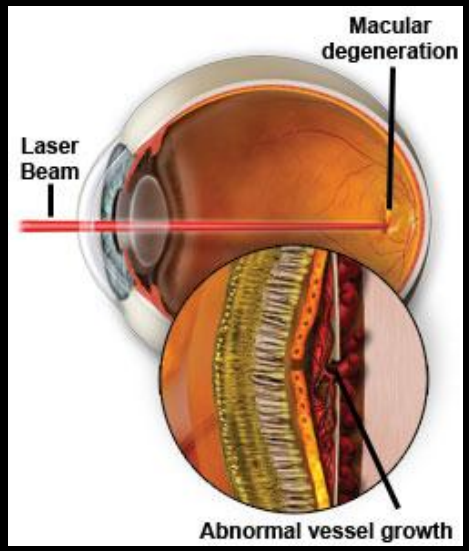
Mallika Goyal, MD

Retina Service, Apollo Health City,
Hyderabad, India

# A 2-step Procedure

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





# Photodynamic Therapy

Light + Verteporfin

↓

Free radicals & singlet oxygen

↓

Endothelial cell damage + Platelet aggregation

↓

Occlusion of CNVM/ abnormal permeability

# PDT application

- Reduced dose (3mg/m)
- Reduced fluence (25 J/ cm)
- Reduced duration (42 sec)
- Standard fluence

# Demerits of PDT

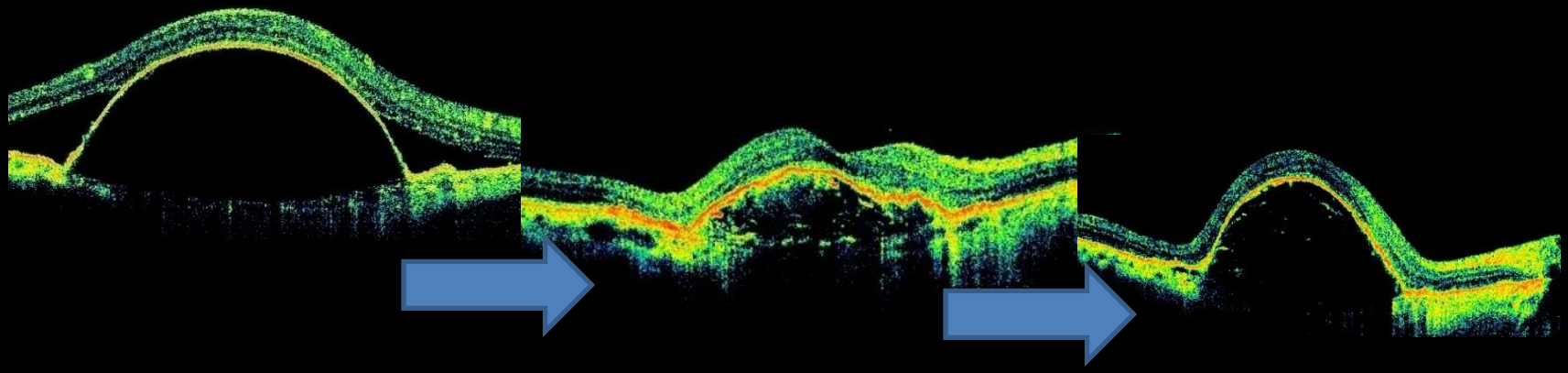
- Choroidal hypoperfusion
- RPE atrophy
- RPE tears
- Cost (Rs 1 Lakh)
- Protection from bright lights for 3-5 days

# PDT Indications

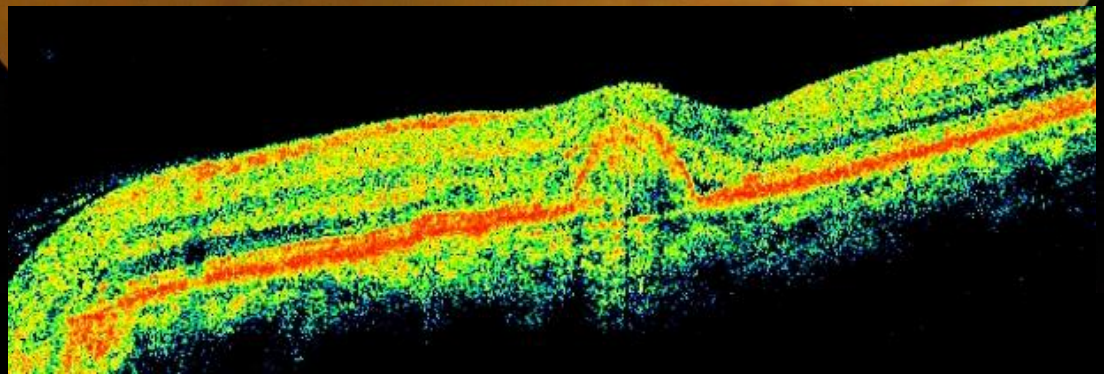
- Wet AMD:  not  treatment of choice; only when lesion is inadequately responsive to anti-VEGF
- PCV
- Chronic / atypical CSCR
- RAP lesions

# Non-response of AMD to anti-VEGF Causes

- Interruption of therapy: commonest cause
- Tachyphylaxis: following long period of therapy
- Genetic
- Wrong diagnosis: PCV/ CSCR lesion

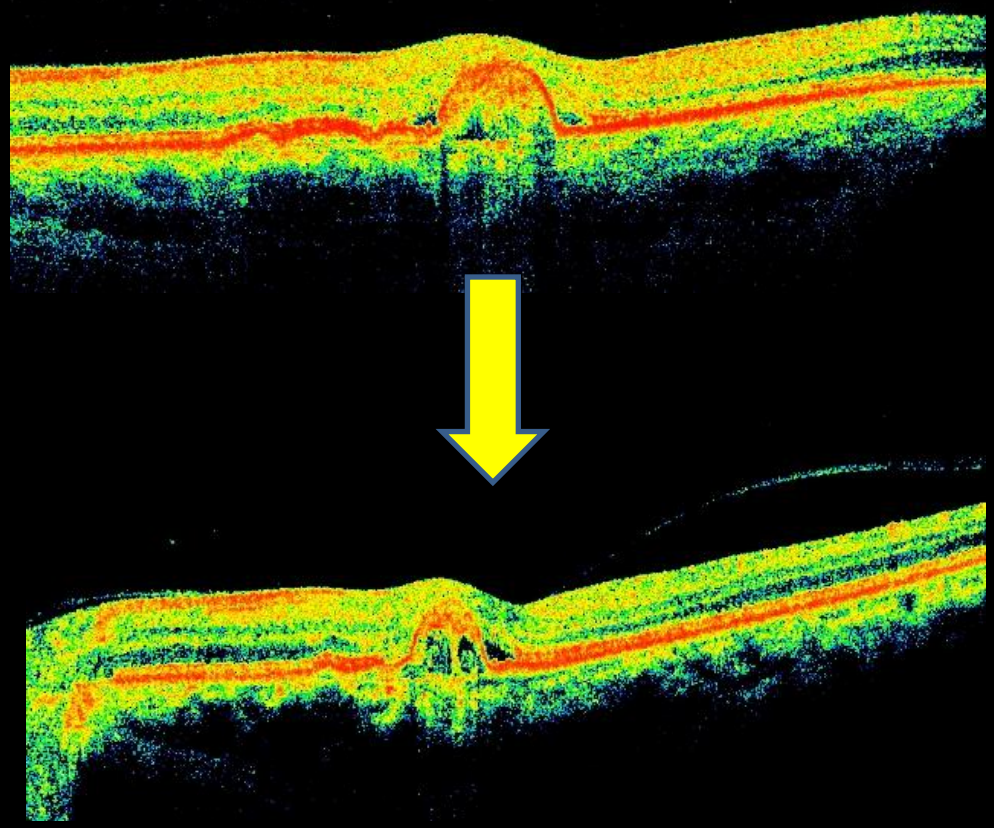


# Case 1. 52 yo male wet AMD Nov 2011



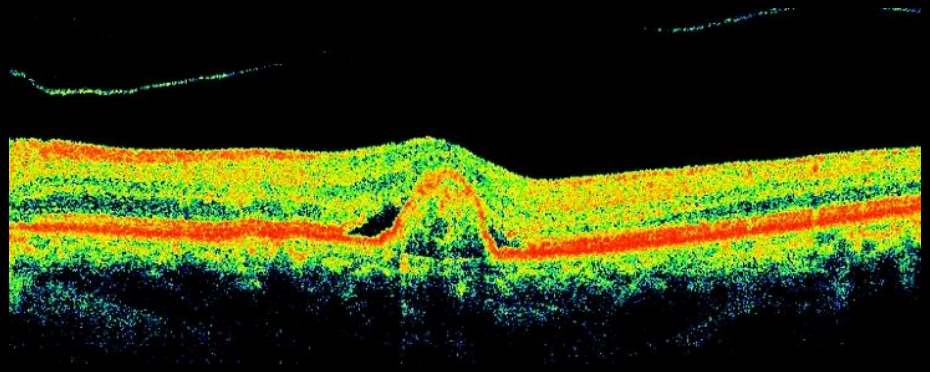
# FFA
# Classic CNVM

# On anti-VEGF monotherapy for over 2.5 years

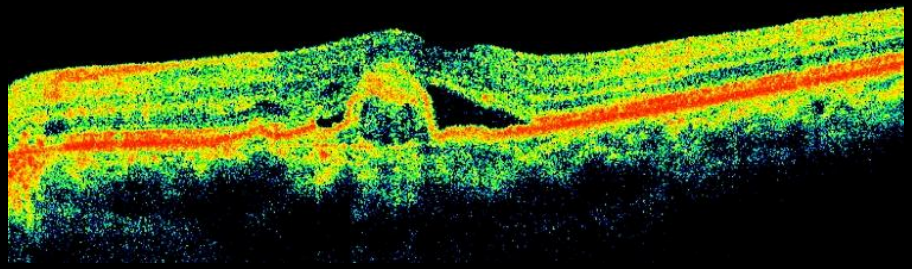


# Unscheduled 3 month gap in therapy
# Non-response on resuming injections

Sep 2013

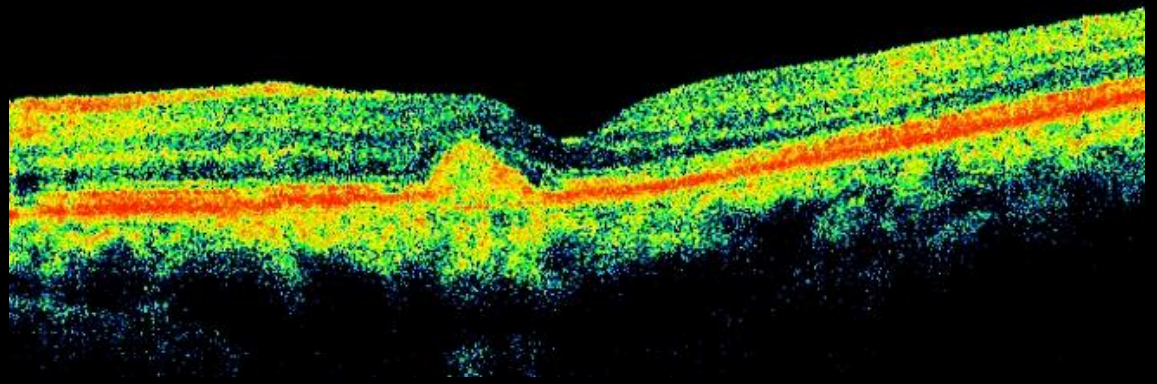


Mar 2014
PDT done

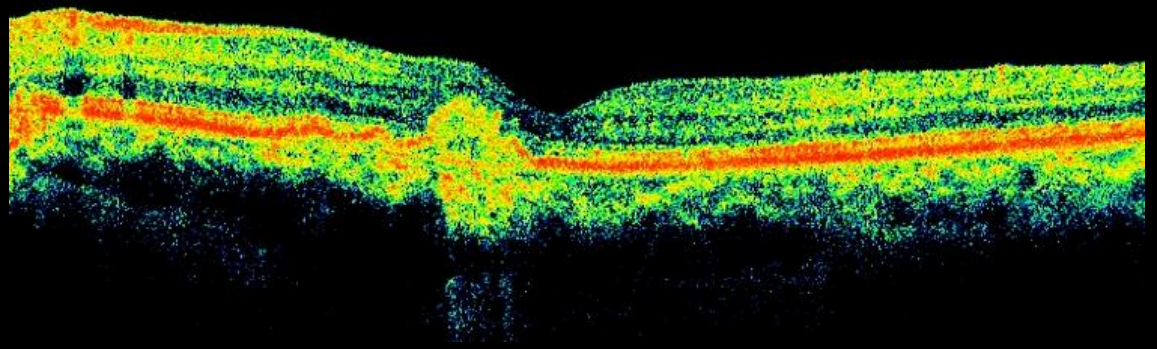


# Post PDT
# Off anti-VEGF therapy

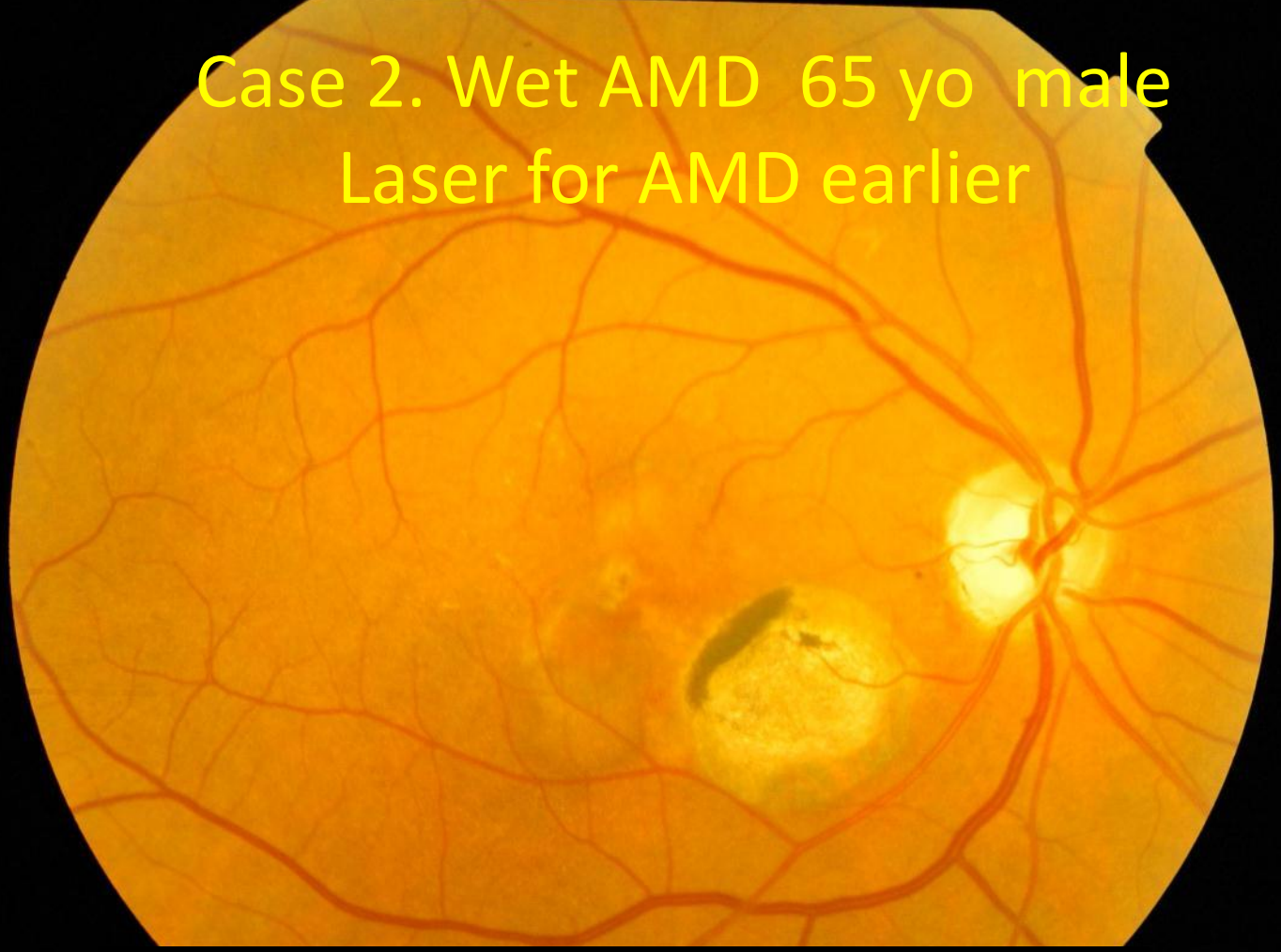
Apr 2014

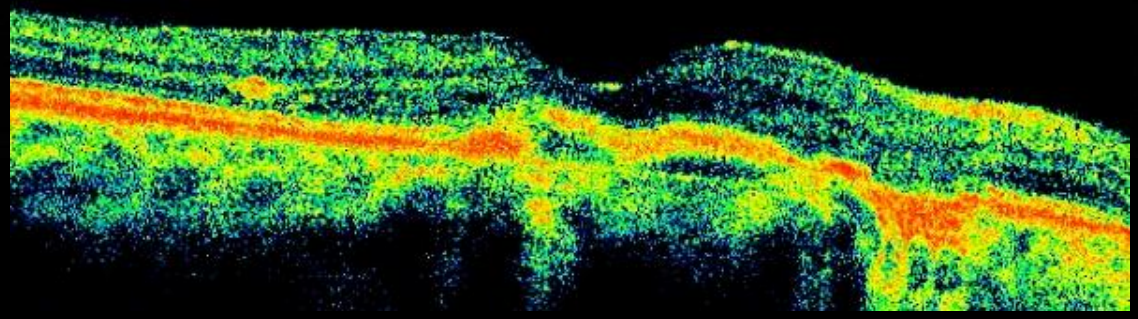


Apr 2015

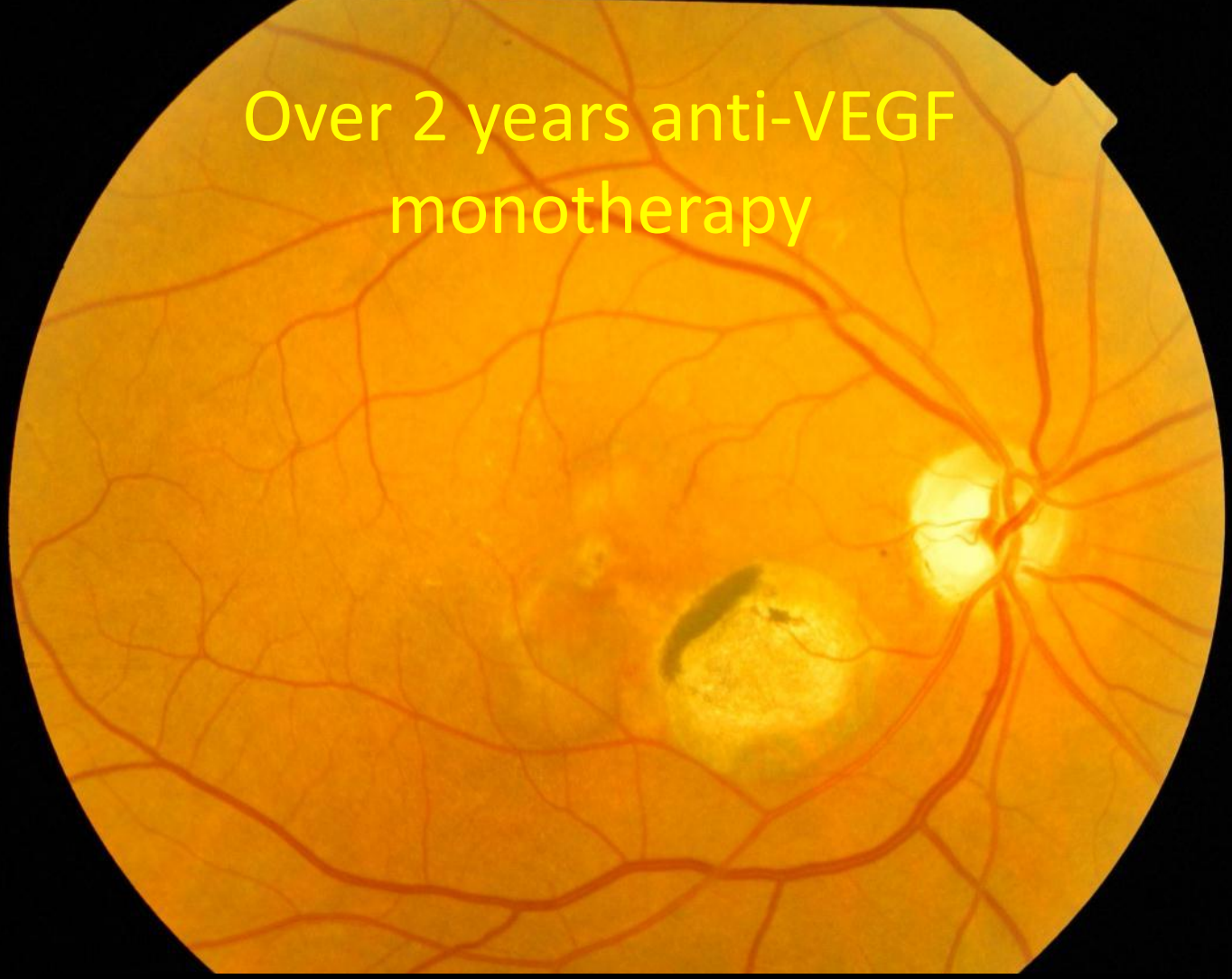


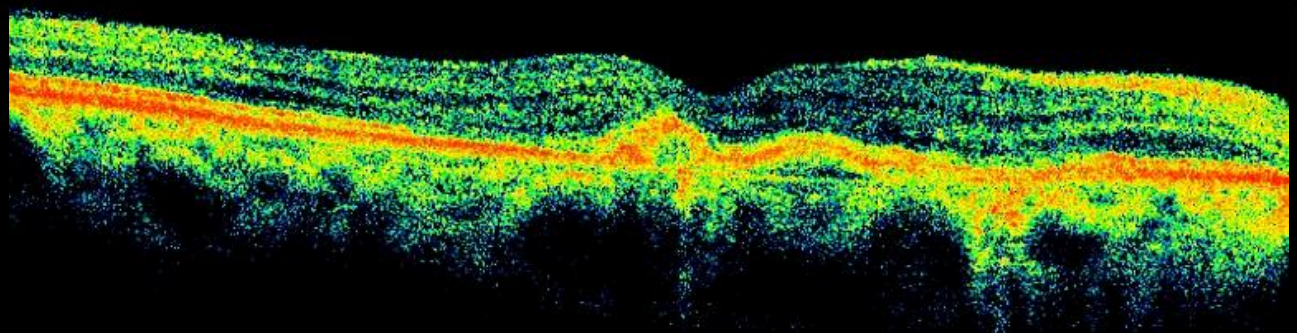
# Case 2. Wet AMD 65 yo male
Laser for AMD earlier



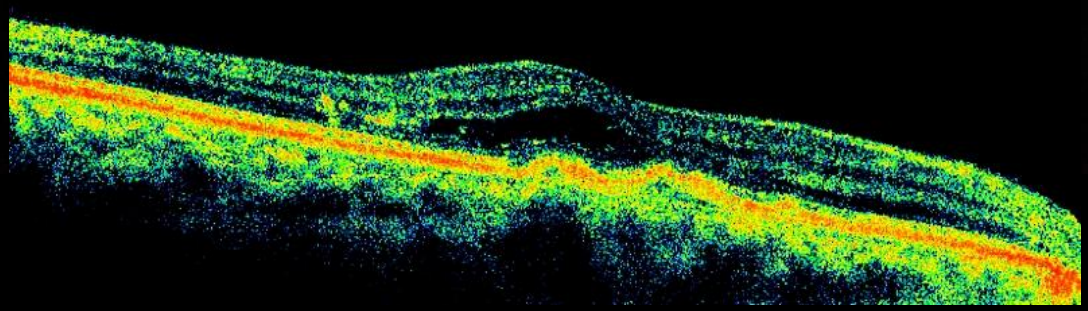


Over 2 years anti-VEGF monotherapy

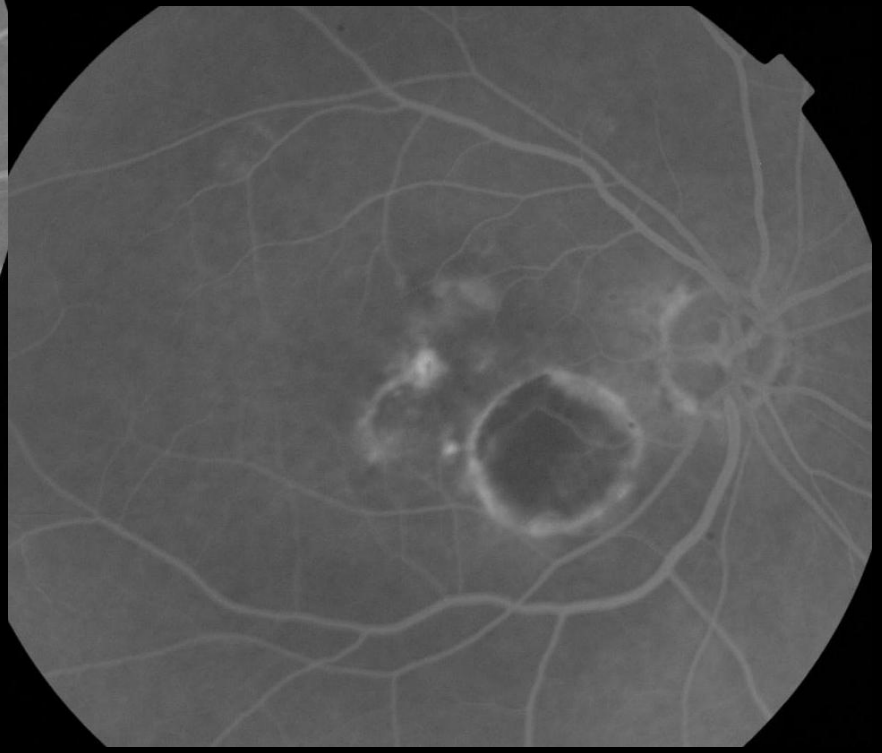




Following 4month gap in therapy
Unresponsive to anti-VEGF

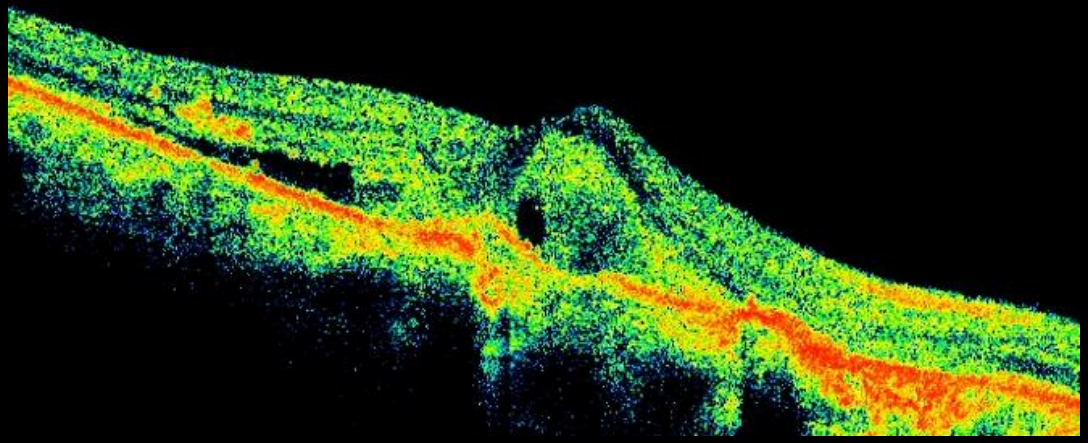


# FFA
# Occult CNVM



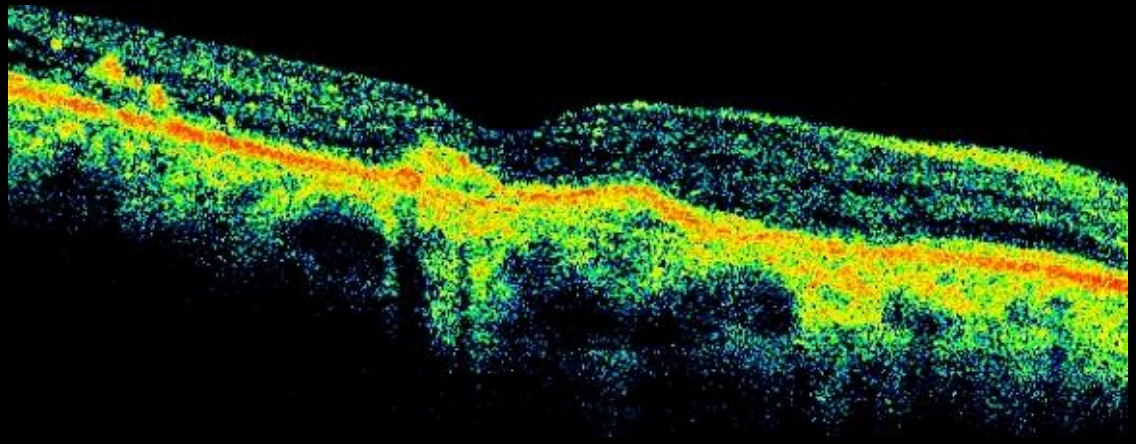
# Post PDT

1 week



6 weeks

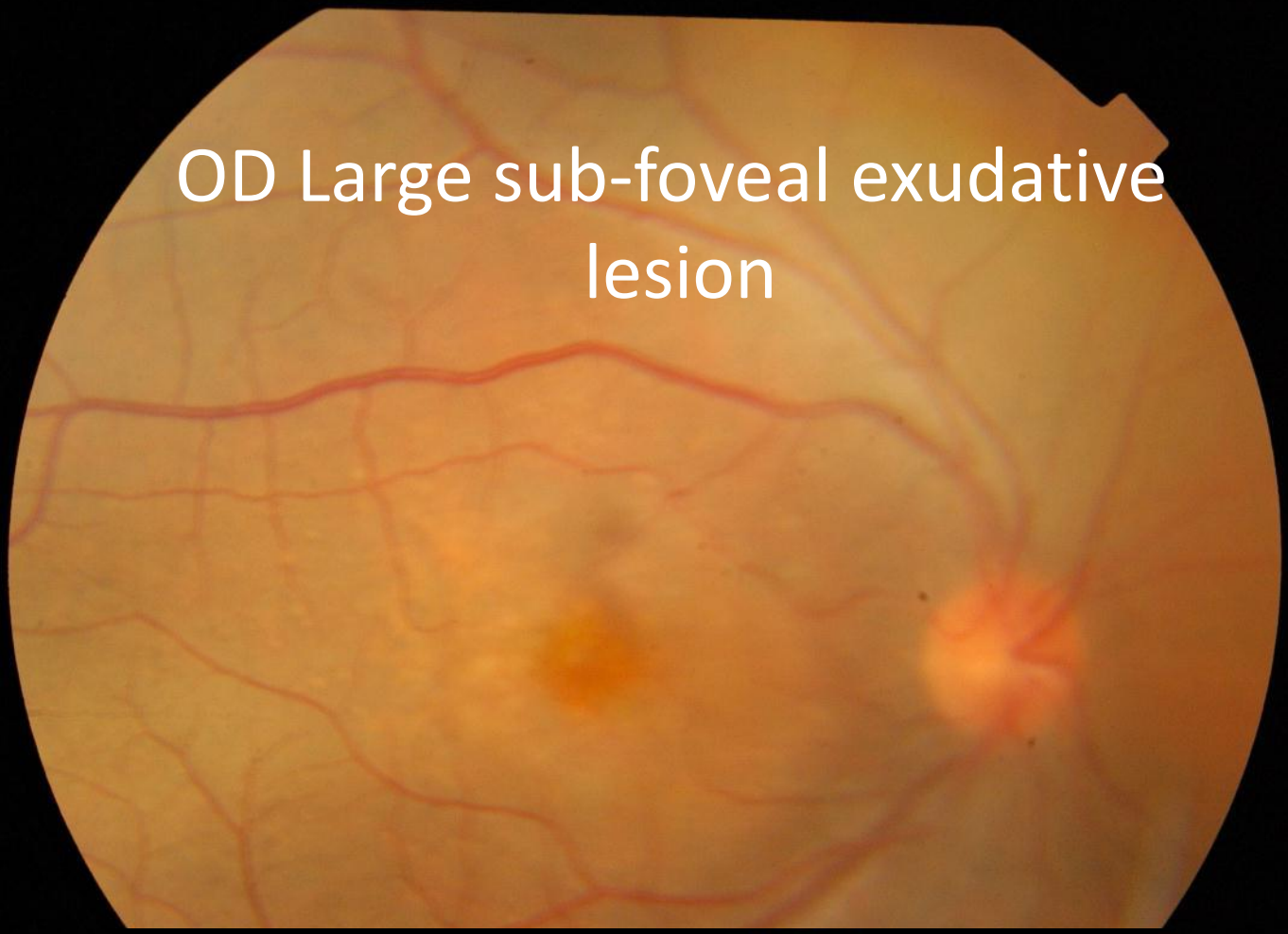
Off therapy
8 months

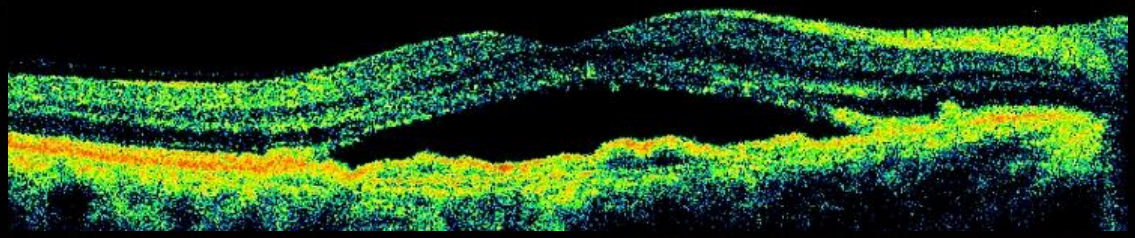


# Case 3. Presentation
## July 4, 2012

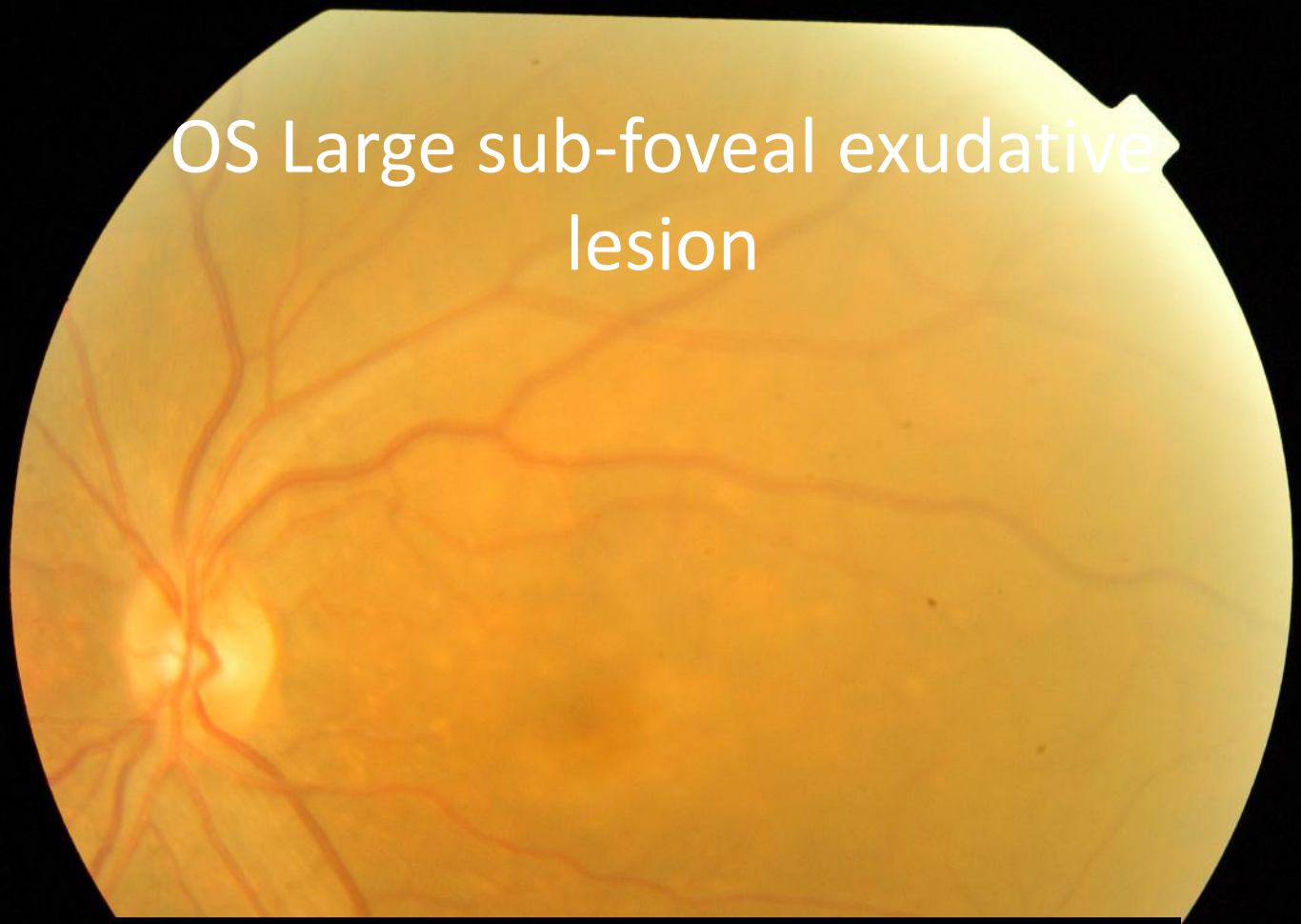
- 61 year old male
- c/o bilateral vision drop for several months
- Visual acuity was OD 20/100
  OS 20/40

OD Large sub-foveal exudative lesion





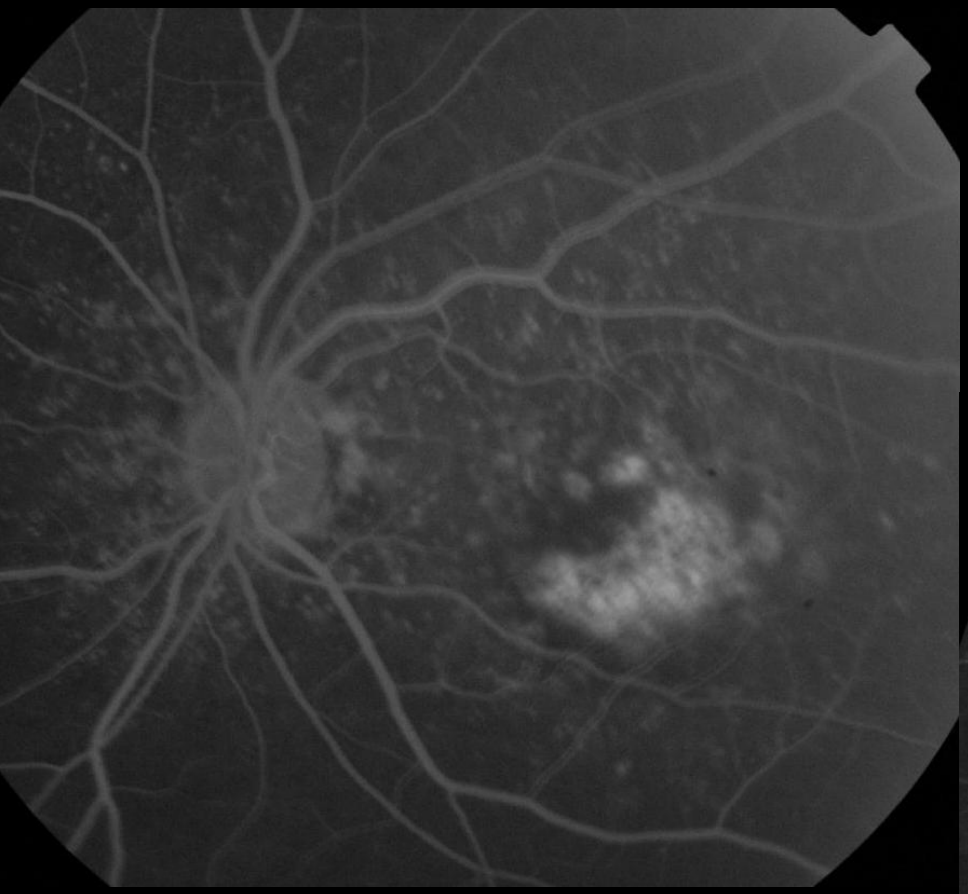
# OS Large sub-foveal exudative lesion

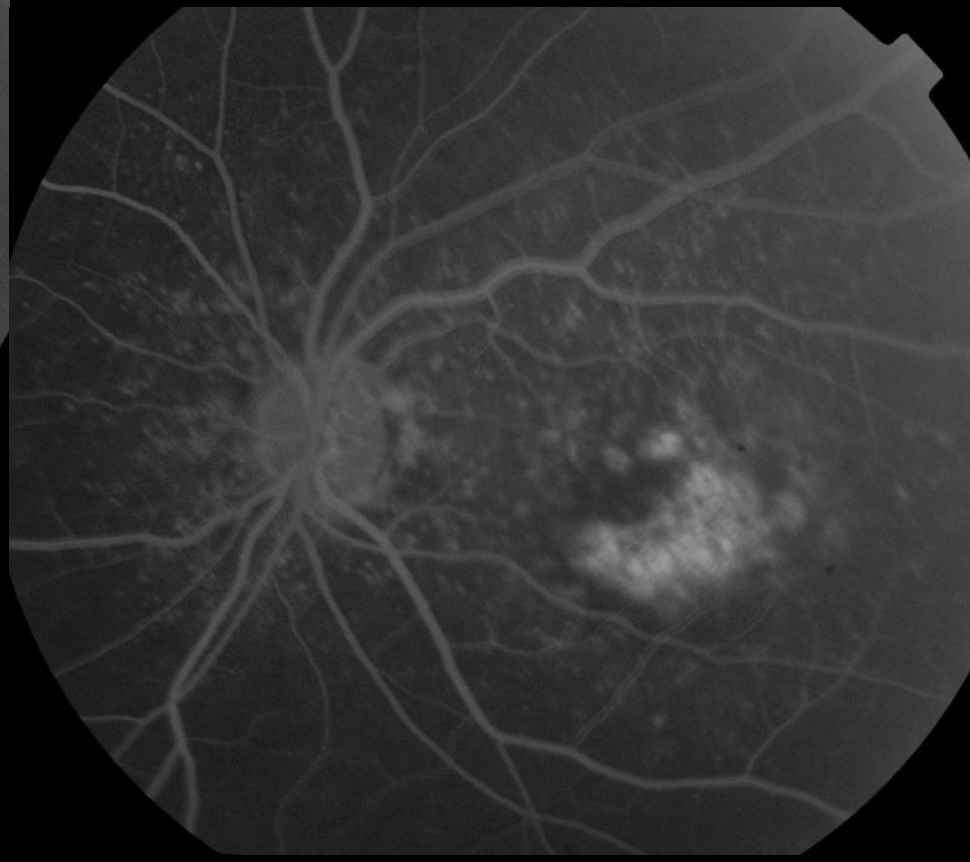


# Fluorescein angiogram

## OD  Large classic CNVM

# OS Large classic CNVM



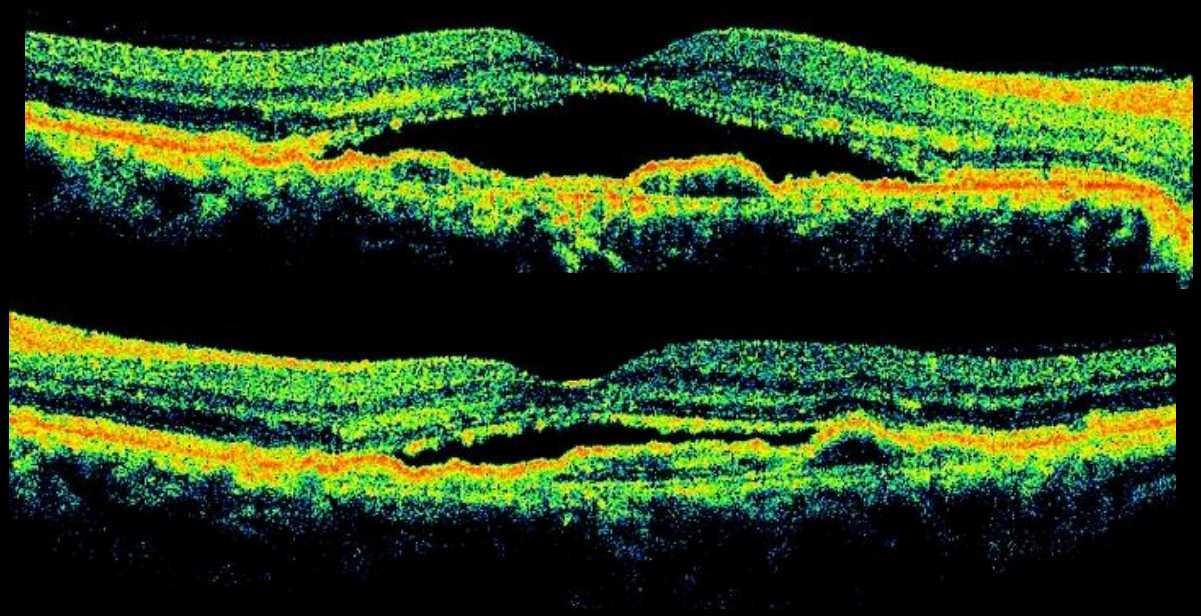


# Monthly Bevacizumab for 6 months

No Improvement

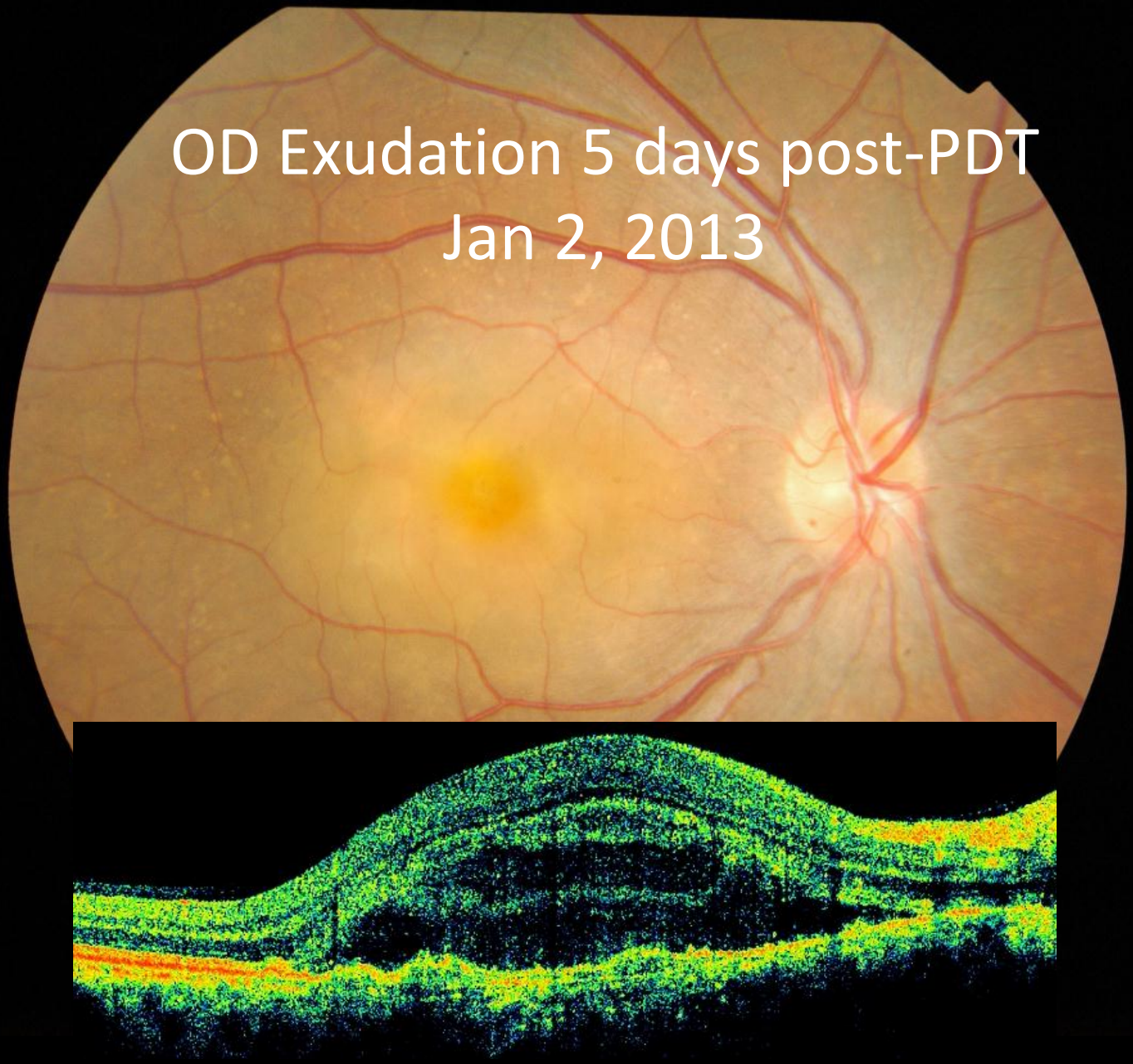
OD

OS

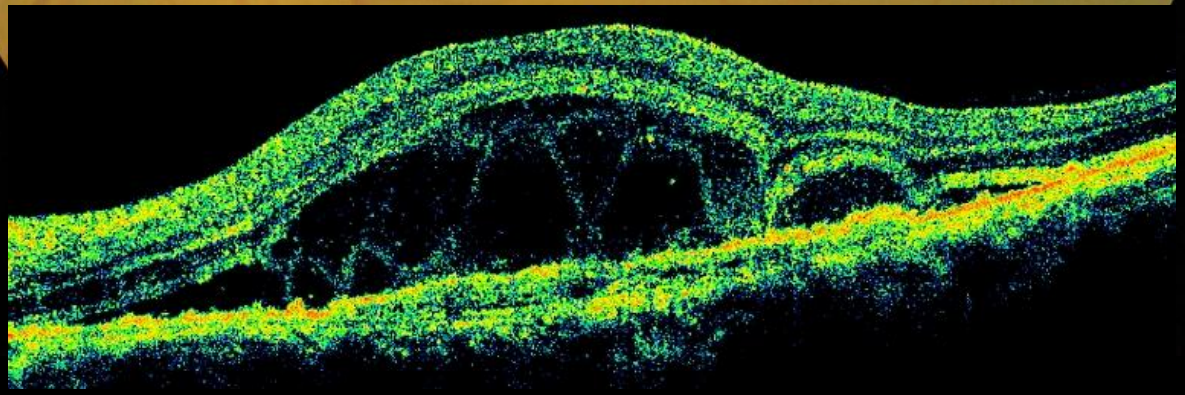


# Dec 28, 2012

Bilateral Photodynamic Therapy Standard Fluence, Spot Size 3500 um

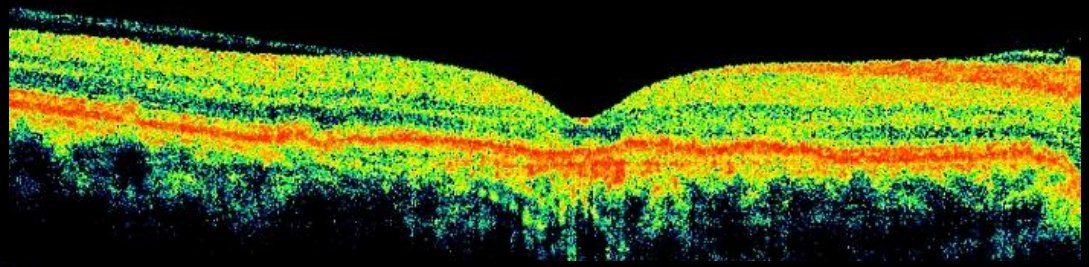

OD Exudation 5 days post-PDT
Jan 2, 2013

OS Exudation 5 days post-PDT
Jan 2, 2013

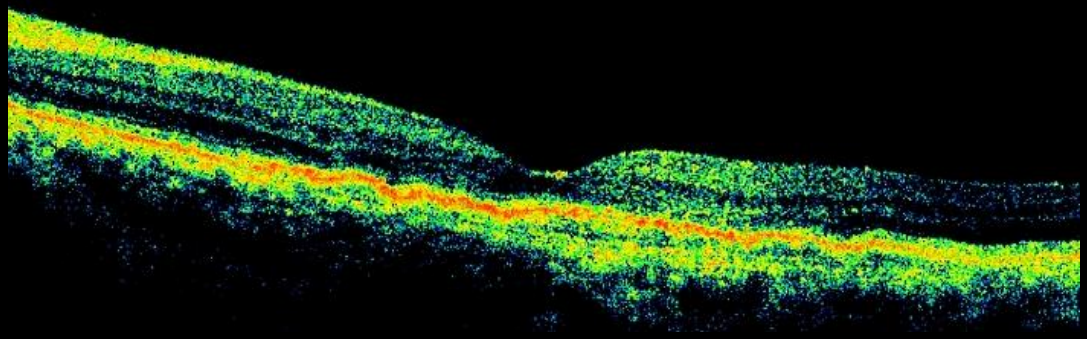


# 4 weeks post PDT, Feb 2013 to date
## Maintained on anti-VEGF monotherapy for 1 year
## Off all therapy 1 year

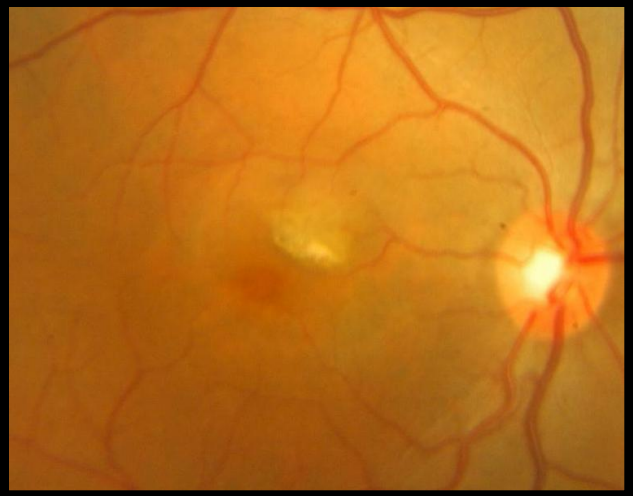
OD 20/80

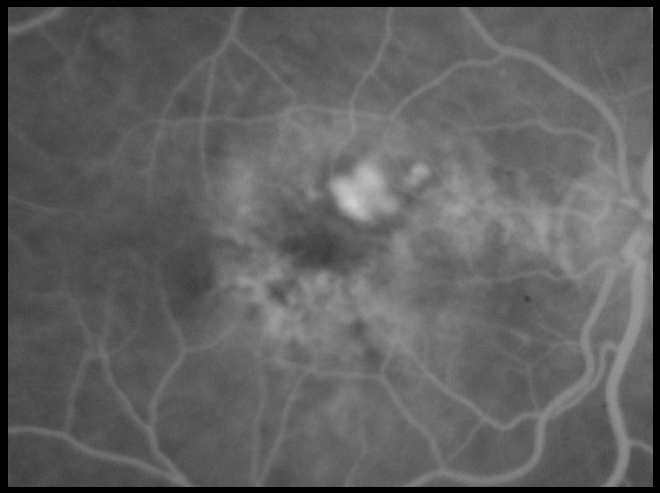


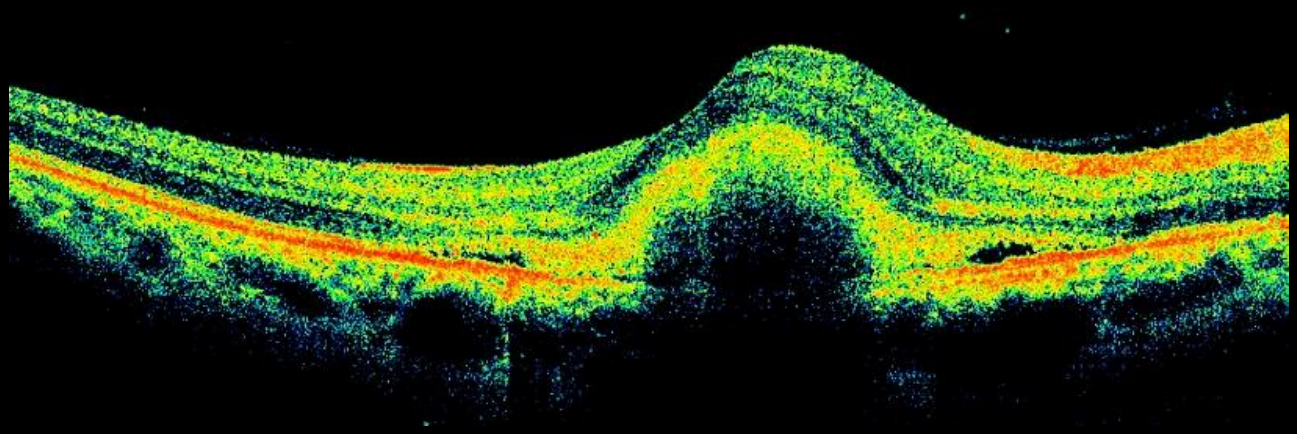
OS 20/60



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



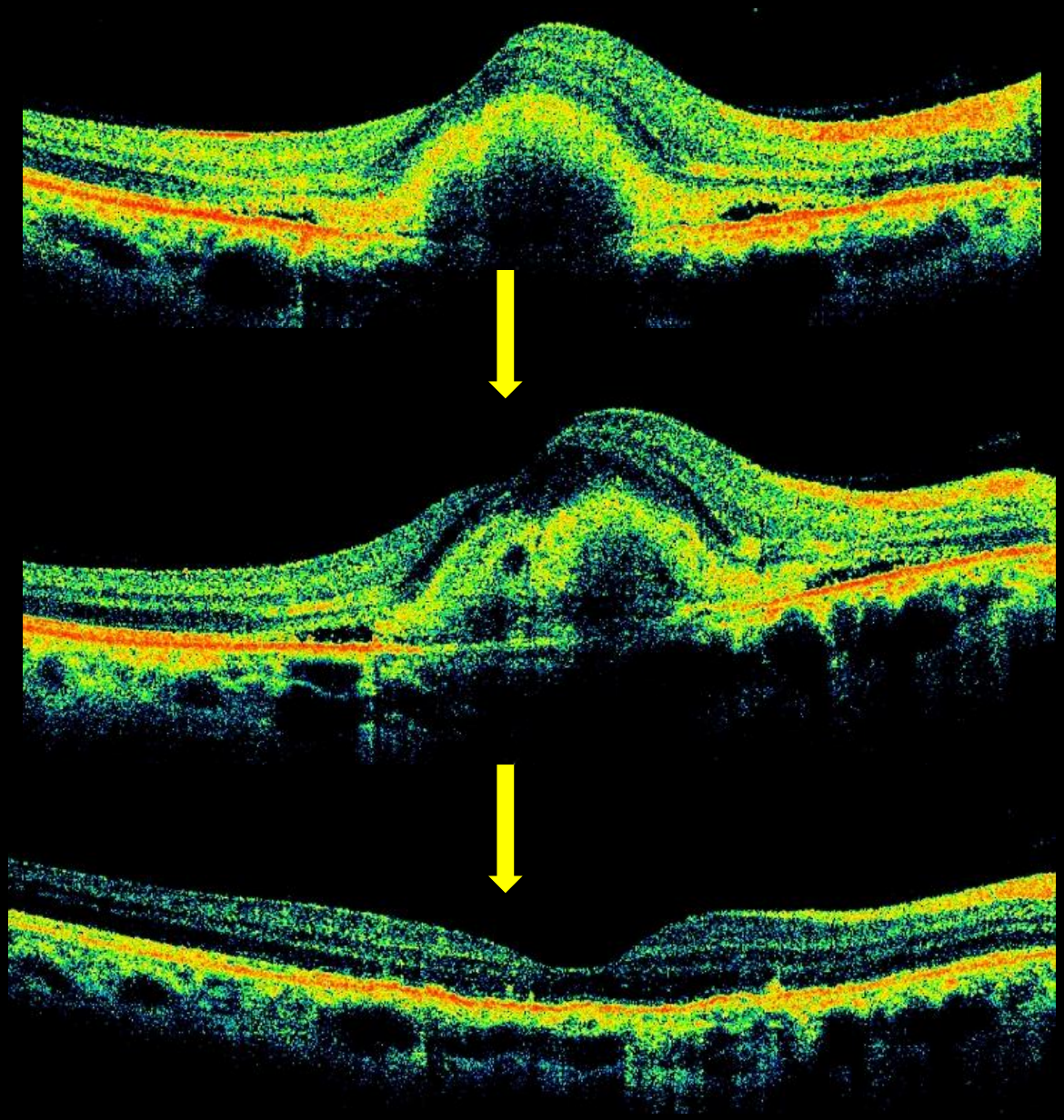




## Case 4.

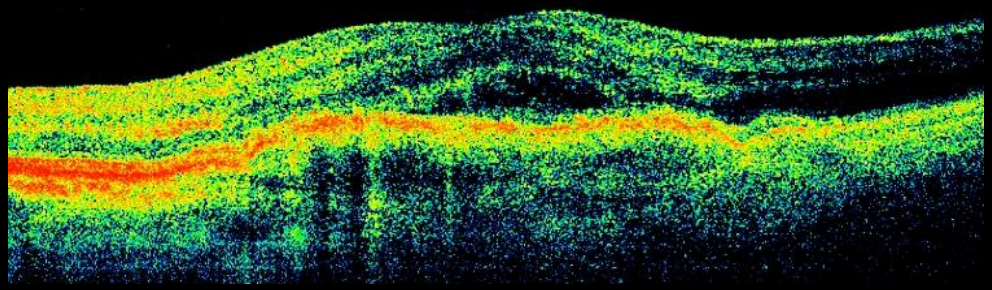
Increasing fluid on bevacizumab over 4 months

Complete resolution 4 weeks post-PDT



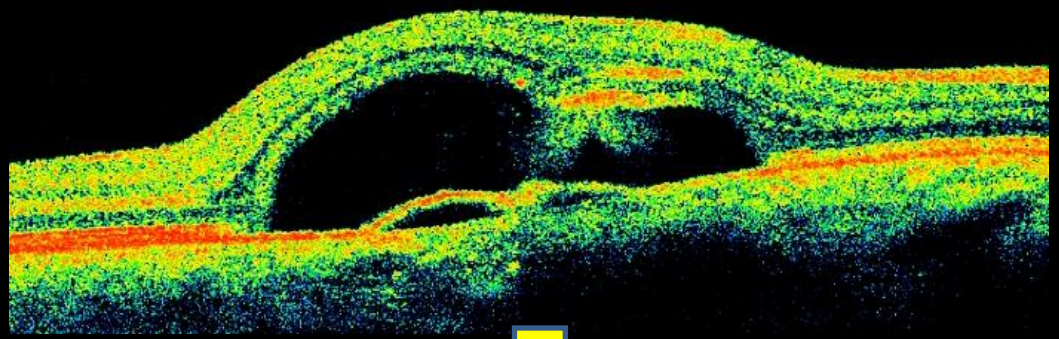
# Case 5. Mar 2010

- Wet AMD, classic CNVM
- Initially responsive to anti-VEGF

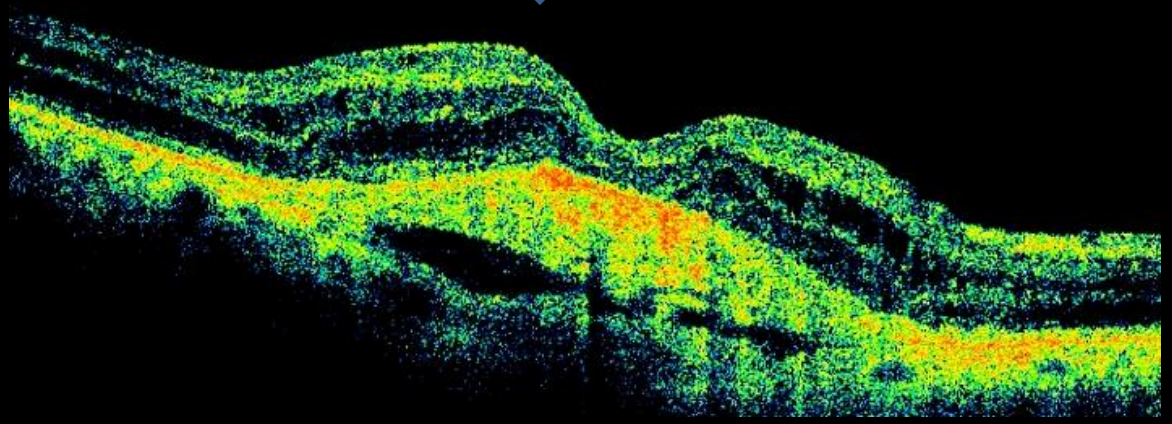


# Became unresponsive following vitrectomy

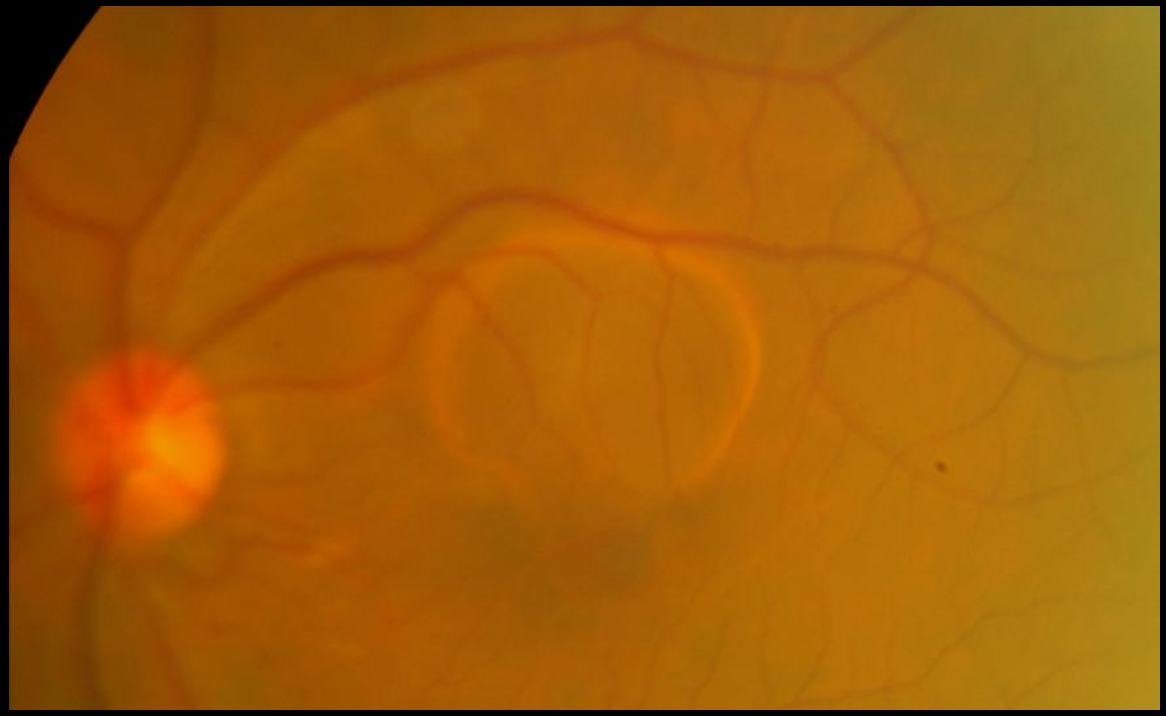
Sep 2010

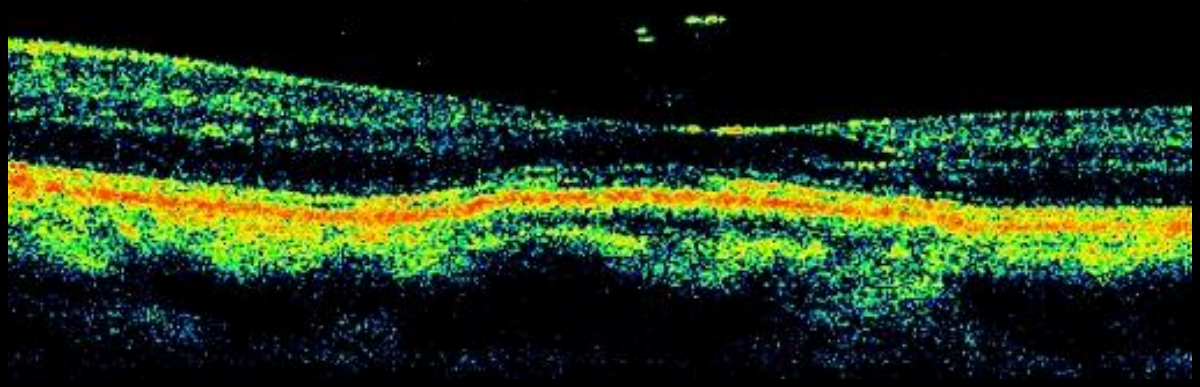


Post PDT
Mar 2011



# Case 6. 60 yo lady
# Wet AMD,  Serous RPE Detachment

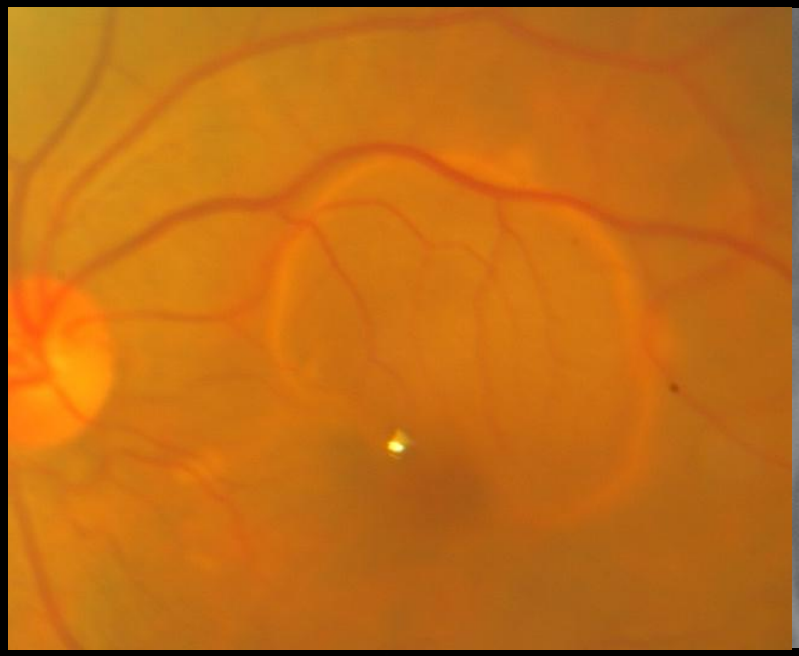


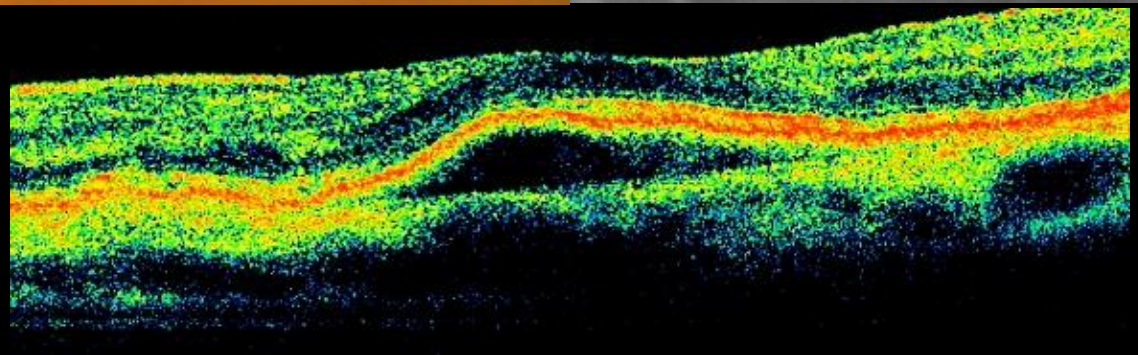


# 2008

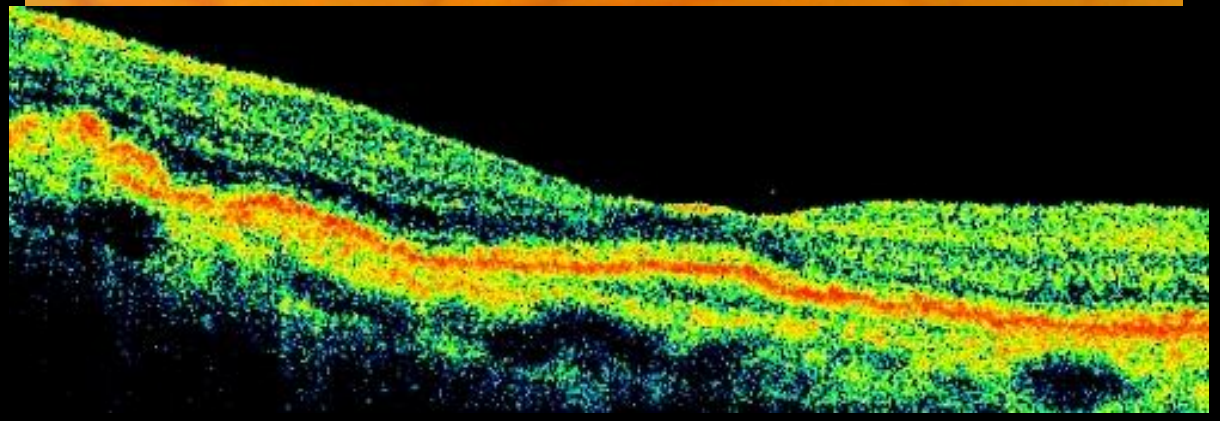
- VA 6/6
- Maintained  with anti-VEGF monotherapy for 7 months

- Did not review for 4 months
- RPED high at foveal centre
- Non-responding to anti-VEGF monotherapy

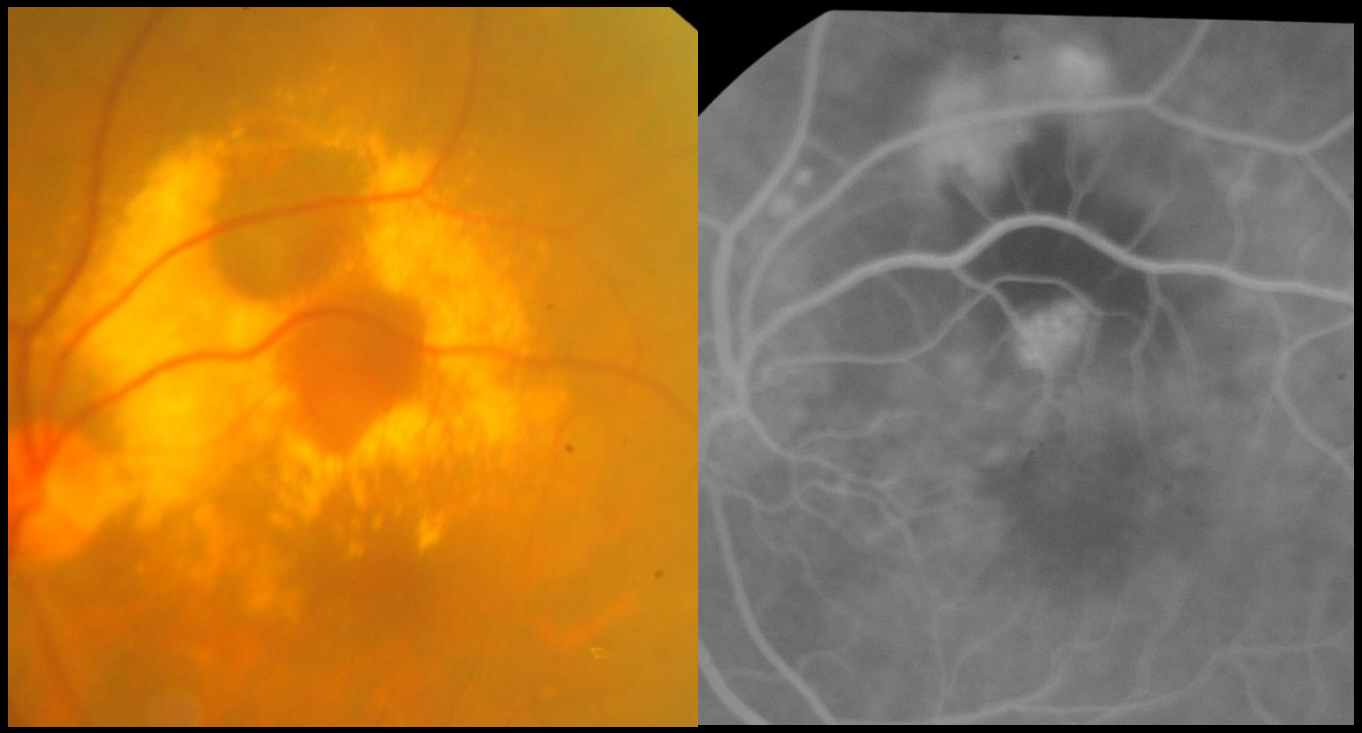


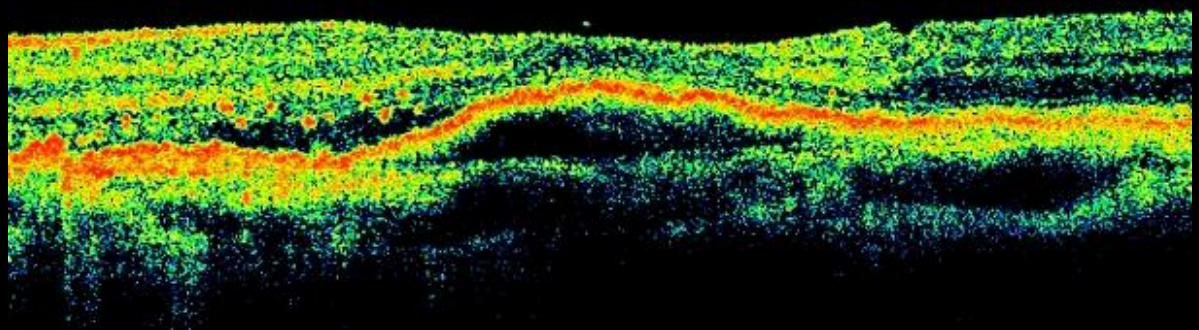


# 4 weeks post-PDT, 2009
# maintained on anti-VEGF therapy for 1 year

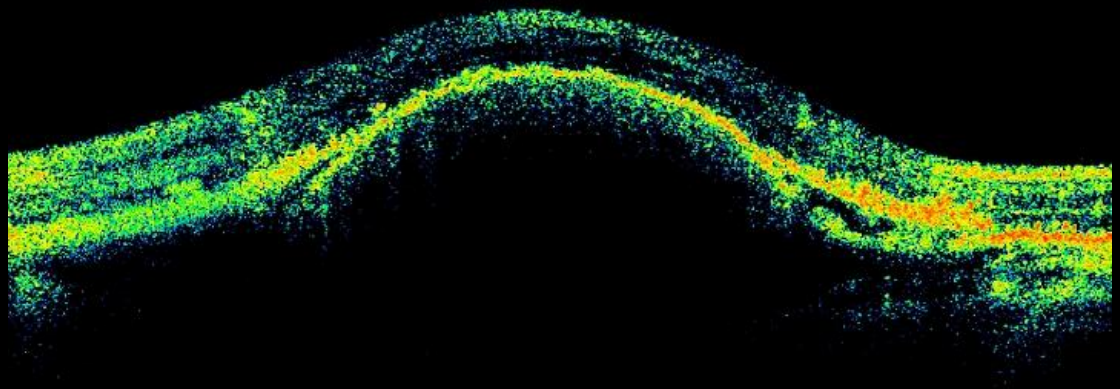


# Jan 2011,  on widely spaced avastin
# VA  CF 2M

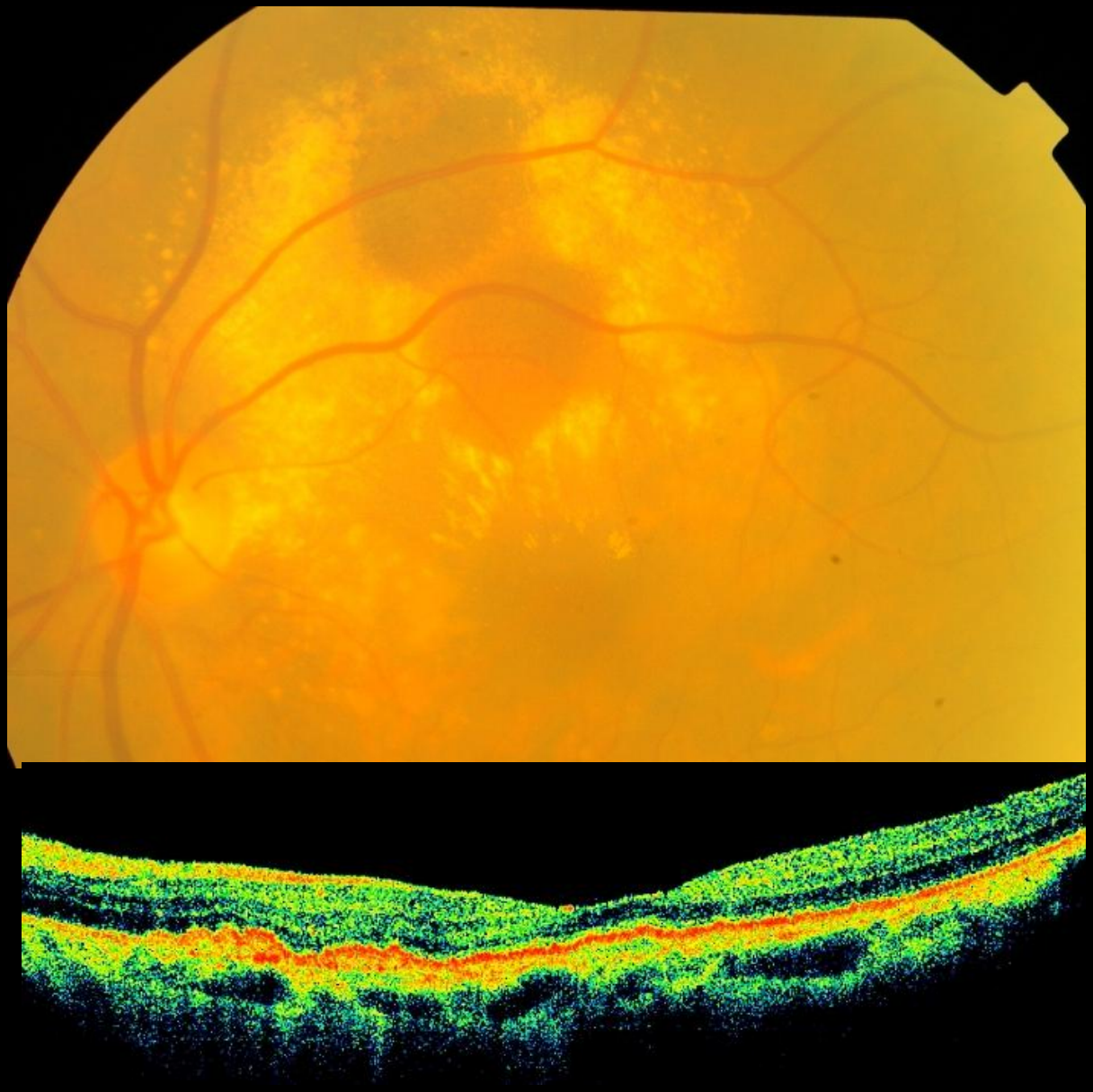




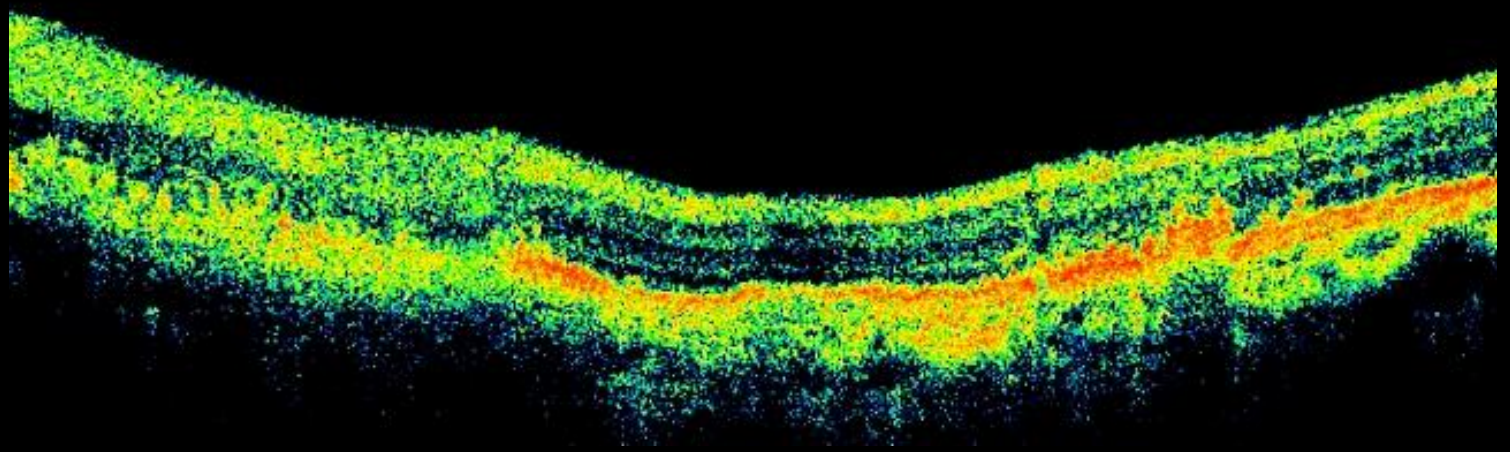
# RPED superior to centre



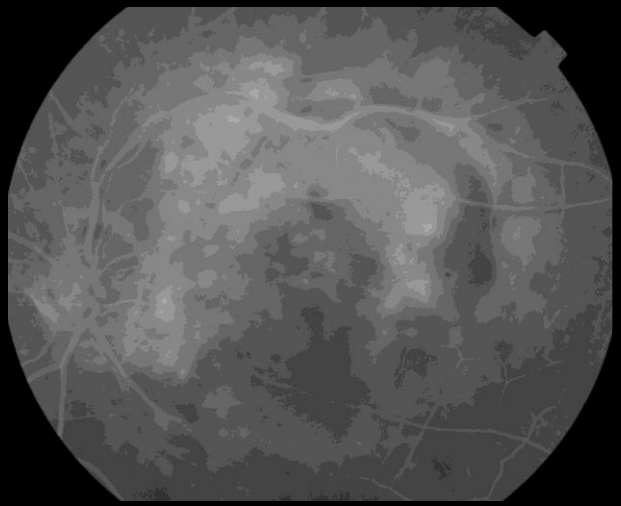
# 6 weeks following repeat PDT

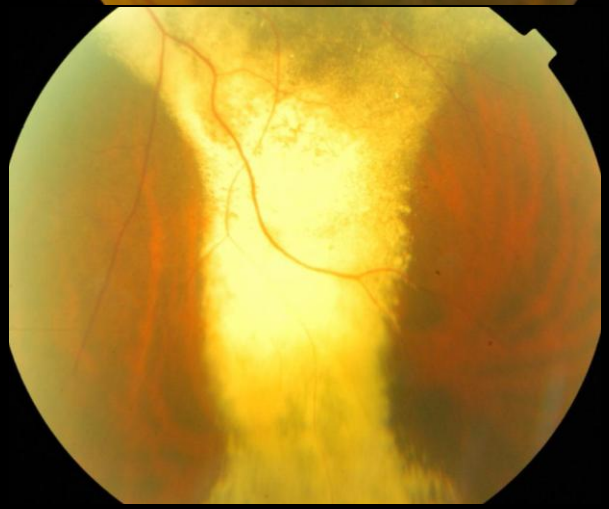


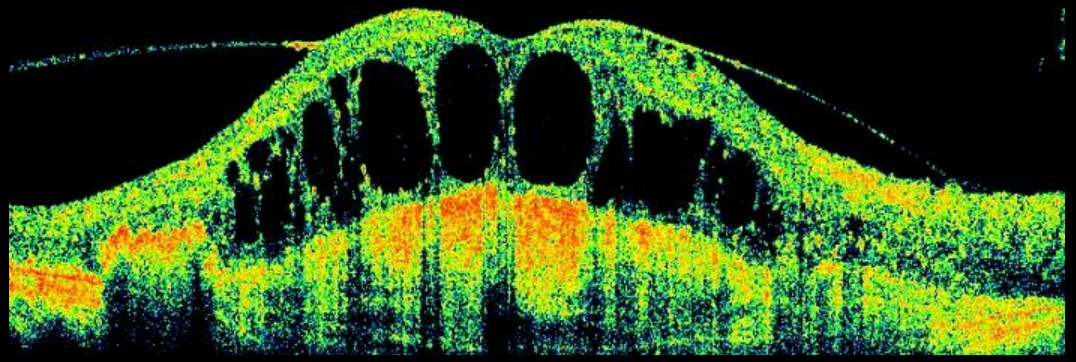
Jul 2011 to date (3.5 years), Superior to centre
Maintained on anti-VEGF



# Case 7. Large exudative lesion, multiple widely spaced treatments earlier



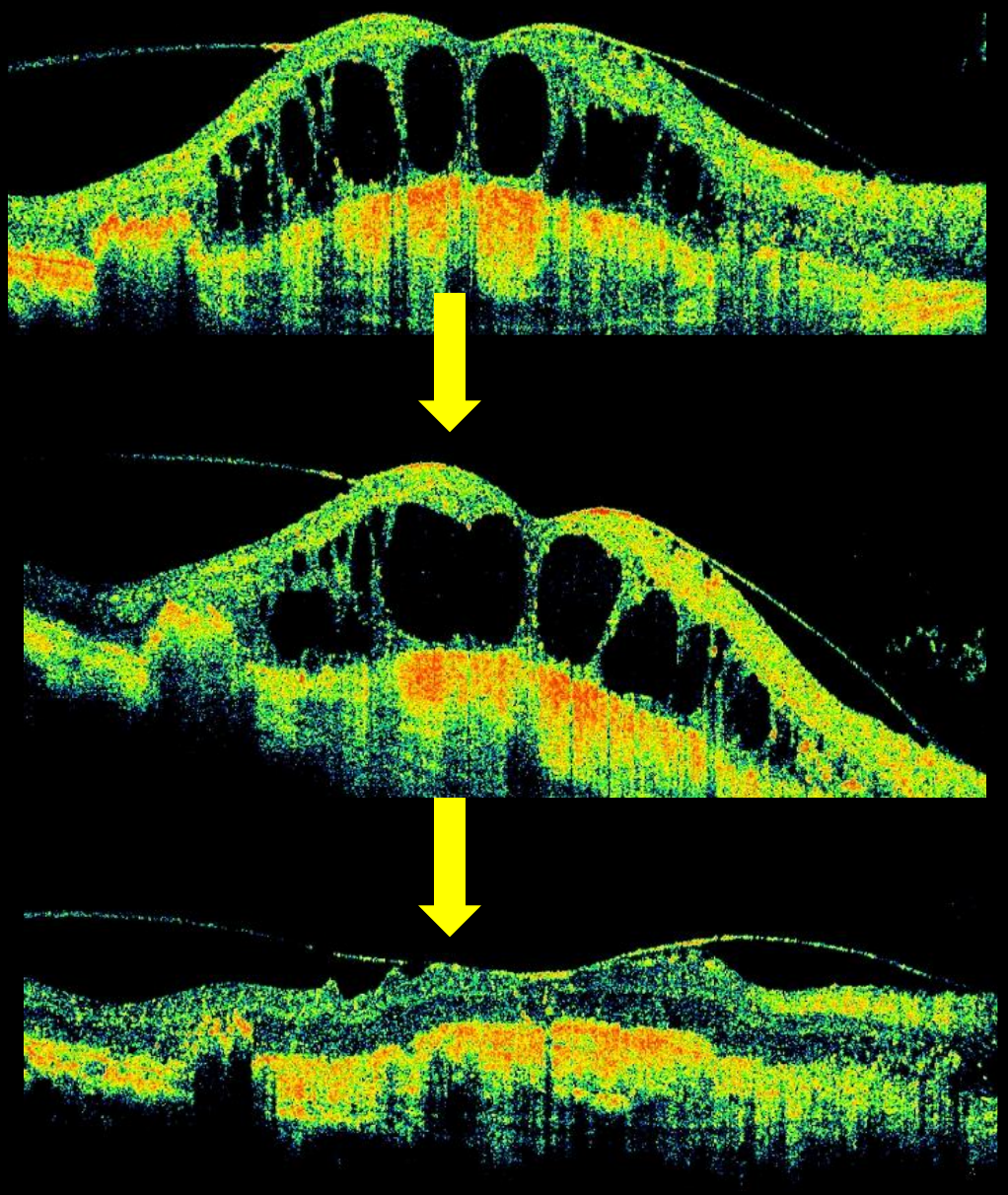




# Case 7.

Increasing fluid on bevacizumab for 6 months

Complete resolution 4 weeks post-PDT

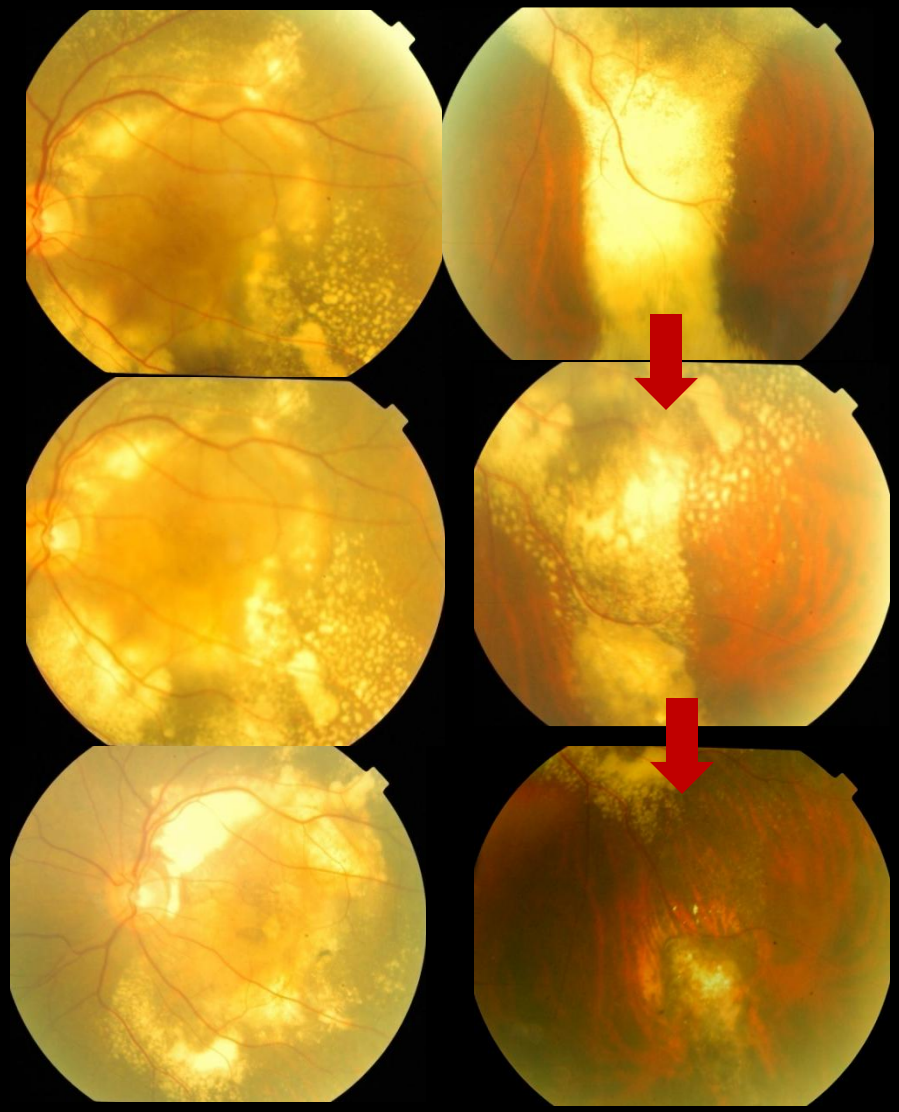


# Case 7. Gravitational exudates inferior to macula

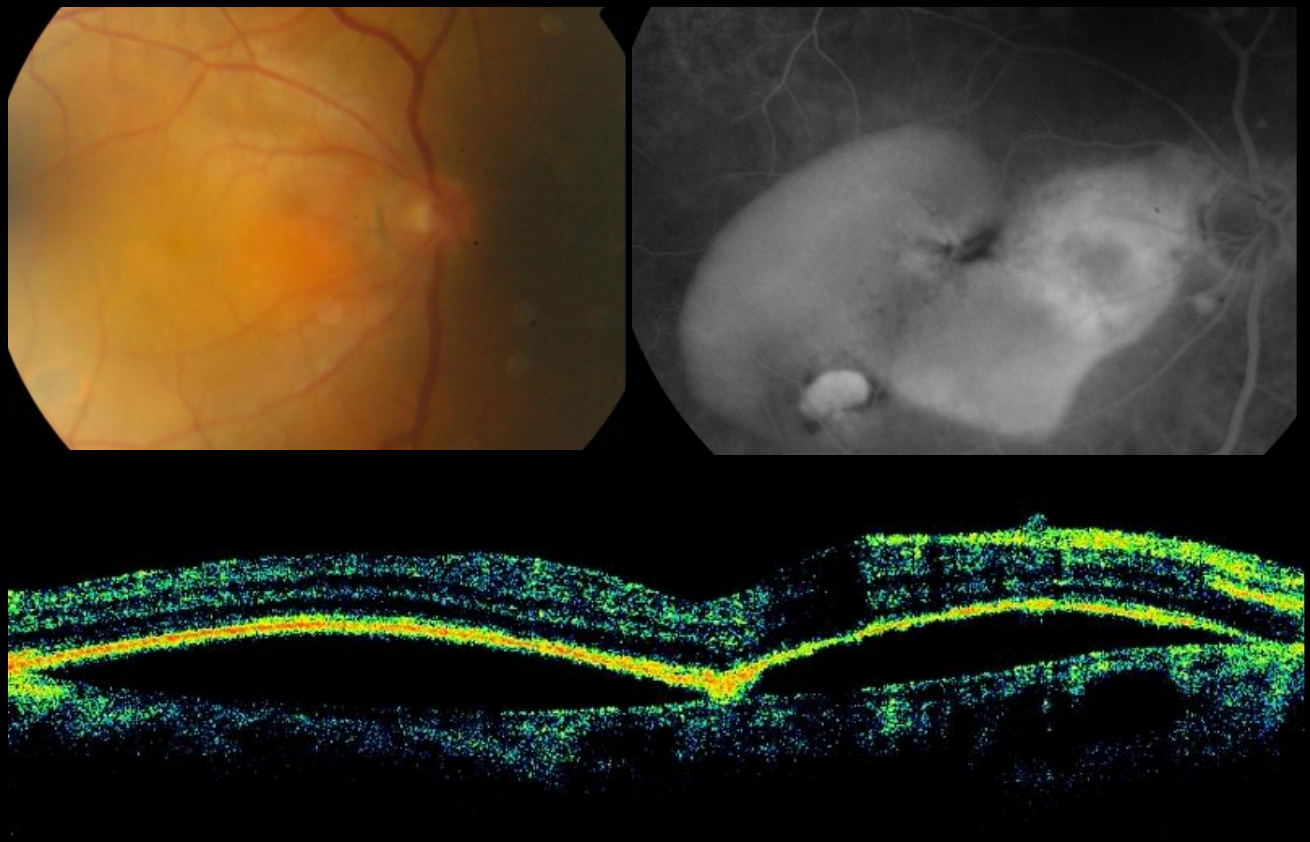
Pre-PDT 2/60

Post PDT 4 weeks

Post PDT 1 year 6/36

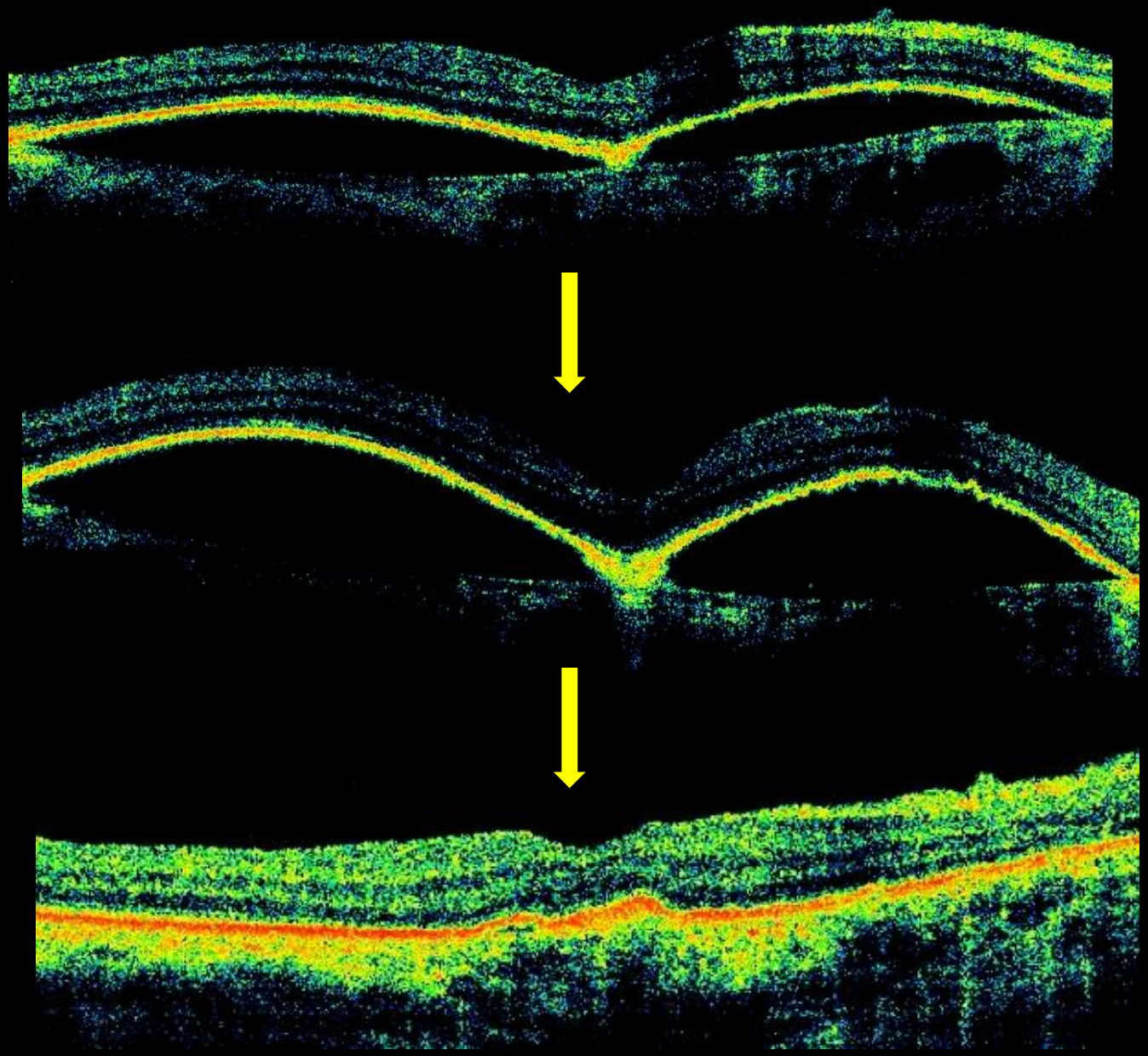


# Case 8. Large  exudative lesion



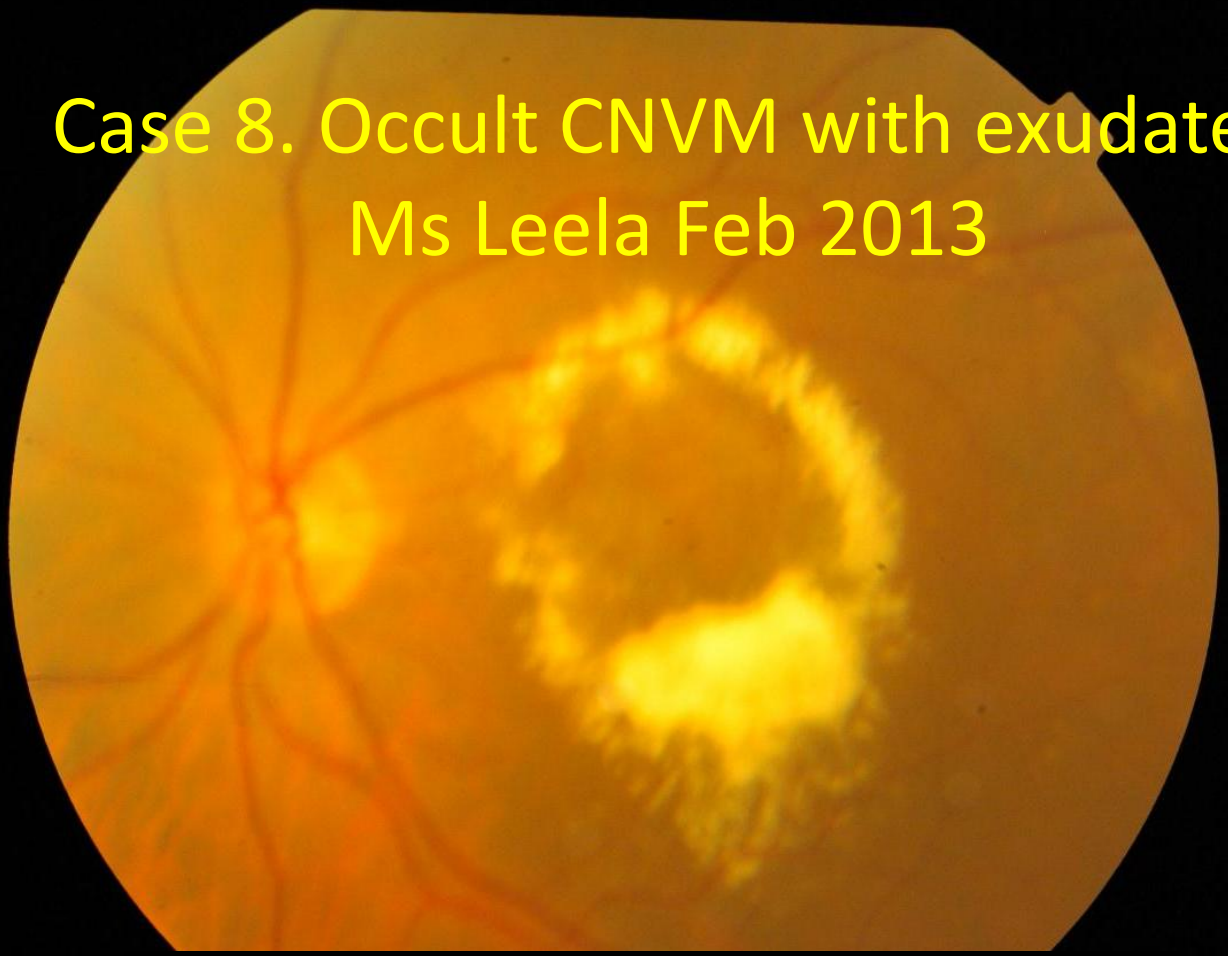
# Case 6.

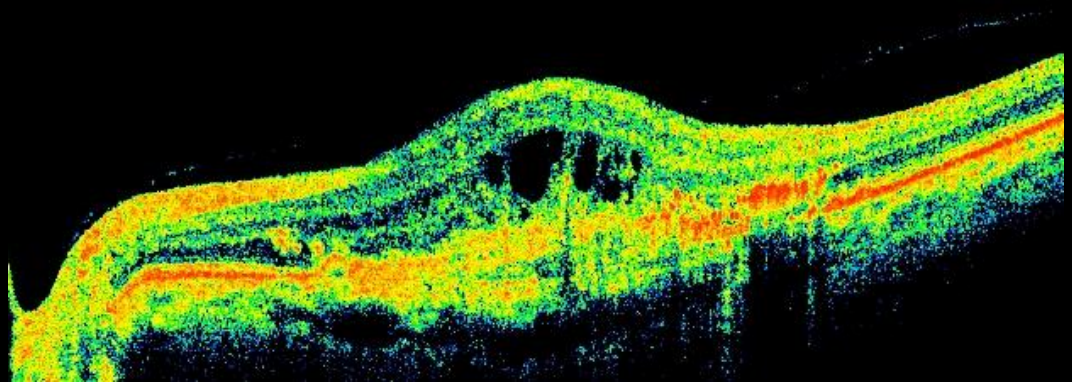
Increasing fluid on bevacizumab over 10 months

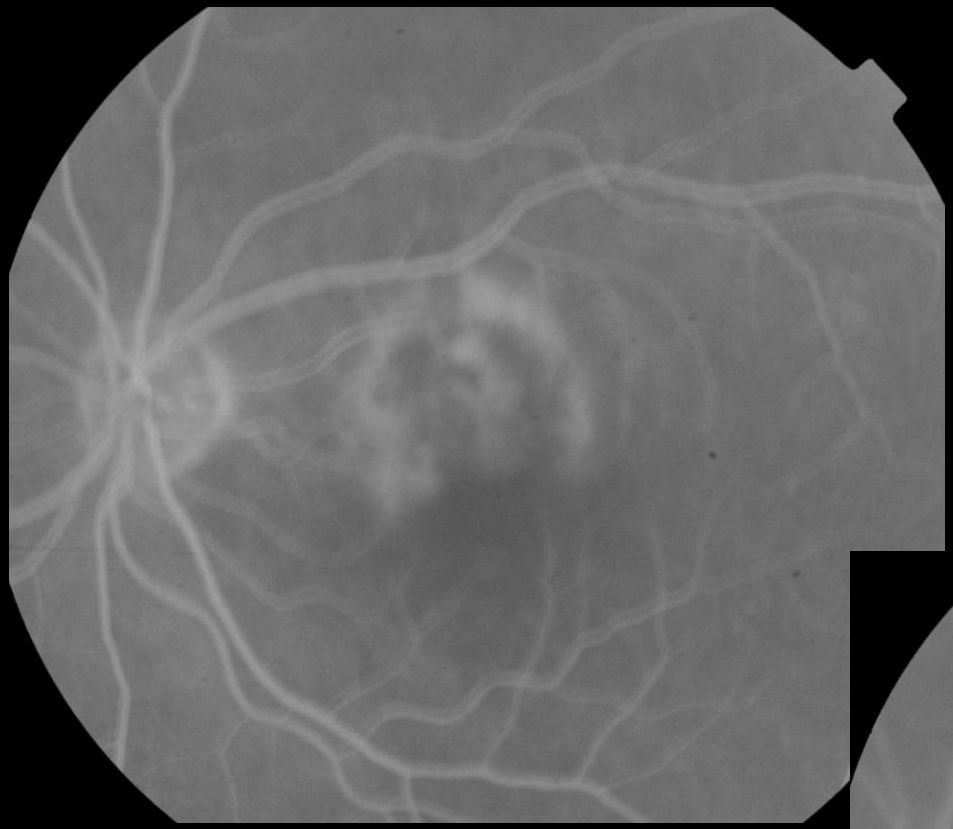


Post-PDT 4 weeks

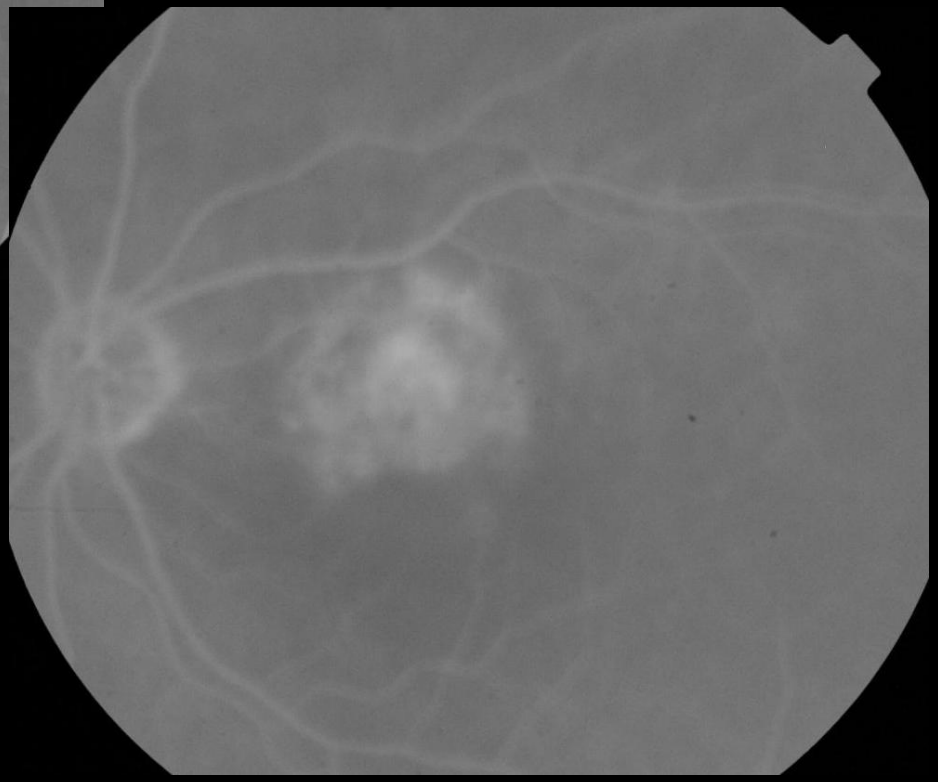
# Case 8. Occult CNVM with exudates
## Ms Leela Feb 2013



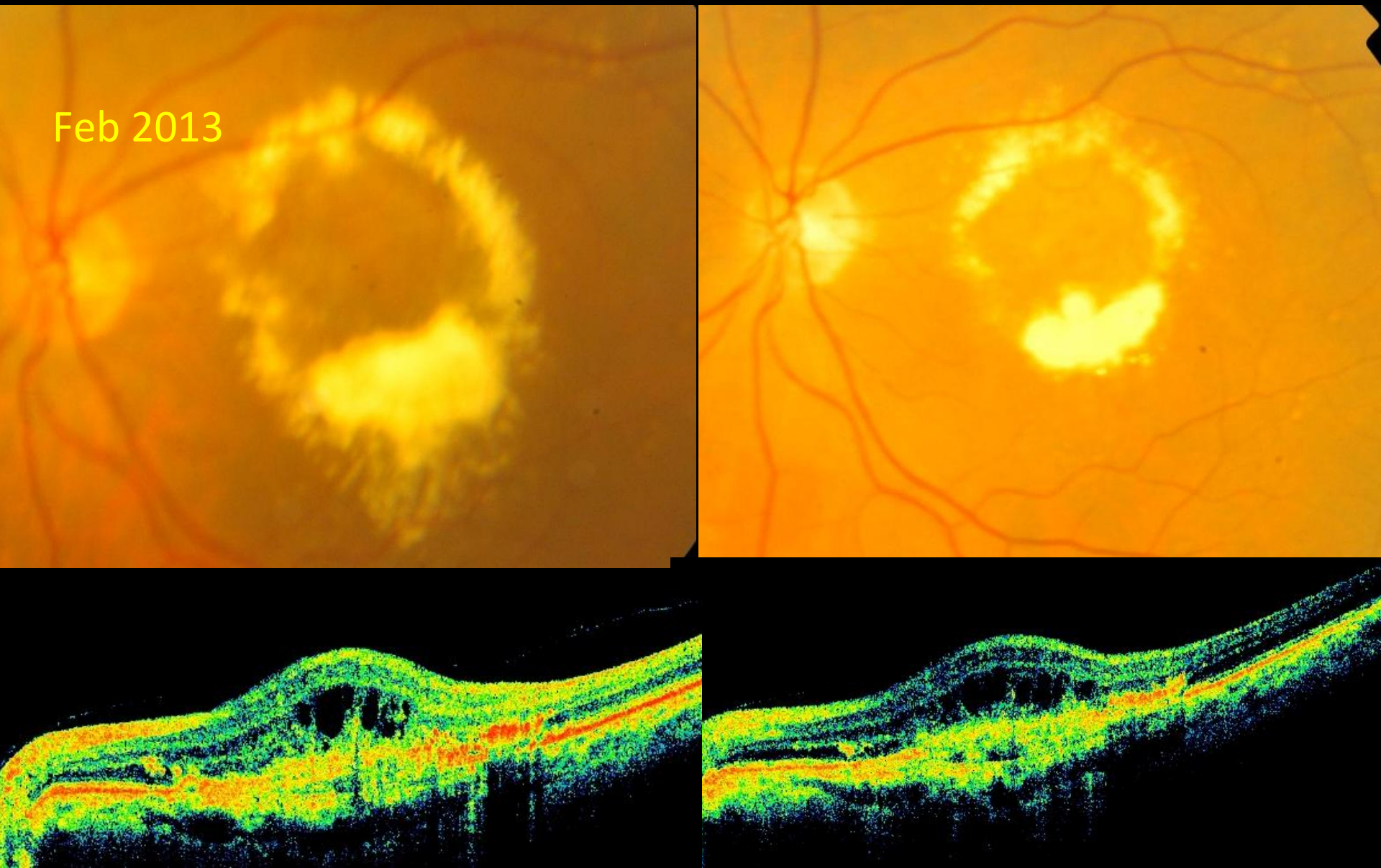




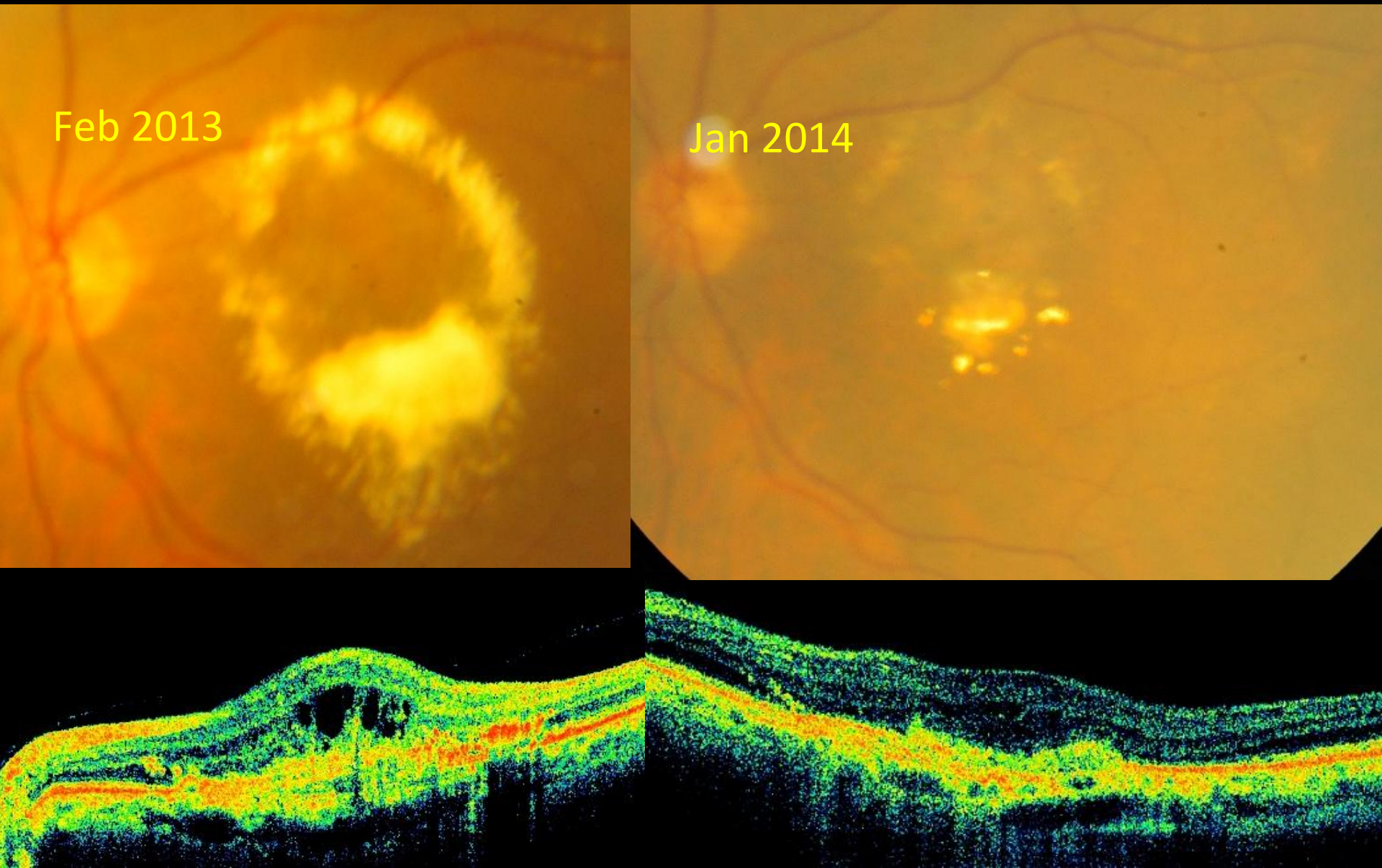
Occult CNVM



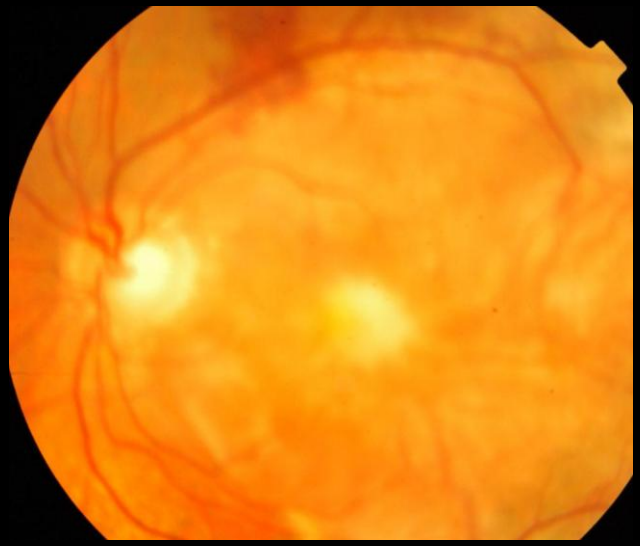
# Comparative over 9 months
# Anti-VEGF monotherapy

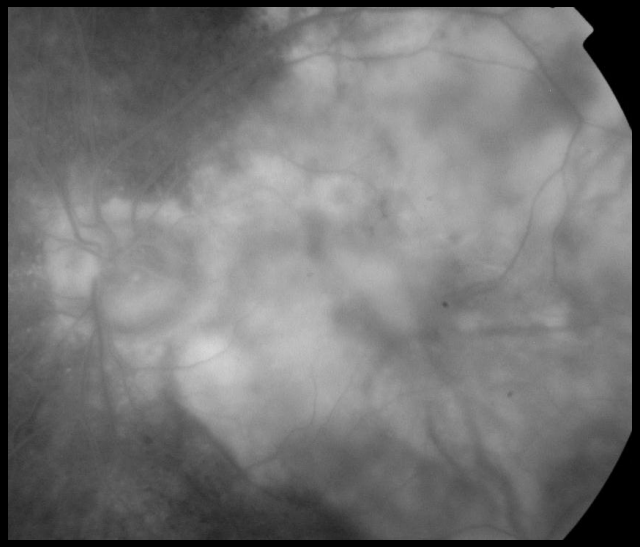


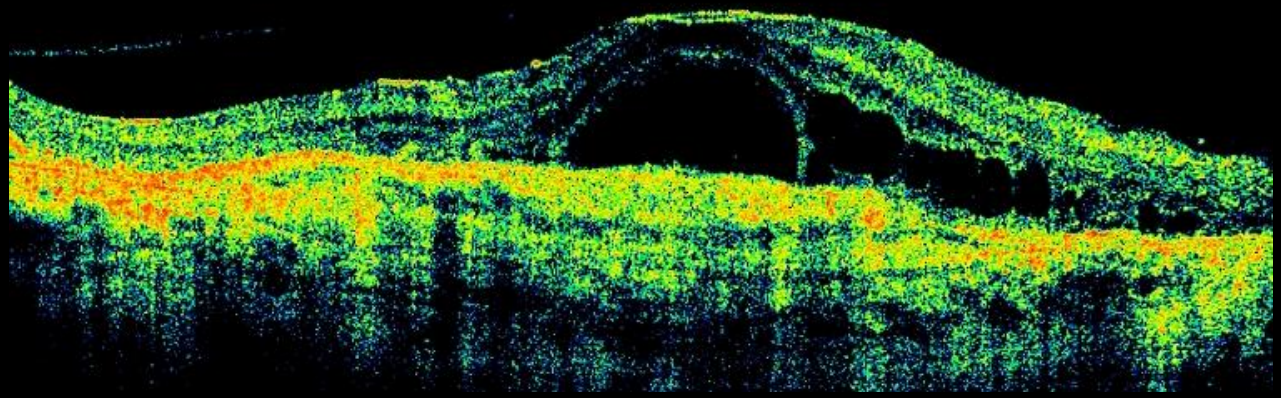
# Post PDT 3 months



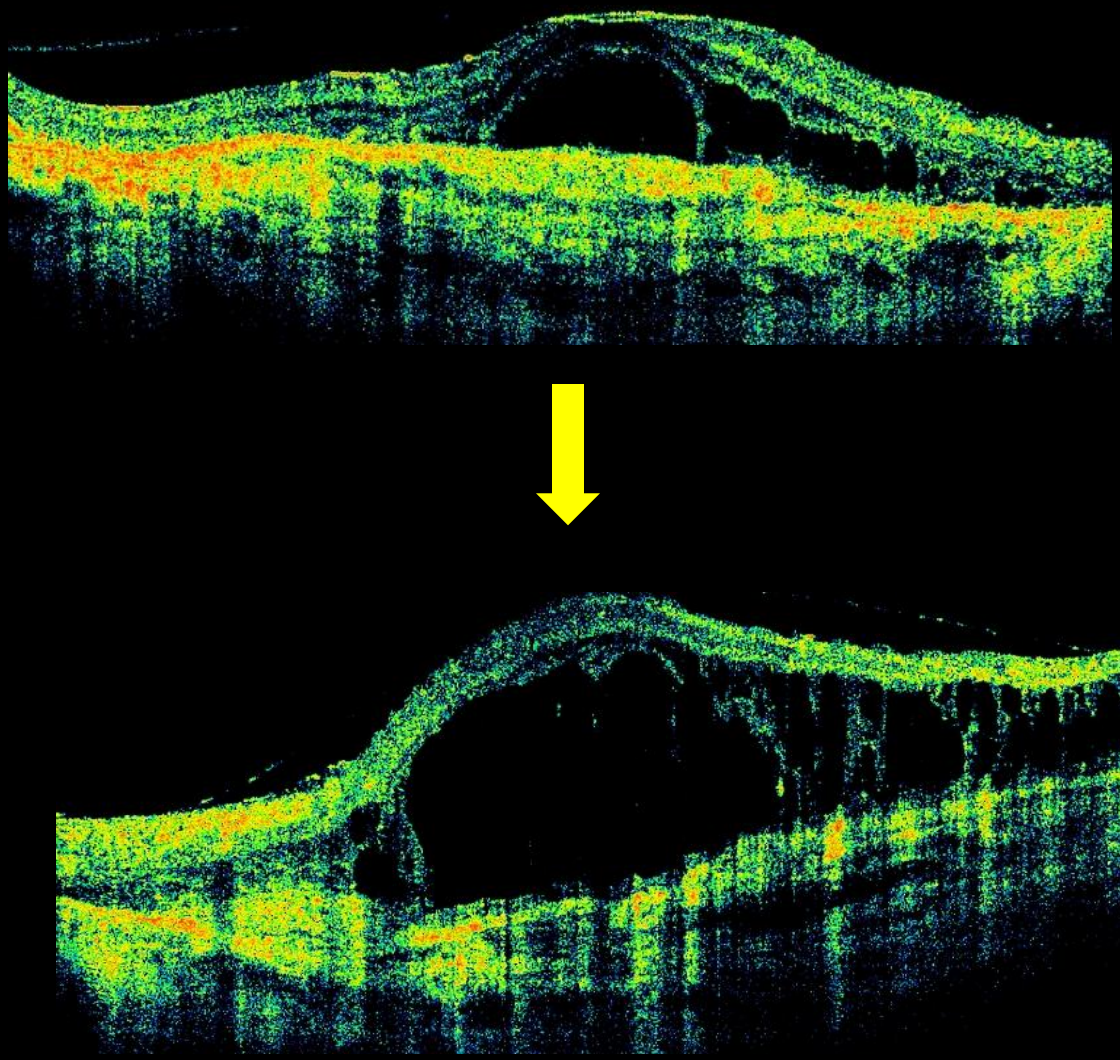
# Case 11. Large exudative AMD lesion
# Worsening on anti-VEGF therapy over 4 months

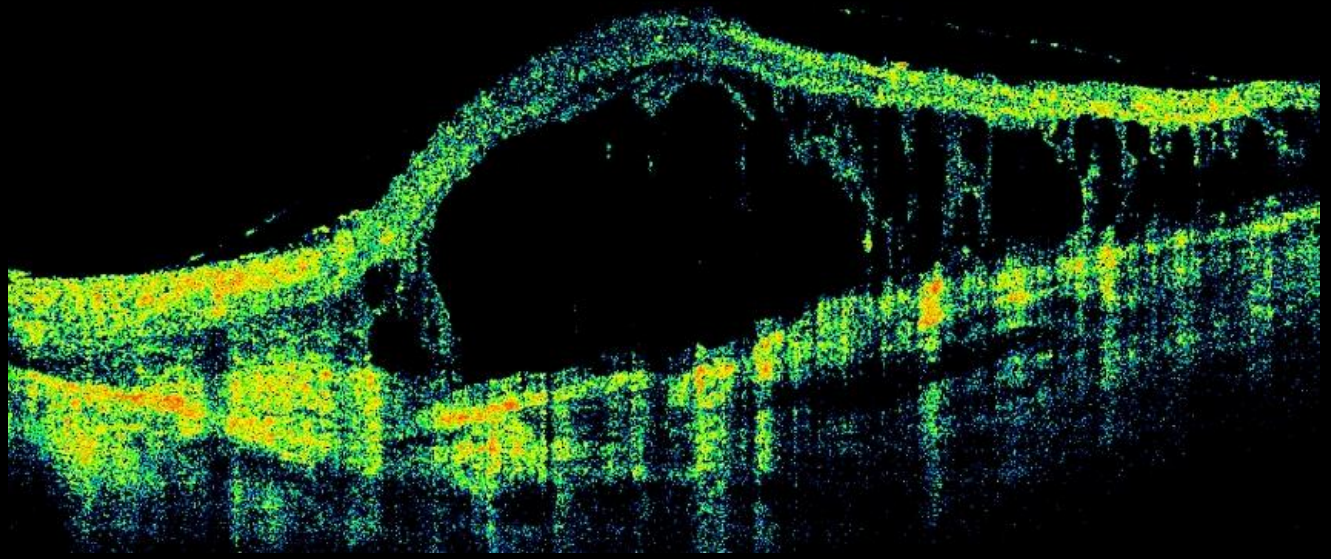




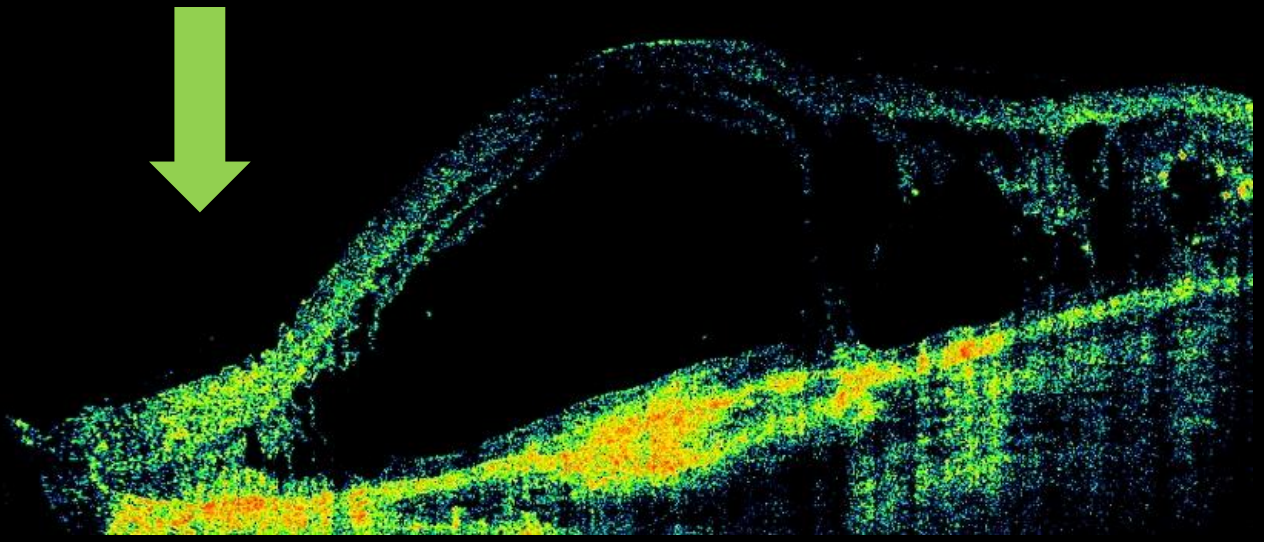


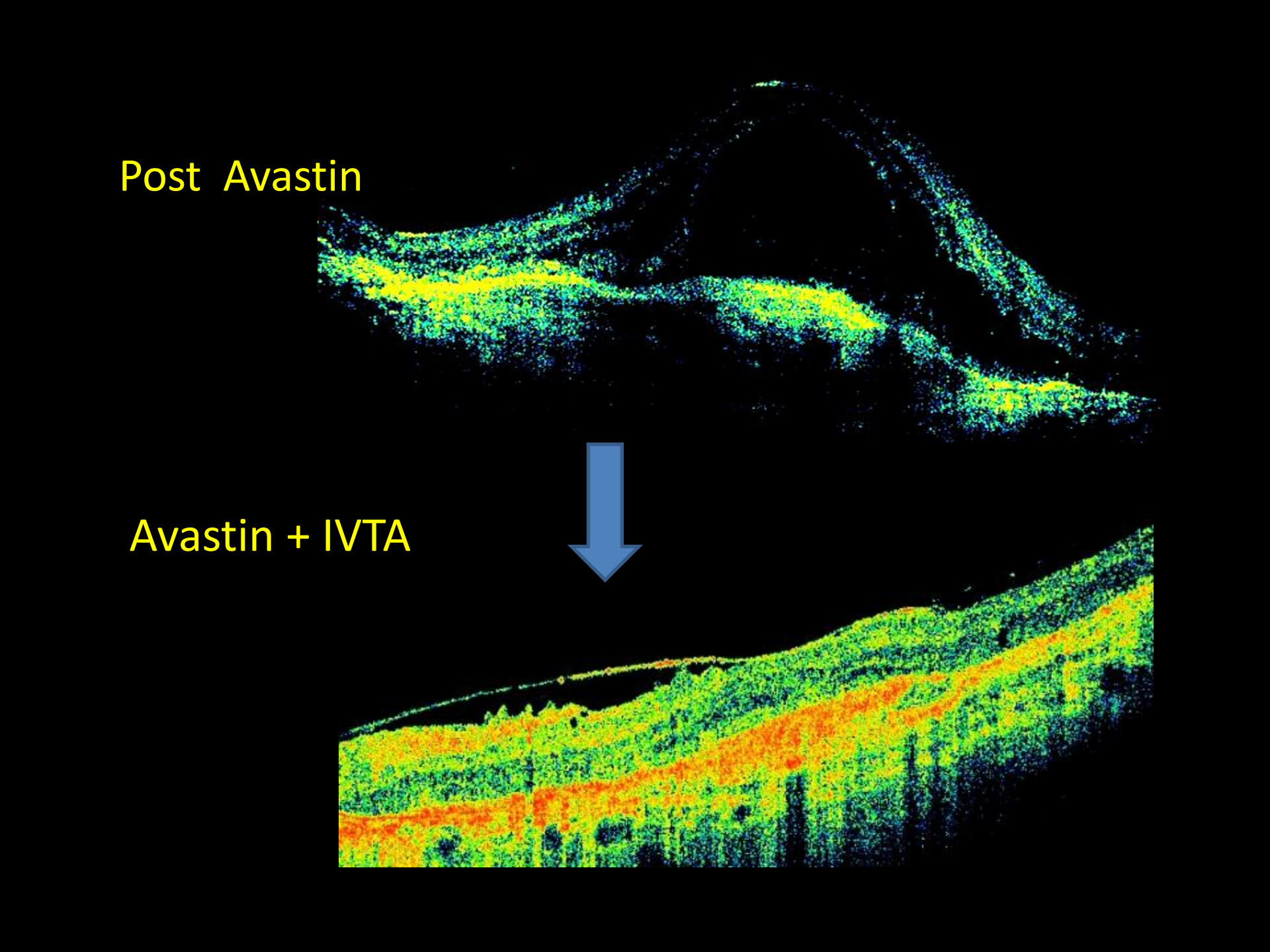
Increasing fluid
on bevacizumab
for 4 months



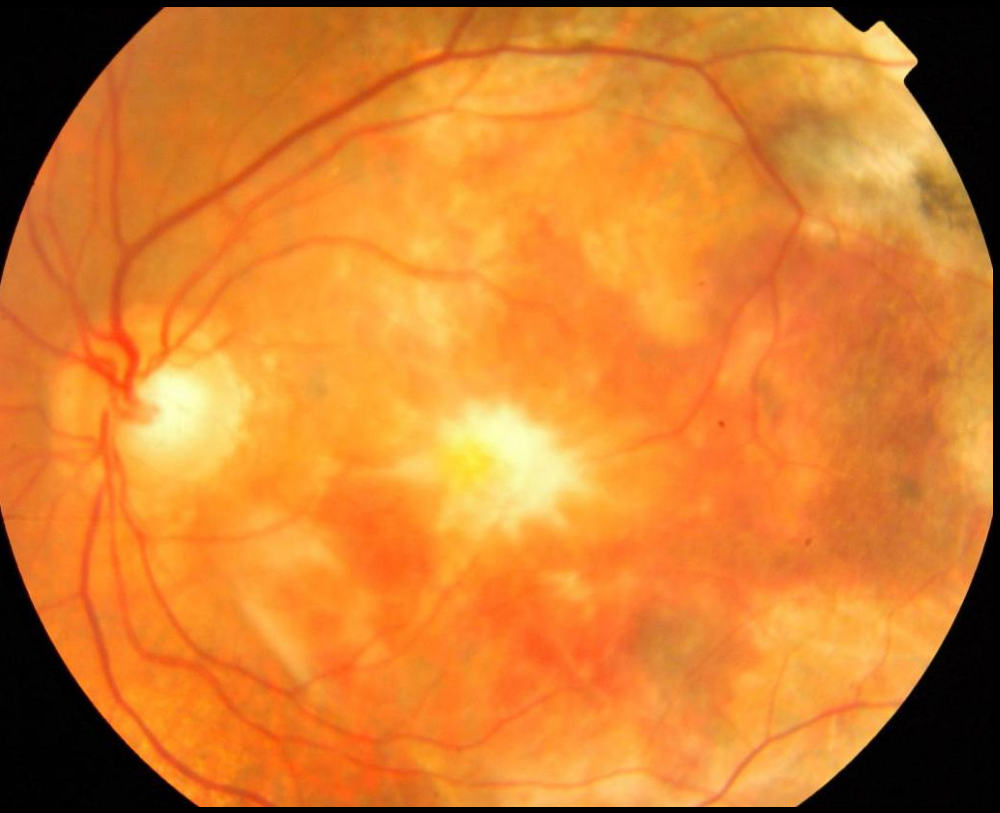


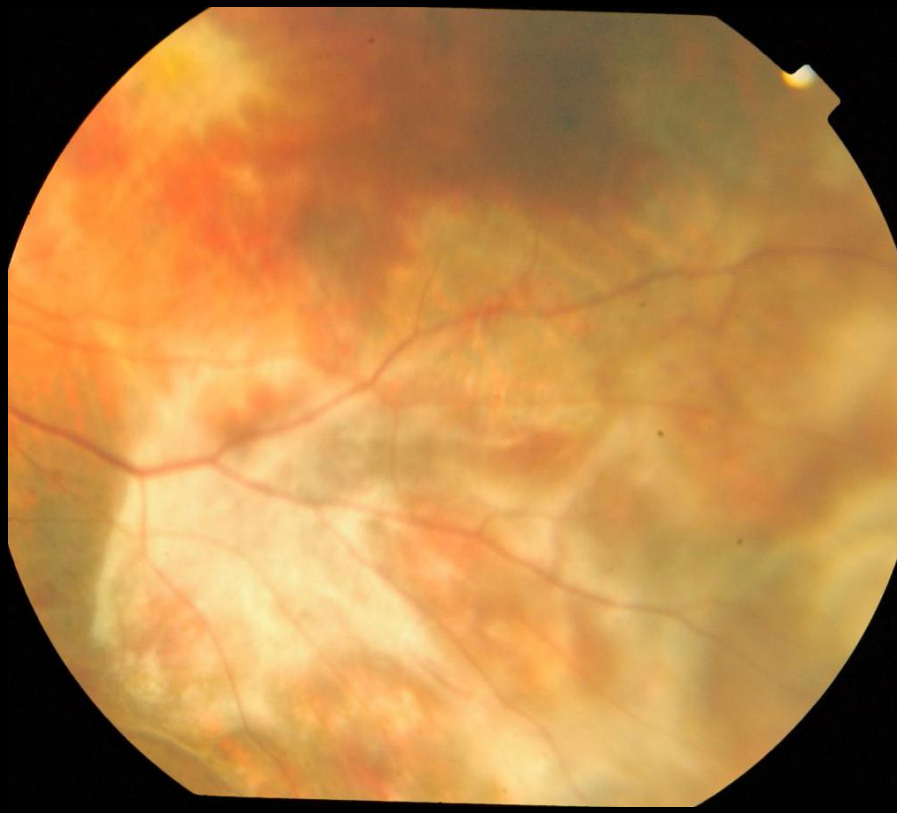
No change
Post PDT



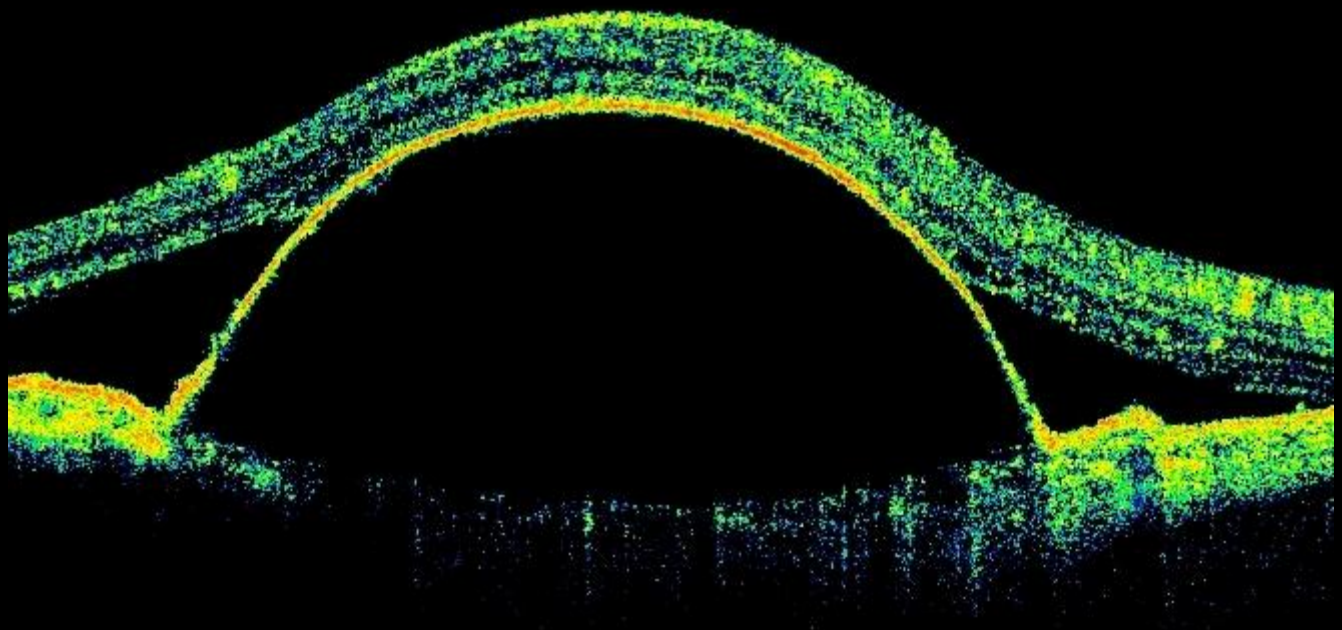

Post Avastin
Avastin + IVTA

# Post Avastin + IVTA
# Dry lesion with scarring

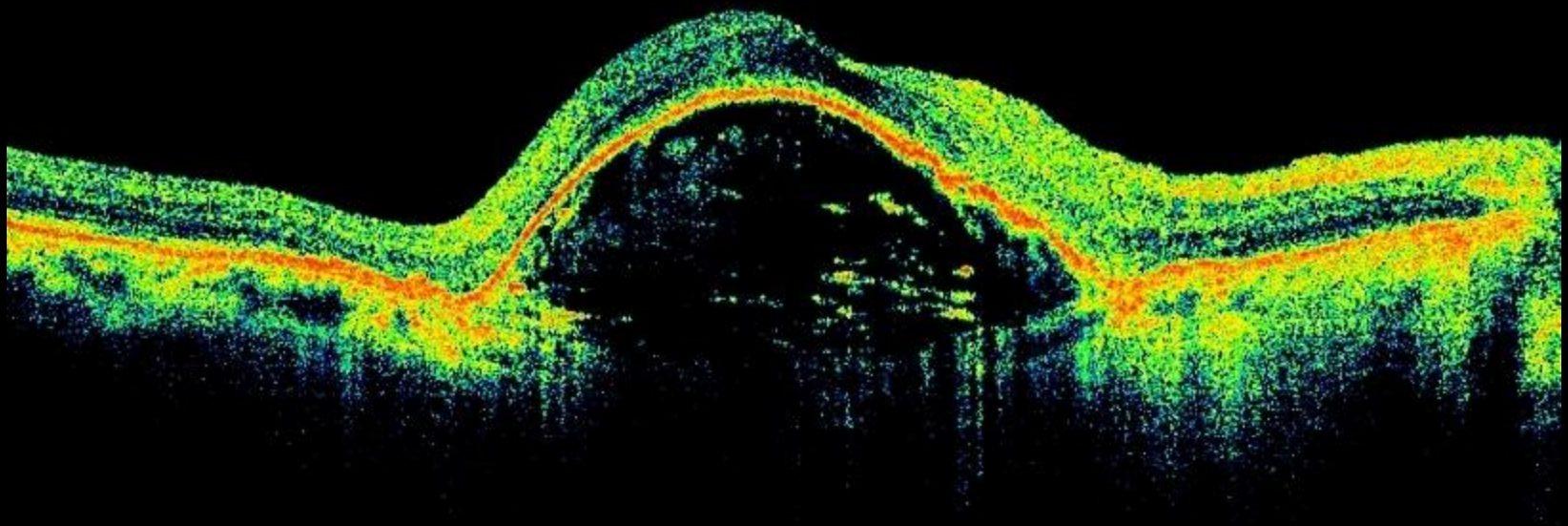




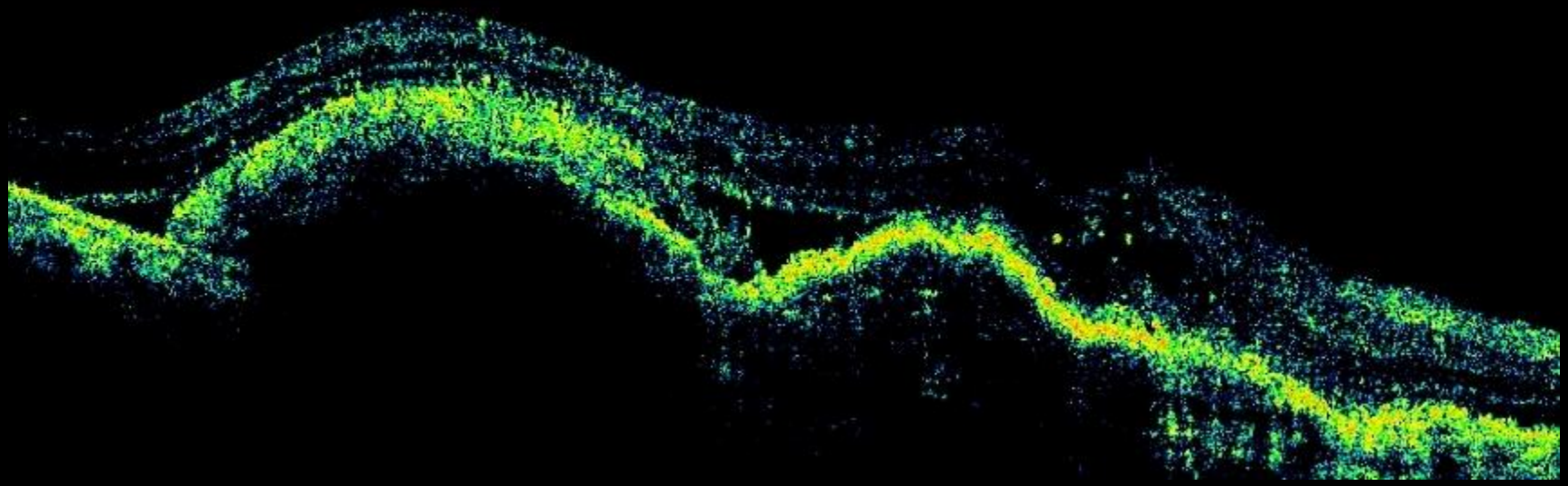
# Case 12. Bilateral AMD with RPED



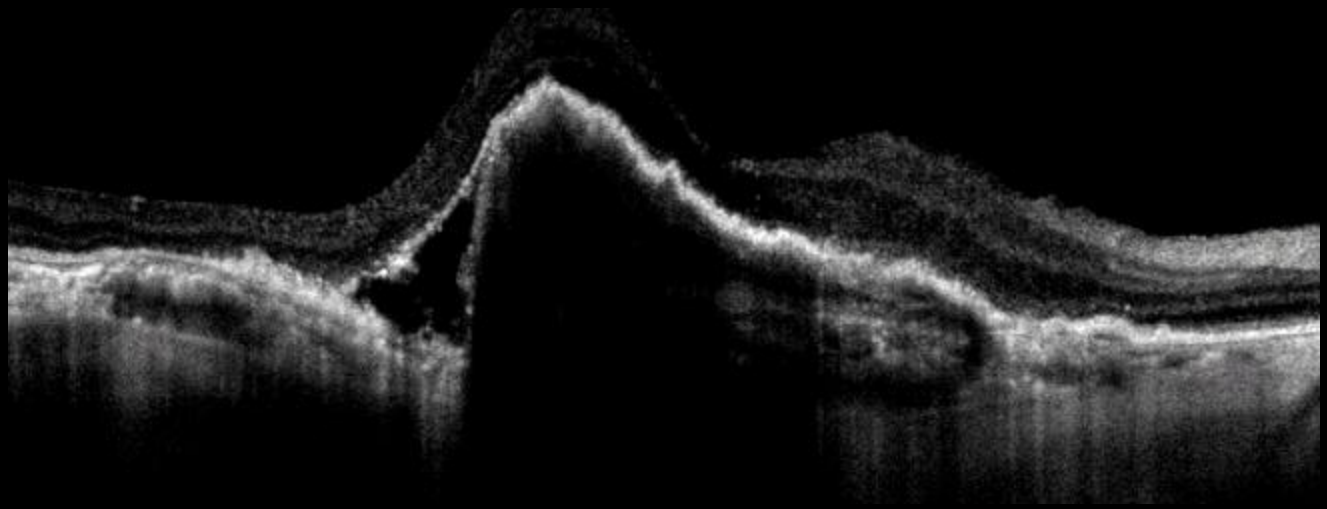
# Improvement with bevacizumab



# July 2013 after a 9 month treatment free interval

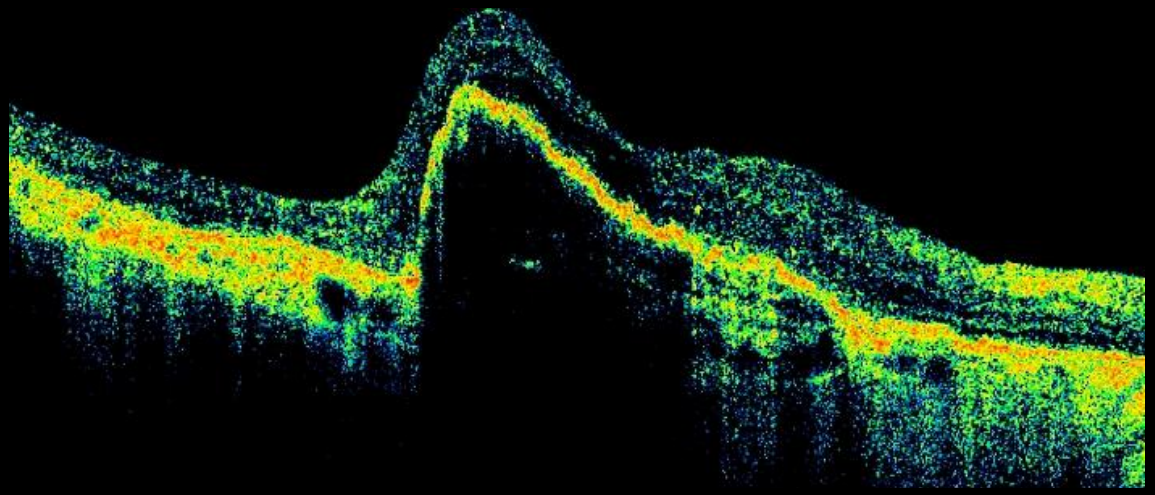


# Sep 2013, 2 months later on anti-VEGF monotherapy

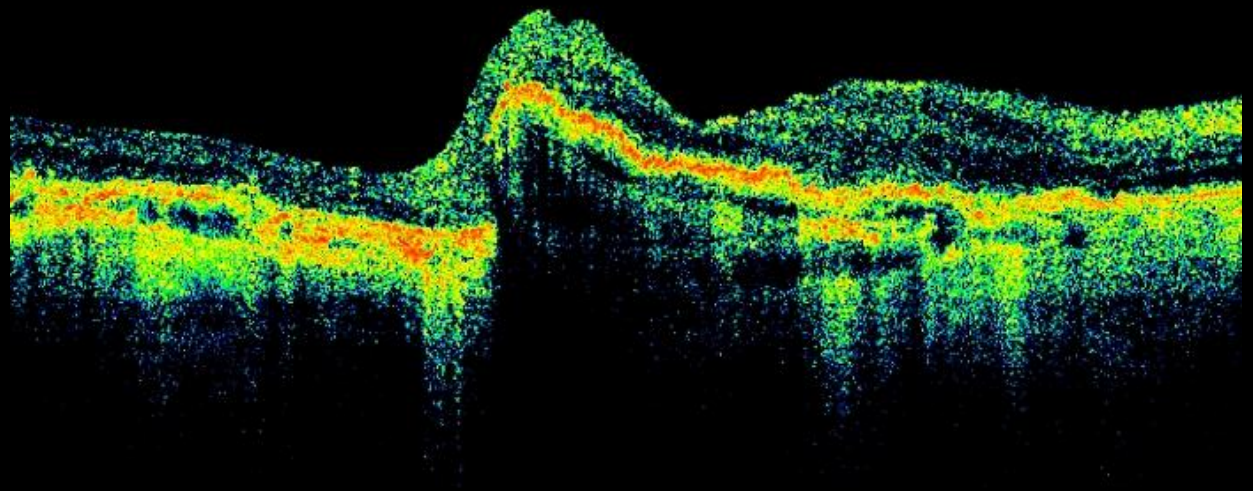


# On avastin + IVTA

Oct 2013



Jan 2014



# Summary

- Lesions were bilateral in most cases
- Most patients had significant improvement in structural & functional status following PDT over that achieved with anti-VEGF monotherapy

# Conclusion

- PDT is an effective modality to improve status in eyes with wet AMD that respond inadequately to anti-VEGF monotherapy with bevacizumab or ranibizumab
- The benefit from PDT is long-term, usually > 6 months, and can be maintained with anti-VEGF therapy

# Conclusion

- PDT may be repeated when fluid reaccumulates on continuing monotherapy
- Intravitreal steroid can be added to anti-VEGF therapy in unresponsive cases

Thank you!