

Dentoalveolar injuries

**Department of Oral and Maxillofacial Surgery
Semmelweis University**

Dentoalveolar injuries

Litetaure:

Andreasen, J.O., Andreasen, F.M.: Textbook and Color Atlas of Traumatic Injuries of the Teeth, Mosby, 1999.

Peterson, L.J.: Contemporary Oral and Maxillofacial Surgery, Mosby, 1993.

**More than 50% of
adolescents have
suffered some tooth
trauma before the age 20**

/Andreasen 1988; Hotz 1990; Kirschner et.al. 1992/

Dentoalvolar injuries

- 1. History, documentation**
- 2. Clinical examination**
- 3. Radiological examination**
- 4. Diagnose, classification**
- 5. Treatment plan**
- 6. Treatment**

Dentoalvolar injuries

Injuries to the hard tissues of teeth:

- Crown crack
- Crown fracture
- Crown-root fracture
- Root fracture

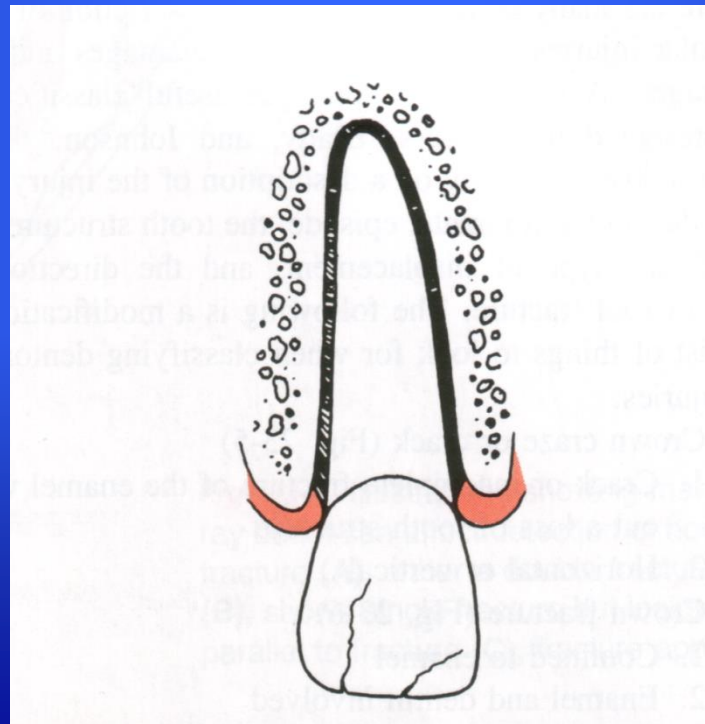
Injuries to the attachment:

- Concussion (contusion; sensitivity)
- Subluxation (mobility)
- Tooth displacement
- Avulsion
- Alveolar bone fracture

Crown crack

incomplete fracture of enamel

The anterior teeth are most frequently involved



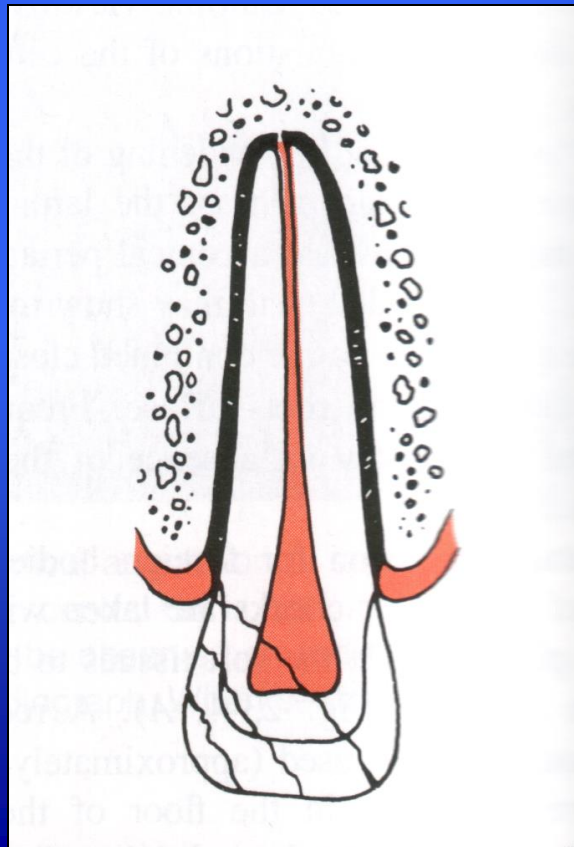
Crown fracture

Uncomplicated fracture

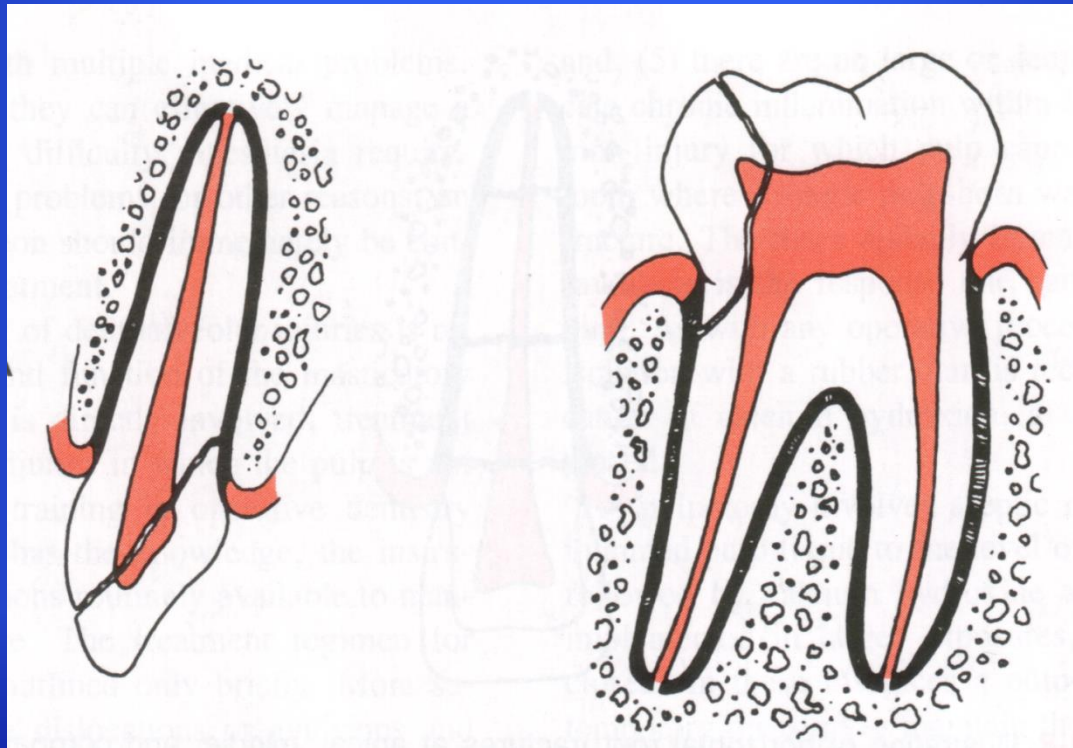
loss of structure including enamel, dentin

Complicated crown fracture

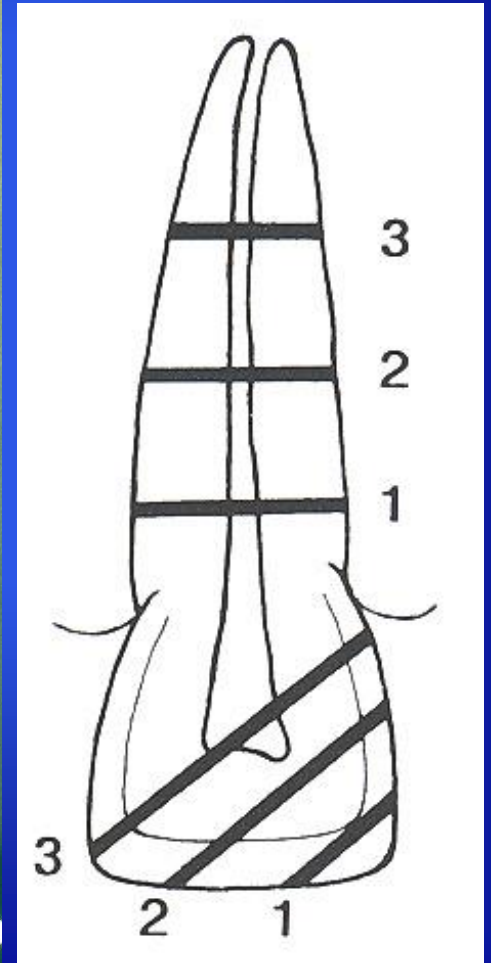
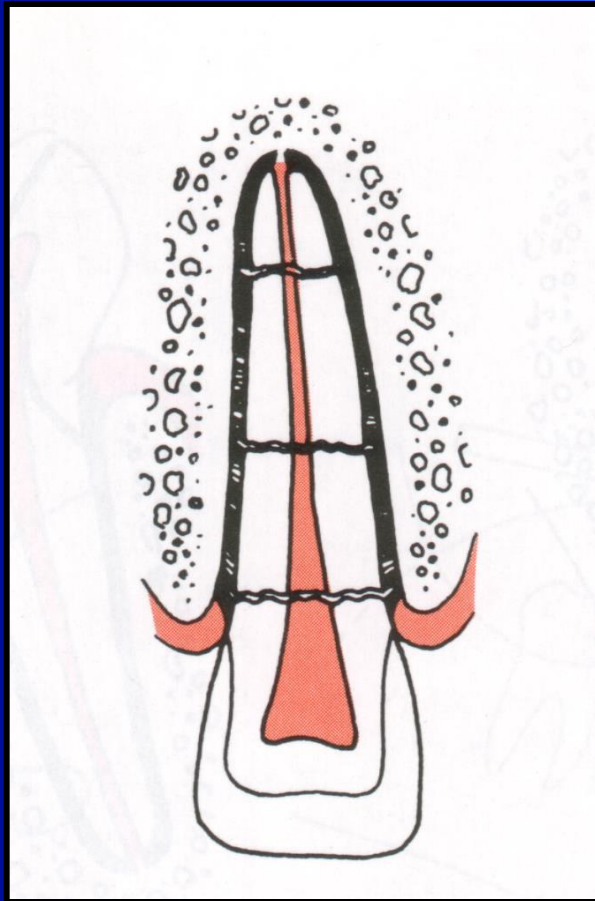
exposition of the pulp



Crown-root fracture



Root fracture



Root fracture

(horizontal or oblique)

- 1. Coronal level - removal the coronal fragment or the root**
- 2. Middle level - repositioning of the tooth (if dislocated) and splinting (2-3 monthes)**
- 3. Apical level - similar**

Therapeutical possibilities of fractured root

Does the fracture extend more than one-third the length of clinical root?

No

Is pulp exposed?

No

Smooth rough edges; place temporary crown with supragingival margins

Yes

Extract

Yes

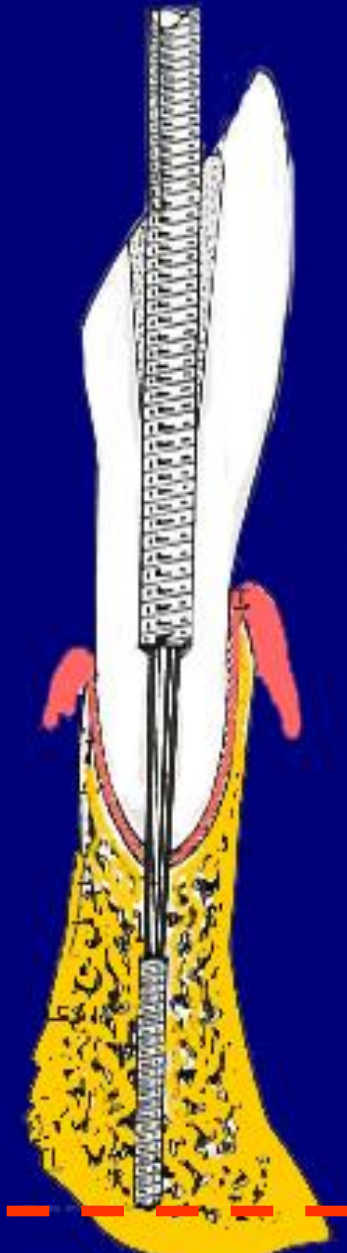
Extirpate pulp and complete root canal treatment and/or temporize

Fractures of the root

Therapy:

- **Immobilization**
endodontic treatment
- **Transdental fixation**
- **Removal - implant**

Transdental fixation



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Concussion

/contusion - sensitivity/

**Minor injury caused to periodontal ligament
by lateral or vertical blow to the tooth**

Treatment:

- relieve the occlusion
- re-examine in 2 weeks
- devitalization may occur

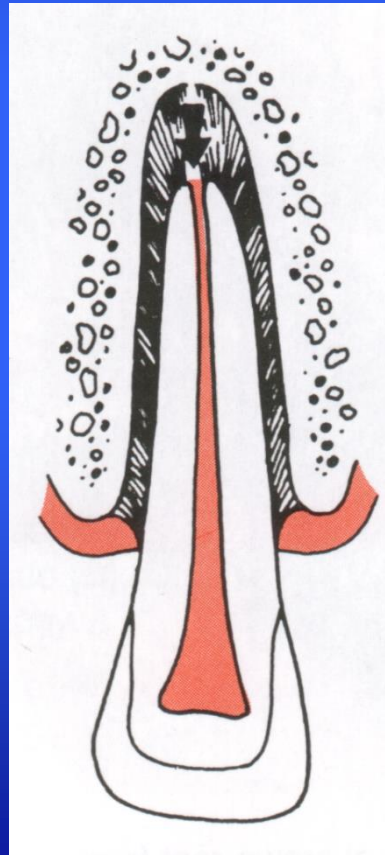
Subluxation (mobility)

More serious than concussion because the definite rupture of some periodontal fibres

Treatment:

- relieve the occlusion
- rarely splinting for 2 (3-4?) weeks
- re-examine in 2 weeks, 6 and 12 months

Tooth displacement (extrusion)



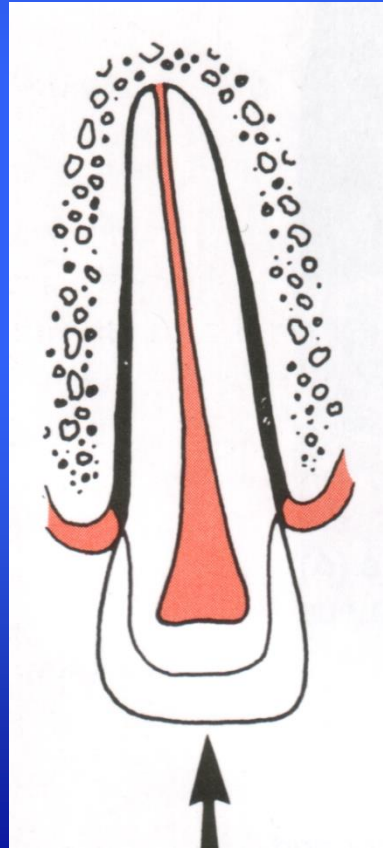
Extrusion

Tooth has been displaced in a coronal direction. The periodontal ligament has suffered massive damage.

Treatment:

- repositioning
- splinting for 2-3 weeks, relieve occlusion
- soft diet during splinting
- check at 3, 6 and 12 months

Tooth displacement (intrusion)

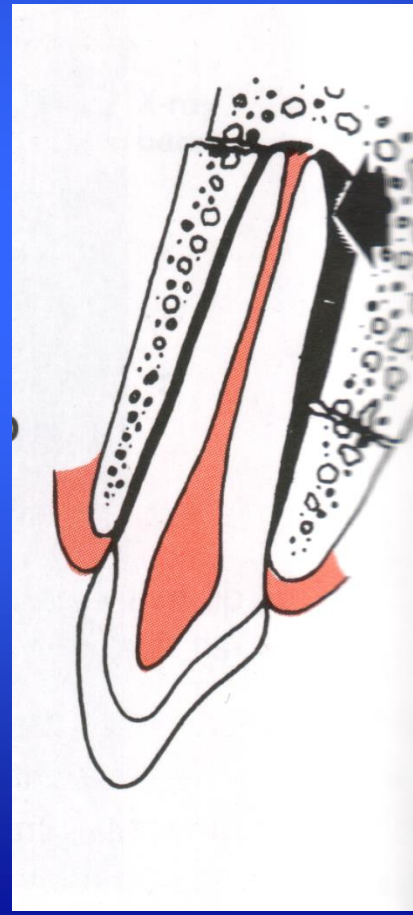
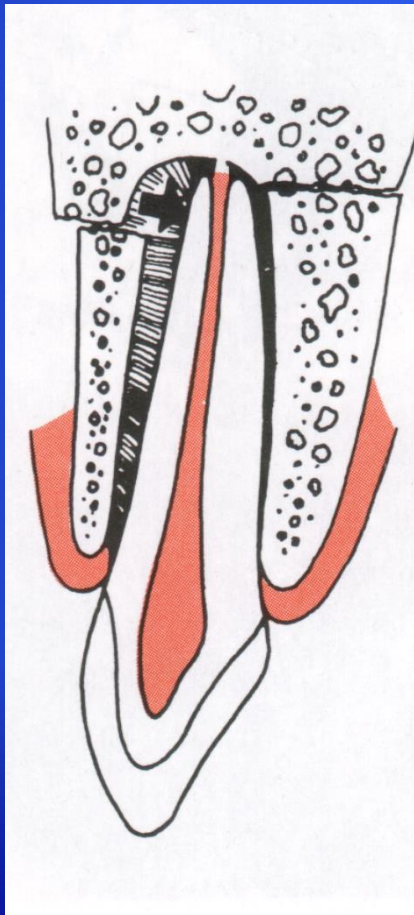


Intrusion

Considerable force is delivered apically to the crown. The periodontal ligament is ruptured.

- Orthodontic forces (immediatly or 4-6 days later) for eruption + splinting (3-4 weeks)**
- Leave alone → reeruption**
- Surgical repositioning + splinting**
- Closely monitoring**

Tooth displacement (alveolar bone fracture)

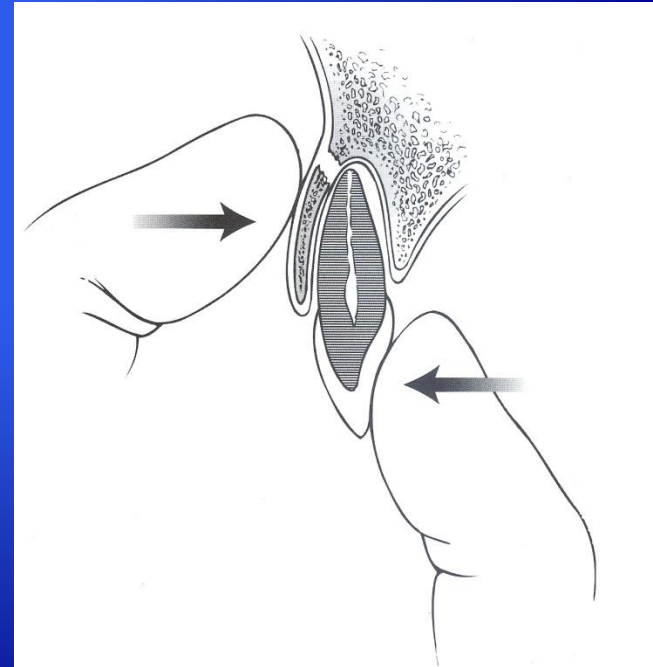


Lateral displacement /luxation/

The crown appears to be lingualized, while the root is forced labially. The periodontal ligament is ruptured, the socket wall is contused or fractured.

Treatment:

- repositioning
- splinting, soft diet for 3 weeks
- relieve occlusion
- check at 3, 6 and 12 months

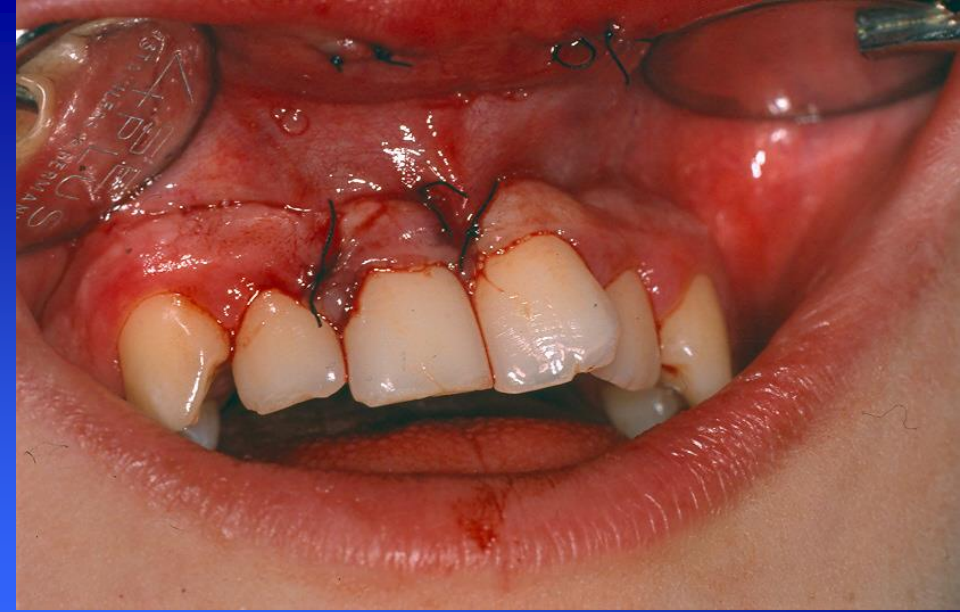


Avulsion /total luxation/

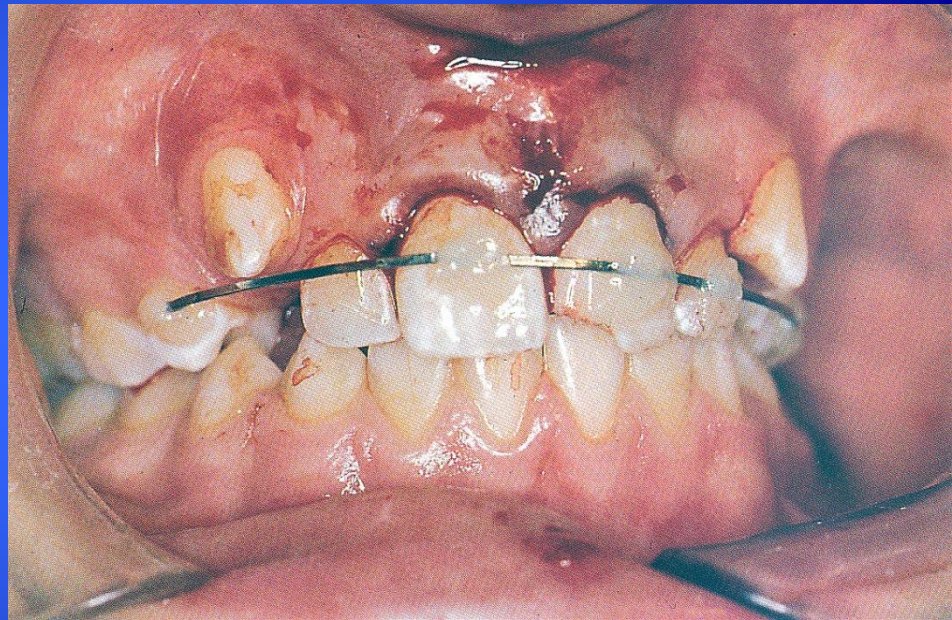
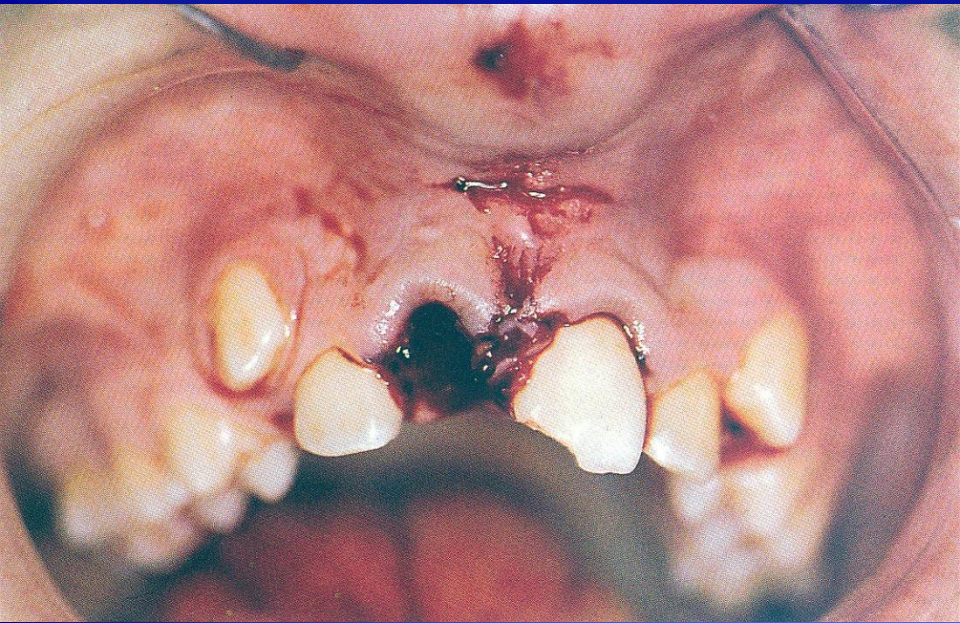
The tooth is displaced from its socket by a traumatic force.
The pathology is same as lateral displacement.

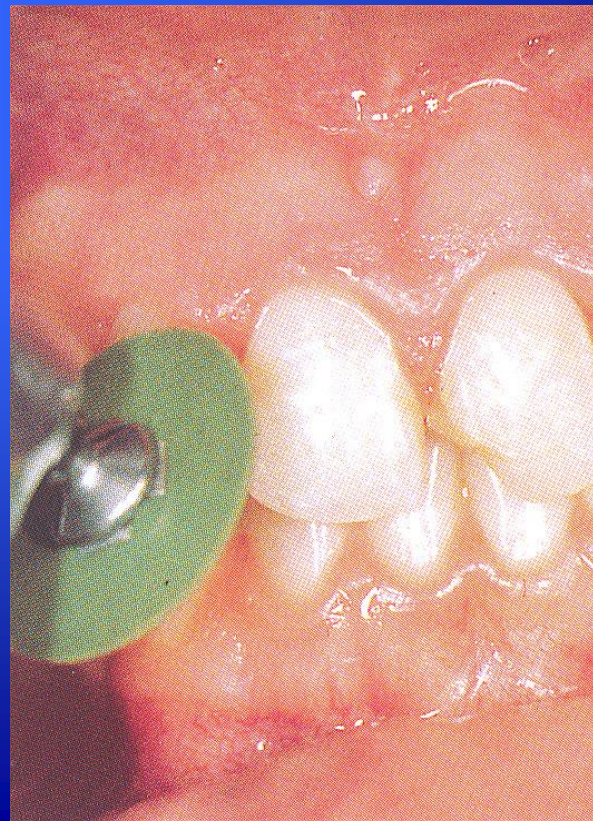
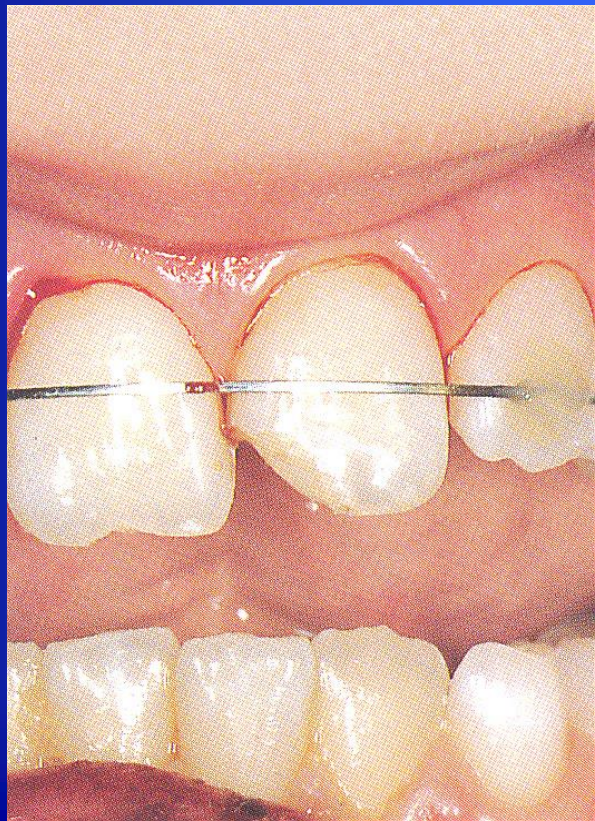
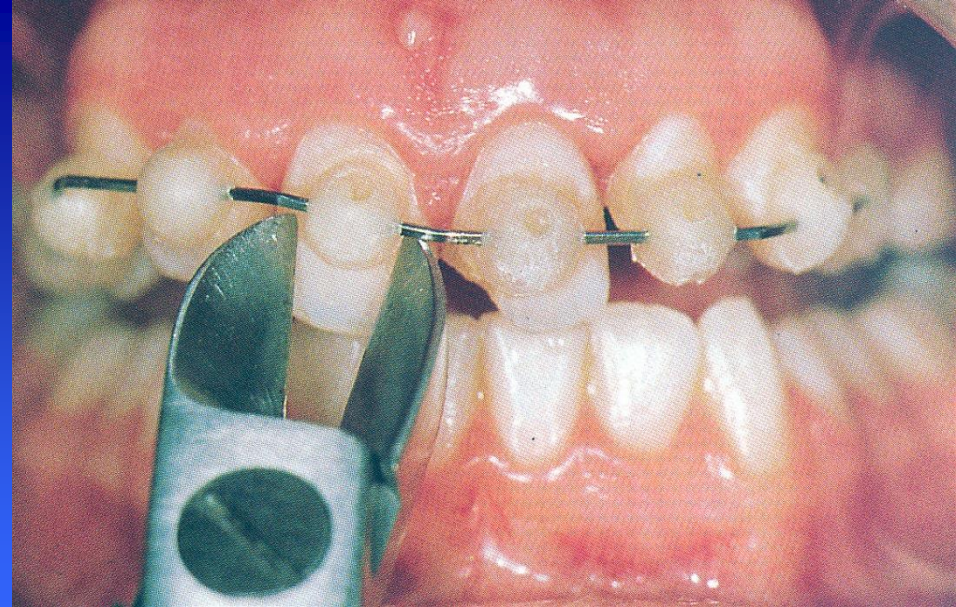
Treatment:

- rinsing the tooth & alveolar socket by sterile saline
- replantation
- splinting as lateral displacement (or 7-10 days?)
- antibiotic prophylaxis
- tetanus prophylaxis if necessary
- root canal treatment with calcium hydroxide, repeated 3 monthly for 1 year









Factors influencing prognosis of avulsed /total luxated/ teeth

- Length of time outside the mouth
- Intact periodontal ligament (the manner of preservation)
- State of the alveolar bone
- Endodontics
- Calcium-hydroxide paste
- Repositioning technique
- Splinting

Internal and external root resorption







Different forms of root resorption

1. Surface resorption

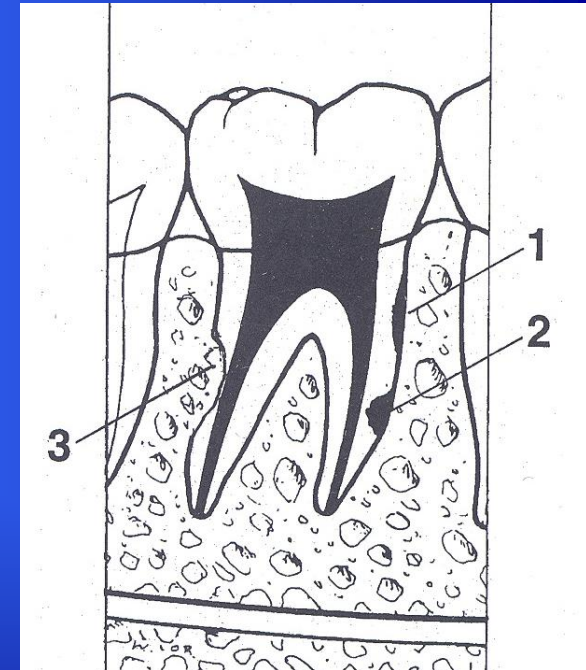
Damage of the periodontium and cementum without opening of dentin tubuli. Th: –

2. Inflammatory resorption

Injury with opening of the dentin tubuli
Th: $\text{Ca}/\text{OH}/_2$

3. Replacement resorption/ ankylosis/

Necrosis of the periodontal ligament and cementum. Infraocclusion. Th: –



The local and systemic administration of Doxycycline inhibits the resorption of replanted teeth.

/Andreasen J. O.: Farbatlas der Replantation und Transplantation von Zähnen. 1993/

**The Emdogain® treatment
inhibits or delays the
ankylosis, so the resorption
of replanted teeth.**

/ Filippi A. et al.: Dent. Traumatol, 2002/

**Emdogain[®] treatment does
not influence the ankylosis of
replanted teeth.**

/Schjott M., Andreasen J.O.: Dent. Traumatol, 2005/

**Most dental injuries occur
between the ages of 8 and 11**

/Gnoinski 1944/

Treatment for missing maxillary incisor

- conventional fixed bridge
- orthodontic closure
- implant



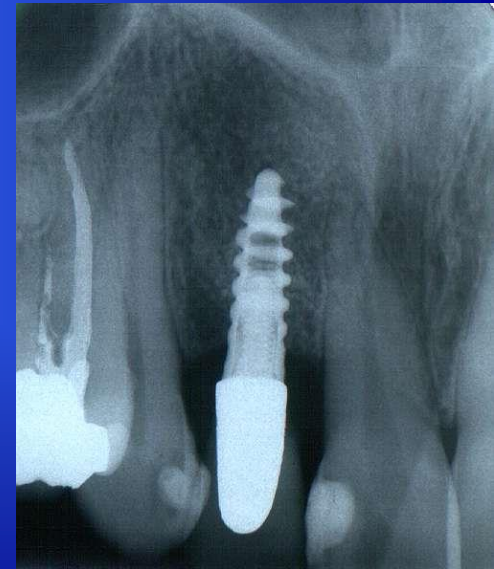
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The difficulties of implant rehabilitations in young age

- **The developmental state of jaw-bones**
- **Space-maintenance /orthodontics/**
- **The available bone. Physiologic bone resorption**