

ABC of oral health

Dental emergencies

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Most oral emergencies relate to pain, bleeding, or orofacial trauma and should be attended by a dental practitioner. However, in the absence of access to dental care, a medical practitioner may be called on to help. Jaw fractures require the attention of oral or maxillofacial surgeons.

Dental pain

Pulpal pain is spontaneous, strong, often throbbing, and exacerbated by temperature and outlasts the evoking stimulus. Localisation is poor, and pain tends to radiate to the ipsilateral ear, temple, or cheek. The pain may abate spontaneously, but the patient should still be referred for dental advice, as the pulp has probably necrosed, and acute periapical periodontitis (dental abscess) will probably follow in due course. Endodontics (root canal treatment) or tooth extraction are required.

Periapical periodontitis pain is spontaneous and severe, persists for hours, is well localised, and is exacerbated by biting. The adjacent gum is often tender to palpation. An abscess may form ("gumboil"), sometimes with facial swelling, fever, and illness. Fascial space infections are fortunately rare since they threaten the airway: patients should be referred to a specialist. In the absence of immediate dental attention it is best to incise a fluctuant abscess and give antimicrobials (amoxicillin) and analgesics. The acute situation usually then resolves, but the abscess will recur, since the necrotic pulp will become re-infected unless the tooth is endodontically treated or extracted, though a chronic abscess may be asymptomatic apart from a discharging sinus. Rarely, this may open on to the skin.

- **Emergency treatment of dental abscess is antimicrobials, analgesics, and drainage of a fluctuant swelling by a dentist**
- **Dental treatment should then be arranged, or the abscess will recur**

Bleeding

Most oral bleeding results from gingivitis (see earlier article) or trauma, but if it is prolonged consider a bleeding tendency.

Trauma

After a tooth is extracted, the socket bleeds normally for a few minutes but then clots. Since clots are easily disturbed, patients should be advised not to rinse their mouth, disturb the clot, chew hard, take hot drinks or alcohol, or exercise for the next 24 hours. If the socket continues to bleed lie a gauze pad across the socket and ask the patient to bite on it for 15-30 minutes. If it is still bleeding place Surgicel or another haemostatic agent in the socket. If the bleeding continues suture the socket and, lastly, consider a bleeding tendency.

- **Emergency care of post-extraction bleeding is to have the patient bite on gauze for 15-30 minutes**
- **Persistent bleeding may require packing the socket with a haemostatic agent or suturing, but it occasionally signifies an unrecognised bleeding tendency**



Orofacial swelling in a patient with an acute dental abscess



Chronic dental abscess (gumboil) at a typical site, in this case related to the broken molar



Dental sinus opening on to skin

Dental indications for urgent admission to hospital

Trauma

- Middle facial third fractures
- Mandibular fractures unless simple or undisplaced
- Zygomatic fractures where there is danger of ocular damage

Inflammatory lesions and infections

- Cervical or facial fascial space infection
- Oral infections where patient is "toxic" or severely immunocompromised
- Tuberculosis (some)
- Severe viral infections
- Severe vesiculobullous disorders (pemphigus, Stevens-Johnson syndrome, toxic epidermal necrolysis)

Blood loss

- Severe or persistent haemorrhage (particularly in patient with a bleeding tendency)

Others

- Diabetes with poor control

Surgical complications

Post-extraction pain

Some pain and swelling after tooth extraction are common but ease over a few hours. Paracetamol usually provides adequate analgesia. Pain from complex procedures may last longer and should be controlled with regularly administered analgesics. If pain persists or increases the patient should return to the dentist to exclude pathology (such as dry socket or jaw fracture).

Infection

Localised osteitis (dry socket) occasionally follows an extraction, typically a lower molar extraction. After two to four days there is usually increasing pain, halitosis, unpleasant taste, an empty socket, and tenderness. Exclude retained roots, foreign body, jaw fracture, osteomyelitis, or other pathology, especially if there is fever, intense pain, or neurological signs such as labial anaesthesia. Treat by irrigating with warm (50°C) saline or aqueous chlorhexidine, dressing the socket (several concoctions are available), and giving analgesics and antimicrobials (metronidazole).

Actinomycosis a rare late complication of extraction or jaw fracture and usually presents as a chronic purplish swelling. A three week course of penicillin is often indicated.

Antral complications

Loss of tooth or root into the antrum—Give antimicrobials and a nasal decongestant and locate the object by radiography. A further operation is required.

Oroantral fistula—Patients should not blow their nose. Antimicrobials and nasal decongestants help. If it is detected early, primary closure is possible, but others may need flap closure by a specialist.

Fractured teeth

Injuries to the primary teeth may be of little consequence with regard to emergency care, but even seemingly mild injuries can damage the permanent successors. Upwards of 30% of children damage their permanent teeth by the age of 15.

Enamel fracture needs no emergency care, but dental attention should be sought later. More severe injuries affecting the dentine should be treated as urgent as there might be pulpal infection. Emergency care consists of placing a suitable dentine lining material on to the fractured dentine, and so prompt treatment by a dentist within the same working day or at least by the following morning is required. Fractured roots require dental advice.

Avulsed teeth

Avulsed permanent anterior teeth can be replanted successfully in a child, particularly if the root apex is not completely formed (under 16 years old). Avulsed primary teeth should not be replanted. The younger the child and the sooner the replantation, the better the success; teeth replanted within 15 minutes stand a 98% chance of being retained after further dental attention.

Immediate replantation gives the best results. Hold the tooth by the crown (do not handle root as that could damage the periodontal ligament). If the tooth is contaminated rinse it with sterile saline, and if the socket contains a clot remove it with saline irrigation. Replant the tooth the right way round (ensure the labial (convex) surface is facing forward) and manually compress the socket. Splint the tooth; “finger crimping” a foil milk bottle top is a temporary measure, an alternative is tissue adhesive. The child should see a dentist within 72 hours.



Actinomycosis

- Pain increasing after an extraction may indicate infection or fracture
- Radiograph to exclude pathology
- Irrigate and dress the socket, and consider antimicrobials and analgesics



Oroantral fistula after extraction of an upper molar. The antral floor is often in close proximity to the roots of maxillary molars and premolars



Oral and dental trauma after a skateboarding accident

If immediate replantation is not possible place tooth in an isotonic fluid (cool fresh pasteurised or long life milk, saline, or contact lens fluid). Otherwise, if the child is cooperative, place tooth in the buccal sulcus and get to a dentist within 30 minutes. Unsuitable and slightly damaging fluids are water (because of isotonic damage as a result of prolonged exposure), disinfectants, bleach, and fruit juice. The use of a doxycycline immersion before reimplantation by the dentist may be helpful in preventing later external root resorption.

Splint the tooth for 7-10 days, with no biting on splinted teeth, soft diet, and good oral hygiene.

Follow up—Root resorption, ankylosis, and tooth submergence (infraocclusion) are potential complications.

- Primary teeth should not be replanted
- Permanent teeth in children can be successfully replanted
- Hold tooth by crown, keep clean and moist in saline or milk, replant as soon as possible, and splint

Maxillofacial trauma

Dislocation or subluxation of mandible

This is commonly caused by a blow to the chin when the jaw is open. The condyles are dislocated forwards and upwards anterior to the eminence, and the patient gags open.

Fractures must be excluded. Reduction can usually be achieved by facing the patient and placing the thumb pads over the lower molars and applying downwards pressure and simultaneously, with the fingers under the chin, rotating the jaw backwards and upwards. If muscle spasm prevents reduction intravenous midazolam may be needed. After reduction, wide opening of the jaw should be avoided.

Recurrent dislocation is a feature of Ehlers-Danlos and Marfan's syndromes.

Jaw fractures

These mainly result from high velocity impact as in road traffic accidents, other accidents, and assaults.

The immediate concern is to preserve the airway. Assess all traumatised patients along the lines of the advanced trauma life support scheme (ATLS). Other immediate life threatening problems include intracranial haemorrhage, severe haemorrhage from other sites, and cervical spine damage. During the secondary survey, inspect the head for lacerations and leakage of cerebrospinal fluid.

Associated bleeding may further compromise the airway. Jaw fractures alone, unless associated with a split palate or gunshot wounds, rarely cause severe haemorrhage. Bleeding from a ruptured inferior dental artery usually stops spontaneously, but may recur if, for example, there is traction on the mandible. Severe maxillofacial bleeding may be tamponaded with craniofacial fixation. Bleeding can arise from fractured nasal bones, in which case nasal packing may be required. If bleeding recurs the damaged vessel must be ligated.

Definitive management of fractures, despite frighteningly severe disfigurement, is not an immediate priority, but debris such as fractured teeth, blood, and saliva should be cleared from the mouth, and the tongue may be controlled by a dorsal suture. An oropharyngeal airway may be required. Involve the maxillofacial team early on for treatment planning.

Intubation may be necessary in presence of substantial head injury, and inability to intubate may necessitate surgical cricothyroidotomy, since nasotracheal intubation is contraindicated.

The diagnosis of fracture is from the history, pain, swelling, bruising (haematoma), bleeding (usually intraorally), mobility of fragments (and crepitus), deranged occlusion, paraesthesia or anaesthesia of nerves involved, and radiographic signs.



Step deformity of occlusion revealing mandibular fracture

Radiographs for demonstrating maxillofacial fractures

Mandibular fracture

- Panoramic *or*
- Bilateral oblique laterals
- Postero-anterior view of mandible
- Occlusal

Temporomandibular joint and condyle fracture

- Conventional and high orthopantomogram *or*
- Reverse Towne's
- Consider computed tomography

Zygomatic arch fracture

- Occipitomeatal
- Submentovertex (exposed for zygomatic arches, not base of skull)

Middle third fracture

- Occipitomeatal 30°
- Occipitomeatal 10°
- Lateral skull
- Computed tomography

Skull fracture

- Postero-anterior view of skull
- Lateral skull (brow up)
- Submentovertex (exposed for base of skull)
- Computed tomography

Nasal fracture

- Soft tissues lateral view for nasal bones
- Occipitomeatal 30°

Mandibular fractures

These are commonly owing to assault and are usually simple and not associated with serious other injuries or bleeding. If the symphysis is comminuted the tongue could fall back and obstruct the airway, and this must be prevented. Simple undisplaced fractures may occasionally be treated conservatively with a soft diet if the teeth are not damaged. If the fragments are excessively mobile, pain will be substantial, and early fixation is the best management. Most fractures are managed by open reduction and internal fixation, usually with mini-plates.

Middle third or upper facial skeleton fractures

These commonly arise from severe trauma (particularly road traffic accidents) and are classified into Le Fort fracture lines: I—Low level above the nasal floor (swelling of upper lip) II—Subzygomatic (massive swelling of face: ballooning) (Panda facies) III—Suprazygomatic (massive swelling of face and cerebrospinal rhinorrhoea).

There may be airway obstruction, head injury, chest injuries, ruptured viscera, and fractured spine and long bones. Most middle third fractures are treated by open reduction and internal fixation with mini-plates.

Zygomatic (malar) fractures

These are typically due to assaults. Orbital features are common and include depression of cheek, lateral subconjunctival haemorrhage, rim step deformities, restricted eye movements, changes in visual acuity, variation in pupil size and reactivity, and, occasionally, enophthalmos or exophthalmos.

Undisplaced uncomplicated fractures need no treatment but should be reviewed as early as possible within two weeks. For others, reduction is by elevating from the temporal region (Gillies approach), an intraoral approach, or open reduction and internal fixation.

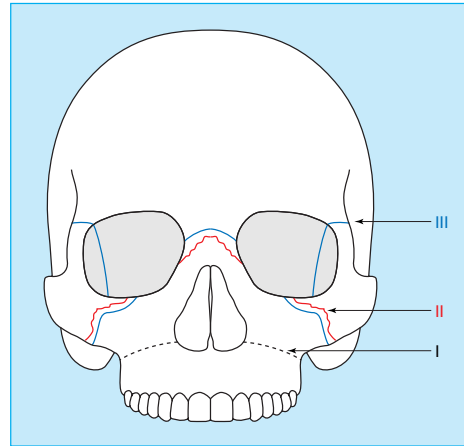
- **The priority in patients with maxillofacial injury is the airway**
- **Middle third facial fractures may be associated with cerebrospinal rhinorrhoea**
- **Zygomatic fractures may be associated with ocular damage**
- **The maxillofacial team should be involved at an early stage for planning treatment**

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Le Fort lines of middle third facial fractures (redrawn from Scully et al. *Oxford Handbook of Dental Patient Care*. Oxford University Press, 1998)

Further reading

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Corrections

ABC of oral health: Dental damage, sequelae, and prevention

Two errors occurred in this article by Ruth Holt and colleagues (24 June, pp 1717-9). First, the picture of tooth erosion (bottom of p 1717) is upside down. Second, in the table of recommended fluoride dietary supplementation for caries prophylaxis in high risk children (p 1718) the supplementation for children aged >6 years old in areas with water fluoride levels <0.3 ppm should have read 1 mg/day (not 1 g/day).

ABC of oral health: Periodontal disease

In this article by John Coventry and colleagues (1 July, pp 36-9) the third picture on page 38 is wrongly labelled as pregnancy epulis. In fact, it shows pyogenic granuloma in a child.

ABC of oral health: Oral cancer

In this article by Crispian Scully and Stephen Porter (8 July, pp 97-100) the picture of carcinoma of the tongue (p 97) is upside down.