The OMFS Survival Guide

Signs on Examination for Facial Trauma

Aims & Objectives

- To give a brief overview of systematic trauma examination
- Attendees to understand pathophysiology behind certain signs (eye signs, trismus, and emphysema)
- Attendees to understand which cases may need further investigation/ management
- Attendees to understand clinical signs and points in the history of head and C-Spine injury

When First Referred a Patient (SBAR Handover)

- Ask for patient details (Name, Age, Hosp Number)
- General history and complaint
- Past medical history
- Get their observations (all of them)
- Any blood results
- Imaging- if it's been done look at it before you see the patient

General History

- Timeline of events
- Mechanism of injury
- Head injury red flags: Loss of consciousness (how long), amnesia, seizure activity, vomiting more than once since incident, dropping GCS
- C- Spine red flags: pain on palpation of C- Spine, difficulty moving neck, numbness or tingling in a dermatomal distribution to hands/ arms
- Main complaint- e.g. malocclusion, visual disturbance
- When did they last eat/ drink (important if need to go to theatre)
- Past medical history (PMH)- includes drug history (with med doses), allergies, family history
- Social history- Smoking, alcohol, rec drug use, occupation, who lives at home (important for discharge)

General Examination Process

- End of the bed inspection (do they look very unwell, clearly struggling to breathe?) Look for obvious facial asymmetry, lacerations, bruising, swelling
- Ask them their name, how they are (initial airway check- can they speak?)
- Check for peri- orbital and post- auricular bruising, as well as any clear discharge from ears or nose
- Palpate facial bones for any steps, mobility or crepitus
- Check nose and maxilla for any mobility
- Check facial movements and sensation (CNs V and VII)
- Eye examination- subconjunctival haemorrhage, position of the globe, eye movements, pupils equal and reactive, visual acuity
- Medial canthal laxity test- pull laterally on the lower eyelid, if not disrupted the medial canthus should not move with it (if it moves patient may have an NOE fracture)
- Check the nasal cavity for septal haematoma
- Intra- oral examination- trismus, any damage/avulsed teeth (may need CXR), malocclusion, obvious lacerations, bruising or haematomas

The Eye Examination

- Any visible swelling, bruising, lacerations
- Check the position of the globe from above, the sides and in front of the patient:
    - **Enophthalmos:** posterior displacement of the globe from reduced orbital contents (e.g. fat herniating through the orbital floor in a blowout fracture)
    - **Hypoglobus:** The inferior displacement of the globe from a reduction of orbital contents
    - **Exophthalmos:** anterior displacement of the globe from being pushed forward by blood, air, neoplasia etc
- Check eye movements in all directions (using the double H or star method)
- Check the pupils are equal and reactive, and the consensual reflexes are intact
- Visual acuity: stand at the distance on the Snellen chart, if the patient has glasses put them on, check both eyes separately and then together
- Check for red colour desaturation ("what colour is this?)

Retrobulbar Haemorrhage

- The 3 Ps: **P**ain, **P**roptosis, O**p**thalmo**p**legia, Visual acuity, Red colour desaturation.
- Caused by bleeding into the orbital compartment- puts pressure on the orbital nerve and is sight threatening.
- The compression on the orbital nerve causes the symptoms- reduced VA, colour desaturation.

- Patient requires a lateral canthotomy and cantholysis (by senior ED Doctor, OMFS Registrar or Ophthalmology Registrar)
- Can give IV acetazolamide and mannitol as medical management whilst awaiting help (check local guidelines).

Trauma- Related Airway Compromise

- Bilateral fractures of the parasymphysis or body o mandible can cause the anterior segment to be completely mobile- can displace posteriorly and push the tongue into the airway. You can bridle the fracture at one/ both sides to help stabilise the mandible whilst help comes
- Major bleeding from the midface or mandible including sublingual haematomas- increasing haematoma can block the upper airway, these patients should be monitored accordingly.

Base of Skull Fractures

- Patient must be discussed with neurosurgery
- Monitor for CSF leaks
- Cannot have anything through the nose (e.g. NG tube, naso-pharyngeal airway, nasal packs, nasal tube for GA)
- Will need neurological observations

Investigations

- Radiographs as necessary OPG & PA Mandible for mandibular and dental issues, OM Facial views for midface plus possible CT facial bones or orbits as required
- Bloods: FBC, U&E
- If pyrexic/ septic, get a venous blood gas to look at the lactate
- Any other bloods relevant to PMH, e.g. INR if on warfarin, LFTs if liver disease, coagulation screen if liver disease or reports heavy alcohol intake
- If querying CSF leak can use a urine dipstick to check the clear fluid for glucose (lab CSF test takes at least 24 hours)

Pathophysiology of Signs

- **Trismus**

  Trismus in trauma patients can be caused by pain, a bony fracture causing a physical inability to open due to muscular impingement, bruising to the masseter or other facial muscles or blood or inflammatory effusion in the TMJ space. Trauma can also cause disk displacements.
- **Loss of sensation or movement in a myotome or dermatome**
- Neuropraxia- bruising to a nerve (usually via compression), is usually reversible
- Axonotmesis- Physical disruption to a nerve, can sometimes recover depending on extent of injury

- Neurotmesis- Complete disruption of the nerve, inability to recover
- **Pupillary Defects in Patients with Orbital Trauma**
  Compression of the optic nerve from bleeding means the signals of light perception aren't carried back to the brain appropriately, and so the pupil may not react, and so the consensual reflex is also not intact. Another trauma related cause is a large intracranial bleed compressing the Oculomotor nerve- this will cause a dilated, fixed pupil as it is not on the side of the lesion.

The "White- Eyed Blowout Fracture"

- Typically seen in children and young adults and commonly mistaken for a head injury.
- The orbital floor/ medial wall fractures. Blows out, the muscle herniates through and bone flips back up like a trapdoor and traps it.
- Patients must be operated on within 24-48 hours as the muscle is at a high risk of necrosis
- Aside from restriction of eye movement, can present with bradycardia and nausea/vomiting due to crossover stimulation of the vagus nerve from the stretch on the extra- ocular muscles.

Simple Local Measures for Trauma Patients

- **Unstable Mandibular Fractures**
  Bridle wiring- pass a wire between two teeth either side of the fracture and twist to tighten- can aid with mobility and pain.
- **Nasal Bleeds**
  Head forward, pinch fleshy part of nose firmly for 20 minutes. Can use adr/ txa- soaked gauze to assist with haemostasis. If no base of skull fracture the nasal cavity can be packed (contact ENT or OMFS SpR).
- **Septal Haematoma**
  Requires drainage ASAP to reduce chance of septal necrosis. Simple incision and drainage under LA and then nasal pack, contact ENT or OMFS SpR if you are not able to do so.

Further reading:

General assessment of OMFS patients: https://www.amazon.co.uk/Call-Oral-Malliofacial-Surgery-2nd/dp/1909818585

AO CMF Surgery:

https://surgeryreference.aofoundation.org/cmf/trauma?_ga=2.47445540.2099594922.1635008087-486569647.1635008087

Interpretation of multiple imaging tutorials:
https://radiopaedia.org/encyclopaedia/all/head-neck?lang=us&page=1

Classification of facial fractures:
Pocket Dentistry
https://pocketdentistry.com/trauma-2/

E- Face:
https://www.e-lfh.org.uk/programmes/oral-and-maxillofacial-surgery/