Sahand Ensafi PA, CCPA, B.H.Sc.,Department of Emergency Medicine, University Health Network

ACUTE PAINLESS VISION LOSS

No Disclosures

Definitions

- Ophthalmologic “Blindness”
- Practical definition?
- WHO
  - V/A less than 3/60 (snellen) or equivalent
  - No chart?

- Our definition?
  - Systematic Approach
  - Rapid Fire

General Approach

- Vision Loss
  - **Painless** vs. Painful
  - Media vs Retina vs Neural Pathway

History (Painless)

- HPI
  - Truly acute? Prodrome? Trauma?
  - Visual field/eye affected
- PMHx: Vascular Risk Fx, RE?, Surgery?
- Meds: Anticholinergics, sildenafil (AION), OCP (ischemia), Tox

General Approach

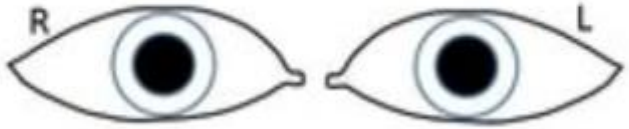
Physical Examination

- General Inspection
- V/A – Corrected/PH, CF to 1-2ft -> HM -> LP
- Pupils – Symmetry, reactivity/reflex, **RAPD**
- Pressure (+/-)
- EOM (3, 4, 6)
- VF (confrontation)
- SLE +/- flourescein
- Ocular U/S

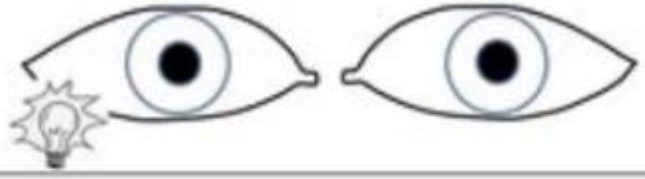
Pupillary Light Reflex/RAPD

Left Relative Afferent Pupillary Defect* (RAPD)

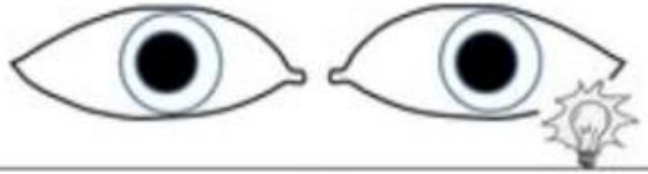
(1) Begin with dark room, bright pen light, and patient fixated at distant object.



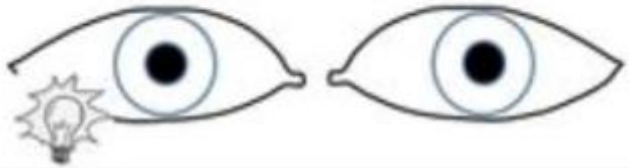
(2) **Shine light into right (R) eye**. Both pupils constrict.



(3) **Swing light to left (L) affected eye.** Instead of pupil constriction, both pupils will *dilate*.



(4) **Swing light back to right (normal) eye**. Both pupils constrict.



Case 1

- 36 yo male, hit in the eye with a baseball ball 2 hours ago. Now V/A left eye - CF at 4ft. No c/o of pain.

Hyphema

Overview

- Blood in AC
- Traumatic or spontaneous
- ?Open globe/associated injuries

Treatment

- Raise head of bed
- Dilate
- Manage Pressure
  - Timolol/apraclonidine, IV Mannitol, Diamox
- Follow-up?
- If > 1/3 of AC may require admission for monitoring

Complications

- Rebleed 3-5d in 30%
- Glaucoma
- Corneal blood staining

Lens Dislocation

Overview

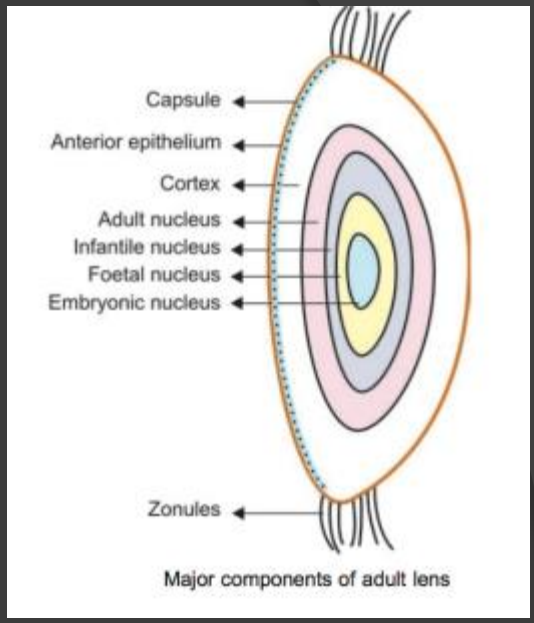
- Partial vs complete disruption of zonules
- Traumatic or spontaneous
- Blurred vision due to RE
- Monocular diplopia with subluxation

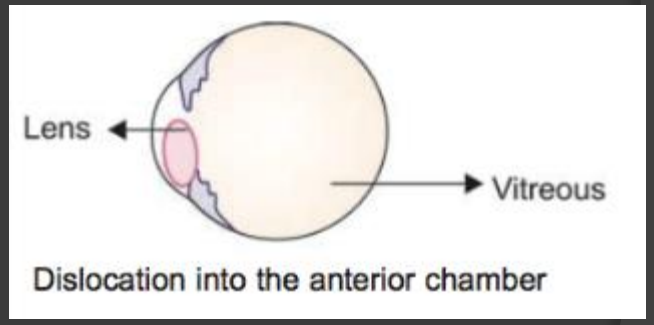
Treatment

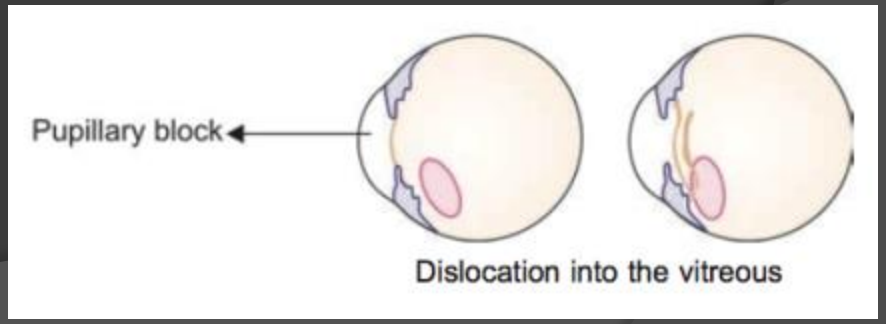
- Nil if v/a mantained
- OR for lens replacement if opacity/complications

Complications

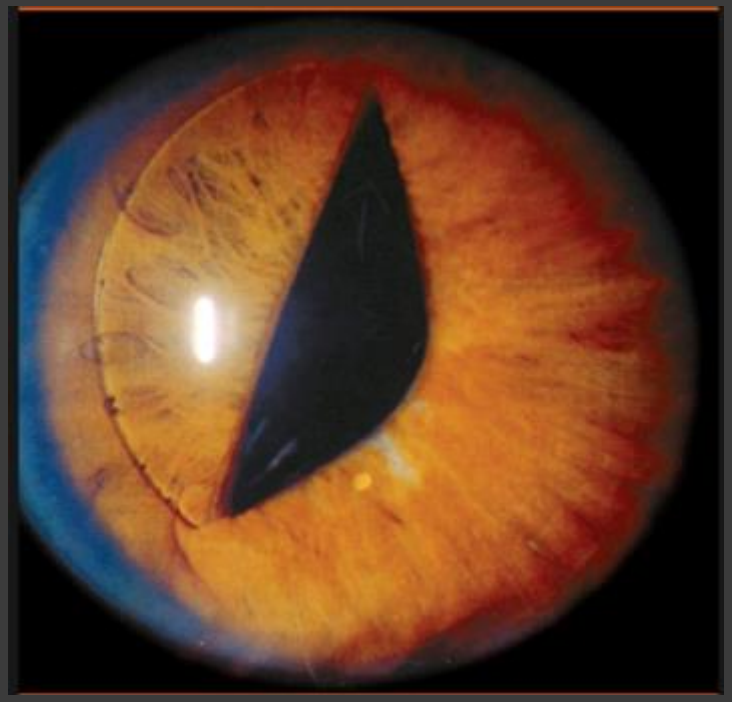
- Glaucoma

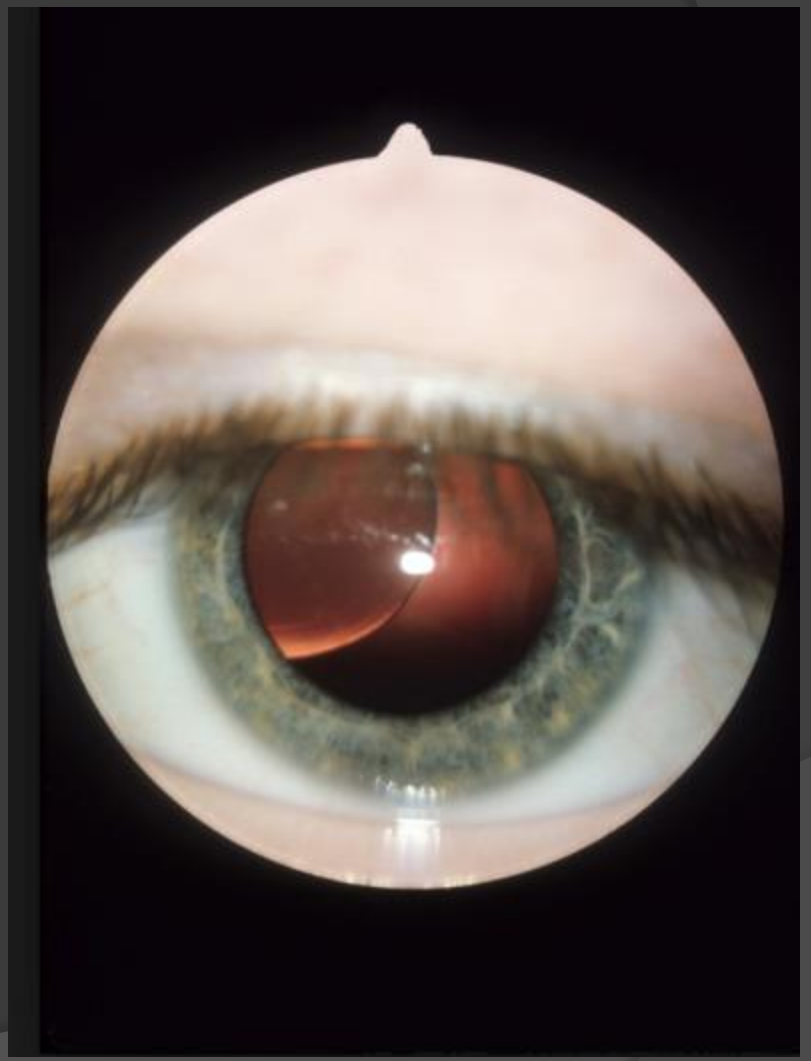


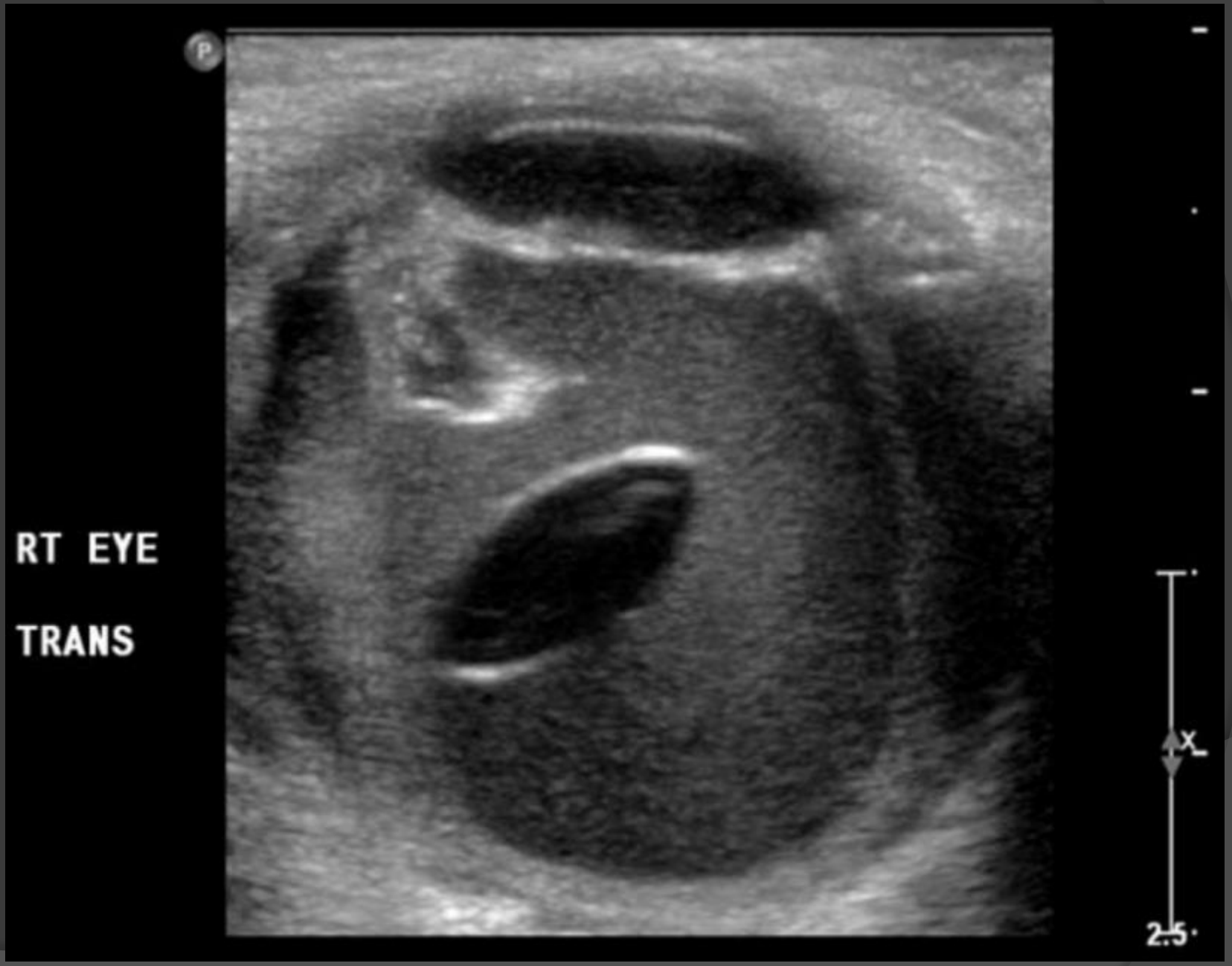




Lens Dislocation

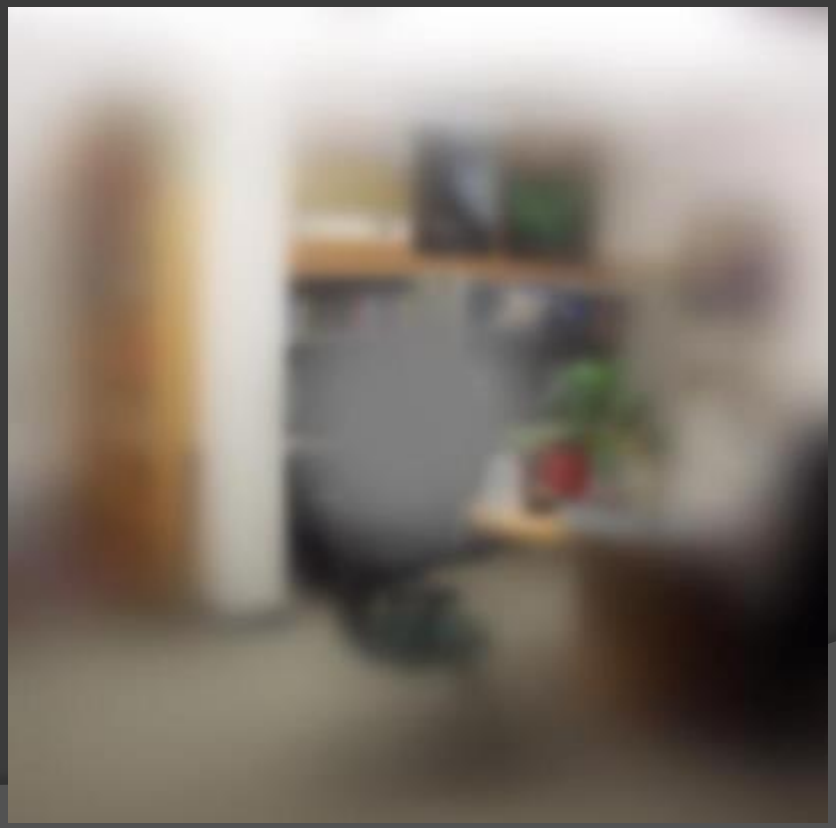





RT EYE
TRANS
2.5

Case 2

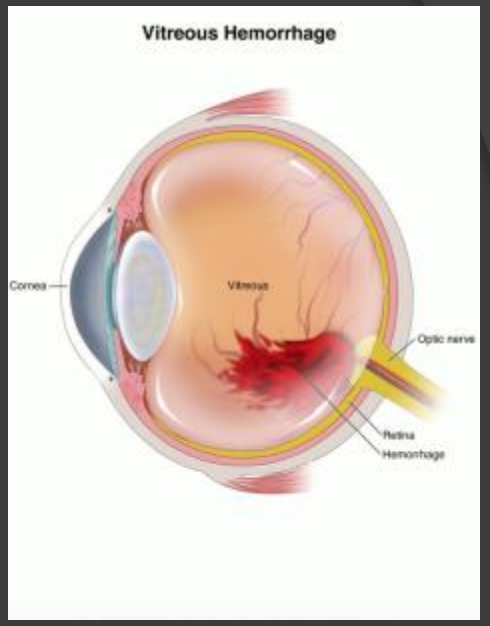
- 65 yo female, loss of vision in right eye while on her phone 1 hour ago, v/a only CF @ 3ft on presentation to ED.



Sudden Severe Vision Loss

Vitreous Hemorrhage

- Blood in vitreous cavity
- RD, PVD, Retinopathy, CRVO, Trauma
- ?anticoags

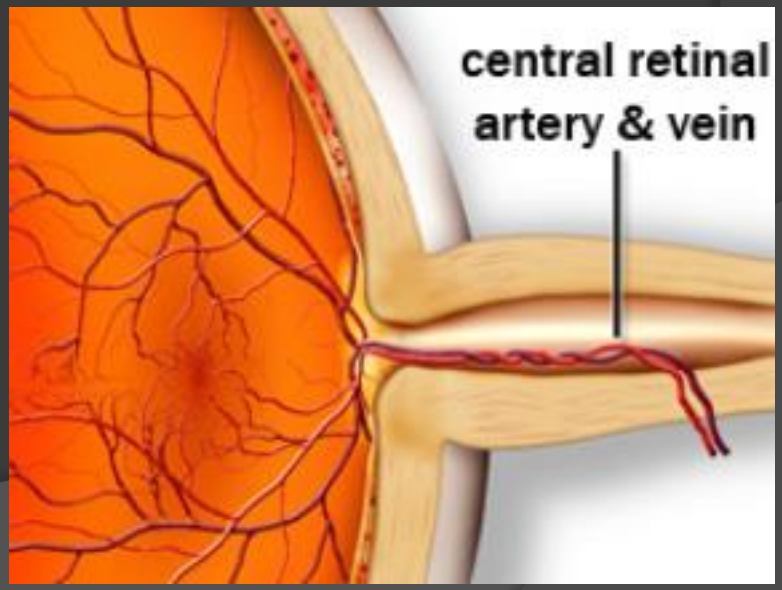


CRVO

- Obstruction of retinal venous outflow (At or prox to lamina cribrosa)
  - Thrombotic vs embolic
- 90%>50, Vascular risk fx
- Young: OCP, Collagen vasc disease, coagulopathy
- Ischemic (33%) vs Non-ischemic (67%)

CRAO

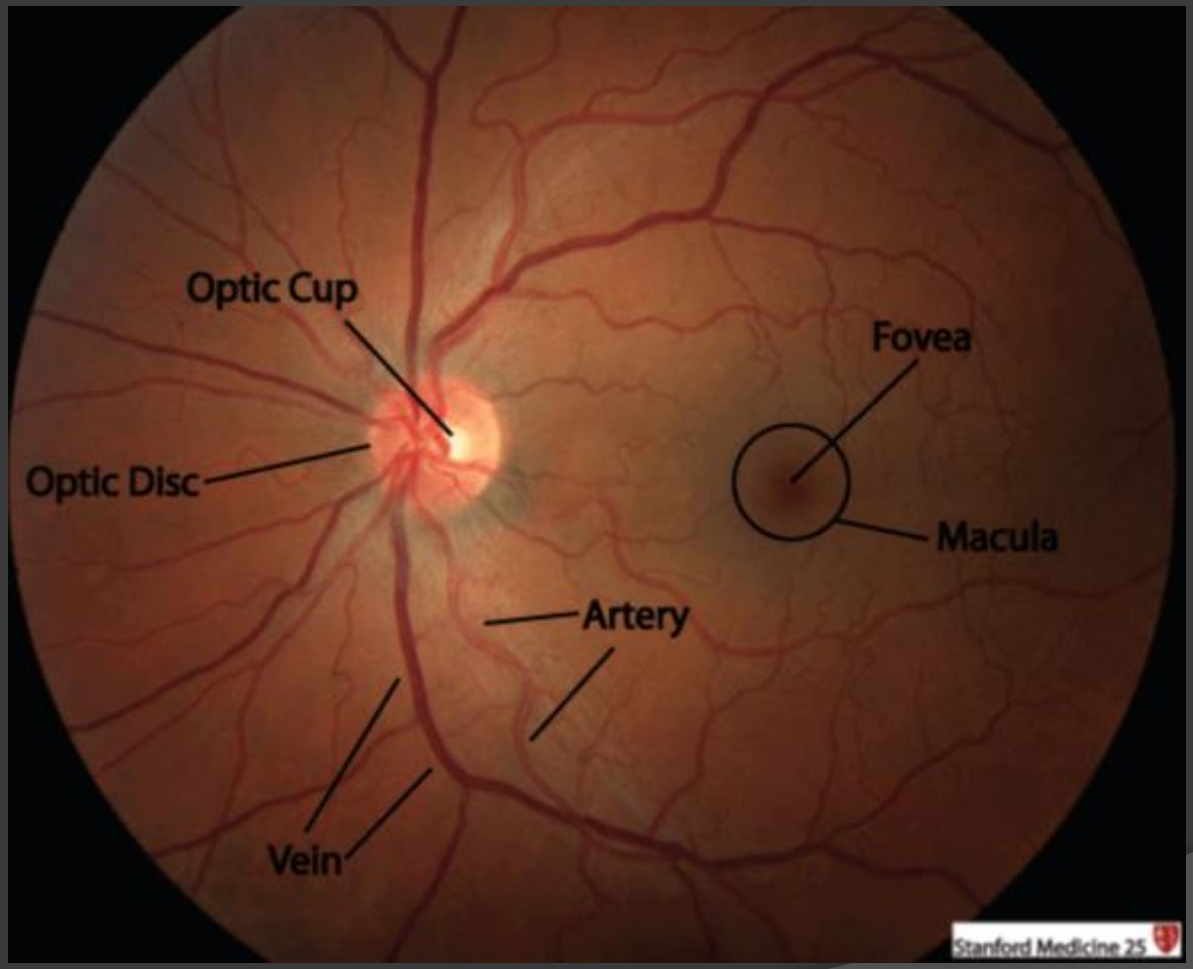
- Obstruction of arterial circulation of retina (At or prox to lamina cribrosa)
  - Embolic/Thrombotic
- 50-70, A. Fib, GCA, Vascular risk fx
- Anoxia = irreversible damage within ~90min



Presentation

	Vitreous Hemorrhage	CRVO	CRAO
Vision	Floaters -> LP (min to hours)	Sudden (sec to min), <20/200 (scotoma to CF/LP) *Non-Ischemic typically not as severe	Sudden (sec), CF -> LP/No LP ?Amaurosis prior
Pupils	Reactive, (-) RAPD	Reactive, (+) RAPD	Dilated, not/minimally reactive, (+RAPD)

Presentation



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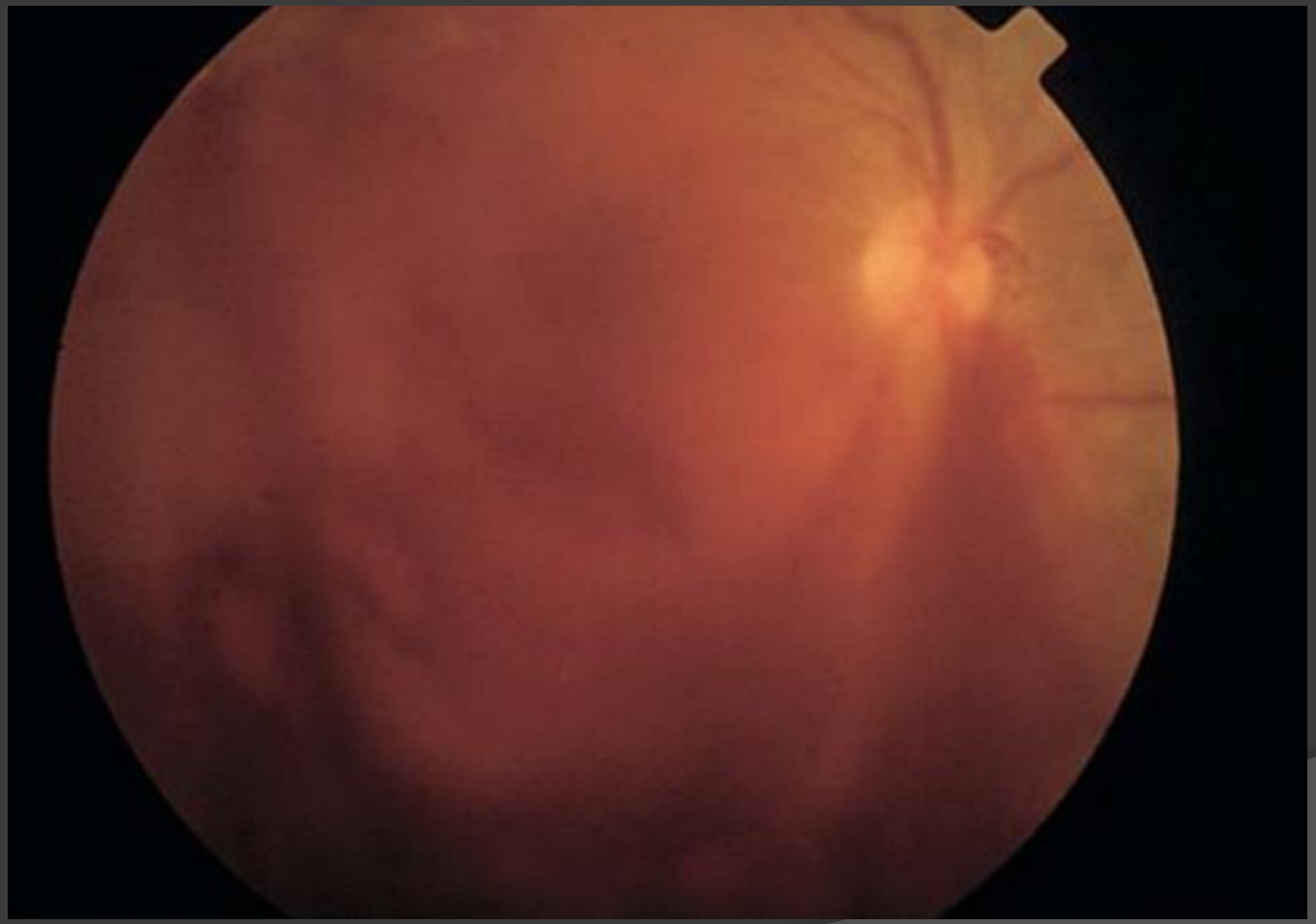

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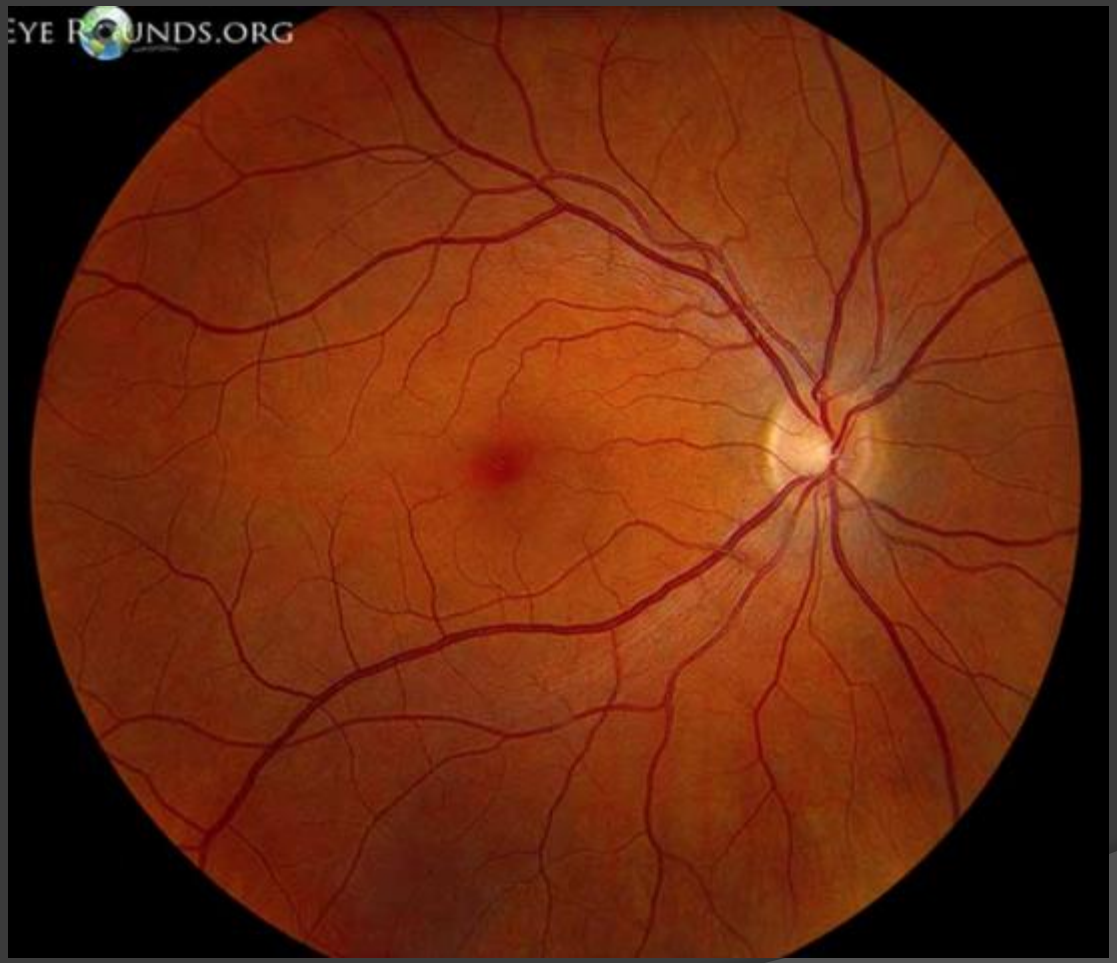

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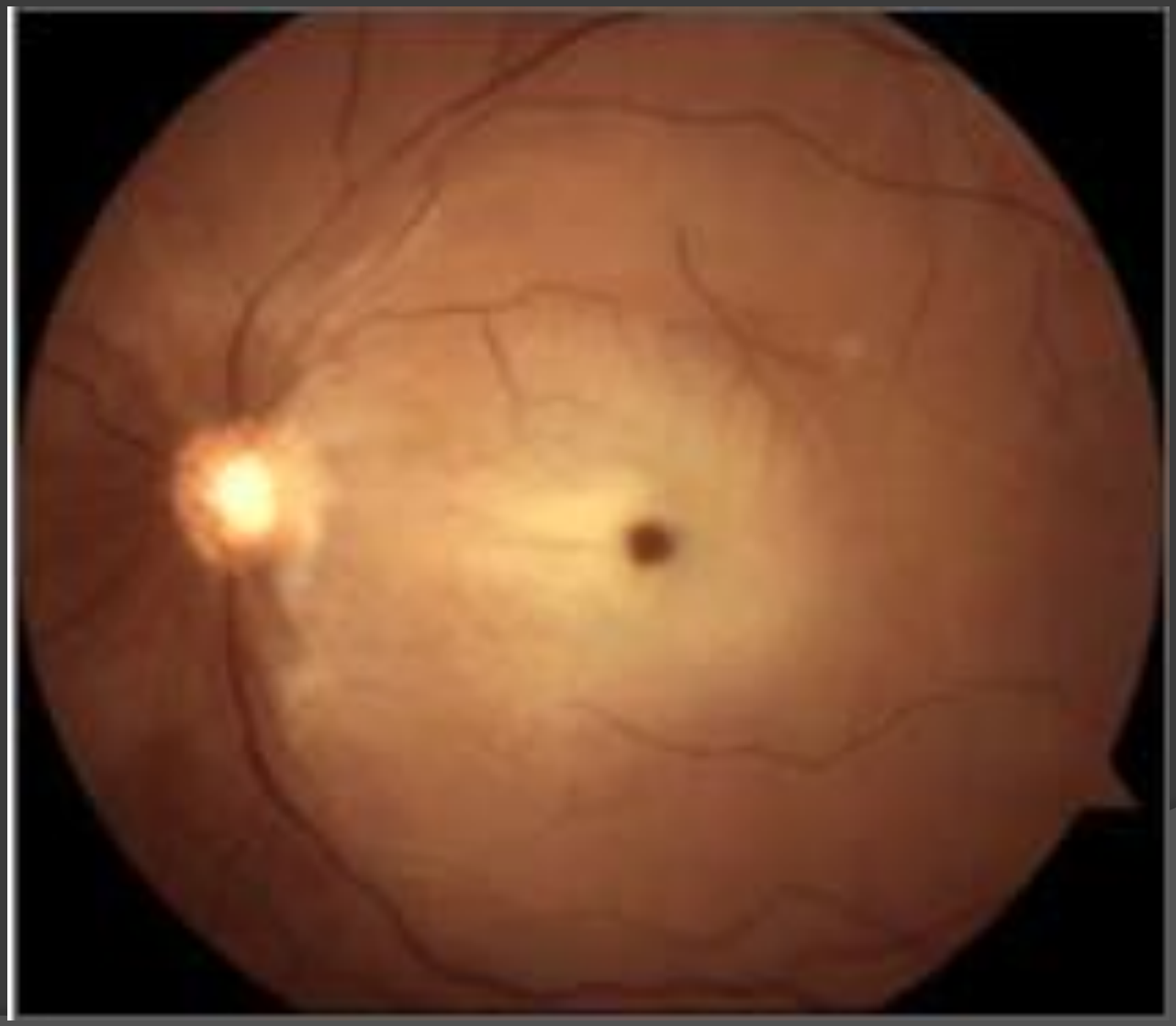

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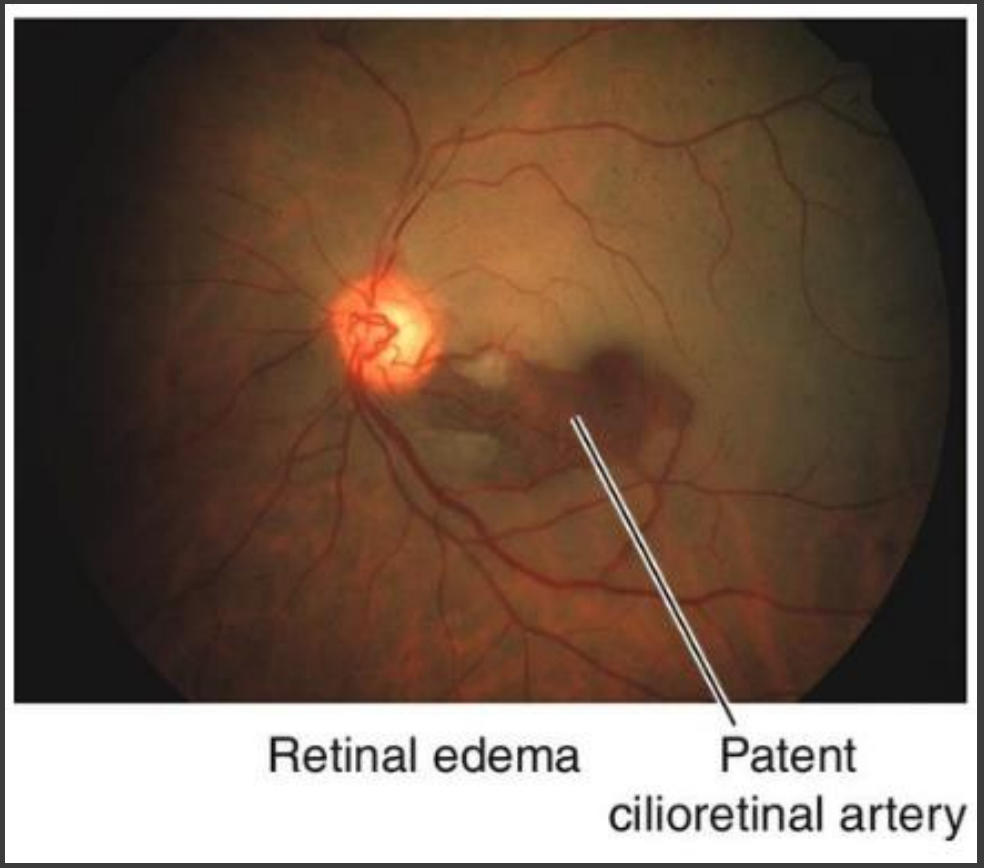

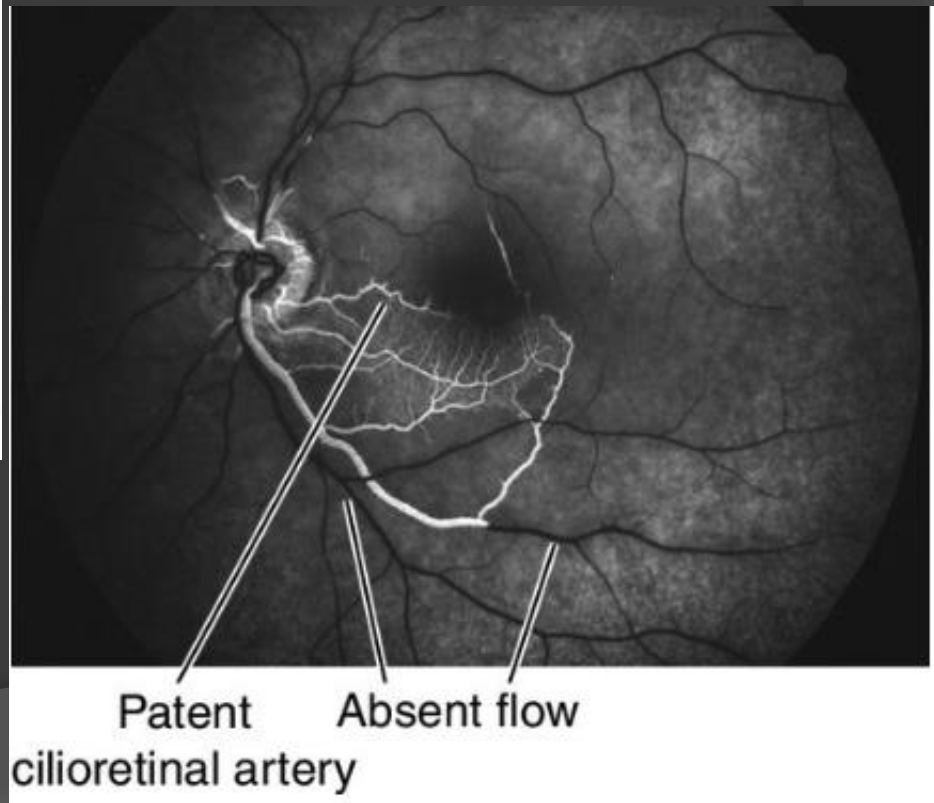

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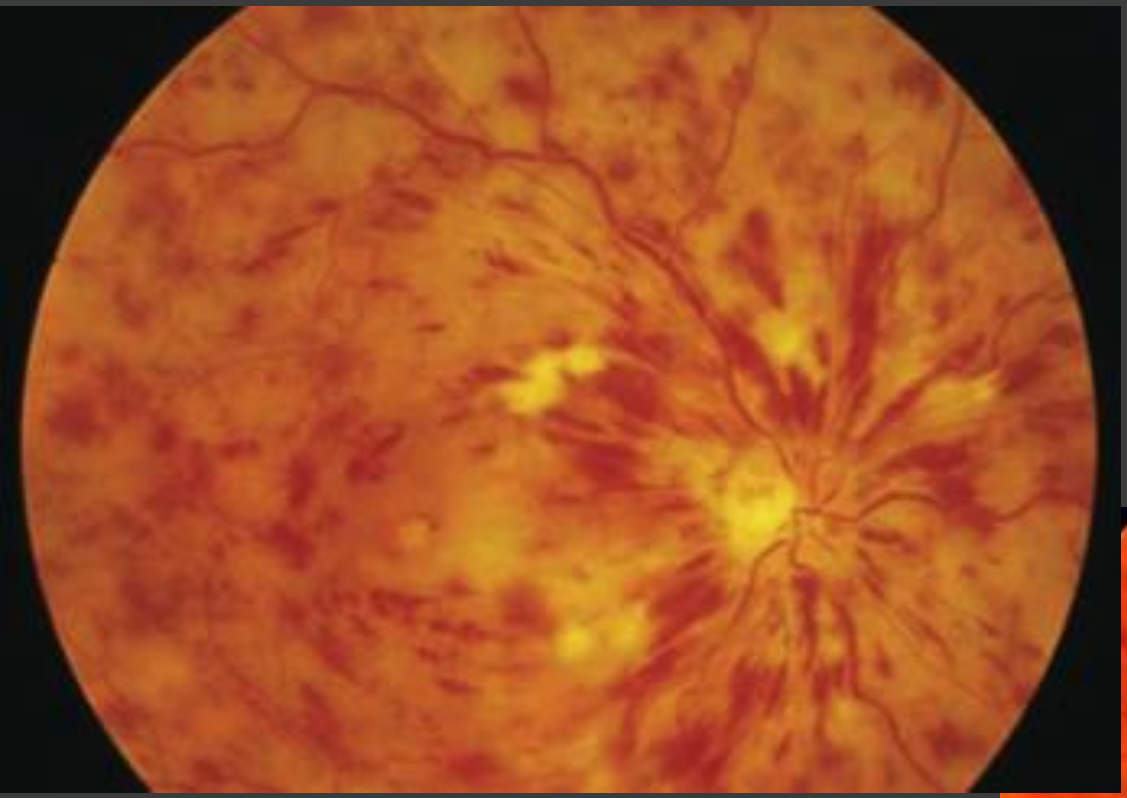
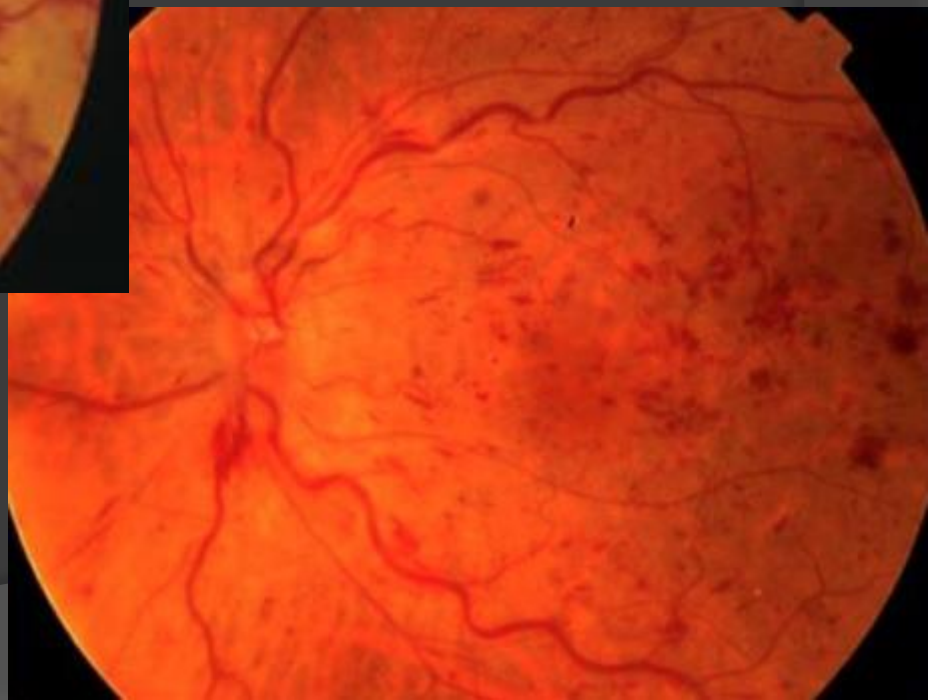




Summary of Fundi

	Vitreous Hemorrhage	CRVO	CRAO
Fundi	Normal/Hazy -> LP	Dilated, Tortous veins, Hemorrhages, Cotton Wool spots “Blood and thunder	Pale/milky white retina, minimal/absent arteries, cherry red spot

Work- Up and Management

Vitreous Hemorrhage

- ?Anti-coags
- Elevation of head
- Call ophtha

CRVO

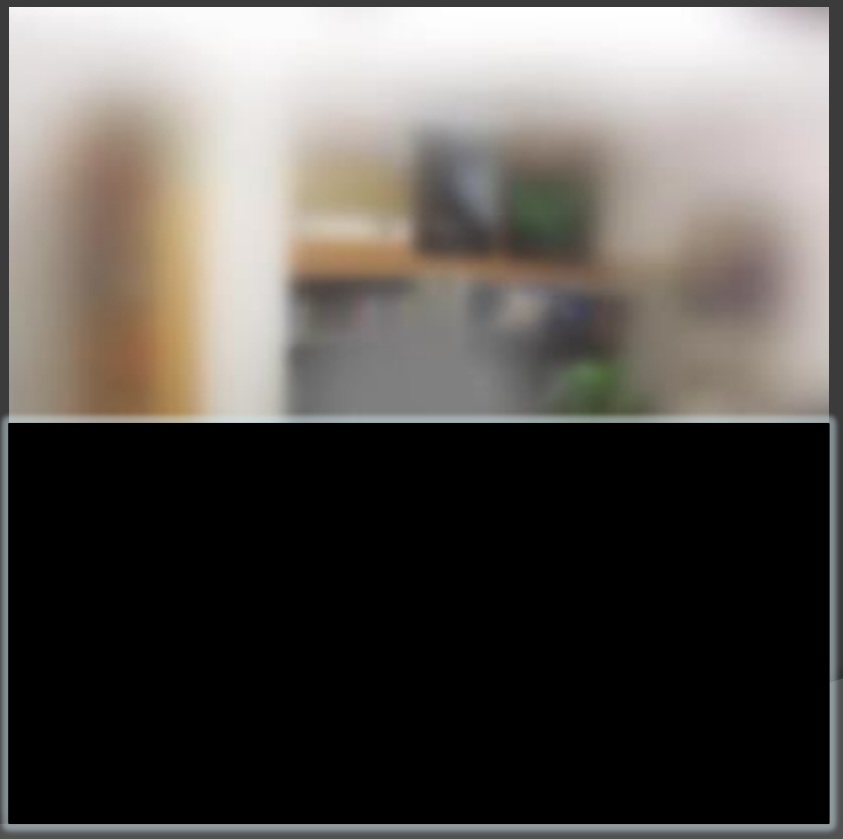
- Thrombosis w/u, ?underlying cause
- Decrease IOP
- Call Ophtha

CRAO

- CALL OPHTHA
- Stroke W/U
- Relieve spasm/dislodge embolus
  - Digital Massage/Acetazolamide
  - Breath into paper bag

Case 3

- 70 yo male complaining of “dark shadow” covering the inferior half of left visual field for 1 day.



Sudden Painless Field Loss

BRVO/BRAO

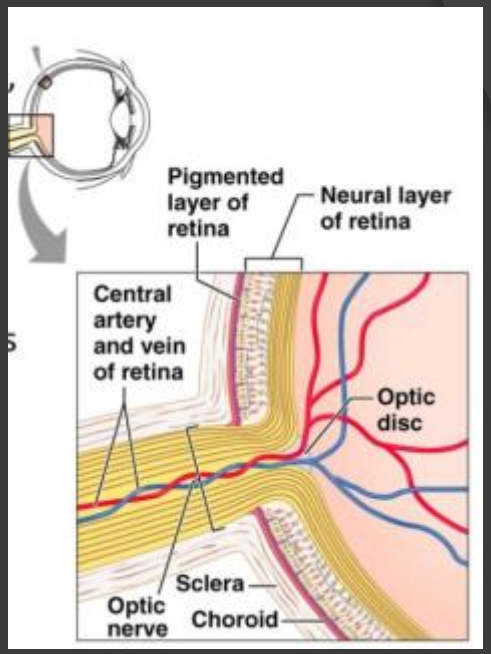
- Superior Temporal

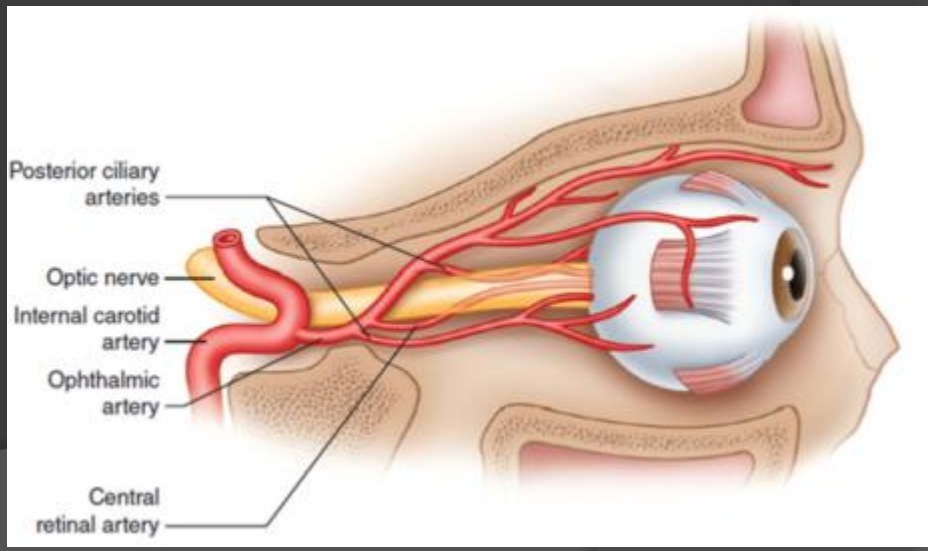
Retinal Detachment

- Rhegmatogenous, exudative, tractional
- Myopia, Age > 45, Previous hx

AION

- Arteritic (5-10%)
  - Infarction of retrolaminar optic nerve from occlusion/decreased perfusion of posterior ciliary arteries
- Non-arteritic (90-95%)
  - “Disc at risk”/Poor flow

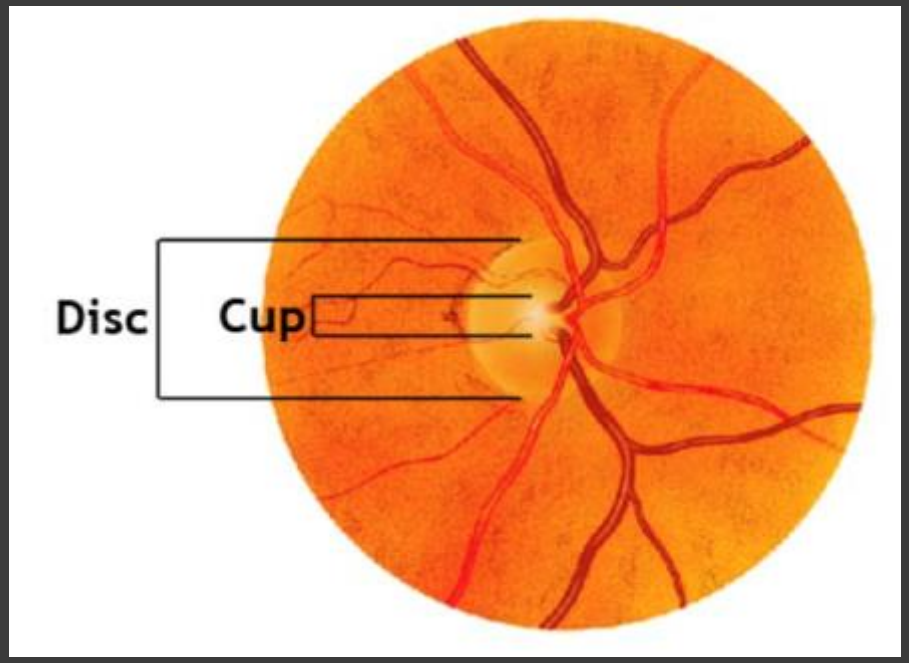


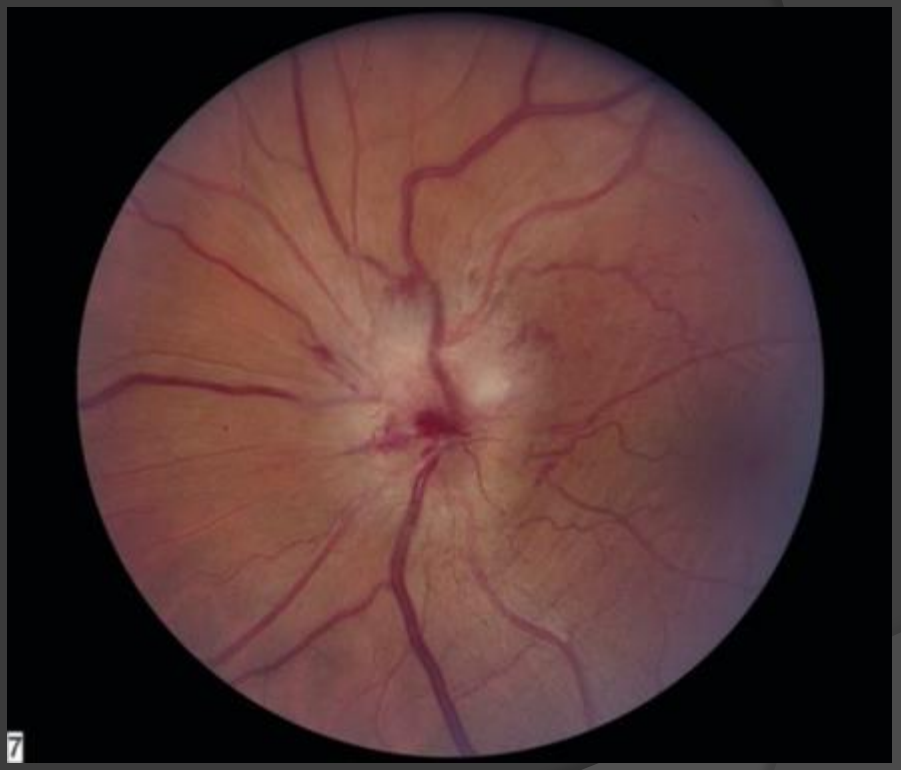


Presentation

	Retinal Detachment	Non-arteritic AION	BRVO	BRAO
Vision	Flashes/Floaters/Curtain	Decreased V/A (40% < 20/200), Chromotopsia, altitudinal VF loss	Asymptomatic -> Scotoma/blurring of VF affected	Decreased VA -> blurring/VF loss
Pupils	Reactive, +/- RAPD	Reactive, +RAPD	Reactive, +/- RAPD	Reactive, **+**/- RAPD
Fundi	grayish-white, raised retina	Pallid disc swelling, venous dilation,	Same as CRVO limited to branch	Same as CRAO limited to branch

Presentation





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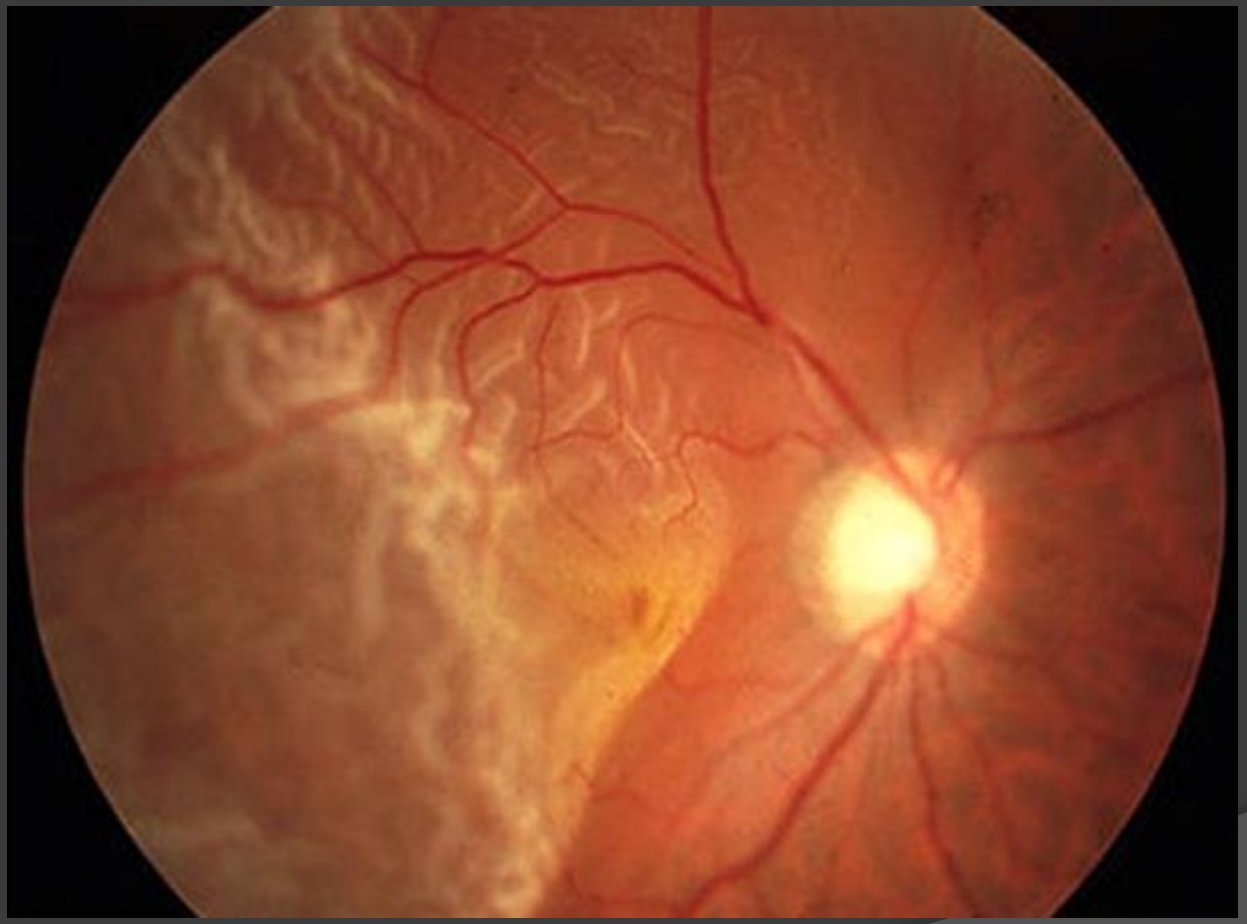

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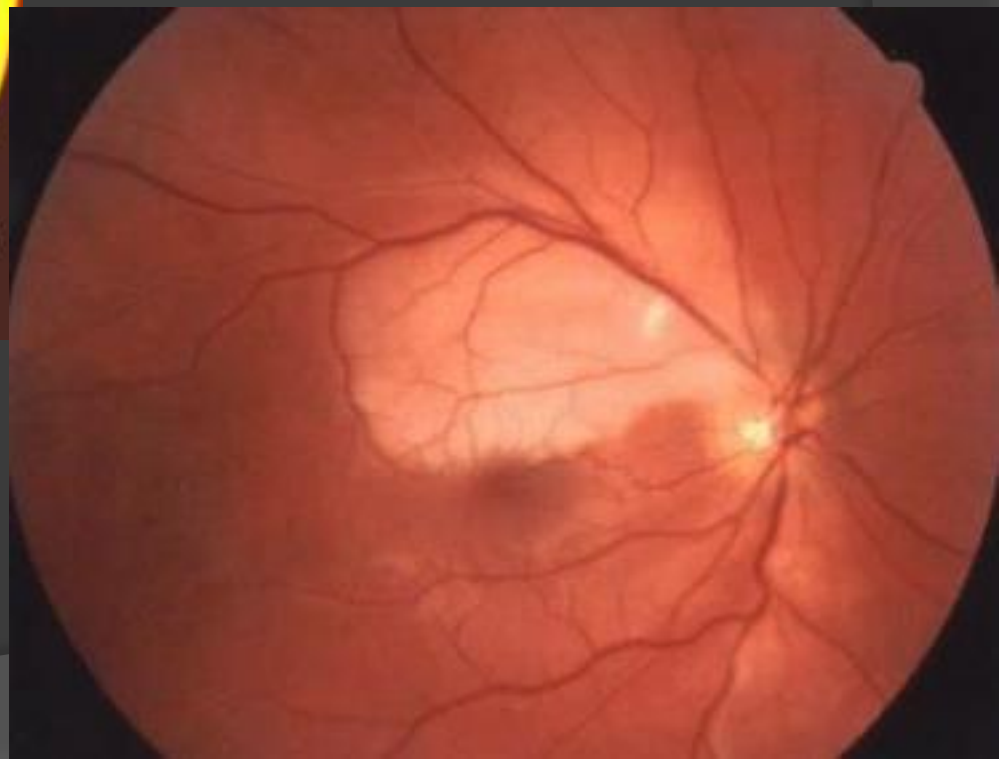


Work – Up and Management

Unilateral VF Defect

- Call Ophtha - follow-up within 12-24h depending
  BRAO/BRVO
  - Similar to Central

Retinal Detachment

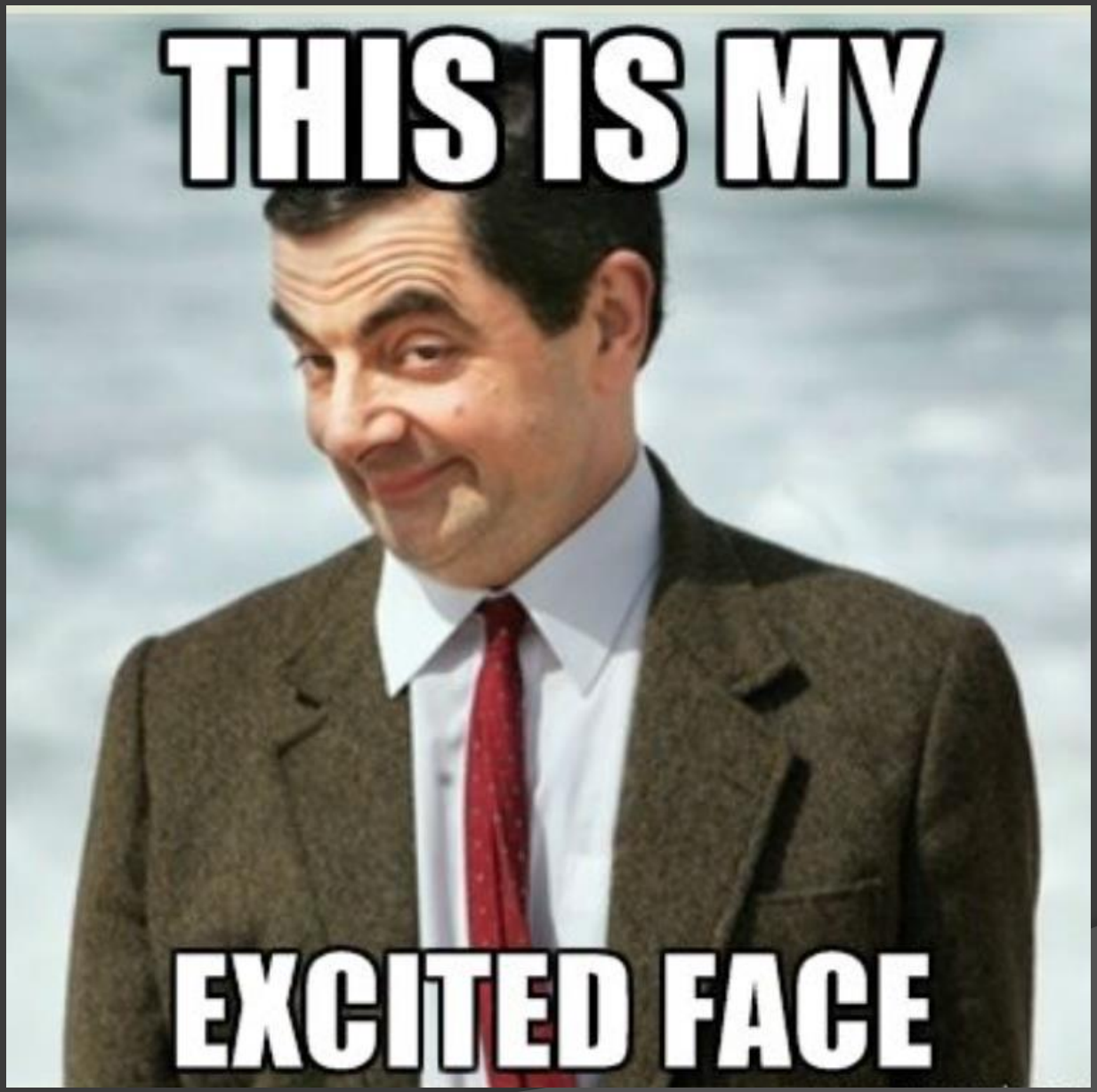
- Follow – up?
  - 1. Hollands H, et al. Acute-Onset Floaters and Flashes: Is this Patient at Risk for Retinal Detachment? JAMA 2009;302(20):2243-2249.
- Laser/OR

AION

- Rule out GCA
- NAION – Not enough evidence for steroids, Anecdotal evidence for ASA

Summary

- Detailed history
- Vital signs of the eye
- Generalized vs VF
- Curtain defect does not = RD
- RAPD = BAD = Retina/Neural Pathway
- Acute VF loss = Ophtha
- Majority with acute severe visual loss will require urgent if not emergent follow-up


THIS IS MY
EXCITED FACE

References

- Friedman, Neil J., Peter K. Kaiser, and Roberto Pineda. *The Massachusetts Eye and Ear Infirmary Illustrated Manual of Ophthalmology*. Philadelphia, PA: Saunders/Elsevier, 2009. PDF.
- Hockberger, Robert S., and Ron M. Walls. "Acute Visual Loss." *Rosen's Emergency Medicine - Concepts and Clinical Practice 8th Ed.* Ed. John A. Marx. 8th ed. Vol. 1. N.p.: Elsevier, n.d. 968-81. Print.
- Hollands H, et al. Acute-Onset Floaters and Flashes: Is this Patient at Risk for Retinal Detachment? JAMA 2009;302(20):2243-2249.
- Jogi, Renu. *Basic Ophthalmology*. New Delhi: Jaypee Brothers Medical, n.d. PDF.
- Long, Brit. "Acute Visual Loss in the Emergency Department: Pearls and Pitfalls - Emdocs." *Emdocs*. Emdocs, 26 Apr. 2016. Web. 10 Oct. 2016.
- Tintinalli, Judith E. "Eye Emergencies." *Tintinallis Emergency Medicine A Comprehensive Study Guide*. 7th ed. N.p.: McGraw Hill, 2011. 1517+. Print.
- Tsai, James C. *Oxford American Handbook of Ophthalmology*. Oxford: Oxford UP, 2011. Print.