Eye Trauma

Lid Laceration

The presence of a lid laceration, however insignificant, mandates careful exploration of the wound and examination of the globe.

1. **Superficial** lacerations parallel to the lid margin without gaping can be sutured with 6-0 black silk. The sutures are removed after 5 days.
2. **Lid margin** lacerations invariably gape and must therefore be very carefully sutured with perfect alignment to prevent notching .
3. **With extensive tissue** may require major reconstructive procedures.
4. **Canalicular** lacerations should be repaired within 24hours. The laceration is bridged by silicone tubing, which is threaded down the lacrimal system and tied in the nose, and the laceration is sutured. The tubing is left *in-situ* for 3-6months.

Orbital Fracture

A blow-out fracture of the orbital floor is typically caused by a sudden increase in the orbital pressure by a striking object which is greater than 5 cm in diameter, such as a fist or tennis ball. The fracture most frequently involves the floor of the orbit along the thin bone covering the infraorbital canal.

Diagnosis
1. Periocular signs include variable ecchymosis ,oedema and occasionally subcutaneous emphysema.
2. Infraorbital nerve anaesthesia involving the lower lid, cheek, side of nose.
3. Diplopia most commonly vertical diplopia.
4. Ocular damage(e.g. hyphaema, angle recession, retinal dialysis), although uncommon, should be excluded.
5.CT with coronal sections is particularly useful in evaluating the extent of the fracture, as well as determining the nature of maxillary antral soft-tissue densities which may represent prolapsed orbital fat, extraocular muscles, haematoma or unrelated antral polyps.

treatment
 Initial treatment is conservative with antibiotics if the fracture involves the maxillary sinus. The patient should also be instructed not to blow the nose.
 Subsequent treatment is aimed at prevention of permanent vertical diplopia and cosmetically unacceptable enophthalmos.

TRAUMA TO THE GLOBE

Definition:

1. **Closed injury** is commonly due to blunt trauma. The corneo-scleral wall of the globe is intact but intraocular damage may be present.
2. **Open injury** involves a full-thickness wound of the corneo-scleral wall.

Principles of manegment

1. Initial assessment should be performed in the following order:

- Determination of the nature and extent of any life-threatening problems.
- History of the injury, including the circumstances, timing and likely object.
- Thorough examination of both eyes and orbits and assessment of visual potential.

2. Special investigations

a. ***Plain radiographs*** may be taken when a foreign body is suspected .
b. ***CT*** is superior to plain radiography in the detection and localization of intraocular foreign bodies. It is also of value in determining the integrity of intracranial, facial and intraocular structures.

NB: *MR should never be performed if a metallic foreign body is suspected*.

c. ***Ocular US*** may be useful in the detection of intraocular foreign bodies and retinal detachment. It is also helpful in planning surgical repair, for example regarding placement of infusion ports during vitrectomy and whether drainage of suprachoroidal haemorrhage is required.

Blunt Trauma

The most common causes of blunt trauma are squash balls, elastic luggage straps and fist clashes. The extent of ocular damage depends on the severity of trauma and for unknown reasons is largely concentrated to either anterior or posterior segment. Apart from obvious ocular damage, blunt trauma may result in long-term effects so that the prognosis is necessarily guarded.

Cornea: Corneal abrasion ,Acute corneal oedema and Tears in Descemet membrane

Anterior uvea: Traumatic Mydriasis, iridodialysis

Lens : cataract, subluxation and dislocation.

Retina : retinal breaks , retinal detachment and commetio retinae.

Optic nerve : optic nerve avulsion

Ruptured globe

Traumatic hyphema:

Hyphaema (haemorrhage into the anterior chamber) is a common complication. The source of the bleeding is the iris or ciliary body. Characteristically, the red blood cells sediment inferiorly with a resultant 'fluid level', the height of which should be measured and documented .Observation is all that is required in most cases because most hyphaemas are small, innocuous and transient.

Medical treatment include : topical steroids,mydriatics,antiglaucoma and even systemic anti-fibrinolytic agent (cyclocapron).

Surgical intervention with anterior chamber washout may be needed under special circumstances.

Penetrating trauma

Penetrating injuries are three times more common in males than females, and in the younger age group. The most frequent causes are assault, domestic accidents and sport.

The extent of the injury is determined by the size of the object, its speed at the time of impact and its composition. Sharp objects such as knives cause well-defined lacerations of the globe.

These injuries could involve the cornea and /or the sclera with or without prolapsed of the underlying uveal tissue.

Corneal foreign bodies

1. **Clinical features.** Corneal foreign bodies are extremely common and cause considerable irritation. Leukocytic infiltration may also develop around any foreign body of some duration .If a foreign body is allowed to remain, there is a significant risk of secondary infection and corneal ulceration. Mild secondary uveitis is common with irritative miosis and photophobia. Ferrous foreign bodies of even a few days duration often result in rust

staining of the bed of the abrasion.

Management

a. The foreign body is removed under slit-lamp visualization using a sterile 26-gauge needle.
b. A residual 'rust ring' is easiest to remove with a sterile 'burr', if available.
c. Antibiotic ointment is instilled together with a cycloplegic and/or ketorolac to promote comfort.

Chemical Injuries

Chemical injuries range in severity from trivial to potentially blinding. The majority are accidental and a few the result of assault. Two-thirds of accidental burns occur at work and the remainder at home.

Alkali burns :are twice as common as acid burns since alkalis are more widely used at home and in industry. The most common involved alkalis are ammonia, sodium hydroxide and lime.

The *commonest acids* implicated are sulphuric, sulphurous, hydrofluoric, acetic, chromic and hydrochloric.

The severity of a chemical injury is related to the

1.properties of the chemical.

2.The area of affected ocular surface.

3. duration of exposure (retention of particulate chemical on the surface of the globe) and

4.Related effects such as thermal damage.

Alkalis tend to penetrate deeper than do acids, which coagulate surface proteins, resulting in a protective barrier. Ammonia and sodium hydroxide may produce severe damage because of rapid penetration.

Emergency treatment

A chemical burn is the only eye injury that requires immediate treatment without first taking a history and performing a careful examination.

Immediate treatment is as follows:

1. **Copious irrigation** is crucial to minimize duration of contact with the chemical and normalize the pH in the conjunctival sac as soon as possible. Normal saline (or equivalent) should be used to irrigate the eye for 15-30 minutes or until pH is normalized.
2. **Double-eversion of the eyelids** should be performed so that any retained particulate matter trapped in the fornices, such as lime or cement, may be removed.
3. **Debridement** of necrotic areas of corneal epithelium should be performed to allow for proper re-epithelialisation.

Subsequent medical treatment :Might include: topical steroids,Ascorbic acid,Citric acid,and tetracyclines.

Surgical treatment.