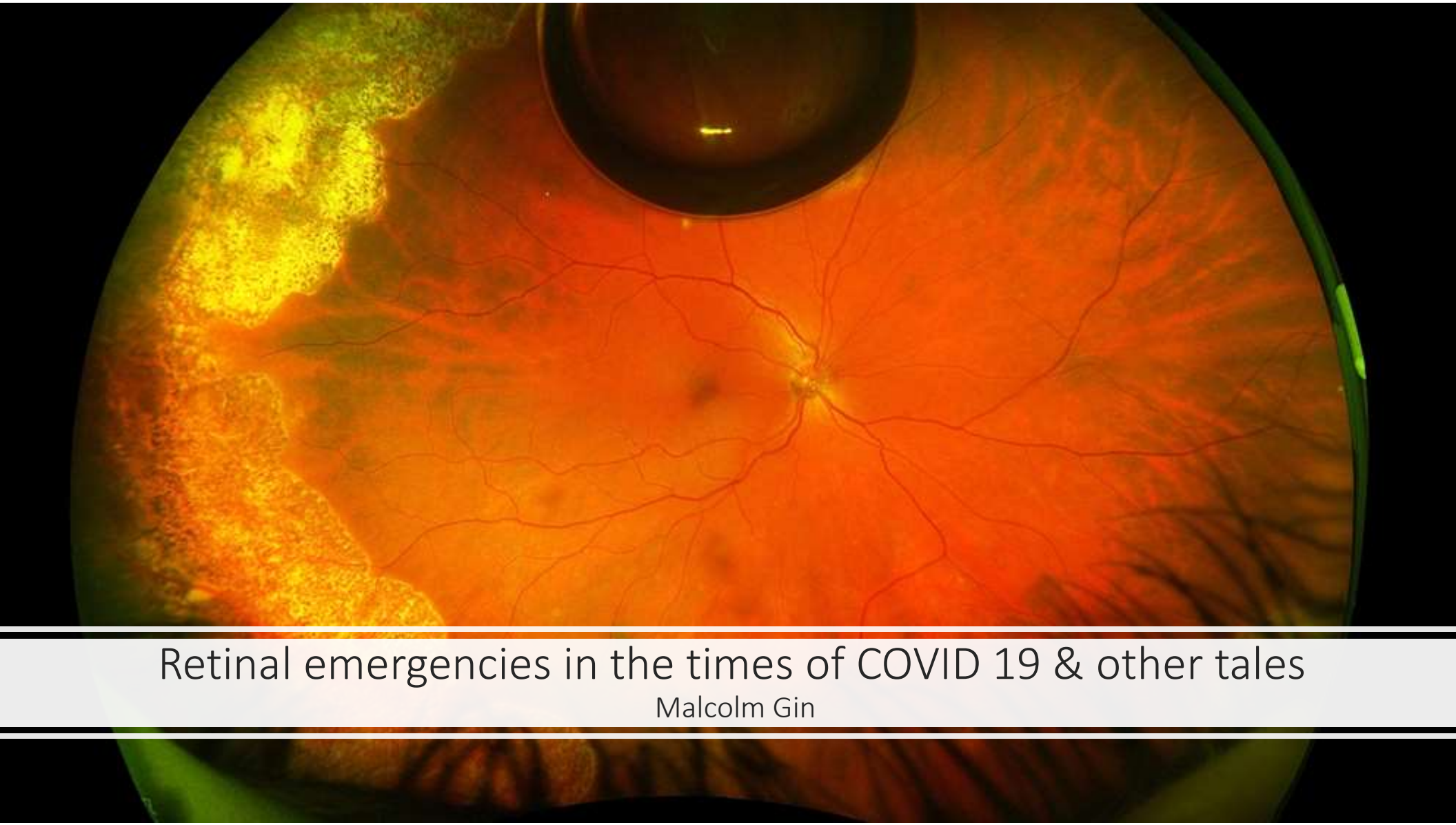
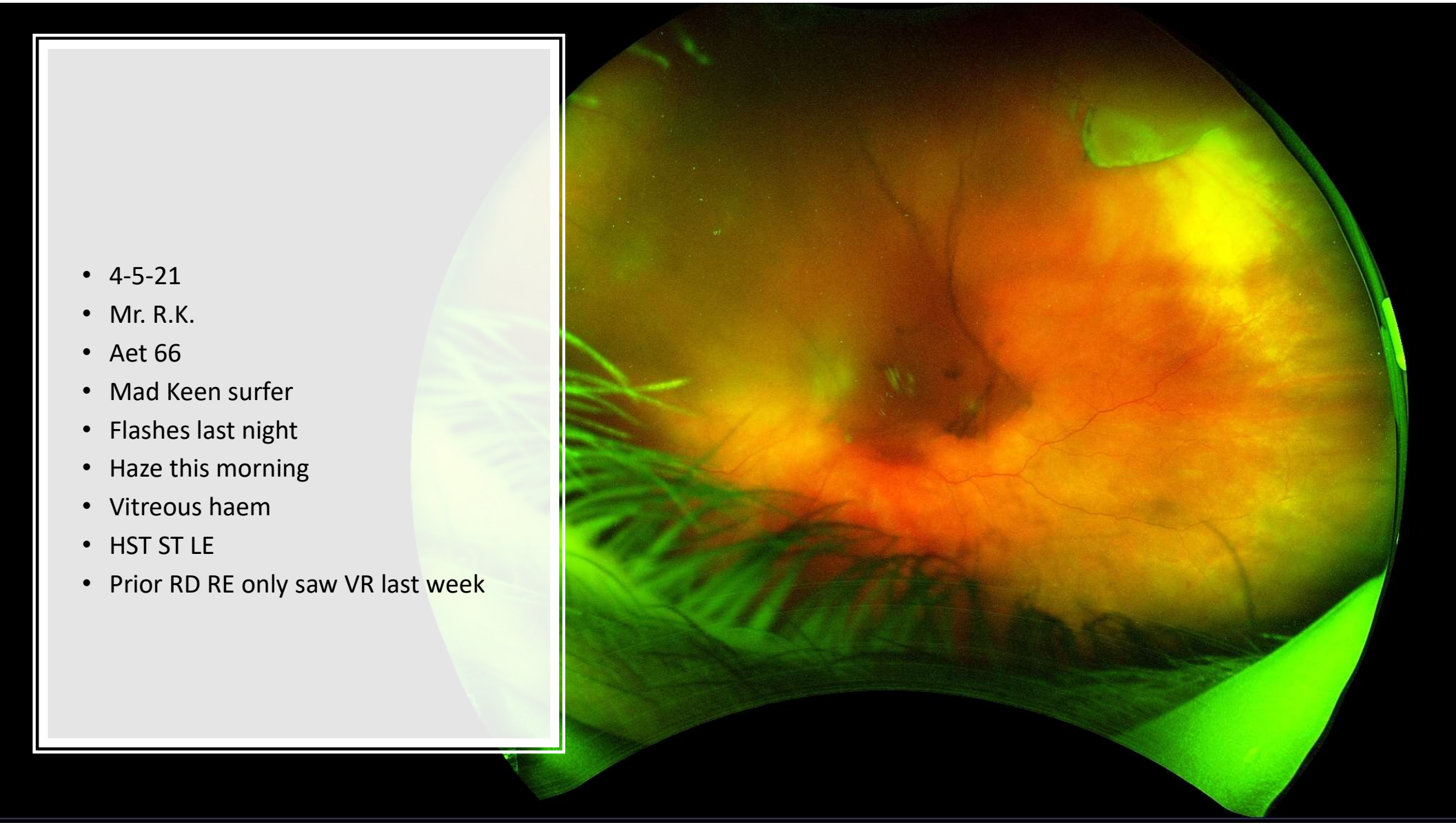


Retinal emergencies in the times of COVID 19 & other tales

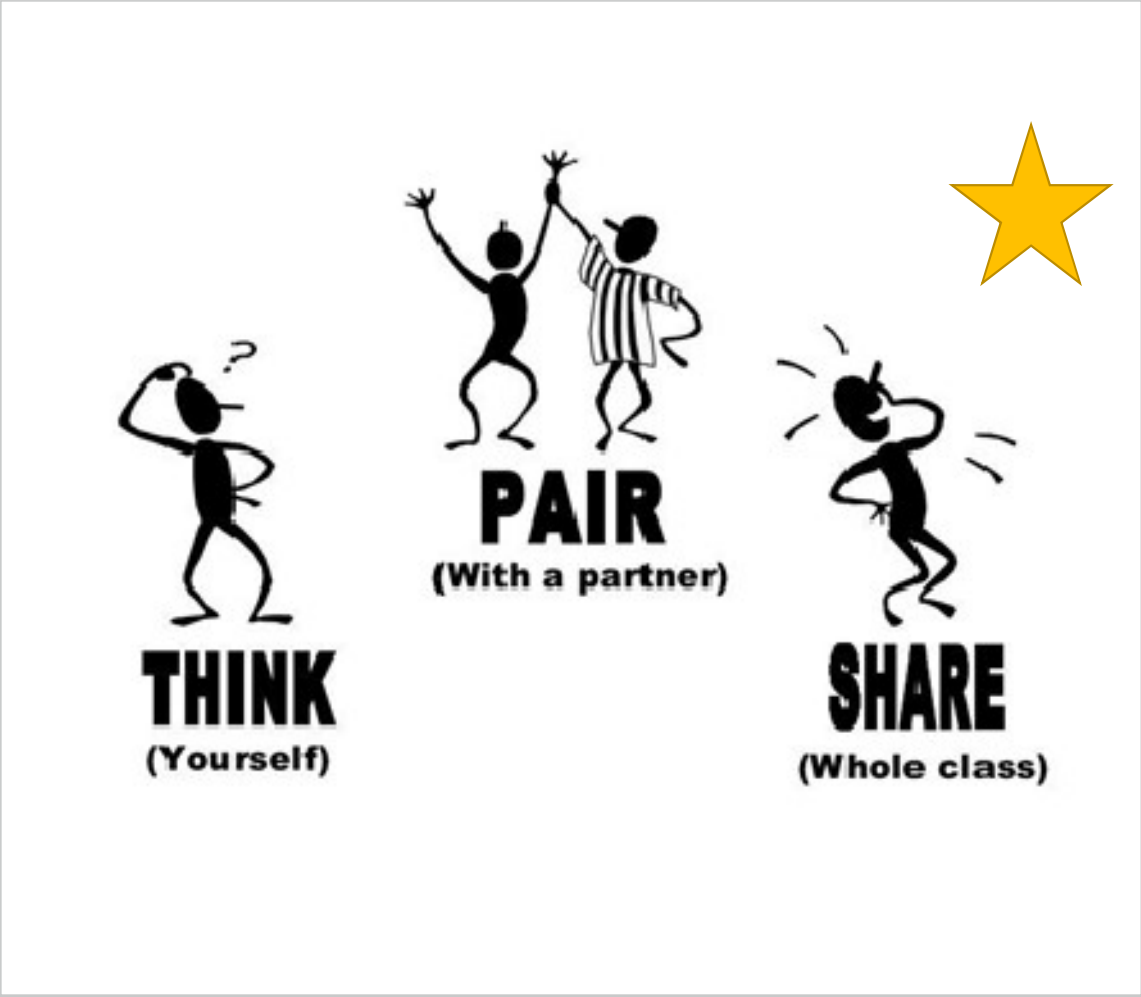
Malcolm Gin

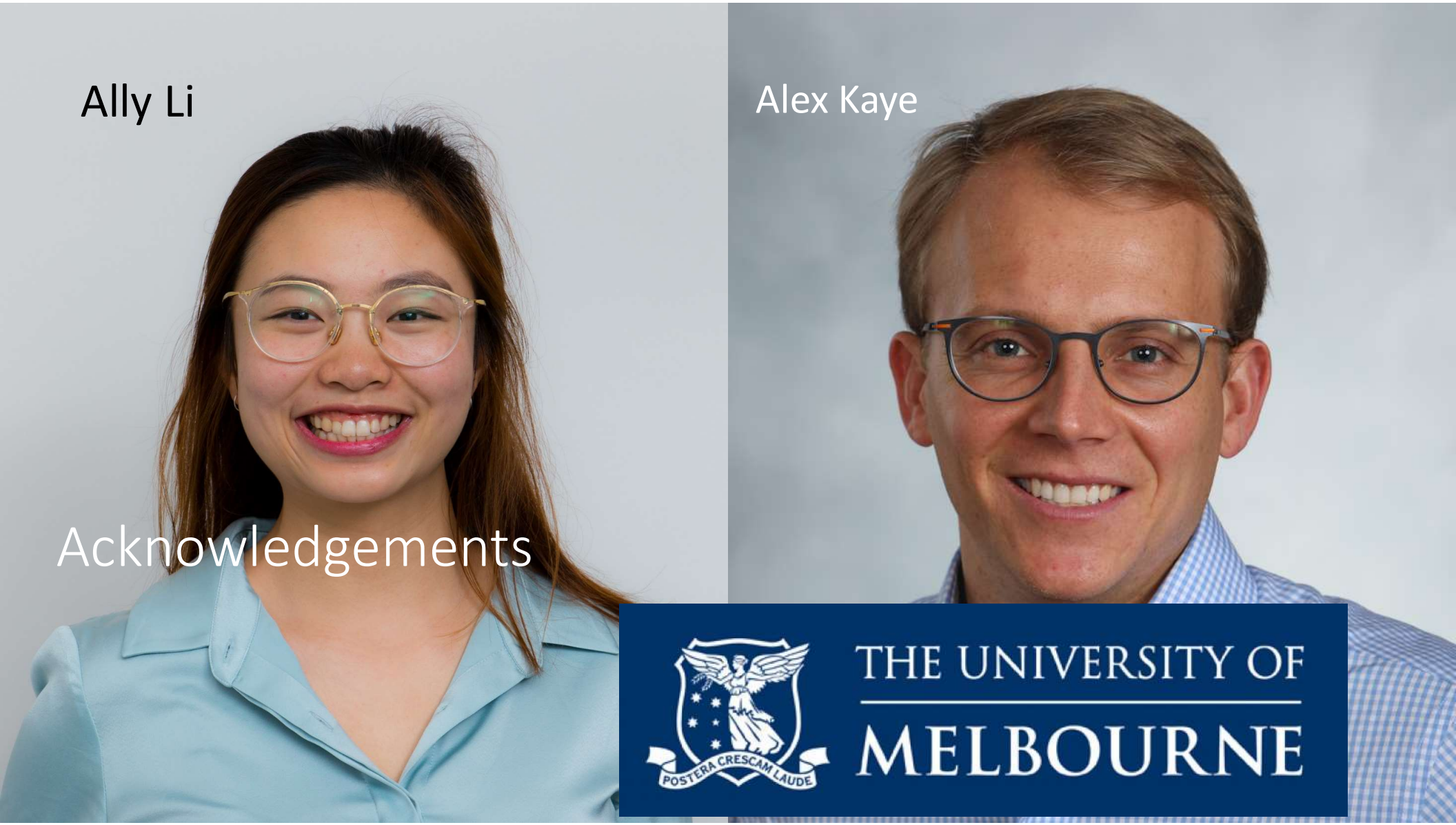
- 4-5-21
- Mr. R.K.
- Aet 66
- Mad Keen surfer
- Flashes last night
- Haze this morning
- Vitreous haem
- HST ST LE
- Prior RD RE only saw VR last week



Learning Objectives

- 1 Discuss the differences between retinal emergencies and urgencies
- 2 Recognise retinal emergencies and appropriately triage and refer
- 3 Use new imaging technologies to recognise change





Acknowledgements

THE UNIVERSITY OF MELBOURNE

Housekeeping

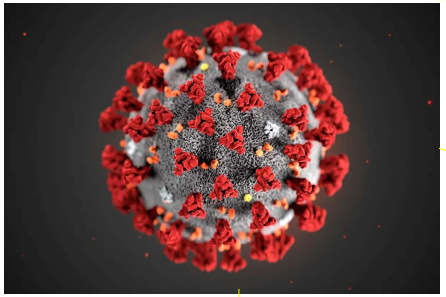
- Case studies
- Framework, interactive
- I am not a retinal specialist
- If you know something, let's share
- If you want to know something, then happy to forward questions on
- My action is not always correct
- I'm looking to learn as well

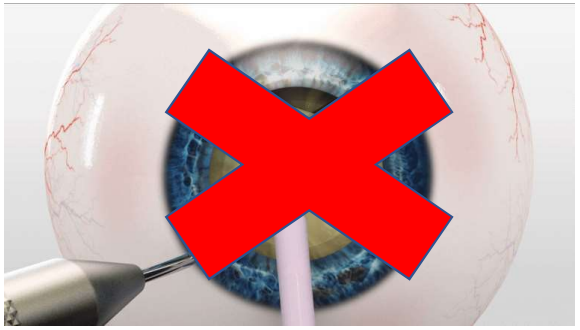
- **Emergency**
- a serious, unexpected, and often dangerous situation requiring immediate action.

The main difference between emergency and urgency is that in emergency there is immediate threat to vision or ocular health whereas in urgency, there is no immediate danger but if not taken care in a given period of time, then the situation may turn into ..

- **Urgency**
- importance requiring swift action.
- Days?


120 days
Victoria
lockdown






E+E
the royal victorian
eye and ear
hospital

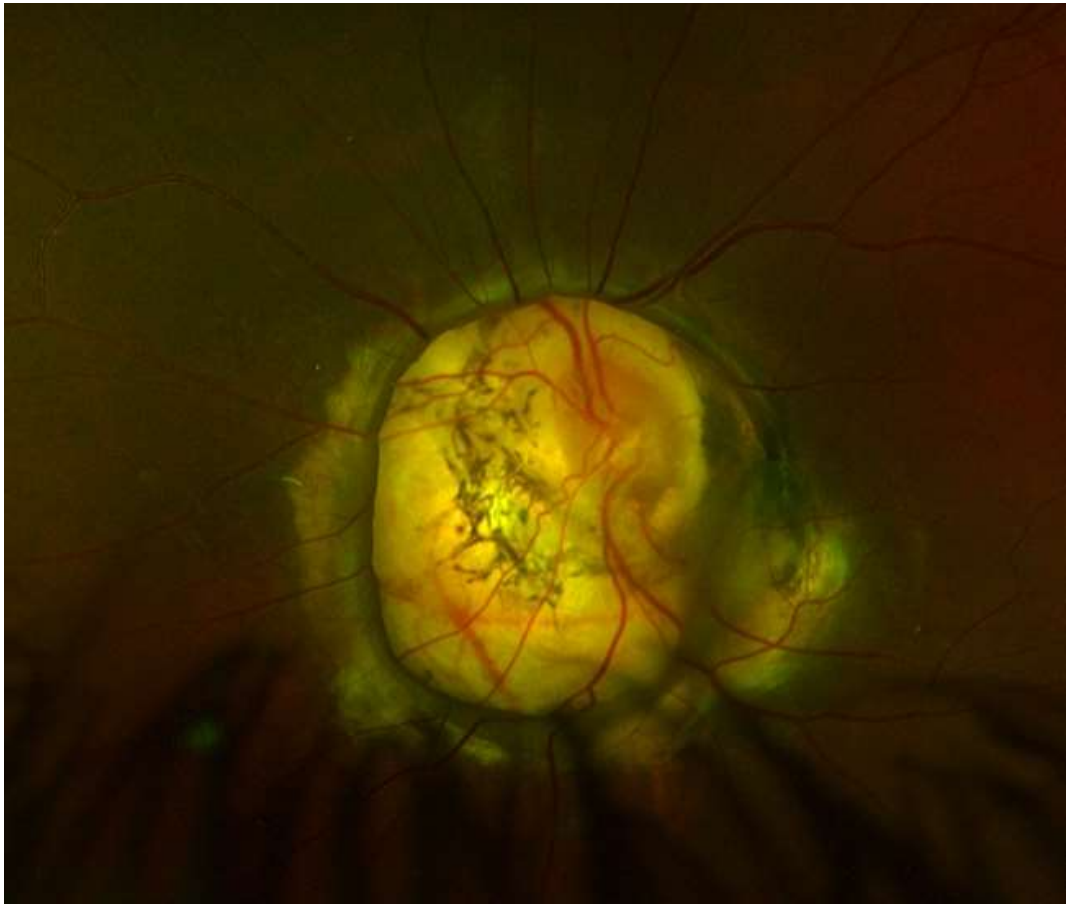

eye specialists

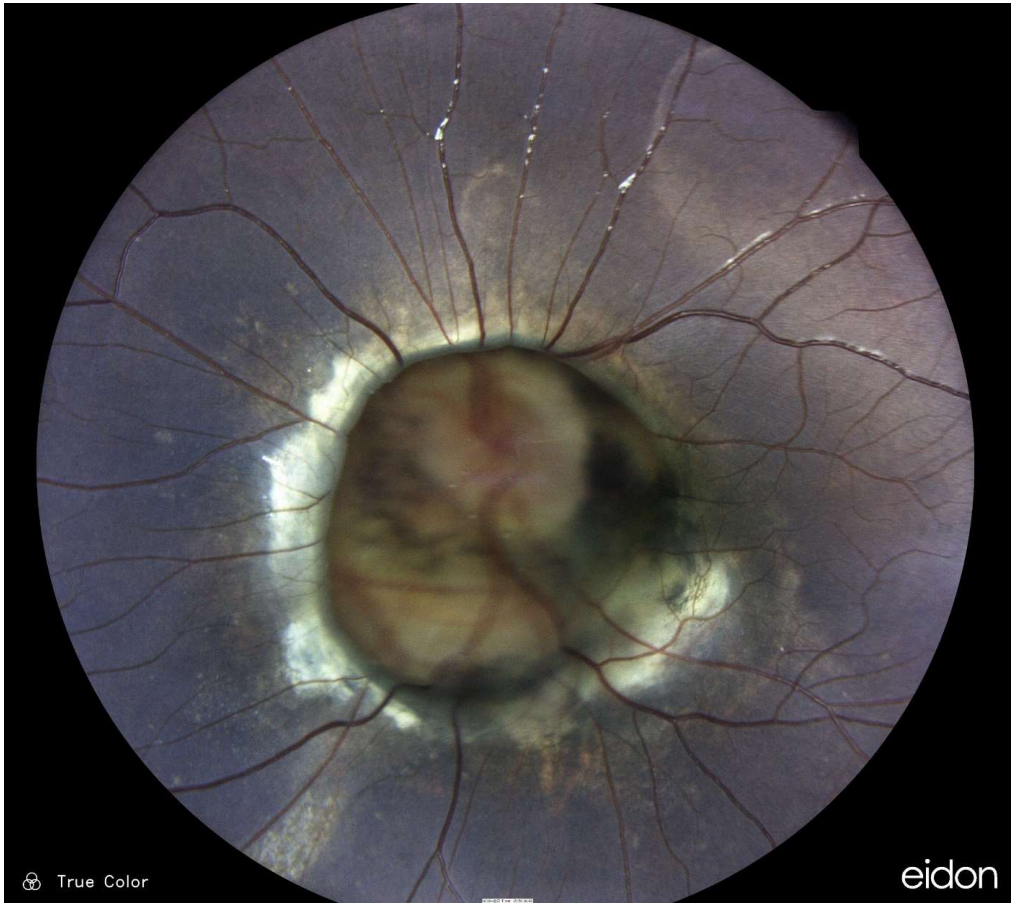
Teaser Miss
N.C. Aet 9

No significant Rx	R 6/6 L 6/120
Strab sx aet 2.5	Patch and drops to no avail
2 yr teleconference	

Miss N.C. Which eye is this?

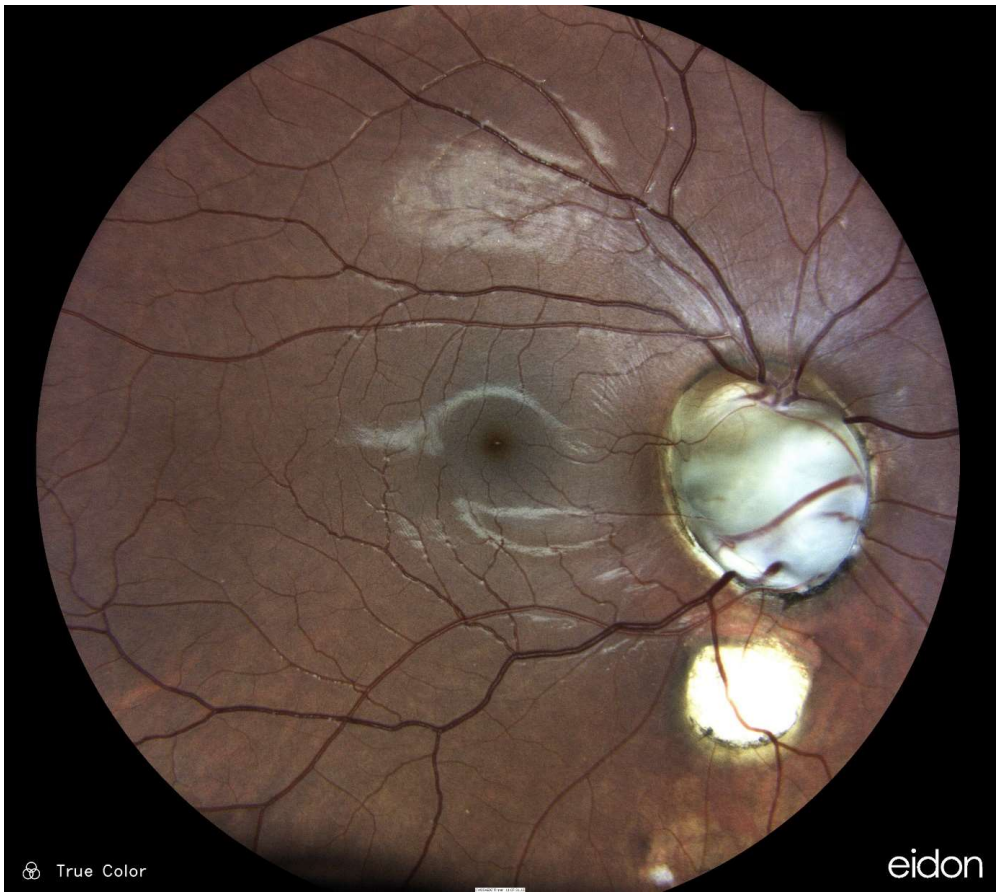
Optic Nerve coloboma

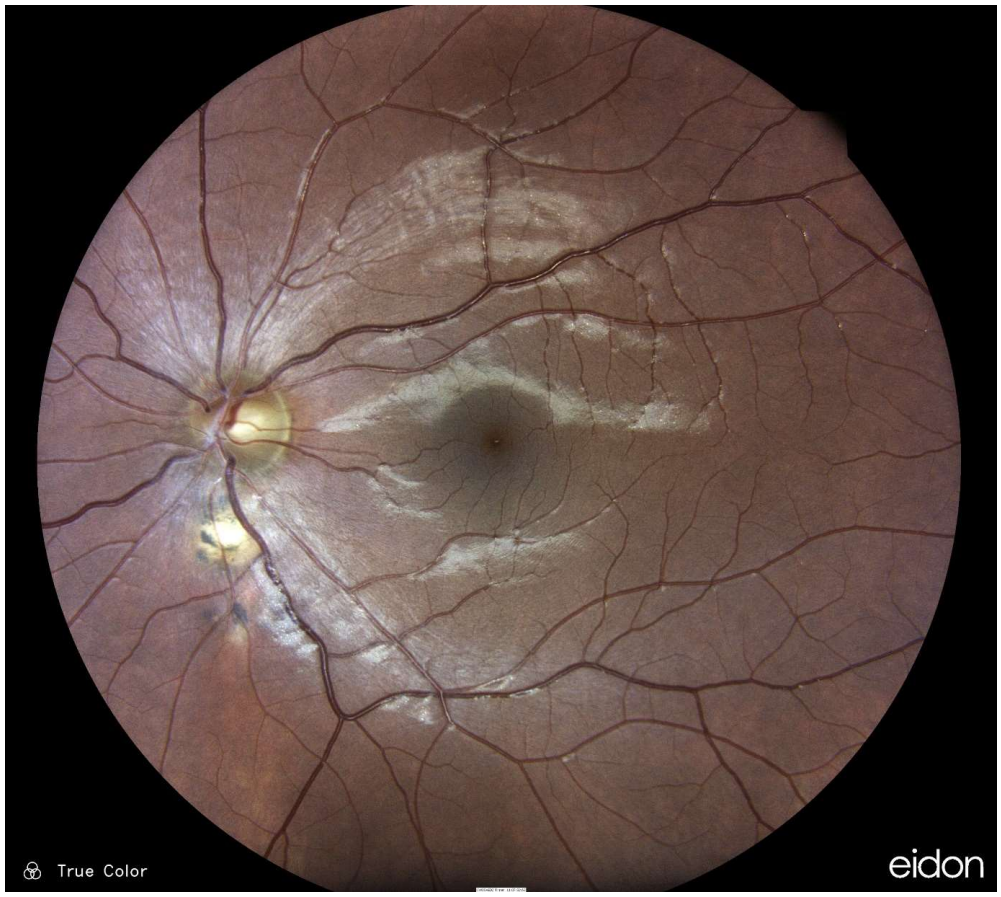




Mr. C.W. aet 25

No prior eye exam H/as Ses with PC work
Vision 6/6 OU mild hyperope
Normal C/V, PERRLA



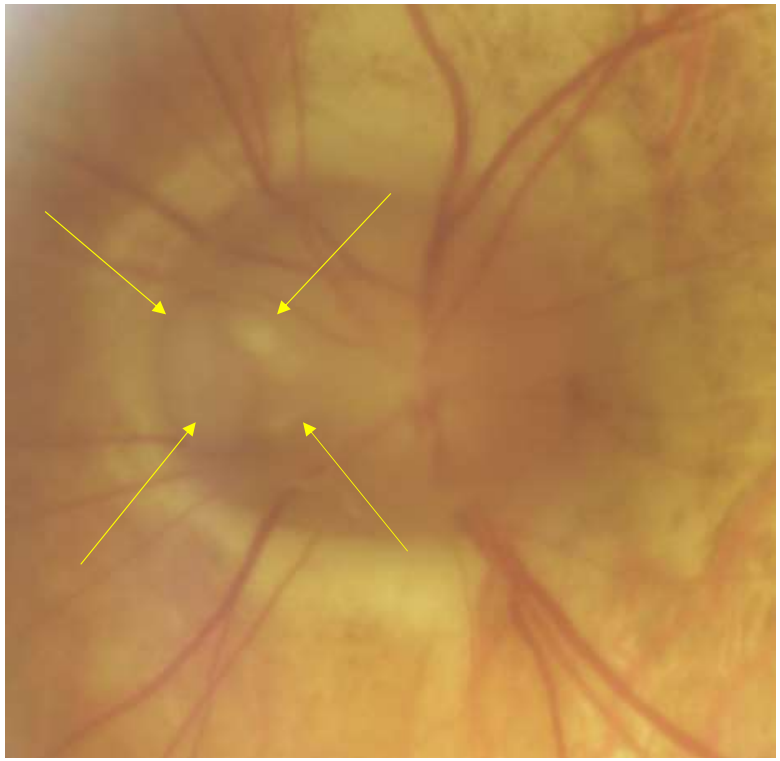


Optic nerve coloboma

Uncommon, unilateral or bilateral congenital condition caused by incomplete closure of the embryonic fissure.
May present as sporadic cases or autosomal dominantly inherited (bilateral)

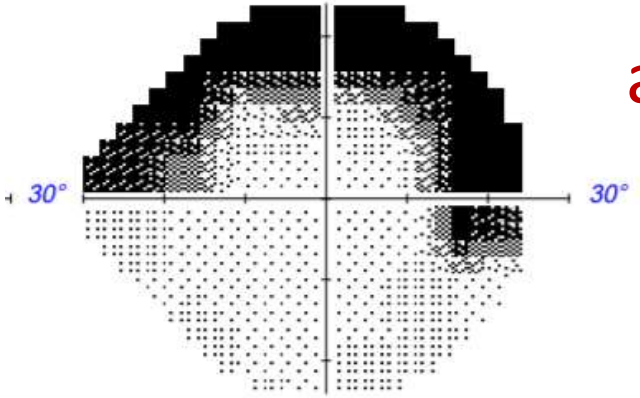
Enlarged, sharply circumscribed, glistening white and deeply excavated optic disc which usually occurs inferiorly

Can develop serous macular detachment
RAPD & VF defect
agenesis vs dysgenesis (Morning glory)

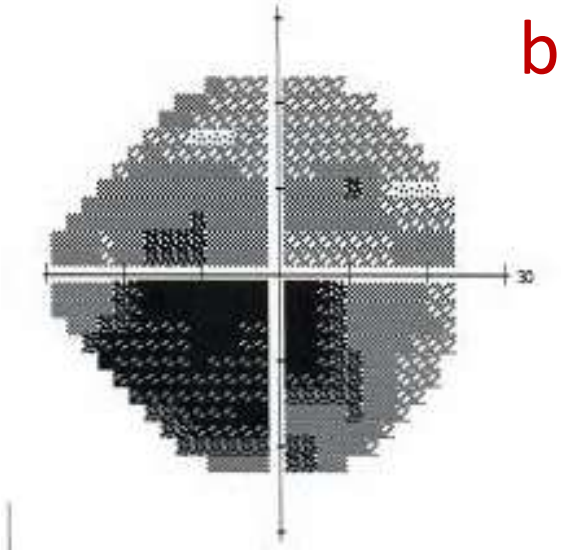


Quiz 1 What's the expected right VF defect?

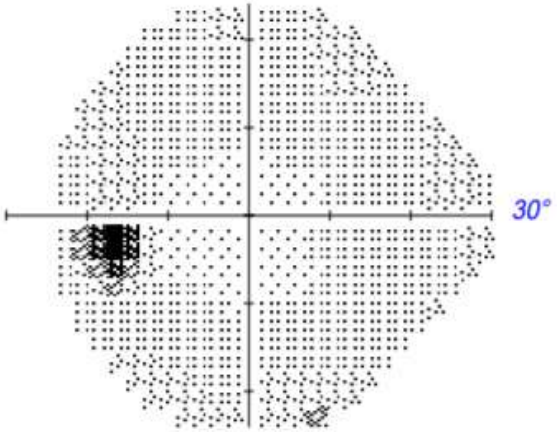
a



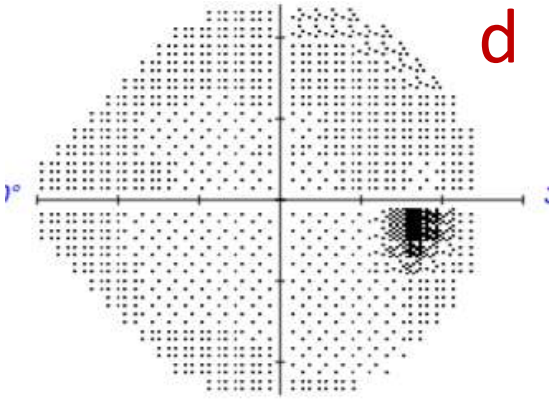
b

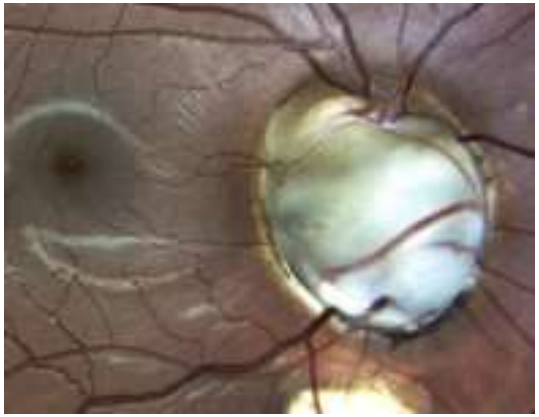


c



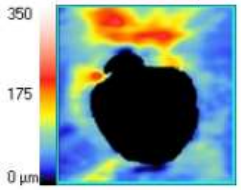
d





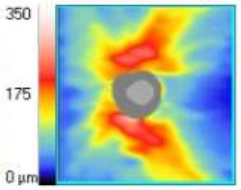
ONH and RNFL OU Analysis:Optic Disc Cube 200x200 OD ● ● OS

RNFL Thickness Map

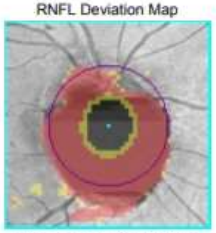


	OD	OS
Average RNFL Thickness	44 µm	131 µm
RNFL Symmetry	15%	
Rim Area	0.00 mm²	1.59 mm²
Disc Area	0.00 mm²	2.21 mm²
Average C/D Ratio	0.00	0.53
Vertical C/D Ratio	0.00	0.53
Cup Volume	0.000 mm³	0.197 mm³

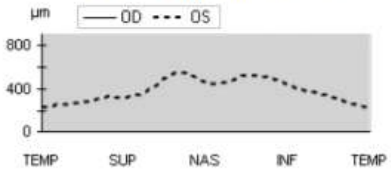
RNFL Thickness Map



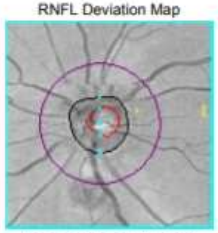
RNFL Deviation Map



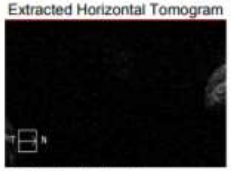
Neuro-retinal Rim Thickness



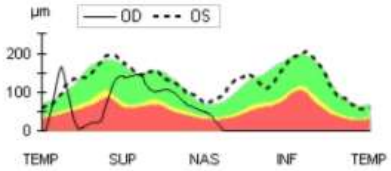
RNFL Deviation Map



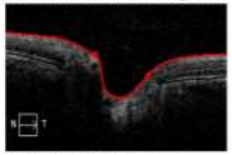
Disc Center(0.00,0.00)mm
Extracted Horizontal Tomogram



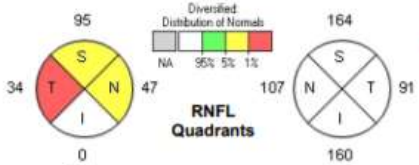
RNFL Thickness



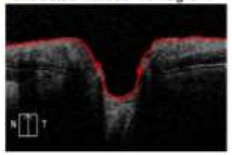
Disc Center(-0.30,0.06)mm
Extracted Horizontal Tomogram



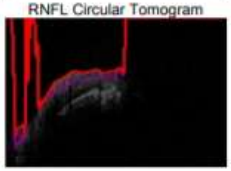
Extracted Vertical Tomogram

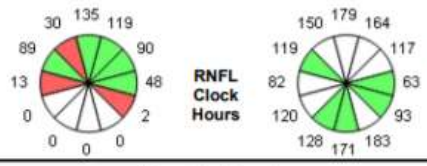


Extracted Vertical Tomogram

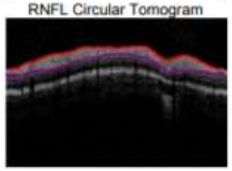


RNFL Circular Tomogram



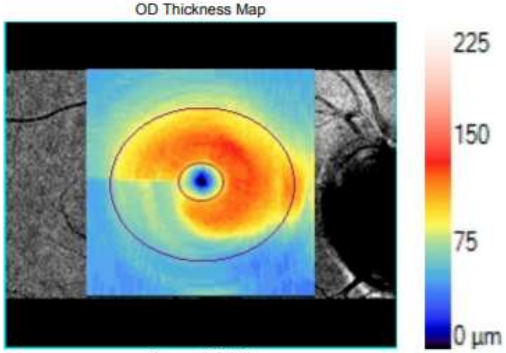


RNFL Circular Tomogram



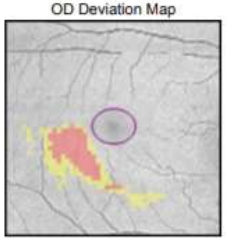
Ganglion Cell OU Analysis: Macular Cube 512x128 OD ●

OD Thickness Map

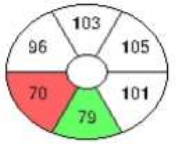


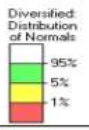
Fovea: 258, 64

OD Deviation Map



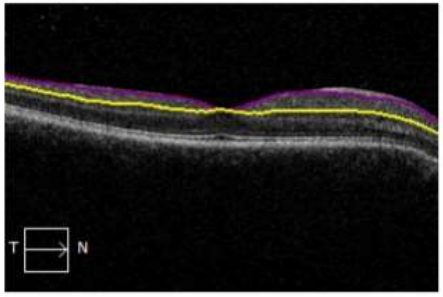
OD Sectors



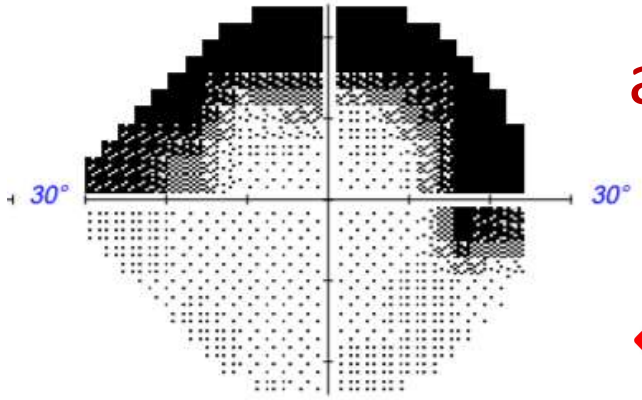


	OD µm	OS µm
Average GCL + IPL Thickness	92	X
Minimum GCL + IPL Thickness	70	X

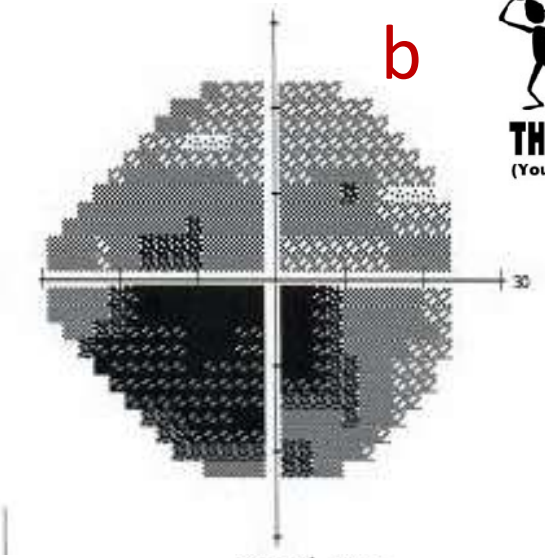
OD Horizontal B-Scan **BScan:** 64



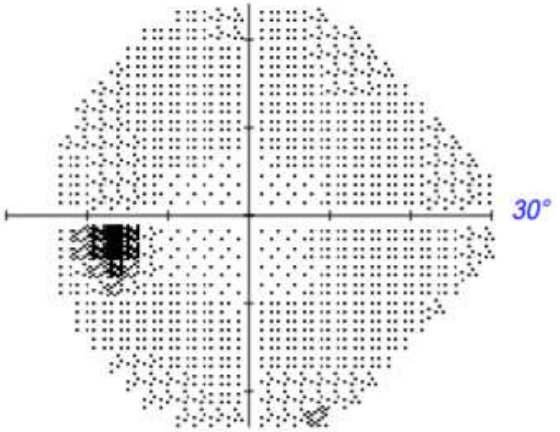
MCQ 1 What's the expected right VF defect?



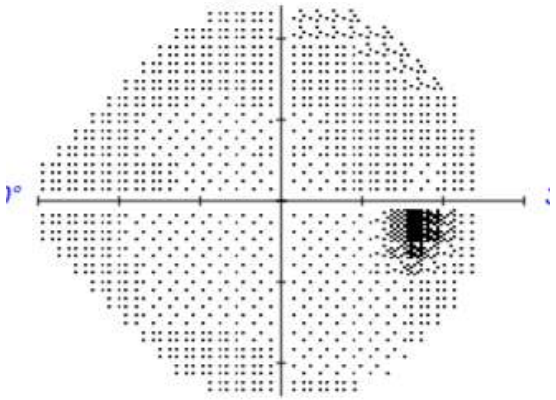
a ✓



b

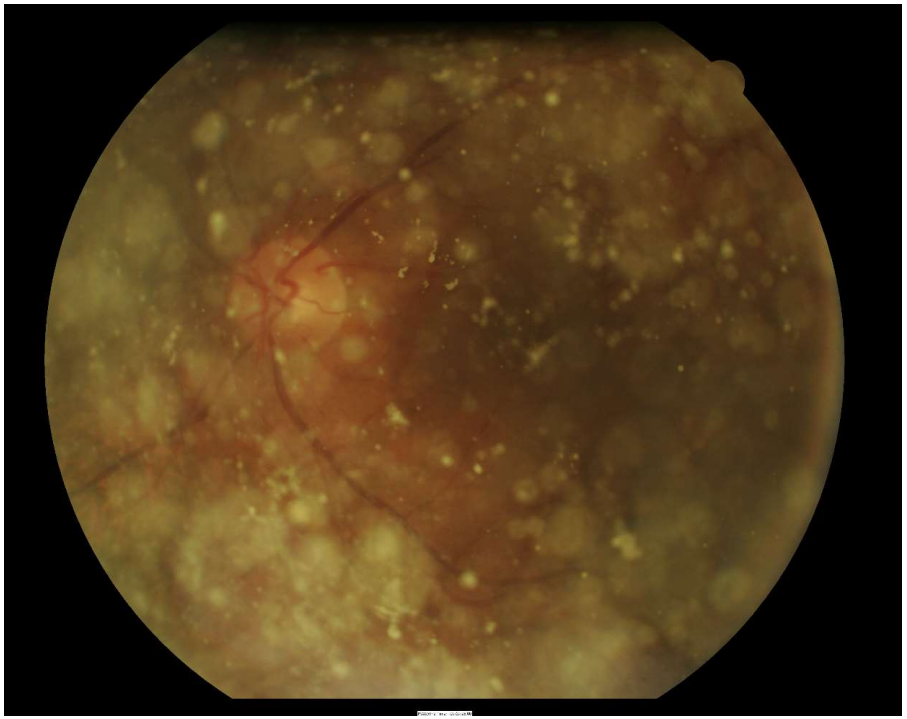


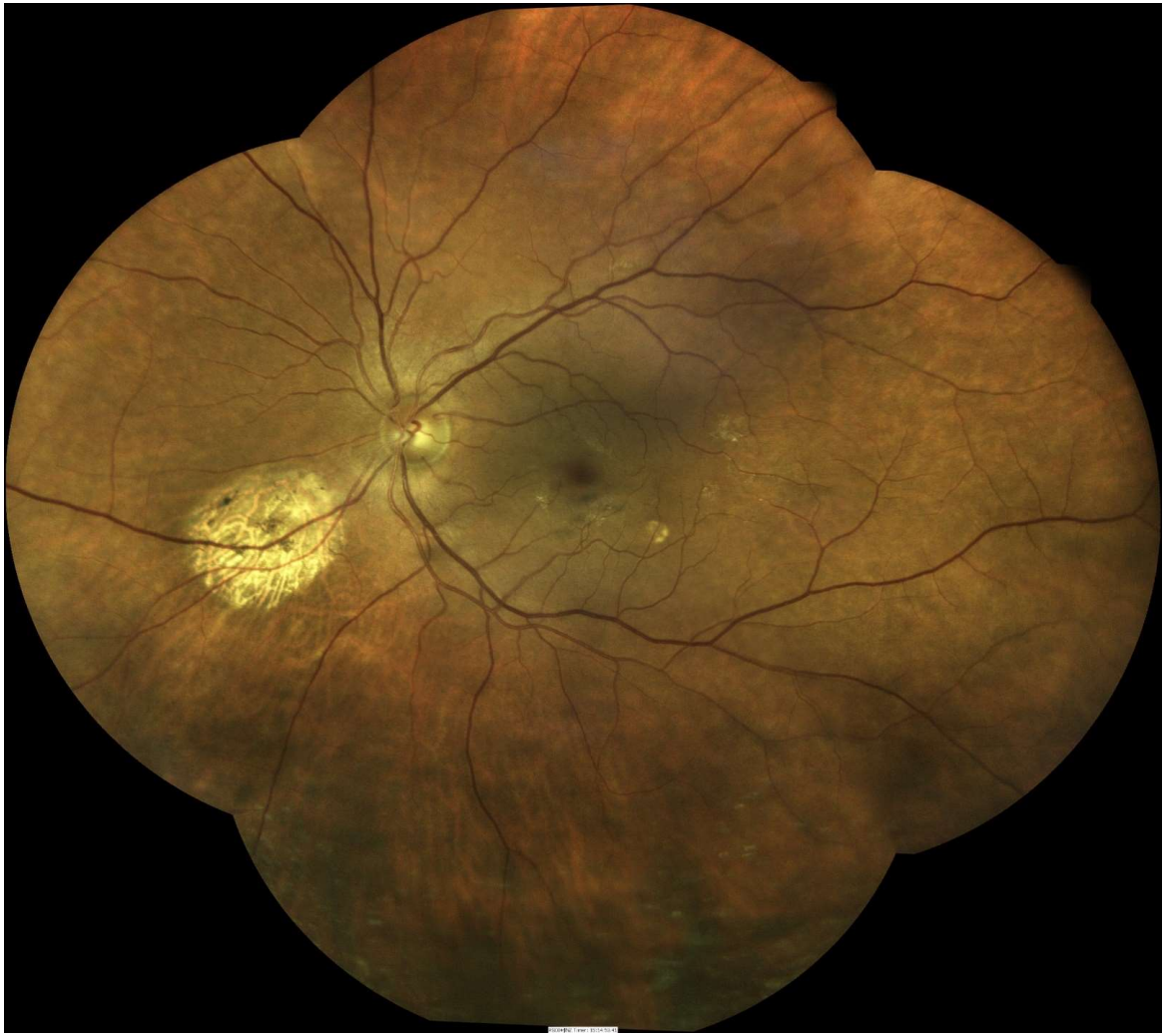
c

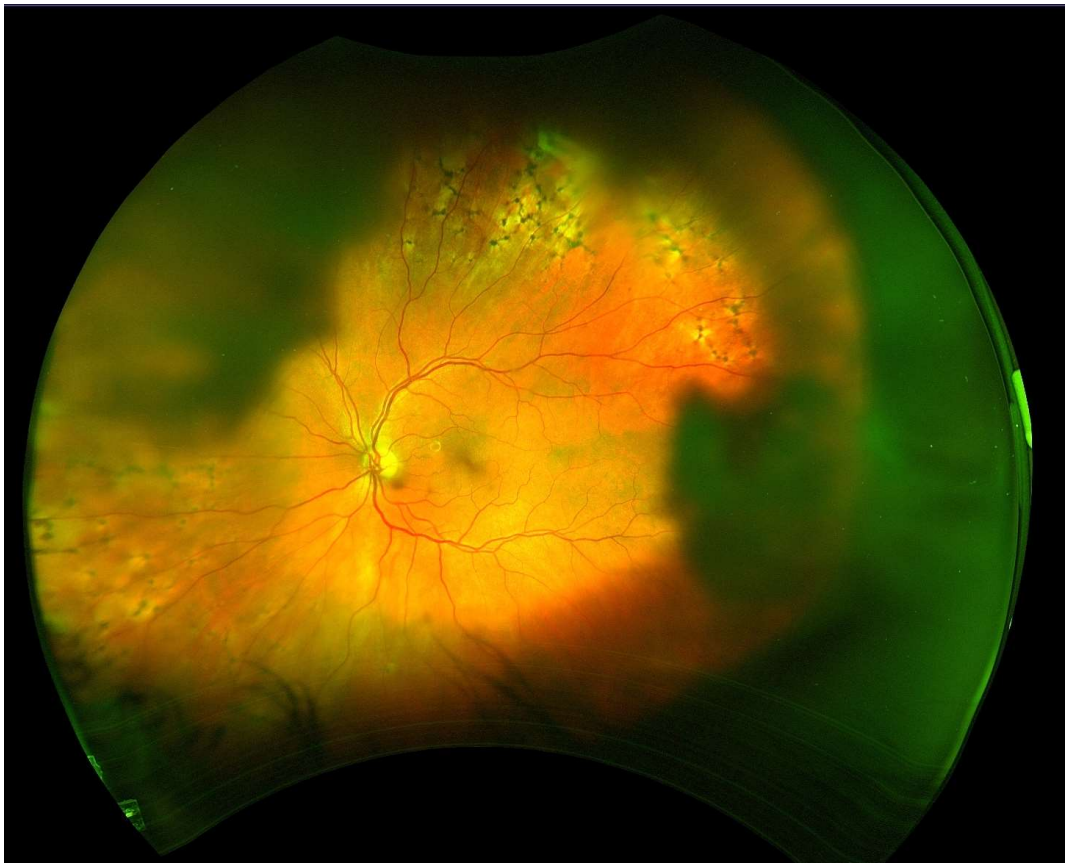


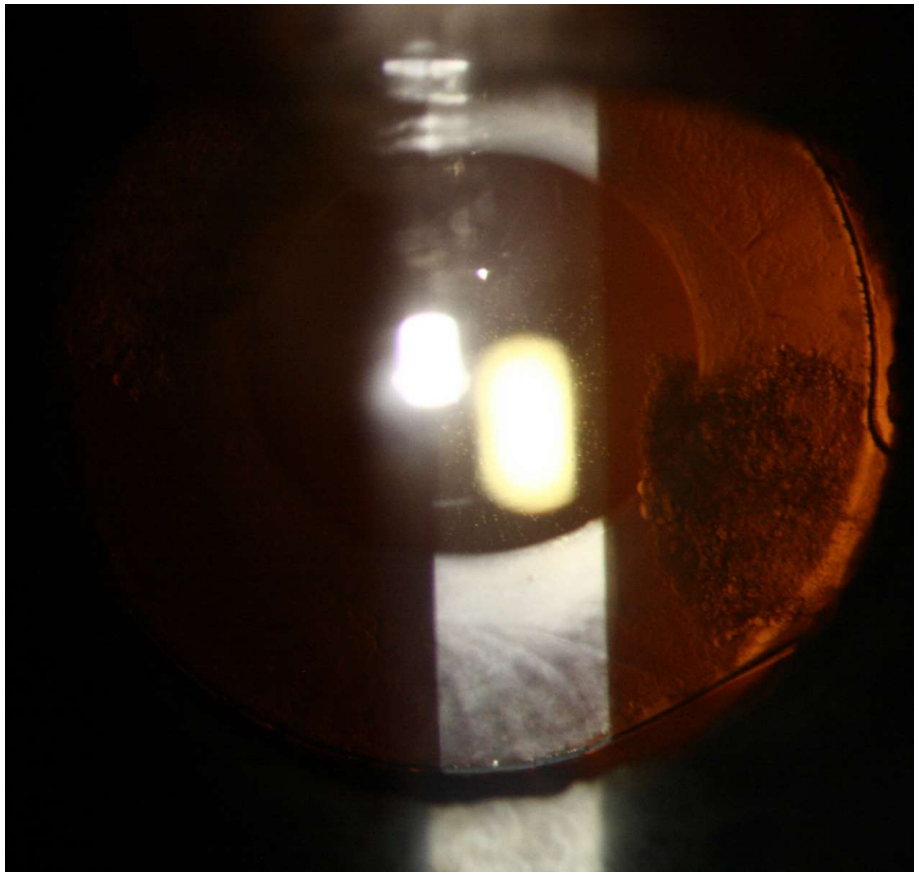
d

DGI vs eidon







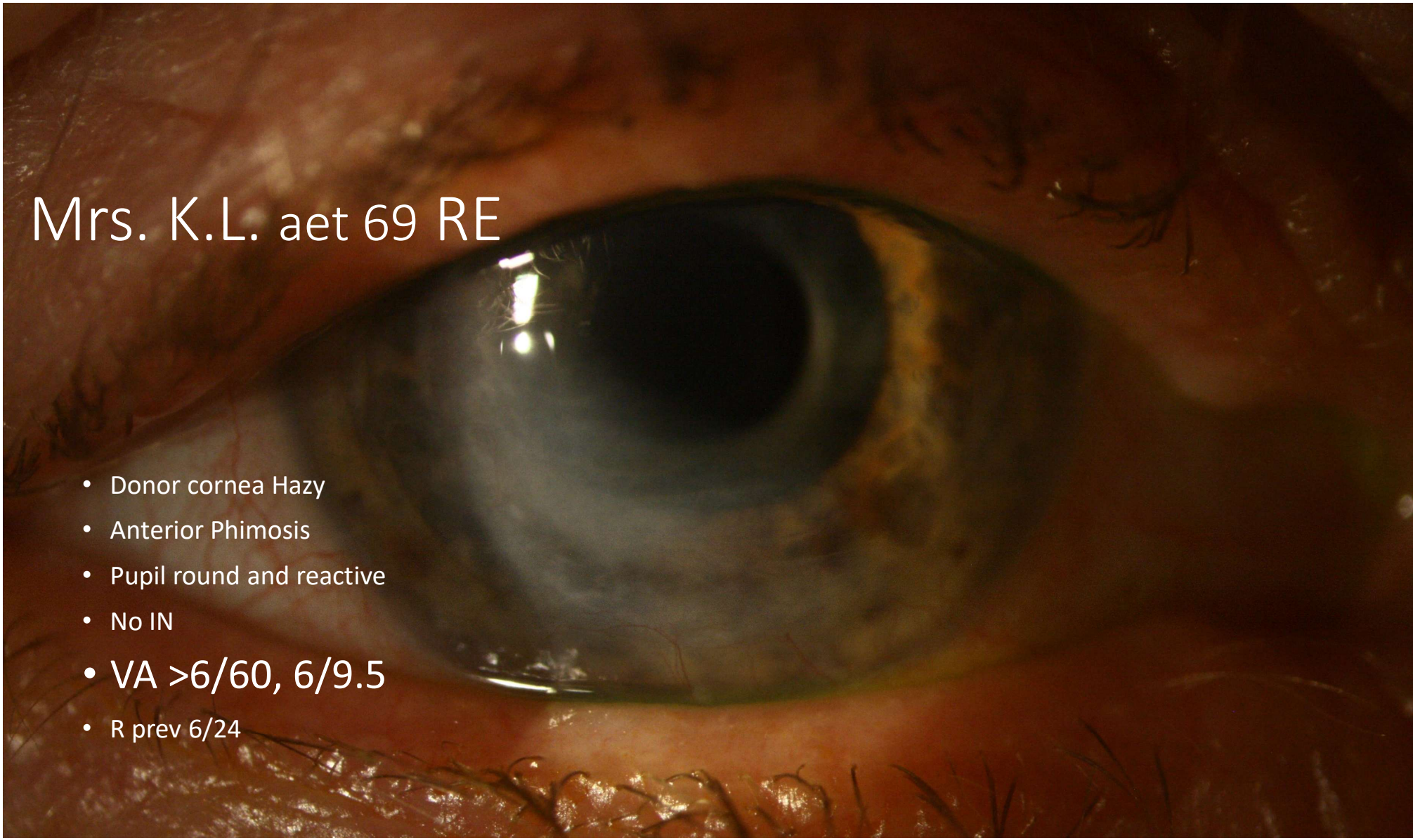


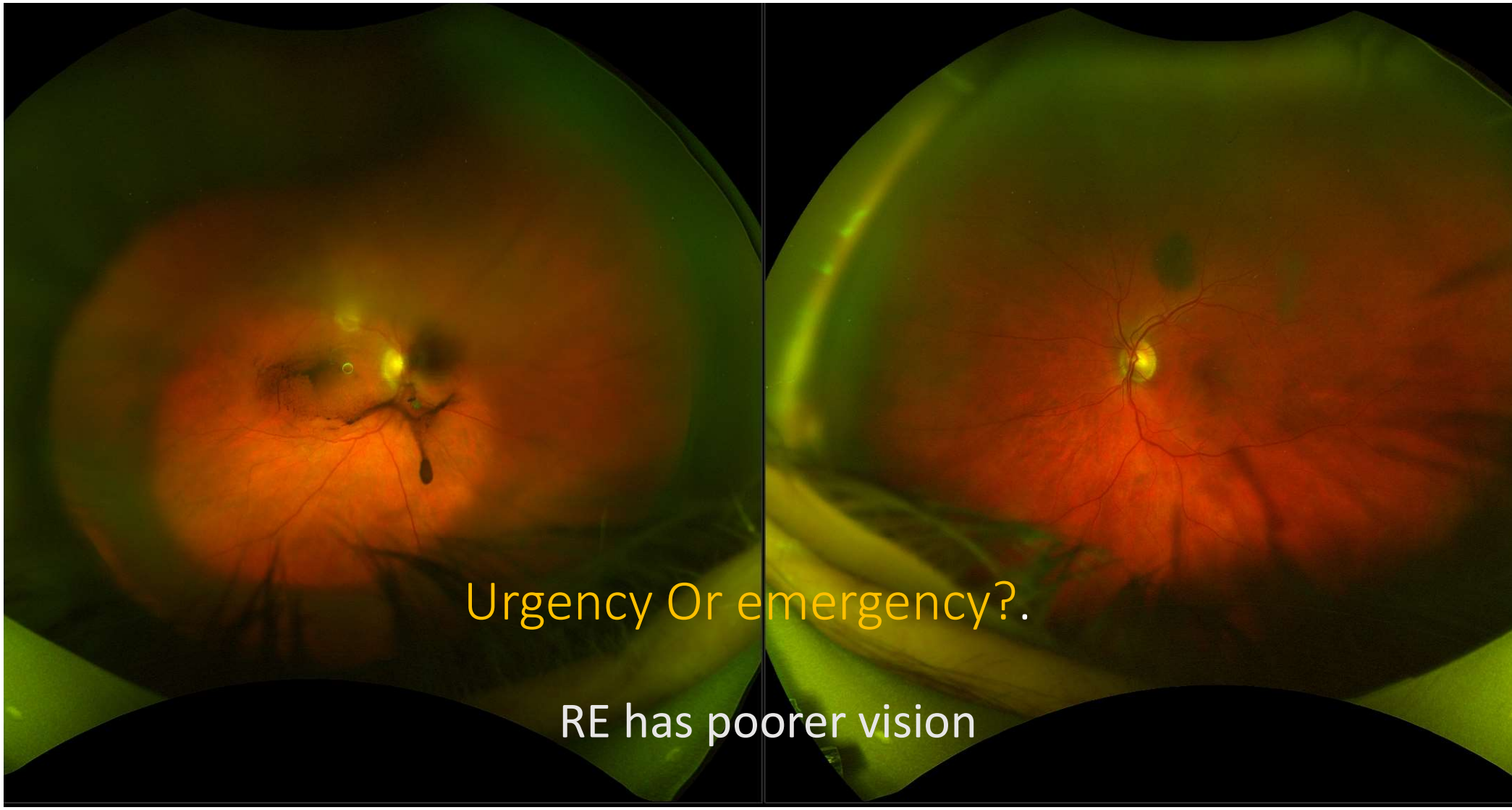
0.3-1.1% Cat Sx retained cortex

Capsular bag shields nucleus & cortex from body's immune system, otherwise antigenic inflammation

Phacoanaphylactic uveitis

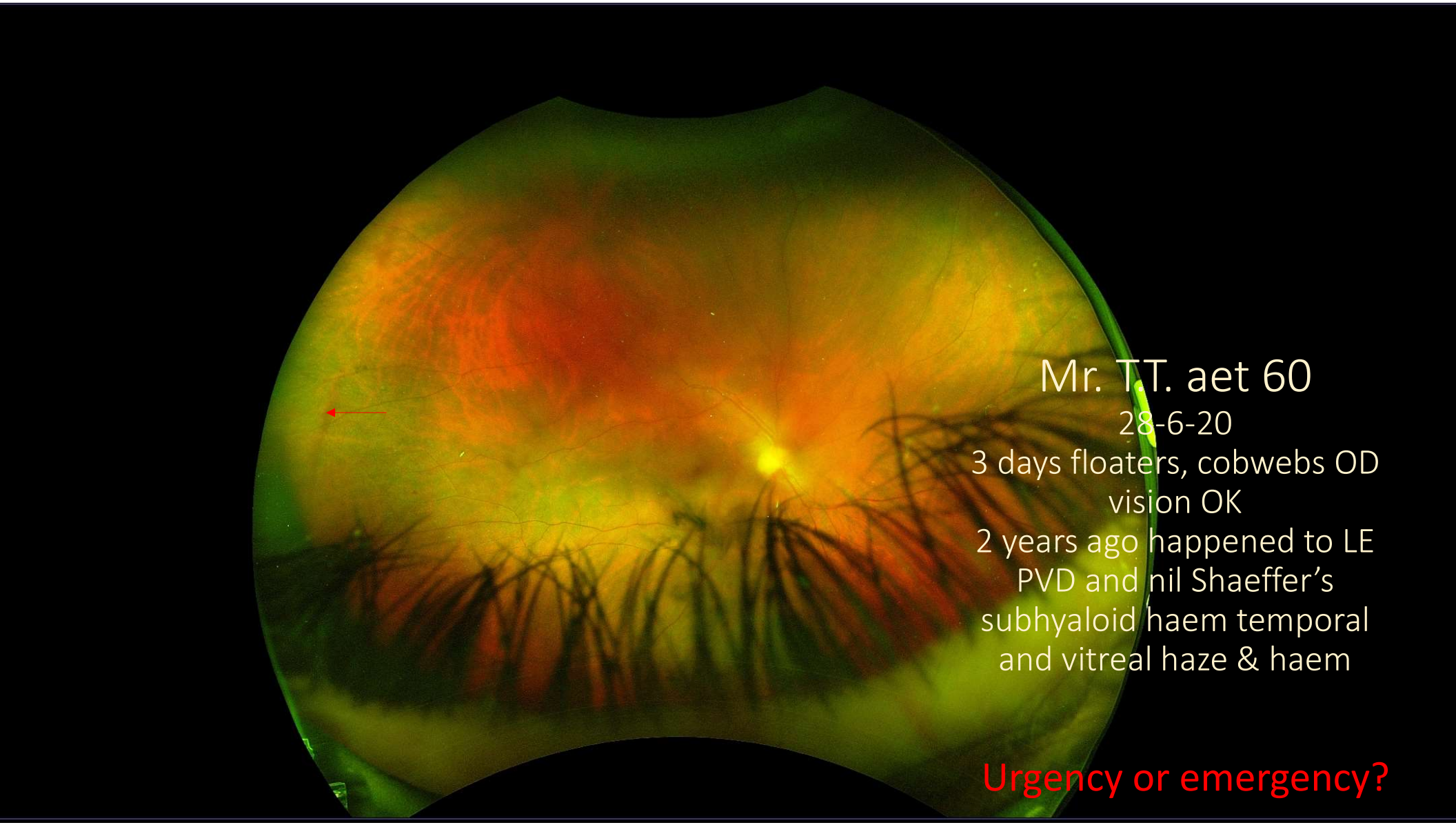
What happens with capsulotomy?


Mrs. K.L. aet 69 RE
• Donor cornea Hazy
• Anterior Phimosis
• Pupil round and reactive
• No IN
• VA >6/60, 6/9.5
• R prev 6/24

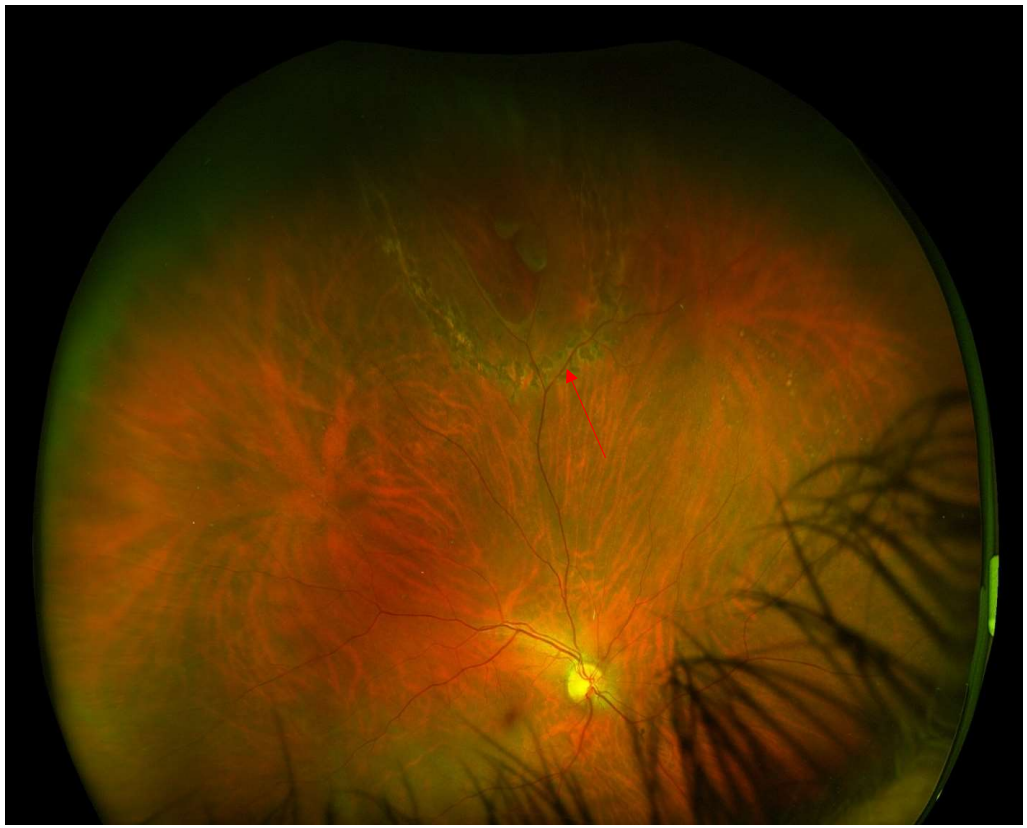

Urgency Or emergency?.
RE has poorer vision

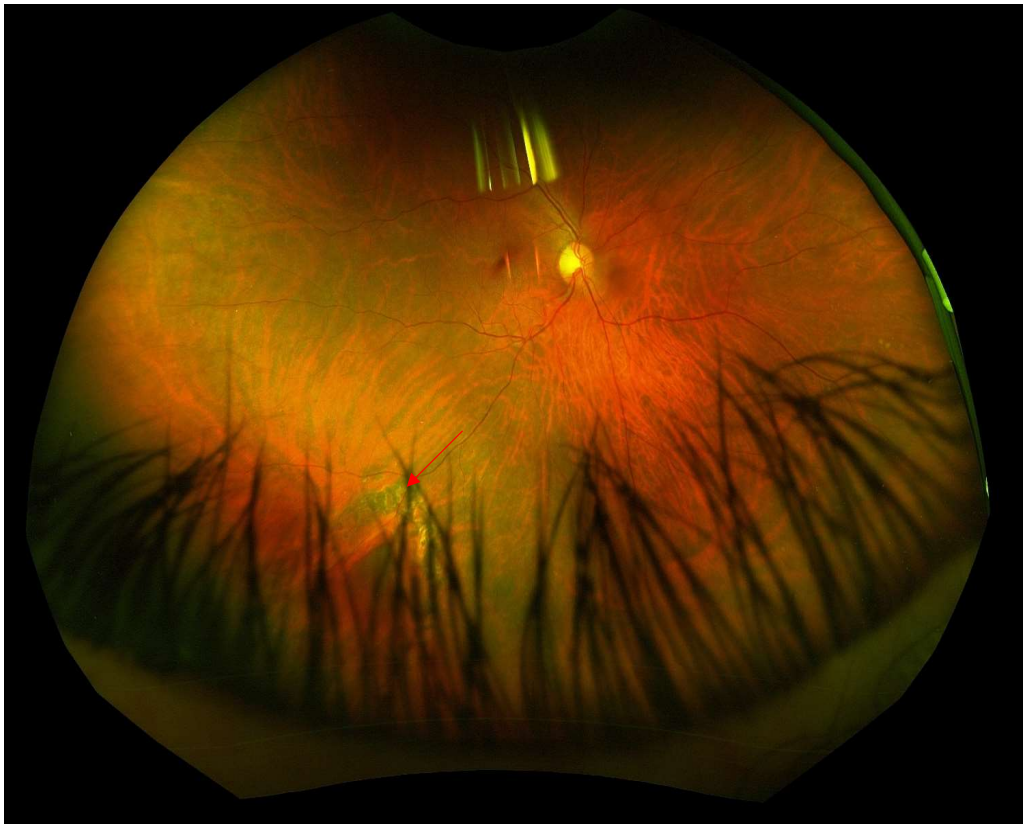
Vitreal Haemorrhage

- Conservative treatment as Eye had reduced vision & COVID
- Emergency referral?
- Haem to clear then B scan
- Aggressive as poor outcomes
- 70% have retinal tear
- Vitrectomy, B Scan, find Retinal tear
- Emergency, triage with E & E or VR surgeon


Mr. T.T. aet 60
28-6-20
3 days floaters, cobwebs OD
vision OK
2 years ago happened to LE
PVD and nil Shaeffer's
subhyaloid haem temporal
and vitreal haze & haem
Urgency or emergency?

Mr. T.T. horseshoe tears sup'ly and inf'ly 17/7/20 3 weeks later





Causes of Vitreous haemorrhage

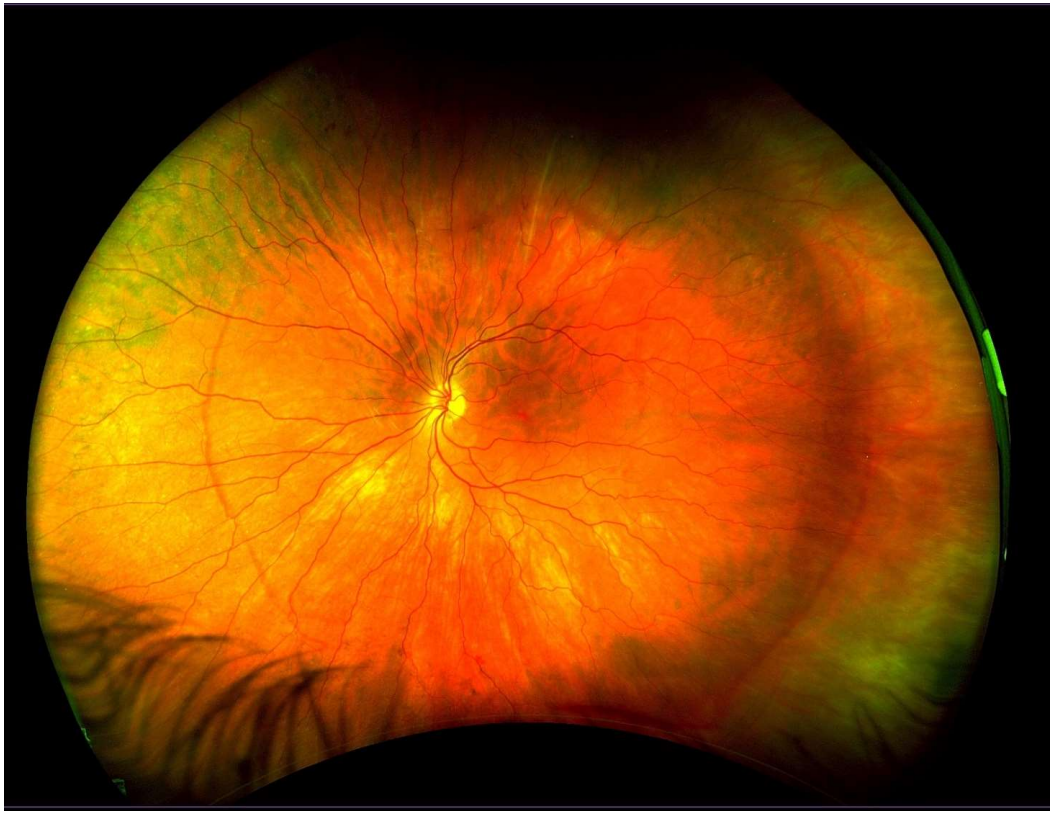
- Abnormal new retinal B.Vs = Ocular ischaemia, DM, peripheral choroidal neovascularisation
- Retinal tears via PVD
- Retinal BV leak via PVD
- Trauma
- 7 in 100000 annually

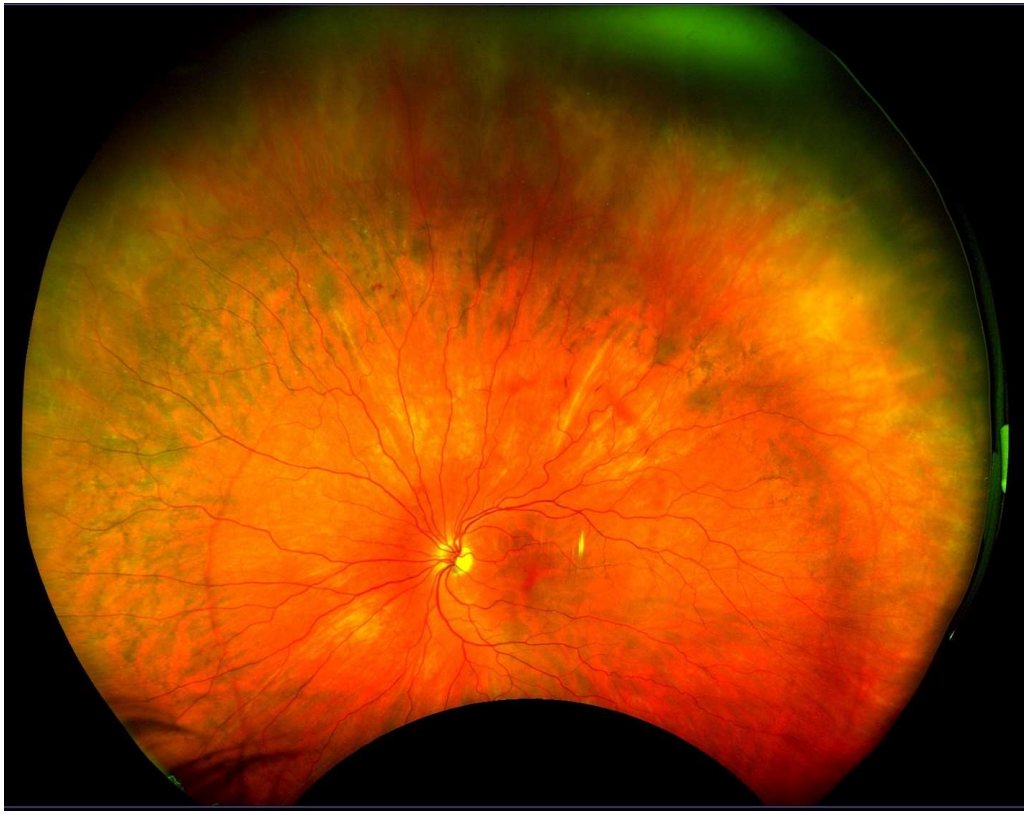
Mr. G.M. 6/11/2020

LE black spots & black circle for 3 days & occas flash NIDDM BSL 7

Nil Shafers, PVD, annular subhyaloid haem pooling inferiorly no obvious retinal tear/hole

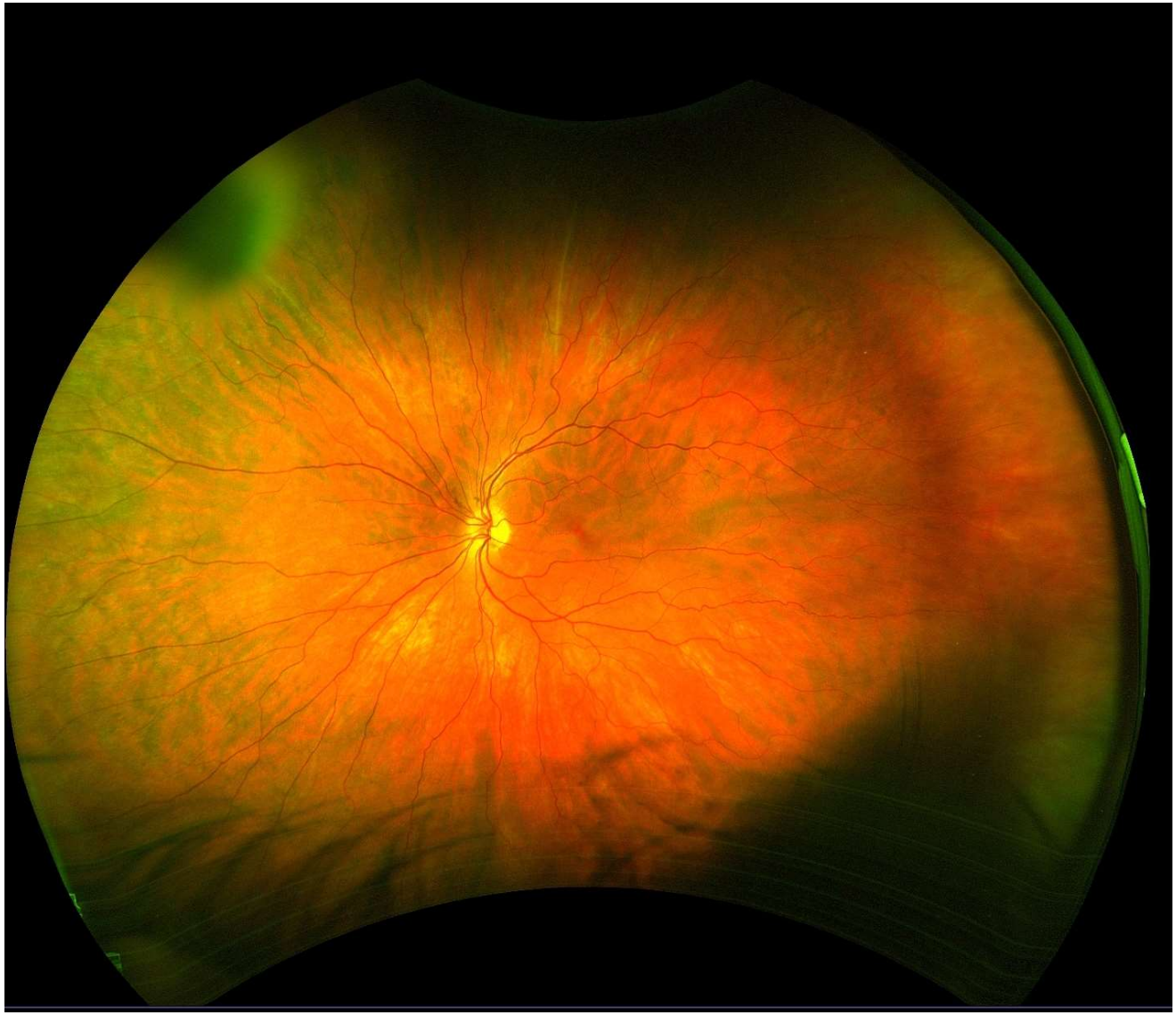
Urgency or emergency?





Mr. G.M. 3/12 later

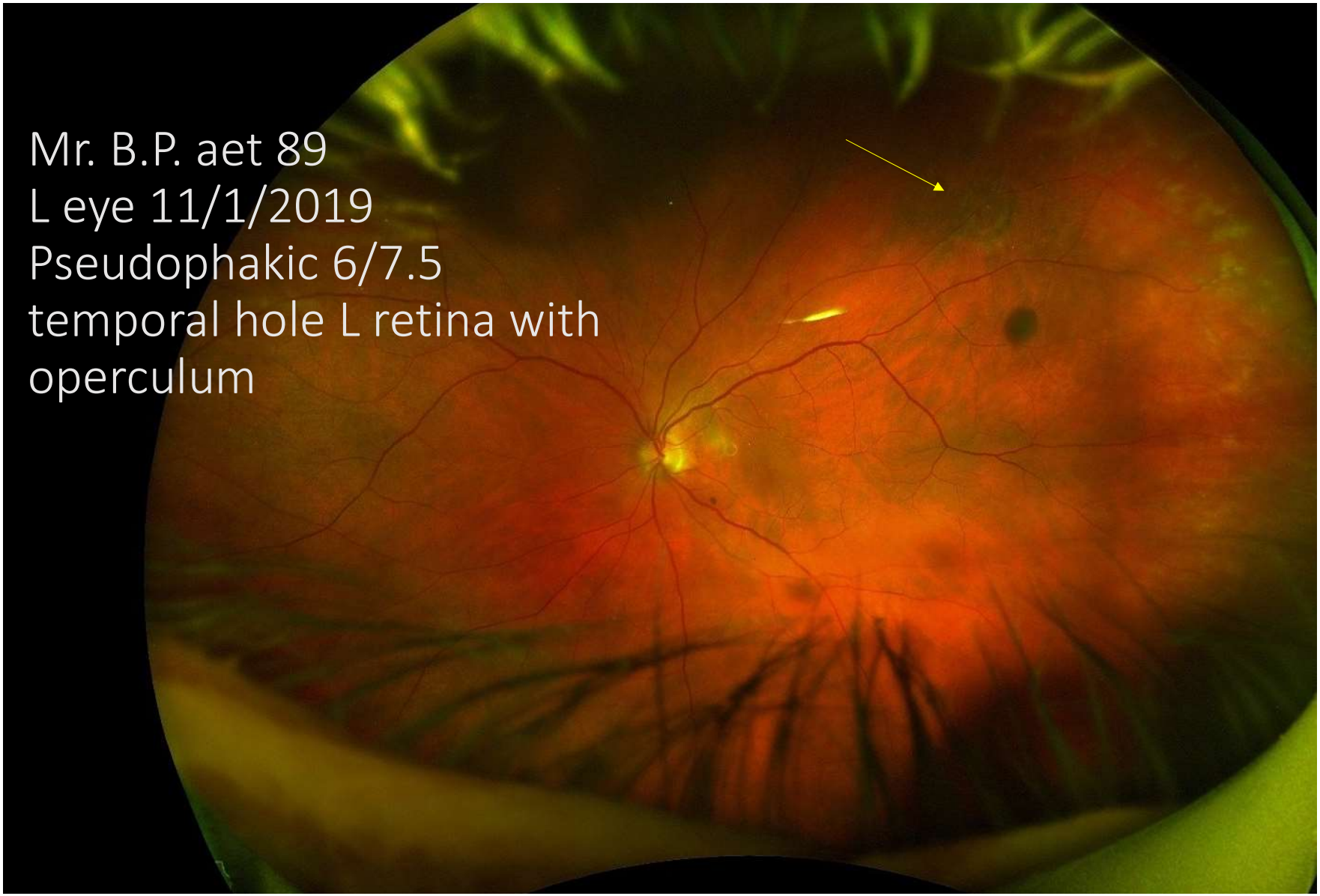
- Appt with VR 3 days after 1st visit
- Haemorrhagic PVD
- Subhyaloid haem
- Review with ophthal 1/12 later
- discharged



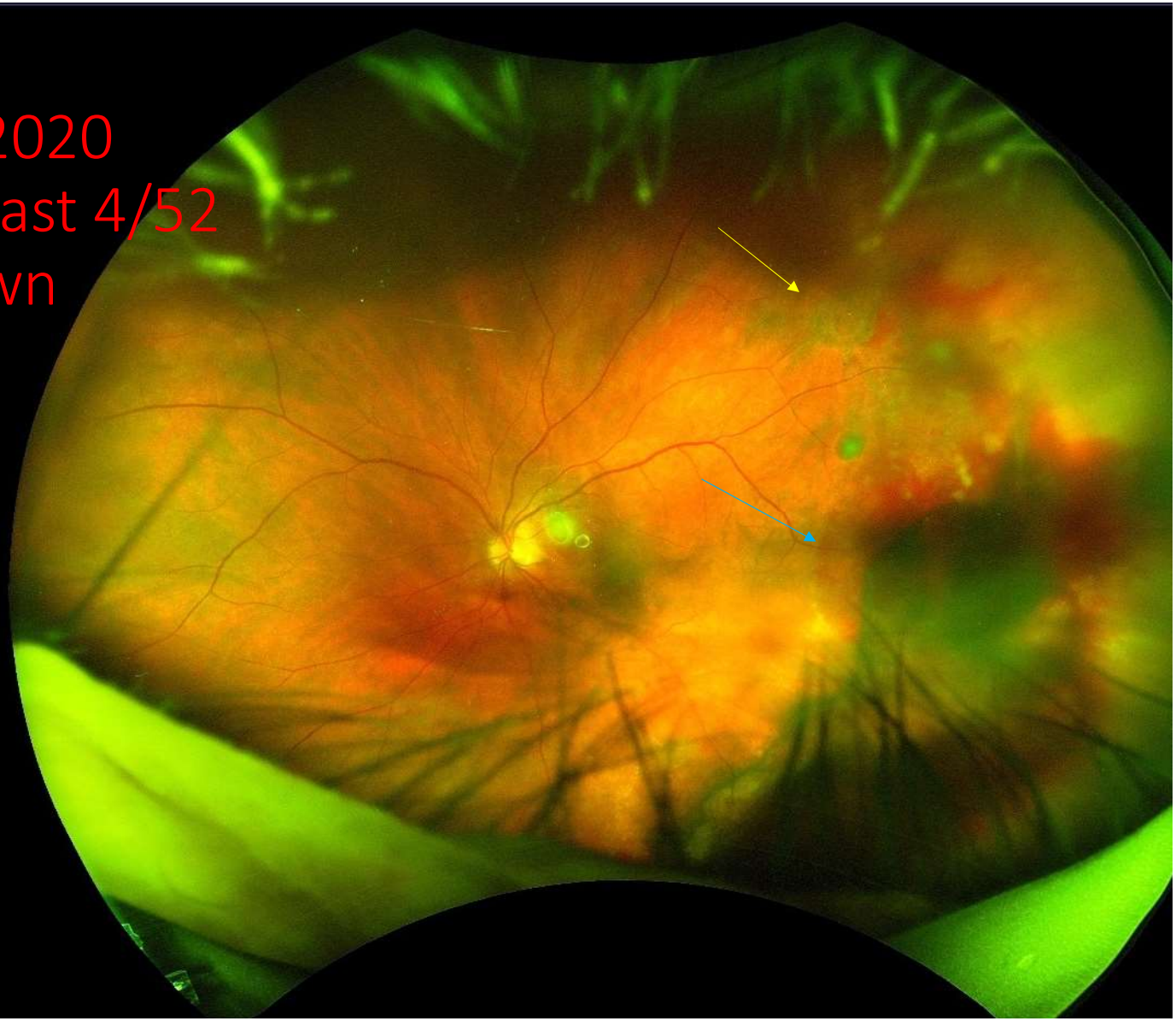
Quiz Vitreal haemorrhage
Which of the following is true?

1 Vitreal haemorrhages will clear on their own accord and are in themselves benign
2 Most vitreal haemorrhages are suspicious of a retinal tear ✓
3 Vitreal haemorrhages are a common sequalae to PVD
4 Current treatment for a Vitreal haemorrhage includes vitrectomy, scleral buckle and cryotherapy

7.5% PVD have associated vitreal haemorrhage


Mr. B.P. aet 89
L eye 11/1/2019
Pseudophakic 6/7.5
temporal hole L retina with
operculum

Mr. B.P. 15/5/2020
L vision hazy past 4/52
COVID lockdown



Urgency or
emergency?

Mr. B.P.

- Conundrum
- All Ophthalmologists in lockdown
- Will not see anyone with watery eye, conjunctivitis
- E & E
- Risk an 89 yo exposure to Covid 19?
- Blind in one eye, death? What trumps?
- What's the differential Dx?

What did I do?

Organise appt with POAG Ophthal for Monday morning

Sunday I SMS his POAG Ophthal ‘RD LE macula on, where do I send him?’ & gave him Mr. B.P.’s contact numbers with Optos

Send to E & E, I haven’t seen him in 2 years!

I couldn’t raise B.P. and Surgeon said to pass on his number

6:10 pm surgeon sms me : not RD new choroidal vessel in periphery

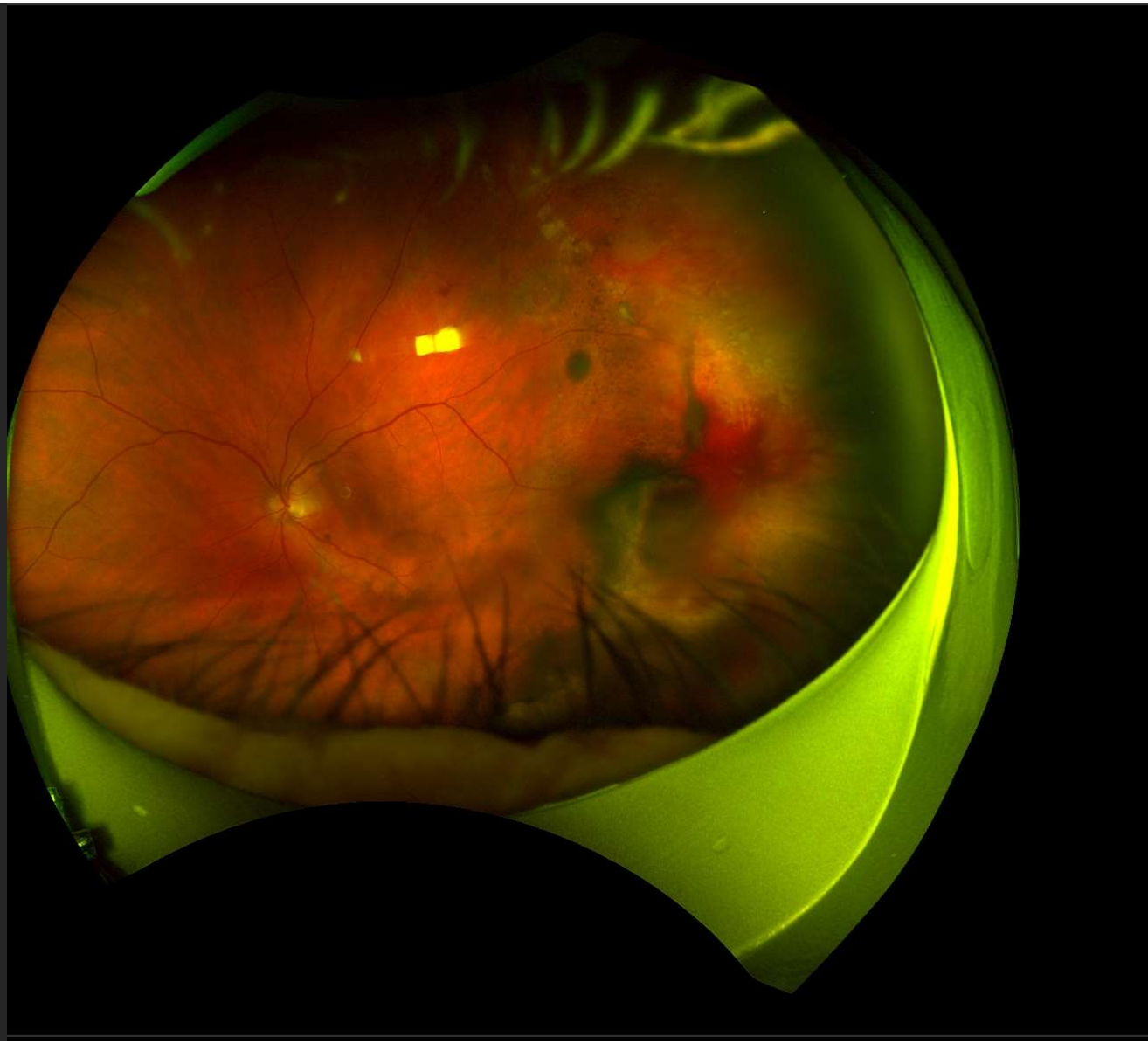
Conservative Tx no Anti veg F, no laser, no steroid

Phoned B.P. E & E remarkably quiet 4 interns, consultant

Peripheral choroidal neovascularisation

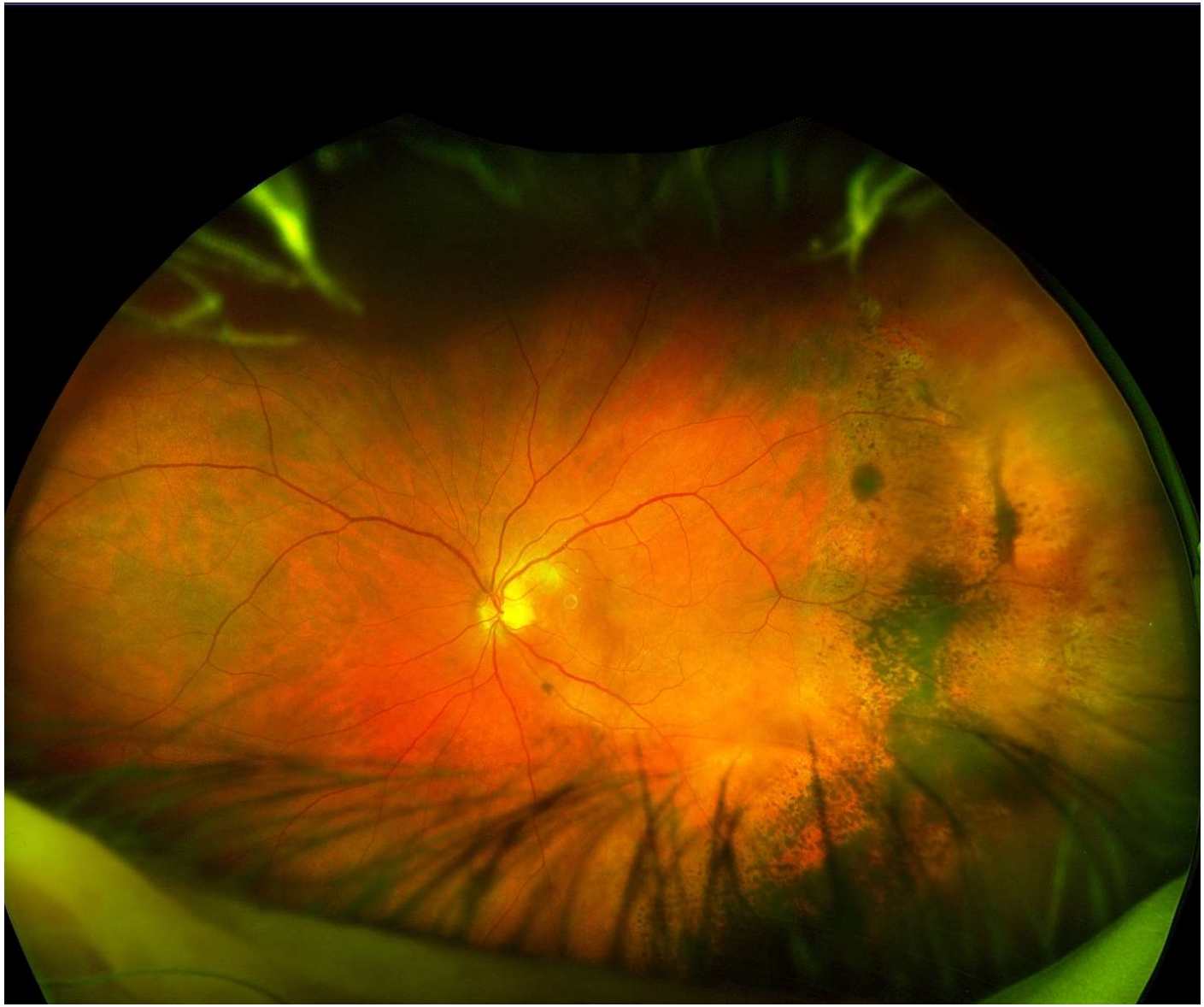
- Eccentric disciform degeneration, Peripheral exudative haemorrhagic chorioretinopathy, extra macular disciform degeneration
- Wet AMD not at the macula
- abnormal BV growth under the retina 50% also have Mac degen
- 70+, female, HT, anticoagulant
- No Tx maybe retinal laser, Anti vegF?
- Coats like response, abnormal BV development where endothelial cells allow leakage esp cholesterol crystals into retina & sub retina, leukocoria due to cholesterol deposition young males 1/100000

Mr. B.P.
15-6-20
1/12
later



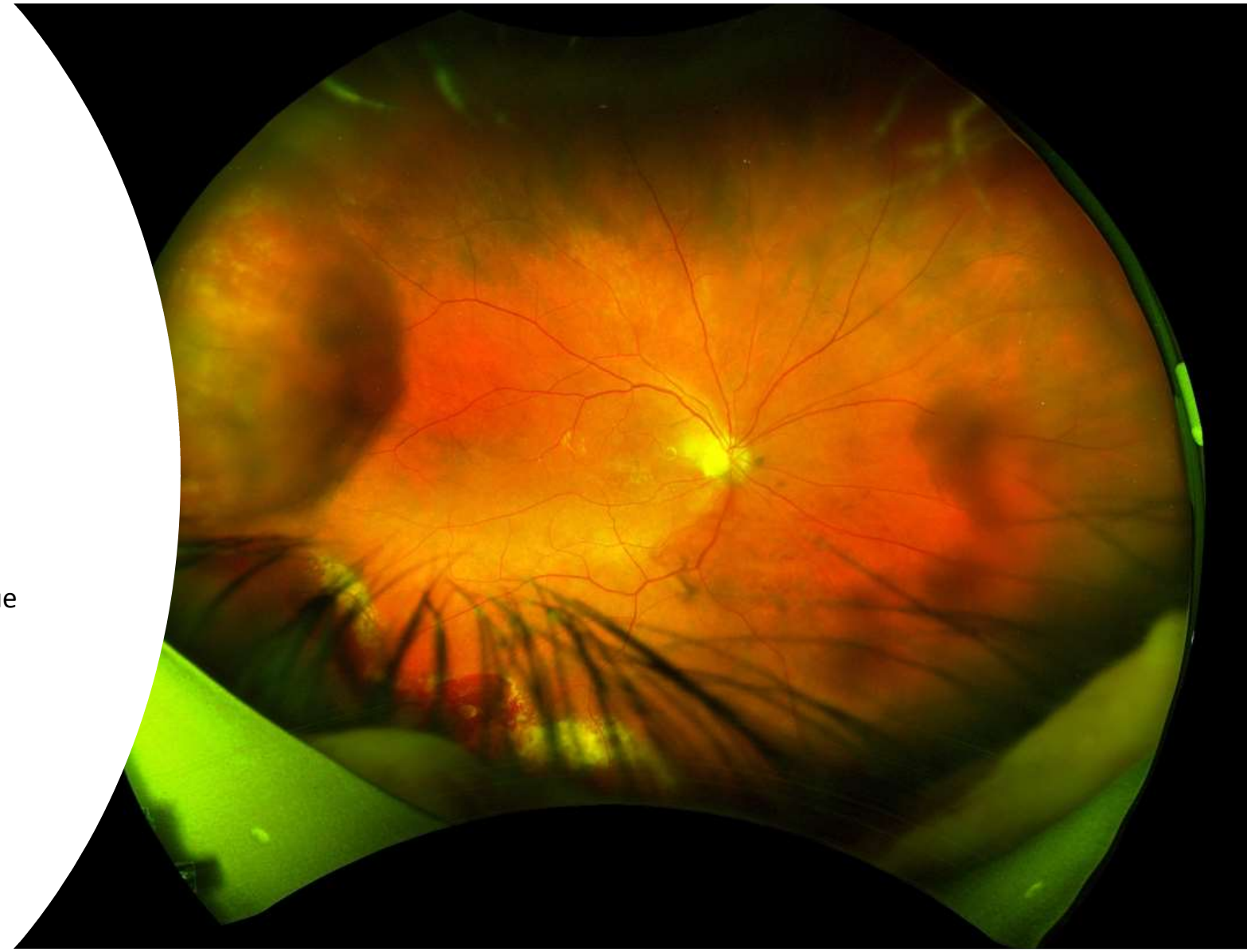
Mr. B.P. 15-10-2020
5/12 after

- Reluctant to go to Melbourne for review
- Pigmentary response and sealed

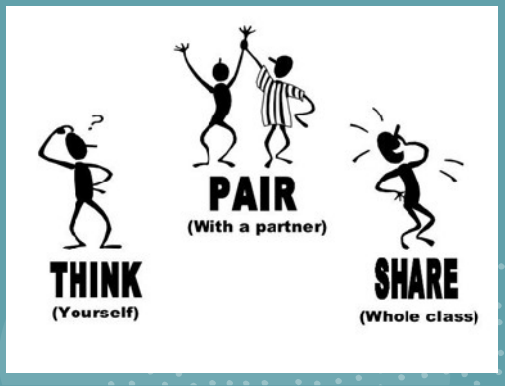


Mr. B.P. 1/2/2021

- Incidental RE finding
- Ophthal report
- No break, no haemorrhage
- No Tx
- Reassurred, review if an issue



Quiz Which of the following is a false statement regarding peripheral retinal neovascularisation?



1/ It is also known as Eccentric disciform degeneration

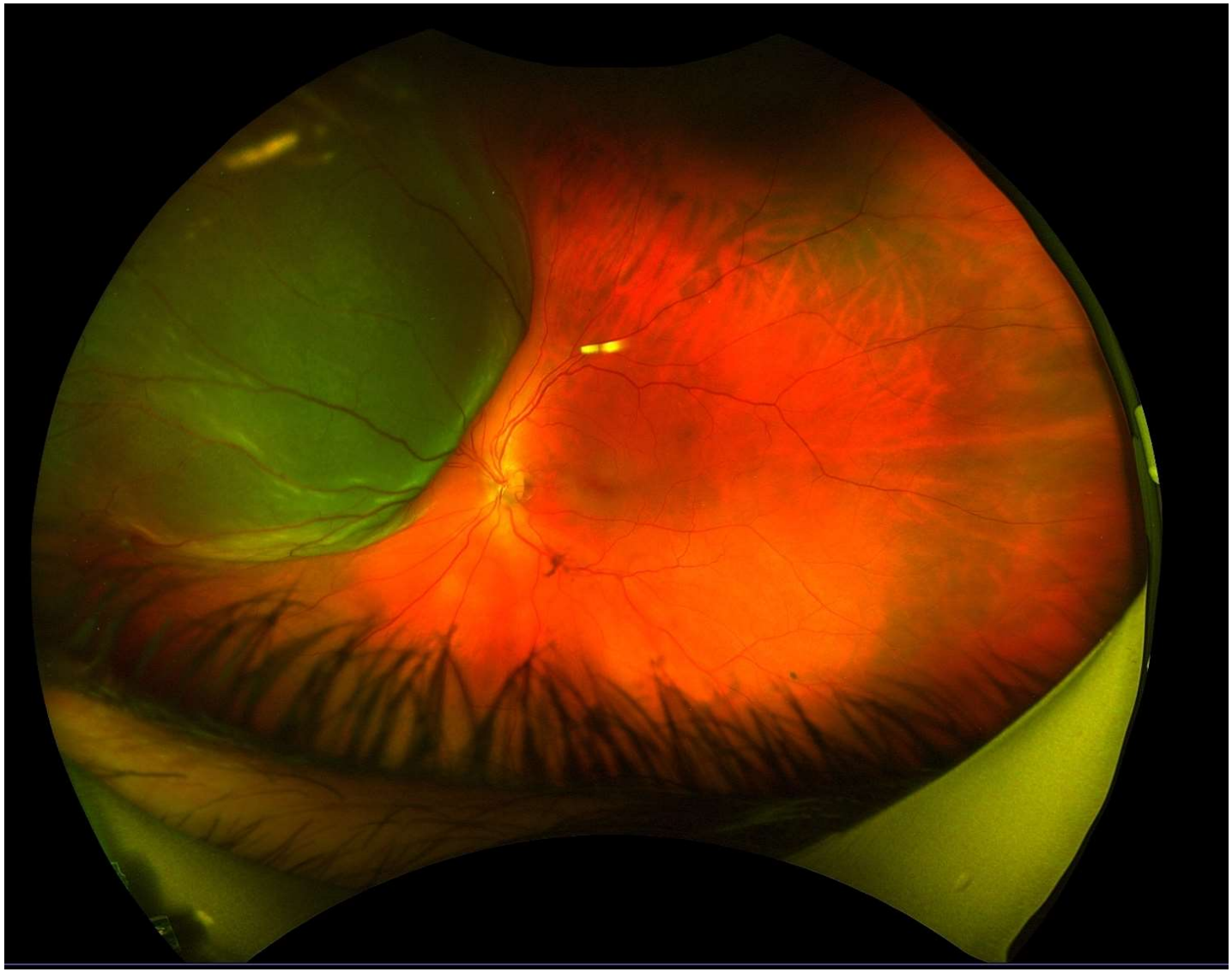
2/ It is amenable to Ranibizumab injections

3/ 50% of patients with peripheral retinal neovascularisation also have macular degeneration

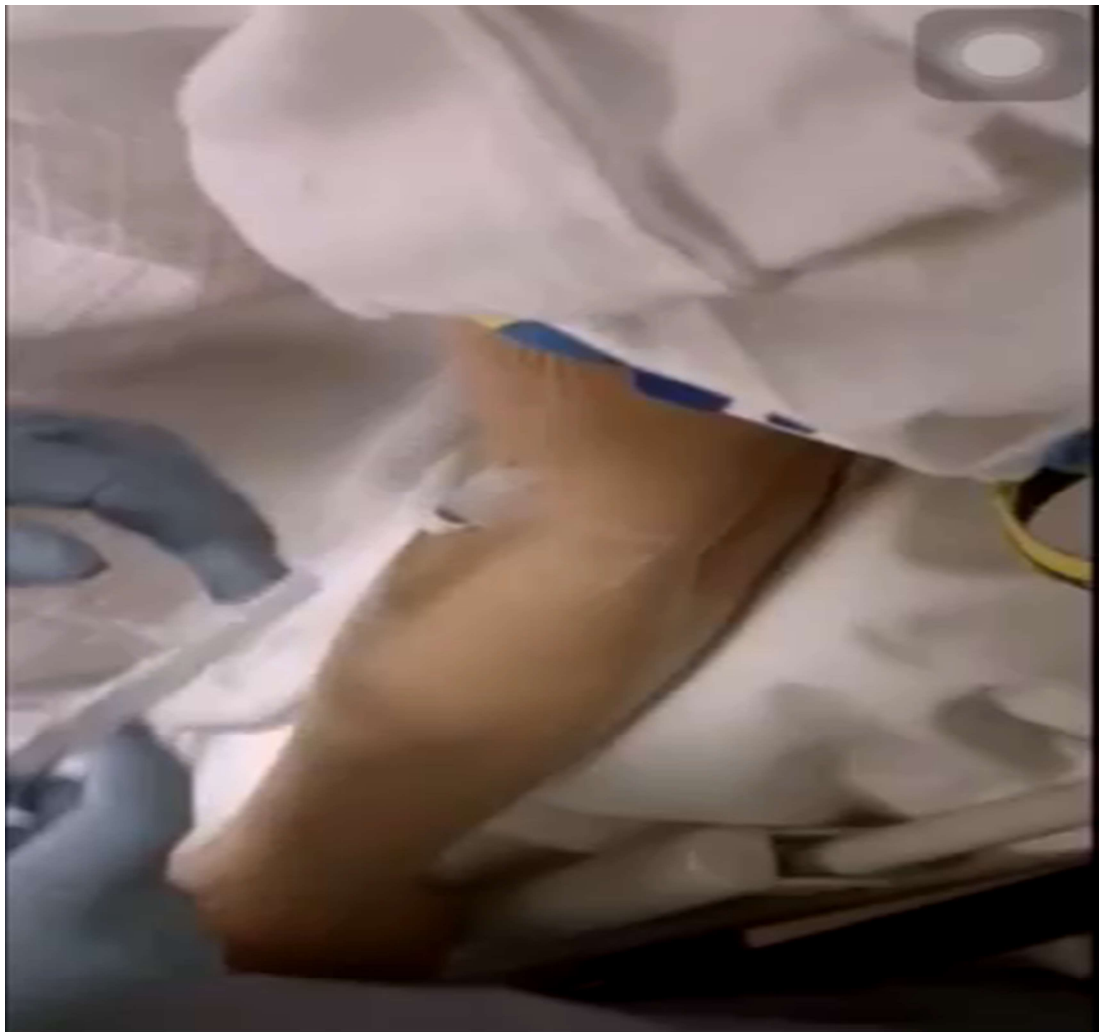
4/ It is similar to dry macular degeneration ✓

Mr. I.M. aet 59 May 20
‘I have a retinal detachment’
Cat Sx 9/19
Floaters since cat Sx
occas temporal flash

How do you triage?
Do you follow up?



A Detached Retina – Surgery at Sydney Eye Hospital



Quiz
RD triaged Pt, phoned Ophthal, sent images, expecting Pt at E & E, what are the next instructions?

- 1 No food 6 hours, no clear fluid or water for 2 hours ✓
- 2 Call an ambulance ?
- 3 No food 6 hours, can sip fluid ?
- 4 Do you have someone to take you? ✓
- 5 Do you have somewhere to stay in Melbourne? ✓
- 6 Do you have private health insurance? ?

Local = vitrectomy, bubble, laser
GA = Cryo, buckle, bubble

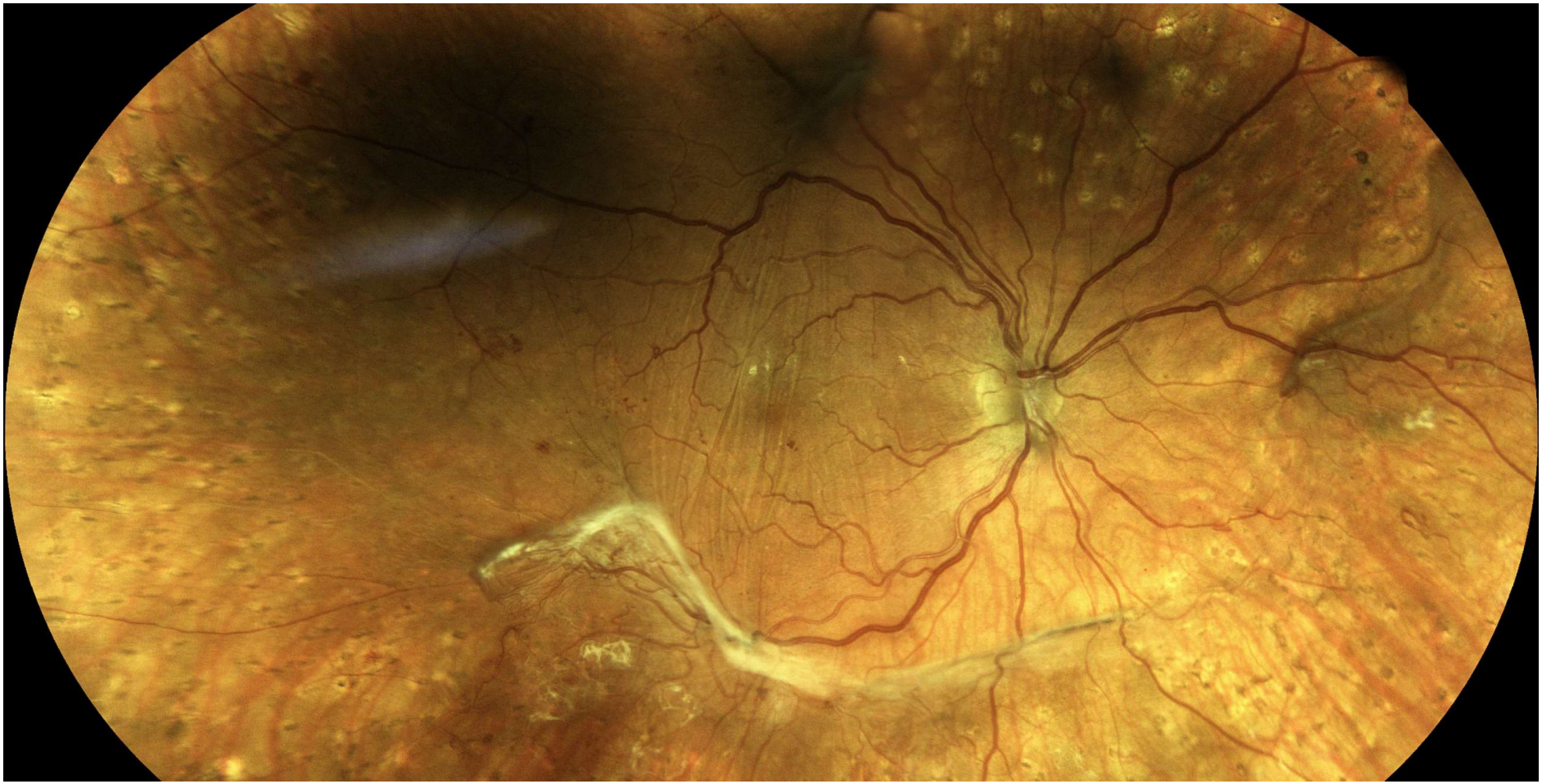
If definitely local can eat or drink
Problem is if need to convert to GA
So 1 is most appropriate

"Can I have a coffee?"
Milk is the same as food due to fat content delaying gastric emptying ie 6 hrs

Retinal detachment fun facts

- Separation from the retina proper and the RPE
- Rhegmatogenous rRD vs Non rhegmetogenous nRD
- rRD Rhegma = break retinal tear/hole, liquified vitreous to SRS, towards macula
- nRD absence of tear,
- Tractional : Proliferative diabetes, ocular ischaemia, CRVO
- Exudative : rpe damage fluid from Choroid to SRS ie AMD, peripheral retinal neovasc, CSR, choroidal tumour

nRD proliferative DM

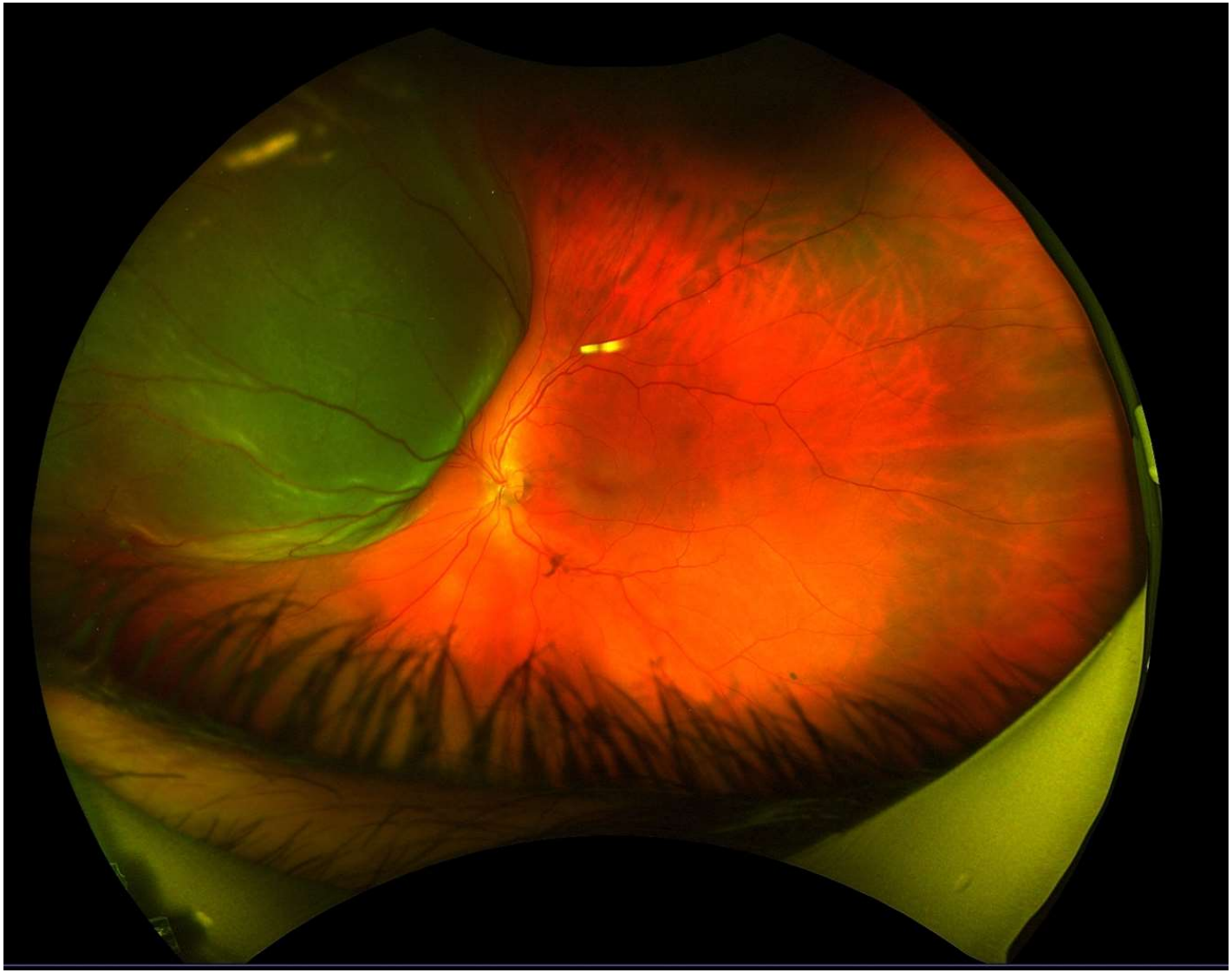


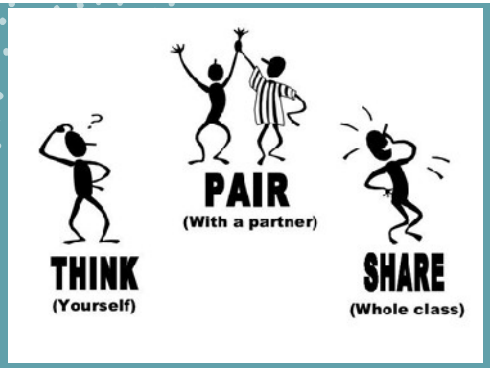
Epidemiology & risk factors RD

- 6.3-18/100000 people ie 315-900 per yr in Melb
- Age 50+, males
- Trauma 6-16% rRD with break esp if < 50
- Up to 7% have bilateral RD
- Risk of RD fellow eye 3 - 10%
- pseudophakia, myopia, LD 15%
- Myopia -1 to -3D = 4 x risk increase, > -3D = 10 x increase
- Cat Sx thinner IOL, more movement 10-33% increase
- Acute PVD 10-17% have retinal tears
- Pigment hypertrophy is my friend

Pseudophakic 10-33%
male 2%
50+
PVD 10-17%

Ring Ophthal sms image and ask to triage at E & E
Nil food
Sip water?
Take pyjamas
Carer overnight in Melbourne
Lost more than half vision on arrival from 10:30 am to 1 pm





Quiz Which of the following is less of a risk factor for retinal detatchment

a/ Trauma

b/ female

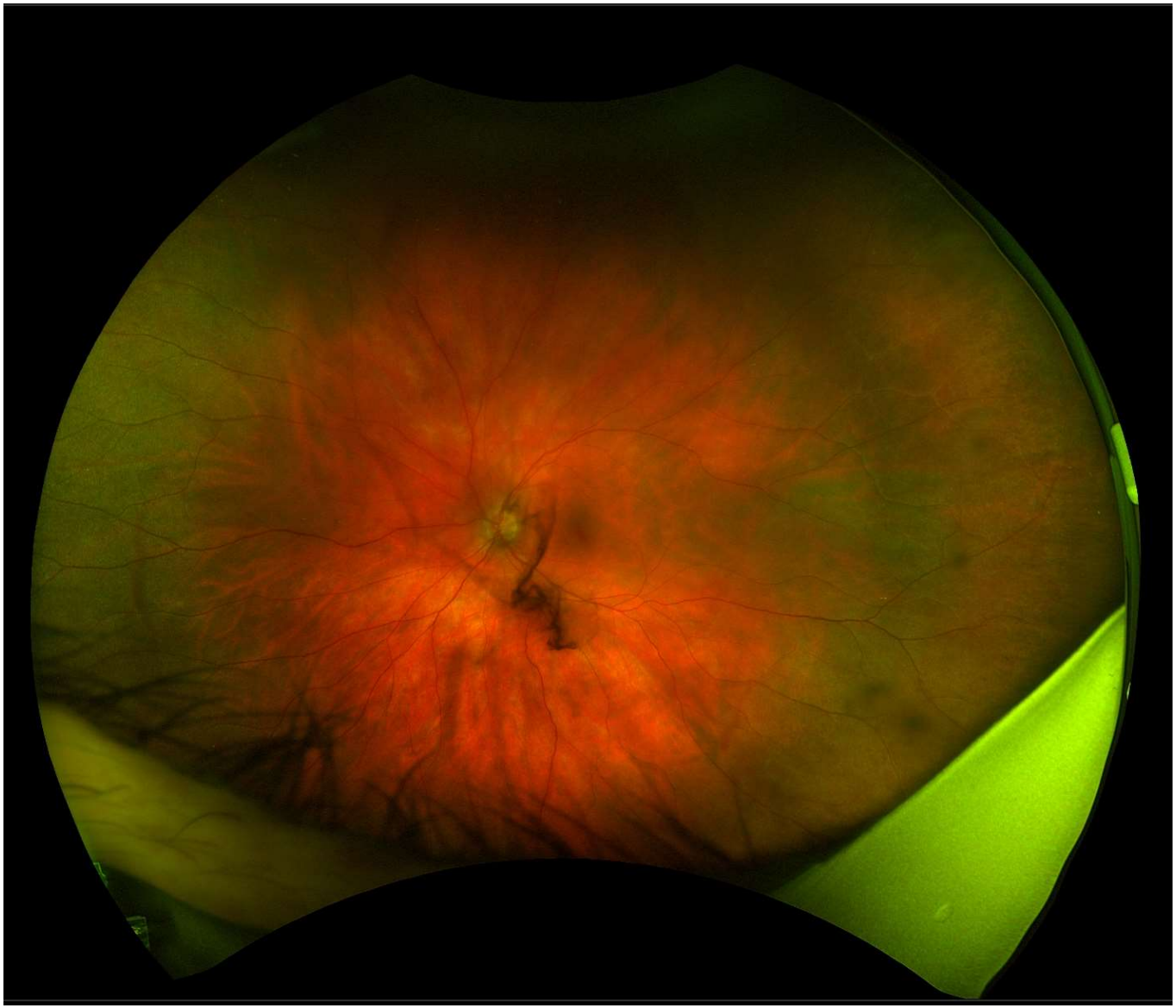
c/ prior cataract surgery

d/ vitreal haemorrhage

Ms. E.J. aet 60

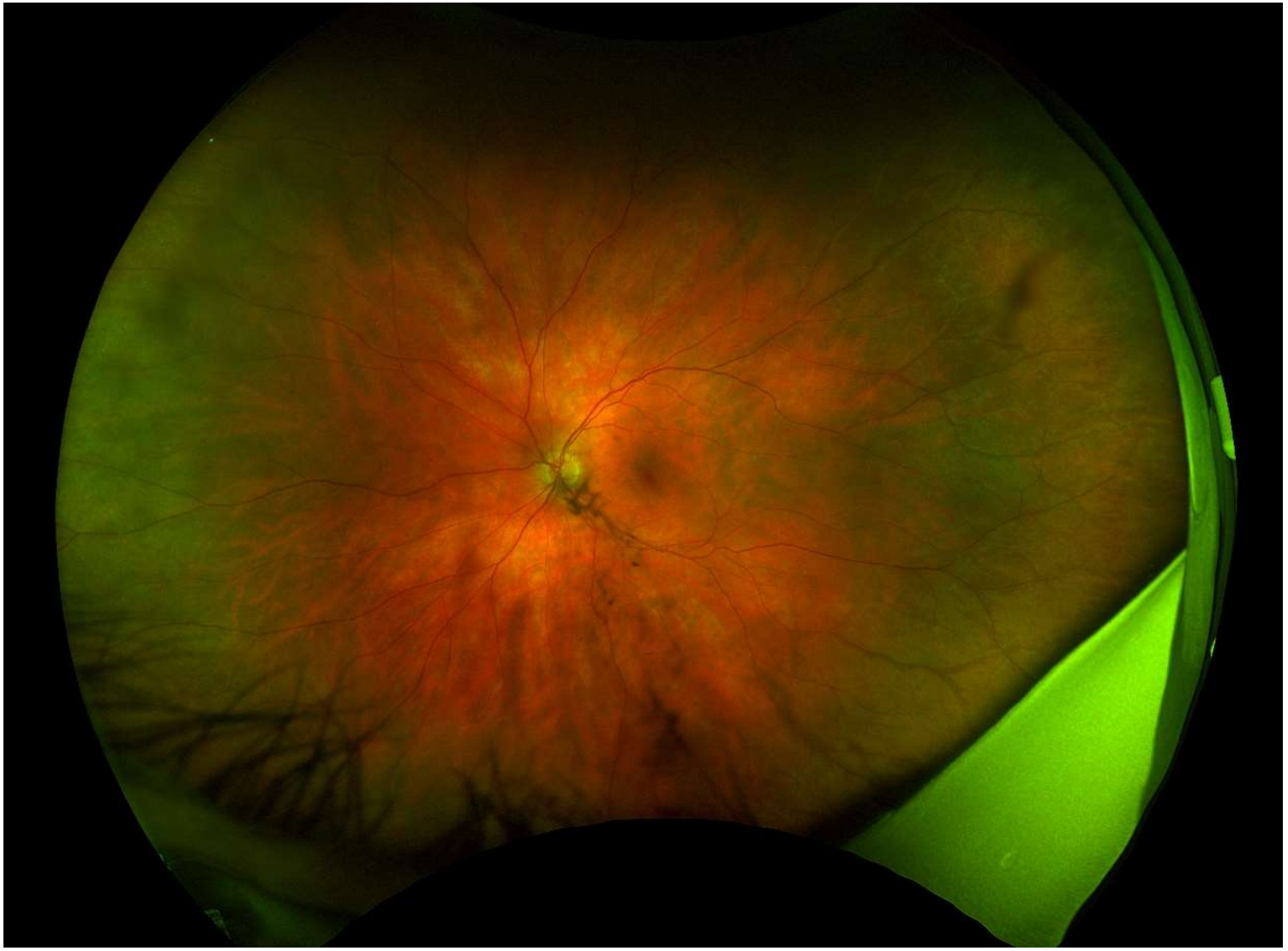
31-1-20
LE black line comes & goes, wavy shadow, flashes
Vision fine
Youngest of 12, all myopic
PRK
2 sisters & mother RD

Weiss ring
action PVD
cautioned RD signs & symptoms



Ms. E.J.

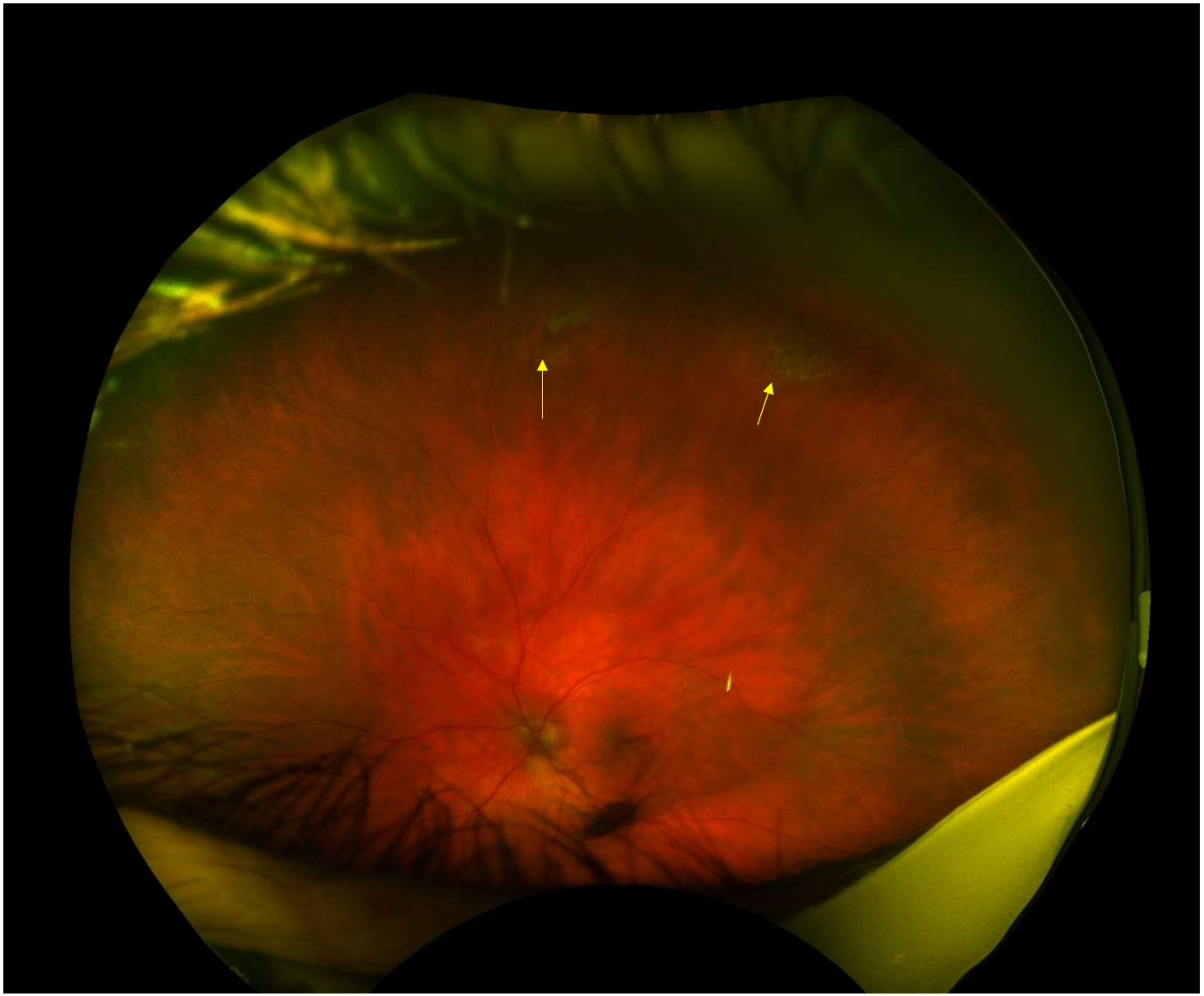
24-2-2020 1/12 later
cobwebs persist
bright lights temporal
vision PVD
amsler NAD
PRK wore Rx since aet 6
High Myope
FOH mother, 2 sisters RD
Hx RD



Ms. E.J.

superiorly 2 horseshoe tears

Moral
FOH
Myopia how much?
Wide field scanners vs BIO



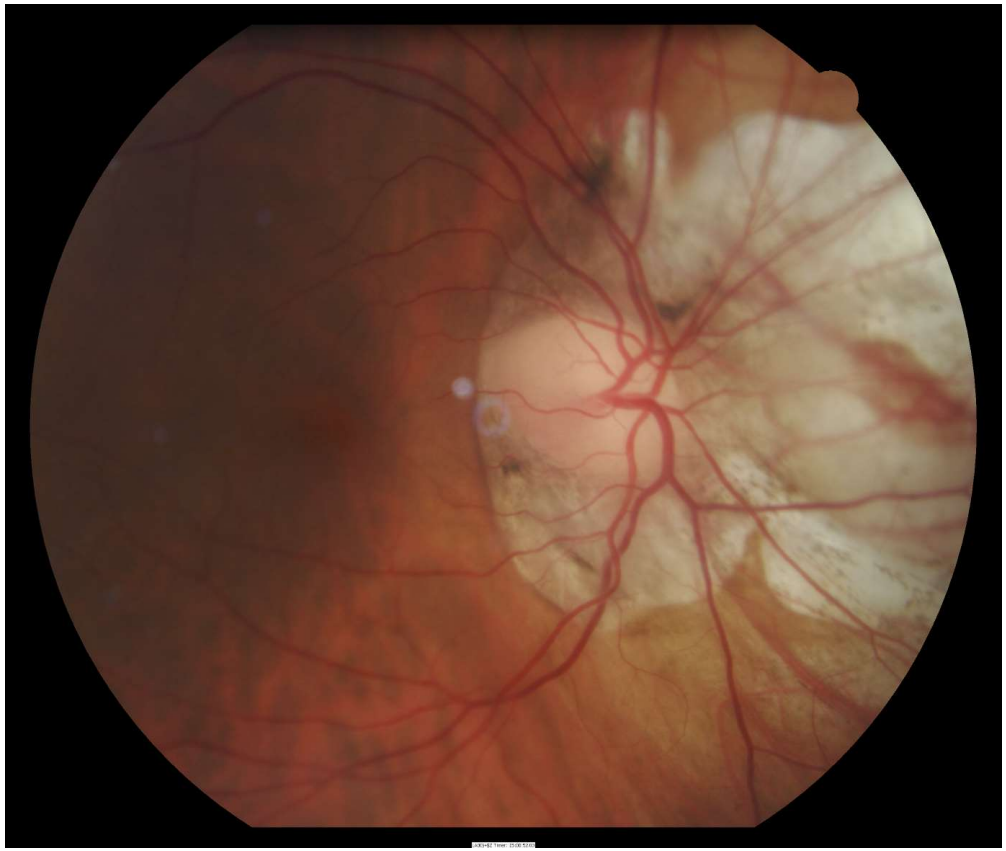
Ms L.A. aet 55 13/01/2012 past 3/12 vision unstable D & N OU

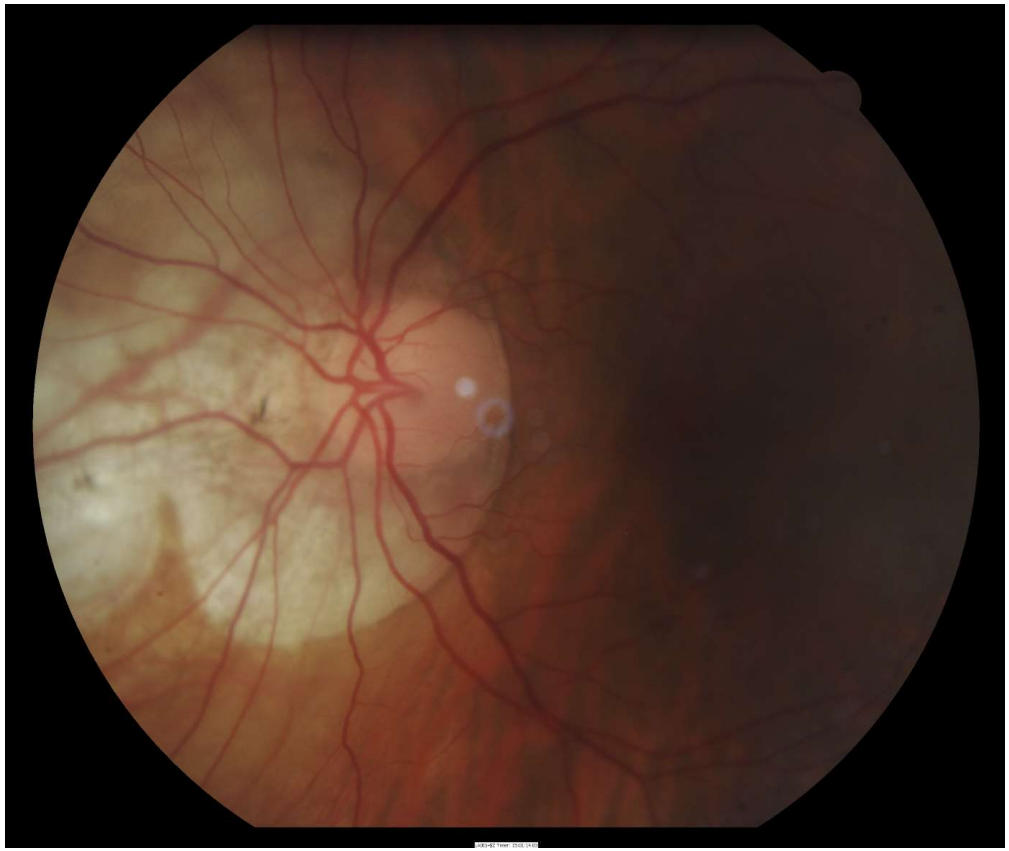
R -6.00/-2.75 x 45 L -6.50/-0.25 x 7.5 6/12 OU

Posterior staphyloma nasal to ONH

No flashes no distortion

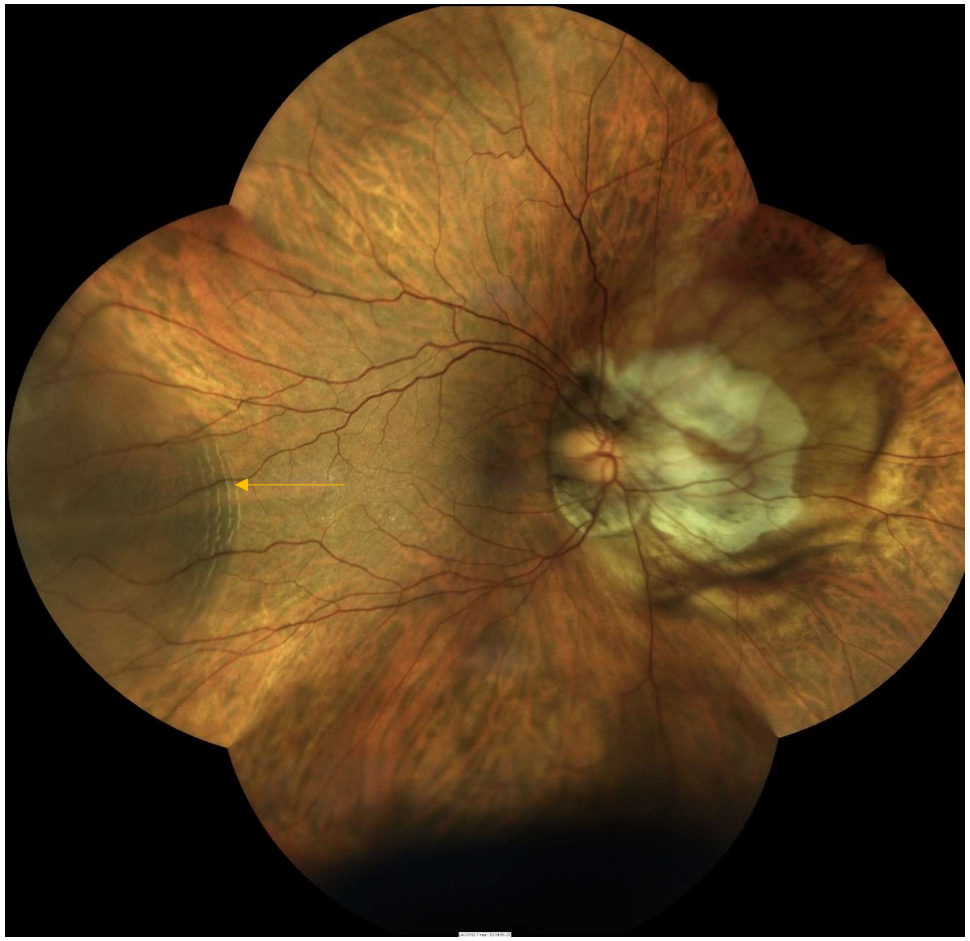
Supero nasal RD to edge of staphyloma LE

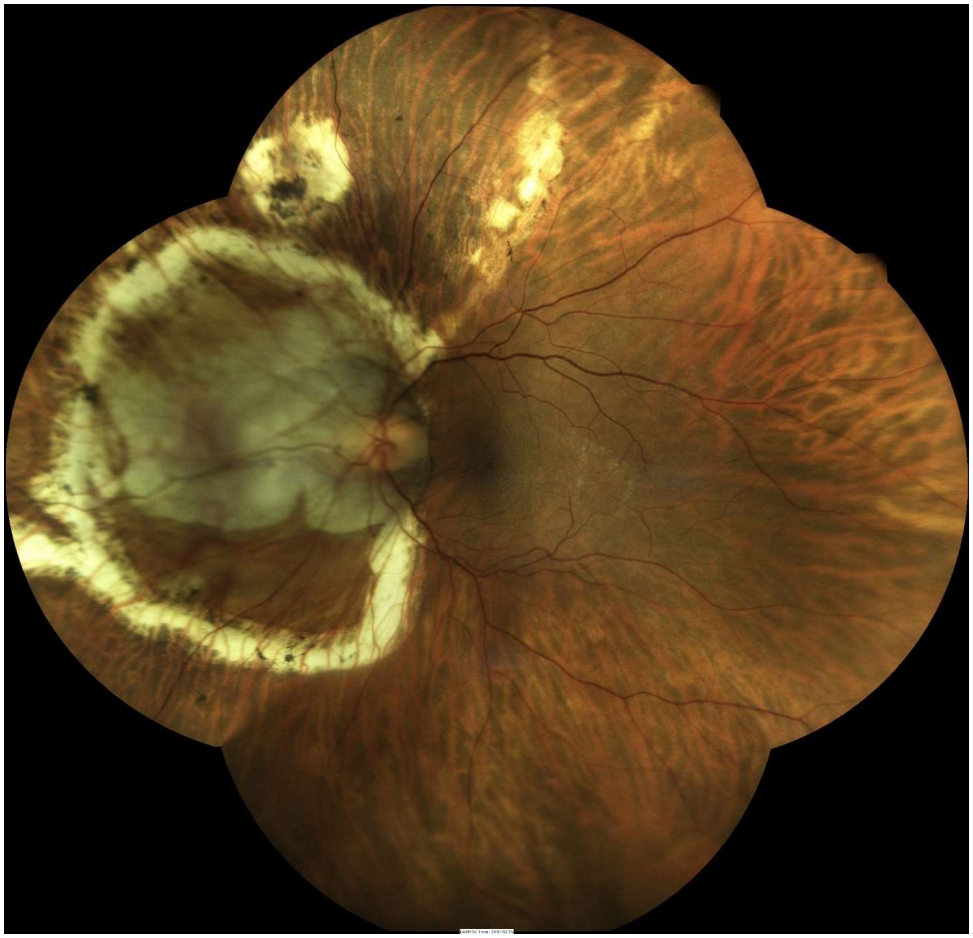




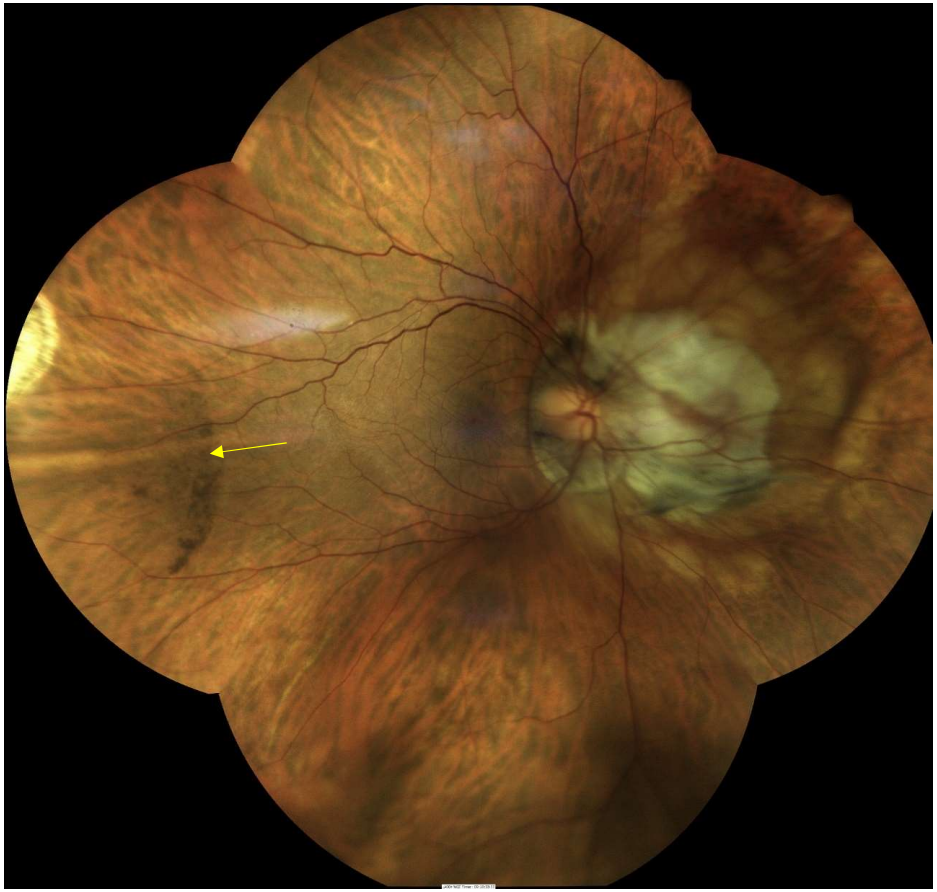
Ms. L.A.

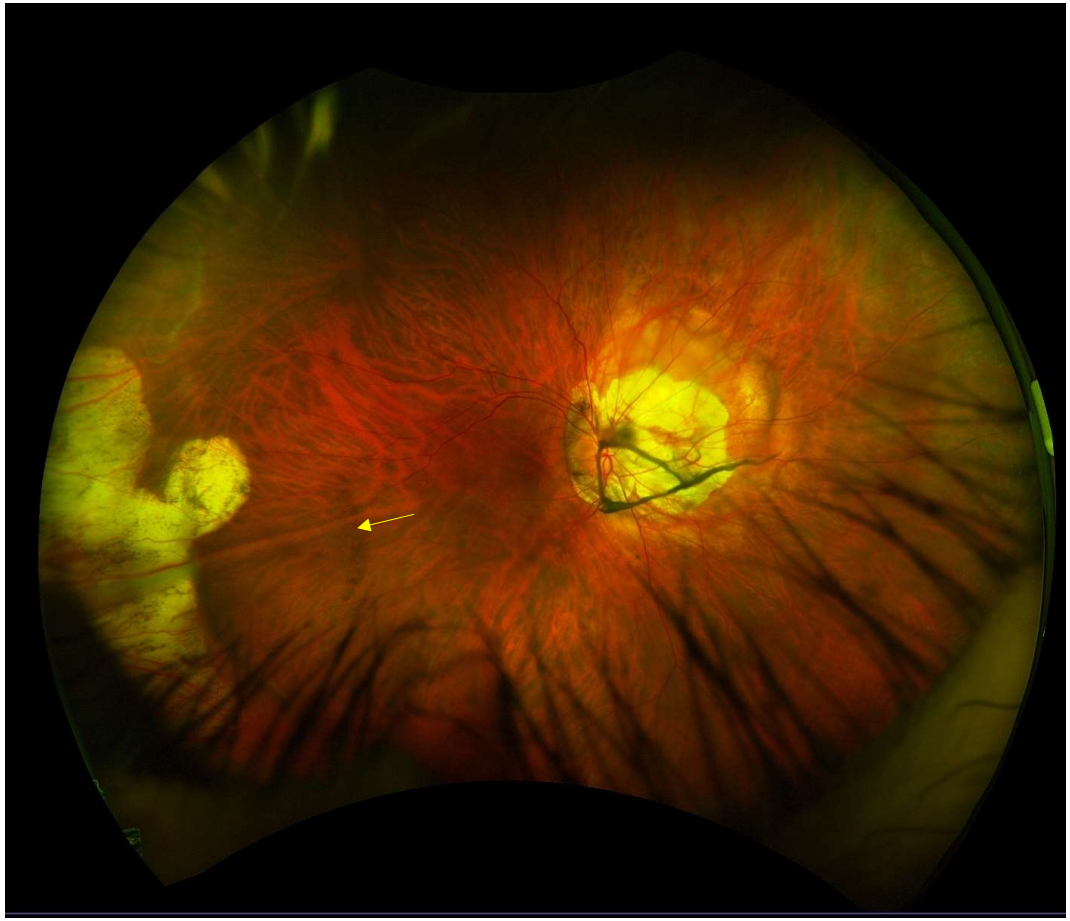
14-12-17 asymptomatic LE has had laser & gas
High Myope
Prior RD
50+





Ms. L.A. RE : Buckle, gas cryo





PVD

REVIEW of OPHTHALMOLOGY Clinical advice you can trust

Dean Eliott, MD, Detroit

PUBLISHED 15 MARCH 2004

Evaluation and Management of PVD

Firm vitreous attachment Vitreous base 3mm b/n PP & Ora, retinal scars, lattice deg'n & like, ONH & retinal vessels

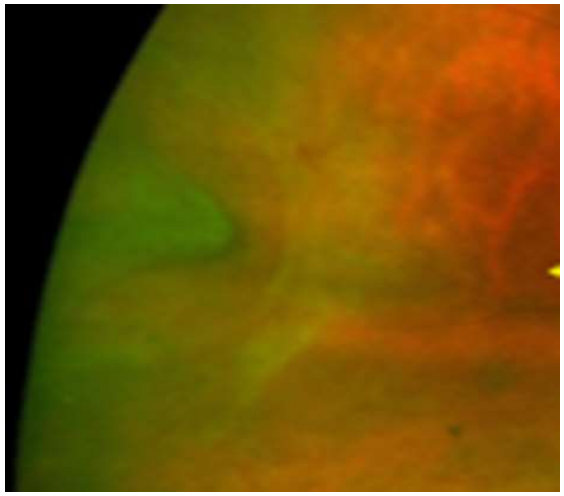
PVD = vitreous syneresis, then liquefied vitreous passes through hyaloid membrane shearing posterior hyaloid from retina

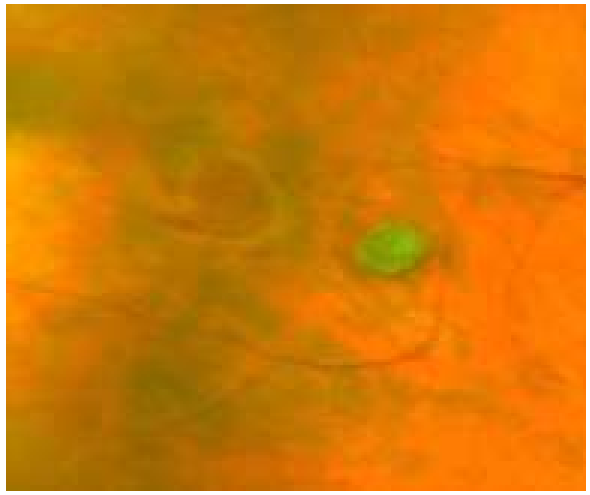
Age 30-59 10% 60-69 27% 70+ 63%

Axial length (myopia 10 yrs earlier), trauma, Cat Sx

Firm vitreal attachment + vitreo retinal traction = HST or hole & operculum
HST = vitreous into sub retinal space = rRD (split sensory retina & RPE)

10 – 15 % acute PVD have retinal tear





RPE pigment cells migrate through tear to vitreous (Shafer's)

Peripheral dot (punctate) haems =VR traction (impending tear?)

Flashes (VR traction) Floaters (Weiss, blood, condensed vitreal collagen)

Review 4/52 as breaks may form after symptoms

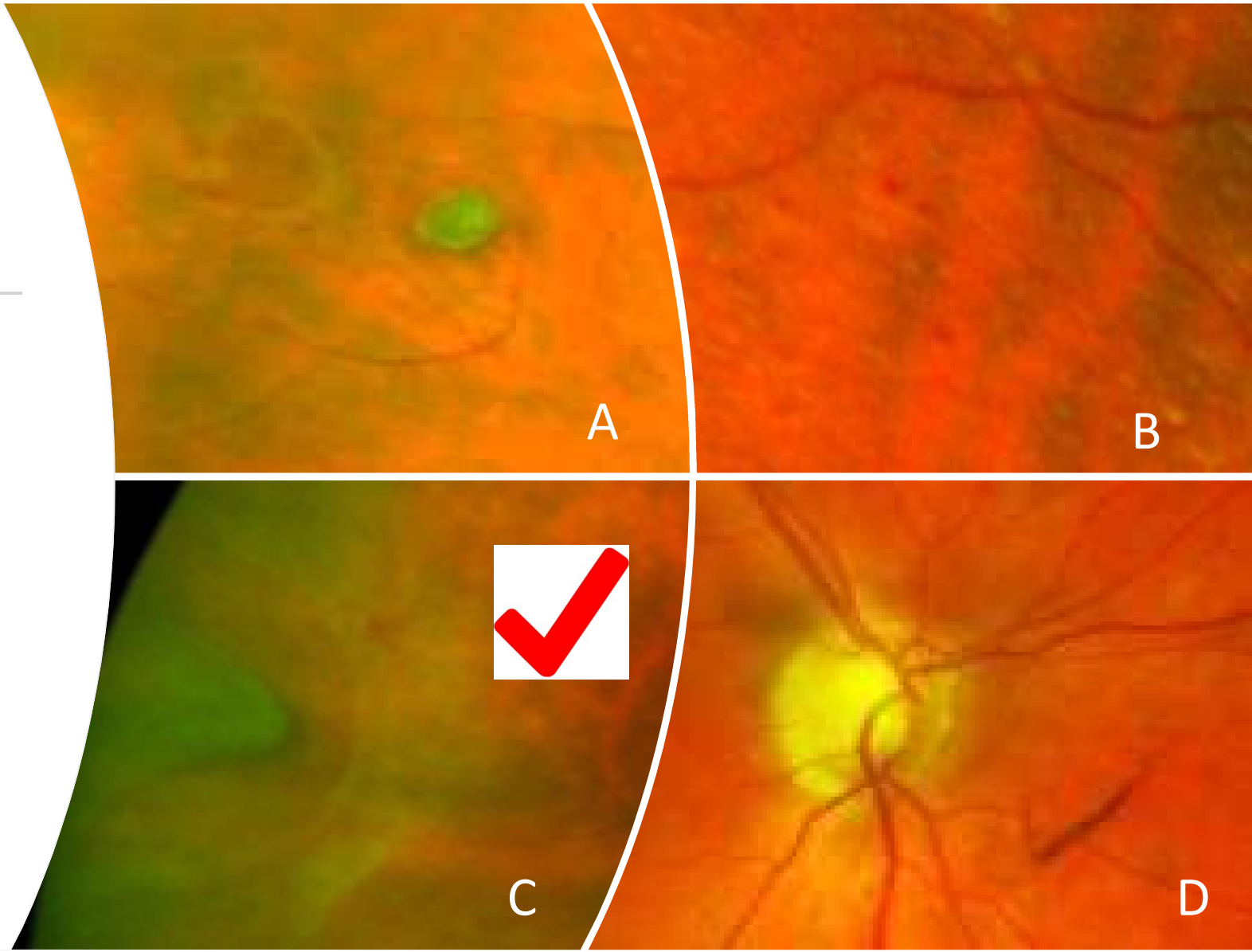
Unlikely to have break if not there at 4/52, counsel RD S & S

Laser = CR scar to stop communication b/n vitreous & SRS

Cryo if media Opacities

Quiz Which of the following requires urgent referral?

1. A & D
2. B & D
3. C & D ✓
4. A, B & D



Shafer's sign

REVIEW of OPTOMETRY Leadership in clinical care

A Sign of Trouble
How to locate and identify a telltale finding that could prevent a near-future retinal detachment.
By Bisant A. Labib, OD 15th March 2018

Shafer's sign refers to the presence of a collection of brown pigmented cells in the anterior vitreous following a PVD
25 to 90% proceed to RD
Absence does not mean retina intact
Red blood cells = 70% correlation retinal tears (vitreal haem)

Acute posterior vitreous detachment: the predictive value of vitreous pigment and symptomatology V Tanner et al
Br J Ophthalmol. 2000 Nov;84(11):1264-8

In 200 eyes presenting with an acute PVD, 25 were found to have an associated retinal break, 23 of which were also Shafer positive

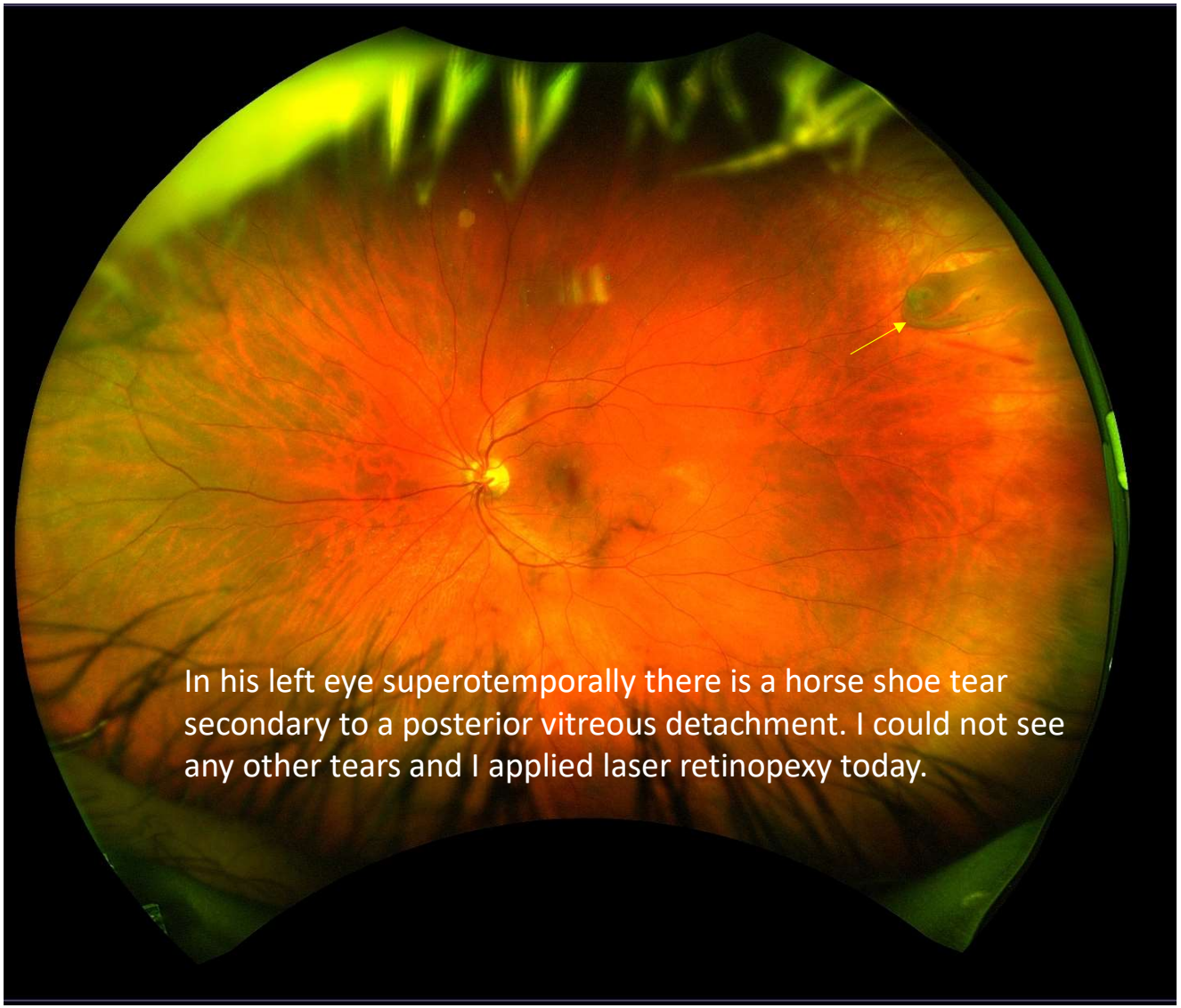
Table 1. Types of Cells Found in the Anterior Vitreous and their Clinical implications

Abnormal Vitreous Cells	Source	Clinical Indication
Brown (Shafer's sign) cells	Pigment from RPE of retina	Retinal break
Red cells	Red blood cells from hemorrhage	Retinal break or proliferative retinal process
White cells	Inflammatory white blood cells	Vitritis, pars planitis

Mr. D.J. aet 63 9/10/19

Farmer & rowing coach
LE 6 days cobwebs & flashes temporally
sl blur unaided VA 6/6 6/6 =
Urgency or emergency?

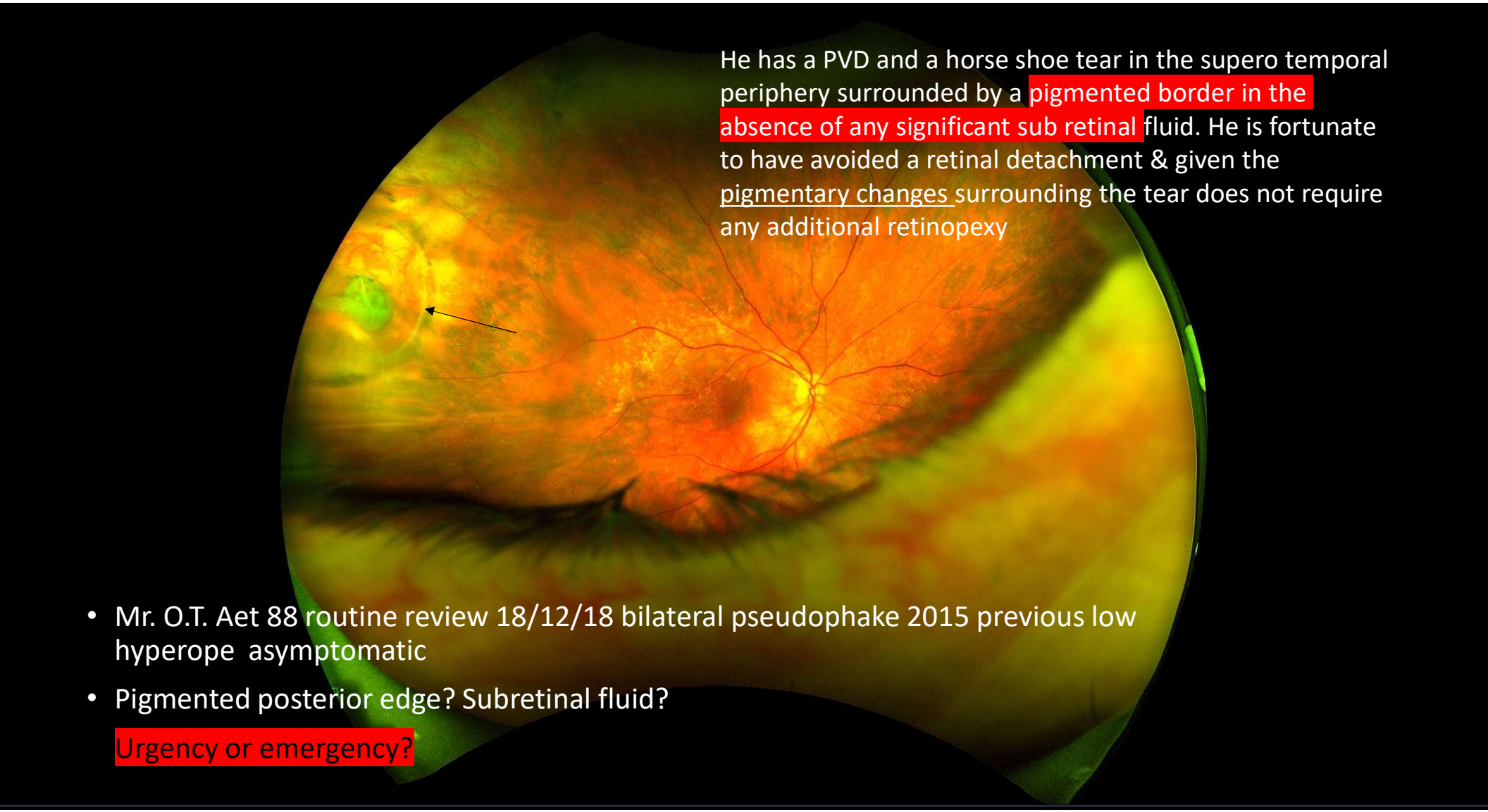
Vitreal haem (under mac)
Horse shoe tear
Preretinal haem
Referred that day



It was a pleasure seeing …. He has dense cataracts OU and an asymptomatic operculated hole temporally LE. I will perform R cataract surgery first followed by left a month later

What if it was a HST?

Mr. R.P. Aet 68 13/10/20 Reduced vision 6/12 -2.75 6/15 -1.75/-1.00 x 70 6/15 dense cataracts can't remember last EE urgency or emergency?



He has a PVD and a horse shoe tear in the supero temporal periphery surrounded by a pigmented border in the absence of any significant sub retinal fluid. He is fortunate to have avoided a retinal detachment & given the pigmentary changes surrounding the tear does not require any additional retinopexy

- Mr. O.T. Aet 88 routine review 18/12/18 bilateral pseudophake 2015 previous low hyperope asymptomatic
- Pigmented posterior edge? Subretinal fluid?

Urgency or emergency?

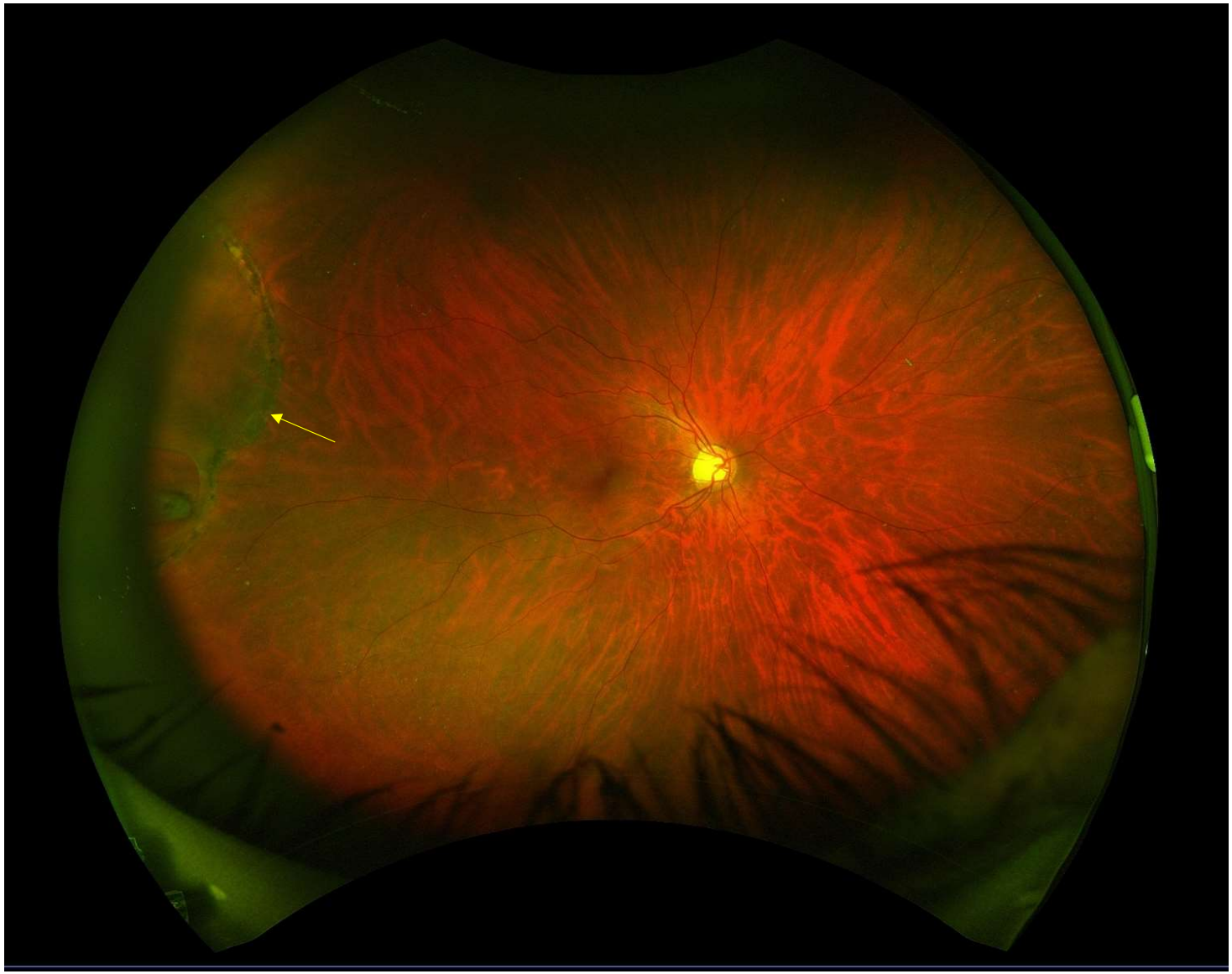
Ms. M.S. aet 62 4/12/19

under surveillance for R pigmentary changes since 2011
R -12.00/-2.00 x 62.5 6/9 -10.25/-1.50 x 120 6/6
no flash/floaters, denied trauma
Urgency or emergency?

- Doesn't smell right
- Non urgent referral

Mrs.JM aet 70
asymptomatic
Refer or not refer?
When?

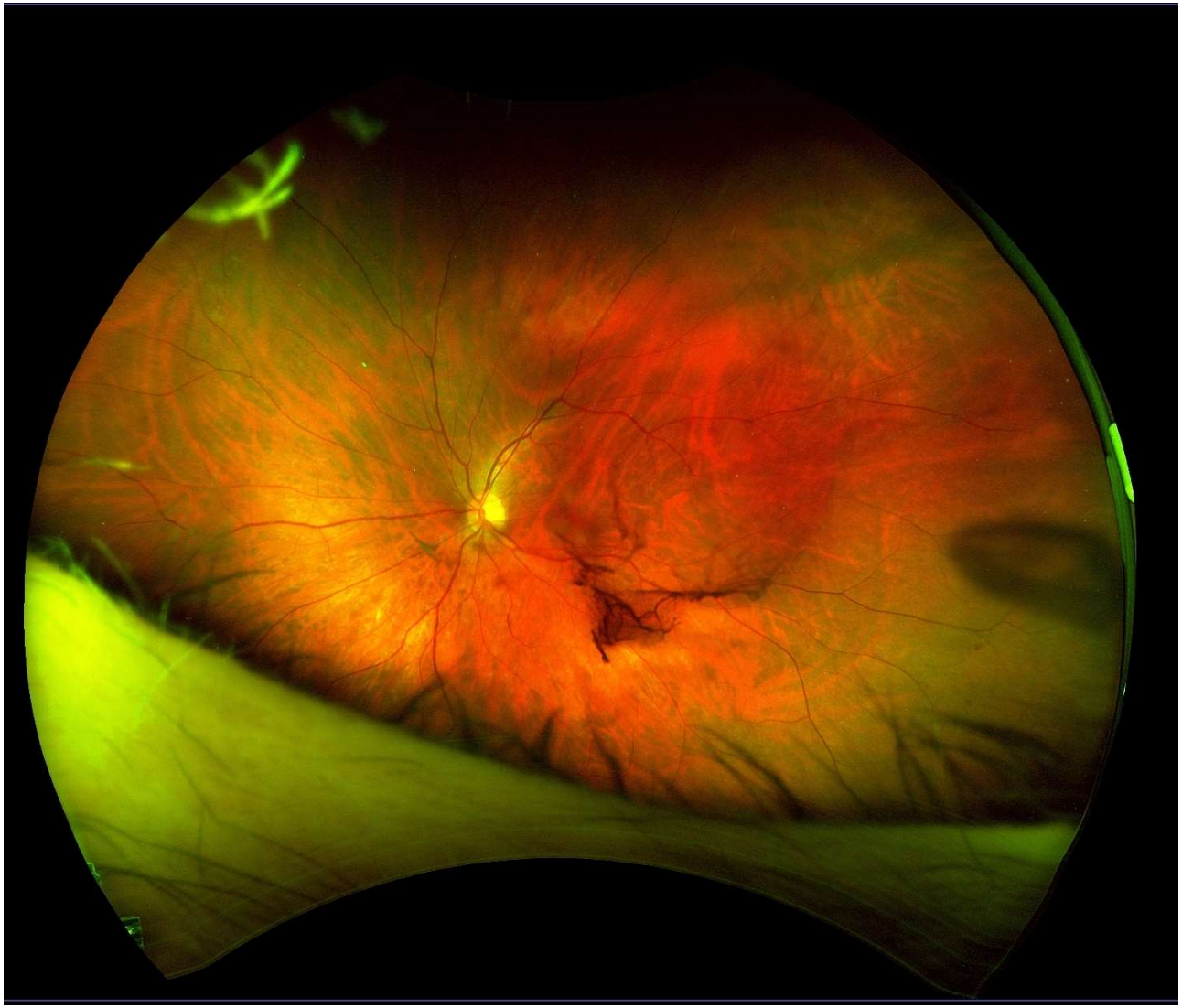
Non urgent referral
Vision 6/6 R 6/9.5 L
Bilateral PVD
Horseshoe tear with shallow sub retinal fluid
Pigment hypertrophy =chronicity (like retinal laser)
POAG more issue
Monitor, no active Tx necessary

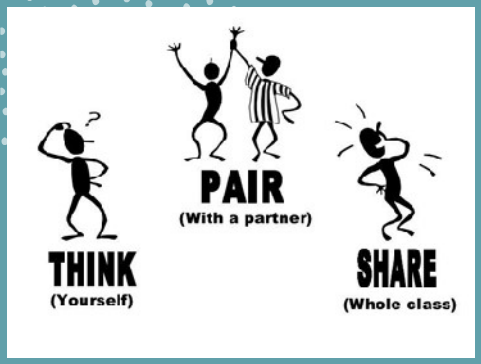


Mrs. J.H. aet 60

1st presentation to clinic
23-02-21 past couple of days black spot and temporal flashes OS
PVD with white cells only, no Schaeffers sign and temporal blot haems
9/20 ERM peel and vitrectomy RE
Urgency or Emergency?

Ophthal 2 days VR surgeon 2 days after
Left very peripheral superonasal tear
In office barrier laser insufficient?
Dx Theatre and EUA and cryotherapy or indirect laser
'Chance of missing more tears by attempting office based laser is quite high'





Quiz Which of the following patients needs an emergency referral?

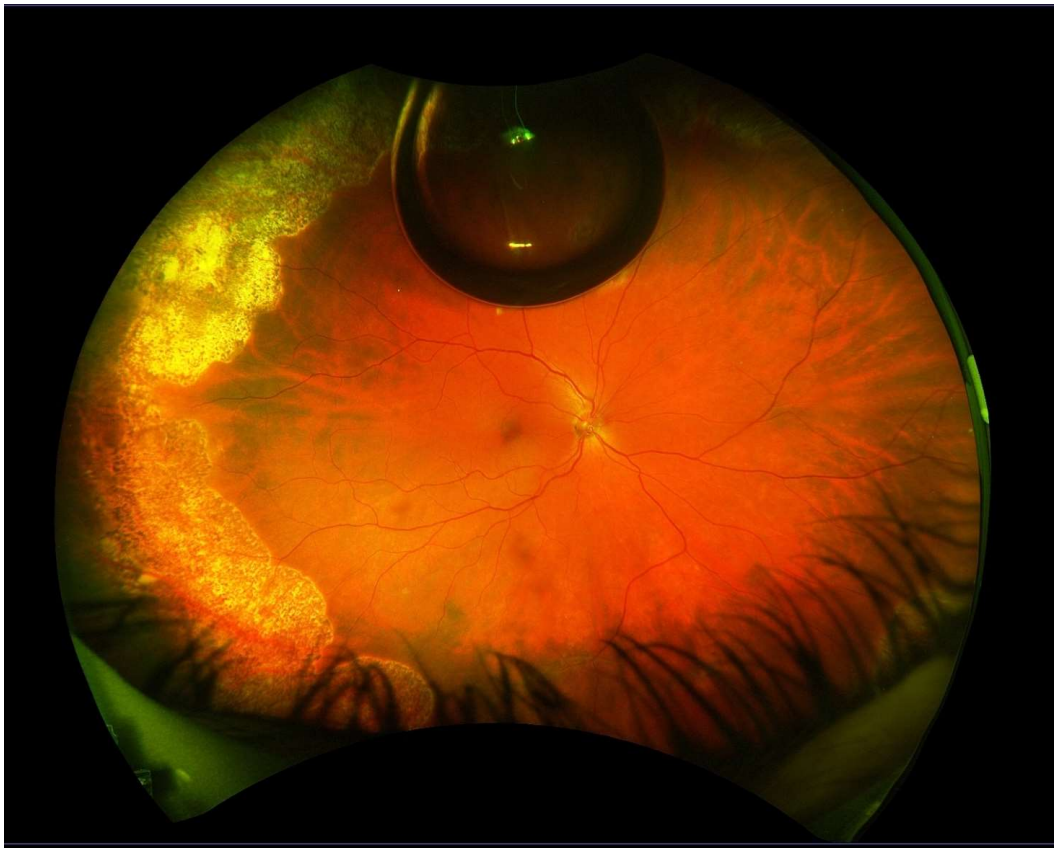
1 asymptomatic high myope with retinal hole with operculum and prior PVD

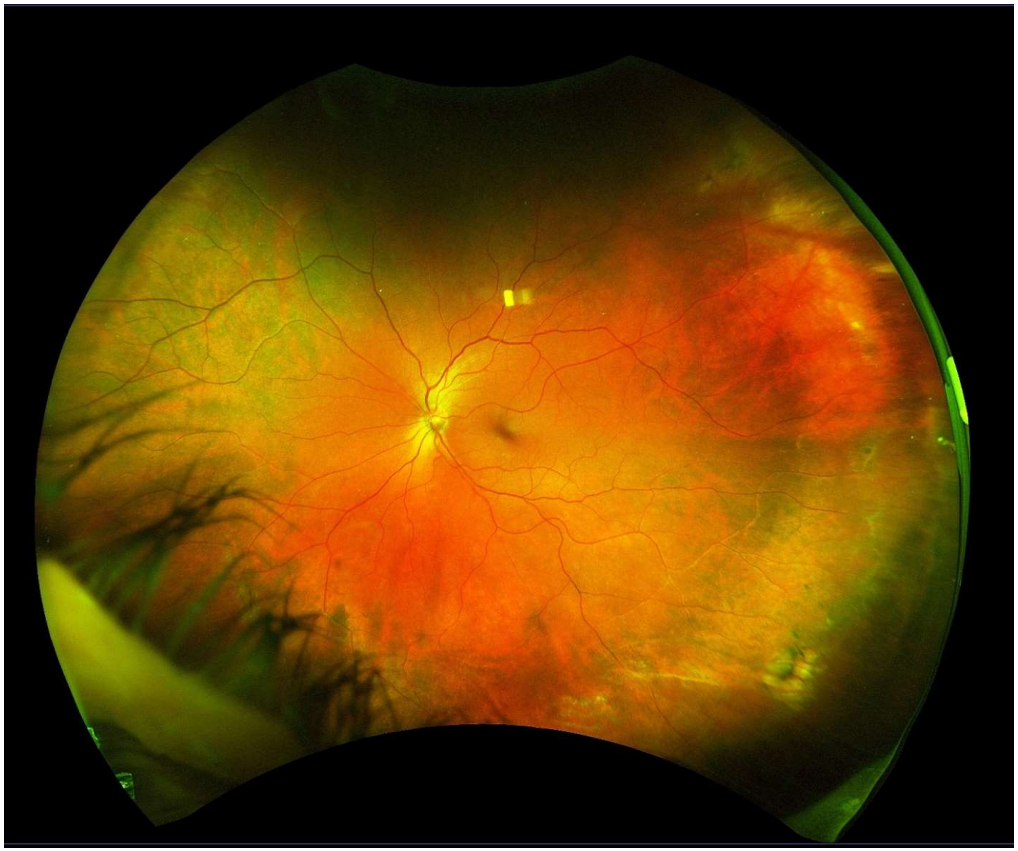
2 68 yo low hyperope with a temporal horse shoe tear with pigmented posterior edge and no obvious subretinal fluid

3 Low myope with vitreal haze following blunt trauma and occasional flashes

4 High myope with peripheral lattice degeneration, no PVD, good vision and asymptomatic

Mrs. S.A. aet 60 3-1-19 RD SX RE had 8 tears following blunt trauma (toggle)
angle recession, vossius ring, LD in LE
referred high IOP post Sx Diamox, Lumigan, Cosopt, Eniden, PF





the royal victorian eye and ear hospital

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W eyeandear.org.au

11/1/19

Dear Colleague

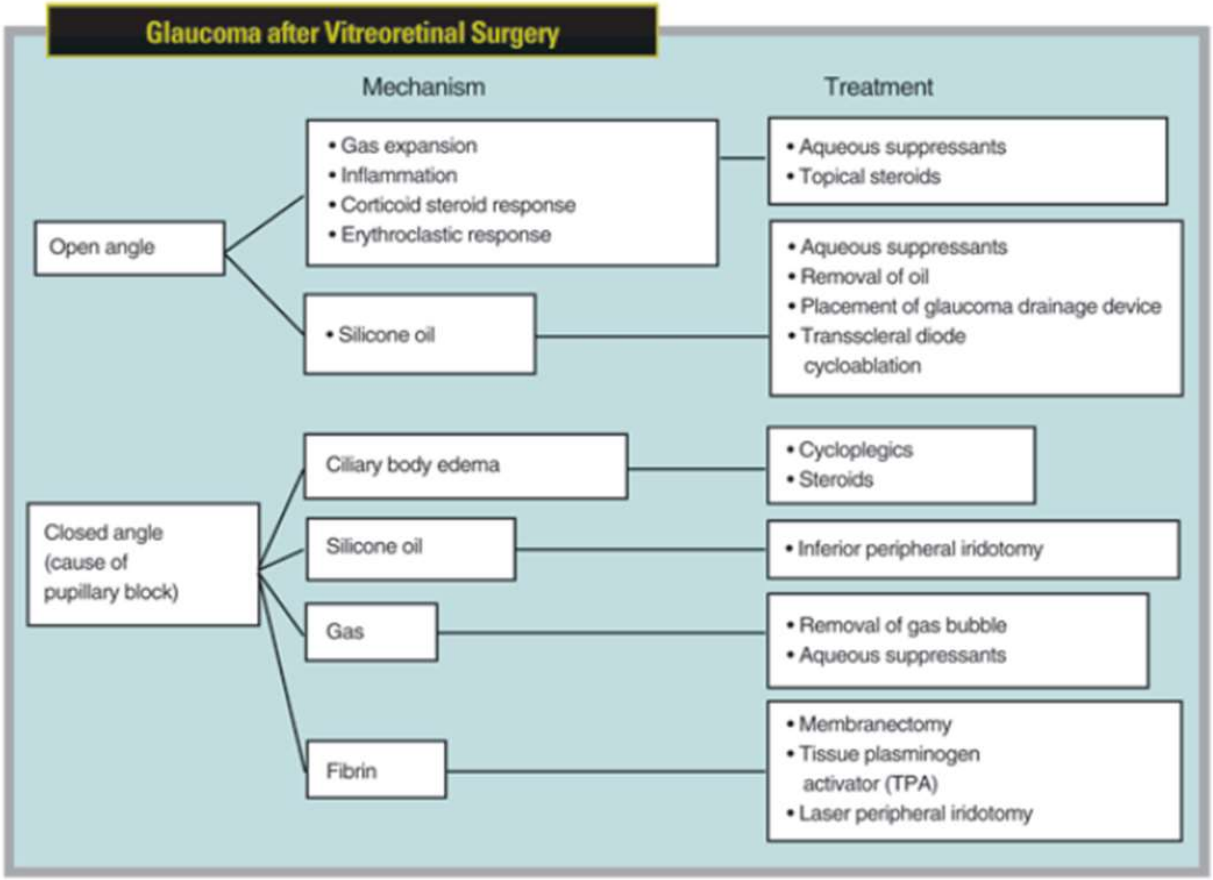
Thank you for seeing [redacted] for an IOP check in the right eye. Following ⓡ Vitx cryo + gas for a mac-on RD the ⓡ IOP ↑ to 44 mm Hg but today on Diamox, Enidin, Cosopt + Valdtan, the IOP has dropped to 8mmHg. I have stopped the Diamox and have made an appt for her to be seen in 2 weeks + would appreciate you seeing [redacted] for a pressure check in 1 week. The retina today

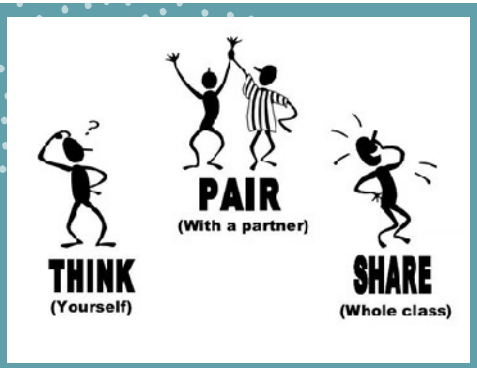
REVIEW of OPHTHALMOLOGY

Annisa L. Jamil, MD, Seattle

PUBLISHED 13 AUGUST 2009

Managing Patients After Retinal Surgery





Quiz Which of the following are possible sequalae following RD Sx

a/ Diplopia

b/ High IOP

c/ Increased glare intolerance

d/ Haloes

e/ Cataracts

f/ all of the above