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Sunday, August 11, 2019

(Room 4)

8:30 - 9:25 WS #150: Ophthalmology Update

9:35 - 10:30 WS #160: Ophthalmology Update (Repeated)

Southern Eye Specialists

Systemic Vascular Disease and the Retina

Sean Every

Ophthalmologist and Vitreoretinal Surgeon

No financial disclosures

THE EYES ARE THE WINDOW TO THE SOUL

THE EYES ARE THE WINDOW TO THE VASCULAR SYSTEM

Outline:

1. Diabetic Retinopathy
2. Retinal Vein Occlusion
3. Carotid Artery Disease
4. Systemic vasculitis
5. Hypertension

Diabetes mellitus: epidemiology

- The leading cause of blindness in working age adults
- Prevalence of DM 6% of the total NZ population
  - 240,000 diagnosed
  - 100,000 undiagnosed
- 1/3 diabetics will have diabetic retinopathy
  - 10% sight threatening

Risk factors for retinopathy:

- Duration of diabetes
- Type 1 diabetes
- Poor HbA1c
- Hypertension
- Pregnancy
- Dyslipidaemia

Diabetic Retinopathy: Pathogenesis

Damage to capillary wall

↓

Capillary dropout

↓

Microvasculature occlusion and leakage

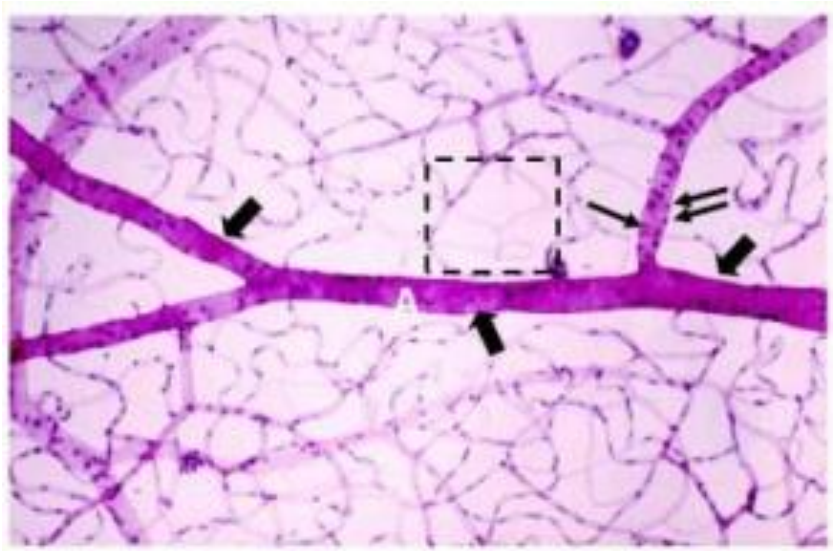
↓

Ischaemia and production of Vascular Endothelial Growth Factor (VEGF) and inflammatory mediators

↓

Retinal and optic disc neovascularisation

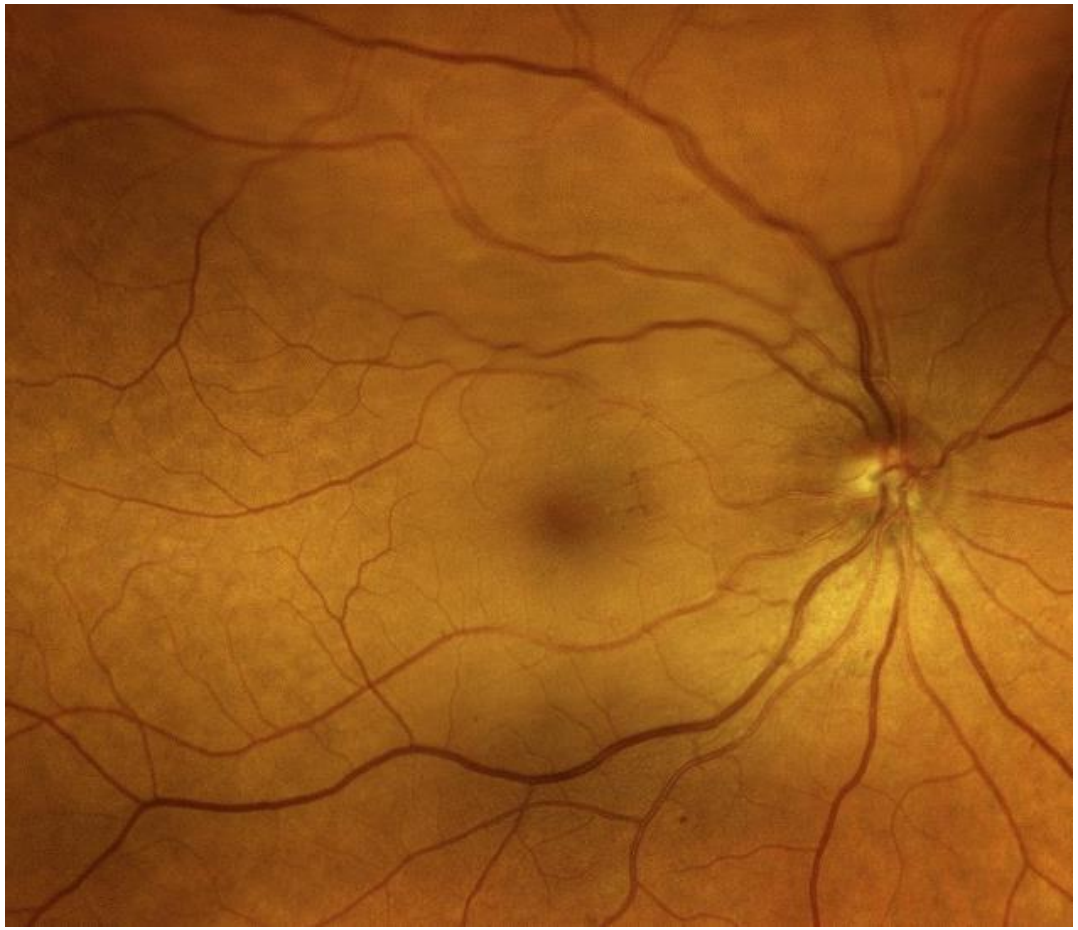
- Haemorrhage
- Fibrosis and retinal detachments



Diabetic Maculopathy

67y F recently diagnosed; poor control

6/6



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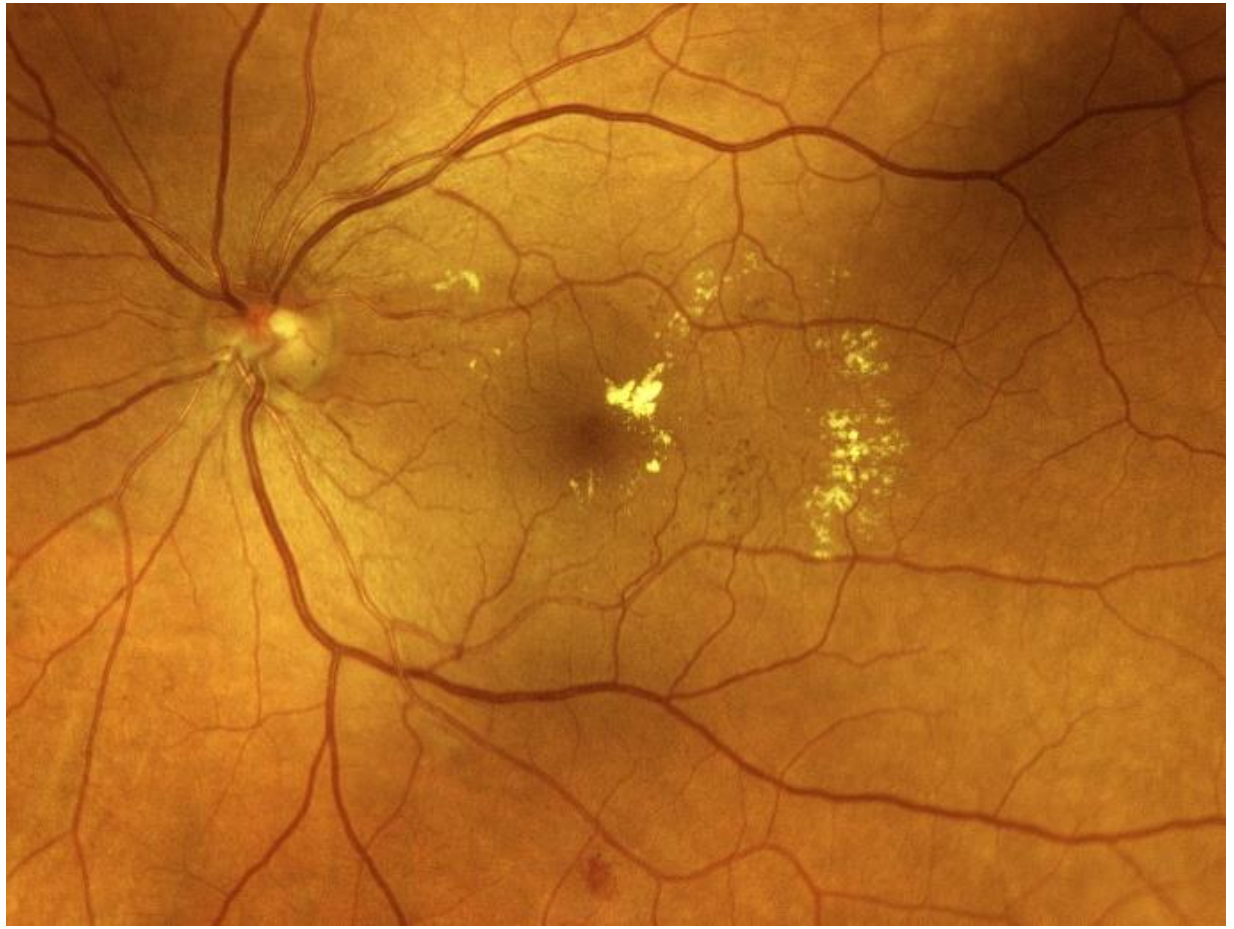
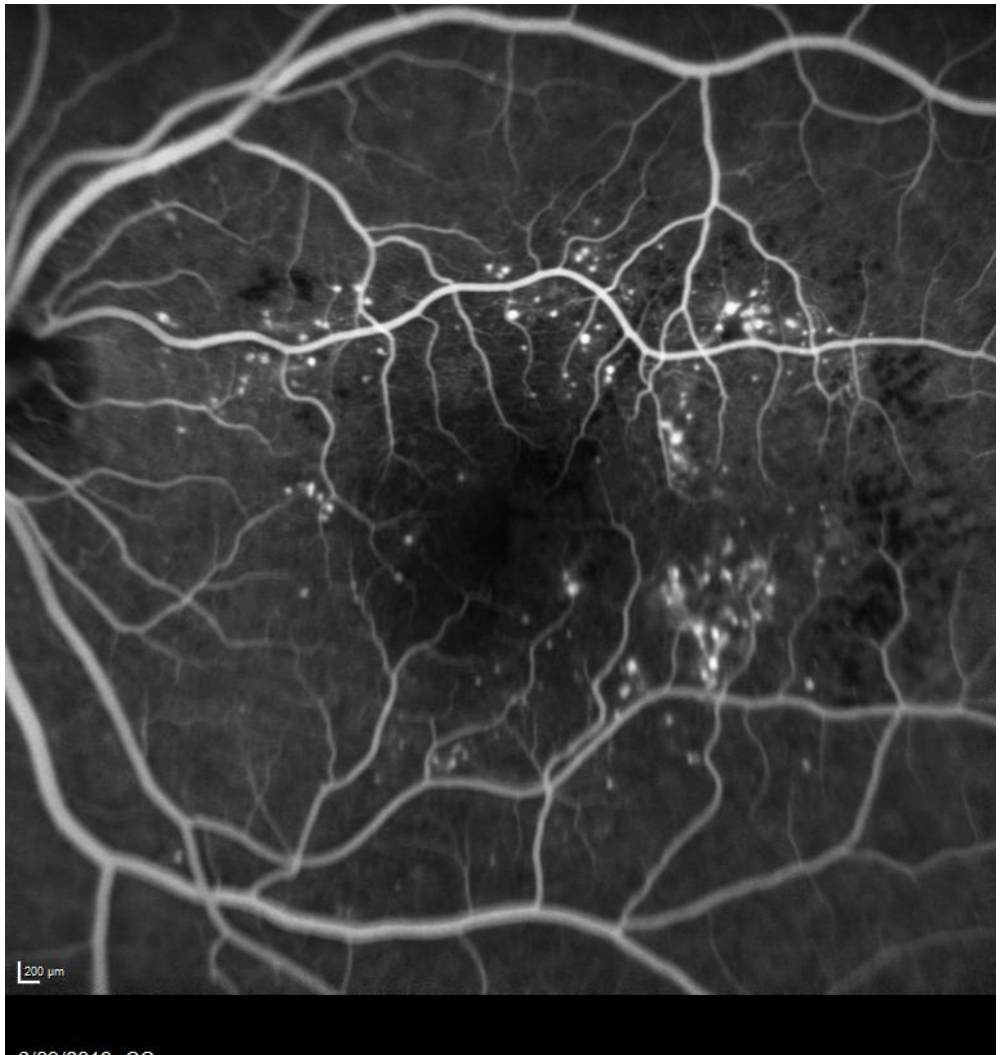
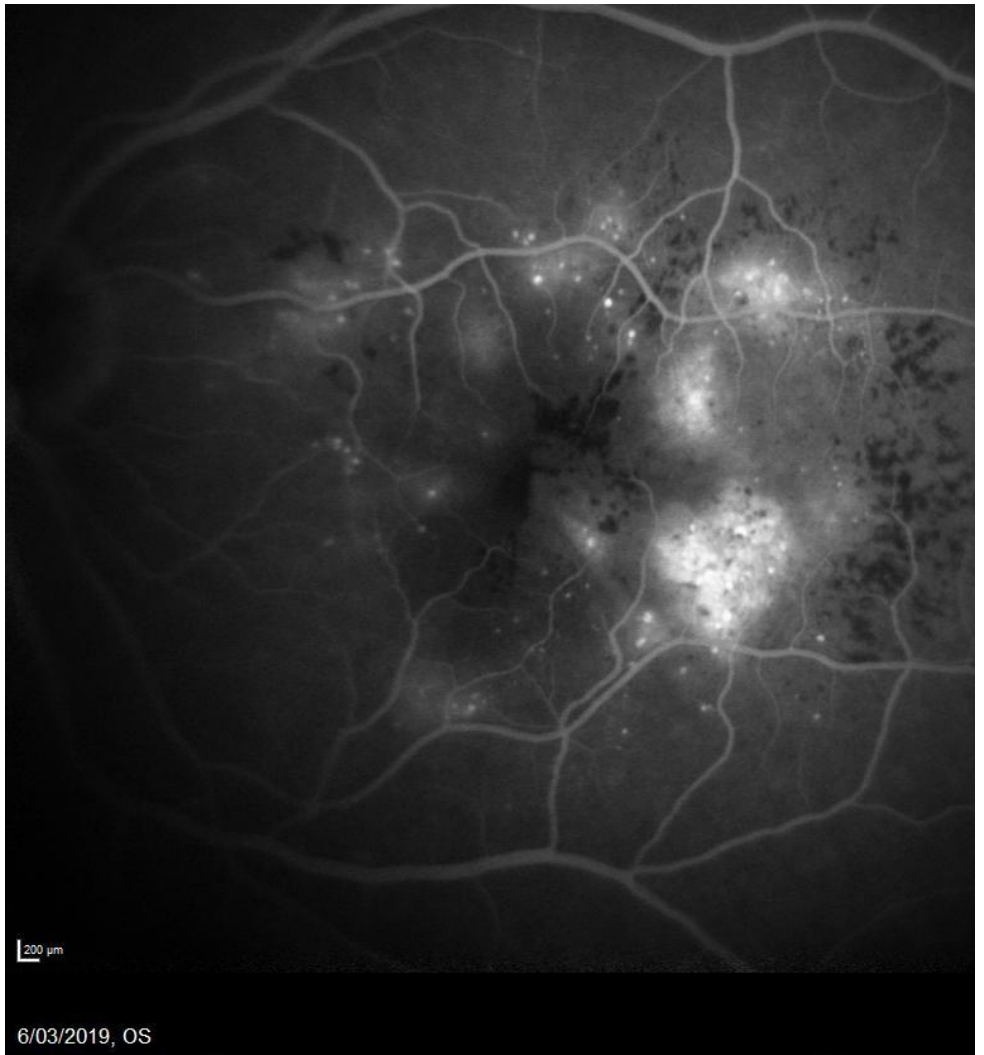


Fluorescein angiography left eye

Early (1 minute)



Late (14 minutes)



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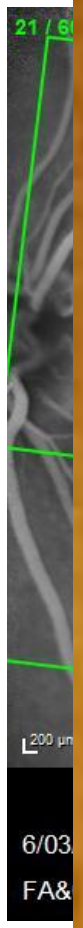
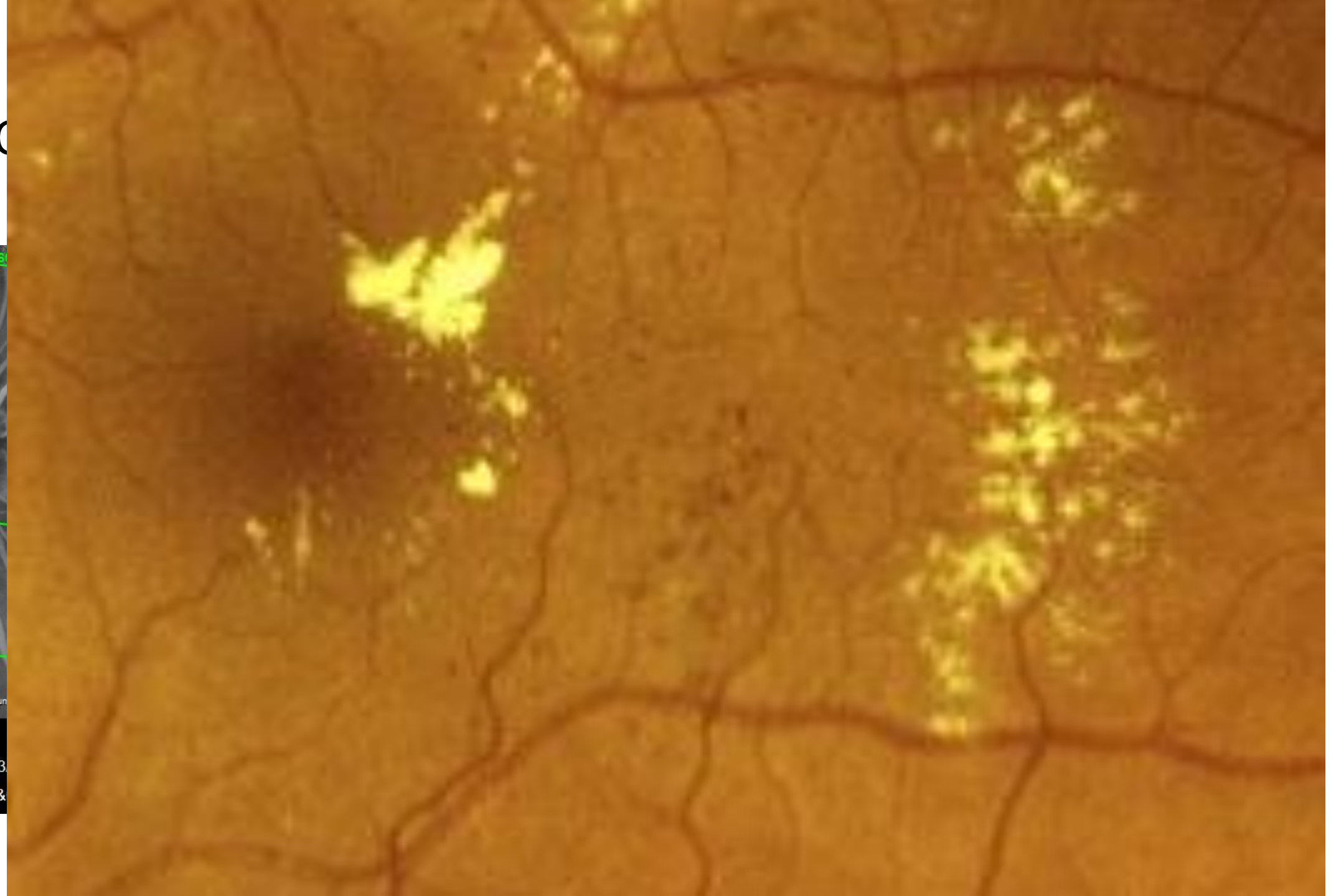
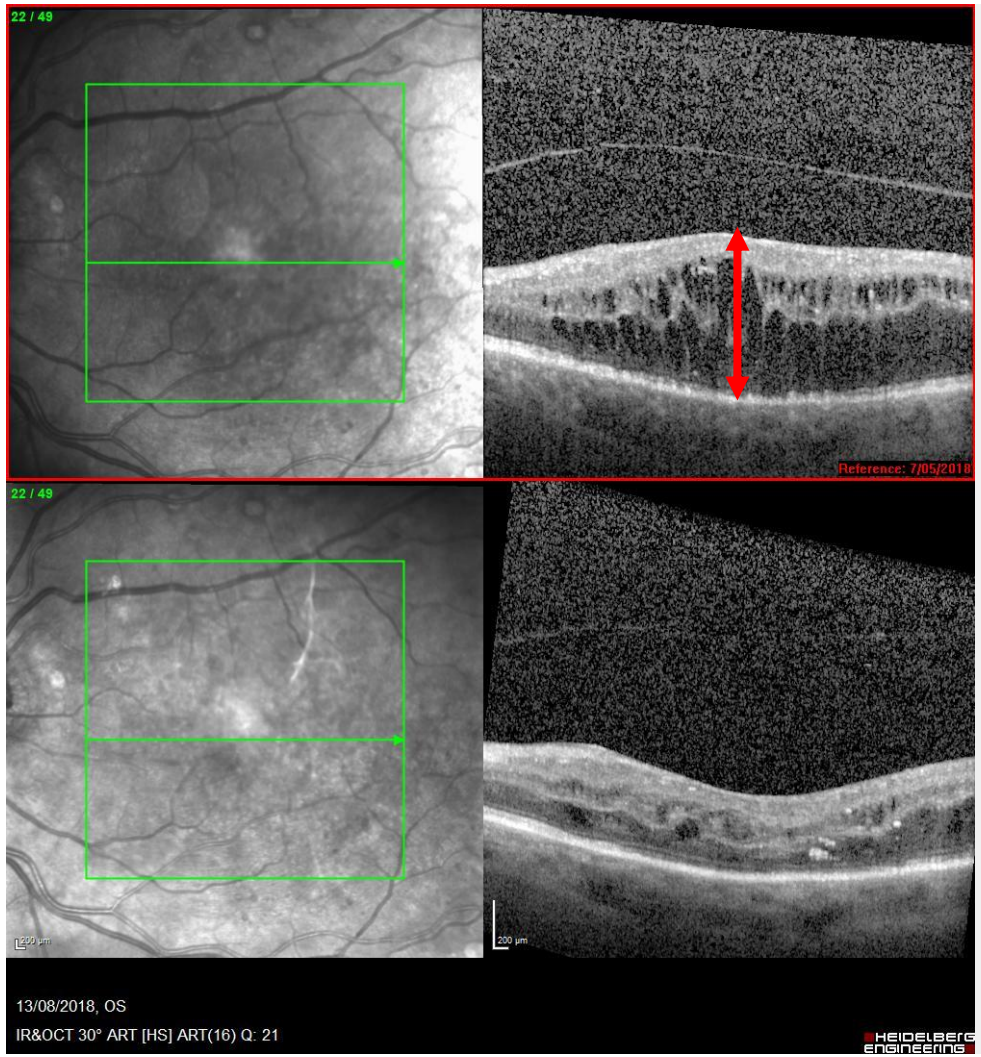


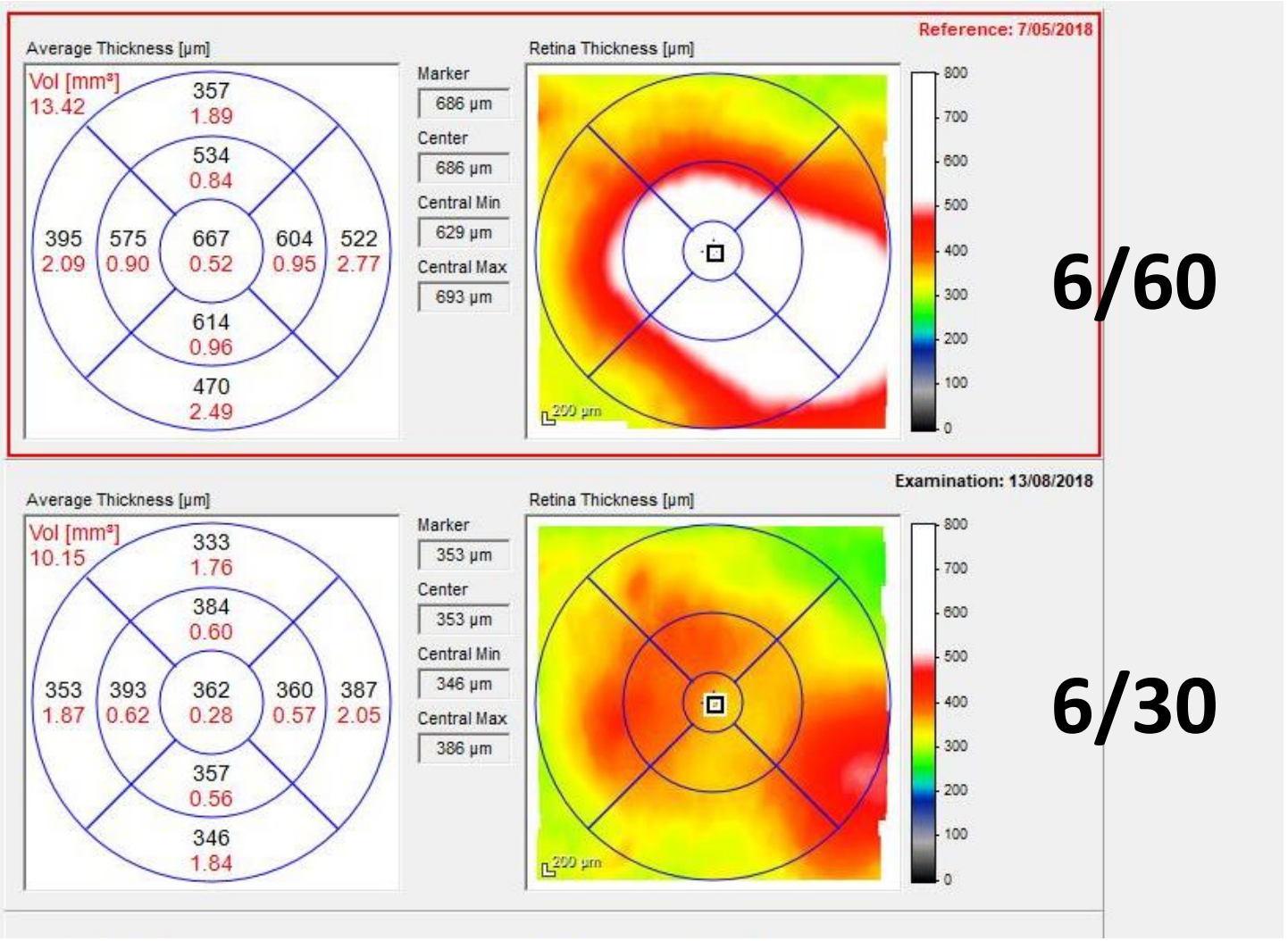


76 yr M

long history poor control, likes lollies, massive silent MI, BKA, smoker

Rx Ozurdex implant





Diabetic maculopathy: Rx options

First line: Anti-VEGF injection
- Avastin
- Eylea on special authority

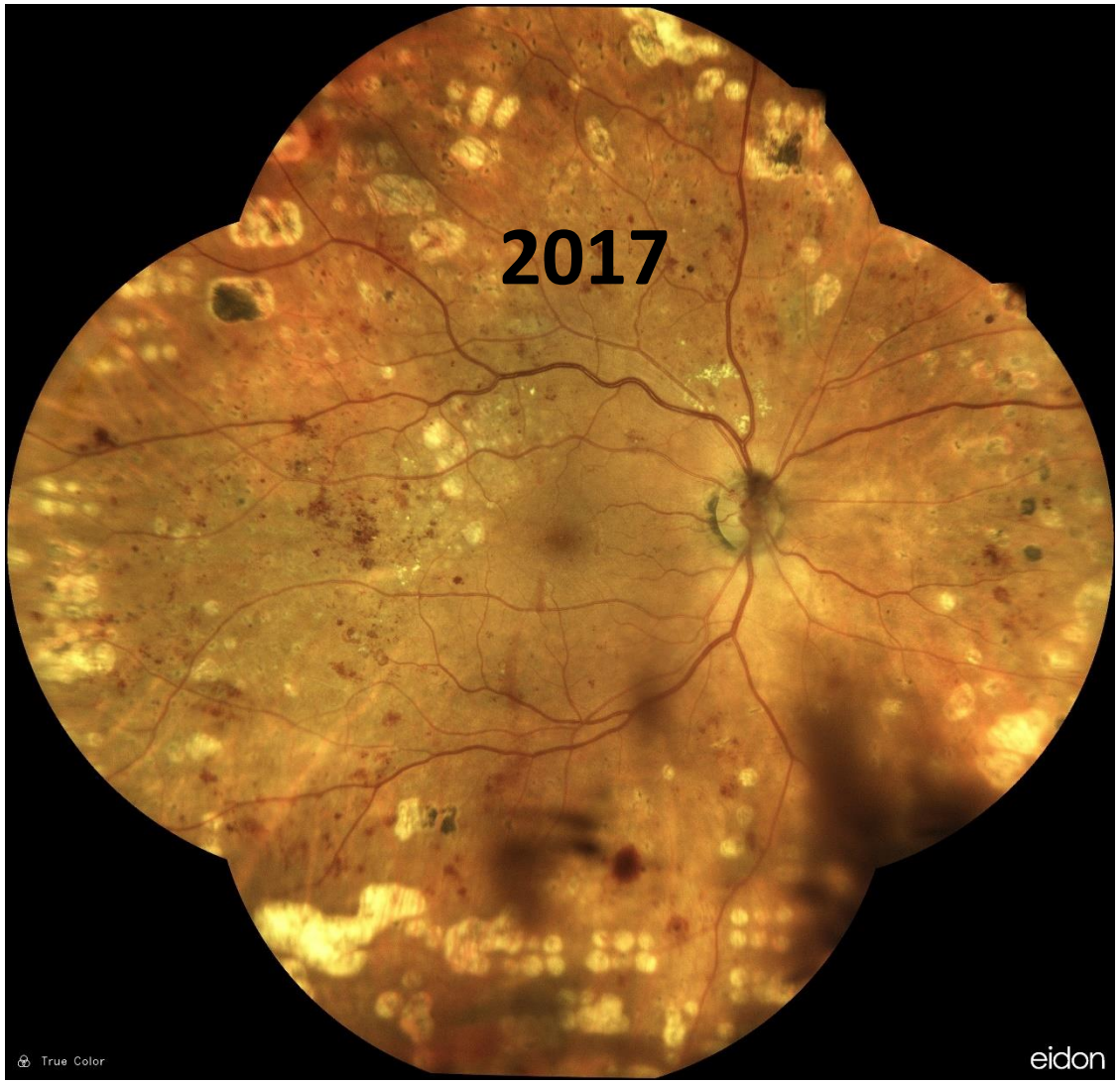
Second line: Intraocular steroid injection
- shut down inflammatory pathways
- Complications: cataract and steroid glaucoma

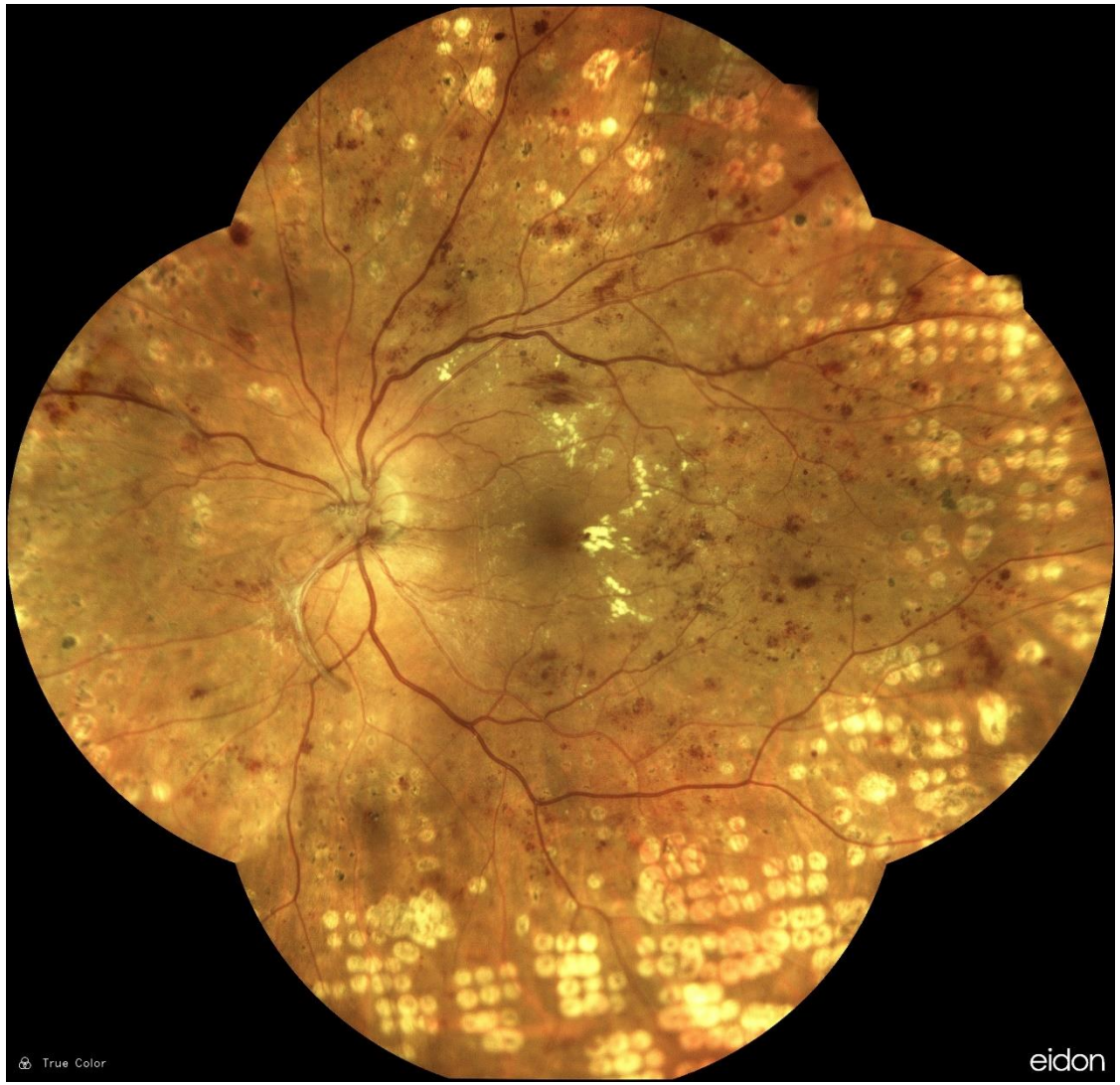
Consider: Thermal laser

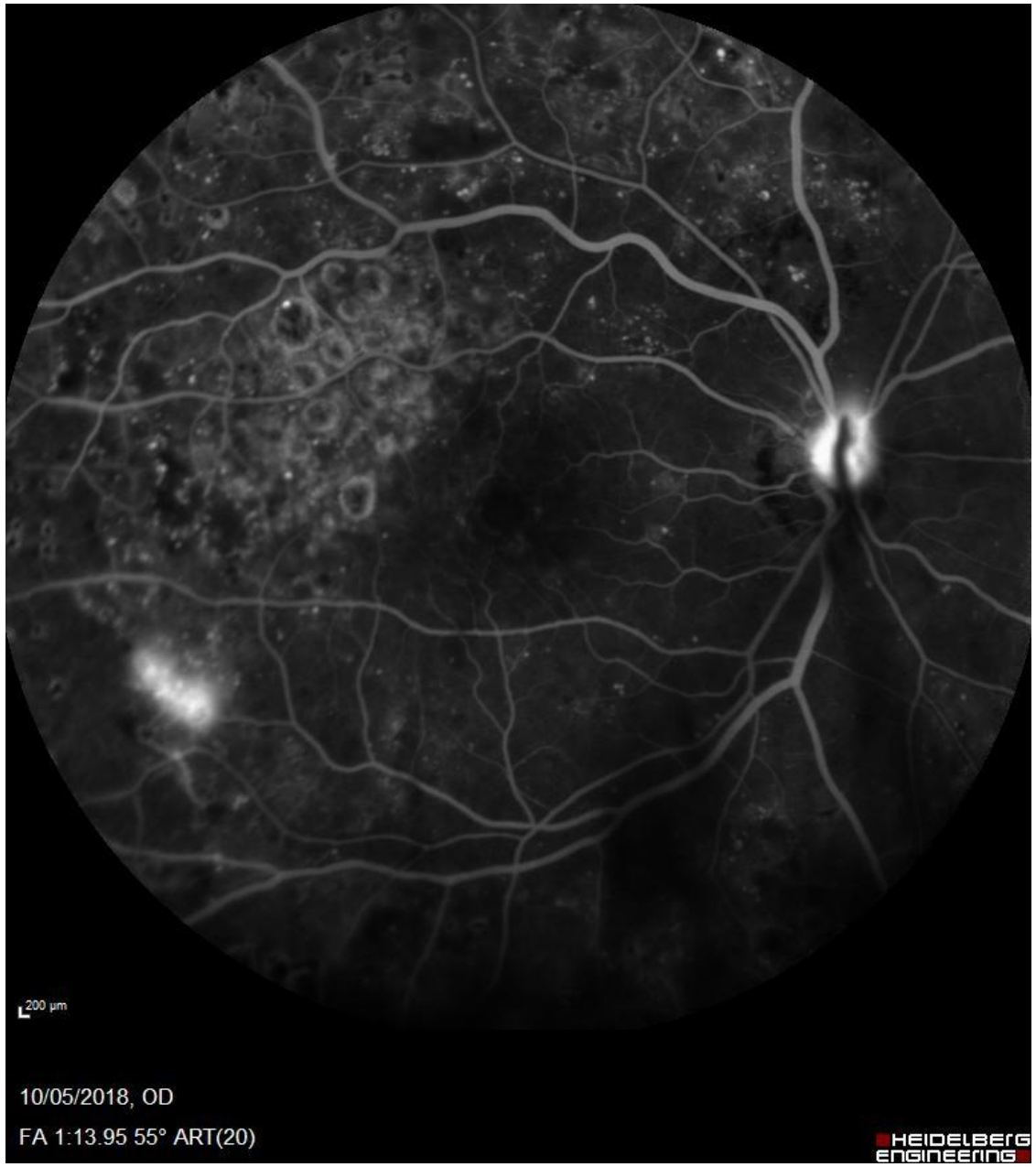
Vitreoretinal surgery if macular traction

Proliferative Diabetic Retinopathy

early 60’s F; first seen 2014, BSL 12-17, new floaters right eye

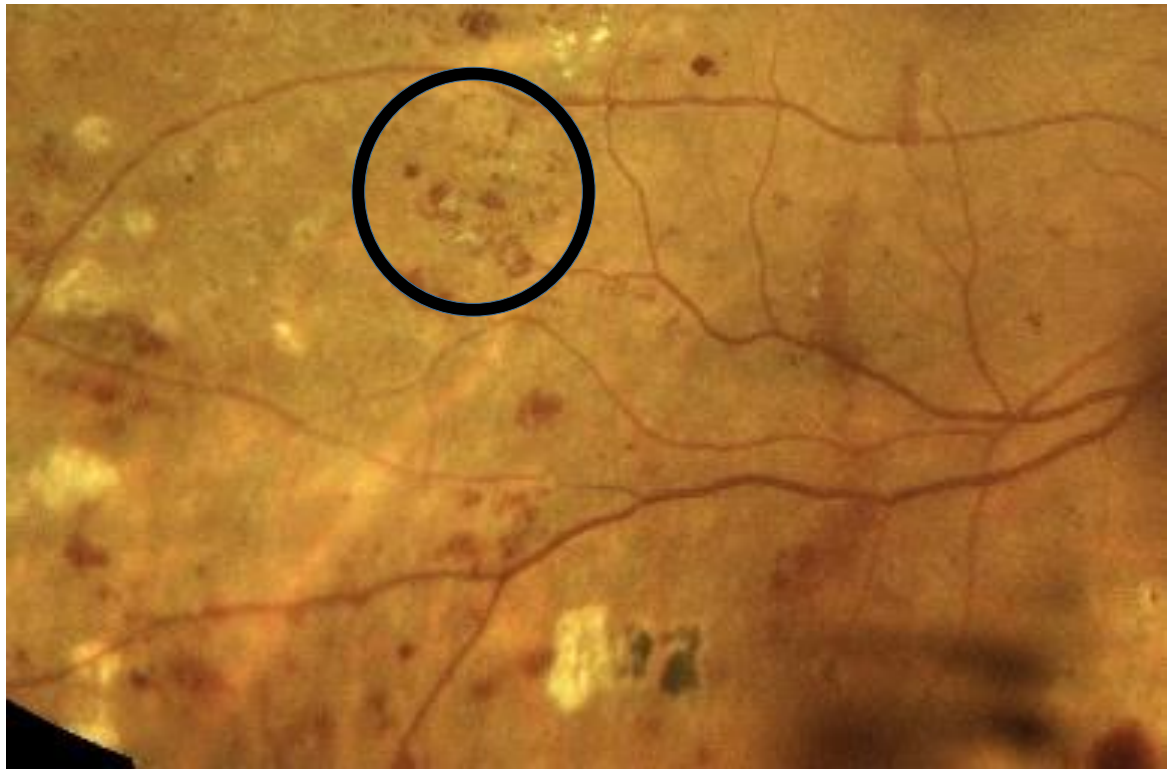






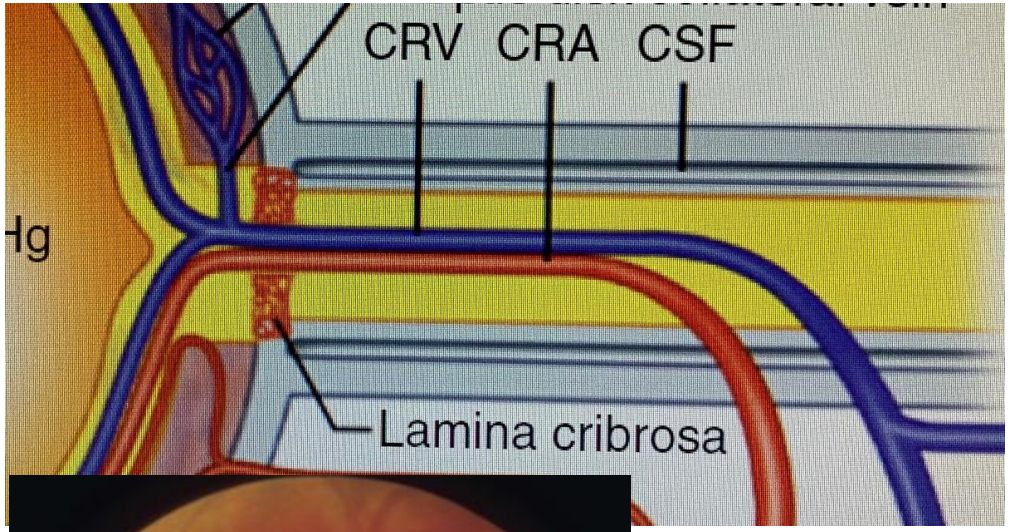
Rx options

1. Panretinal photocoagulation (PRP)
2. Anti-VEGF
3. Vitrectomy

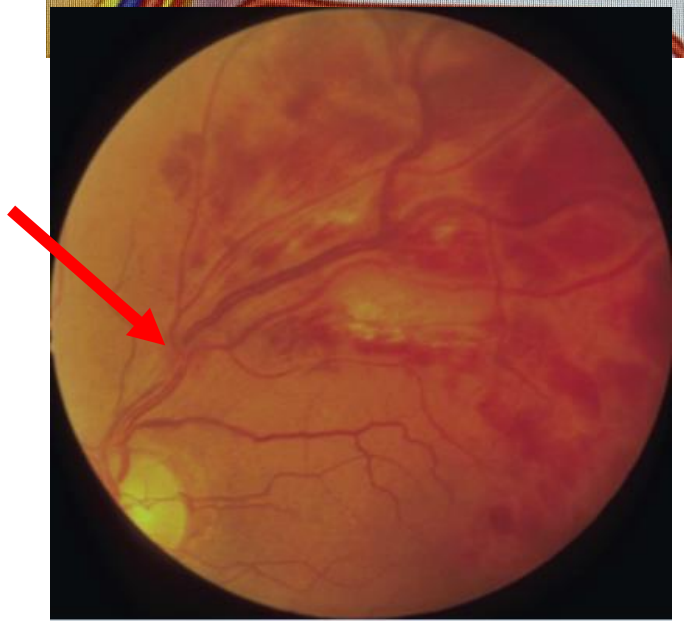


Retinal vein occlusions
2nd commonest cause of retinal vascular disease

central



branch



Pathogenesis

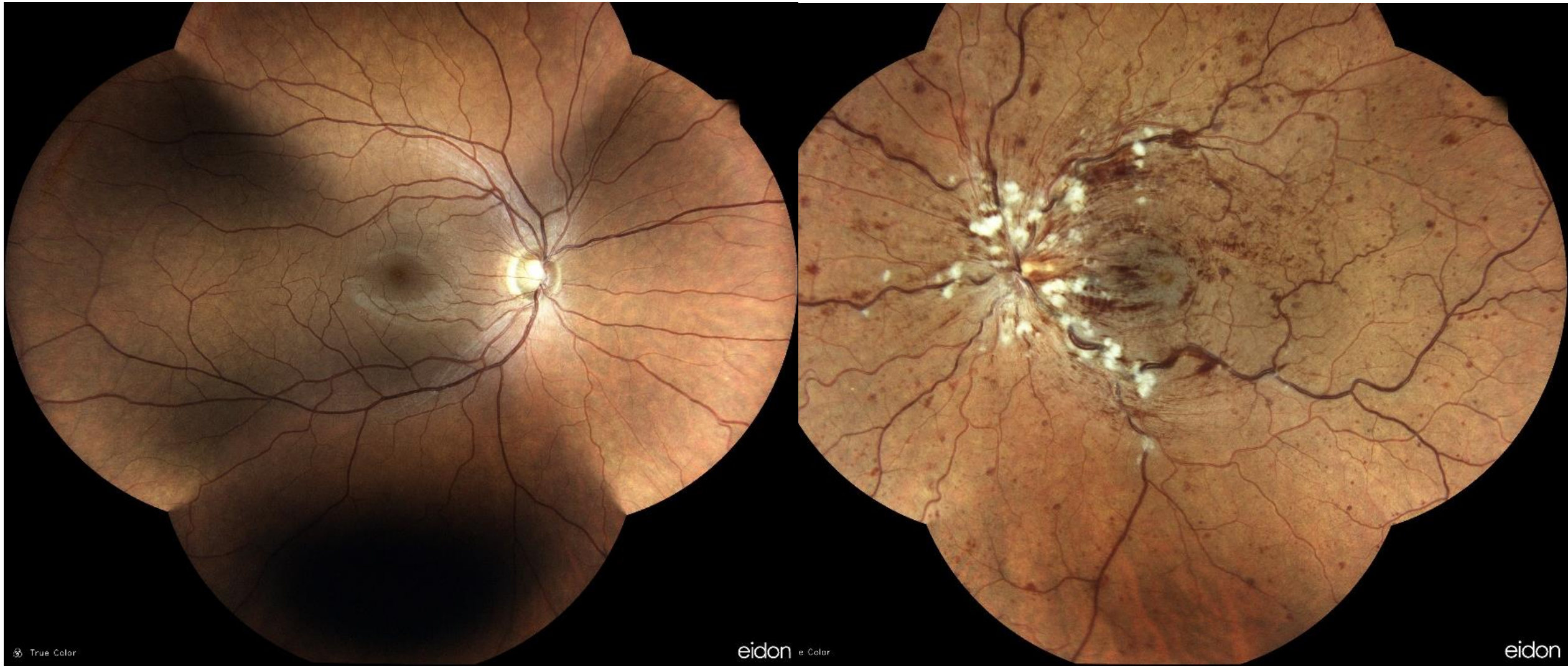
- Retinal artery and vein share a common adventitial sheath
- Atherosclerosis compromises central retinal vein

Risk factors

- Hypertension
- DM
- Glaucoma (CRVO)
- Thrombophilia in young adults

Acute central retinal vein occlusion

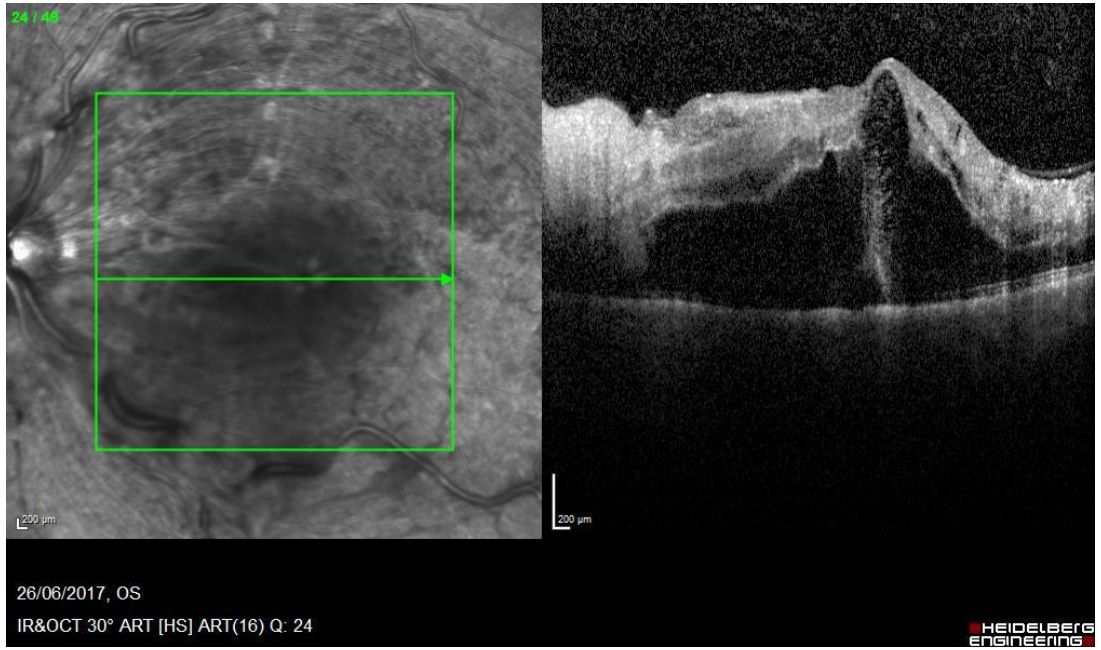
41yM; 3 week decreased left VA, fit and well



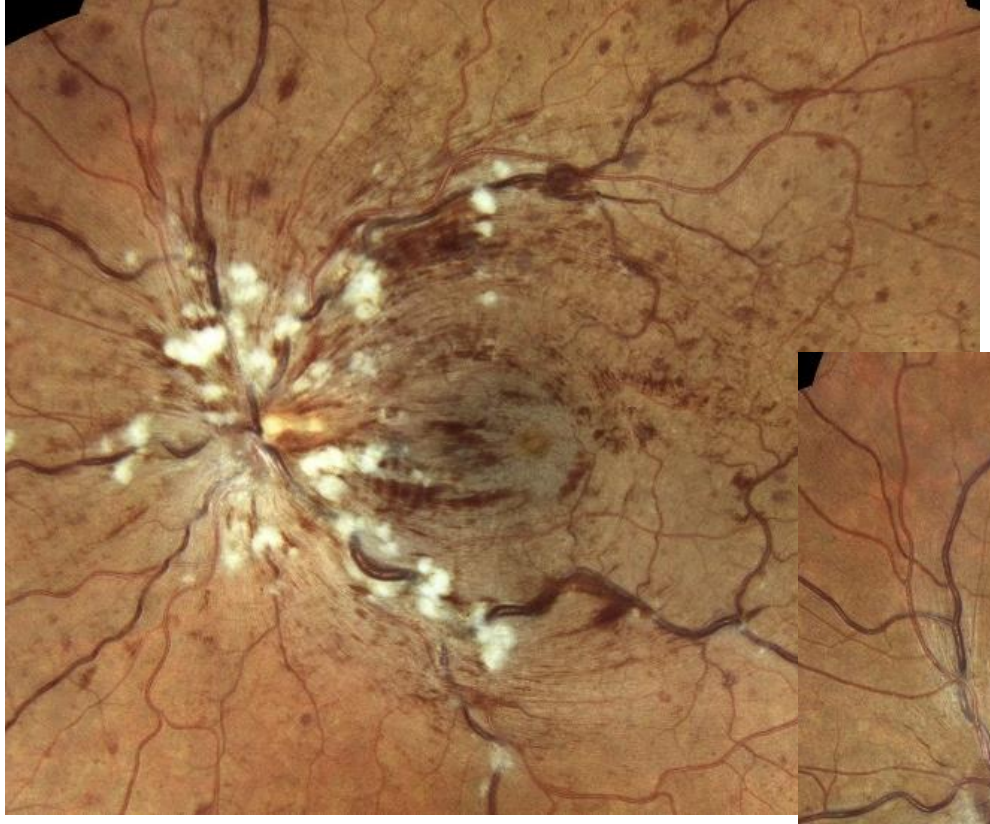
OCT

Right

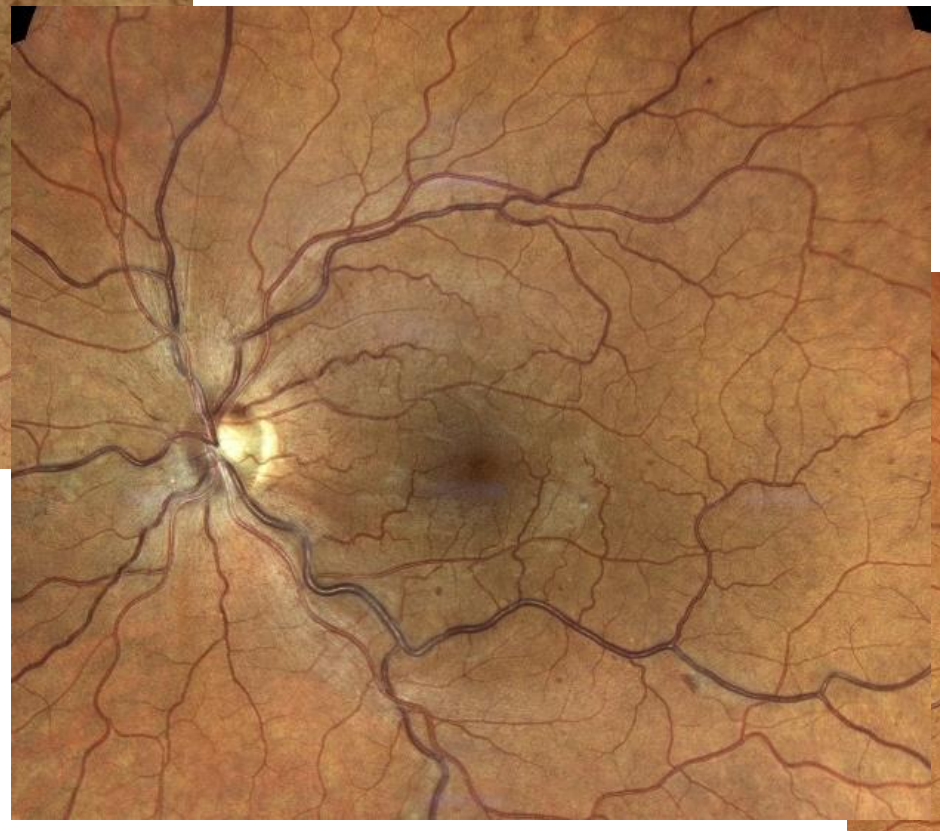
Left: gross macular oedema



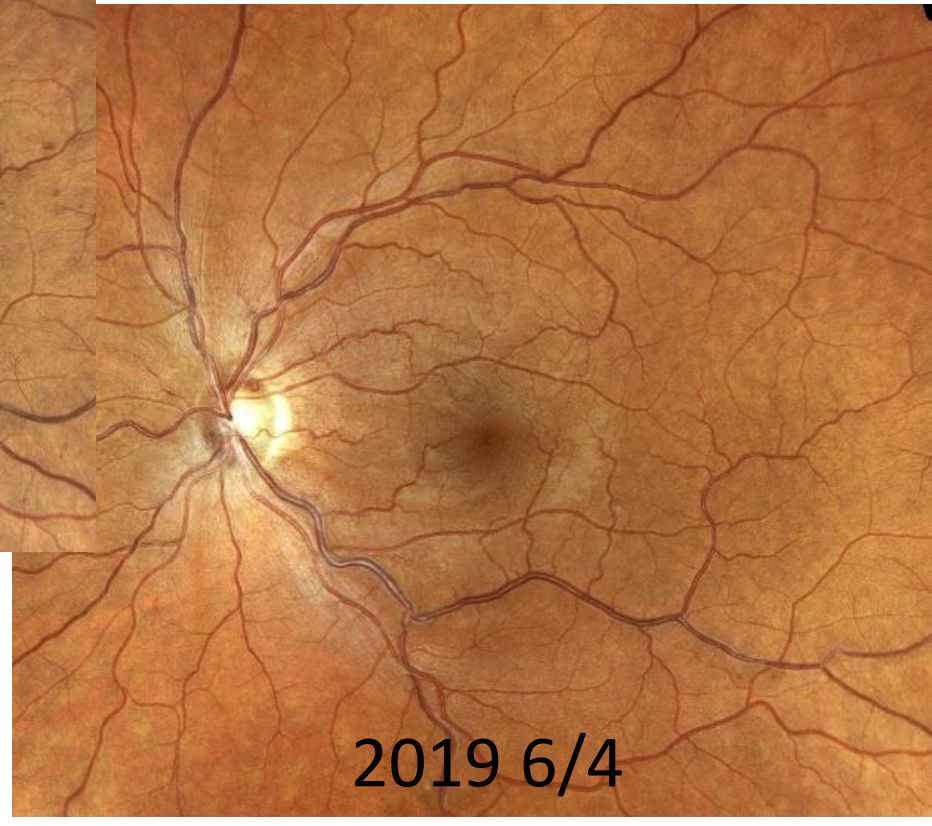
Rx Intravitreal Avastin x6



2017 CF

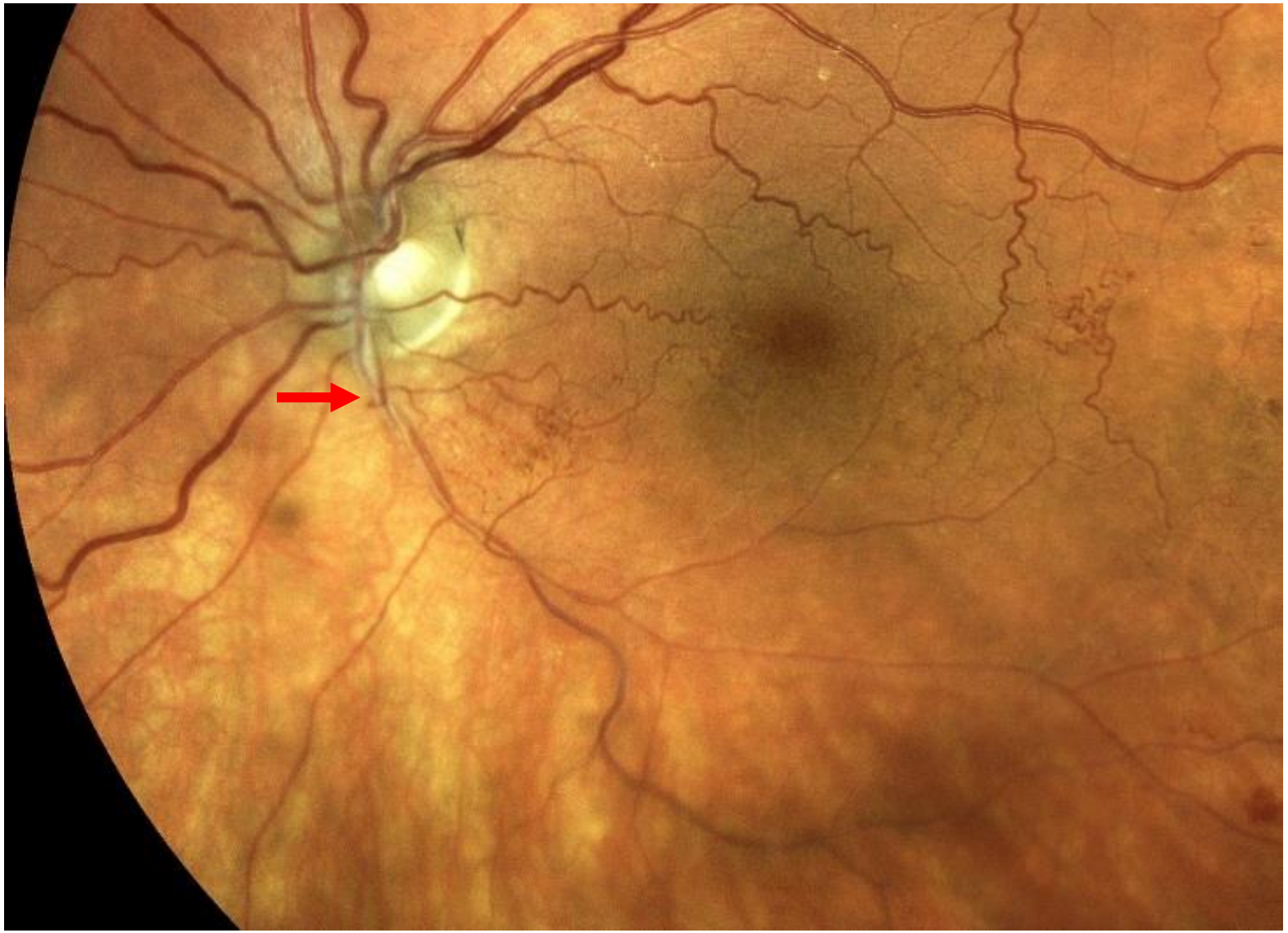


2018 6/6



2019 6/4

Outcome of retinal vein occlusion

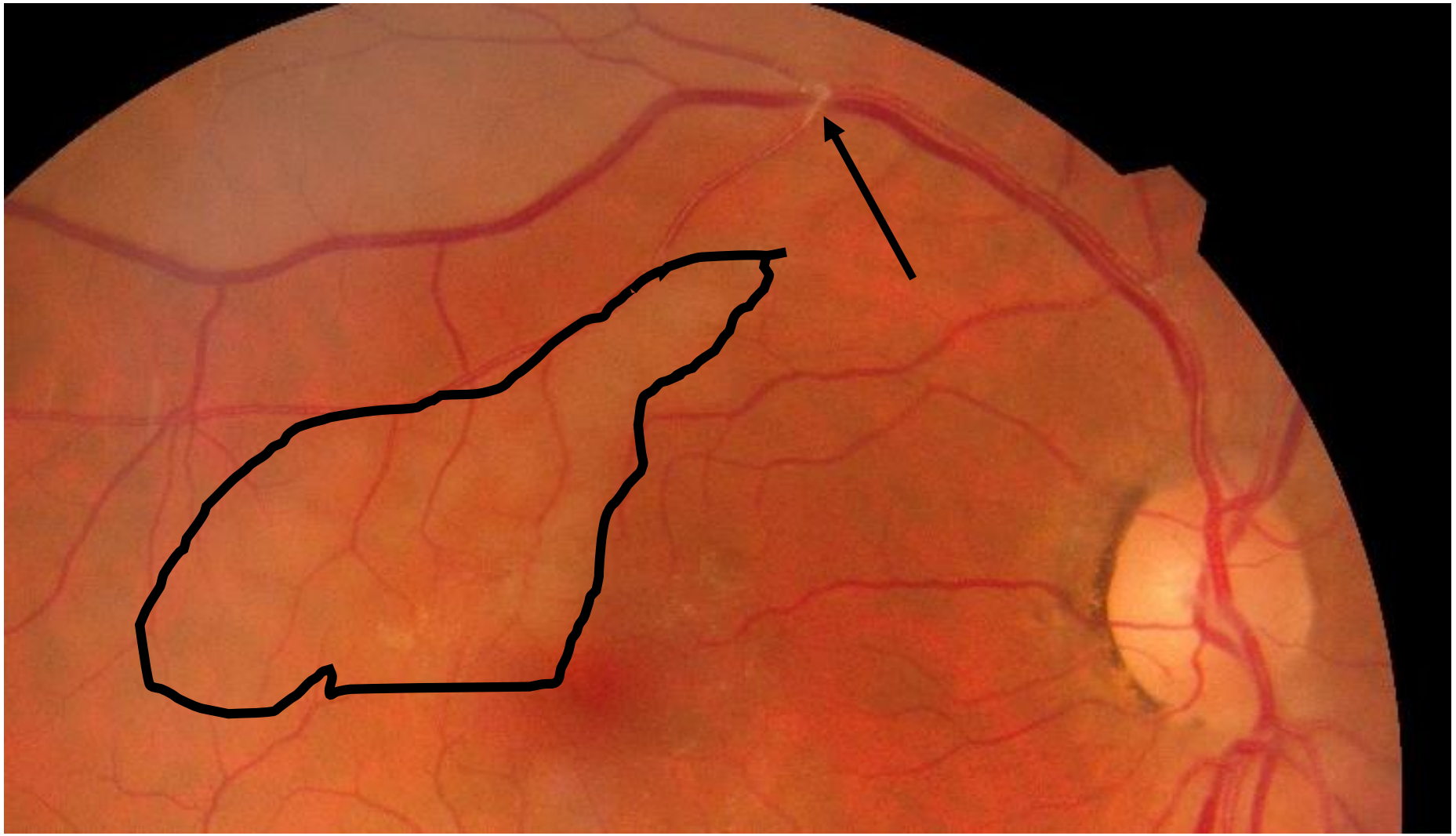


Protect the macular from inflammation and fibrosis with anti-VEGF

Collateral venous drainage

Remodelling of the occlusion

Carotid artery disease: retinal artery embolus
66yM; presents with right inferior VF scotoma



Carotid source of retinal emboli
1.3% prevalence of retinal emboli in >40yrs

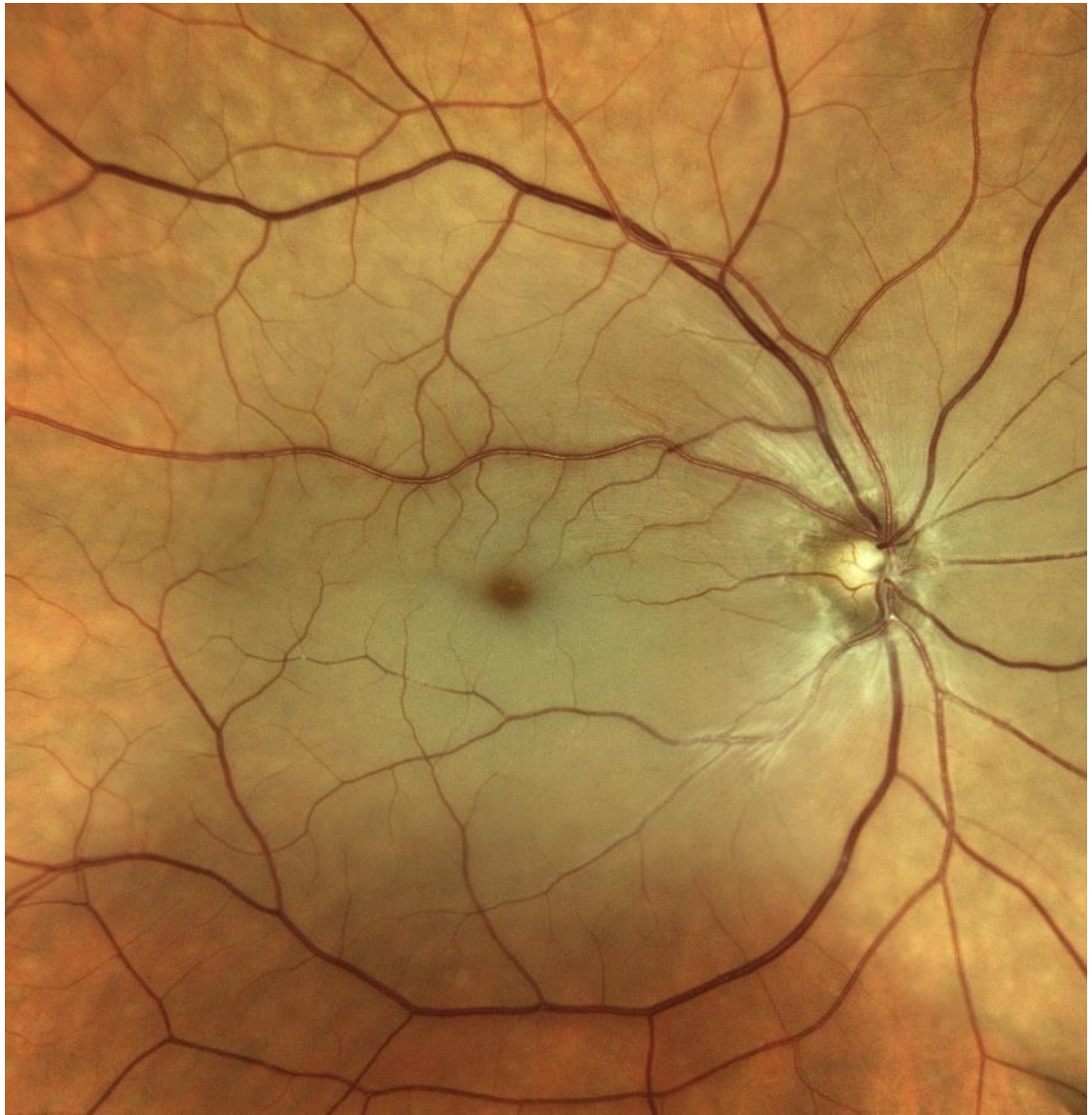
Asymptomatic

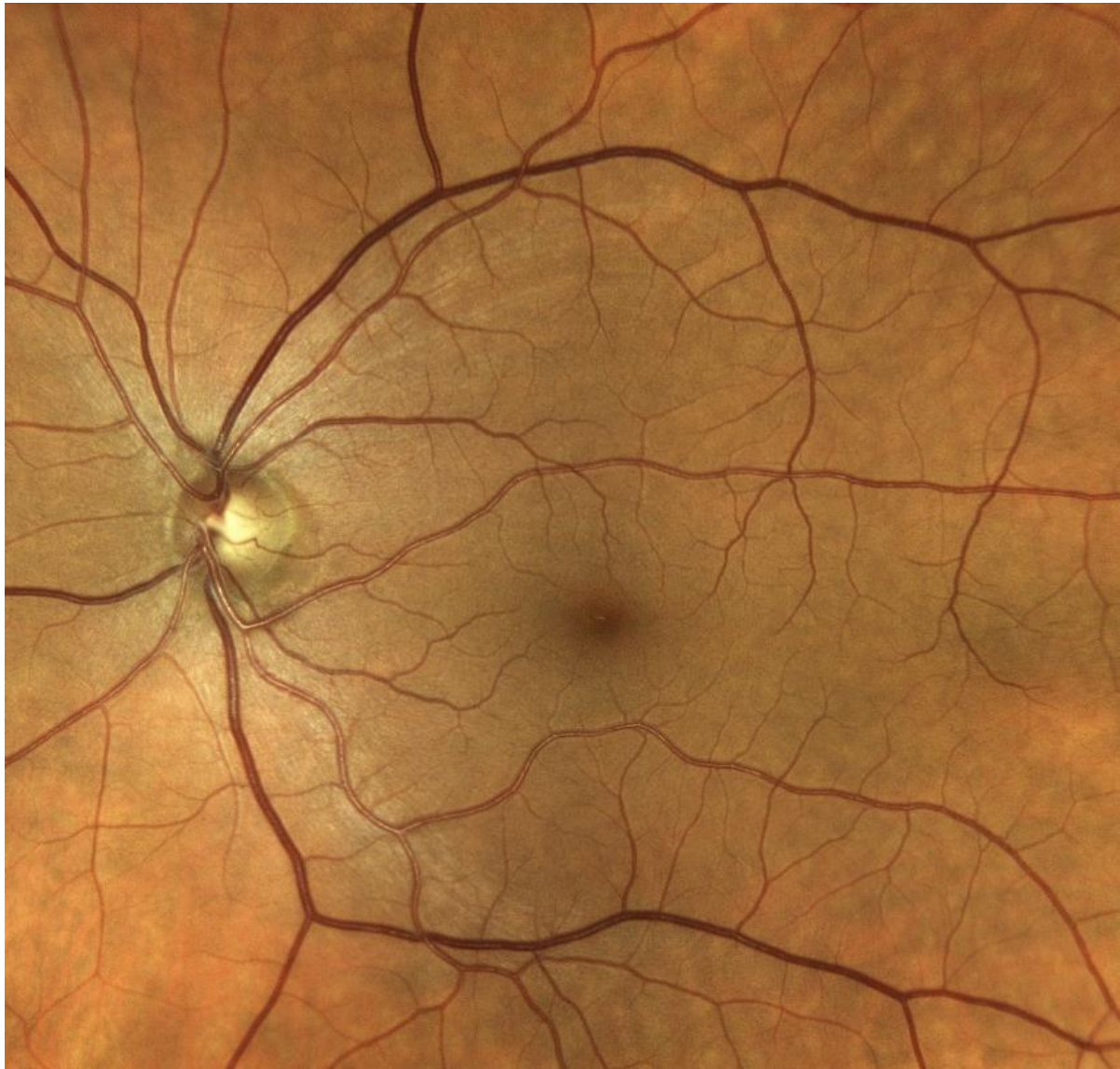
- Associated smoking, IHD, ↑BP
- Majority not associated with significant carotid artery stenosis
- Surgery in asymptomatic cases with significant carotid artery stenosis controversial

Symptomatic

- Strongest evidence for endarterectomy in symptomatic patients with at least 70% stenosis on carotid USS

Right Central retinal artery occlusion
55yM: CVS review, GCA screen, Carotid USS

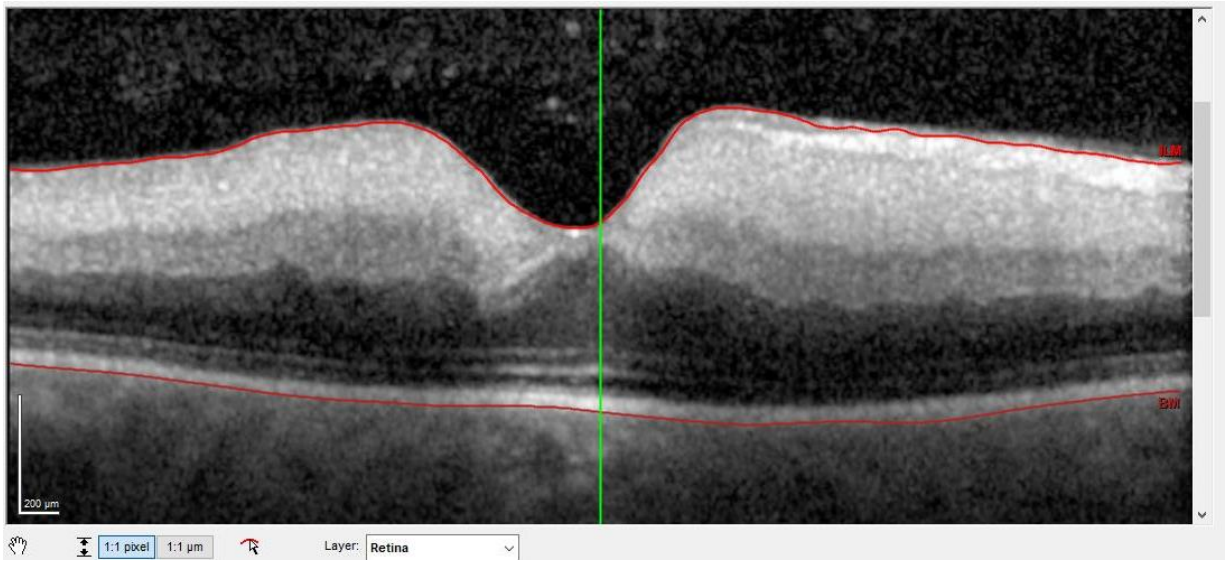




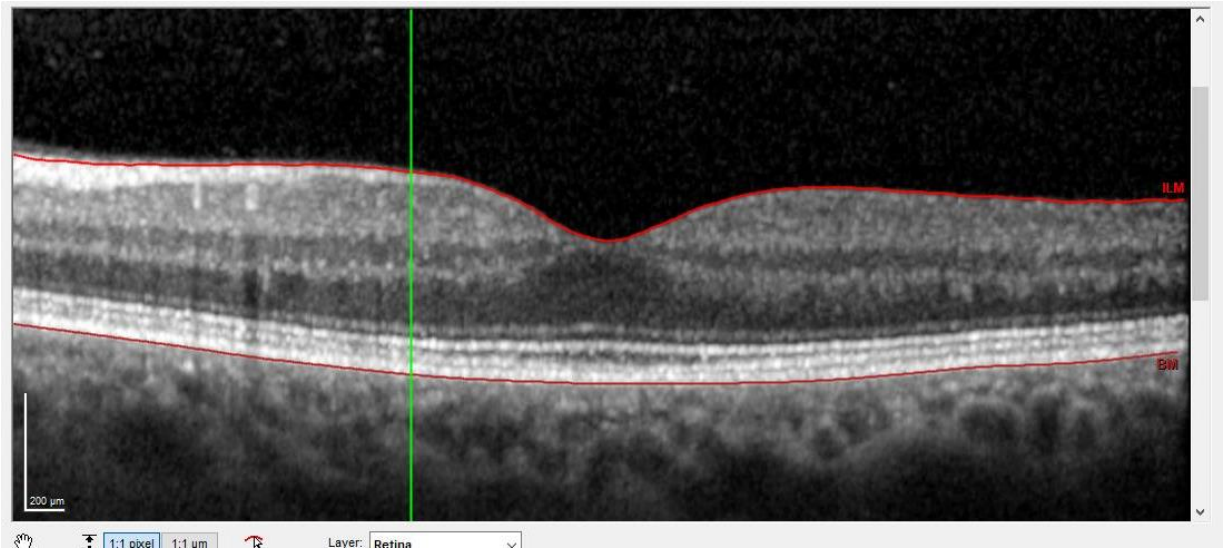
OCT

Right: oedematous inner retina

Outer retina perfused by choroid



Left normal



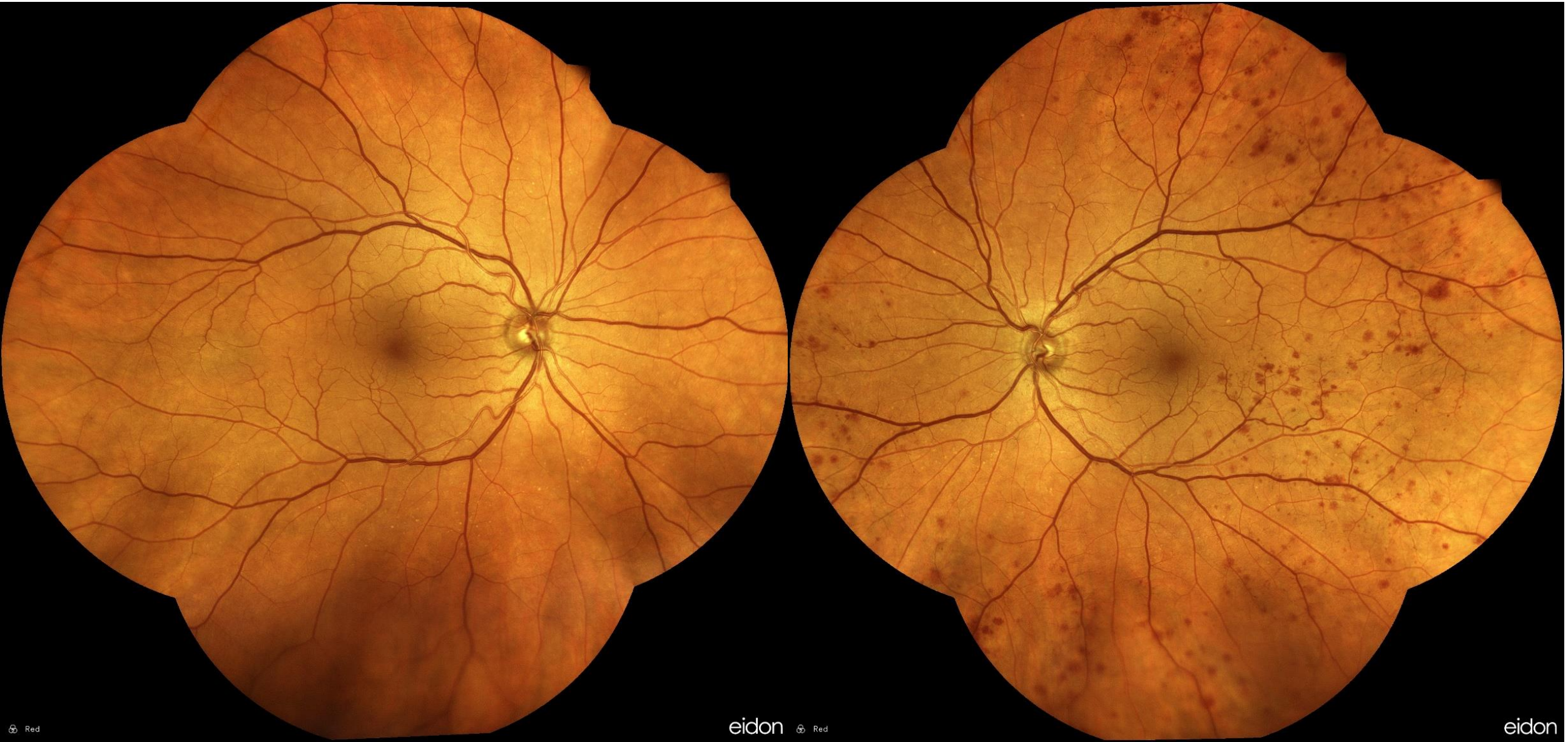
CRAO: Rx

- No consensus about preferred management in the acute setting
- Most Rx aimed at dislodging embolus further down the arterial tree
- Ideally intervene early (within 24 hrs)

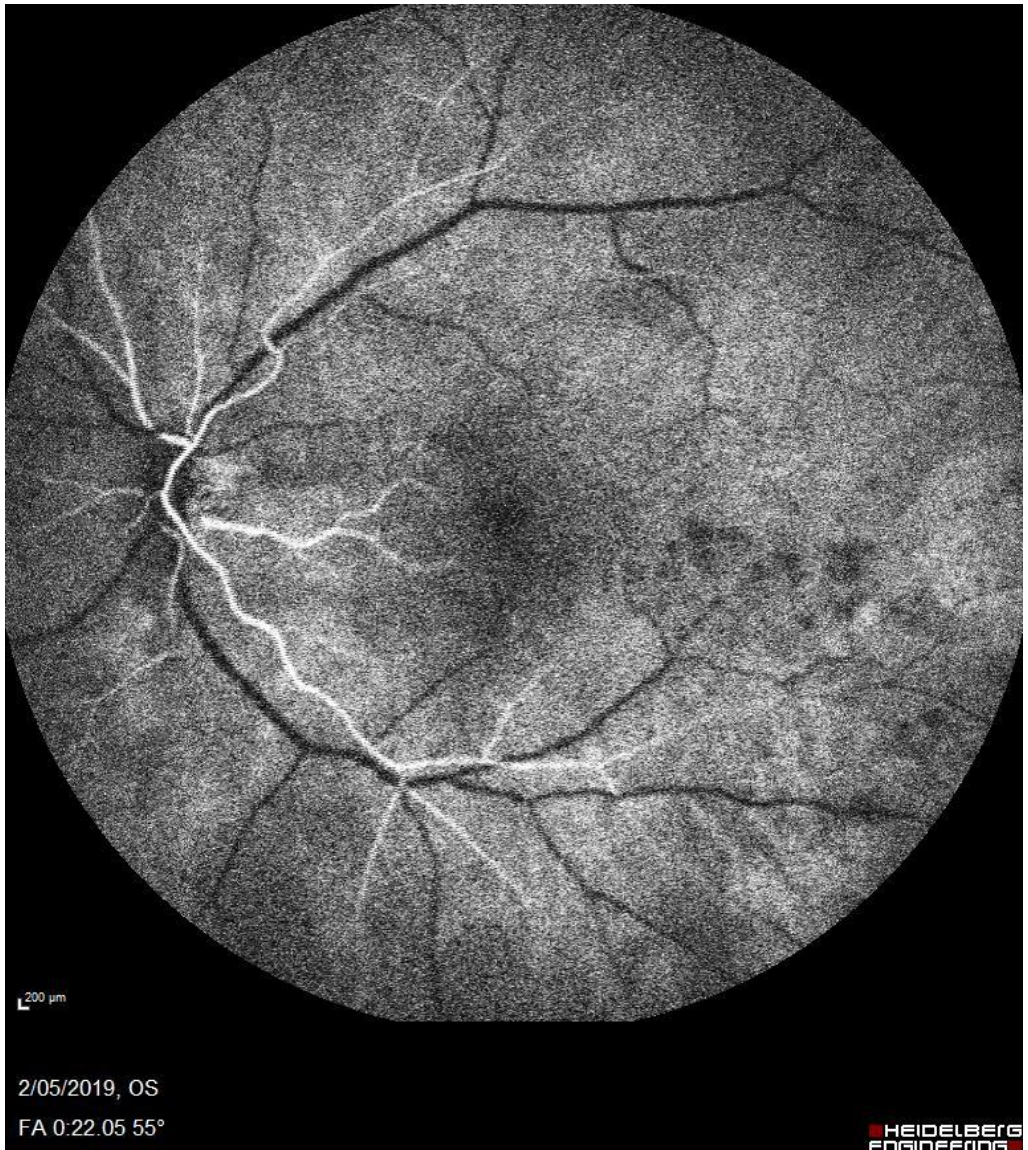
1. Globe pressure
2. Lower IOP medically
3. AC paracentesis
4. Dislodge embolus with YAG laser
5. Thrombolysis (meta-analysis not supportive)
6. Carbogen: 95% O2 to oxygenate retina from choroid:5% CO2
7. Hyperbaric O2 but hard to understand how brief elevation of O2 saturation will sustain the retina through days of ischaemia

Ocular ischaemic syndrome

64yM: blocked carotids and vertebral perfusion of Circle of Willis



22s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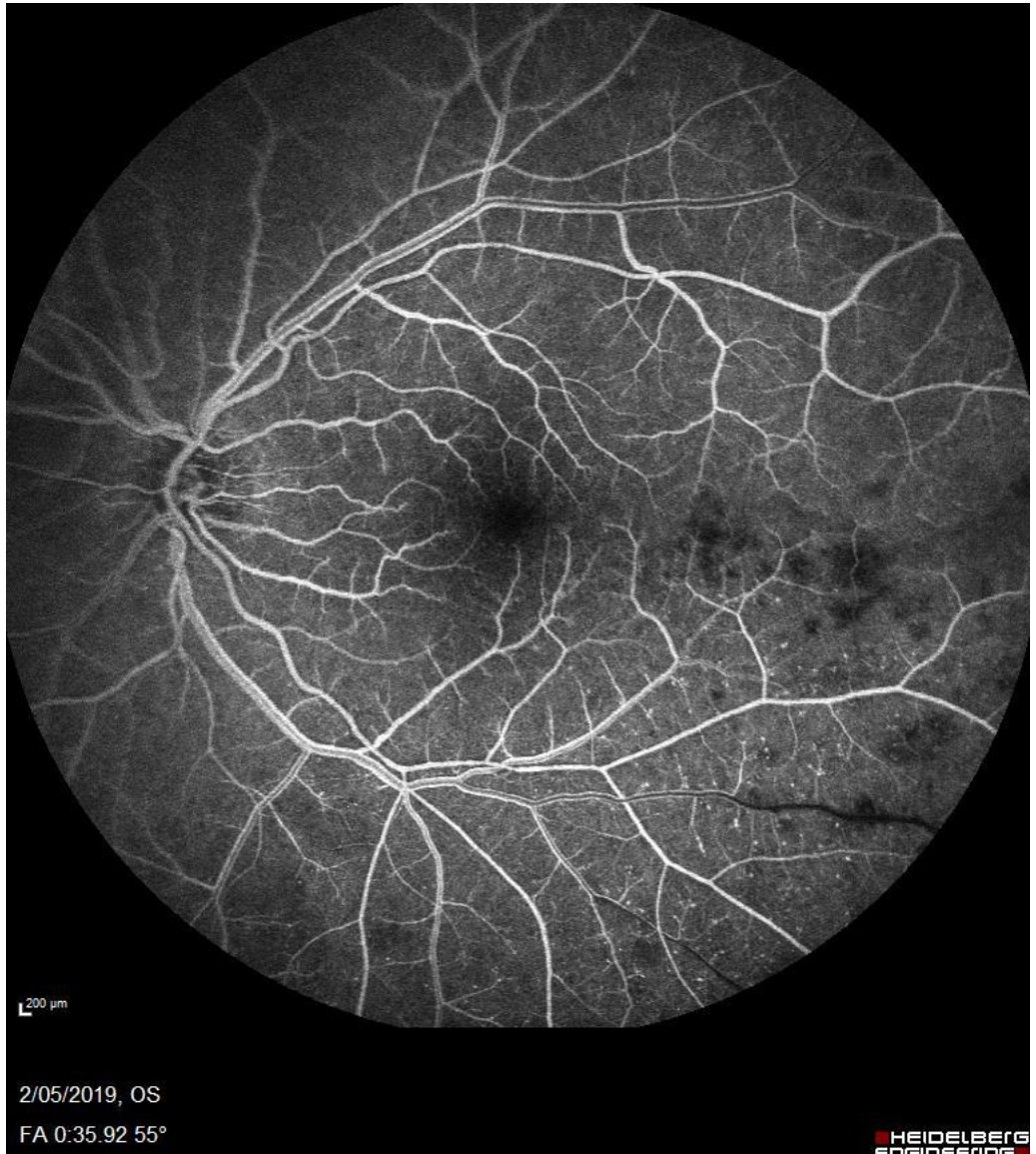
35s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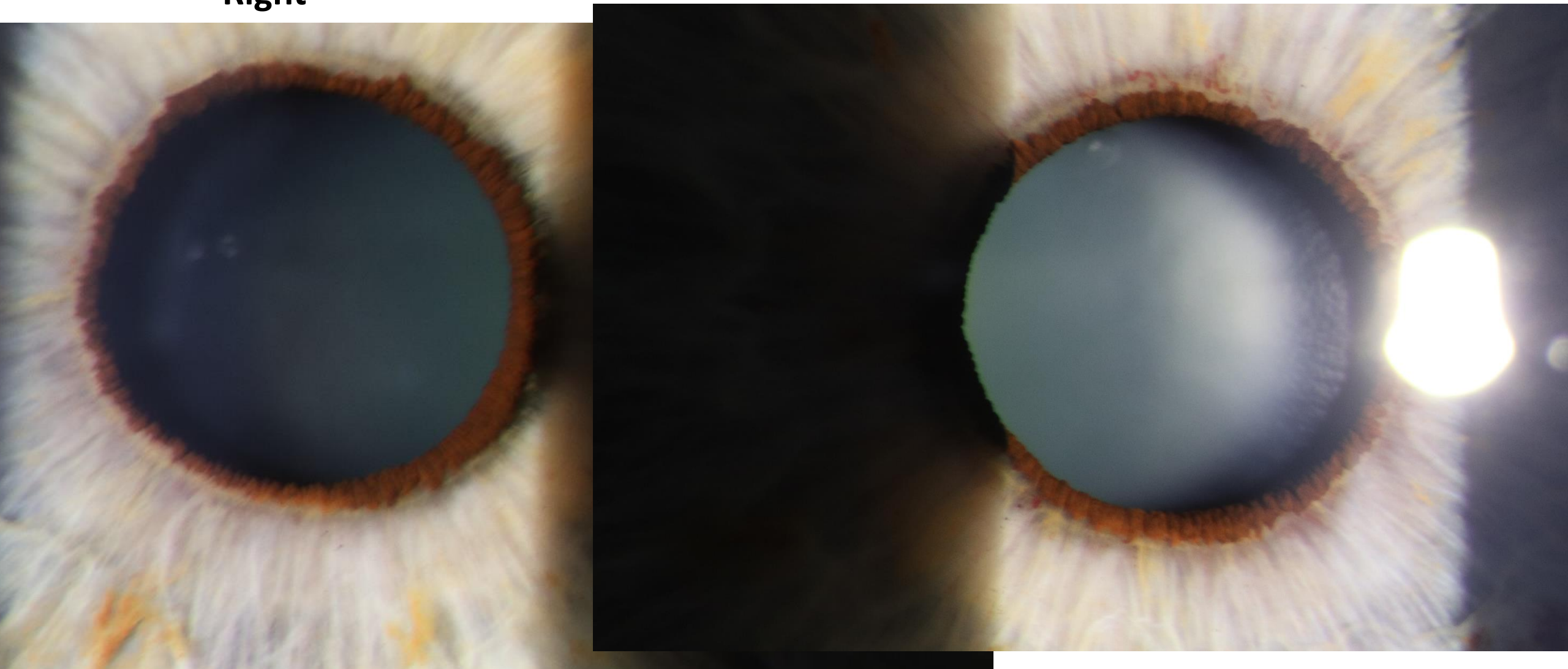
Iris neovascularization → neovascular glaucoma
Ischaemic retina produces VEGF

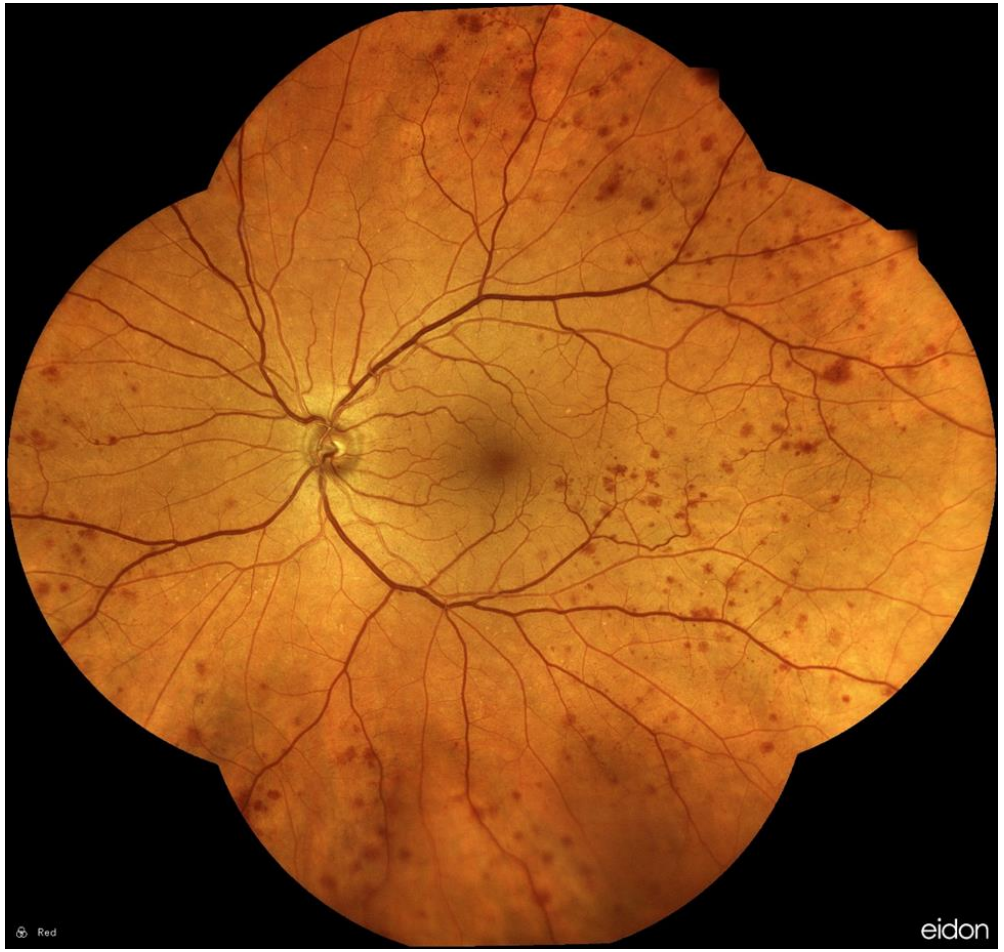
Right

Left

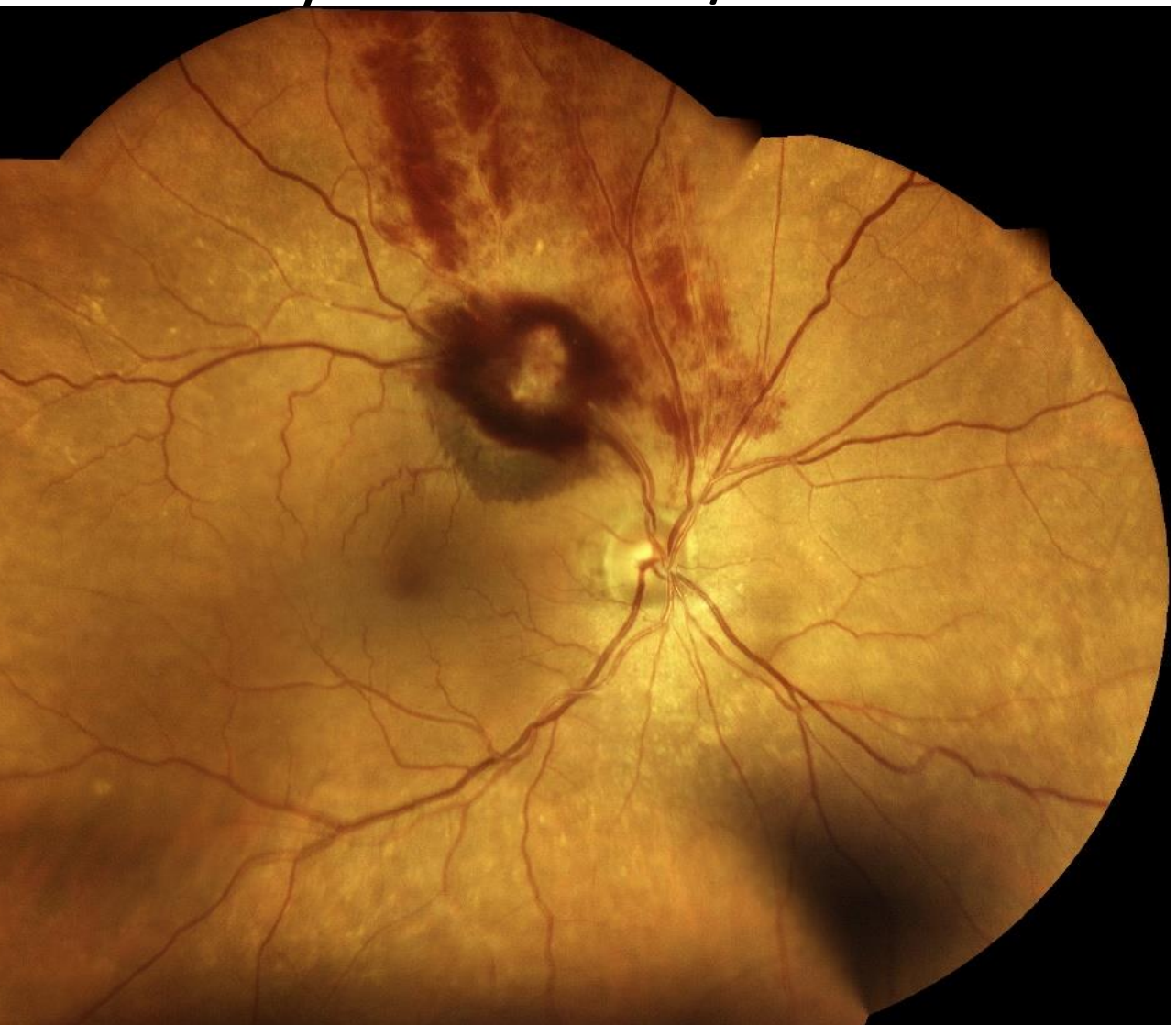


Ocular ischaemic syndrome

- Ocular Rx
  - antiVEGF to stop neovascular glaucoma
  - PRP
- Systemic Rx
  - Treat CVS risk factors
  - Carotid imaging to assess risk/benefit of endarterectomy
  - Anti-platelet treatment



Hypertension: Macroaneurysm
79yF BP 180/110



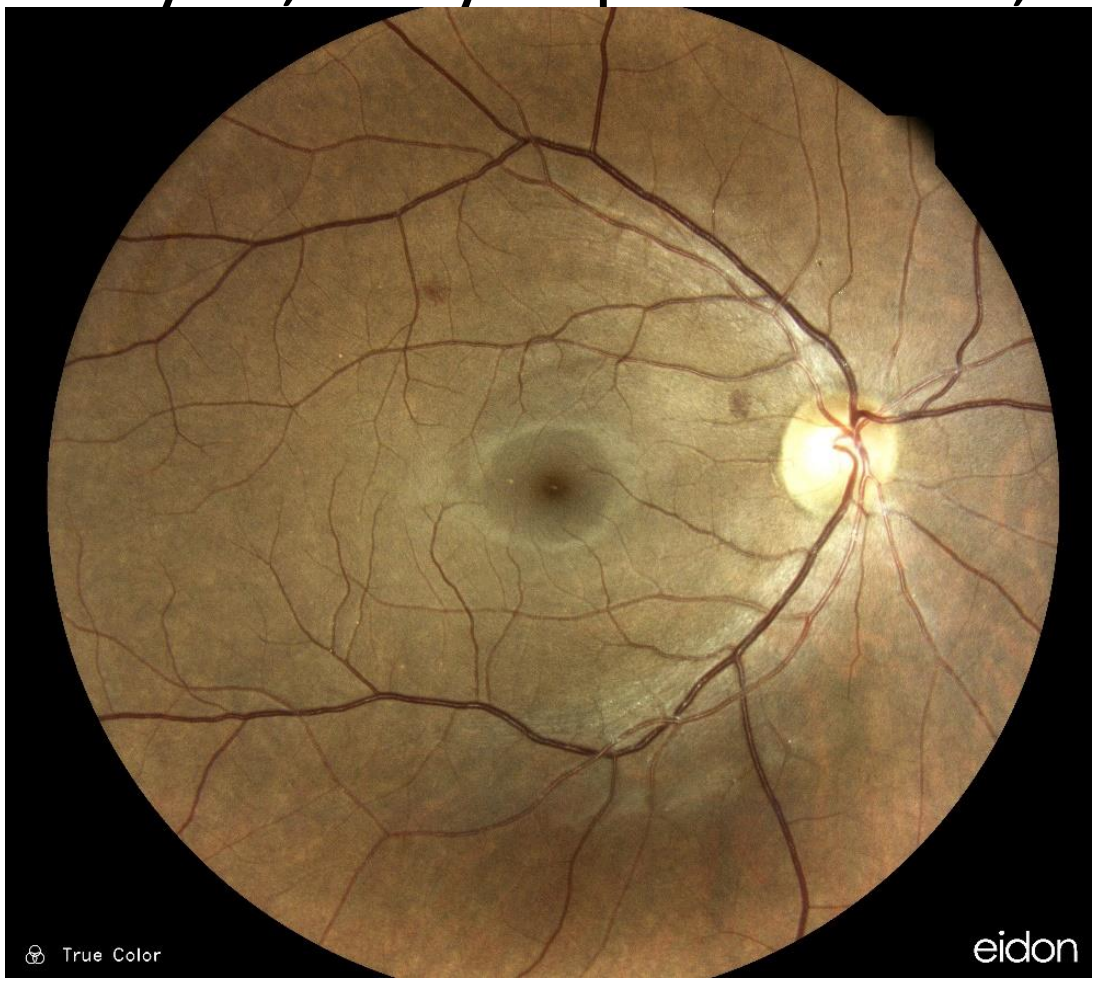
- Acquired focal aneurysmal dilation of an arteriole
- Usually within first 3 orders of the retinal arterial system
- Commonly older, hypertensive, female

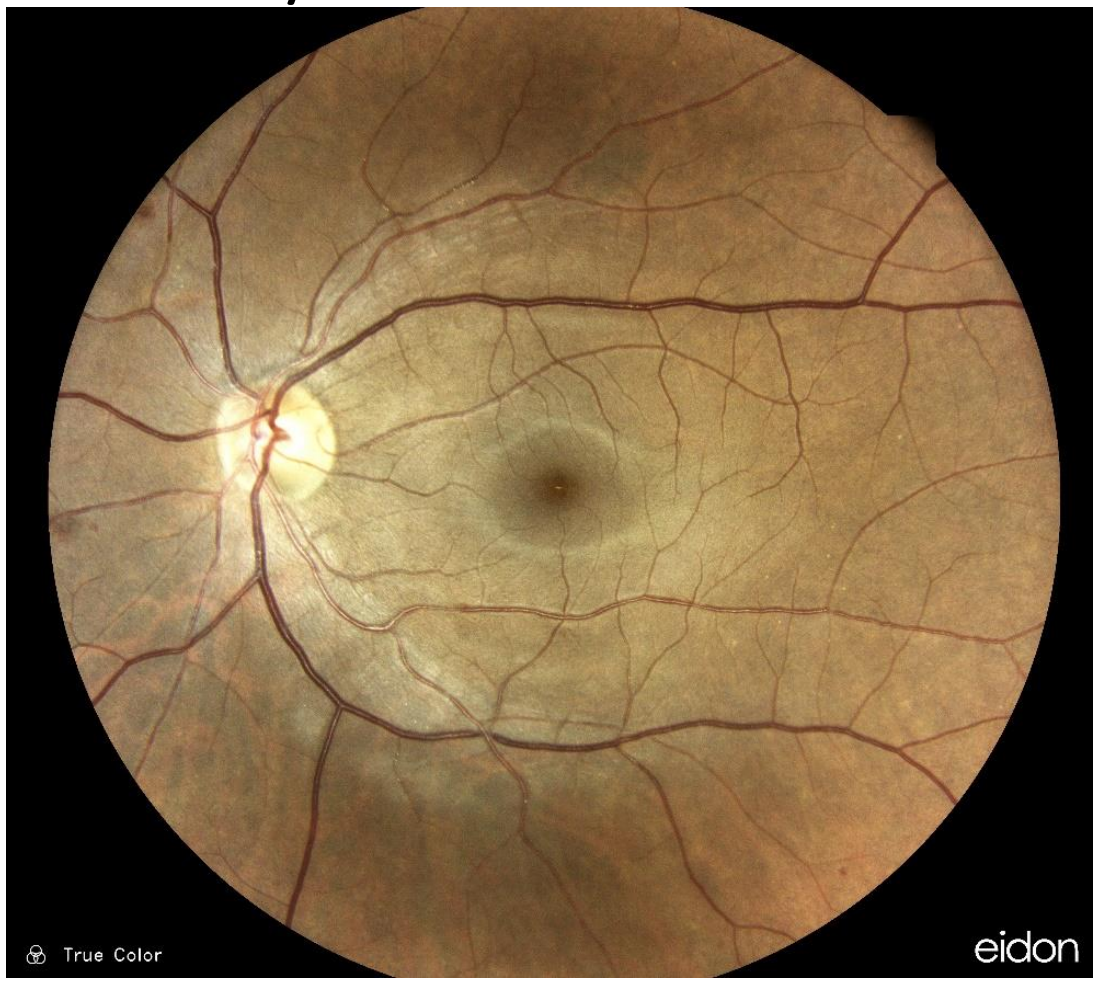
Macroaneurysm: treatment

- Generally settle spontaneously
- Do badly if bleed under the retina and blood breakdown products damage the photoreceptors

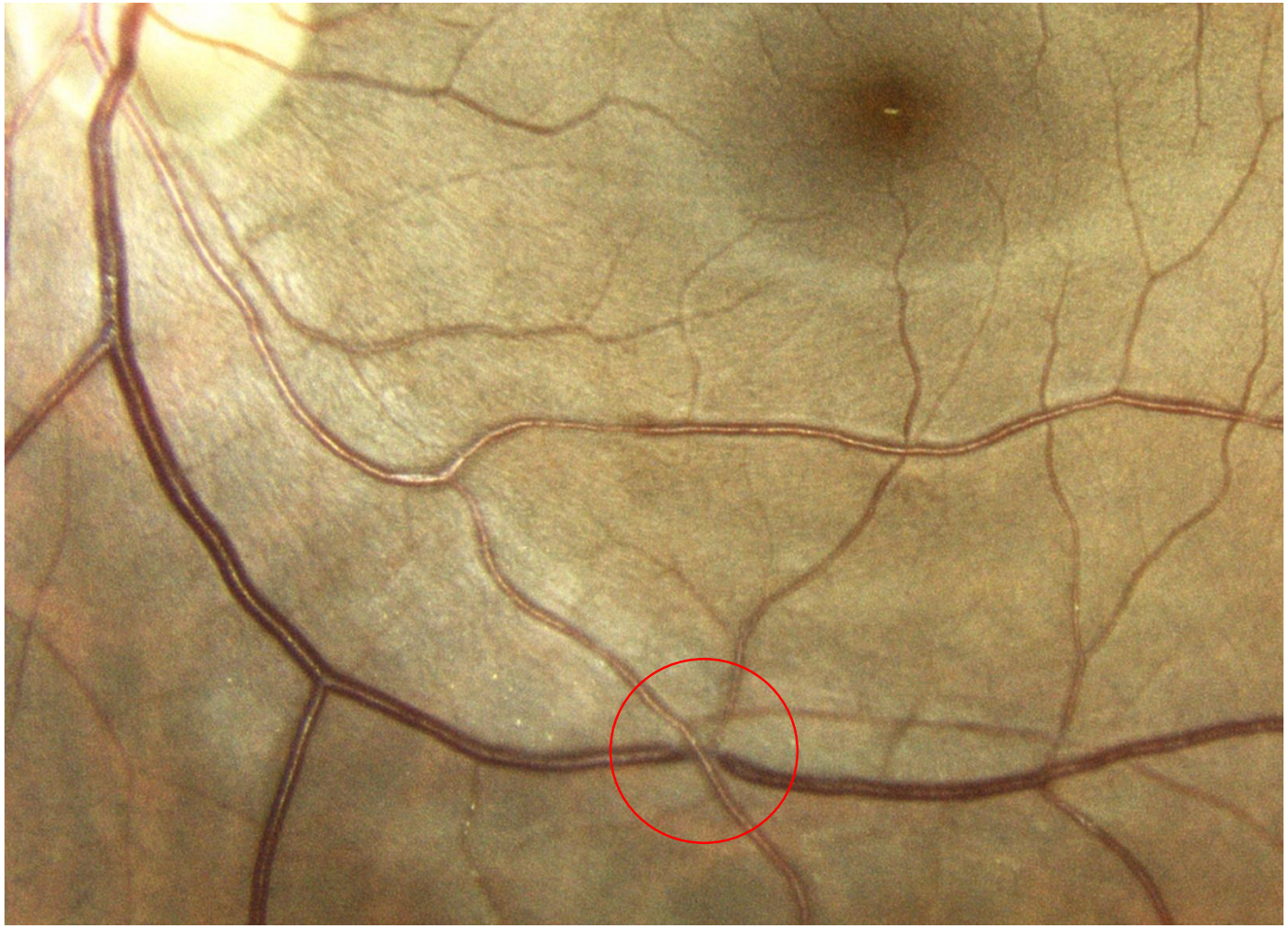
1. Control BP
2. Anti-VEGF
3. Vitrectomy if break through haemorrhage into vitreous cavity

Hypertensive retinopathy
48y F; Asymptomatic, BP 210/127

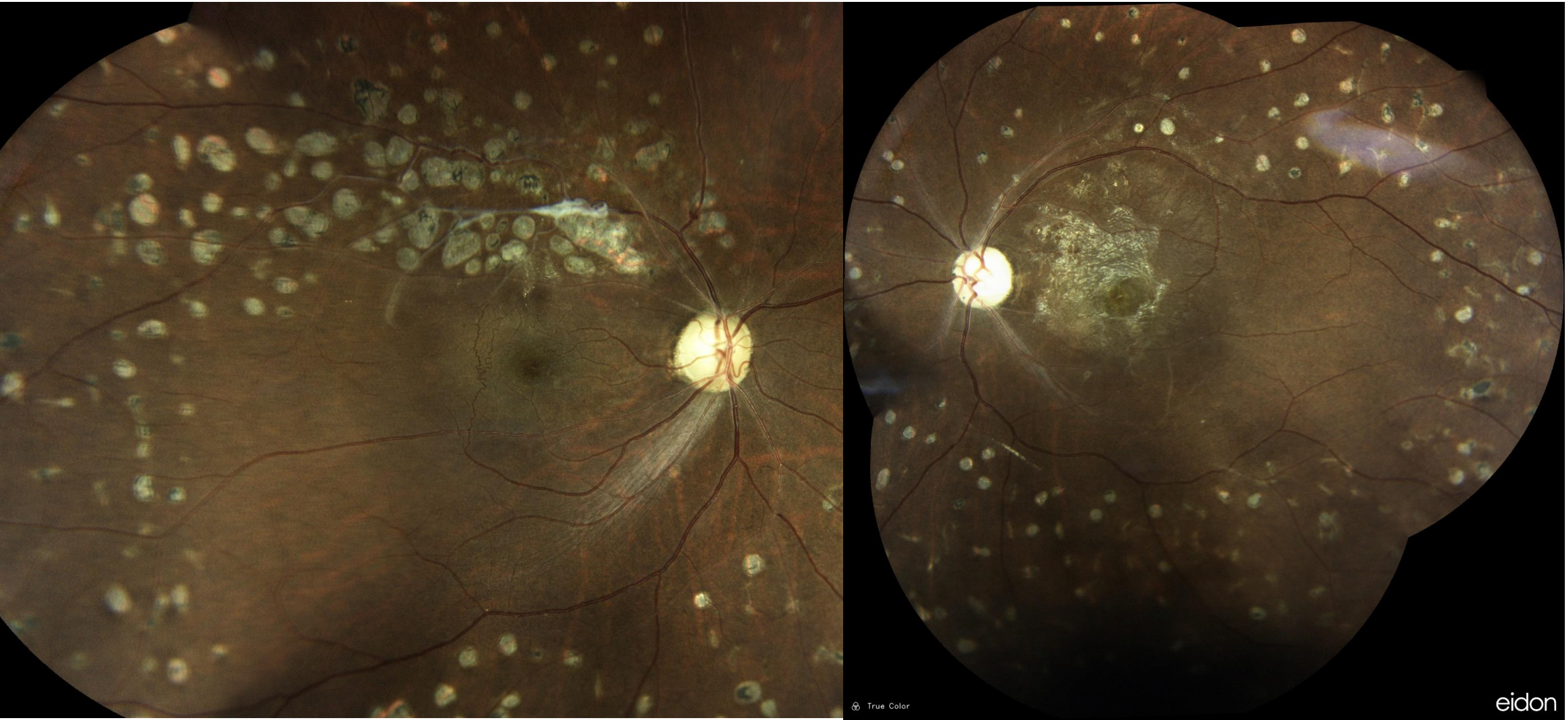




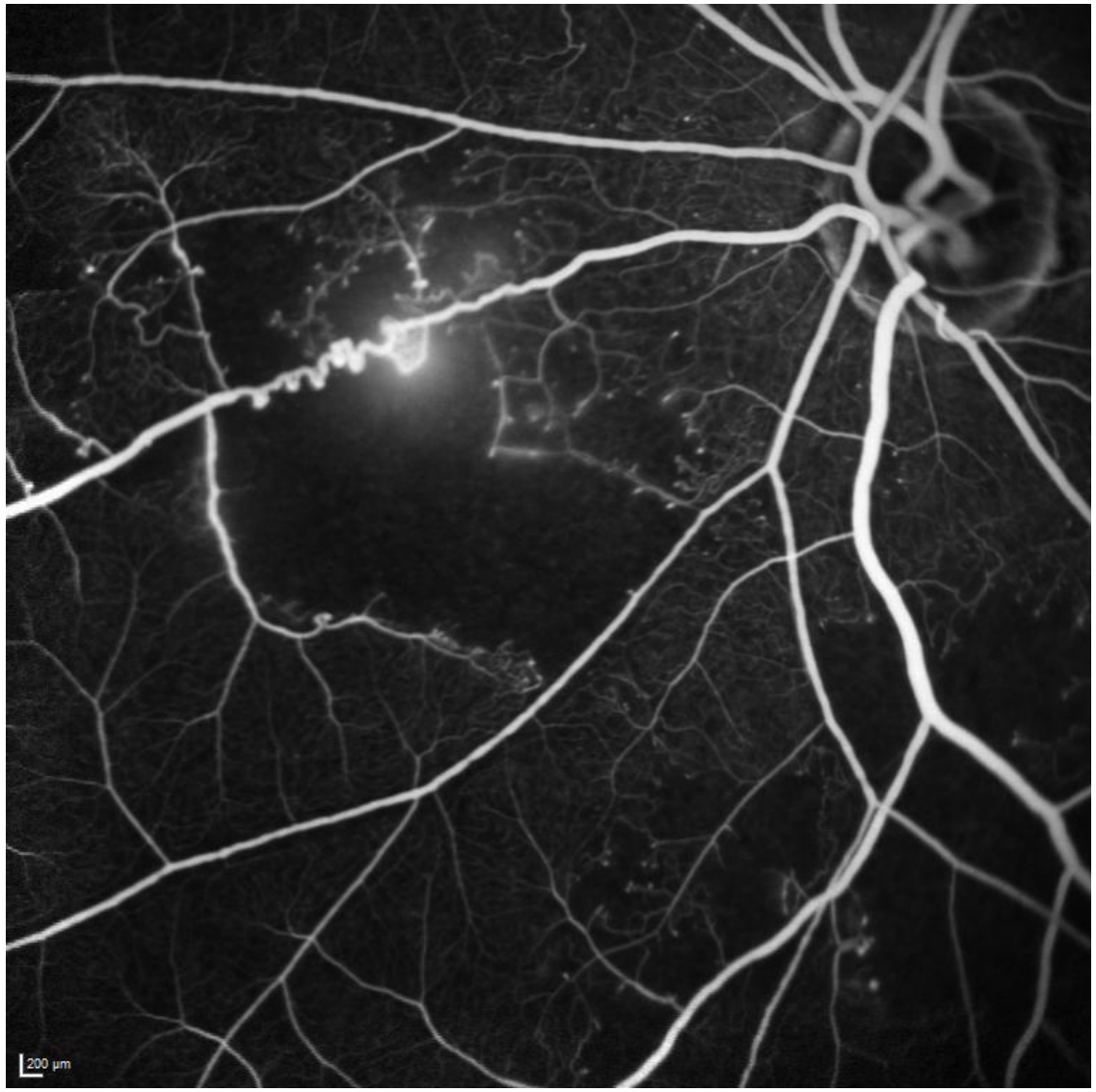
Arterio-venous nipping

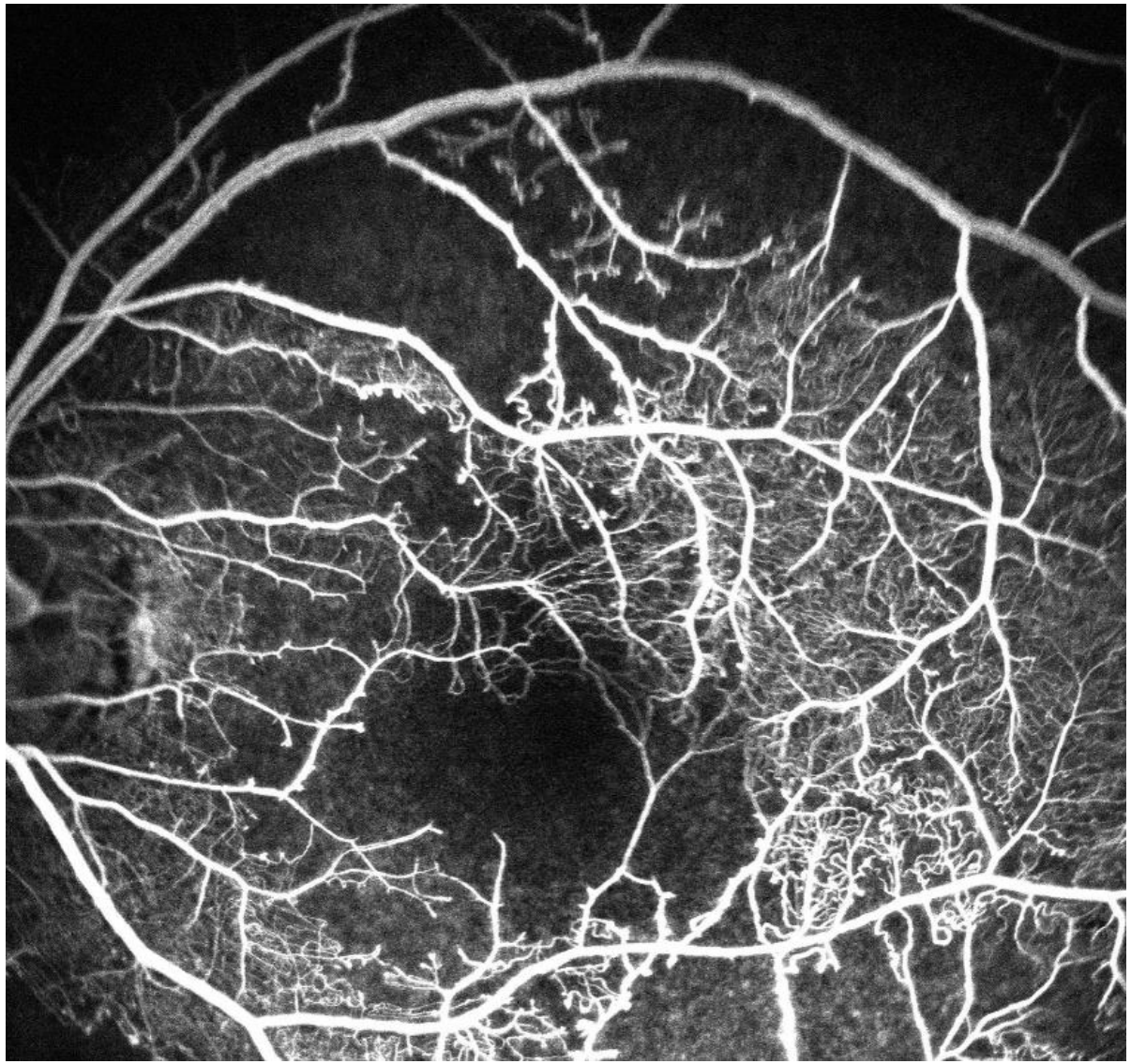


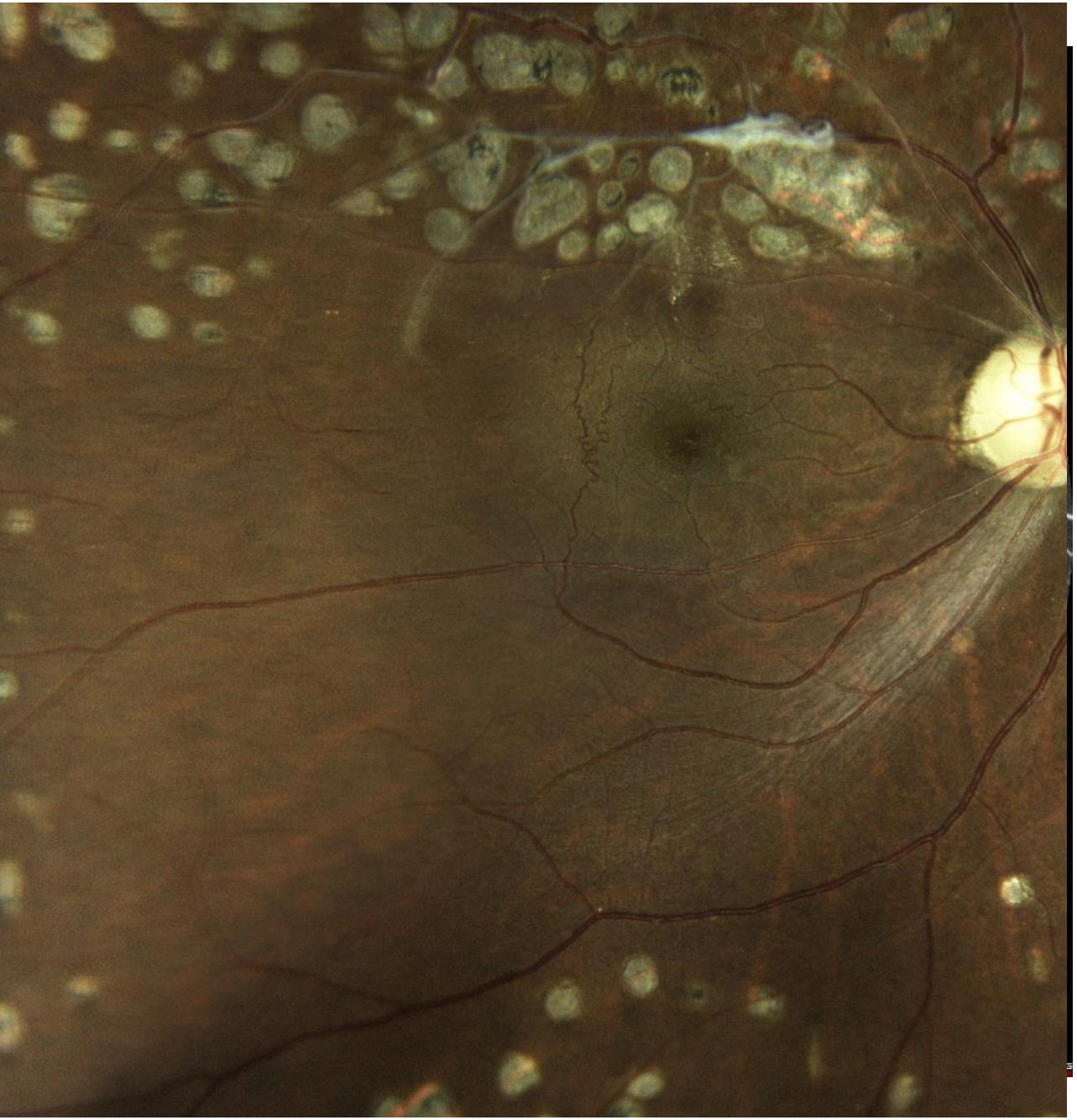
Vasculitis: Systemic Lupus Erythematosus
39 y F: VA 6/7.5 right, Hand movements left

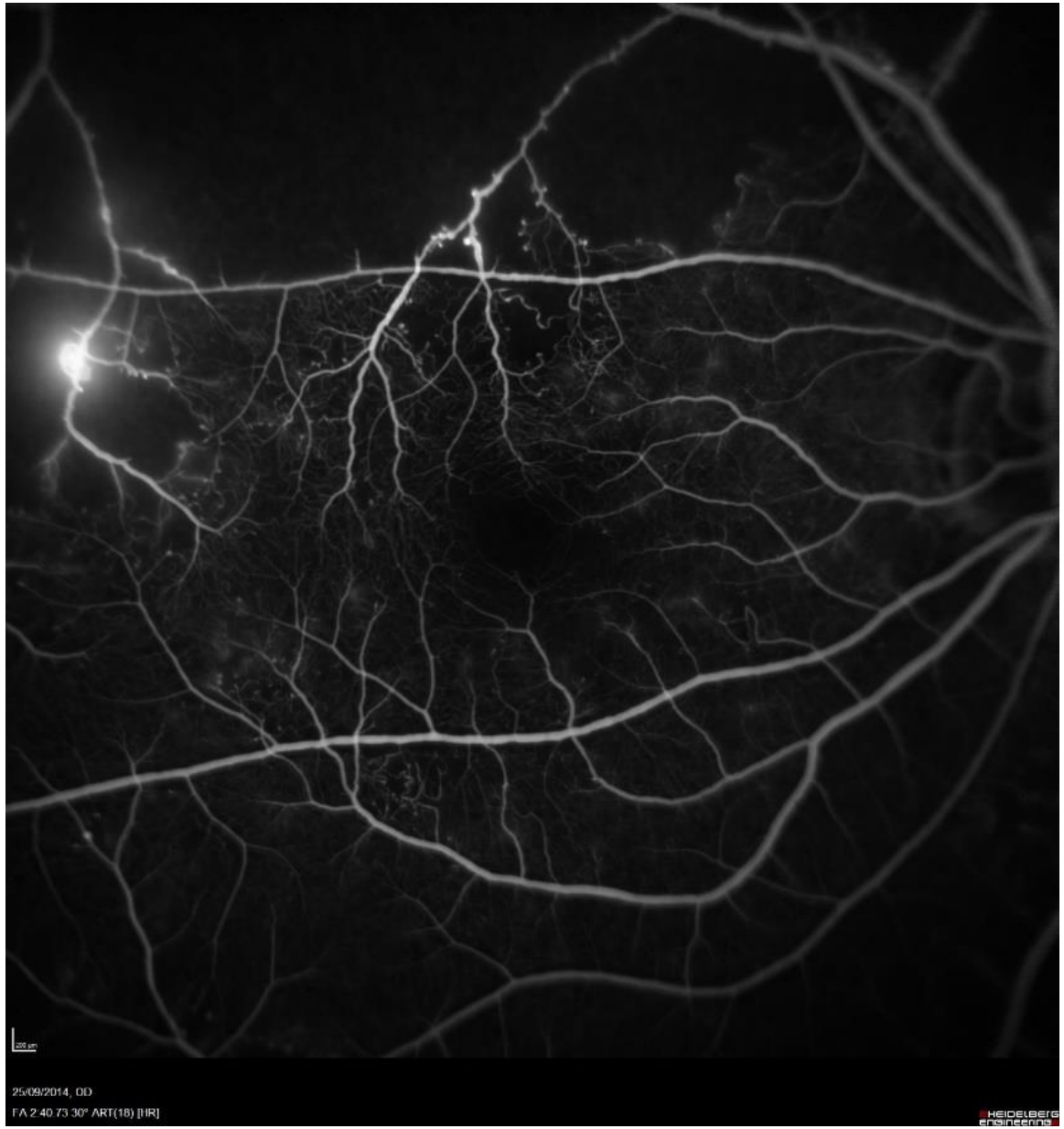


Fluorescein Angiography: Retinal vessel occlusion





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HEIDELBERG
engineering

Common systemic causes of retinal vasculitis

- Sarcoidosis
- SLE
- Wegener's Granulomatosis
- Behcet's
- Relapsing polychondritis

- *Infective*
  - *TB*
  - *Syphilis*
  - *HSV/HZV*

Summary

- An increasing range of retinal treatments available:
  - Thermal laser (subthreshold laser)
  - Anti-VEGF
  - Steroids (intraocular, periocular, oral)
  - DMARDS
  - Vitreoretinal surgery
- **Primary prevention**
  - **CVS risk factors**
  - **Glycaemic control**
  - **Ensure patients enrolled in a diabetic retinopathy screening programme**