# Injuries to the supporting bone

**Terminology**
1) Comminution of the alveolar socket
2) Fracture of the alveolar socket
3) Fracture of the alveolar process
4) Jaw fracture

**Frequency:**
Permanent dentition: 16 % of the dental injuries
Primary dentition: 7 % of the dental injuries

**Etiology:**
Fight injuries
Automobile injuries

**1) Comminution of the alveolar socket:**

Comminuted fracture = fracture producing multiple bone splinters

Always associated with intrusive or lateral luxation
Treatment: see treatment of luxation injuries

**2) Fracture of the alveolar socket:**
**Fracture confined to the facial or lingual socket wall**

Clinical findings:

- Predominantly seen in the upper incisor region, usually several teeth are affected.
- Associated especially with dental injuries, luxation with dislocation and avulsion.
- Diagnosis through palpation and mobility of the involved teeth → abnormal mobility of the socket wall

Radiographic findings:
Only in lateral extraoral radiograph, difficult to visualize

Treatment:
Anesthesia + reposition of displaced teeth (socket wall repositioned at the same time)
Suturing of the lacerated soft tissue (Important to do last)
Splinting (not required for children – soft diet)

**3) Fracture of the alveolar process:**
**which may or may not involve the alveolar socket (→ tooth involvement)**

Clinical findings:
- Predominantly in older age group
- Location: especially anterior region, canine and premolar region can also be involved
- concomitant with extrusive and lateral luxation and root fracture

Diagnosis: Displacement and mobility of the fragment
When mobility of a single tooth is tested, adjacent teeth move with it
Percussion: dull sound

Radiographic findings:
- Distinct line on intraoral radiograph, difficult to visualize
- If fracture line through interdental septa → extrusive luxation and root fractures
OBS: Alveolar fractures lines through the apices may simulate root fractures
Fractures of the most apical parts of the roots often overlooked

Treatment:
- Anesthesia + repositioning of the fragment
- Splinting: acid-etch/resin or arch bar (intermix fixation not required) – 4 weeks
(Children:3weeks)
-Extraction if necessary should be postponed
- Suturing of soft tissue laceration (do be done last)

Children: splinting difficult due to lack of sufficient teeth – soft diet

**5) Jaw fracture**
**Fracture of the maxilla or mandible, may or may not involve the alveolar socket**

Clinical findings:

- One-half of the fracture involve teeth in the fracture line!
- Location of the fracture → state of dentition
  → marginal bone defect
  → primary dentition: usually mand canine and incisor
- Displacement of the fragment and disturbance of the occlusion
- Crepitus
- Provoked pain

Radiographic findings:

- Intra (reveal relationship between involved tooth and fracture line) and extraoral (course and position of fracture line) radiographs necessary
- Maxilla fracture: difficult to visualize in extraoral radiographs
- Mandible fracture: especially subcondylar, third molars and canine regions

  Usually obliquely downwards and backwards to the base (not parallel to the long axis of the tooth)

**Complications:**

Teeth in the line of fracture: increased risk for infection
Multirooted teeth increase risk for complications
Complications only seen in semi-erupted third molars
Extraction – not conclusive
Antibiotics: 30 min before and 1 day after decrease the risk for infection
Delay of treatment: 2-4 days delay increase the risk of infection

Loss of supporting bone

Root resorption

Pulp necrosis