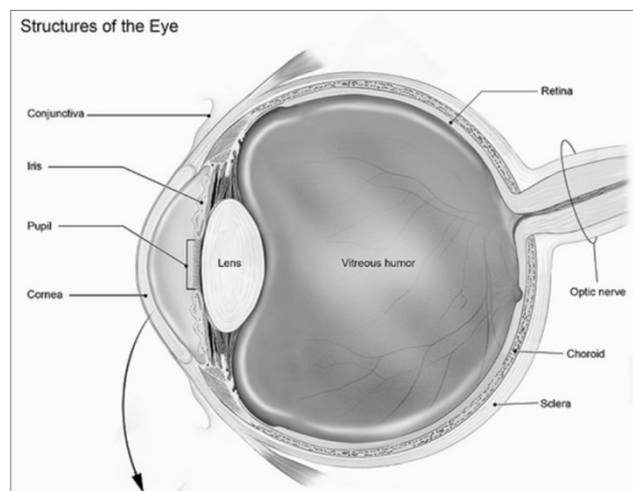


Common Eye Injuries

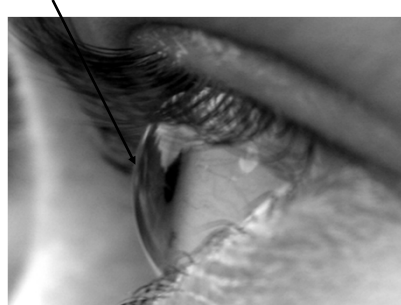
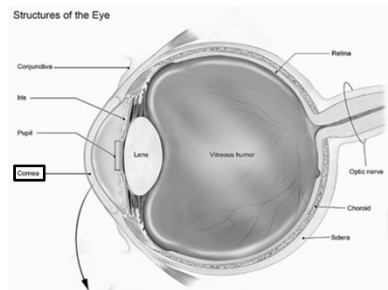
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Brief Overview of Eye Anatomy



Source: National Eye Institute

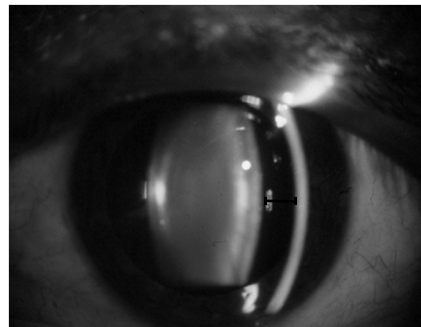
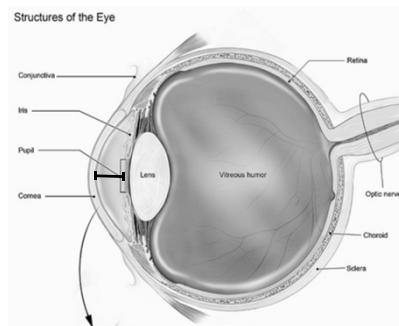
Cornea



Source: National Eye Institute

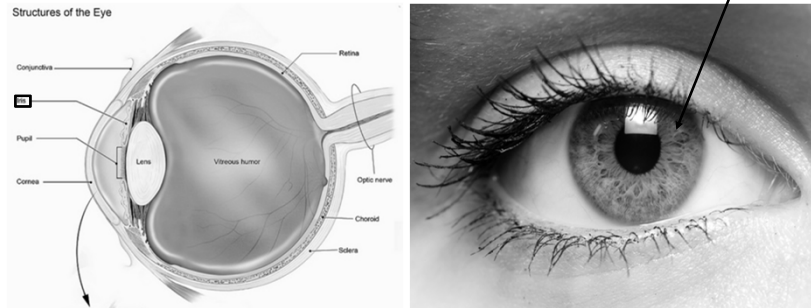
Author: Paul Savage - (CC BY 2.0)

Anterior Chamber



Source: National Eye Institute

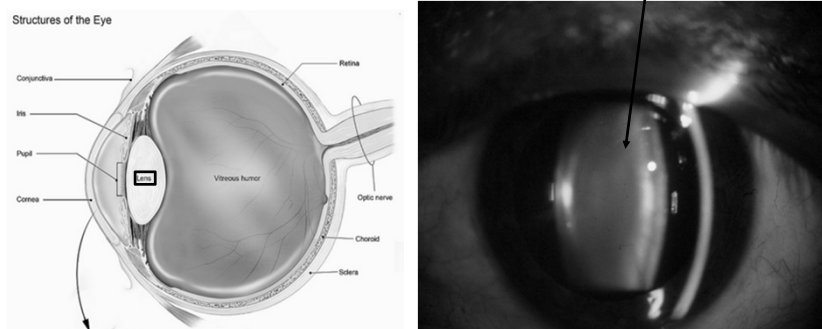
Iris



Source: National Eye Institute

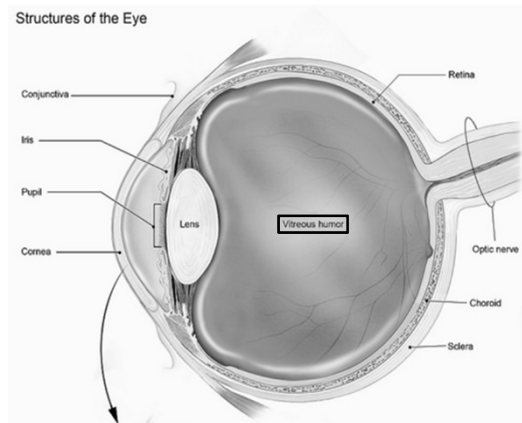
Author: Laitr Keiows - (CC BY-SA 3.0)

Lens



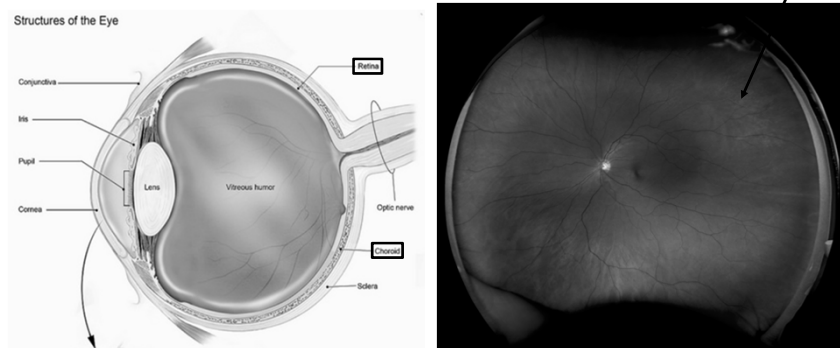
Source: National Eye Institute

Vitreous Cavity



Source: National Eye Institute

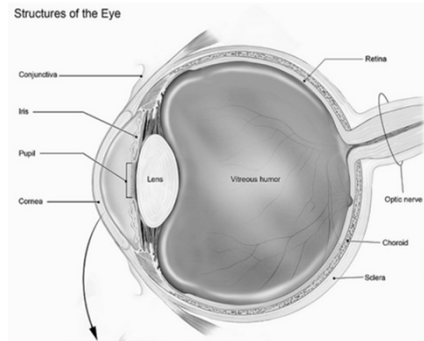
Retina / Choroid



Source: National Eye Institute

Author: Optomap - (CC BY-SA 4.0)

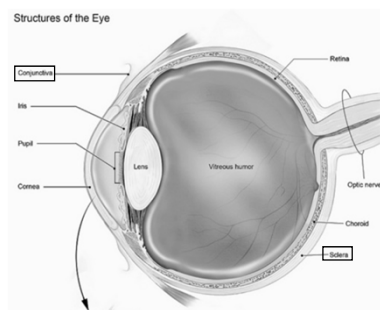
Optic Nerve



Source: National Eye Institute

Author: By Mikael Häggström, used with permission.

Sclera / Conjunctiva



Source: National Eye Institute

Author: Laitr Keiows - (CC BY-SA 3.0)

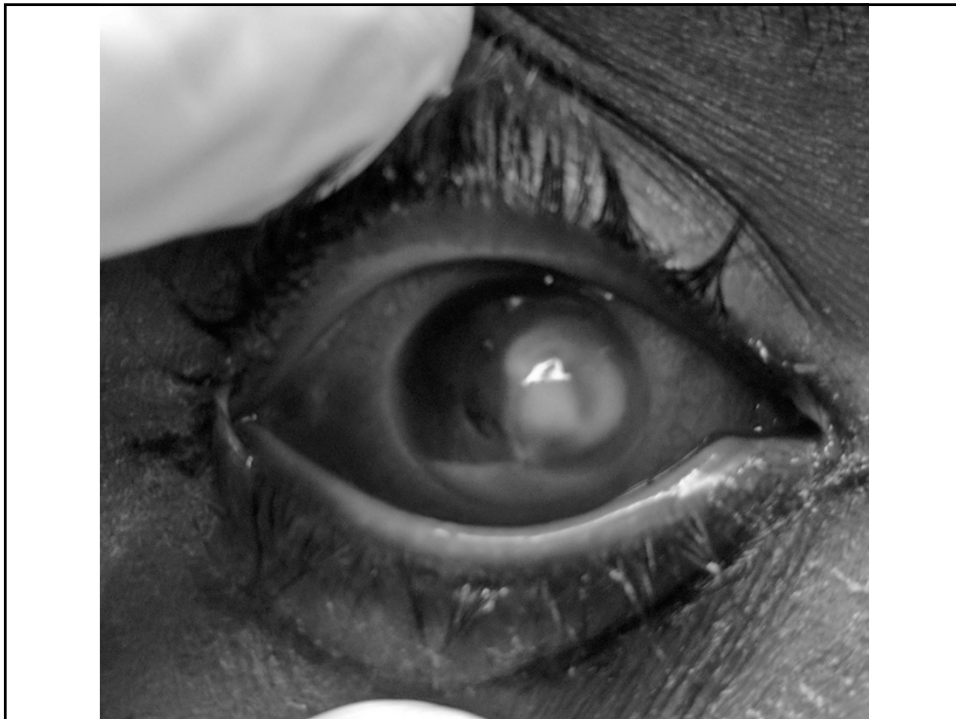
Common Eye Injuries

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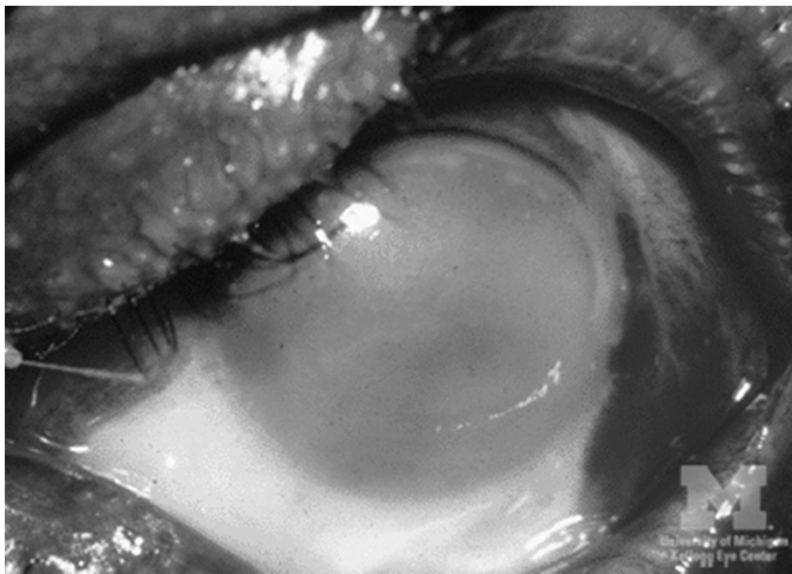
Corneal Abrasion

- **Symptoms:** sharp pain, photophobia, foreign body sensation, history of trauma
- **Signs:** epithelial defect that stains with fluorescein
- **Treatment**
 - Antibiotic drops or ointment (e.g. erythromycin, bacitracin, polymyxin B/trimethoprim)
 - If contact lens wearer, consider fluoroquinolone drops
 - No patching or anesthetic drops, no contact lens wear
- **Follow-up:** 1-5 days to ensure improvement or resolution



Corneal Ulcer

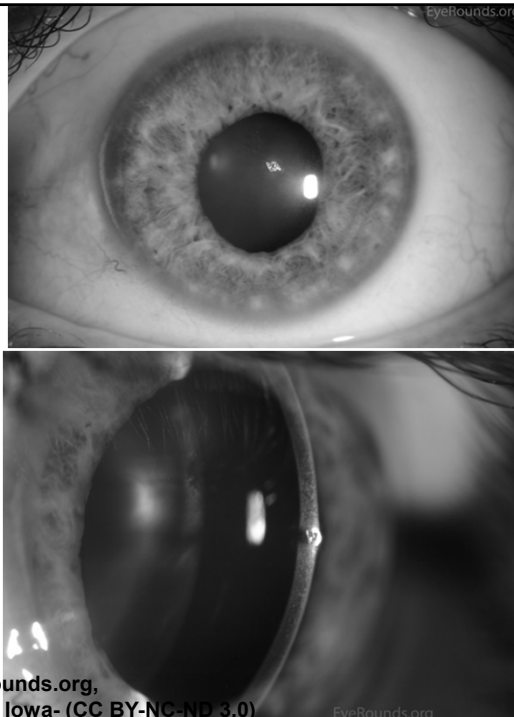
- **Symptoms:** redness, pain, photophobia, decreased vision, discharge
- **Signs:** white corneal infiltrate with overlying epithelial defect
- **Treatment**
 - **Bacterial:** fluoroquinolone drops (e.g. ciprofloxacin or moxifloxacin) for low risk ulcers, fortified antibiotics for higher risk ulcers
 - Cycloplegic drops
 - No patching or anesthetic drops, no contact lens wear
- **Refer immediately**



Source: The University of Michigan - (CC BY 3.0 US)

Chemical Burn

- **Symptoms:** redness, pain, photophobia, decreased vision, history of chemical injury
- **Signs:** epithelial defect or corneal opacification, injection or blanching of conjunctival vessels, chemosis
- **Treatment**
 - Immediate copious irrigation with saline or Ringer lactate solution until neutral pH is achieved
 - Sweep conjunctival fornices, evert eyelids
 - Antibiotic ointment and cycloplegic drops
- Refer if vision is decreased



Images by EyeRounds.org,
The University of Iowa- (CC BY-NC-ND 3.0)

Corneal and Conjunctival Foreign Bodies

- **Symptoms:** foreign body sensation, tearing
- **Signs:** presence of foreign body, rust ring
- **Treatment**
 - Remove superficial foreign bodies with irrigation, cotton-tipped applicator, fine forceps, or foreign body spud
 - Treat similarly to corneal abrasion with antibiotic drops or ointment
- **Refer** if foreign body is not superficial or unable to remove easily

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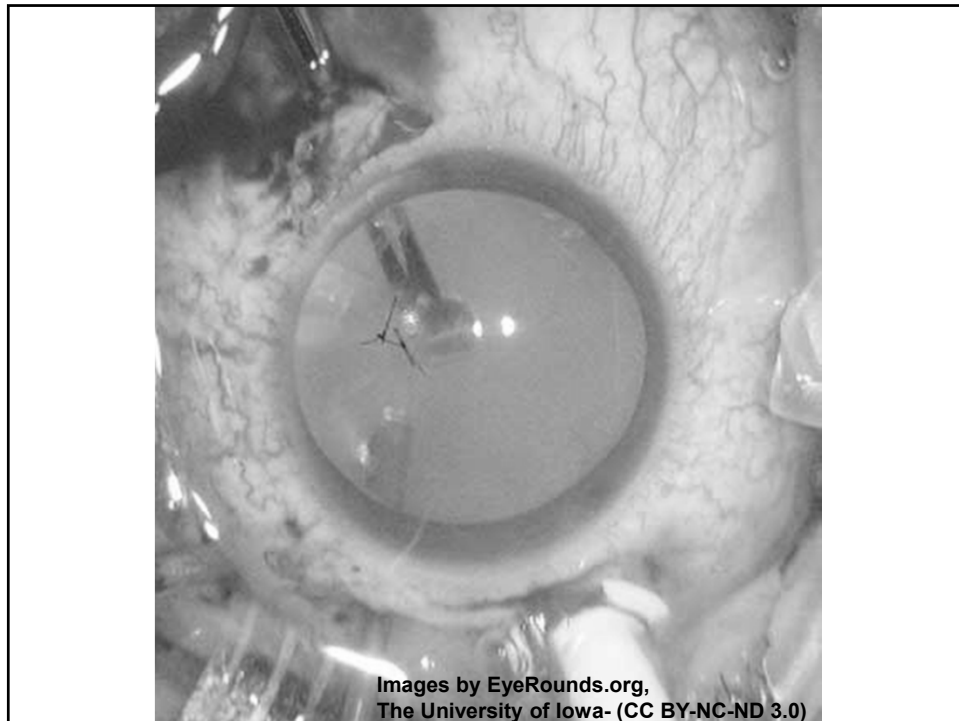
Conjunctival Laceration

- **Symptoms:** hx of trauma, mild pain, foreign body sensation, redness
- **Signs:** conjunctival defect with fluorescein uptake, exposed white sclera, subconjunctival hemorrhage
- **Treatment**
 - Antibiotic ointment
 - Large lacerations > 1.0 cm may require suturing
- **Refer immediately** – rule out penetrating or perforating eye injury, intraocular foreign body



Corneal / Scleral Lacerations or Rupture aka “Open Globe”

- **Symptoms:** hx of trauma, pain, decreased vision, loss of fluid from the eye
- **Signs:** full thickness laceration, hemorrhagic chemosis, shallow or deep anterior chamber, peaked or irregular pupil
- **Treatment**
 - Surgical repair in the operating room
 - In the meantime: hard eye shield, NPO, pain and nausea control, IV access, systemic antibiotics, bedrest, tetanus prophylaxis
- **Refer immediately**

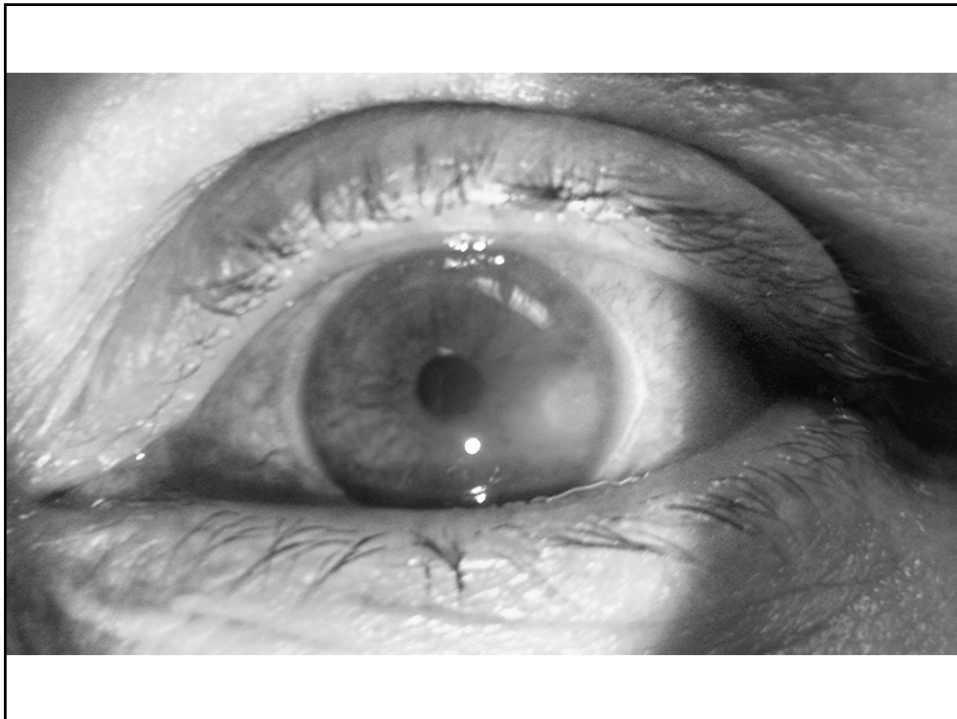


Intraocular Foreign Body

- **Symptoms:** may be similar to that of open globe, hx of sharp object entering eye or hammering metal
- **Signs:** may be similar to that of open globe, or entry site may not be readily apparent
- **Treatment**
 - **Acute IOFB:** surgical removal
 - **Chronic IOFB:** surgical removal if associated with inflammation
- **Refer immediately if acute**

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Traumatic Iritis

- **Symptoms:** dull throbbing pain, photophobia, recent trauma
- **Signs:** white blood cells and flare in the anterior chamber, perilimbal injection
- **Treatment**
 - Cycloplegic drops
 - Cautious use of steroid drops
- **Refer** if no improvement in 2-3 days or associated with other injuries

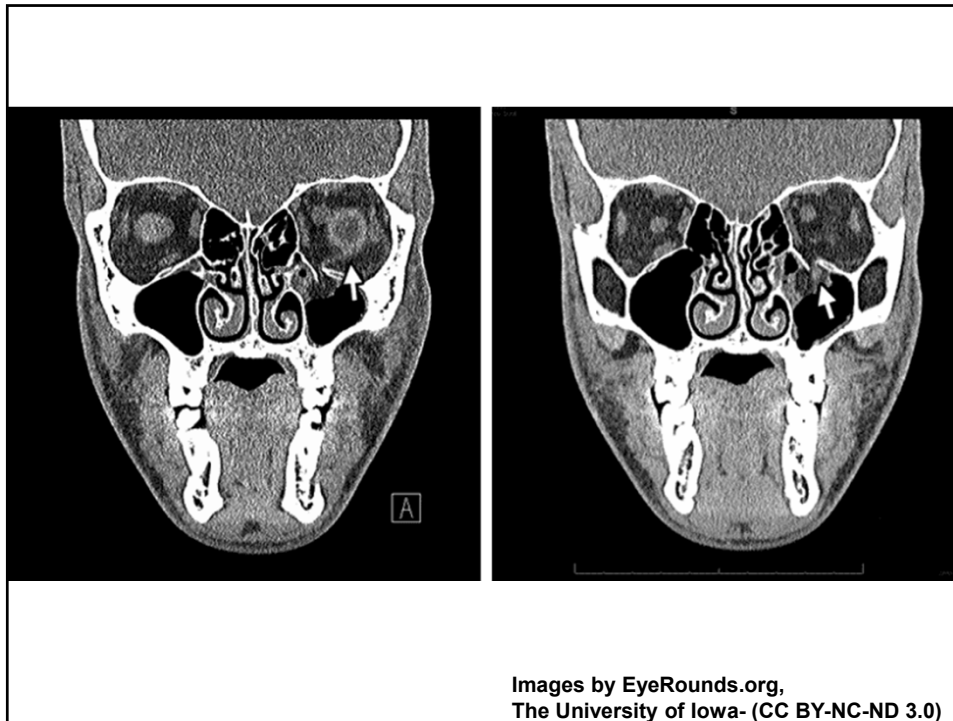


Hyphema

- **Symptoms:** pain, decreased vision, history of blunt trauma
- **Signs:** blood in the anterior chamber
- **Treatment**
 - Bed rest, elevate head of bed, eye shield
 - No blood thinners
 - Cycloplegic drops
 - Steroid drops
 - IOP lowering drops as needed
- **Refer immediately**

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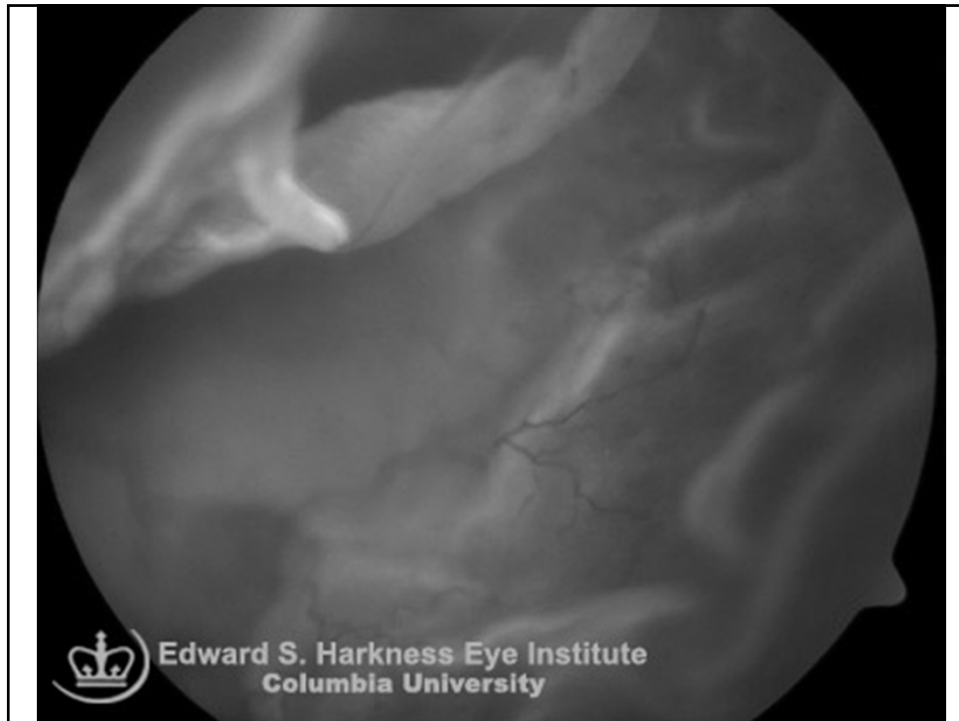
Orbital Fractures / Entrapment

- Symptoms: hx of trauma, periorbital swelling, double vision, pain with eye movement
- Signs: restricted extraocular motility, hypesthesia in distribution of infraorbital nerve, periorbital edema, enophthalmos, hypoglobus
- Treatment:
 - CT orbits / face
 - Considerations: oral antibiotics, corticosteroids, nasal decongestants, sinus precautions
 - Immediate repair if muscle entrapment
 - Delayed repair if persistent diplopia or large fracture
- Refer immediately – rule out ocular injury, entrapment



Retrobulbar Hemorrhage

- **Symptoms:** hx of trauma, pain, decreased vision, inability to open eyelids
- **Signs:** proptosis, resistance to retropulsion, tense eyelids that are difficult to open, increased intraocular pressure, possible vision loss or afferent pupillary defect
- **Treatment:** urgent lateral canthotomy and cantholysis
- **Refer immediately** – consider ED vs local ophthalmologist



Retinal Tears and Detachments

- **Symptoms:** flashes, floaters, may have decreased vision or a curtain/shadow in vision
- **Signs:** pigment in anterior vitreous, retinal tear/flap, elevation of retina by subretinal fluid
- **Treatment**
 - Laser retinopexy in acute symptomatic or traumatic break
 - Surgical repair – urgent if threatens the fovea, less urgently if macula is off
- **Refer immediately**