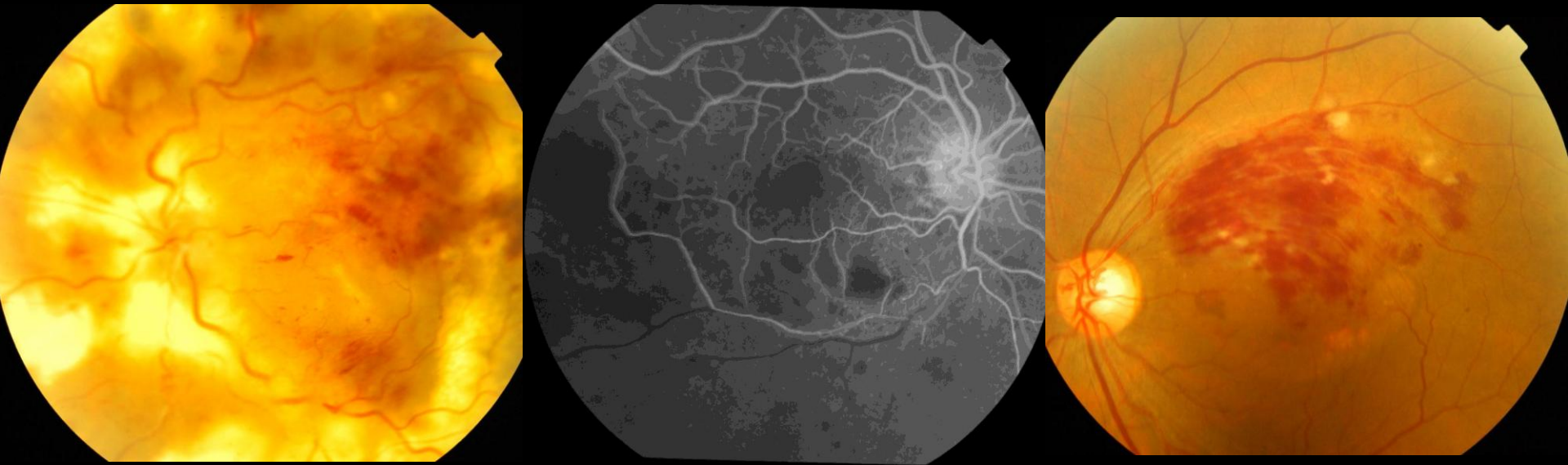


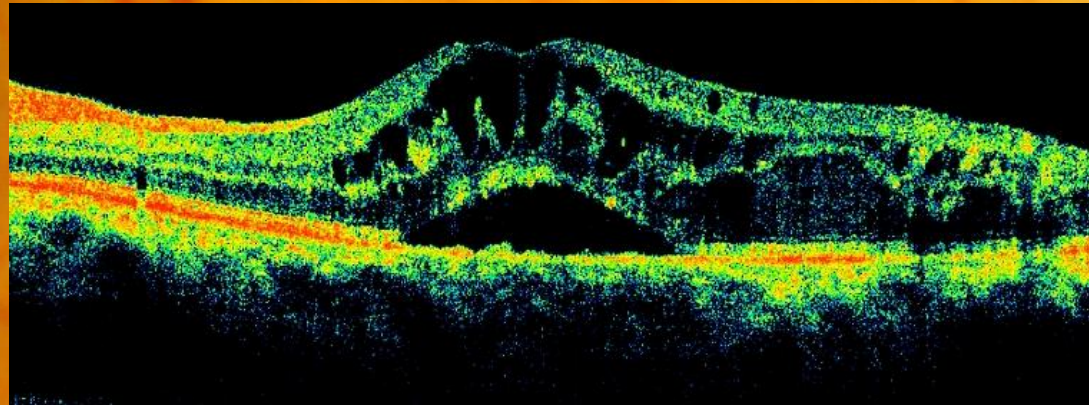
Retinal Vein Occlusions



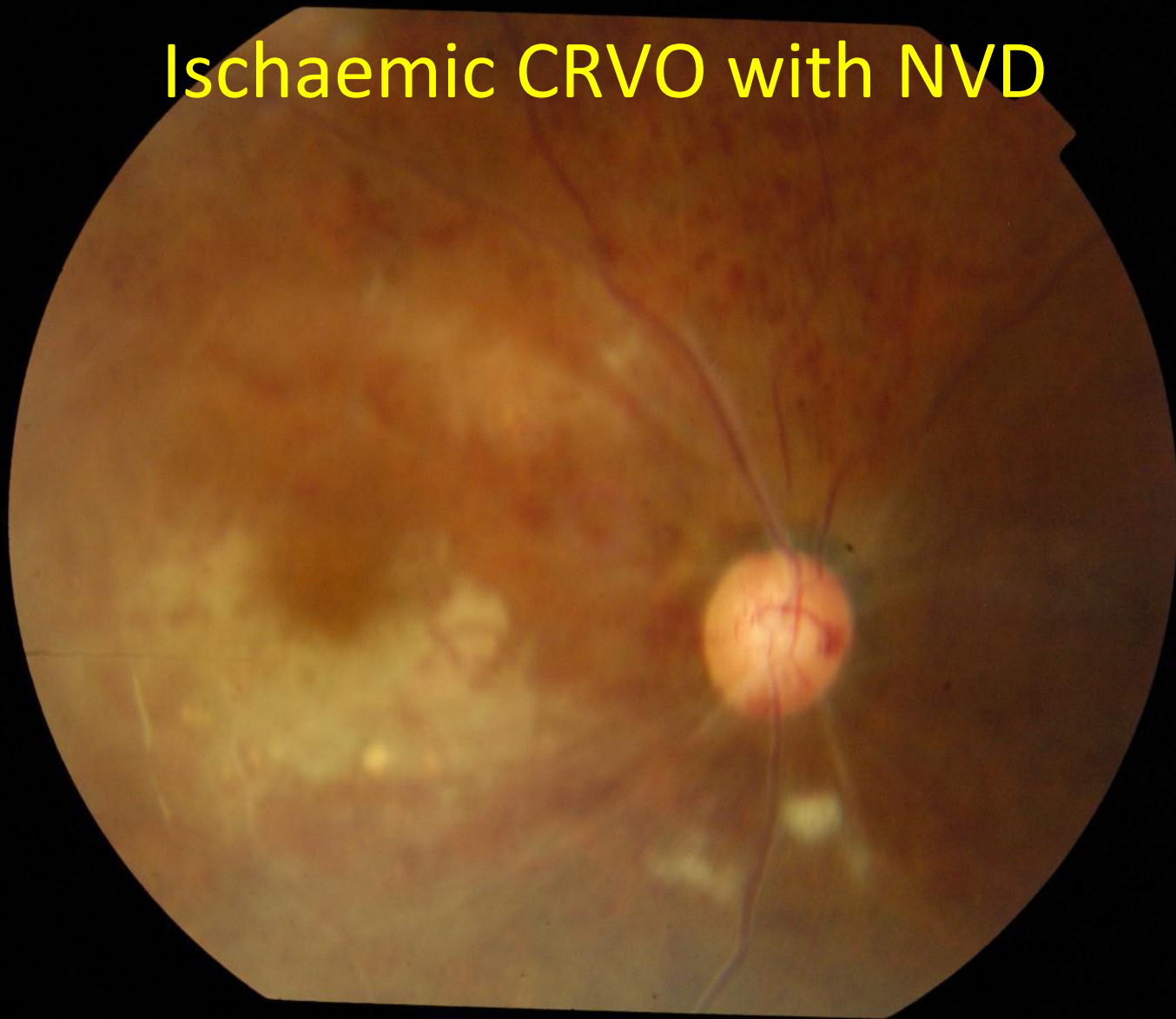
Mallika Goyal, MD

Apollo Health City, Jubilee Hills, Hyderabad

Non ischaemic CRVO

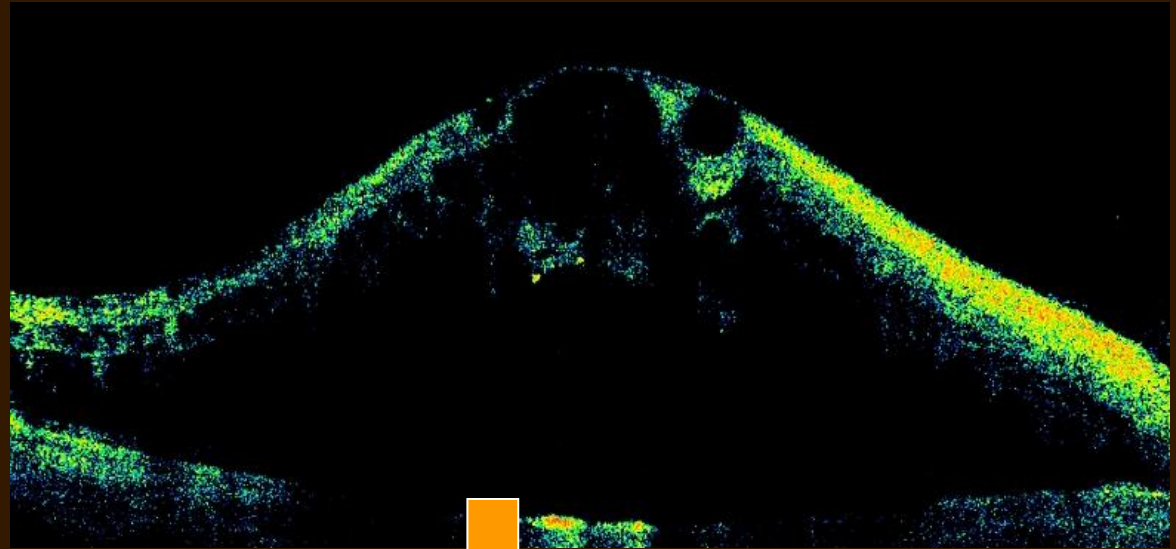


Ischaemic CRVO with NVD

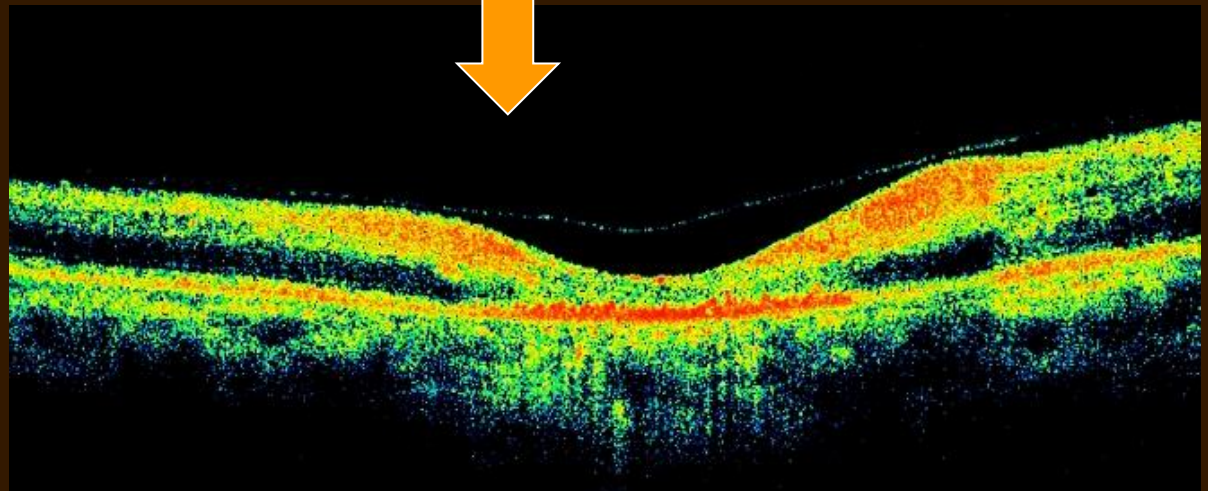


Ischaemic CRVO with NVD Post Avastin + IVTA 2 months

Nov 11, 2014



Jan 7, 2015



Workup of the RVO Patient

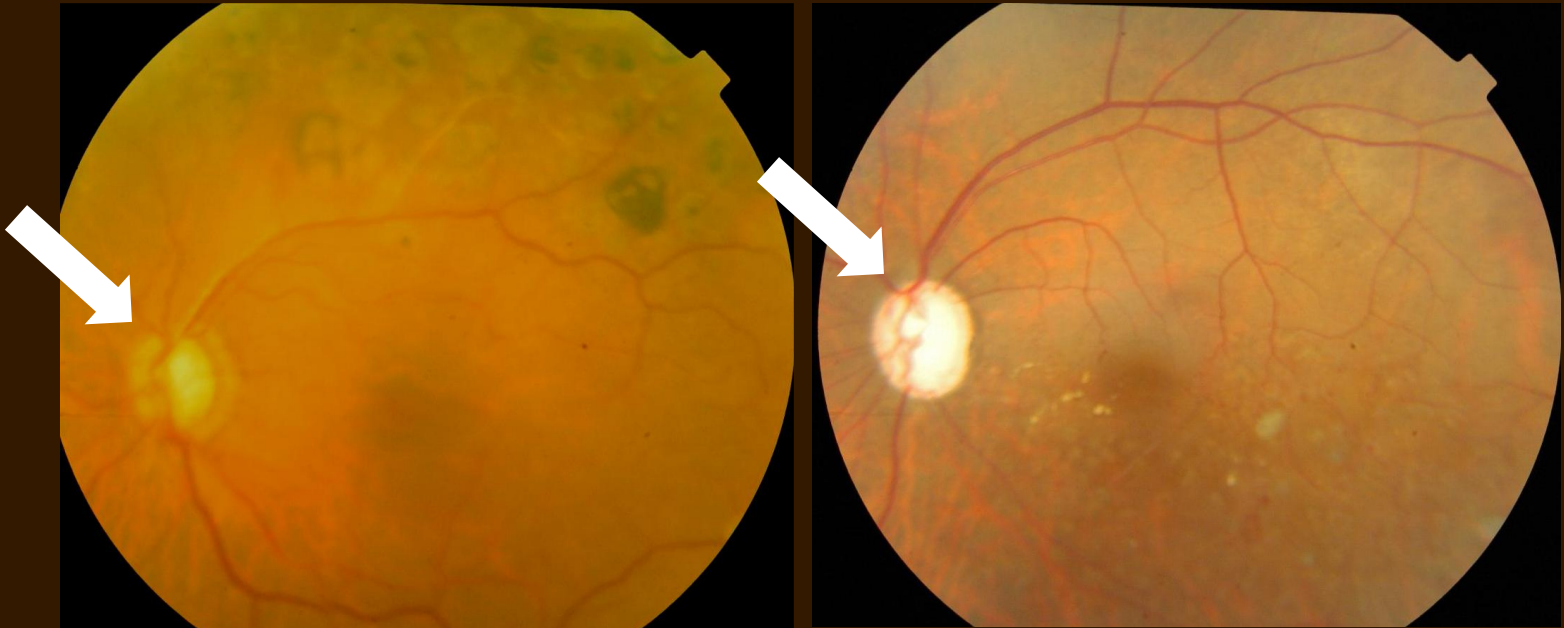
Systemic Risk Factors

- Hypertension
- Hyperlipidemia
- Diabetes
- Smoking

Workup of the RVO Patient

Ocular Risk Factor

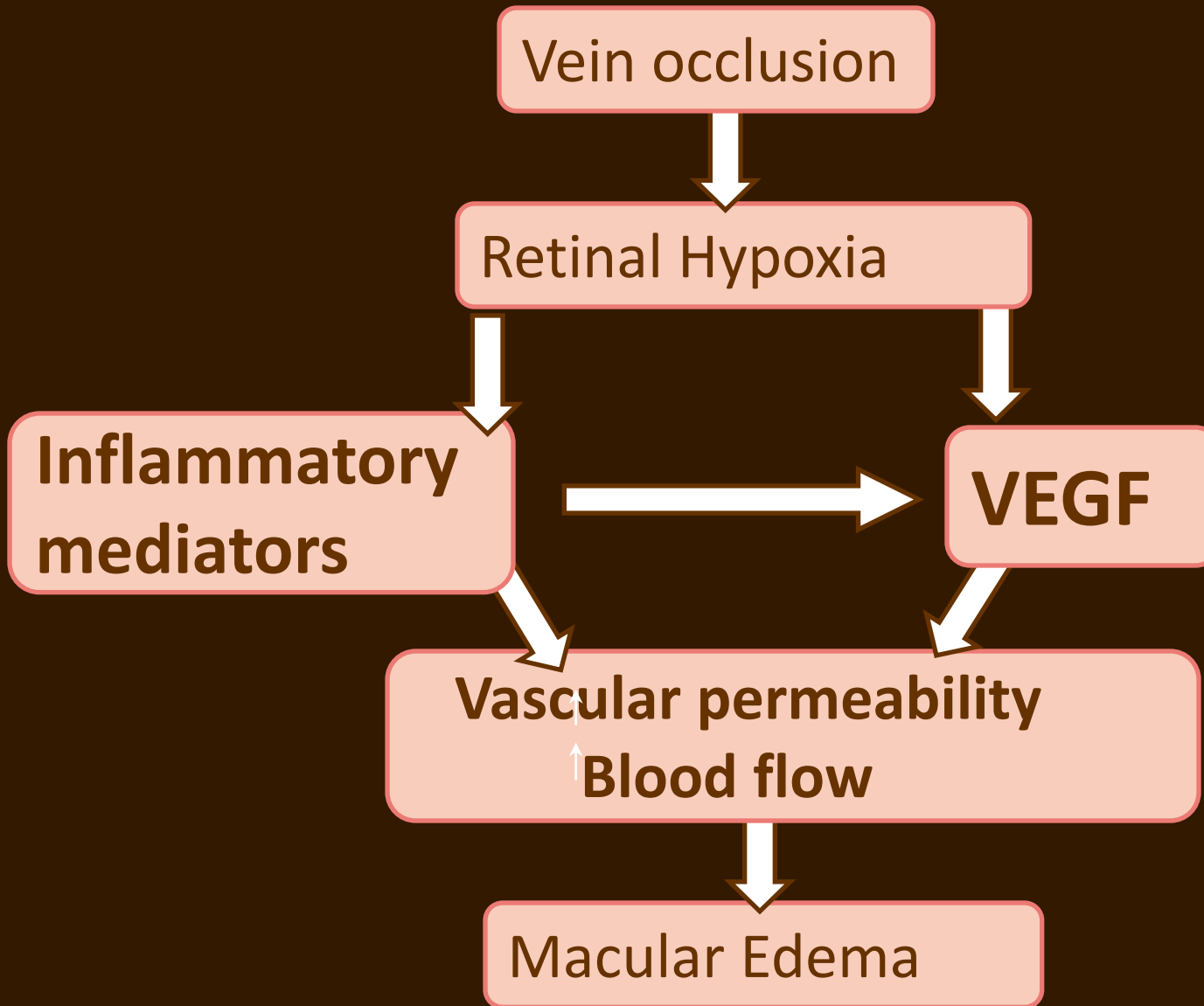
- Glaucoma



CRVO of the Young Workup

- Papillophlebitis: Idiopathic Inflammation
- Vasculitis (Idiopathic)
- SLE, Sarcoidosis
- Blood dyscrasias: leukemia, myeloma etc
- Hyperhomocysteinemia
- Antiphospholipid antibody syndrome

Pathogenesis of Macular Edema



Management of Macular Edema

1. Anti-VEGF

Bevacizumab

Ranibizumab

Aflibercept/ Eylea

2. Anti-Inflammation/ Steroid

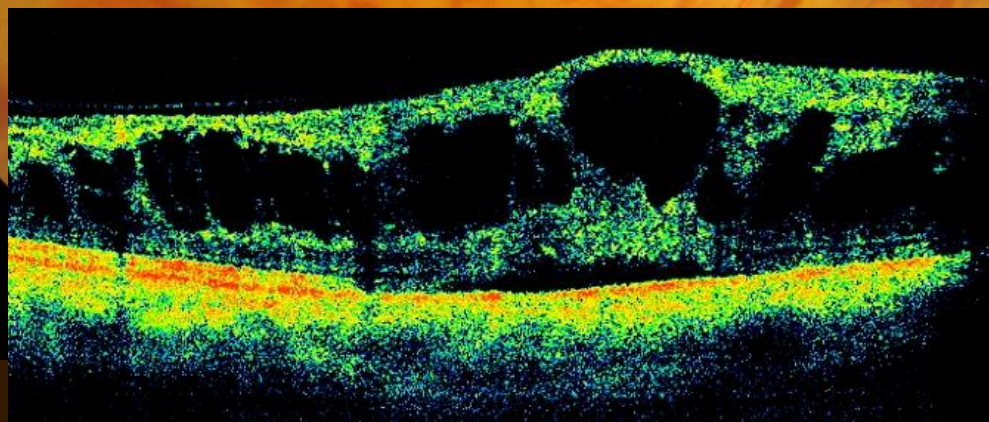
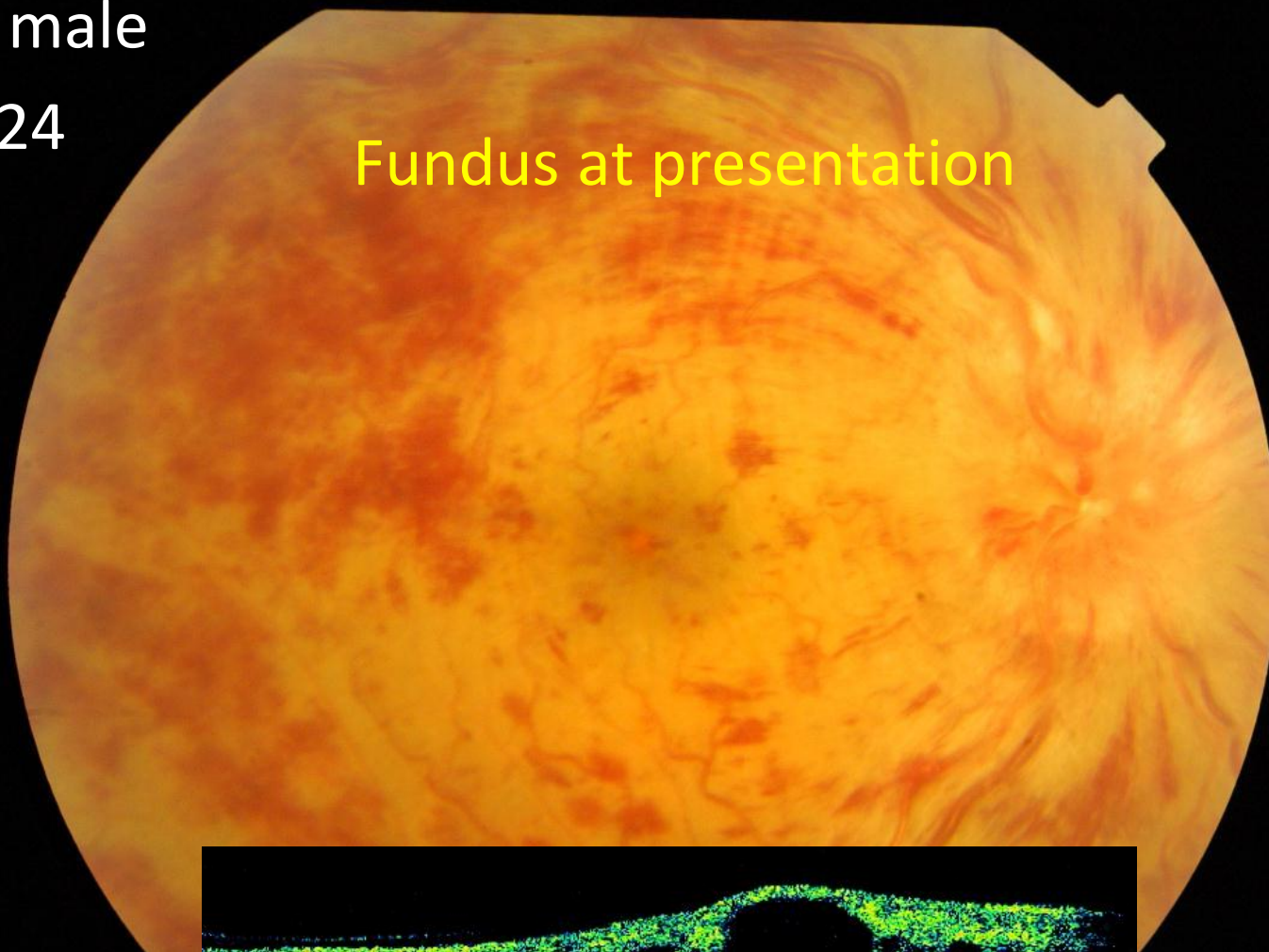
Dexamethasone implant/ Ozurdex

Inj Triamcinolone acetonide

Typical Case CRVO

- 67 yo male
- VA 6/24
- ACG
- HT

Fundus at presentation



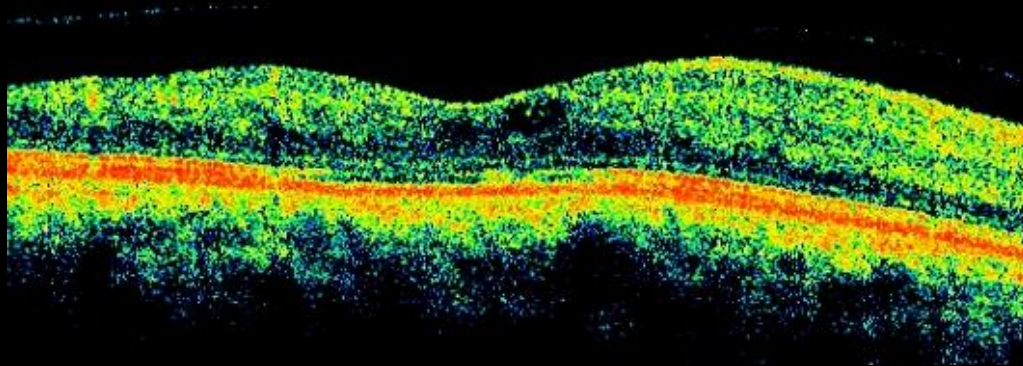
Management

- Primarily Macular edema management
- Educated about symptoms of progression to ischaemic form and NVG, & prompt reporting

Intravitreal bevacizumab at presentation 4 weeks later...



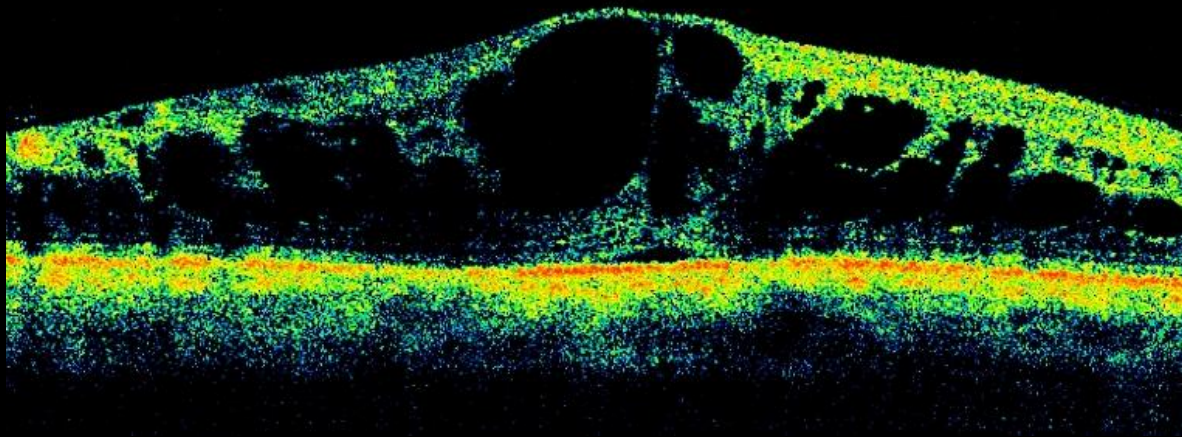
- VA 20/40
- Near complete resolution of edema



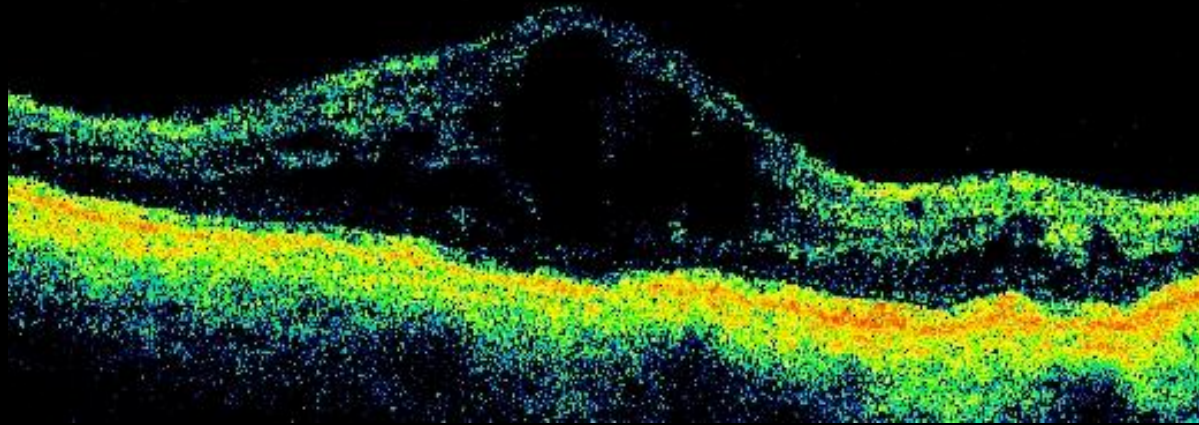


Recurrence every 2-3 months..

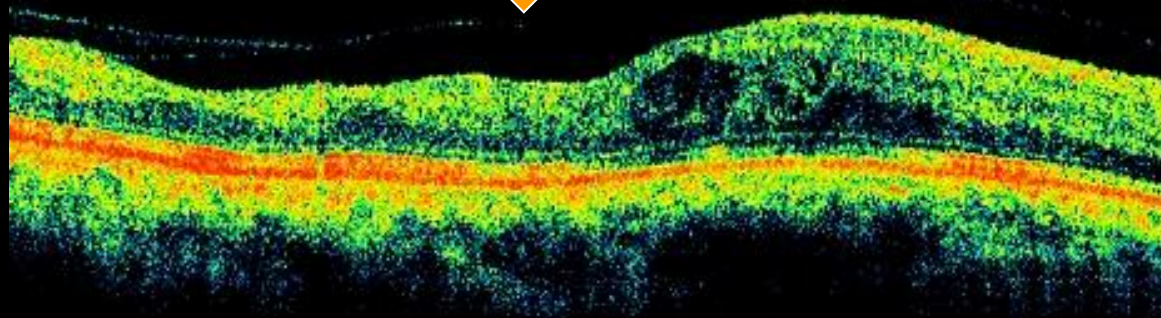
- 8 further injections in 2 years
- Undergoes Phaco+ Trab



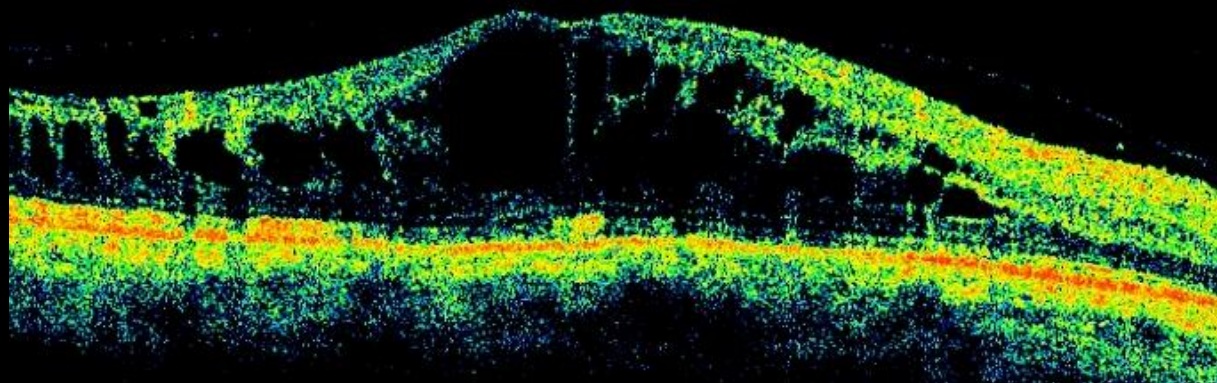
Pseudophakic



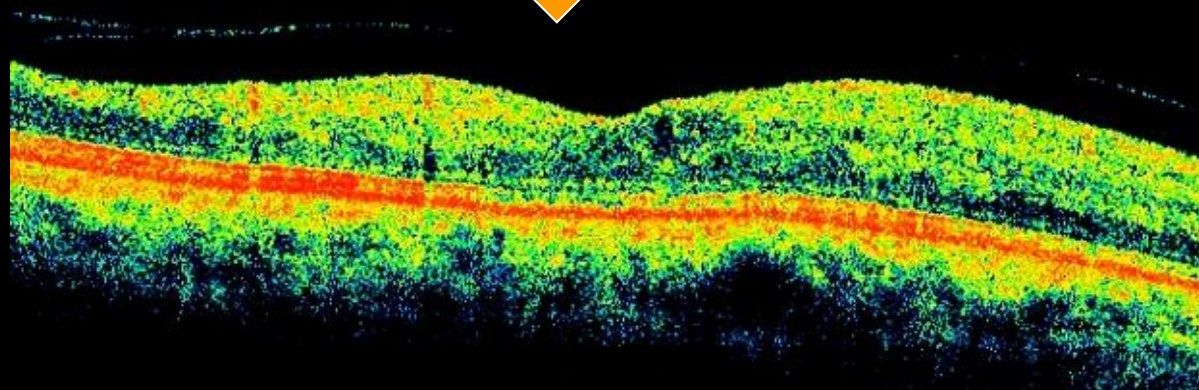
IVTA



Recurrence every 5 months...

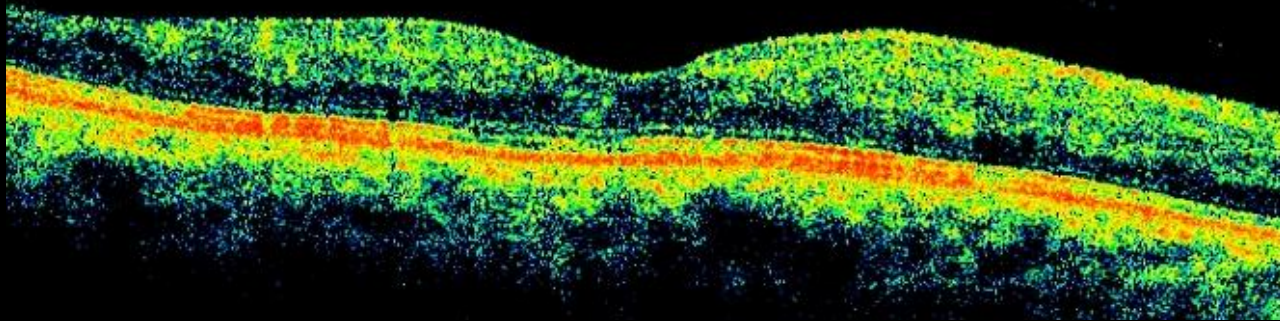


IVTA



Maintained on 5-6 monthly IVTA for 5 years

- VA 20/25

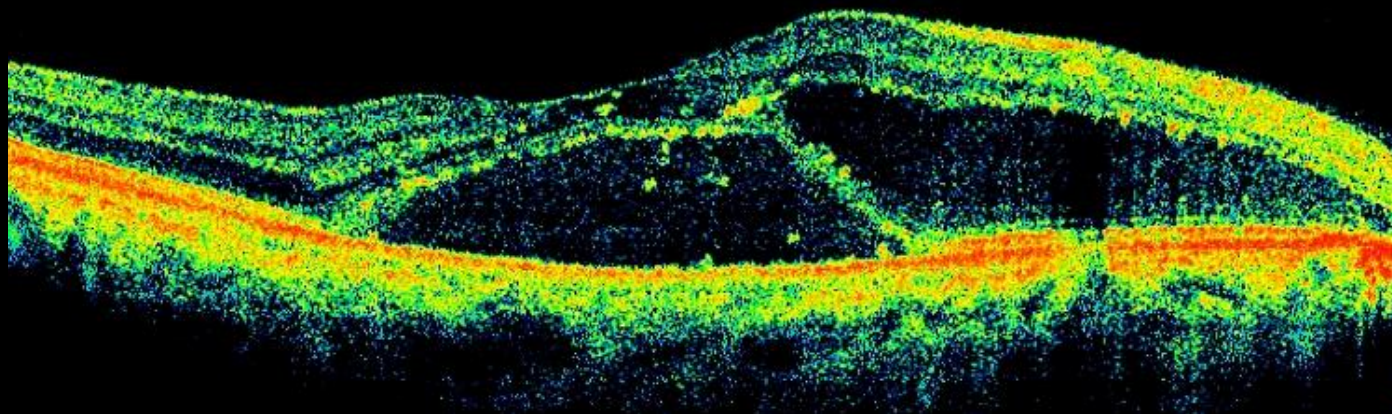


Case 2 BRVO

BRVO



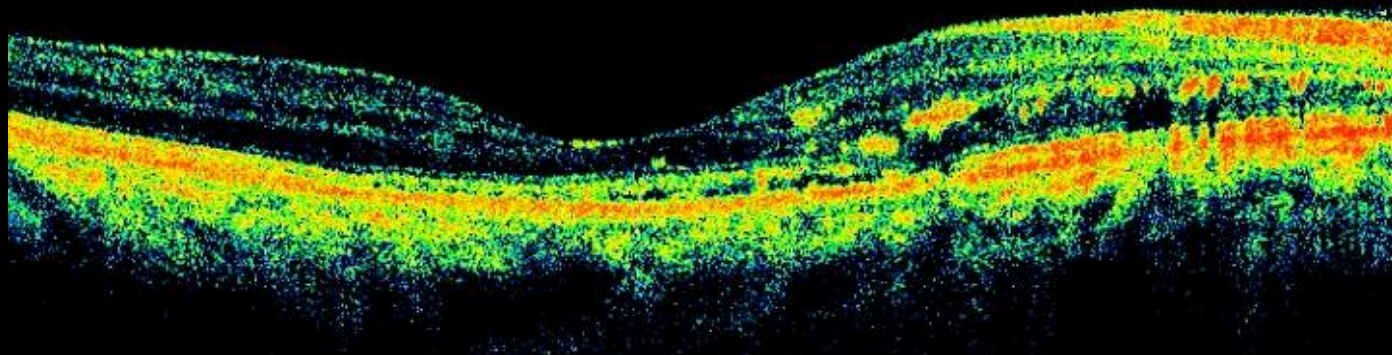
BRVO



Less recurrences
Better Visual Prognosis



Avastin



Inferior Hemiretinal Vein Occlusion



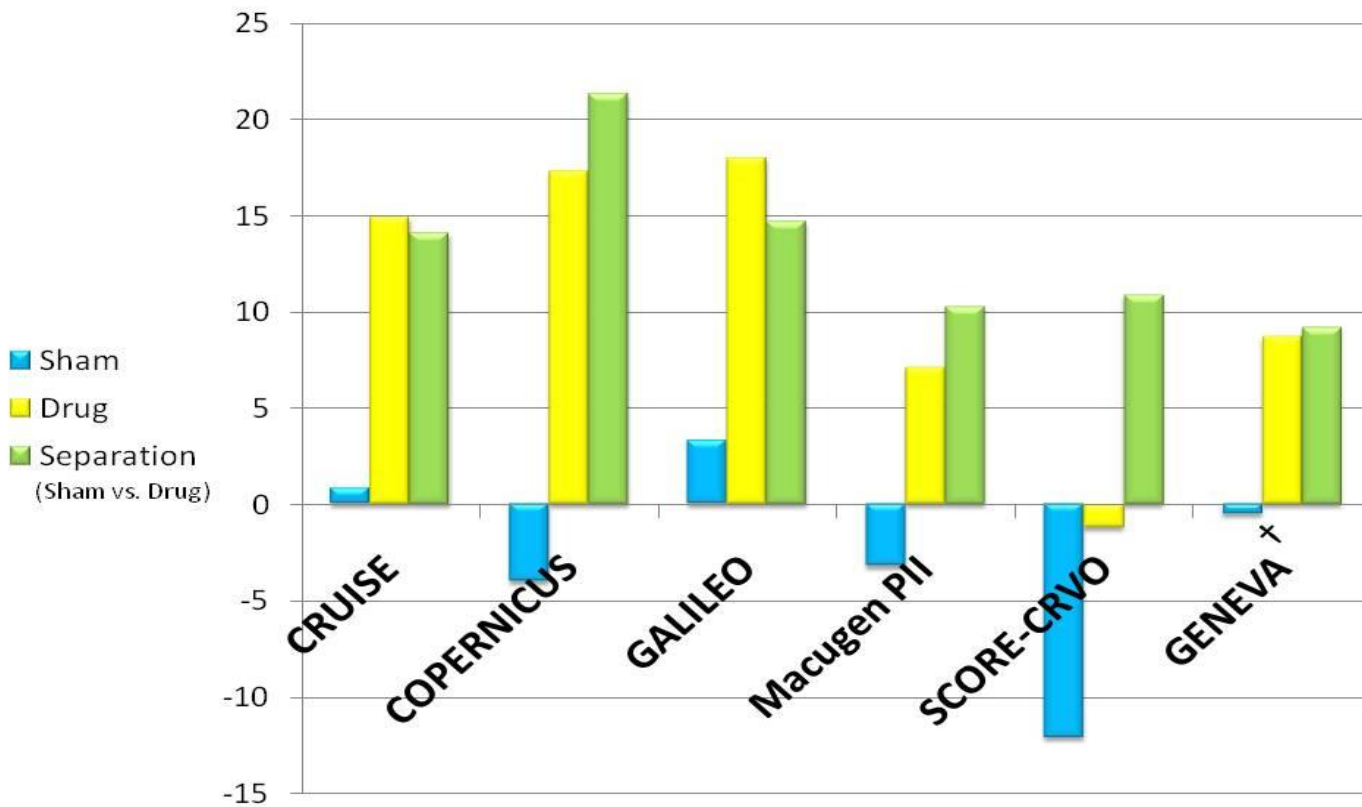
Hemi-Retinal Vein Occlusion

- Anatomic variation in 20% patients
- Pathophysiology like CRVO
- Clinical features & complications intermediate between CRVO & BRVO
- CRVO guidelines used for panretinal laser
- Macular edema managed as in BRVO

Anti-VEGFs & Steroids in CVO

Landmark Trials

Average Gain or Loss in Visual Acuity (Letters)



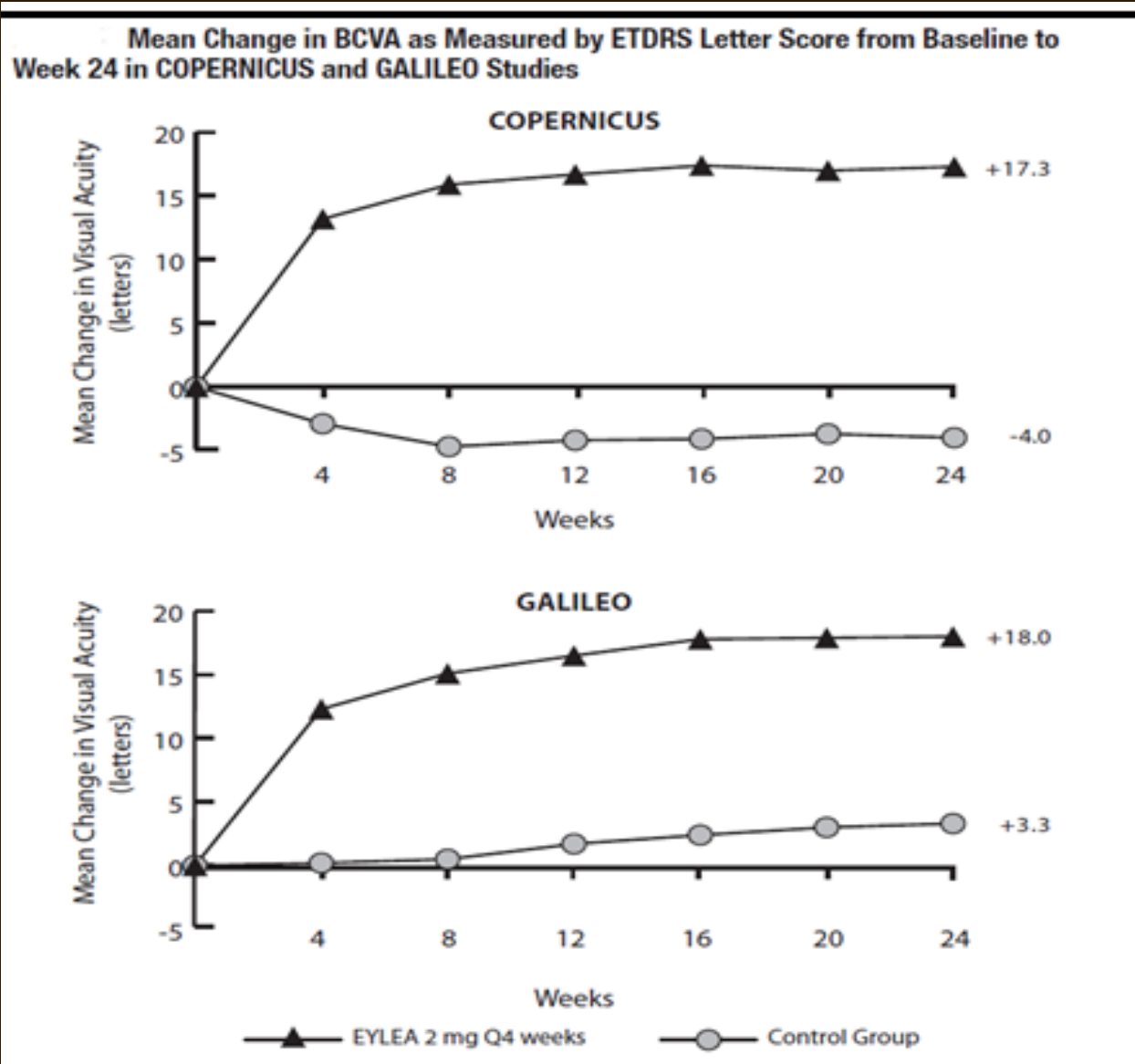
Intravitreal Aflibercept for CRVO

GALILEO Study

- 2-mg aflibercept or sham every 4 weeks for 20 weeks
- From week 24 to 48, PRN dosing
- Mean of 2.5 injections during PRN dosing



Visual results in GALILEO & COPERNICUS trials



GALILEO Study: 18 Month Results

- At week 52, the mean % of patients gaining > 15 letters was
60.2% in the aflibercept group
32.4% in the sham group
- The visual & anatomic improvements seen after monthly dosing at week 24 were largely maintained during PRN dosing thru week 52

Am J Ophthalmol. 2014 Nov

Time to first >15-letter VA gains BRAVO & CRUISE trials (Ranibizumab)

- BRAVO : 4 months
- CRUISE: 5.2 months



Timing of treatment

BRAVO & CRUISE trials

- Control group eyes that received treatment after first 6 months showed an anatomical improvement similar to that in the treatment groups but less visual improvement
- Initiating treatment ***immediately after diagnosis*** provides the greatest vision gains

Long-term follow-up HORIZON trial

- Extension of the 12-month CRUISE & BRAVO
- 304 patients from each study
- Review every 3 months & treated with ranibizumab if they met treatment criteria

2nd Year Results

HORIZON trial

- Reduced follow-up & fewer injections → vision decline in CRVO, but stable vision in BRVO
- In 2nd year, review & injections should be individualized
- CRVO may need more frequent follow-up than every 3 months

Ophthalmology. 2012 Apr, Heier JS et al

RVO in a vitrectomized eye

- Sequentially treated with 4 agents
- Avastin, Lucentis: dry macula not achieved even at 1 week
- *Eylea*: *dry macula for 5 weeks*
- IVTA : dry macula for 7 weeks

Case Rep Ophthalmol. 2014 Oct 22, Malhotra P, Kishore K

SCORE-CRVO Trial

Standard Care vs Corticosteroid for Retinal Vein Occlusion, 2009

- Comparing IVTA (PRN) with observation
- > 15 letters gain:
 - 26% in 4 mg group
 - 7% in observation group
- Odds of > 15 letters gain 5 times higher with treatment



SCORE-CRVO Trial



- Rates of raised IOP & cataract higher in 4-mg group

Ozurdex Geneva Study, May 2011

Macular edema with CRVO



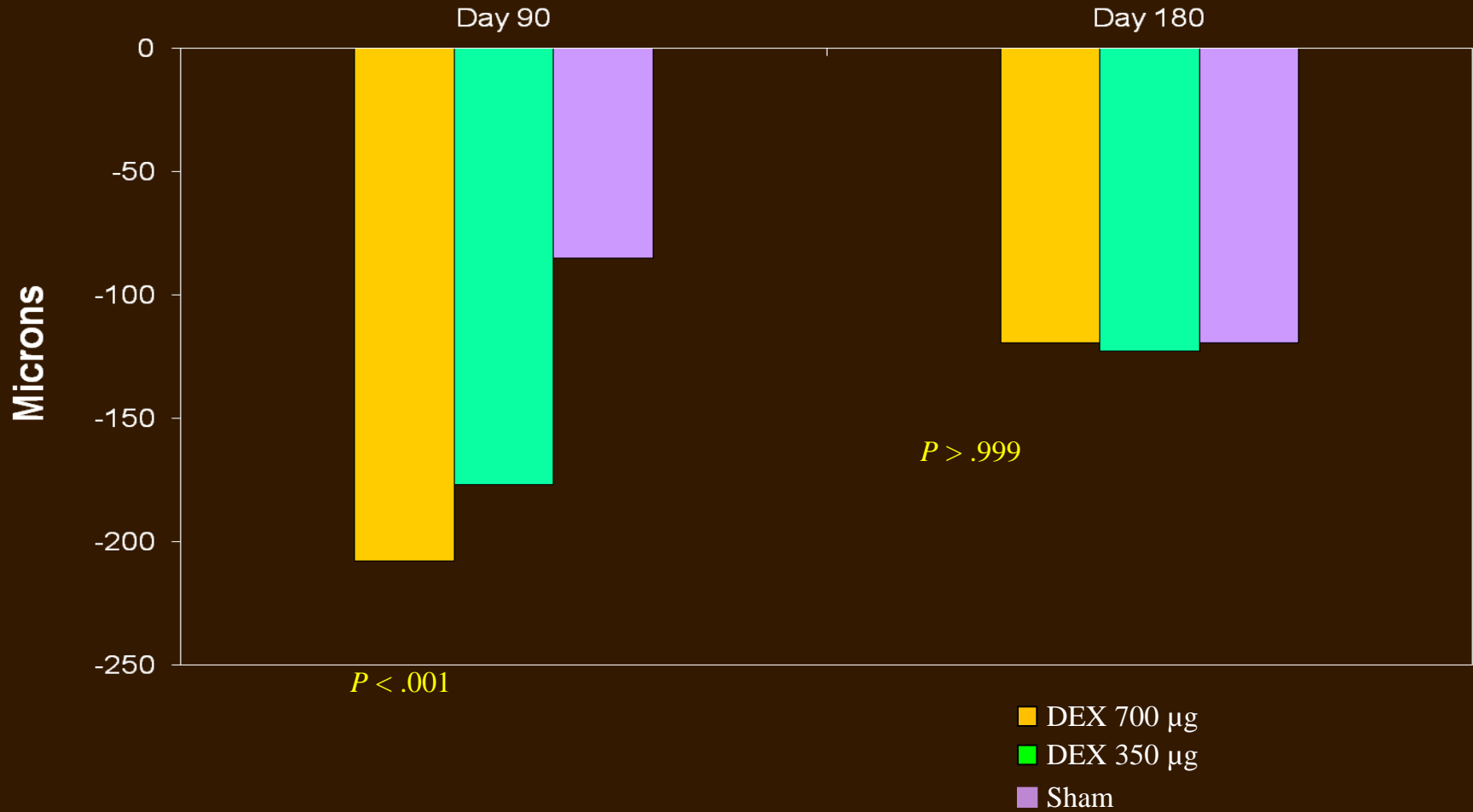
Dexamethasone Delivery Implant 700 ug

Mean Change in BCVA From Baseline: Retreated Population



Ozurdex Geneva Study

Mean Change From Baseline OCT



P values are for DEX 700 µg vs sham.

Comparison of anti-VEGFs vs Steroids in RVO

- No head to head comparisons of the two treatments
- Trend for ranibizumab achieving visual gains in greater percentage of patients than dexamethasone at months 1 & 6

BMC Med Res Methodol. 2014 Dec 22 Thom HH etc

Prospective study of IVTA vs Avastin in CRVO

- No statistical differences in BCVA or mean central macular thickness
- Less injections were performed in the IVT group
- IVTA → more adverse events than avastin

Retina. 2011 May;31(5) Ding X1 et al

Laser for Macular Edema in CRVO CVO Study

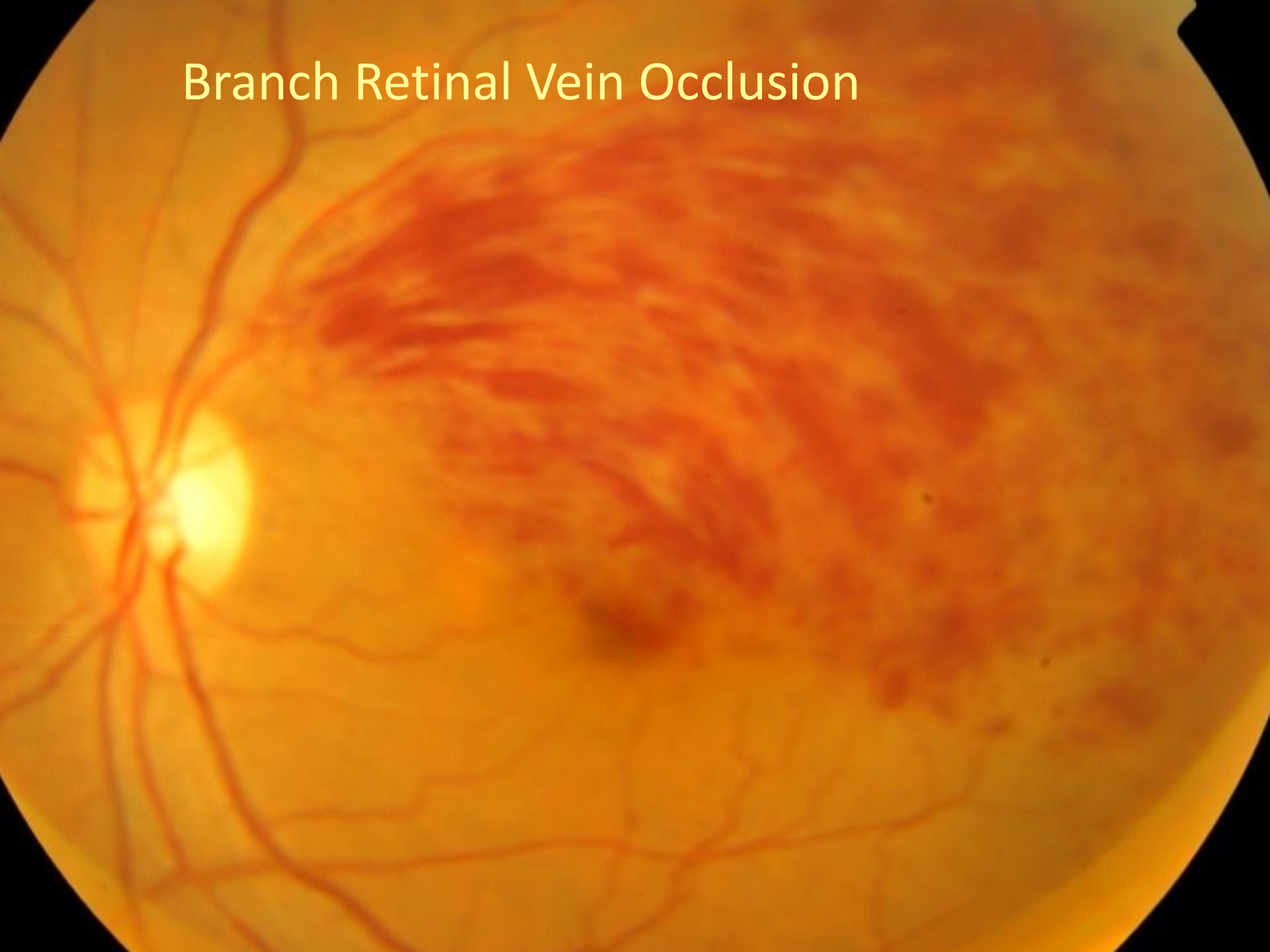
Macular grid laser effective in reducing angiographic evidence of macular edema but did not improve visual acuity

Macular Edema in CRVO

Summary

- Prompt intravitreal anti-VEGF/ Steroid
- Prefer anti-VEGF specially in ischaemic CRVO
- Can be monthly loading injections (CRUISE, BRAVO, COPERNICUS, GALILEO) or as needed (SCORE, Ozurdex-Geneva)

Branch Retinal Vein Occlusion

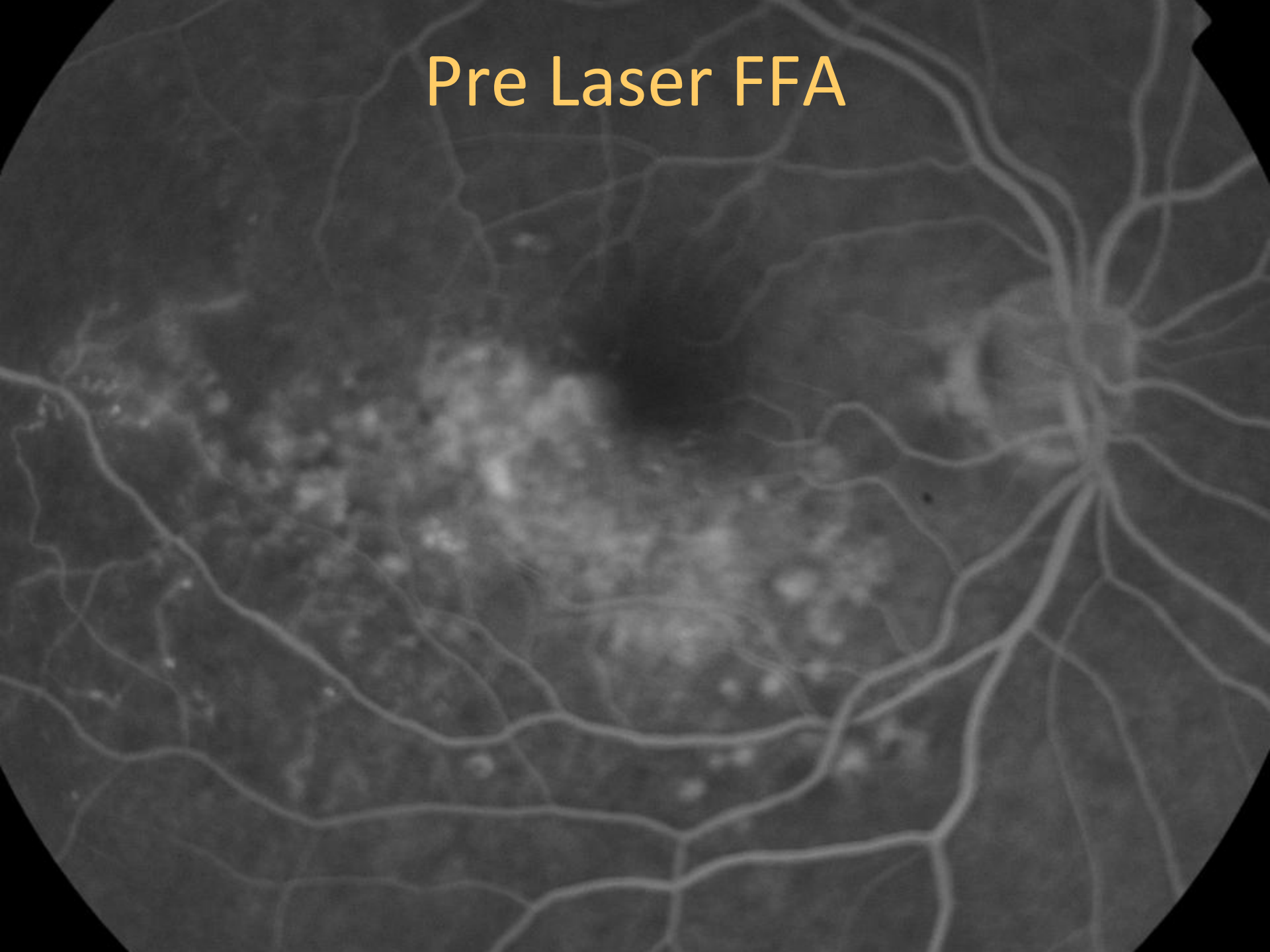


BVO Study group

- Macular Laser 3 months after onset if VA \leq 20/40
- 65% treated eyes vs 37% control eyes have 2-line improvement at 3 years



Pre Laser FFA



Macular Edema in BRVO/ HRVO Summary

Prompt intravitreal anti-VEGF/ Steroid



Macular grid laser

Thank you!