Eye Injuries

Dr Katie Baston
Injuries we will discuss today

• Subconjunctival hemorrhage
• Corneal abrasion
• Corneal foreign body
• Thermal burns
• Chemical burns
• Blunt trauma
• Eyelid lacerations
• Penetrating Trauma
History and Physical

• Key components of the history:
  – Timing of injury (length of time since penetrating injury affects prognosis)
  – Mechanism of injury (were power tools involved, dirty objects)
  – Intervening treatments (eye drops/ointments, attempts to remove foreign body)
  – History of previous injury or surgery (iris trauma could be from a previous eye surgery – but this history must be very specific)
History and Physical

• Key components of the physical exam:
  – VISION (if you don’t have an eye chart, just improvise)
  – Pupil exam (an afferent pupillary defect is a very poor prognostic sign)
  – Extraocular muscle exam (in particular for blunt trauma where muscle entrapment in an orbital fracture is suspected)
  – Assessment of the lids, sclera, cornea, and iris.
Subconjunctival Hemorrhage

- Poked in the eye with pencil/pen/finger
  - Rinse the eye
  - Assess for corneal or conjunctival laceration (uncommon) or abrasion (more common)
  - Prescribe a prophylactic antibiotic drop
  - Reassure the patient that the AWFUL looking subconjunctival hemorrhage will likely resolve in 1-2 weeks just like a bruise
Subconjunctival Hemorrhage
Importance of History

http://medicalpicturesinfo.com/subconjunctival-hemorrhage/

2 – 68 year old man with CAD, osteoarthritis, and recent URI presents to your office stating that he was cutting some custom cabinets with his circular saw this morning when he thought he felt something hit his eye. He rubbed his eyes and thought it felt a little better but now his eye is all red and he can’t see as well.
Corneal Abrasions

**Signs/Symptoms**
- REDNESS
- TEARING
- PHOTOPHOBIA
- PAIN
- LID EDEMA

This can look like pink eye, but check the history and check with fluorescein!
For Corneal Abrasions

• Treat with antibiotic ointment (erythromycin/bacitracin) or a drop (polytrim/tobramycin). Ointments are better for coating the surface and helping with symptoms but they blur the vision.
• Most abrasions heal in 24-48 hours.
• Narcotics can be used for large abrasions but don’t help much with the pain. Most patients say it “takes the edge off so I can sleep.”
For Corneal Abrasions

• If you think “this is bad enough to patch,” then please consider referring for a bandage contact lens. I try to avoid patching a dirty wound.

• A bandage contact lens provides better pain relief, the patient can continue using antibiotic eye drops, and it promotes quicker healing.
Corneal Foreign Bodies

• This can be removed with a cotton swab or a beveled 25-27g needle tip. It is best to do this at a slit lamp. It may require the use of a burr to remove the remaining rust or “rust ring.”
• If you do not have experience with this, treat with antibiotic ointment and refer to an ophthalmologist within one day.
Foreign Bodies Under the Eyelid

Often easier to spot using fluorescein and Wood’s lamp.
Thermal Burn

- Conjunctival and corneal involvement
  - Can assess for these using fluorescein and woods lamp
  - Can lead to scarring but often resolve
  - Antibiotic coverage used to prevent secondary infection and aggressive lubrication used to assist healing and for comfort
  - Vitamin C has been studied as adjunctive therapy

-Eyebrow/Eyelid involvement
  - Can lead to cicatricial changes pending severity

http://burnssurgery.blogspot.com/2012/05/electric-flash-burns-facial-burns.html
Chemical Burn

– Eyebrow/Eyelid involvement – can lead to cicatricial changes pending severity
– RINSE and keep doing it until the pH is normal (often over 1L of normal saline). Reading litmus paper can be tough so, compare to the other eye if possible… or your own eye.
– Average pH of tears - 6.5-7.6.
– Look for foreign bodies that may be harboring the chemical

– Treatment:
  • Antibiotic coverage used to prevent secondary infection and aggressive lubrication used to assist healing and for comfort
  • Vitamin C has been studied as adjunctive therapy
### Grade I (excellent prognosis)
- Clear cornea
- No limbal ischemia

### Grade II (good prognosis)
- Cornea hazy but iris details visible
- Limbal ischemia <1/3

### Grade III (guarded prognosis)
- No iris details through the cornea
- Limbal ischemia 1/3-1/2

### Grade IV (very poor prognosis)
- Opaque cornea
- Limbal ischemia >1/2

**RX:** IRRIGATION AND CALL OPHTHALMOLOGIST
Importance of History

Acids
• Battery (sulphuric) acid
• Glass cleaner
• Vinegar (weak acetic)
• Acids containing heavy metals
• Hydrochloric acid
• Peroxide for sterilizing contact lenses

Bases (more serious)
• Oven cleaner
• Products to unblock drains (i.e. Draino), hoses, pipes
• Fertilizer, plaster, mortar, cement, lime
• Fireworks
• Products containing chlorine (pool filter tablets)
Blunt trauma – periocular

• If the mechanism of injury does not suggest there is an open globe – gently try to open the lids to assess to vision, pupils, and anterior segment of the eye.
• The pupil may be large just from damage to the iris sphincter.

• Treatment should include referral to ophthalmologist, ice, and elevation.
Blunt trauma - hyphema

- I am showing this with variations in severity because sometimes they are obvious, but sometimes they are subtle.
- They all require care with an ophthalmologist.
Blunt Trauma - Hyphema

- Usually caused by bleeding from iris root or insertion at the limbus (where the iris, sclera, and cornea meet)
- There is a risk of rebleeding in the first 5 days which can worsen prognosis. Patients are advised against aspirin/NSAIDS and put on activity restrictions.
- Often associated with intraocular inflammation.
- Can lead to and acute increase in the intraocular pressure and damage to the optic nerve or long term glaucoma secondary to intraocular scarring.
Various Complications of Blunt Trauma

- Hyphema
- Sphincter tear
- Iridodialysis
- Vessica ring
- Cataract
- Lens subluxation
- Angle recession
- Rupture of globe
Orbital Fractures

- Decreased upgaze in the right eye. Patients may have pain, nausea, and bradycardia when looking up.
- Entrapment is a clinical diagnosis but coronal CT scans are very helpful.


Eyelid Lacerations

• Importance of history...
• Which eyelid looks worse?
Mechanism of Injury

- Poked with finger playing basketball – will require LACRIMAL repair!

- Scratched by a dog – note the underlying scleral laceration that is not full thickness. This should heal nicely after simple closure.

- Hit by glass bottle during bar fight... MUST assess the depth of the laceration and for an occult ruptured globe.
Penetrating Trauma

You probably already knew this was an emergency... should be repaired in 8-24hr (ASAP in this case as it is clearly a dirty wound).

-DO NOT REMOVE THE HOOK! It is plugging the hole.

-You should tape a big shield/dixie cup (pending size of foreign body) and send to an ER with ophthalmology coverage.
Penetrating trauma

- The iris is plugging the wound so this eye looks relatively normal.
- DO NOT pull the iris or try to push it back in. It is plugging the hole.
- The depth of this injury is not known. It could be through the lens, in the vitreous, or to the retina. We do not know if there is an intraocular foreign body.
- DO NOT do an MRI as there could be metal in the eye!
Penetrating Trauma

-Through cornea, sclera, and the lens is visible.
-This eye will likely never see again but it is important to close the wound to prevent infection. If the eye can be saved, it has a chance to still move in conjunction with the other eye.
-Sometimes the eye is not salvageable and a prosthesis must be fitted after the socket has healed.
Thank you for your time!

Dr Baston: Diabetic retinopathy, glaucoma, cataracts, and general eye care

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