

H14: Dental Trauma

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Introduction

Dental trauma is common and often overlooked in the context of more concerning head or neck injuries. While the majority of dental injuries are not time sensitive and can be dealt with on an outpatient basis, some dental injuries can significantly benefit from prompt and appropriate treatment.

Essentials

- A dental avulsion (where the tooth is completely dislodged from the socket) is a true emergency. The chance of tooth survival increases from 85-97% if reimplanted at 5 minutes, and down to 0% after one hour without appropriate steps to preserve or reimplant the tooth.
- The best way to preserve an avulsed tooth is to reimplant it as soon as possible. Patients can do this if they are comfortable with the procedure and there are no airway concerns.
- If a tooth is not reimplanted due to airway concerns, excessive pain, or patient unwillingness, all avulsed teeth (and fragments of fractured teeth) should be preserved and taken with the patient to the emergency department or dentist.
- Avulsed or fractured teeth should be placed in a sealed container or bag and immersed in cool milk if available. The patient's saliva can also be used by having the patient spit into a container. The saliva of a family member or friend may also be used for this purpose.
 - Paramedics and EMRs must ensure that appropriate precautions are taken when asking patients to spit into containers or bags, and that appropriate personal protective equipment is used. Do not collect saliva from an individual who may have an active respiratory tract infection.
 - Save-a-Tooth kits solution (Hank's balanced salt solution) can also be used if the patient has this at home. If none of these products are available, saline solution is acceptable. Plain water should be avoided wherever possible, but is preferable to allowing the tooth to dry out.
- If there are no airway concerns, the patient may also preserve the tooth by keeping it in their mouth, coated in saliva.

Additional Treatment Information

Should a patient decide to reimplant a tooth themselves:

- Avoid handling the tooth by the root.
- Gently clean any dirt or debris with normal saline prior to reimplantation. Do not scrub the tooth.
- Push the tooth into the socket until a click or resistance is felt.
- Hold the tooth in place manually, or bite down on a piece of gauze en route to hospital.

General Information

Simple dental anatomy is useful to understand dental injuries. The tooth consists of the crown and the root. The crown is the portion that sits above the gumline and is visible normally. The root is the portion which anchors the tooth into the socket in the mandible and is not visible. The root is attached by strong periodontal ligaments to the bone. These ligaments are critical to the health of the tooth and important to avoid damage through handling.

The general types of dental injuries are useful to know in order to determine appropriate treatment:

- Dental fracture: The tooth is broken or cracked.
- Dental subluxation: The tooth is loose or has been moved but the root still remains in the socket.
- Dental avulsion: The root of the tooth is completely displaced from the socket.

Note: Pediatric dental avulsions of "baby teeth" are not an emergency and should not be reimplanted. However, it is extremely

difficult for non-specialists to distinguish between permanent and baby teeth. Assume all teeth are permanent until seen by an expert. Paramedics should not attempt to reimplant teeth in patients younger than 16 years of age; in these cases, preserve the tooth, and transport to hospital.

Interventions

First Responder

- Manage the airway as required and address concurrent injuries or clinical problems
- Ensure gentle handling of all avulsed teeth or dental fragments; do not handle by the root.
- Preserve avulsed teeth or dental fragments by immersing them in:
 - Cool milk
 - The patient's own saliva (or the saliva of a friend or family member)
 - Saline
- Do not touch loose or damaged teeth that are still in the socket

Emergency Medical Responder – All FR interventions, plus:

- Ensure teeth stay with the patient on arrival at the emergency department and that triage is aware the patient has a dental injury

Primary Care Paramedic – All FR and EMR interventions, plus:

- Provide analgesia as required for injuries.
 - → [E08: Pain Management](#)
- Consider reimplantation of tooth in socket:
 - Avoid handling the tooth by the root.
 - Gently clean any dirt or debris with normal saline prior to reimplantation. Do not scrub the tooth.
 - Push the tooth into the socket until a click or resistance is felt.
 - Hold the tooth in place manually, or bite down on a piece of gauze en route to hospital.

Evidence Based Practice

Tooth Avulsion

Supportive

- [Hank's Solution](#)
- [Replantation](#)
- [Saline](#)
- [Saliva](#)

Neutral

- [Milk](#)
- [Water](#)

Against

References

1. Fouad AF et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 2. avulsion of permanent teeth. 2020. [\[Link\]](#)

