

15. Facial and dental injuries

Priorities in management

Best practice is based on current APLS / ATLS guidelines.

Maxillofacial injuries will often take a lower priority than other potentially life or limb threatening injuries. This is due to the ability to deal with most maxillofacial injuries in a timescale from 24 hours to 7 days without long-term morbidity.

There are a few exceptions to this rule and they are highlighted in the guidelines below.

PURPLE	Time critical lifesaving intervention needed (or multi system injuries individually needing specialist care) ED to ED transfer, no speciality permission required
RED	Time sensitive intervention required. May be able to stay locally if max fax on site. If being transferred in the context of multi system trauma should only go to paediatric MTC (Leeds / Sheffield)
AMBER	Delayed treatment required. May be able to stay locally if max fax on site If being transferred in the context of multi system trauma should only go to paediatric MTC (Leeds / Sheffield) If isolated injury may be able to go to another Trauma Unit with max fax on site
GREEN	Non-emergency /elective. May be able to stay locally if max fax on site If being transferred in the context of multi system trauma should only go to paediatric MTC (Leeds/Sheffield) If isolated injury may be able to go to another Trauma Unit with max fax on site

Location of services and referral pathways for Yorkshire & Humber

In the child with multiple trauma they will be transferred to the Major Trauma Centre (MTC) according to the usual major trauma pathway (see [Section 3](#)). Each MTC will have maxillofacial support available to them.

Some Trauma Units will be able to provide paediatric management in the following circumstances:

- Absence of other injuries which would require immediate transfer to the Paediatric MTC
- Age > 2 years

Major Trauma Centre	Centres with maxillofacial resident on call		
Leeds General Infirmary 0113 243 2799 Bleep 1782	Leeds General Infirmary 0113 243 2799 Bleep 1782	Bradford Royal Infirmary 01274542200 Bleep 284	Pinderfields General 01924 213000 01924 542318 (direct) Bleep 352
Sheffield Children's Hospital 0114 271 1900 07623869543 Bleep 2027	Royal Hallamshire 0114 271 1900 07623869543 Bleep 2027	Barnsley 01226 730 000 Bleep 173	Chesterfield 8am to 5pm 01246 277 271 Bleep 861 Out of hour refer to Sheffield Children's Hospital
Hull Royal Infirmary 01482 328 541 Bleep 128	Hull Royal Infirmary 01482 328 541 Bleep 128	York District Hospital 01904631313 Bleep 861 (Harrogate refer to York)	

PENETRATING NECK INJURY		
Presentation	Consideration	Management
Stable patient No airway compromise Haemodynamically stable No haematoma No bruit No mediastinal widening No voice changes No cranial nerve injury	Contact vascular surgery and maxillofacial surgery (NB vascular surgery only available in Leeds) CT angiogram and interventional radiography management of bleeding sites Tetanus and antibiotics	Surgery if patient deteriorates or other injury identified on CT scan Otherwise observe and monitor closely
Unstable patient Airway compromise Haemodynamically unstable Neck haematoma Uncontrollable bleeding Mediastinal widening Voice changes Cranial nerve injury	Immediate surgical intervention after control of the airway Tetanus and antibiotics	Multi-specialty surgical input – paediatric surgery, vascular and/ or maxillofacial surgery

Tissue injuries

The management of soft tissue injuries often involves debridement and closure by the maxillofacial team within 24 to 48 hours unless there is a need to control bleeding.

SOFT TISSUE INJURY – SPECIAL CONSIDERATIONS ACCORDING TO SITE			
Site	Pitfall	Immediate Management	Definitive management
All sites	Dirty wound	Irrigation, tetanus, antibiotics and dressings	Debridement, washout and closure
Scalp	Haematoma formation	Control bleeding and pressure dressing	Debridement and washout Monitor haemoglobin
Ears	Haematoma	Drainage to avoid cartilage collapse	Compression bandage
Nose	Septal haematoma and tissue loss	Drain haematoma with needle puncture	Tissue loss requires secondary reconstruction
Lips	Vermillion border scars	Irrigation, identify foreign body	Debridement and closure of wound
Intra-oral lacerations	Infection	Lacerations < 1.5cm require oral hygiene measures only	Large wounds require debridement and closure within 72 hours
Pre-auricular	Facial nerve and parotid injury	Document facial nerve function. Identify salivary leak	Exploration of wounds, repair and closure
Eyelid	Lacrimal flow damage/underlying damage to the globe	Full eye assessment is required	Repair of eyelid with duct cannulation (Ophthalmology +/- Maxillofacial)

HARD TISSUE INJURY			
Site	Presentation	Immediate Management	Definitive Treatment
Skull	Skull laceration, low GCS, CSF leak, "Panda eyes," Battles sign, haemotympanum	Refer to section on Severe traumatic brain injury insert hyperlink Follow local guidelines for vaccination with CSF leak	Neurosurgical management
Orbit - white eye blowout or entrapment (of muscle or fat)	Diplopia, bruising around eye, numbness of cheek, vagal symptoms (bradycardia, syncope, nausea, vomiting, hypotension when asked to move affected eye) - <u>can be mistaken for intracranial injury</u>	Rule out globe injury CT orbits with coronal formats (fine cut) Consider steroids	Contact oral and maxillofacial surgeon If no other injuries then EUA and release of entrapment in theatre within 24 hours to reduce risk of persistent diplopia
Orbit - compartment syndrome or retrobulbar haemorrhage	Pain, proptosis, reduced acuity, paraesthesia of cheek, hard / tense globe	Lateral canthotomy +/- cantholysis Mannitol, acetazolamide, steroids	If no other injuries then EUA and control of bleeding in theatres
Nose	Difficult to assess if swollen Deviation of nose, septal haematoma, epistaxis	Drain septal haematoma, control epistaxis- may need ENT input	MUA nasal bones when swelling reduces in 48-72 hours
Orbital floor injury (no entrapment of muscles or fat)	Bruising of eye with double vision and often identified on CT scan Enophthalmos	Visual acuity and assess for globe injury	ORIF of fracture site within 5-7 days
Zygoma/ midface	Flattening of cheekbone complex, double vision, enophthalmos, inability to open mouth, malocclusion due to mobility of maxilla, bruising of palate, epistaxis, numbness of cheek	Assess for globe injury and record visual acuity Treat emergency as per orbital injury Ask patient not to blow nose. No routine antibiotics	ORIF fractured bones in 5-7 days
			Complex maxillary fractures require management within 24 hours
Mandible including condyles & ramus	Bleeding from mouth, inability to bite, malocclusion, numbness of lower lip on one or both sides	Treat as open fracture and administer antibiotics (except condyles) Ensure airway secure in bilateral fractures	ORIF of fracture within 24 hours (can delay treatment if other life threatening injuries present). Condylar fractures rarely require ORIF under age 12

BITE INJURY		
Type	Consideration	Management
Human	Usually dirty High risk for contamination and transmissible disease	Swab wounds, Tetanus / immunization history, consider transmissible diseases, photograph, irrigate Antibiotics - co-amoxiclav remains first line Consider non-accidental injury and if suspected refer to paediatrician
Animal	May be clean or dirty Lower risk for contamination than human bite	Swab wounds, Tetanus / immunization history, photograph, irrigate Antibiotics (Commonest organism from dog bite - Pasteurella species) - co-amoxiclav remains first line Consider non-accidental injury and if suspected refer to paediatrician

Dental and dentoalveolar trauma – see also tooth avulsion treatment algorithm [Appendix 9](#)

Dental trauma should be triaged and managed based on damage to deciduous teeth (baby teeth) or adult teeth which begin to erupt from the age of 6 sequentially replacing baby teeth with their adult counterparts.

Scenario	Action	Consideration
Acute trauma patient with loose teeth / debris considered to be airway risk	Remove any loose teeth or fractured crowns deemed to compromise airway	Unaccountable teeth- consider CXR to rule out inhalation
Avulsed or subluxed/displaced teeth	Follow algorithm – Appendix 9	Contact maxillofacial bleed holder/ SpR on call

- **Avulsed deciduous (baby) teeth** do not require re-implanting in the acute setting.
- **Avulsed adult teeth** should be re-implanted as quickly as possible (as long as this does not compromise the management of other issues such as the airway management or management of other injuries). This can be performed (ideally within 1 hour of avulsion) by handling the tooth by the crown and sliding the root back into the socket.
- **Dentoalveolar fractures** involve the tooth bearing bone in the mandible and maxilla. Fractured segments will have multiple teeth that move in unison when palpated. These fractures are rare, and should raise suspicion of a fracture of the major bones in the face if mobility is seen.

Following initial management, children should be referred to their dental practitioner or a specialist paediatric dentist at the earliest opportunity for definitive management.

Appendix 9 - Avulsion of tooth algorithm

