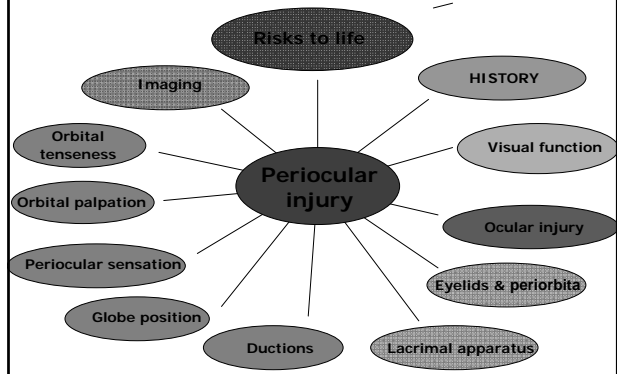


## Periocular Trauma Assessment

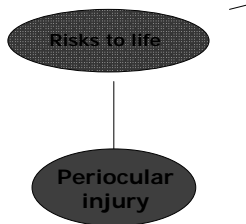


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### Assessment of the patient with periocular injury



### Assessment of the patient with periocular injury



### Risk to Life

- With a closed head injury, consider cerebral contusion / haemorrhage
- In penetrating injury exclude frontal fossa penetration
- Small lacerations DO NOT imply small injuries

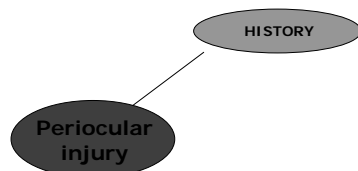


Intracerebral oedema with III palsy

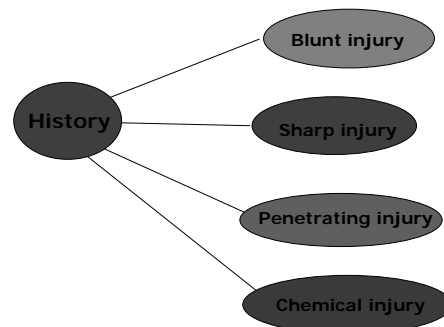


Penetrating cranial injury

### Assessment of the patient with periocular injury



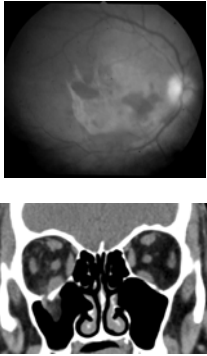
### History – vital clues



**Periocular injury: Clues from the history (i)**

Blunt injury


- Contusion ?
- Fracture ?



**Periocular injury: Clues from the history (ii)**

Sharp injury

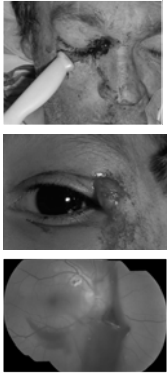
- Lid margins ?
- Canaliculi ?
- Lacrimal sac ?



**Periocular injury: Clues from the history (iii)**

Penetrating injury


- Intracranial injury ?
- Prolapsed orbital contents ?
- Retained foreign body ?



**Periocular injury: Clues from the history (iv)**

Chemical & thermal injury

- Ocular ischaemia ?
- Corneal protection ?
- Entropion, trichiasis ?




**Assessment of the patient with periocular injury**

Periocular injury

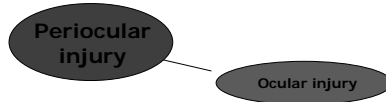
- Visual function

**Visual function**

- Not infrequently overlooked due to other injuries
- Measurement may not always be possible
- Check pupil reactions

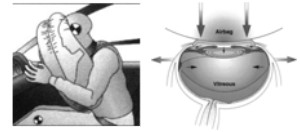


**Assessment of the patient with periorbital injury**

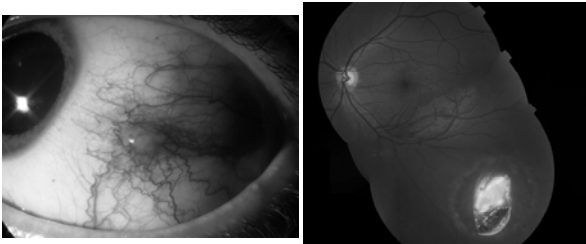


**Contusional injuries and haemorrhage**

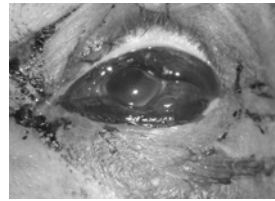
- Suspect intraocular injury with periorbital contusional injury
- Haemorrhage
- Angle recession
- VR pathology



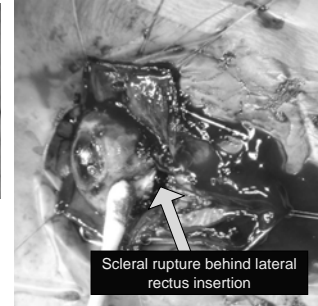
**Penetrating injuries**  
*Undetected intraocular foreign bodies*



**Lacerations**  
*Suspect globe rupture if IOP reduced*



Blunt trauma with subconjunctival haemorrhage and hypotony

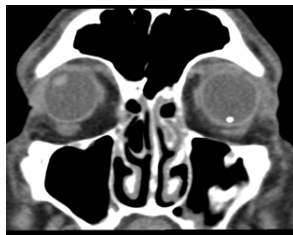


Scleral rupture behind lateral rectus insertion

**Penetrating injuries**  
*Undetected intraocular foreign bodies*

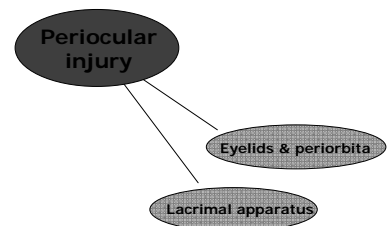


Orbital inflammation following hammer and chisel injury



Retained intraocular metal FB

**Assessment of the patient with periorbital injury**



### Eyelid lacerations

*Always evert the lid & inspect the fornices*

### Lacerations

*Make no assumption on the severity of injury based on the size of the laceration*

### Lacerations – suspect retained foreign body

Patient fell off her bicycle onto a sheaf of bamboo sticks

Recurrent discharge after removal of initial FB.

EUA – large fragment of bamboo removed  
Note long injury track

Injury track opened fully to exclude further retained FB(s)

Closure – local wick

### Undetected foreign body

### Lacrimal apparatus

- Assaults and dog bite injuries frequently result in avulsion injuries of the medial canthal tendon.
- Assessment may require general anaesthesia.
- Adequate exploration of the medial cathus and fornix.

### Assessment of the patient with periocular injury

```

    graph TD
      A[Periocular injury] --- B[Orbital tenderness]
      A --- C[Orbital palpation]
      A --- D[Periocular sensation]
      A --- E[Globe position]
      A --- F[Ductions]
  
```

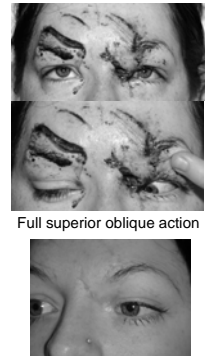
### Blunt trauma – ‘white eye blow out fracture’

- Paediatric orbital floor fracture
- ‘Greenstick’ fracture
- Entrapment of tissue
- +/- Nausea
- In the context of head injury, orbital fracture may not be considered
- Imaging may be unhelpful
- Emergent reduction of the fracture



### Ocular ductions – superior oblique

- Dog bite injury
- Multiple lacerations
- Injury to upper medial lid
- Check superior oblique action
- Forehead sensation
- Full examination under anaesthesia

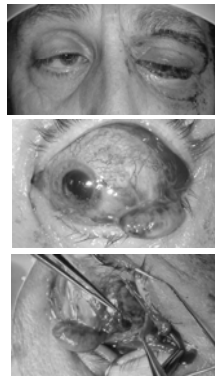


Full superior oblique action

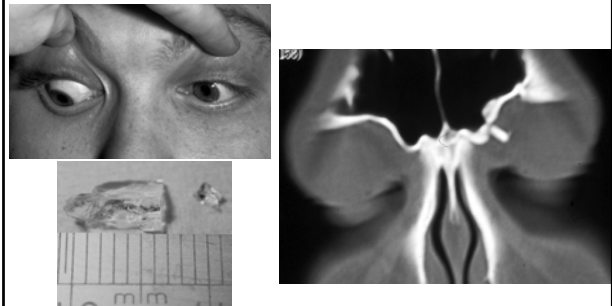
Don't discard tissue during repair

### Ocular ductions – Lateral rectus

- Gardening – high risk activity
- Patient fell onto rose bush
- Avulsion of lateral rectus
- Primary repair and secondary Knapp

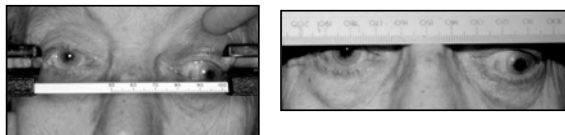


### Ocular ductions – Superior oblique Trochlea injury with lodged glass fragment



Glass fragment lodged in the trochlea

### Globe position



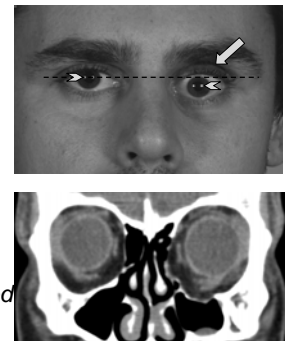
Measure both axial and non-axial proptosis with the measured eye taking up fixation to avoid erroneous readings



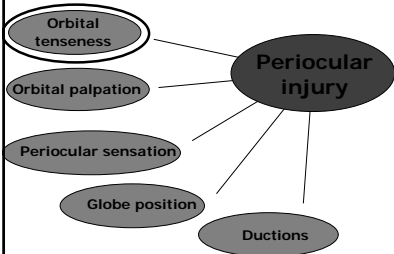
Large medial wall orbital fracture, but no diplopia or troublesome enophthalmos:  
Treat the patient not the scan (surgery not indicated)

### Orbital floor fracture: *Axial and non-axial globe displacement*

- Previous blunt trauma
- Enophthalmos >2mm
- Double vision
- ‘Sunken eye’ (enophthalmos)
- ‘Low eye’ (hypoglobus)
- >> Fracture repair indicated



### Assessment of the patient with periorbital injury



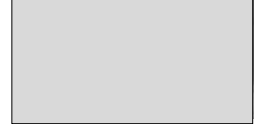
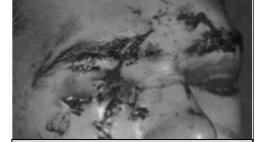
### Tense orbit

#### Causes:

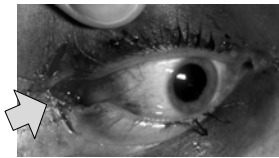
- Haemorrhage
- Oedema
- Gas

#### Risks

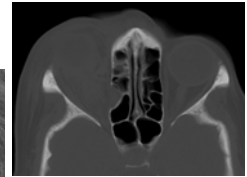
- Compartment syndrome
- Ischaemia
- Thrombosis
- >> Blindness



### Tense orbit – optic neuropathy



### Tense orbit – optic neuropathy



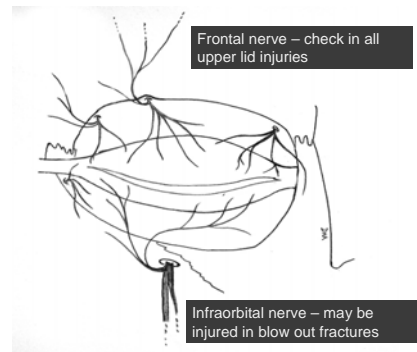
### Tense orbit - air entry from sinuses



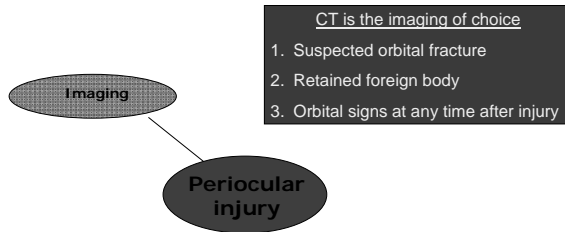
Recent medial wall orbital fracture

Sudden proptosis and surgical emphysema after blowing nose (conservative treatment with oral antibiotics)

### Periorbital sensation



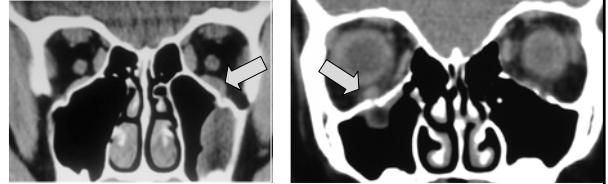
### Assessment of the patient with periorbital injury



CT is the imaging of choice

1. Suspected orbital fracture
2. Retained foreign body
3. Orbital signs at any time after injury

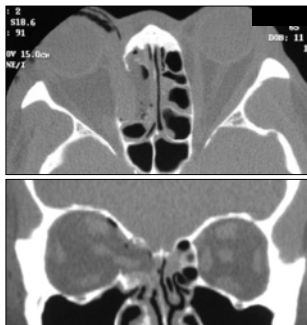
### The “white eye” blowout fracture



'Greenstick' type fracture with minimal or no bony displacement, but oedema of muscle (arrows) due to entrapped fascial tissue

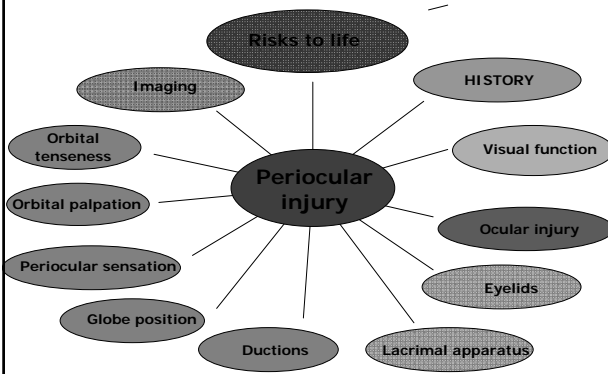
### Patients with suspected orbital fractures should undergo CT imaging

- Treat the patient not the scan
- In this case there was no clinical reason for intervention despite a large medial wall fracture



Make no assumptions on severity of injury based on skin wound

### Assessment of the patient with periorbital injury



### Periocular Trauma Assessment



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