

Facial Injuries

Contributors

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Overview

Facial injuries sustained in sport usually result from direct contact with other athletes or collisions with equipment. While many sports now require the use of protective equipment such as headguards and mouthguards, severe facial injuries can still occur. Common issues include orbital fractures, cauliflower ear, nasal fractures and septal haematomas. An understanding of the diagnosis and treatment of these injuries is crucial for the healthcare professional present, especially those that threaten an athlete's airway and vision.

Interesting Cases

1) In January 2013, UFC athlete Michael Bisping faced Vitor Belfort for a chance at the Middleweight title. He lost the fight via technical knockout following a head kick. Worried about a potentially career-ending injury, Bisping opted not to seek medical help for vision problems following the fight until May 2013, at which point his vision had deteriorated to the extent that he was unable to see his hand directly in front of his face. Examination in May 2013 showed a detached retina in his right eye secondary to trauma. He had surgery for the detached retina and returned to training. He had five further surgeries on his eye during a year-long hiatus from the sport. He was left effectively blind in his right eye but, incredibly, went on to fight on another 11 occasions before his retirement in 2018.

2) 24 year-old female rugby player, lateral blow to nose in last 5 minutes of international game reported to medical team in changing room after the game ended. Displacement evident with slight impeding airflow through right nostril. No other symptoms or signs of head injury or other significant injury and minimal blood loss. During examination the nasal bones were relocated by consented manipulation. Player monitored over next 3 days and had no significant symptoms apart from bruising and some swelling (minimised by regular icing and use of kinesiotape). The player was aware of risk of re-fracture, nose bleeds & infection but was determined to play the next 2 international games in the series. Player did take part in both games as pivotal player and had no further issues and once swelling had completely settled airway was clear and the player was happy with the cosmetic alignment.

Auricular Haematoma

Anatomy: The ear is comprised of three parts: the outer (known as the auricle or pinna), middle and inner ear. The cartilaginous auricle is the visible portion of the ear [1].

Aetiology: Auricular haematoma often occurs as a result of a shearing force in contact sports such as rugby, wrestling and mixed martial arts. Blood accumulates within the sub-perichondrial space, lifting the perichondrium from the cartilage and devascularising the cartilage. Left untreated, this can lead to infection, necrosis and loss of the auricular cartilage [2, 3]. The term 'cauliflower ear' refers to the permanent deformity caused by fibrocartilaginous overgrowth following destruction of the auricular cartilage. Protective headgear can be worn as a protective measure during practice at the discretion of the athlete.

Clinical features:

- Tender, fluctuant auricular swelling $\pm$ fever. Assessment should include head and neck examination, and otoscopy to evaluate the ear canal and tympanic membrane
- Differential diagnoses include perichondritis, auricular abscess and cellulitis.

Golden nugget: All cases should be assessed for concurrent head injury/concussion

Investigations:

- History and physical exam.
- CT and MRI can be considered if there is concern about brain injury [4]

Management:

- Treat acutely with ice and firm compression.
- Within the first 48 hours, it can be drained aseptically and firmly bandaged with a pressure dressing, silicon mould or compression between silastic sheets and mattress sutures by ENT colleagues [5, 6, 7].
- Examine daily to assess progress and possible re-accumulation of the haematoma [8]. Consider prophylactic oral antibiotic therapy if high risk of infection.

Nasal Fractures

Anatomy: The nose is comprised of a paired bone and cartilage framework.

Aetiology: Typically caused by either lateral or frontal forces.

Clinical features: Nasal fractures often present with pain and epistaxis (due to the rich vascular supply), swelling, crepitus and deformity [1, 9]. Nasal fractures may be displaced or un-displaced.

Investigations: Plain radiographs of the nose are not required for isolated nasal fractures. Consider CT scan if nasal fracture is accompanied by signs of a basal skull fracture.

Management:

1. Lateral displacements (most common) can be corrected immediately. This can help control epistaxis. If not, see Fig 1.

Epistaxis Management [1,10]

1. Approach in safe way, using primary survey assessment (SABCDE) to ensure no other significant injury that is threat to airways, breathing or circulation.
2. Sit patient up and forward
3. Prolonged pressure to lower fleshy part of nose for 10-15 mins, spitting out any blood
4. Ice packs on back of neck and bridge of nose
5. If stops observe further 15 mins, if restarts repeat above $\pm$ nasal tampon inserted
6. Cauterise with silver nitrate if able to visualise small anterior bleeding sites
7. ENT referral if persists

Fig 1: Epistaxis Management

2. Cleanse and suture associated nasal lacerations + consider prophylactic antibiotic therapy (compound fracture).
3. Examine for **septal haematoma** (initially may be painless until large or infected).
4. Persistently displaced fractures & if causing airway restriction should be referred to ENT for review and fracture reduction at 7-10 days post-injury [9]. Advise athlete to take a pre-injury picture of them to the appointment.

Golden nugget: The presence of halo sign and the presence of glucose in fluid leaking from the nose indicates the presence of CSF

Halo sign- a clear ring of fluid surrounding blood spots on tissue

Septal Haematoma

Anatomy: The nasal septum is a cartilaginous structure that is covered by a perichondrium. It provides the septal cartilage with its blood and nutrient supply [11].

Aetiology: A septal haematoma is caused by haemorrhage between the septal cartilage and the perichondrium (Fig 2).

Clinical features: Nasal obstruction or pain following facial trauma. The patient may be febrile. Examination with a nasal speculum shows a lateral bulging of the septum that occludes the nasal passages.

Investigations: Direct vision of the nasal cavity with nasal speculum.



Fig 2: Septal haematoma

PC: perichondrium, C: cartilage, H: haematoma

Management: A septal haematoma is managed by evacuation of the clot with a wide bore needle or small incision. This should be followed by nasal packing with sterile gauze or a nasal tampon to prevent haematoma recurrence. Antibiotic prophylaxis is essential as there is a high risk of infection and abscess formation with cartilage necrosis.

Complications: Septal abscess, deviated septum, saddle nose, orbital cellulitis and abscess, meningitis, epidural abscess, cavernous sinus thrombosis, systemic sepsis.

Eye Injuries

Injury	Exam and investigation	Management
Corneal abrasion	- Pain/ sensation of foreign body/ blurred vision - Topical anaesthetic + fluorescein staining under cobalt blue light	- Antibiotic eye drops (e.g. chloramphenicol) - Padding over the eye - Consider topical mydriatic if severe pain or photophobia
Subconjunctival haemorrhage	- Bright red area in white conjunctiva - If posterior margin not clearly seen consider basal skull injury - Blurred vision/ photophobia should prompt urgent referral to rule out globe perforation	- Check BP to rule out hypertension - Reassurance
Hyphaema	- Blood fluid level in anterior chamber of the eye due to ruptured eye vessels - May have reduced visual acuity	Urgent referral to ophthalmology to prevent glaucoma and corneal bloodstaining - Prevent further bleeding (avoid aspirin/ ibuprofen)
Lens dislocation	- Blurred vision - Ophthalmoscopy	Urgent referral to ophthalmology
Retinal detachment	- Appearance of 'curtain' spreading or flashes of light - Ophthalmoscopy shows elevation and folding of the detached retina - More common when significant myopia	Urgent referral to ophthalmology for surgery

Red flags for immediate referral to ophthalmology [1,12]

- Severe eye pain
- Persistent blurred or double vision
- Persistent photophobia
- Flashing lights
- Foreign body inside the eye
- Cannot tolerate examination
- Hyphaema
- Tears in outer ocular walls + pear-shaped pupil
- No view of fundus
- Marked impaired visual acuity (<6/12)
- Floating bodies
- Loss of part of visual field

Orbital Blowout Fracture

Anatomy: The orbit is comprised of seven bones – frontal, zygomatic, maxillary, sphenoid, ethmoid, palatine and lacrimal (Figure 3). The orbital floor is the weakest part of the orbit; it is comprised of the maxillary, zygomatic and palatine bones [13].

Aetiology: ‘Blow-out’ fracture results from direct trauma. Sudden increased intra-ocular pressure causes a fracture through the weakest area of the orbit (the floor) with preservation of the orbital rim.

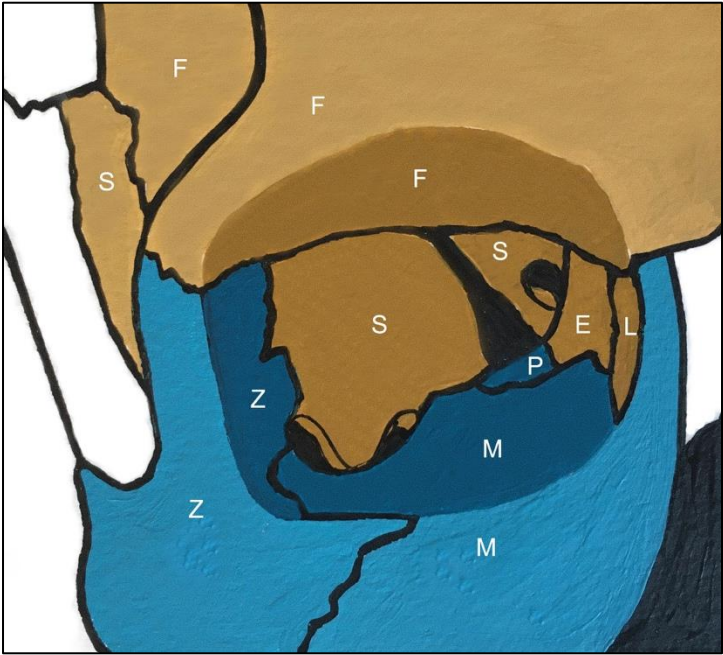


Figure 3: Orbit Anatomy; bones of the orbital floor are pictured in blue.

- S: sphenoid bone
- F: frontal bone
- E: ethmoid bone
- L: lacrimal bone
- M: maxillary bone
- Z: zygomatic bone
- P: Palatine

Clinical features:

- Orbital pain
- Protruding or sunken eye (exophthalmos/enophthalmos)*
- Diplopia on upward gaze
- Limitation of upward gaze (due to entrapment of inferior rectus muscle in the orbital floor fracture)
- Subcutaneous emphysema indicates maxillary sinus fracture
- Numbness of the ipsilateral cheek due to damage to the infraorbital nerve
- Hyphaema or lens dislocation indicates associated intra-ocular injury

Investigations:

- Birds-eye plain radiograph
- CT head and facial bones

Management:

- **Urgent referral** to ophthalmology + antibiotic therapy

***Golden nugget:** Always look at face from above & behind head to assess asymmetry; enophthalmos/exophthalmos is more easily seen

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