Eye Injury

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Eye Injury

- An insult to the eye
  - Physical
  - Chemical
- Can affect or impair vision
- Can result to blindness or potential blindness

Eye Injury – Extent

- Can range from minor bruises to lacerations
- Chemical burns
- Globe injuries may be associated with intra-ocular foreign bodies
- Globe injuries may be associated with fractures

Ocular Injury

- Non - trauma
- Trauma
  - Blunt trauma
  - Penetrating trauma

- Etiological Classification of Trauma : 1. Accidental trauma.
  2. Self inflicted trauma.
  3. Occupational trauma.
- Classification on the basis of Nature:
  - 1. Physical trauma
    - a. Perforating
    - b. Non perforating
  - 2. Chemical trauma
    - a. Acid
    - b. Alkali
    - c. Dye (Salt of acid or alkali)

Mechanical Trauma

- Closed Globe
  - Burn
    - Chemical Burn
    - Radiation/Thermal Burn.
  - Laceration
- Open Globe
  - Rupture
  - Laceration
    - Penetrating
    - Perforating





Ocular Injuries

- **Closed globe injury:** No full-thickness wound of eye wall,but there is intr-ocular damage.
- **Open globe injury:** It refers to the full thickness injury of the eye wall and the intra-ocular structures.
- **Contusion:** It is a result of direct energy delivary to the eye by a blunt object.injury may be at the site of impact or at a distant site.
- **Lamellar laceration:** Partial-thickness wound of the eyewall. • Laceration Full-thickness wound of the eyewall, caused by a sharp object.
- **Penetrating injury:** is an injury where a foriegn object has been embedded in the eye. It is usually a full thickness wound & it has a site of Entrance. Perforating injury has both an Entrance and exit wounds.

Ocular Injuries

PENETRATING INJURY : Usually by a sharp and pointed instruments like needles,sticks,pencils,knives arows,pens,glass and any object with sharp edges.

- The most common causes of penetrating ocular injuries are due to trauma caused by wood, metal and stone .Most of the injuries occurred during chopping or cutting wood, hammering metals or nails and carving stone.
- These are associated with professions such as farming, garage work and carpentry in adults.
- Children, on the other hand, mostly sustain accidental injuries by rubber bands, needles, pencils, sticks while playing with others.

EFFECTS OF PENETRATING OCULAR INJURIES

Laceration of the conjunctiva,corneal lacerations,Vitreous haemorrage,rupture of globe,retinal tears and detachments,scarring which leads to cataract and glaucoma & Intra ocular foriegn bodies, iridocyclitis or Endophthalmitis .

Common Ocular Injuries

Corneal Abrasion

H/O: Blurring of vision ,
redness, Pain , photophobia,
FB sensation, watering,
swelling eyelid.

Epithelial staining defect with fluorescein

Rx:
Erythomycin ,Ciprocin,Contact Lens,Patching.

Corneal Foreign Bodies

A corneal foreign body is an object (eg, metal, glass, wood, plastic, sand) either superficially adherent to or embedded in the cornea of the eye.

Rx:
Removal FB, CT-Scan Orbit.

Subconjunctival Hemorrhage

Subconjunctival bleeding, also known as subconjunctival hemorrhage, is bleeding underneath the conjunctiva. The conjunctiva contains many small, fragile blood vessels that are easily ruptured or broken. When this happens, blood leaks into the space between the conjunctiva and sclera.

H/O : Redness, Discomfort or Burning sensation.

Blackish shadow around side the eye.

Rx:

The elective use of aspirin and NSAIDs is typically discouraged.
Artificial tears may be applied four to six times a day.

Traumatic Hyphaema

- Blood in anterior chamber,Hyphema can occur after blunt or lacerating trauma, after intraocular surgery,
- Loss of vision,Severe Pain,Redness,Photophobia.

Rx:

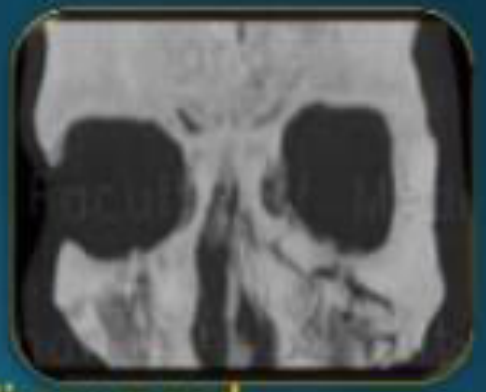
- Topical cycloplegics (e.g. cyclopentalate 2% tid,) will dilate the pupil and prevent synechiae to the lens.
- Topical steroids (e.g. prednisolone acetate 0.125-1% qid) are used to decrease inflammation.

Orbital Fractures

Orbital fractures are breaks of the facial bones surrounding the eye. An orbital blowout fracture is a break in the thin bone that forms the floor of the orbit and supports the eye (orbital floor fracture).

ORBITAL FRACTURES Types :

- Blow-out orbital floor fracture
- Blow-out medial wall fracture
- Roof fracture
- Lateral wall fracture



Rx:

- The elective use of aspirin and NSAIDs is typically discouraged. Artificial tears may be applied four to six times a day.
- Reconstruction of Orbital fractures .

Lid Lacerations

- *Causes: Sharp or blunt trauma.*
- *H/O :Full thickness cut injury BUL / LUL medial canthus side.*
  Redness,Watering,pain,Bleeding
- *Vision may dimness.*

Rx:

- Eyelid Laceration Repair
- Topical antibiotics & Artificial tears .

Penetrating / Ruptured Globe

- Corneal or scleral lacerations.
- Hypopyon (not always present).
- Severe chemosis & hemorrhage.
- Intraocular FB may present.
- Limitation of extraocular motility.
- Irregular pupil.

Rx:

- Repair globe injury / Laceration
- Evisceration / Enucleation

Chemical Burns

- **Alkali-Based Chemical.**

Lime, Cement, Whitewash, Metal Polishes, Ammonia.

- **Acid-Based Chemical:**

Cleaning Solutions , Battery Acid (H_2SO_4, HCL), Acetic Acid.

Severity: The severity of the chemical burn depends on Concentration of the chemical substance, affected area, & duration of exposure.

N.B : Alcali burn are more damaging than Acid burn.

Chemical Burns

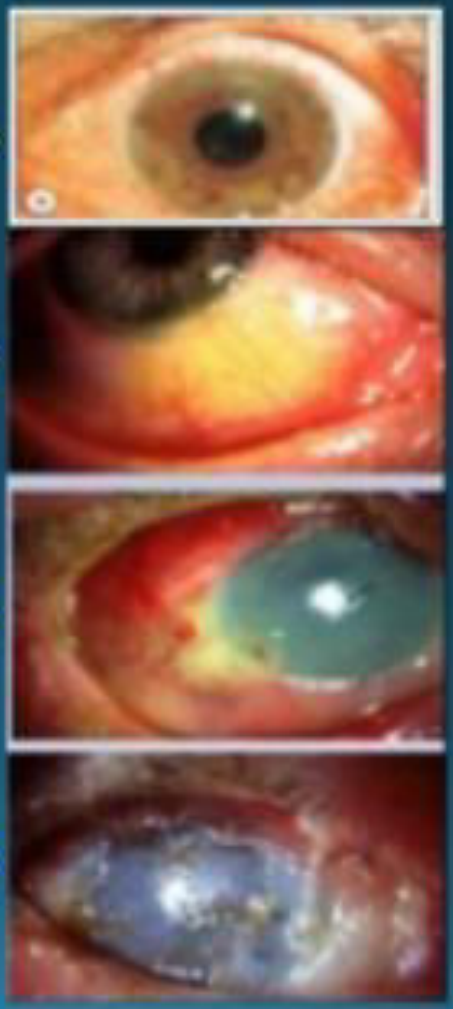
Both acid and alkali burns can be blinding

- ***- Acid burns tend to coagulate proteins, necrosis of conjunctiva, epithelial defect & limiting the depth of penetration.***
- ***- Alkali burns can rapidly penetrate the cornea , stromal necrosis & thinning , raised IOP, and Causing damage to intraocular structures.***

Bilateral Alkali Injuries

GRADING OF SEVERITY OF CHEMICAL INJURIES

- Grade I (excellent prognosis) •Clear cornea •Limbal ischaemia - nil
- Grade II (good prognosis) •Cornea hazy but visible iris details •Limbal ischaemia <1/3
- Grade III (guarded prognosis) •Hazy cornea with no iris details •Limbal ischaemia 1/3 to 1/2
- Grade IV (very poor prognosis) •Opaque cornea •Limbal ischaemia >1/2.



Chemical Burns & Our Activitis

Immediate copious irrigation with a minimum of 1-2 L of saline or until pH is normalized (7.3-7.7)

- Instill a topical anesthetic.
- Use eyelid retractor.
- Double eversion of the eyelids.

Rx Of Chemical Injuries

- 1.Copious irrigation (15-30 min) – to restore normal pH
- 2.Topical steroids (first 7-10 days) – to reduce inflammation
- 3.Topical and systemic ascorbic acid – to enhance collagen production
- 4.Topical citric acid – to inhibit neutrophil activity
- 5.Topical and systemic tetracycline – to inhibit collagenase and neutrophil activity
- 6.Cycloplegia – to improve comfort

Acute Eye Conditions

Emergency	Very Urgent	Urgent
(Immediately)	(Within a few hours)	(Within one day)
Retinal arterial occlusion	Perforation	Orbital cellulitis
Chemical burns	Ruptured Globe	Orbital injury
	Acute glaucoma	Corneal ulcer
	Sudden congestion proptosis	Corneal abrasion
		Hyphema
		Intraocular FB

Primary Rx for Ocular Injuries

- Every eye injury should be given medical attention; do not touch, rub or try to remove any object in the eye. If the eye has been cut or there is an object in the eye, rest a protective shield – such as a paper cup – on the bone around your eye
- In minor cases of trauma, such as a black eye from a sports injury, applying cold to the affected area can help bring swelling down, and allow the affected area to heal faster.
- In general, if a person is not sure if they have a serious eye injury, they should call an ophthalmologist or see an emergency-medicine doctor, preferably at a large hospital that has an ophthalmologist on call, for advice and/or treatment.

Take Home Messages

- Wear protective eyewear during risky activities.
- Wear goggles when exposed to chemicals. Supervise your child's use of tools.
- Protect your eyes while doing yardwork.
- Keep children away from flying debris.
- Use caution with chemicals and cleaners.
- Be careful when cooking or using hot objects.
- Keep sharp kitchen tools and utensils away from small children.
- Use car seats. Avoid certain children's toys.
- Wear protective eyewear during sports.
- Keep small children safe around dogs.

Thank You