GRAND ROUNDS

SUNY DOWNSTATE OPHTHALMOLOGY

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HISTORY

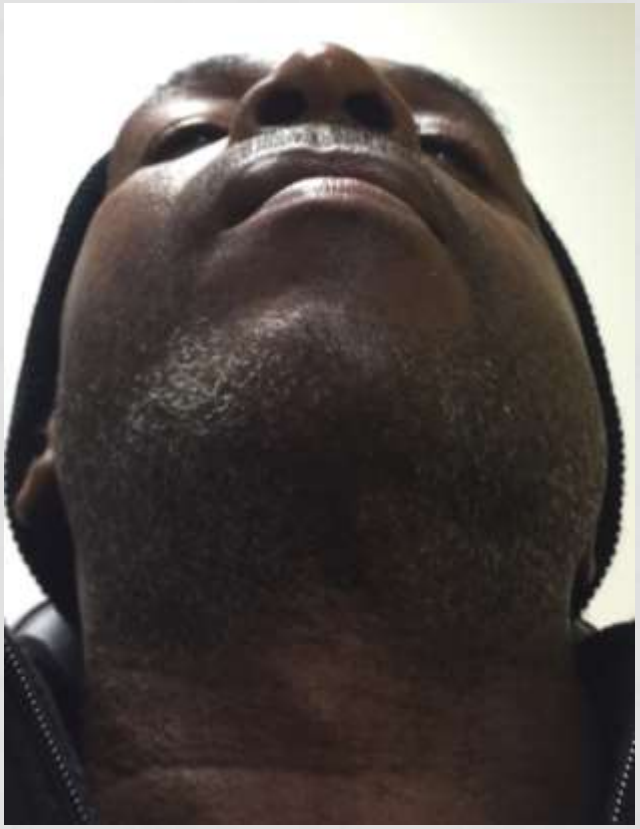
53 y/o black male presents to KCHC ED with complaints of left sided headache and "shadow in his vision" from left eye s/p trauma 2 weeks ago.

- Likely blunt trauma
- Vision mildly blurred in left eye
- No flashes, curtains or veils in either eye
- No pain with EOMs
- No double vision

HISTORY, CONT'D

- PMHx:
  - (+) HTN
- Ocular Hx:
  - Remote hx of trauma >15 yrs ago to R. "eye socket" s/p surgical repair and "pin" placement
- Gtts: none
- Surgical Hx: none
- Family Hx: (-) glaucoma, blindness
- Social Hx: (-) x 3
- Meds: none
- All: NKDA

EXAM: EXTERNAL



CRANIAL NERVE EXAM

CN II: anisocoria with (+) rAPD OS

CN III: EOMs full, no ptosis

CN IV: full OU

CN V: (+) hypesthesia in v1, v2 distribution

CN VI: full OU

CN VII: decreased left forehead crease, flattened left nasolabial fold

CN VIII: hearing intact by gross exam b/l

CN IX – XII: full and intact OU, no abnormality of tongue movements, uvula symmetrically elevated

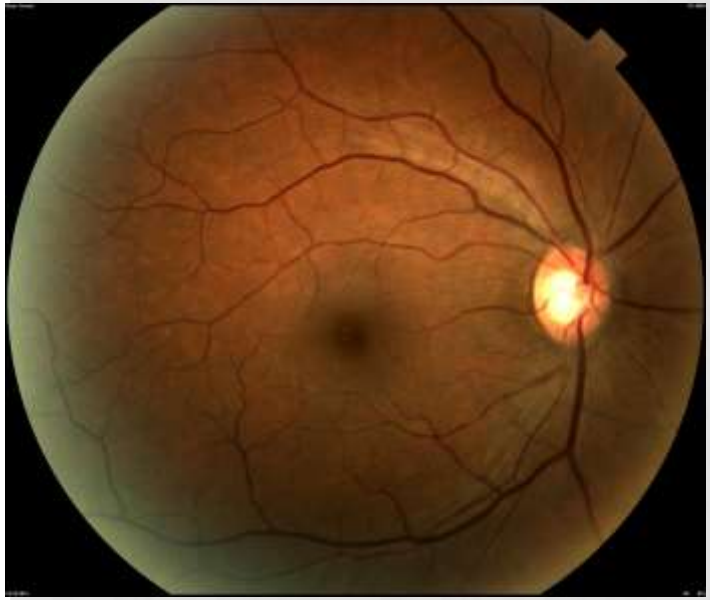
EXAM

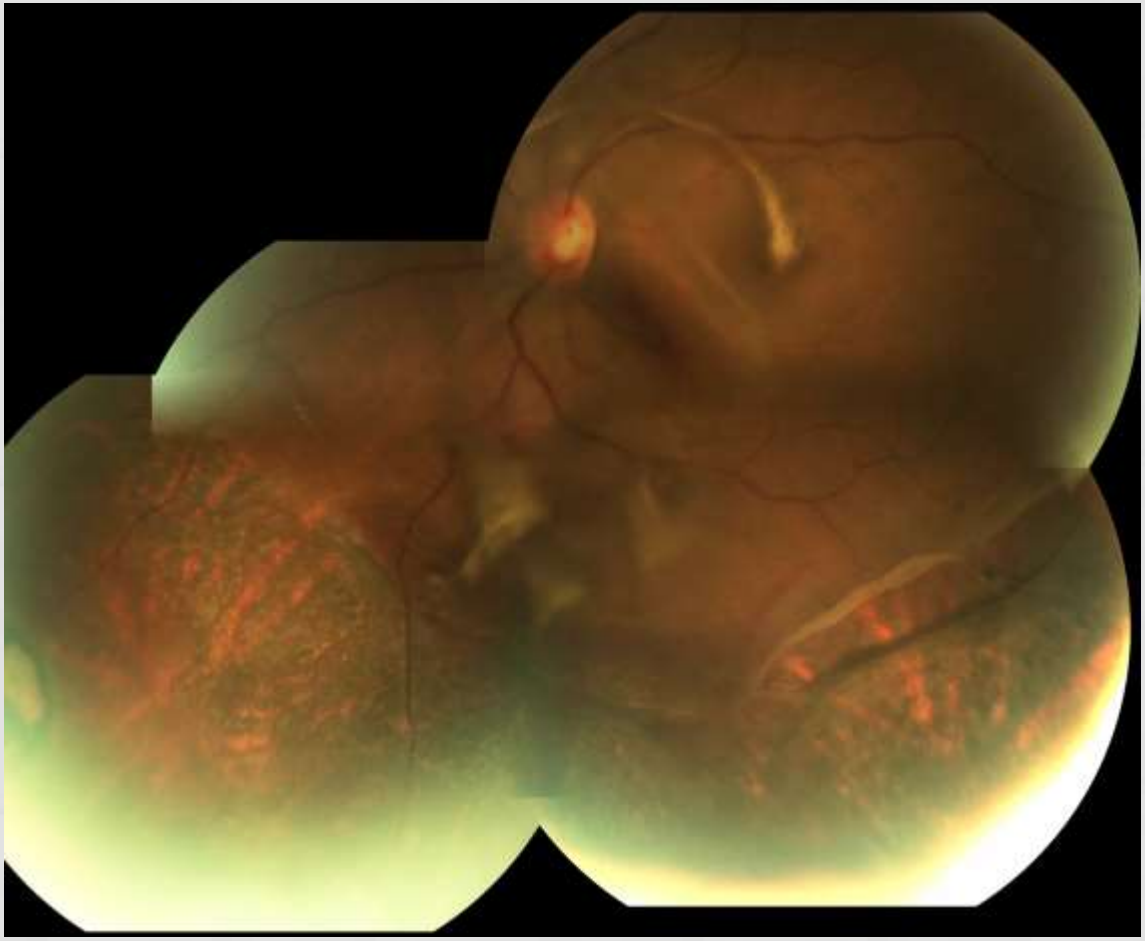
- nVAcc (+2.50): OD 20/20, OS 20/30
- CVF: full OU
- EOMs: full OU, no pain or diplopia
- Pupils: OD – 4-2 and brisk; OS – sluggish with trace rAPD
- Tpen: 9/7 @ 7:30pm

PORTABLE SLIT LAMP EXAM

- LLL: mild MGD OU
- C/S: white/quiet OU, no subconj. Hemorrhage, no conj. Fluorescein uptake
- K: clear OU
- A/C: deep/quiet OU
- I/P: RR OD, **dilated and sluggish with trace rAPD OS**
- L: 1+ NS OU

DILATED FUNDOSCOPIC EXAM





OD

OS

NEXT STEP/MANAGEMENT?

- Laser photocoagulation?
- Cryo?
- Surgical Options?
  - Pneumatic retinopexy
  - Pars Plana Vitrectomy
  - Scleral Buckle
  - PPV + scleral buckling

GIANT RETINAL TEARS

- Break in neurosensory retina extending 3 clock hours or greater in the presence of a posterior vitreous detachment
- Most frequently found posterior to ora (82%)
  - At the equator (15%)
  - Posterior to the equator (3%)
- Classify by location (Scott) or etiology (Schepens)
  - Idiopathic
  - Traumatic
  - Lattice-related
  - iatrogenic

GIANT RETINAL TEARS: EPIDEMIOLOGY

- British Giant Retinal Tear Epidemiology Study:
  - Annual incidence of GRT 0.094 – 0.114 per 100,000
  - Mean age 42
- Scottish RD Study:
  - Annual GRT incidence of 0.15 per 100,000
  - 1,202 RRD over 2 years – GRT were 1.5% of RRD with PVDs
- Tends to occur more commonly in males
- Right eyes more frequently affected
- Bilateral non-traumatic GRTs at presentation 0-13%
- Most commonly idiopathic (55-65%)

RISK FACTORS

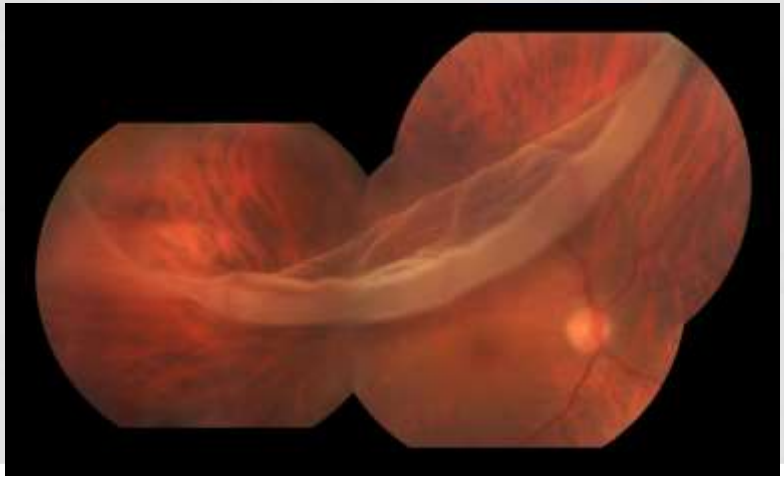
- Trauma
  - 16.1% of GRT cases in BGEES (32% of pediatric cases)
  - Blunt (most common) vs. penetrating vs. globe rupture
  - Unclear pathophysiology:
    - Blunt Trauma:
      - Hemorrhagic necrosis and retinal fragmentation → atrophic changes → retinal break
      - Often delayed until weeks after initial trauma
      - Most commonly inferotemporal and superonasal
    - Open Globe:
      - Due to vitreous traction
      - Almost always superior
- Surgery
  - Cataract surgery
  - Vitrectomy
  - Refractive surgery(less common overall; usually in high myopes)
- Myopia:
  - 9.7% in BGEES had >6D myopia
- Hereditary Vitreoretinopathy
- Others: lens coloboma, buphthalmos, microspherophakia

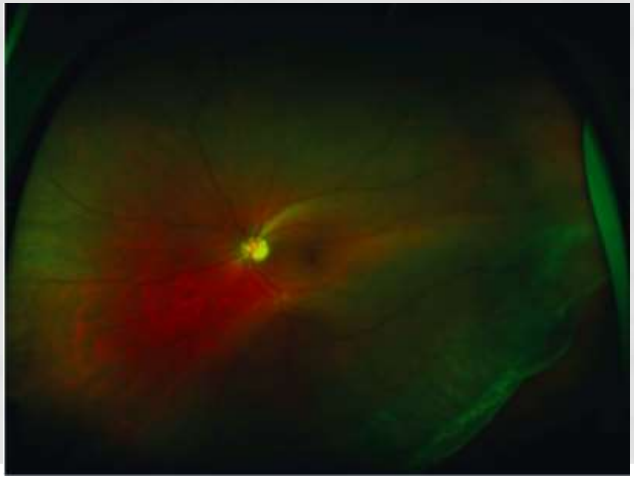
SYMPTOMS

- Decreased Visual acuity:
  - Varies, depending on presence of RD (mac-on vs off)
  - BGEES: presenting VA 20/40+ in 40%, 20/200- in 16%
- Floaters
- Photophsias

EXAM

- Tear of 3 clock hours or more IN THE PRESENCE OF A PVD
- Partial or complete inversion of tear, creating a posterior flap
- +/- RD
- Tobacco dust in vitreous
- +/- vitreous hemorrhage





WHY IS GRT SO BAD?

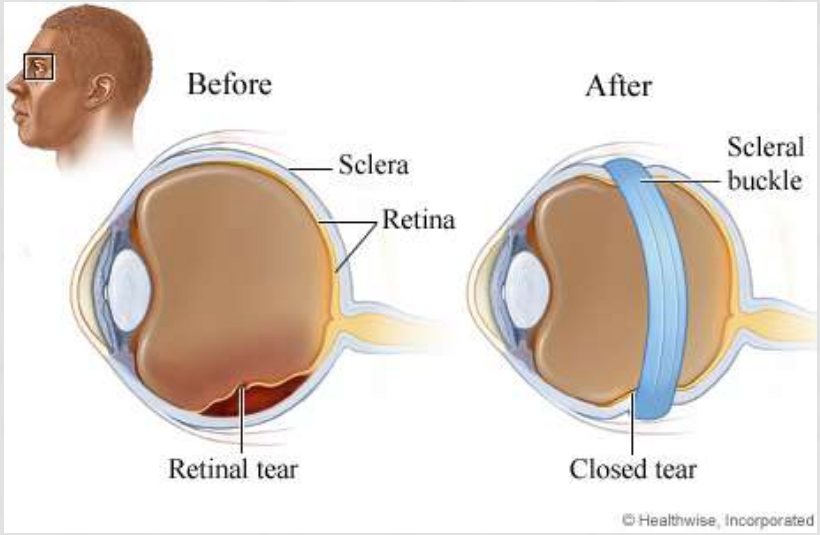
- HIGH association with RD
  - 44-92% with fovea-off RD at presentation
- Proliferative Vitreous Retinopathy (PVR):
  - Exposed RPE cells come into contact with vitreous cytokines
  - RPE cells proliferate, migrate onto vitreous scaffold
  - Fibrotic membranes extend from vitreous scaffolding and create significant traction on retina → retinal detachment
- Risk of *retinal slippage* during surgical repair
  - Posterior displacement of fluid underneath retina
  - More exposed RPE → higher risk PVR
  - Difficulty unfolding GRT
- **VERY DIFFICULT TO FIX**

MANAGEMENT: NON-SURGICAL

- Laser Photocoagulation:
  - Usually only in cases where tear is < 1 clock hour **OR** if no RD is present
  - Requires close monitoring of patient

MANAGEMENT: SURGICAL

- Scleral buckle:
  - Buckle placed around sclera to force wall of the eye closer to torn or detached retina
  - Allows RPE to pump subretinal fluid out and retina to re-attach
  - Series of 156 rhegmatogenous RDs treated solely with scleral buckling: 3 GRTs, NONE with successful repair



MANAGEMENT: SURGICAL

Ophthalmic Surg Lasers Imaging Retina. 2014 Sep-Oct;45(5):421-7.

Vitrectomy alone in the management of giant retinal tears.

Jain N[1], Kozak JA, Niziol LM, Musch DC, Zacks DN.

- Retrospective Review:
  - Consecutive cases of vitrectomy alone for GRT detachment at U of M from 1992-2012
  - Primary outcome: re-attachment rate at 3 months
  - 41 eyes from 40 patients:
    - Single surgery re-attachment rate was 83% at 3 months
    - No difference between phakic and non-phakic eyes

PPV: OIL VS. GAS?

- Silicone oil: primary retinal attachment rate between 74% and 96%
  - Traumatic GRTs with higher success rates
- Al-Khairi, et al:
  - Rate of recurrent RD in eyes s/p gas tamponade was HIGHER (32.1%) compared to eyes s/p silicone oil tamponade (12.5%)
- Batman, et al:
  - 47 eyes with GRTs receiving either C3F8 gas or silicone oil for tamponade after PPV without buckling
  - Both groups with similar baseline characteristics
  - No statistically significant different in final posterior reattachment!

TO BUCKLE OR NOT TO BUCKLE?

- Controversial
- Goezinne, et al:
  - Retrospective study of 30 patients
  - Absence of scleral buckle = statistically significant risk factor for retinal re-detachment
- Al-Khairi, et al:
  - Larger retrospective series of 117 patients
  - Placing encircling buckle was NOT predictive of re-detachment
- Conclusion:
  - Unclear if there is benefit with scleral buckle in addition to PPV

WHAT ABOUT PHAKIC PATIENTS?

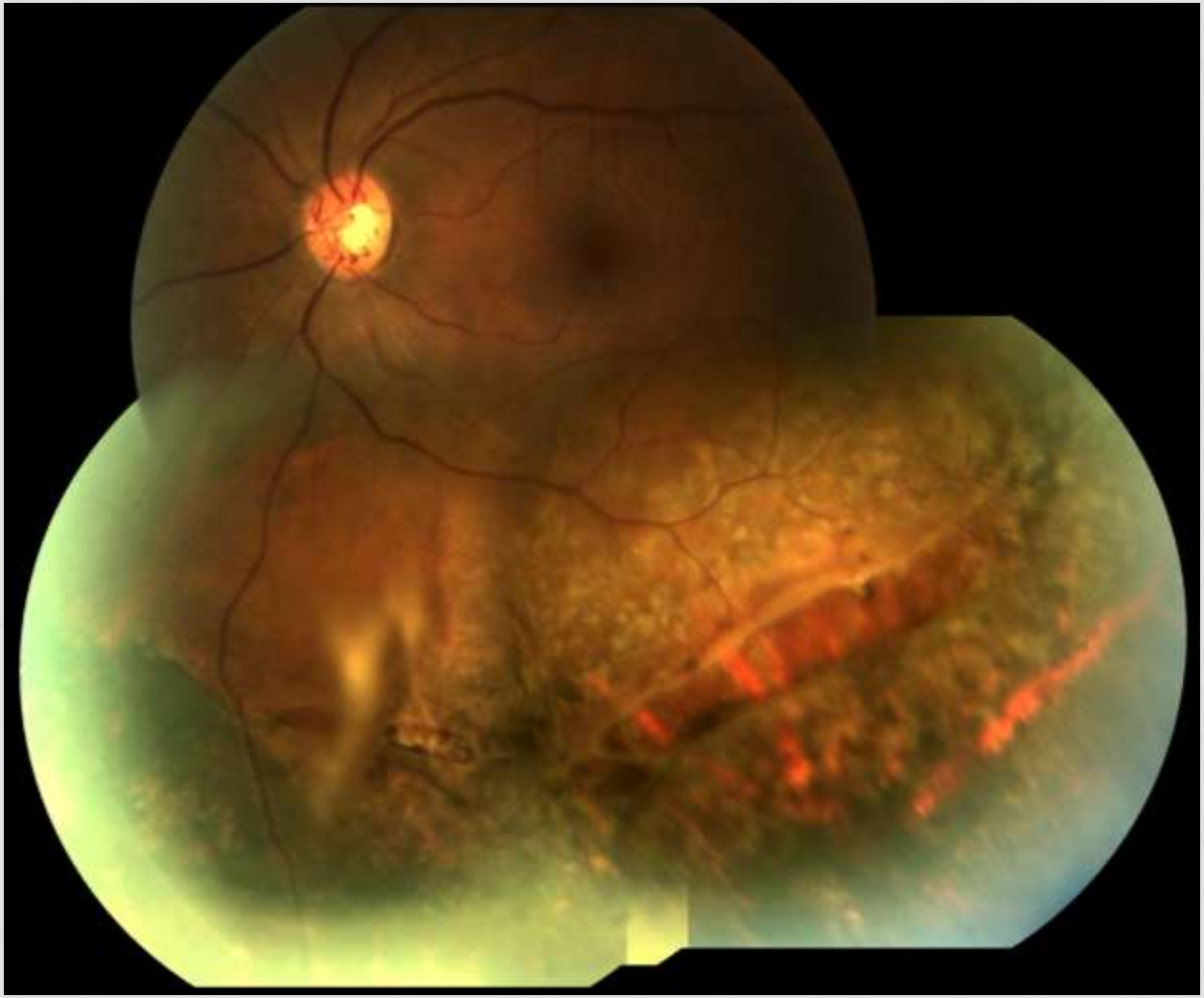
- What to do if you have RD + GRT in phakic patient?
- PPV with removal of vitreous base difficult without traumatizing lens
- Post-op complications often cause cataract

- Lensectomy often performed in TRAUMATIC GRTs

WHAT ABOUT THE FELLOW EYE?

- Freeman:
  - 16 year observation of fellow eyes of 226 nontraumatic GRTs
  - 3.7 year follow up
  - 14 (11.3%) of 124 untreated fellow eyes without GRT on initial presentation developed GRT
  - Risk of RD unrelated to GRT in fellow eye
- Prophylaxis:
  - 360deg laser or cryo
  - 360deg scleral buckle if RD develops

BACK TO OUR PATIENT



REFLECTIVE PRACTICE

- This case demonstrated the importance of a thorough fundoscopic exam in cases of trauma
- This case allowed me to learn more about a rare disease entity and its presentation, treatment modalities, and complications
- This case allowed me to review the literature for management of this disease entity, while keeping in mind the prognosis and expectations of my patient

CORE COMPETENCIES

- Patient care: The case involved thorough patient care and careful attention to the patient's presenting history. Once diagnosed the patient received proper management and follow up care.
- Medical Knowledge: This presentation allowed me to review the presentation, differential diagnosis, proper evaluation, workup and treatment options for Giant Retinal Tears
- Practice-based Learning and Improvement: this presentation included a literature search of current studies in the clinical presentation of Giant Retinal Tears
- Interpersonal and Communication Skills: the patient was treated with respect and every effort was made to communicate with the patient in a timely manner.
- Professionalism: The patient was diagnosed in a timely manner. She was informed of her diagnosis and explained current treatment options.

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THANK YOU!

Dr. Elmalem
Dr. Tseng

To our patient
Dr. Silverman
Dr. Temnogorod
Dr. Dua
Dr. Kotlyar