Common Eye Injuries

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Brief Overview of Eye Anatomy

Cornea

Anterior Chamber

Source: National Eye Institute
Author: Paul Savage - (CC BY 2.0)
Optic Nerve

Source: National Eye Institute
Author: By Mikael Häggström, used with permission.

Sclera / Conjunctiva

Source: National Eye Institute
Author: Laiti Kiowes - (CC BY-SA 3.0)

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The delicacy of Iowa - (CC BY-NC-ND 3.0)
**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**

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**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, hypoglossus
- **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