

## STANDARD OPERATING PROCEDURE FOR TRAUMATIC EYE INJURIES

As and when a patient comes to the casualty, a local and systemic evaluation is done by our resident to rule out life threatening conditions and once the patient is cleared for the same he/she is shifted to the Department of Ophthalmology for further evaluation. In all the traumatic eye injuries we will consider the following principles:

Where an open globe injury is suspected we will try to minimise distress – as it can raise the ocular pressure leading to extrusion of intraocular contents.

The key features to be noted are:

1. Open globe injury – ruptured globe or penetrating laceration
2. Foreign body – corneal or intra-ocular
3. Hyphaema
4. Corneal burns – chemical or thermal

### History

We will ask for:

- Pain
- Vision loss
- Foreign body sensation
- Photophobia

### Examination

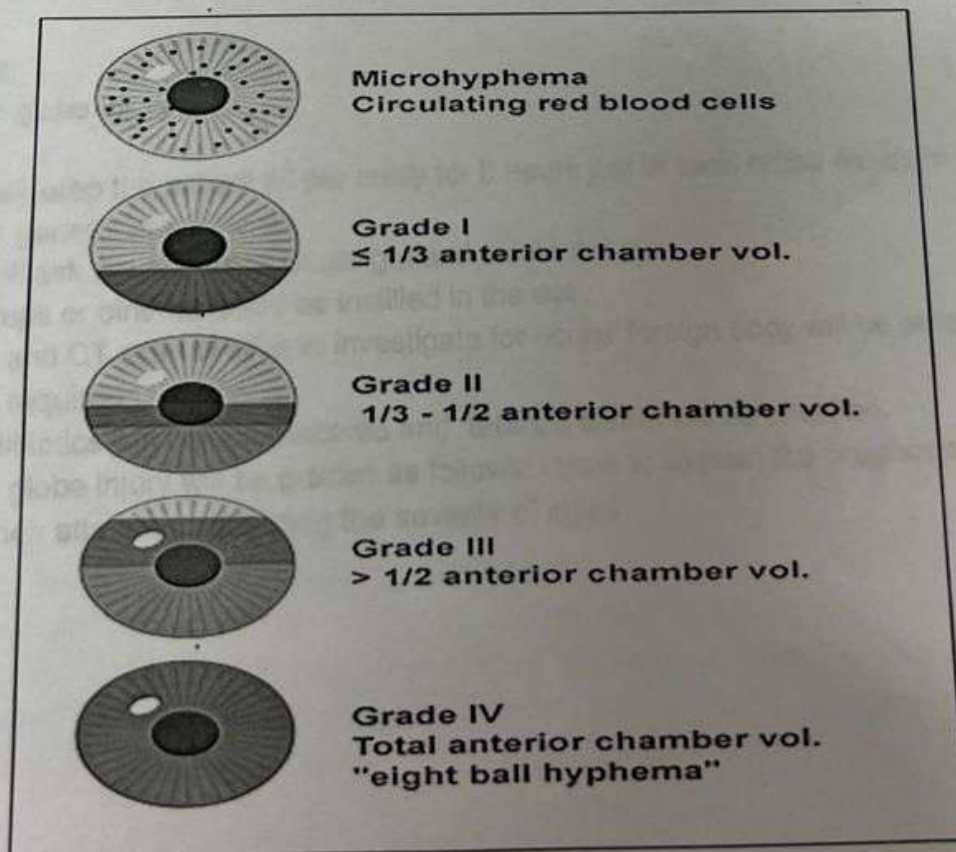
- Visual acuity in both the injured and uninjured eye will be taken.
- We will palpate the orbital rim & assess for bony fractures and check for paraesthesia in the infra-orbital nerve distribution

On torch light examination-

- Pupils- We will check relative afferent pupillary defect which may suggest direct or indirect Optic nerve injury.
- Eye movements- In trauma, an orbital floor fracture can lead to reduced upward gaze (entrapment of inferior rectus)
- Lids, conjunctiva and sclera- We will look for swelling, chemosis, ptosis, ecchymosis and lacerations
- We will evert the upper lid to look for foreign bodies on the underside.
- We will look for a subconjunctival haemorrhage – a localised haemorrhage may suggest penetrating injury. An inability to visualise the posterior extent of a subconjunctival haemorrhage will suggest an orbital or base of skull fracture.

On slit lamp examination-

- Examination of lids and conjunctiva will be carried out under diffuse illumination to look for lacerations or a foreign body missed on torch light examination
- Cornea, Anterior Chamber and Iris- we will look for a hyphaema and grade it as follows:



- Pupils- size, symmetry, shape and reactivity will be noted.
- We will check if there is iridodialysis
- We will look for corneal abrasions and foreign bodies.
- Application of fluorescein dye will help identify any abrasions and a Seidel's test will be done to look for the leakage of aqueous humour
- Vertical scratches on the cornea indicates the likely presence of a foreign body under the upper eyelids
- Fundus- We will look for red reflex, assess the optic disc, the macula and the periphery
- A red reflex may be diminished due to vitreous haemorrhage or lens opacity
- Retinal detachment will be seen as a grey reflex.
- Lastly we will assess intraocular pressure and if low, it may indicate a potential open globe injury

## Management

### 1) Open globe injury

- We will keep the patient nil per orally for 8 hours just in case repair needs to be done under general anaesthesia.
- We will ask the patient to sit upright and shield the eye.
- No drops or ointments will be instilled in the eye.
- X ray and CT scan of orbit to investigate for ocular foreign body will be ordered as and when required.
- IV antibiotics will be administered and tetanus status will be checked.
- Open globe injury will be graded as follows: this is to explain the prognosis to the patient and their attendant regarding the severity of injury

**Type:**

- A. Rupture
- B. Penetrating
- C. Intraocular foreign body
- D. Perforating
- E. Mixed

**Grade:****Visual activity**

1.  $\pm$ 20/40
2. 20/50 to 20/100
3. 19/100 to 5/200
4. 4/200 to light perception
5. No light perception

**Pupil**

1. Positive: relative afferent pupillary defect present in affected eye
2. Negative: relative afferent pupillary defect absent in affected eye

**Zone**

- I. Isolated to cornea (including the corneo-scleral limbus)
- II. Corneo-scleral limbus to a point 5 mm posterior into the sclera
- III. Posterior to the anterior 5 mm of sclera

- In case of penetrating injury, after the investigations and the anesthetic consultation, the patient will be taken for surgery as soon as possible or within 12 to 24 hours for the primary repair depending upon the status of the patient and extent of injury.
- Before the surgery visual prognosis will be explained to the patient and the attendants and an informed consent will be obtained. Along with this we will explain the risk of sympathetic ophthalmitis to the other eye and other risk factors and complications of the surgery.
- Intravitreal antibiotics will be administered in case of evidence of endophthalmitis following trauma.
- In cases of retinal detachment and other conditions requiring vitreo retinal intervention the patient will be referred immediately to a VR surgeon after the primary repair has been done.
- In case of a badly mutilating eye injury, need for primary enucleation will be explained to the patient and planned accordingly to prevent sympathetic endophthalmitis.
- In case of maxillo-facial fracture the patient will be referred to dental surgeon.
- Repair under general anaesthesia is considered in children, un-cooperative patients and in anticipation of long surgeries etc.

## 2) Orbital blow out fracture

- CT scan with coronal cuts will be the investigation of choice to assess the integrity of bony orbit.
- In cases of optic nerve compression once intracranial bleed has been ruled out we will take an ENT opinion for optic nerve decompression or start steroid therapy.

## 3) Chemical burns

- We will instil local anaesthetic drops to the affected eye(s)
- We will irrigate with normal saline - minimum one litre and aim to include under eyelids and conjunctival fornices. All particulate matter will be removed
- The patient's pain will be reviewed regularly; local anaesthetic drops will be instilled 10 minutely as required.
- After one litre of irrigation, the eye will be reviewed.
- Severe burns will usually require a minimum of 30 minutes of irrigation.
- Subsequent management will be done depending upon the nature and extent of injuries.

## 4) Corneal abrasions and superficial foreign bodies

- We will instil topical anaesthetic drop (e.g. proparacaine hydrochloride 0.5%) and warn the patient that the drop will sting briefly.
- We will attempt to remove the foreign body with a moistened cotton bud.
- If unsuccessful and the patient is able to tolerate sitting still at a slit-lamp, we will use a 26 gauge needle with bevel up to remove the corneal foreign bodies.
- Patching of the eye with topical antibiotics and cycloplegics will be done and he/she will be reviewed again after 24 hours