

Traumatic injuries to the teeth - II



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Ellis classification

Class I: Enamel fracture

Class II: Enamel and dentin fracture without pulp exposure

Class III: Crown fracture with pulp exposure

Class IV: Traumatized tooth that has become non-vital with or without loss of tooth structure

Class V: Teeth lost as a result of trauma (Avulsion)

Class VI: Fracture of root with or without loss of crown structure

Class VII: Displacement of the tooth without fracture of crown or root

Class VIII: Fracture of the crown en masse and its replacement

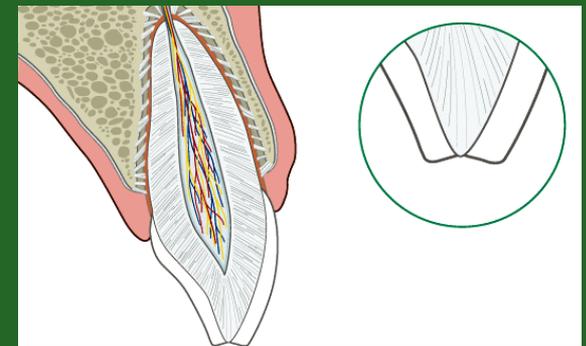
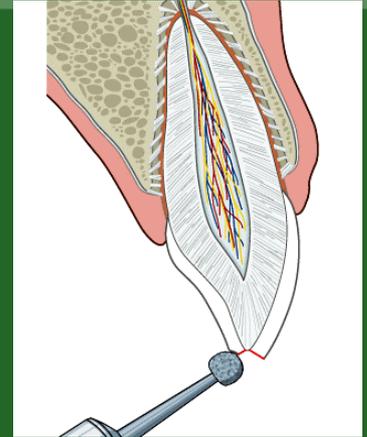
Class IX: Fracture of deciduous teeth

Treatment of various dental fractures



Management of Class I fracture

- ☺ If a tooth fragment is available, it can be bonded to the tooth.
- ☺ In many cases no immediate treatment is needed other than smoothing of sharp fracture edges. The fracture can be left for later restoration which in most cases will consist of augmentation with composite resin material.
- ☺ Grinding or restoration with composite resin depending on the extent and location of the fracture.
- ☺ Clinical and radiographic control at 6-8 weeks and 1 year.



Management of Class II fracture



- ✧ If a tooth fragment is available, it can be bonded to the tooth. Otherwise perform a provisional treatment by covering the exposed dentin with glass-ionomer or a permanent restoration using a bonding agent and composite resin.
- ✧ The definitive treatment for the fractured crown is restoration with accepted dental restorative materials.
- ✧ Radiograph of lip or cheek lacerations to search for tooth fragments or foreign material

Follow-up

- ✧ Clinical and radiographic control at 6-8 weeks and 1 year

Enamel and dentin fracture without pulp exposure



Management of class III fracture



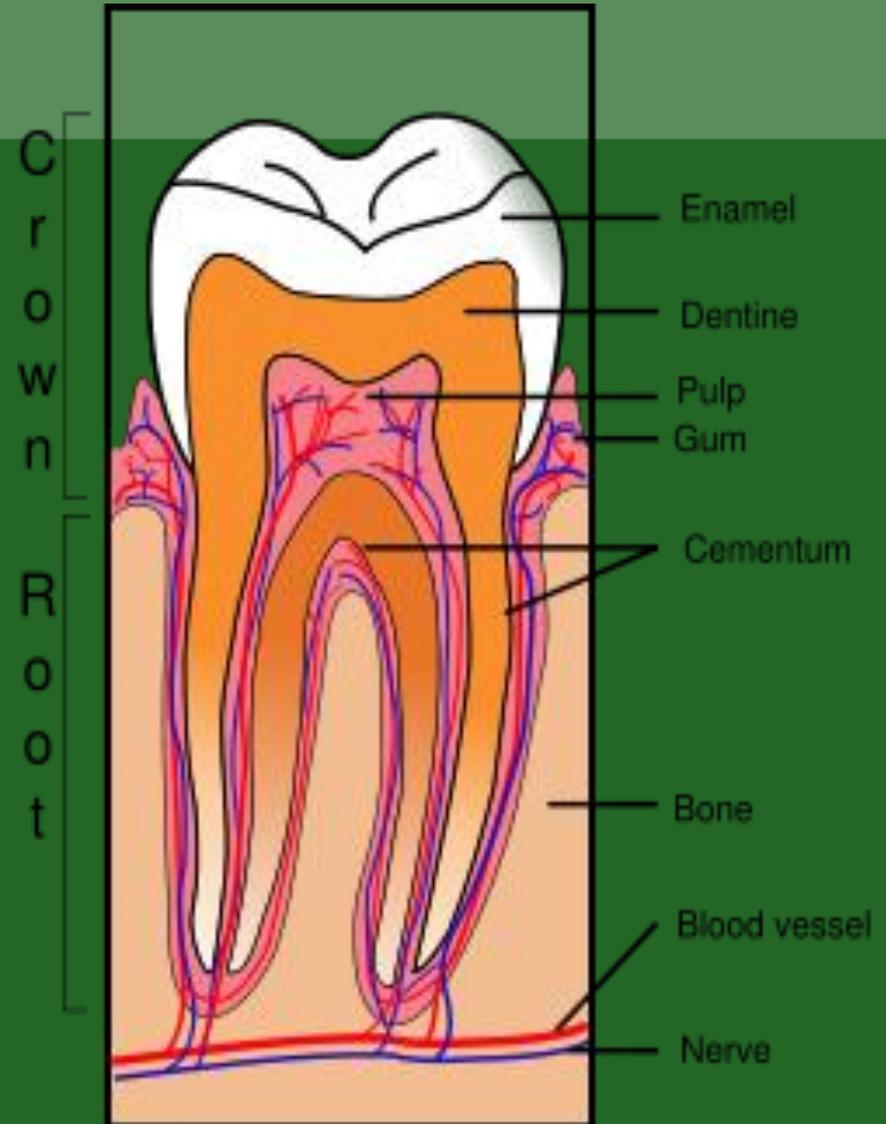
Factors affecting management of class III fractures

- ☼ Vitality of the pulp
- ☼ Size of pulp exposure
- ☼ Time elapsed since exposure
- ☼ Stage of development of root apex
- ☼ Restorability of fractured crown

Crown fracture with pulp exposure

PULP

**PULP IS A SOFT
CONNECTIVE TISSUE
SURROUNDED BY
DENTIN**



APEXOGENESIS

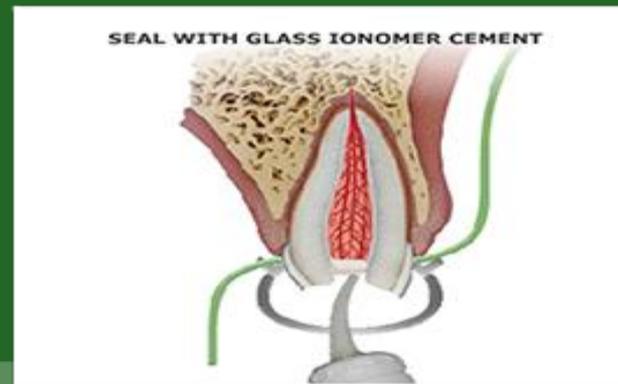
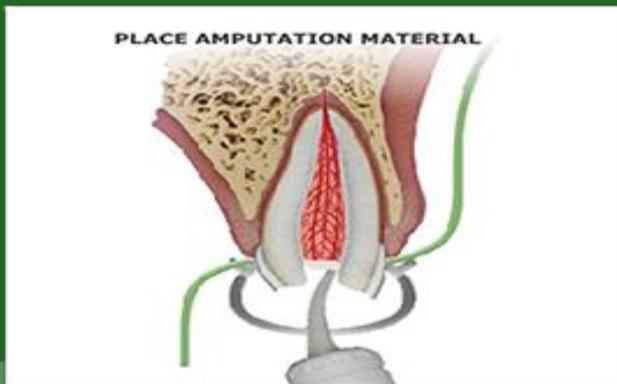
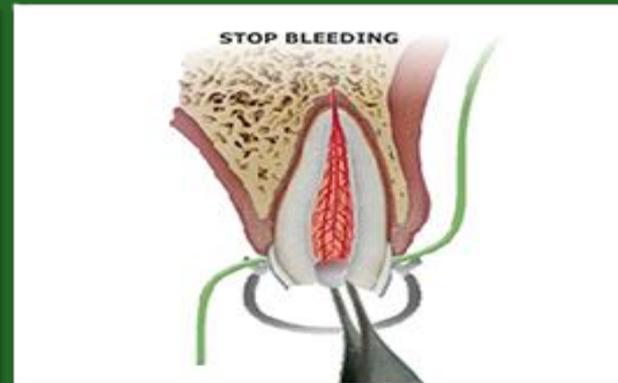
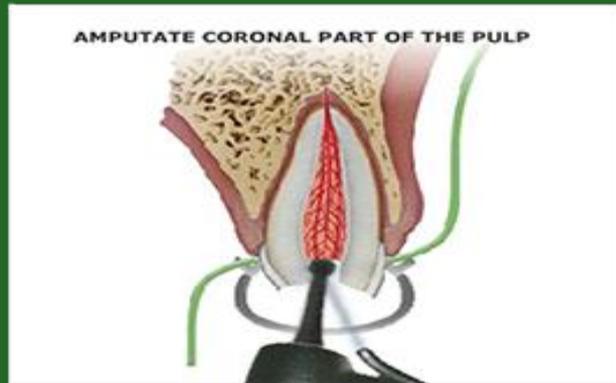
Indicated in large vital exposures in YOUNG permanent teeth with incompletely formed apices.

Aim:

- ⊗ To remove the infected coronal pulp and place calcium hydroxide over the healthy amputated radicular stumps.
- ⊗ A calcific barrier should form in response and the radicular pulp should retain its vitality so that root closure can occur.

PULPOTOMY

Complete removal of coronal portion of the dental pulp followed by placement of a suitable dressing or medicament that will promote the healing and preserve the vitality of tooth.



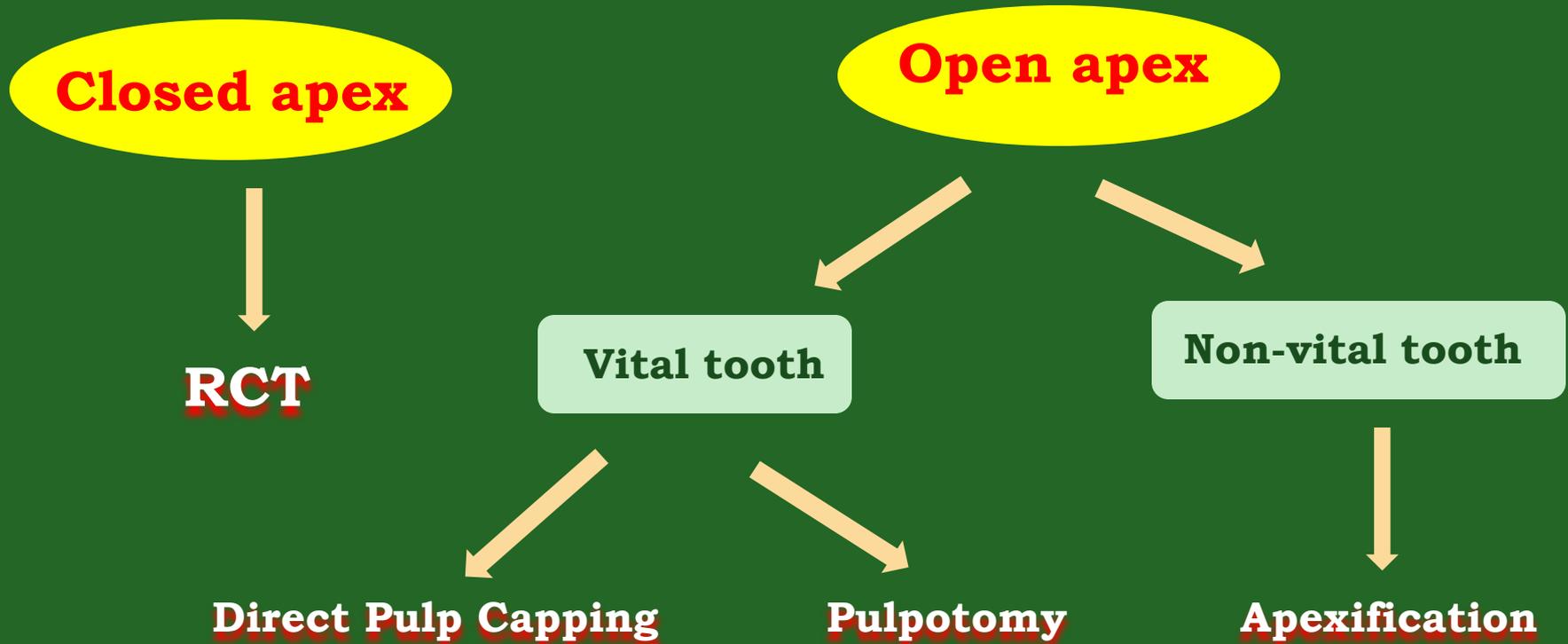
APEXIFICATION

INDICATION

NON VITAL PULP WITH OPEN APEX. (BLUNDERBUSS CANAL)



Treatment summary for class III fractures



Pulp capping

can be employed if the exposure is minimal & not over 24 hours in duration

Pulpotomy

moderate hemorrhage with a relatively large exposure & patient is seen within 72 hours

RCT

if the exposure is of longer than 72 hours

Management of Class IV fracture

Closed apex



RCT

Open apex



Apexification

Traumatized tooth that has become non-vital with or without loss of tooth structure

Management of Class VI fractures

Treatment

Fractures of the apical and middle third

reduction by digital pressure

tooth stabilization by splinting

Fractures of the coronal third

reduction and immobilization by splinting

**endodontic treatment in case of pulp necrosis
& no healing**

removal of coronal fragment

restoration with post & core/ crown

Root fractures

Class VII fractures

Concussion

Intrusive luxation
(central dislocation)

Subluxation
(loosening)

TYPES

Lateral luxation

Extrusive luxation
(peripheral displacement,
partial avulsion)

Displacement of the tooth without fracture of crown or root

Management of Concussion

An injury to the tooth supporting structures without abnormal loosening or displacement but with marked reaction to percussion.

Treatment:

- **Occlusal grinding of opposing teeth at the time of the examination**
- **Regular vitality testing at subsequent visits.**

Management of Subluxation

An injury to the tooth supporting structures with abnormal loosening but without clinically or radiographically demonstrable displacement of the tooth.

Treatment:

- **Occlusal grinding + regular vitality test.**
- **If extensive mobility, splint the tooth using the acid-etch splinting technique.**
- **Periodic reviews every 3-4 weeks to monitor for abscess formation and loss of vitality.**

Management of Intrusion

Displacement of the tooth deeper into the alveolar bone

Clinically most intruded teeth, because of their locked position in the socket are not sensitive to percussion and are completely firm.

Radiographically, reveals dislocation of tooth and sometimes a missing or diminished periodontal space.

Treatment :

- If immature, the tooth will erupt spontaneously
- Immediate surgical repositioning, splinting & endodontic therapy.
- Orthodontic extrusion and repositioning.

Management of extrusion (partial avulsion, peripheral displacement)

Treatment :

- Tooth can be repositioned by digital pressure on the incisal edge.
- Any Delay may result in its being fixed in extruded position.
- After repositioning, splinting for 2-3 weeks.
- If tooth vitality lost, endodontic therapy started immediately.

Management of Lateral Luxation

Displacement of the tooth in a direction other than axially. This is accompanied by comminution or fracture of the alveolar socket.

Treatment:

- **Repositioning is often complicated by associated alveolar bone fracture.**
- **Usually apex of the displaced tooth has been forced through the facial bone plate. So, essential to disengage the apex first by pressing over the apical area and on the lingual aspect of the crown.**

Management of Lateral Luxation

- **Displaced bone fragments repositioned by means of digital pressure and the teeth splinted.**
- **Lacerated gingiva repositioned around the necks of teeth and sutured.**
- **Finally radiographs are taken in order to verify adequate repositioning.**
- **Splinting is done for a period 6-8 weeks.**

TREATMENT OF PRIMARY TOOTH INJURIES

CLASSIFICATION OF PRIMARY TOOTH INJURIES

Given by Rabinowitch (1956)

- 1. Fracture of the enamel or slightly into the dentin**
- 2. Fracture into the dentin**
- 3. Fracture into the pulp**
- 4. Fractures of the root**
- 5. Comminuted fractures**
- 6. Displaced teeth**

TREATMENT

☼ I. **Crown Fractures**

- ☼ Enamel Fracture

- ☼ Crown fractures involving enamel and dentin

- ☼ Crown fractures involving enamel dentin and pulp.

☼ II. **Root Fractures**

☼ III. **Luxation Injuries**

☼ III. **Exarticulation**

Treatment of Enamel Fractures

Treatment:

- ⊗ Do not require treatment.
- ⊗ The tooth evaluated radiographically after a period of six weeks.

Treatment of crown fractures involving enamel and dentin

- ☼ Grind rough enamel edges.
- ☼ If considerable tooth structure lost, then treat with composite resin/stainless steel crown.
- ☼ Strip crown acid etch composite restorations - most successful
- ☼ Unfortunately, because of lack of co-operation in a young child, the treatment of choice may be extraction.

Treatment of crown fractures involving enamel, dentin & pulp

Vital tooth



Pulpotomy

Non vital tooth



Pulpectomy

Treatment of Root Fractures

Rare in primary dentition and when they occur mostly extraction indicated.

Treatment:

- ☼ Primary teeth with root fractures without dislocation may be preserved and normal shedding of injured teeth anticipated.
- ☼ Usually not possible to splint these teeth.
- ☼ Severely dislocated Primary Teeth should be removed

Luxation Injuries

- ☼ Concussion and subluxation in the primary dentition require no treatment apart from a clinical and radiographic follow up for 1 year.
- ☼ Extraction is usually the treatment of choice for primary tooth which is extruded.
- ☼ Intruded primary teeth will usually re-erupt within 1-6 months.
- ☼ If intrusive displacement is less than 1/2 of clinical crown + no evidence of alveolar fracture clinically or radiographic ally, then no immediate treatment.
- ☼ Laterally luxated primary teeth will usually reposition spontaneously within a period of 1 to 6 months.

Primary requirement - prevention of injuries to the succeeding permanent teeth

Treatment of Avulsion

Treatment :

Some clinicians consider replanting but most clinicians do not because of possibility of disturbing developing permanent successor.

MCO_s

MCQ-1

All of the following factors affect the management of class III fracture except:

- a) Vitality of the pulp
- b) Size of pulp exposure
- c) Shape of pulp exposure
- d) Time elapsed since exposure

MCQ- 2

Pulp capping is indicated in permanent tooth when:

- a) moderate hemorrhage with a relatively large exposure & patient is seen within 72 hours
- b) the exposure is minimal & not over 24 hours in duration
- c) the exposure is of longer than 72 hours
- d) None of the above

MCQ- 3

Which of the following is the treatment of choice for fracture of apical third of root of permanent right central incisor in a 12 year old girl:

- a) Extraction
- b) Endodontic treatment
- c) Tooth stabilization by splinting
- d) Reimplantation

MCQ- 4

Which of the following is a type of luxation injury:

- a) Extrusion
- b) Intrusion
- c) Concussion
- d) All of the above

MCQ- 5

Treatment of concussion includes:

- a) Occlusal grinding of opposing teeth at the time of the examination
- b) Splinting of the tooth using the acid-etch splinting technique
- c) Immediate surgical repositioning, splinting & endodontic therapy
- d) Orthodontic extrusion and repositioning

MCQ- 6

What is subluxation:

- a) An injury to the tooth supporting structures without abnormal loosening
- b) An injury to the tooth supporting structures with abnormal loosening
- c) Displacement of the tooth deeper into the alveolar bone
- d) Displacement of the tooth in a direction other than axially

MCQ- 7

What is the treatment of choice of fracture involving pulp in a deciduous non vital central incisor :

- a) Pulpectomy
- b) Pulpotomy
- c) Direct pulp capping
- d) Indirect pulp capping

MCQ- 8

Treatment for an avulsed primary lateral incisor is:

- a) Reimplantation
- b) Reimplantation followed by endodontic therapy
- c) Endodontic therapy followed by reimplantation
- d) No treatment required

MCQ- 9

What is the treatment of choice of partially avulsed primary central incisor in a 5 year old child:

- a) No treatment required
- b) Wait for re-eruption
- c) Extraction
- d) Immobilization

MCQ- 10

Classification of the primary teeth injury was given by Rabinowitch in the year:

- a) 1952
- b) 1954
- c) 1956
- d) 1958

THANK
YOU

