Dentoalveolar Injuries.
Management of Dentoalveolar Injuries

REFERENCES


2. CONTEMPORARY ORAL AND MAXILLOFACIAL SURGERY, Editors: Hupp, Ellis, Tucker


DISTANCE LEARNING:

Successful distance education students are self-motivated and self-disciplined. Taking distance education requires a real commitment and self-discipline to keep up with the flow of the process. Distance education is not easier than the traditional educational process. Many students say that it requires much more time and commitment. Effective distance learners should make maximum use of all available resources. They are comfortable using reference books as needed to understand material. Distance learners stay on task without supervision and spend an appropriate amount of time studying, including reading, e-discussions, and assignments.

Distance Learning in Oral and Maxillofacial Surgery is conducted in the form of self-study, using the following sources:

- CONTEMPORARY ORAL AND MAXILLOFACIAL SURGERY, Editors: Hupp, Ellis, Tucker
- Basic principles in Oral and maxillofacial surgery. Selected texts and topics. RoPrint Ltd., 2018

We strongly recommend CONTEMPORARY ORAL AND MAXILLOFACIAL SURGERY, 7th Edition, Authors: James Hupp Myron Tucker Edward Ellis, November 2018, which is one of the most respected dental surgery books in the world. This book gives you the basic concepts of surgical and medical management of oral surgery issues you need for your studies. This text on oral surgery procedures features full-color photographs and drawings that show how to perform basic surgical techniques, to present a complete description of the simple oral surgical procedure tactics which might be executed within the office of the general practitioner.

We can also recommend to you as very good sources the following free, highly professionally edited and perfectly illustrated specialized medical websites: www.aofoundation.org and http://emedicine.medscape.com
Classification of Dentoalveolar Injuries

- **Crown Craze or Crack**
  - Crack or incomplete fracture of the enamel without a loss of tooth structure
- **Horizontal or Vertical Crown Fracture**
  - Confined to enamel
  - Enamel and dentin involved
  - Enamel, dentin, and exposed pulp involved
  - Horizontal or vertical
  - Oblique (involving the mesioincisal or distoincisal angle)
- **Crown-Root Fracture**
  - No pulp involvement
  - Horizontal Root Fracture
  - Involving apical third
  - Involving middle third
  - Involving cervical third
  - Horizontal or vertical

- **Sensitivity** (i.e., Concussion)
  - Injury to the tooth-supporting structure, resulting in sensitivity to touch or percussion but without mobility or displacement of the tooth
- **Mobility** (i.e., Subluxation or Looseness)
  - Injury to the tooth-supporting structure, resulting in tooth mobility but without tooth displacement
- **Tooth Displacement**
  - Intrusion (displacement of tooth into its socket—usually associated with compression fracture of socket)
  - Extrusion (partial displacement of tooth out of its socket—possibly no concomitant fracture of alveolar bone)
  - Labial displacement (alveolar wall fractures probable)
  - Lingual displacement (alveolar wall fractures probable)
  - Lateral displacement (displacement of tooth in mesial or distal direction, usually into a missing tooth space—alveolar wall fractures probable)
- **Avulsion**
  - Complete displacement of tooth from its socket (may be associated with alveolar wall fractures)
- **Alveolar Process Fracture**
  - Fracture of alveolar bone in the presence or absence of a tooth or teeth

Data from Sanders B, Brady FA, Johnson R: Injuries. In Sanders B, editor: Pediatric oral and maxillofacial surgery, St Louis, MO, 1979, Mosby.
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**Crown fracture.** The depth of tooth tissue involvement determines the treatment of crown fractures. For fractures that are only through the enamel or those with minimal amounts of dentin involvement, no acute treatment other than smoothing off the sharp edges is warranted.
Enamel fracture. If reshaping of teeth would leave a noticeable deformity, replacement of the missing enamel by acid-etched composite resin techniques is indicated.
Enamel fracture
Enamel - dentin involvement fracture
Current recommendations are the placement of a dentin-bonding agent or glass ionomer cement over exposed dentin, followed by the placement of a resin composite restoration.
If the pulp is exposed, the aim of treatment is to preserve it in a vital, healthy state. This can usually be accomplished by pulp capping if five conditions are present: (1) The exposure is small; (2) the patient is seen soon after injury; (3) the patient had no root fractures; (4) the tooth has not been displaced; and (5) no large or deep fillings exist that might indicate chronic inflammation within the pulp.
After application of calcium hydroxide on the exposed pulp, glass ionomer cement is placed over the exposed dentin and a watertight acid-etch composite restoration is placed.
Calcium hydroxide or mineral trioxide aggregate (MTA)
A pulpotomy involves aseptic removal of damaged and inflamed pulp tissue to the level of clinically healthy pulp, after which calcium hydroxide is applied. A pulpotomy is usually implemented in larger exposures in which the apex is not closed. In these instances, a pulpotomy should be only a temporary measure to maintain the vitality of the radicular pulp until the apex is closed. Endodontic therapy should then be instituted. Periodic follow-up examinations are mandatory after any pulpal procedure.
Pulpectomy
Crown-root fracture. The treatment of crown-root fractures depends on the location of the fracture and local anatomic variance. If the coronal fragment is still in place, it must be removed to assess the depth to which the fracture has gone. If the fracture does not descend too far apically (and the tooth is therefore restorable) and if the pulp has not been exposed, the tooth is treated as already discussed for crown fracture. Depending on the apical extent of the fracture, it may be necessary to perform periodontal procedures to make the apical margin of the fracture accessible for restorative procedures. Alternatively, orthodontic extrusion of the root can make it accessible for restorative procedures. If the pulp is involved and the tooth is restorable, endodontic treatment is implemented. If, however, the tooth is not restorable, removal is indicated. If a concomitant alveolar fracture is found, the extraction may be delayed for several weeks to permit the fracture to heal and thus prevent undue loss of alveolar bone at the time of extraction.
Horizontal root fracture. When a horizontal or oblique fracture of the root occurs, the main factor in determining the prognosis, and therefore in directing treatment, is the position of the fracture in relation to the gingival crevice. If the fracture is above or close to the gingival crevice, the tooth should be removed or the coronal fragment should be removed and endodontic treatment performed on the root. The root can then be restored with a post and core restoration. Fractures in the middle to apical one third of the root have a good prognosis for survival of the pulp and healing of the root fragments to one another. These fractures should be treated with repositioning (if any mobility is detectable) and firm immobilization for 2 to 3 months (these techniques are described later). During this time, bridging of the fracture with calcified tissue usually occurs, and the tooth remains vital.
Mobility. If the tooth is only mildly mobile, relieving the occlusal contact is effective treatment. Most mobile teeth stabilize (i.e., “tighten up”) with time. If the tooth is extremely mobile, splinting it to adjacent teeth is recommended. Periodic observation is then necessary.
Tooth displacement
Manual repositioning
Severe tooth displacement. **Extrusion.** An extruded tooth can usually be manually seated back into its socket if the injury was recent. After replacement of the tooth within the socket, splinting for 1 to 3 weeks is usually necessary.
Intrusion. Traumatic intrusion of teeth indicates that the alveolar socket has sustained a compression fracture to permit the new tooth position.
A technique that serves admirably for the stabilization of avulsed teeth is the use of an acid-etched composite system.
Stabilization of an avulsed tooth can be achieved using a variety of materials such as wires, arch bars, and splints.
The duration of stabilization should be as short a time as necessary for the tooth to become reattached, usually 7 to 10 days. Studies have shown that the more rigid and the longer the stabilization, the better would be the root resorption.
Surgical repositioning, soft tissue management and fixation
Stabilization Periods for Dentoalveolar Injuries

Dentoalveolar Injury Duration of Immobilization

Mobile tooth 7–10 days
Tooth displacement 2–3 weeks
Root fracture 2–4 months
Replanted tooth (mature) 7–10 days
Replanted tooth (immature) 3–4 weeks
**Avulsion.** Total avulsion from its socket is the gravest situation for a tooth because the health of the pulp and periodontal tissues is in severe jeopardy. The factors most important for determining how successful treatment measures will be are the length of time the tooth has been out of the socket, the state of the tooth and periodontal tissues, and the manner in which the tooth was preserved before replantation. The sooner the tooth can be replanted, the better is the prognosis.
Alveolar fractures. These injuries may best be managed by referral to an oral-maxillofacial surgeon because management may involve open surgical treatment to reposition the bony segments. The treatment of this type of injury, as for any fracture, is first to place the segment into its proper position and then to stabilize it until osseous healing occurs. This procedure may be simply performed with digital pressure applied after an appropriate anesthetic is administered. Frequently, however, splintering of the dento-osseous segment margins makes repositioning difficult, and open surgical treatment might then be required.
The dento-osseous segment must be stabilized for approximately 4 weeks to allow osseous healing. Several acceptable methods can be used to stabilize the segment. The simplest is to ligate an arch bar to the teeth both mesial and distal to the segment and within the fractured alveolar segment. Teeth immediately adjacent to the fracture are frequently not wired to the arch bar, so these teeth are more amenable to oral hygienic measures. Not wiring them also helps prevent their loosening from the forces placed by the wire. The use of an acid-etched arch wire, as just described, is also acceptable. A cold-cured acrylic splint can be made in situ or on casts obtained by taking an impression immediately after repositioning the alveolar segment. The splint can be wired to adjacent teeth and to teeth within the fractured segment.