

ADULT DENTAL TRAUMA: WHAT SHOULD THE DENTAL PRACTITIONER KNOW?

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Prim Dent J. 2016;5(2): 66-77

ABSTRACT

The management of adult dental trauma can be a daunting challenge for practitioners at any level. Like medical emergencies, initial management can have a large influence on prognosis. It is important that practitioners understand the basic principles of managing the acute presentations of dental trauma. This article aims to illustrate a step-by-step approach in order to improve the management within general dental practice for better outcomes for patients.

The prospect of managing adult dental trauma can be challenging and daunting for practitioners at any level. Achieving optimal outcomes relies on sound decision-making from the outset, helping to avoid complications and chronic sequelae. As with all aspects of clinical practice, repetition and familiarity breed confidence. Unfortunately dental trauma may not be encountered as frequently as other problems. Like medical emergencies, initial management can have a large influence on prognosis. It is important that practitioners understand the basic principles of managing the acute presentations of dental trauma.

When faced with this often-unexpected challenge, various questions will relay through our minds:

- What do I ask the patient?
- What should I expect to see from the history?
- How can I manage this injury?
- Do I have the time and the necessary equipment to manage this?
- Should I prescribe antibiotics?
- Is there anyone I can refer the patient to?
- When should I see the patient again?
- Where can I get more information?

This article aims to illustrate, in a step-by-step approach, the management of dental trauma to achieve better outcomes for patients.

What do I ask the patient?

Dental trauma will usually present unpredictably during a busy day. The patient will often be anxious, in pain and keen to know if their injured tooth or teeth can be saved. As with everything in dentistry, the process of managing a problem that initially seems complicated begins with a focused history.

A pre-printed pro-forma can be useful in these circumstances as it can act as an aide-mémoire. As a result, the most appropriate and relevant questions can be asked in an efficient and confident manner (see Table 1).

The answers to these questions should provide the practitioner with the basic information that can help inform the management of the trauma.

Patients who present with dental trauma may not have seen a dentist for a while, may be anxious about dentistry or may not have had any dental treatment in the past. All of the above will undoubtedly compound the distress caused by the traumatic incident.

What should I expect to see from the history?

The clinical examination should be logical, quick and easy to execute. The pro-forma can be useful in building the clinical picture.

Clinical examination

A gentle assessment of the soft tissues and teeth should be carried out to minimise the patient's distress.

Most untreated injuries presenting in general dental practice will be relatively minor, as major soft tissue injuries or facial fractures would normally be managed in a maxillofacial unit. Soft tissue injuries, including lacerations (even if already sutured) should be

KEY WORDS

Trauma, Fracture, Luxation, Crown, Root

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TABLE 1**QUESTIONS THAT CAN BE INCLUDED ON PRO-FORMA**

Questions	Reasons for asking
Date of trauma	Will determine prognosis
Time of trauma	
What happened?	To determine mechanism of injury
Where did it happen?	May require tetanus booster if around soil
Loss of consciousness	Has the patient been cleared of head injuries?
Emergency treatment carried out elsewhere	To get a full picture of what has been carried out
Medical history	May contraindicate certain treatment: <ul style="list-style-type: none"> • Immunocompromised • Bisphosphonates/radiotherapy • Allergies • Bleeding conditions
Smoking status	May compromise healing
Bite disturbance	Will tell you that the teeth/tooth may not be in the correct position



Figure 1: Photograph showing soft tissue injuries

noted and drawn on a facial diagram or, ideally, photographed (see Figure 1).

There are however occasions when a quick check is prudent if you have suspicions about further injuries – for example, bilateral circumorbital ecchymosis (black eye) is suggestive of a Le fort II or III fracture. Palpation, to elucidate any step deformities, flattening of the cheek and any limitation of jaw movements, should be carried out and a referral made if necessary (see Figure 2).

A full charting of the teeth present, any mobility, displacement, changes in the gingival margin location (see Figure 3) or occlusion (see Figure 4) should also be carried out.

When checking for mobility of teeth, on occasion, moving a single tooth may result in several teeth moving.

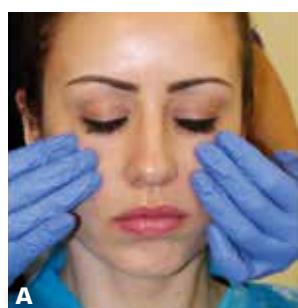


Figure 2: A. Palpating for step deformities, B. Checking for flattening of cheek, C. Checking jaw movement



Figure 3: Intrusion of UR1 showing change in gingival margin location



Figure 4: Extrusion of UR1 showing change in occlusion



Figure 5: Dentoalveolar fracture in the region of UL1, UL2, UL3 and UL4

This is strongly indicative of a dentoalveolar fracture (see Figure 5). If there is an associated haematoma (bruising) then a dentoalveolar fracture is almost certain. In the case of a significant sublingual haematoma, you should eliminate the possibility of a mandibular fracture.

The thorough assessment described above is often carried out in a few minutes and the findings should be taken in the context of the overall condition of the mouth. Therefore, the oral hygiene status of the patient should be noted, as well as the presence of periodontal disease and caries, together with the general motivation of the patient.

The types of injury can then be noted. It is important not to focus solely on the clinically obvious injured teeth at this stage as root fractures and other injuries may be missed.

Remember, if there are lacerations to the lips as well as missing tooth fragments, these pieces may be lodged in the lip. Gently palpating the tissue between the forefinger and thumb can be helpful (but very painful!). A soft tissue radiograph will be needed (see next section).

Special investigations

Sensibility testing

Following a crushing injury, the pulp is unlikely to respond immediately after the trauma. These tests have been shown to yield false negative results for up to three months following acute trauma and therefore their validity must be questioned at this stage.^{1,2} The pulp may become necrotic at a later stage and therefore these tests are very useful at follow-up. Bearing in mind that patients will be anxious and traumatised emotionally, applying an electric current or temperatures of –50°C may not be welcomed by the patient.

As a result, the authors feel that sensibility testing should be deferred until the next appointment, once the patient has recovered from the acute trauma and baseline measurements can be initiated.

Radiographic examination

Periapical

Periapical radiographs are taken routinely in general dental practice with the use of film holders. In the presence of displaced teeth this is a bit tricky. The radiographic report should include reference to the periodontal ligament, root, location of any fractures etc (see Figure 6).

Things to look for include:

- Widening of the periodontal ligament space (PDL) – indicative of displacement and not periapical pathology.
- Socket outlines.
- Loss of periodontal ligament space.



Figure 6:
Periapical
radiograph
showing
uncomplicated
crown fractures
UR2 and UL1

- Foreshortened roots.
- Root fractures.
- Pulp canal obliteration – indicative of previous trauma that can be confirmed on further questioning of the patient.

Upper standard occlusal

This view is very useful if a root fracture is suspected (see Figure 7). Position the X-ray tube so that it bisects the upper anterior teeth as shown in Figure 8. Due to the direction of the beam, the authors recommend the use of a thyroid collar.

Remember, in the presence of a tooth fracture with the fragment unaccounted



Figure 8: Positioning the x-ray tube for an upper standard occlusal radiograph

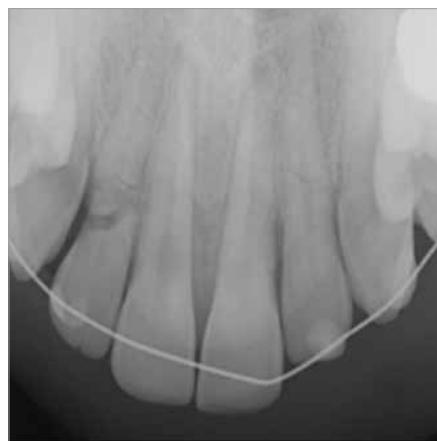


Figure 7: Upper standard occlusal
showing root fracture of the UR2

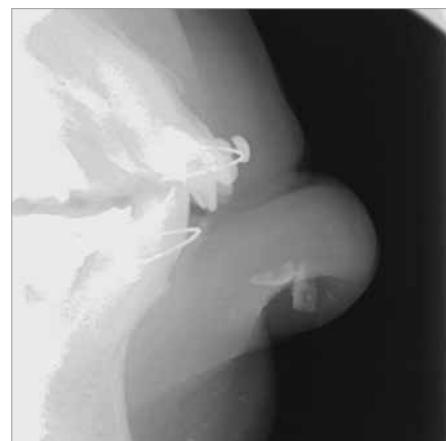


Figure 9: Soft tissue radiograph
showing embedded tooth fragments

TABLE 2**LIST OF DIAGNOSES AND DEFINITIONS FOR FRACTURES**

Diagnosis: fractures	Definition
Infraction	Incomplete fracture in enamel and dentine
Enamel fracture (Figure 10)	Fracture confined to enamel
Uncomplicated crown fracture (Figure 10)	Fracture confined to enamel and dentine with NO pulp exposure
Complicated crown fracture (Figure 11)	Fracture confined to enamel and dentine with pulp exposure
Uncomplicated crown-root fracture	Fracture confined to enamel, dentine and cementum with NO pulp exposure
Complicated crown-root fracture (Figure 12)	Fracture confined to enamel, dentine and cementum with pulp exposure
Root fracture – apical/mid/cervical (Figure 13)	Fracture confined to dentine, cementum and pulp

TABLE 3**LIST OF DIAGNOSES AND DEFINITIONS FOR LUXATIONS**

Diagnosis: Luxations	Definition
Concussion	Injury to the periodontal tissues with tenderness to touch but no mobility or displacement
Subluxation	Injury to the periodontal tissues with increased mobility, tenderness to touch but with no displacement
Lateral Luxation (Figure 14)	Displacement of tooth in a non-axial direction (most often palatally). Tooth is firm and there is often a bite disturbance
Intrusion (Figure 15)	Displacement of tooth axially down the long axis of the tooth socket. Tooth is firm and appears shorter than corresponding tooth on other side
Extrusion (Figure 16)	Partial displacement of the tooth out of the socket. Tooth is mobile and there is often a bite disturbance
Avulsion (Figure 17)	Complete displacement of the tooth out of its socket

for, and a lip laceration, a soft tissue radiograph with 30% exposure of the usual radiation dose should be taken to rule out any embedded tooth fragments in the lip (see Figure 9).

Dental panoramic tomogram (DPT)

A DPT is indicated when a mandibular fracture is suspected. You may not have the facilities to take one and therefore, if you suspect a fracture refer the patient to the nearest maxillofacial unit.

Photographs

Photographs provide the best record of the patient's extra-oral and intra-oral injuries. Photos provide a retrospective view of the injuries and may highlight

gradual subtle changes over time that may not be readily apparent on review. Photographs are an essential baseline record and may be important for reporting purposes if required in the future.

Using a clinical camera in the dental clinic with informed consent would be ideal in this situation. Where attendance is delayed, a patient may have taken a photo on their smartphone soon after the incident. Obtaining consent and requesting the photo to be emailed to become part of the clinical record is likely to aid future treatment and provide more information on management.

Figure 10:
Fracture confined to enamel UR1 and fracture involving dentine UL1



Figure 11:
Complicated crown fracture UR1



Figure 12:
Periapical radiograph showing crown-root fracture UL1



Figure 13:
Periapical radiograph showing displaced apical third root fracture UL1



Figure 14: Lateral luxation UL1 with corresponding periapical radiograph



Figure 15: Intrusion UR2 with corresponding periapical radiograph



Figure 17: Avulsion UL2 with corresponding periapical radiograph



Figure 18:

- Application of topical anaesthetic
- Injecting L.A. into the bolus of previously given L.A
- Infiltration of buccal papilla
- Injecting further into buccal papilla aiming palatally
- Palatal infiltration

Diagnosis

Using all of the information gained from the patient's history, clinical findings and special investigations a diagnosis or diagnoses can be reached (see Tables 2 and 3).

It is rare for a patient to present with a single injury to a single tooth. Dental trauma often presents as polytrauma and the correct diagnoses will aid effective management.

Management

Patients are likely to be anxious at the prospect of having treatment provided for their injury. Patients may be concerned about eating or drinking in fear of affecting the site, or may be simply unable to bite together due to pain or the nature of the injury. As such, provision of a drink with some glucose may be prudent before starting any treatment.

Effective management is dependent on achieving good local anaesthesia (LA) and it is well known that LA itself can produce anxiety for the patient. Buccal and palatal anaesthesia is important for repositioning teeth as well as exploring crown-root fractures. A tried and tested approach to pain-free LA is illustrated in Figure 18 and described below.

- **Step A** Apply topical anaesthesia for a couple of minutes.
- **Step B** Pull the soft tissues to make the sulcus taut and inject a small amount of LA onto the surface of the mucosa; wait a minute then go back into the same place inserting the needle deeper and inject more LA. Then move the needle a few millimetres towards the next tooth to be anaesthetised, into the bolus of the LA just given.
- **Step C** Infiltrate the buccal papilla of the first tooth anaesthetised and follow through to include all the injured teeth.
- **Step D** Inject further into the buccal

papilla aiming for the palatal side (the coincident palatal gingiva will blanch as a result).

- **Step E** Palatal infiltration into the blanched area.

Management of uncomplicated crown fractures

Fractures confined to enamel and/or dentine are relatively straightforward to manage. If the patient attends with the tooth fragment in hand and it is large enough, it may be possible to re-attach using composite resin. Try and see if you can easily locate the fragment back into position. If this is possible, under local anaesthetic, wash the tooth and fragment, etch both, apply bond and then paint flowable composite to both surfaces, reposition the fragment and cure for one second. This will partially set the composite and allow you to clean the excess. Then fully cure on both sides.

If the fragment cannot be located, a composite restoration should be placed



Figure 19:

- Uncomplicated crown fractures UR1 and UL1
- Composite resin build-ups UR1 and UL1

(see Figure 19). The authors feel that this is almost as quick as a temporary glass ionomer bandage and prefer this approach in almost all cases.

Complicated crown fractures

The management of fractured teeth with exposed pulps should aim to preserve the pulp regardless of the time elapsed since the injury. Under local anaesthesia and adequate isolation open up the exposure using a small round diamond bur and remove 2-3mm of the pulp (see Figure 20A). Apply pressure using a small pledget of cotton wool soaked in sodium hypochlorite to cleanse the exposed potentially inflamed superficial pulp. If the pulp looks healthy and is not bleeding (see Figure 20B), apply non-setting calcium hydroxide (see Figure 20C) or mineral trioxide aggregate (MTA); cover with glass ionomer, and reattach the fragment or build up with composite to full contour (see Figure 20D).

If the pulp bleeds, remove another 1mm using the small diamond bur and apply gentle pressure. If haemorrhage does not stop it is likely that the pulp system is chronically inflamed and extirpation required.

For both types of crown fractures, the teeth should be reviewed long-term for any signs or symptoms of pulp necrosis and/or apical periodontitis. Generally, if there

are two signs or symptoms (see Table 4), root canal therapy is indicated.

Root fractures

The management of root fractures and prognosis are determined by the position of the fracture line and whether there has been displacement of the coronal fragment. In the latter scenario, the coronal fragment is loose and can interfere with the occlusion.

If you suspect a root fracture but it is not obvious on a periapical radiograph, an upper occlusal is an excellent view to show the fracture (see Figure 7).

Following a diagnosis of a root fracture, the coronal fragment should be digitally repositioned if it is displaced under local anaesthetic. Thereafter, the following should be undertaken:

- Check the occlusion.
- Temporarily splint the tooth in position (see Figure 21).
- Take a check radiograph.
- Apply non-rigid splinting for four weeks for apical and middle third root fractures.

The authors recommend four months' rigid splinting for cervical third root fractures.

The teeth should be reviewed long-term for any signs or symptoms of pulp necrosis. Root canal therapy, up to the



Figure 20:

- A. Complicated crown fracture UR2
- B. Healthy pulp that is not bleeding
- C. Application of non-setting calcium hydroxide
- D. Fragment re-attached UR2

TABLE 4

SIGNS AND SYMPTOMS OF PULP NECROSIS AND/OR APICAL PERIODONTITIS³

Signs	Symptoms
Discolouration	Spontaneous pain
Tenderness to percussion	Pain on biting
Buccal tenderness	
No response to sensibility testing	
Sharp pain upon thermal stimulus	
Radiographic signs e.g. periapical radiolucency or widening of the periodontal ligament space	
Presence of a sinus	

*Figure 21:
Triad used to
temporarily
splint the teeth
in place*



fracture line only, should be commenced if there are two signs or symptoms of pulp necrosis.

Crown-root fractures

The management of crown-root fractures depends on the extent of the fracture and the presence or absence of pulpal involvement.

In uncomplicated crown-root fractures, the coronal fragment can be reattached if present (as described earlier) but with additional moisture control, e.g. retraction cord or electrosurgery. Alternatively, the tooth can be restored with composite and again effective moisture control is important.

The true extent of a crown root fracture is difficult to assess until after the tooth has been anaesthetised. Consenting the patient to an examination under anaesthetic is important so that they are fully aware that the tooth may be found to be unrestorable.

Various approaches can be utilised to try and save teeth, even if it is only for a few years until the patient stops growing, when further treatment options become available. Future planning in this respect is likely to benefit the patient and allow maintenance of the options available to them. Surgical crown lengthening to expose the fracture line to allow an extra-coronal restoration could also be considered.

In some cases, elective root canal treatment may be required to restore the

tooth with an appropriately designed post-core restoration. Such an approach could be provided in conjunction with orthodontic treatment to extrude it first, followed by crown lengthening surgery and a post-core crown restoration.

Complicated crown root fractures if deemed restorable will need root canal treatment followed by the approach described above.

What injuries require emergency management?

The cohort of dental trauma injuries that require emergency management are avulsions.

Avulsions

An avulsed tooth should be replanted within the first five minutes, at the scene of the incident. When the patient attends the surgery sometime after this, the same assessment should be carried out as described above, with the aim of checking that the tooth has been re-positioned correctly. If this is not the case, apply apical pressure using your index finger and thumb and check the occlusion under local anaesthesia. If the patient can bite together fully, temporarily splint the tooth to the adjacent teeth (see Figure 21) and take a check radiograph.

Unfortunately, despite public health programmes to raise awareness of what to do if a tooth is knocked clean out of the mouth, patients often attend the dental surgery with their tooth wrapped 'safely' in tissue, by which time any

delicate periodontal ligament cells that survived the trauma would have died.

If the tooth has not been replanted immediately, the storage medium to transport the tooth becomes critical.⁴ Various media have been investigated in an effort to replicate the environment of the tooth socket and provide the most optimal conditions to maintain the viability of the cells. They are listed in Table 5.

The best transport medium is Hanks balanced salt solution (Save-A-Tooth[®]) (see Figure 22). Unfortunately, this is not readily available in the UK and the recommended medium for easy use is milk.

The dentist will need to make an assessment on whether it is possible to replant the tooth, and if it is, what management strategy should be followed.

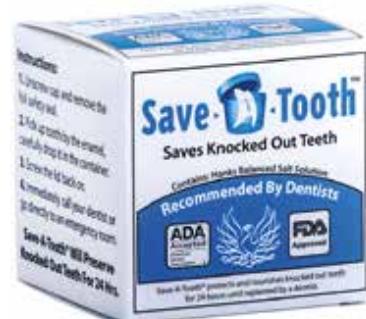


Figure 22: Commercially available HANKS balanced salt solution

TABLE 5

STORAGE MEDIA (ADAPTED FROM POI ET AL.⁴)

The outcome for an avulsed tooth is directly related to its extra-oral dry time (EODT).⁵ The longer the tooth is out of its socket and dry, the poorer the prognosis.⁶ This is due to complications introduced by bacterial and foreign body contamination compromising the viability of the periodontal ligament cells. As a result, various forms of resorption may ensue and in adults, external replacement resorption (ankylosis) is the most common.⁷

The treatment strategy is determined by the EODT (see Figure 23) and patients should be warned of the questionable long-term prognosis of teeth with prolonged drying out of the periodontal ligament.

Avulsions with extra-oral dry time <60 minutes

- Saline irrigation to clean the root surface without touching it.
- Digitally replant the tooth.
- Check the occlusion.
- Temporarily splint the tooth in position with clear light cured acrylic (see Figure 21).
- Take a check radiograph.
- Apply non-rigid splinting for two weeks.
- Start root canal treatment as soon as possible (within seven to 10 days).

Storage media

Tooth socket

Hanks balanced salt solution

Pasteurised whole milk

Water

Properties

Normal physiological conditions

Physiological pH, osmolality and nutrients

Low bacterial content, isotonic, physiological pH and osmolality

Bacterial contamination, hypotonic, non-physiological pH and osmolality

Avulsions with extra-oral dry time >60 minutes

The authors follow the following protocol to help prepare the root surface prior to replantation:

- Bathe the tooth in sodium hypochlorite for five minutes.
- Rinse with saline.
- Bathe the tooth in 0.5% sodium fluoride for 20 minutes.
- If there is time, root canal treat the tooth out of the mouth.
- Digitally replant the tooth.
- Check the occlusion.
- Temporarily splint the tooth in position with clear light cured acrylic (see Figure 21).
- Take a check radiograph.
- Apply non-rigid splinting for four weeks.
- RCT within seven to 10 days if extra-oral RCT is not possible.

Despite the perceived poor prognosis for teeth with prolonged EODT, the

authors recommend replantation in well maintained mouths as the first treatment of choice. This will allow some time – sometimes years – maintaining the bone. Replacement of that tooth with a dental implant will then remain a possibility without the need for grafting particularly in growing patients.⁸

Avulsions are the only dental trauma in adults that require root canal treatment as soon as possible (with the exception of severe intrusion injuries).

For all other dental injuries the teeth should be monitored for pulp recovery at the follow-up appointments. Two signs or symptoms of pulp necrosis are needed for root canal treatment to be initiated. Due to the potential for false negative responses for up to three months following trauma, it may be prudent to delay making a positive diagnosis of necrosis until after the three-month period.

Extrusion

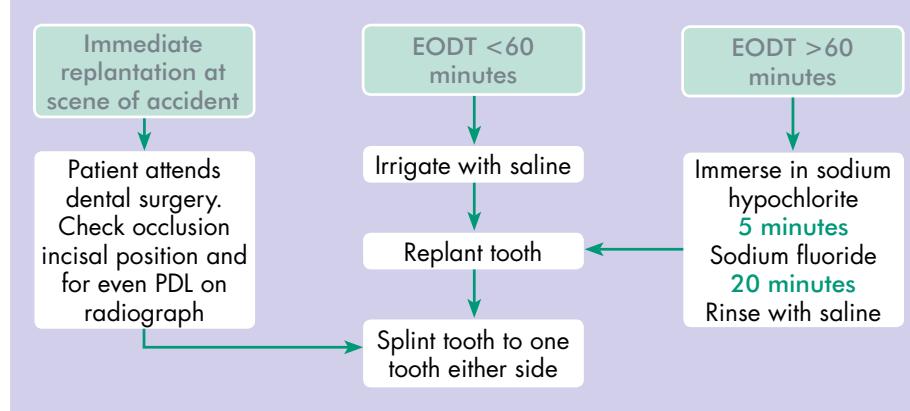
An extruded tooth is loose due to being held in by soft tissues only. It may also represent a dental emergency requiring urgent care if there is a risk of inhalation. In the absence of airway risk, this injury can be managed at a convenient time when there is access to all the armamentarium in the dental surgery for optimal management:

- Digitally reposition the tooth.
- Check the occlusion.
- Temporarily splint the tooth in position (see Figure 21).
- Take a check radiograph.
- Apply non-rigid splinting for two weeks.

As explained previously, root canal therapy should be commenced if there

FIGURE 23

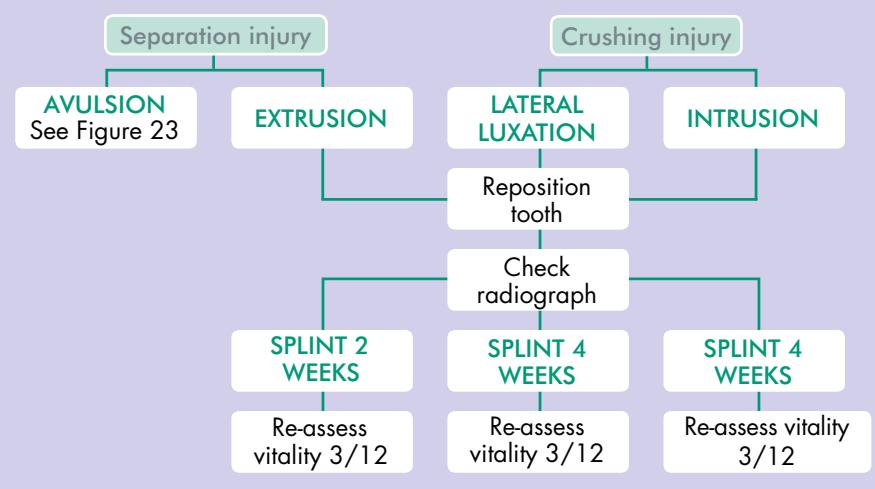
MANAGEMENT OF AVULSION



ADULT DENTAL TRAUMA: WHAT SHOULD THE DENTAL PRACTITIONER KNOW?

FIGURE 24

MANAGEMENT OF LUXATION INJURIES



As explained previously, root canal therapy should be commenced if there are two signs or symptoms of pulp necrosis 3 months after the injury.

Intrusion

Intrusion injuries carry the most unfavourable prognosis and at presentation, the affected tooth appears short and can be mistaken for a crown fracture.⁸ The tooth should be disengaged using a flat plastic instrument interproximally followed by:

- Digitally repositioning of the tooth.
- Check the occlusion.
- Temporarily splint the tooth in position (see Figure 21).
- Take a check radiograph.
- Apply non-rigid splinting for four weeks (see Figure 24).

are two signs or symptoms of pulp necrosis three months after the injury.

Lateral luxation

Lateral luxation injuries are not dental emergencies requiring immediate management and can be postponed for a few hours. They are often accompanied with a dentoalveolar fracture and the tooth is locked in position and firm. With palatal displacement, the patient is unable to bite together due to interference from the displaced tooth.

Digital repositioning should be carried out disengaging the apical part of the root high in the buccal sulcus first, before pushing the crown of the tooth labially:

- Digitally reposition the tooth.
- Check the occlusion.
- Temporarily splint the tooth in position (see Figure 21).
- Take a check radiograph.
- Apply non-rigid splinting for 4 weeks.

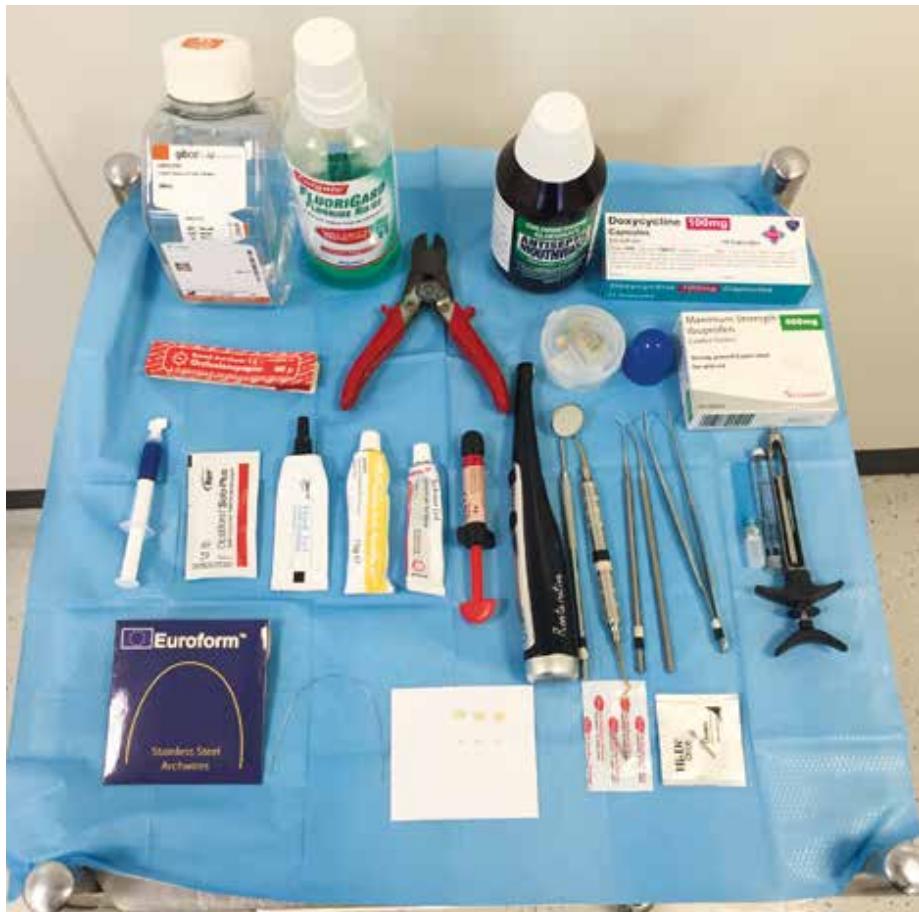


Figure 25: Recommended trauma kit

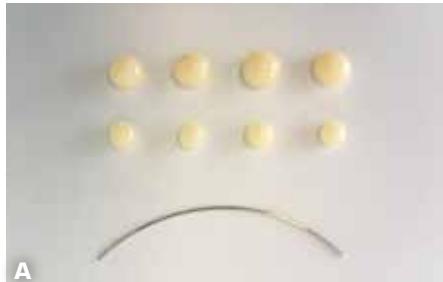


Figure 26:

- A. Large and small composite balls with 018 stainless steel wire
- B. Spot etching the teeth to be splinted
- C. Securing the 018 stainless steel wire in place
- D. Encasing the wire with the small composite balls

Do I have time and the necessary equipment to manage these traumas?

Essential armamentarium

The authors routinely use the following materials and equipment to assess and manage dental trauma (see Figure 25):

- 1 Examination kit with flat plastic.
- 2 Electric pulp tester and Endo-frost.
- 3 Topical anaesthetic.
- 4 Local anaesthetic.
- 5 Clear light cured acrylic (Triad).
- 6 0.18 stainless steel archwire and orthodontic wire cutters.
- 7 Composite resin.
- 8 37% phosphoric acid gel.
- 9 Combined primer and adhesive.
- 10 Curing light.
- 11 Diamond burs.
- 12 Articulating paper.

Step-by-step clinical guide to simple splinting

Splinting can be completed simply and effectively by following the steps below (see Figure 26):

- 1 Prepare composite (large and small composite balls) (see Figure 26A).
- 2 Cut the wire to length to include one tooth either side of the injured teeth.
- 3 Spot etch the teeth to be splinted (see Figure 26B).
- 4 Wash and dry the teeth.

- 5 Apply dentine bonding agent and light cure.
- 6 Position the large composite balls to the bonded surfaces.
- 7 Place the wire (0.18 stainless steel) on the composite balls and quick cure all the teeth to secure the wire in place (see Figure 26C).
- 8 Place the small composite balls onto the large composite balls to encase the wire in composite and light cure each tooth completely (see Figure 26D).
- 9 Remove the temporary splint and check the occlusion.

Should I prescribe antibiotics?

Antibiotics are only indicated for avulsion injuries; 100mg of Doxycycline, twice a day for seven days is recommended in adults. This helps to reduce the risk of bacterial infection and the effects of collagenase.⁹

However, in the case of other severe luxation injuries where a significant inflammatory response is anticipated, it may be sensible to consider prescribing doxycycline for these cases too.

How long should I splint the teeth for?

Flexible splinting times, recommended by the International Association of Dental Traumatology,¹⁰ are listed in Table 6.

TABLE 6

RECOMMENDED SPLINTING TIMES

Type of injury	Splinting time
Lateral luxation	4 weeks
Extrusion	2 weeks
Intrusion	4 weeks
Avulsion (extra oral dry time <60 minutes)	2 weeks
Avulsion (extra oral dry time >60 minutes)	4 weeks
Apical 1/3 root fracture	4 weeks
Mid 1/3 root fracture	4 weeks
Cervical 1/3 root fracture	4 months*

*Rigid splinting is recommended by the authors

ADULT DENTAL TRAUMA: WHAT SHOULD THE DENTAL PRACTITIONER KNOW?

How should I manage a telephone call about a dental trauma?

If a patient or relative phones the dental practice requiring urgent advice regarding a permanent tooth, reassure them and calm them down and ask them to come to the surgery as soon as possible. If the tooth has been avulsed, ask them to:

- Pick it – hold the tooth by the crown
- Lick it – clean if it is visibly dirty / contaminated

- Stick it – back into position and bite of a tissue.

If they are unable to do this, get them to put the tooth in milk and come to the surgery immediately.

When should I see the patient again?

The aim of appropriate recall is to monitor healing and check for signs and symptoms of necrosis. There are

TABLE 7

RECOMMENDED RECALL INTERVALS FROM TIME OF INJURY FOR FRACTURES

Type of injury	Appointment from time of injury	Clinical exam*	Sensibility testing	X-rays	Splint removal	Photos
• Uncomplicated and complicated crown fractures	3 months	✓	✓	✓		✓
• Uncomplicated and complicated crown-root fractures	6 months	✓	✓	✓		✓
	Annual review	✓	✓	✓		✓
• Root fractures**	4 weeks	✓	✓	✓	✓	✓
	3 months	✓	✓	✓		✓
	6 months	✓	✓	✓		✓
	Annual review	✓	✓	✓		✓

*Should include assessment of discolouration, mobility, tenderness to palpation and percussion and the possibility of a draining sinus.

**Splint removal at 4 months for cervical third root fractures.

TABLE 8

RECOMMENDED RECALL INTERVALS FROM TIME OF INJURY FOR LUXATION INJURIES

Type of injury	Appointment from time of injury	Clinical exam*	Sensibility testing	X-rays	Splint removal	Photos
• Avulsion EODT <60 minutes	2 weeks	✓	✓		✓	✓
• Extrusion	6 weeks	✓	✓			✓
	3 months	✓	✓	✓		✓
	6 months	✓	✓	✓		✓
	Annual review	✓	✓	✓		✓
• Avulsion EODT >60 minutes	4 weeks	✓	✓		✓	✓
• Lateral luxation	3 months	✓	✓	✓		✓
• Intrusion	6 months	✓	✓	✓		✓
	Annual review	✓	✓	✓		✓

*Should include assessment of discolouration, mobility, tenderness to palpation and percussion and the possibility of a draining sinus.



Figure 28:

A. Removal of surface composite

B. Removal of stainless steel wire

C. Removal of further composite with a tungsten carbide bur

D. Polishing remaining composite with an abrasive disc

other unwanted consequences of dental trauma, such as resorption, that may present later and early diagnosis and intervention can improve the outcome.

If teeth have been splinted, the next appointment will be for splint removal as depicted in Table 7 and 8. At this stage, sensibility testing as baseline recordings can commence. Detailed recall periods for all dental traumas can be accessed via the International Association of Dental Traumatology website.¹⁰

Removing the splint

The authors routinely use the kit shown in Figure 27 and steps



Figure 27:
Splint removal kit. From top to bottom – abrasive disc, tapered diamond bur, tungsten carbide composite removal bur, mandrel

outlined below for splint removal (see Figure 28):

- 1 Remove the surface of the composite down to the wire using a tapered diamond bur in a fast handpiece (see Figure 28A).
- 2 Remove the wire (see Figure 28B).
- 3 Remove the bulk of remaining composite using a tungsten carbide composite removal bur in a slow handpiece (see Figure 28C).
- 4 Polish off the remaining composite using an abrasive disc (see Figure 28D).

Is there anyone I can refer the patient to?

If dental trauma is extensive or you are unable to manage the trauma within your dental practice consider referring the patient to one of the following:

- An endodontic specialist.
- A colleague who has an interest or experience in managing dental trauma.
- A dental teaching hospital, if there is one within easy reach.
- An Oral and Maxillofacial Surgery department.

Where can I get more information?

Further information can be accessed from the following websites.

- www.dentaltraumaguide.org
- www.nhs.uk/conditions/broken-tooth/pages/introduction.aspx
- www.dentaltrauma.co.uk

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