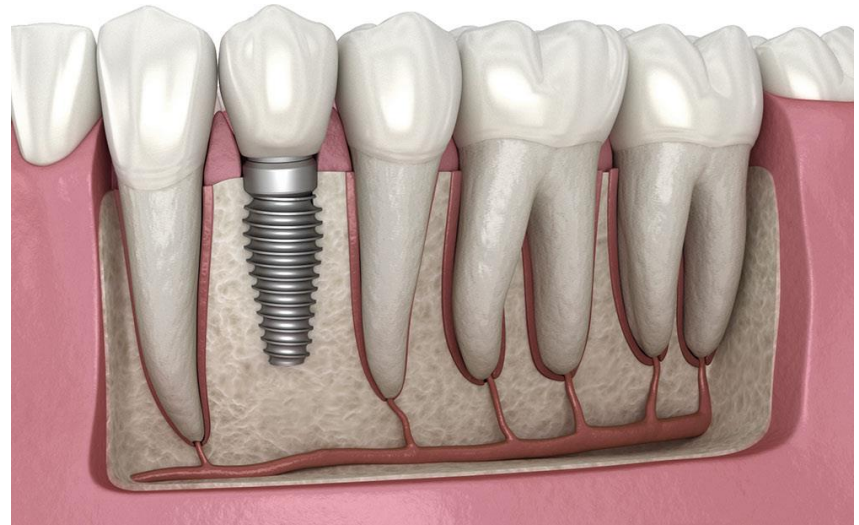




Perforation

The importance of the issue

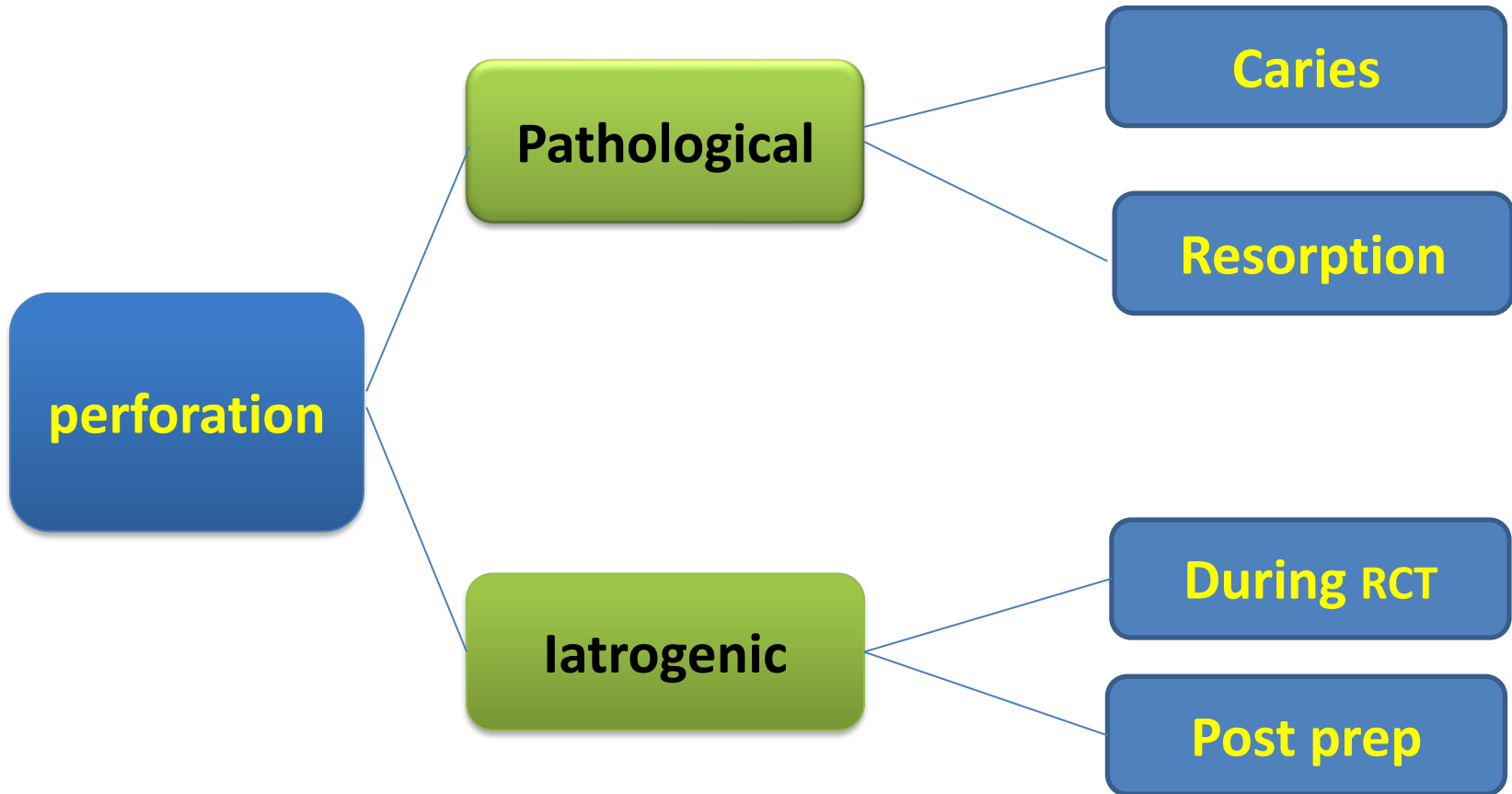


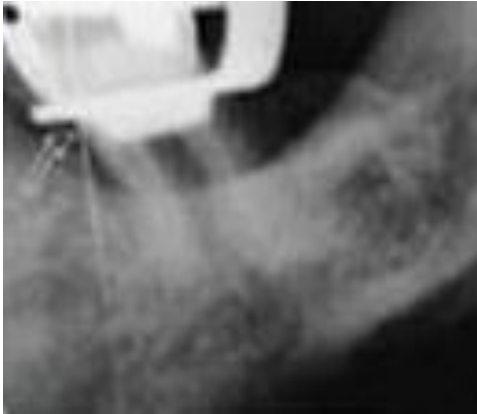
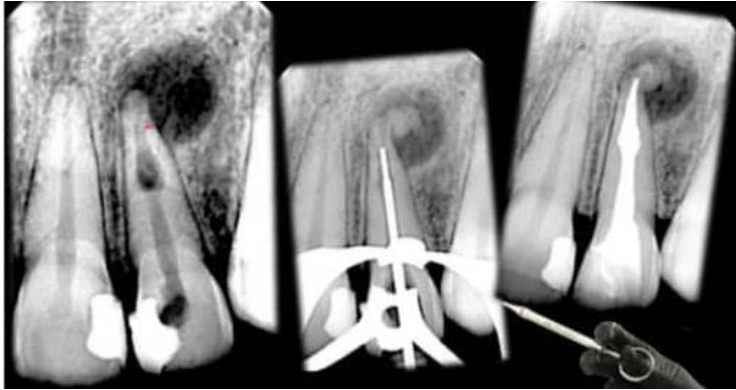
Perforation definition

A root perforation is a mechanical or pathologic communication formed between the supporting periodontal apparatus of the tooth and the root canal system (AAE)



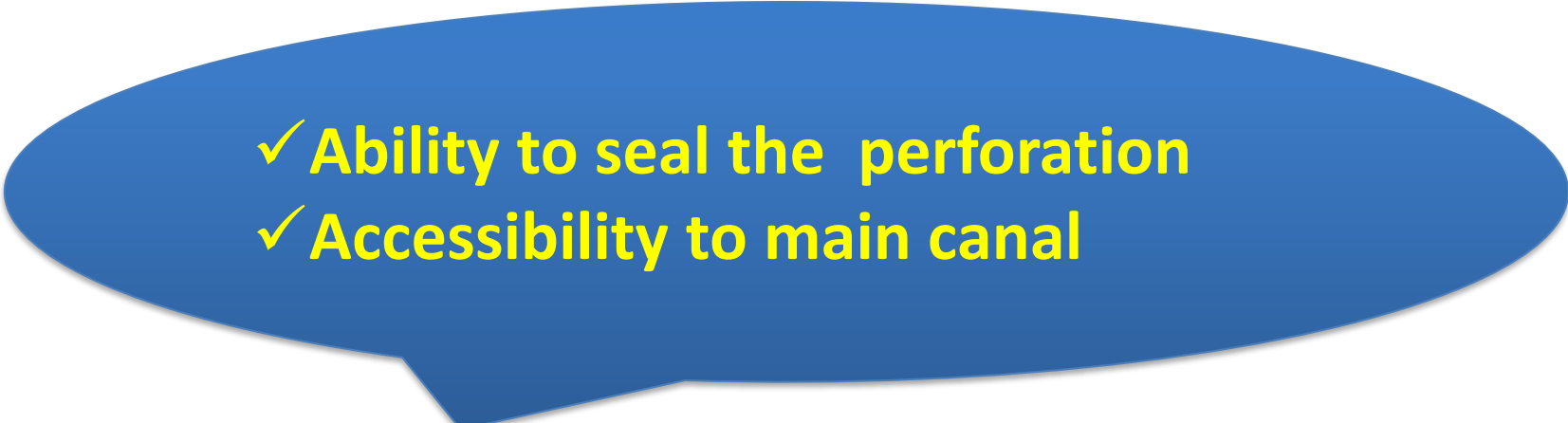
Perforation classification





Perforation classification

- Size
- Time
- Location



✓ Ability to seal the perforation
✓ Accessibility to main canal

Perforation prognosis

Small perforation
Fresh Perforation

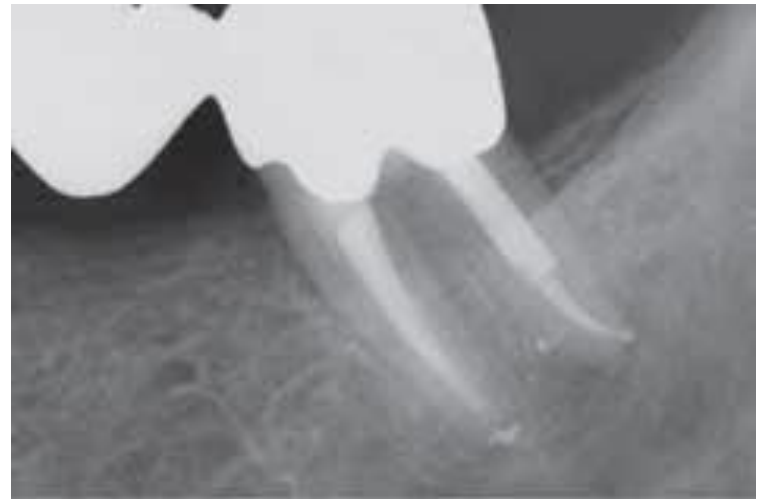


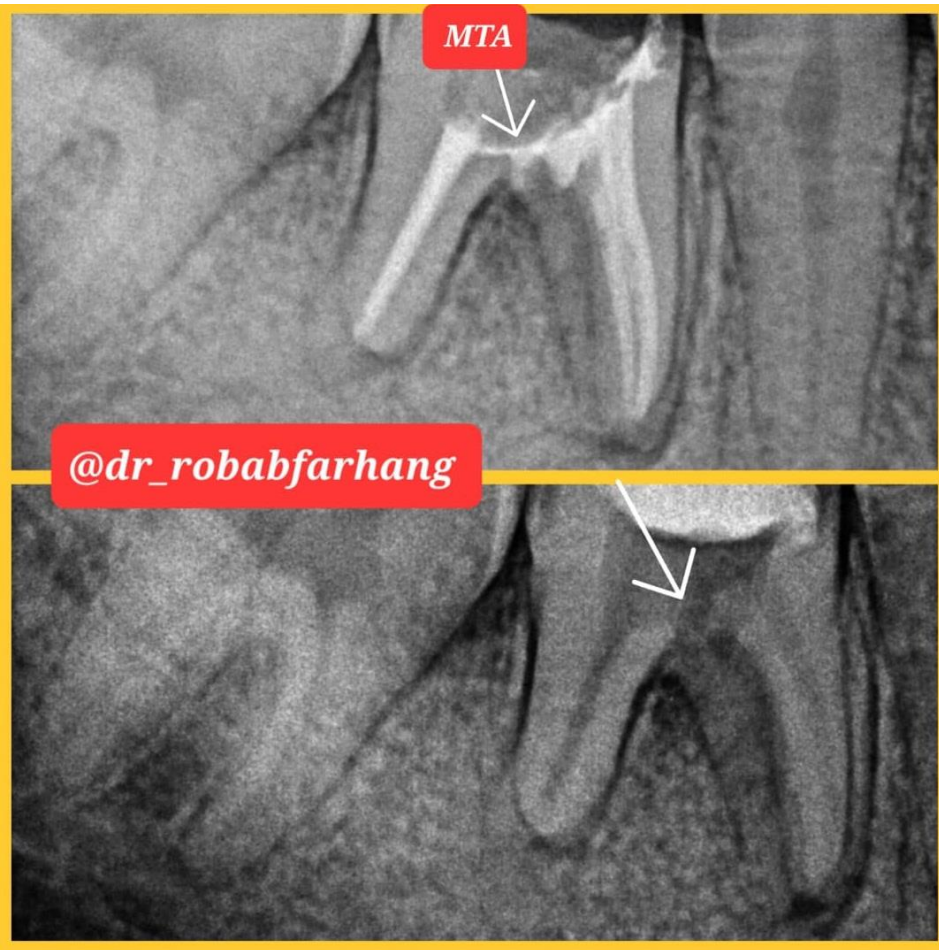
good prognosis

Large perforation
Old Perforation



questionable prognosis







Perforation prognosis

therefore, the classic negative prognostic factors for perforation repair might NOT BE applicable if a bioactive material is used for repair

Perforation prognosis

- Coronal Perforation

Good

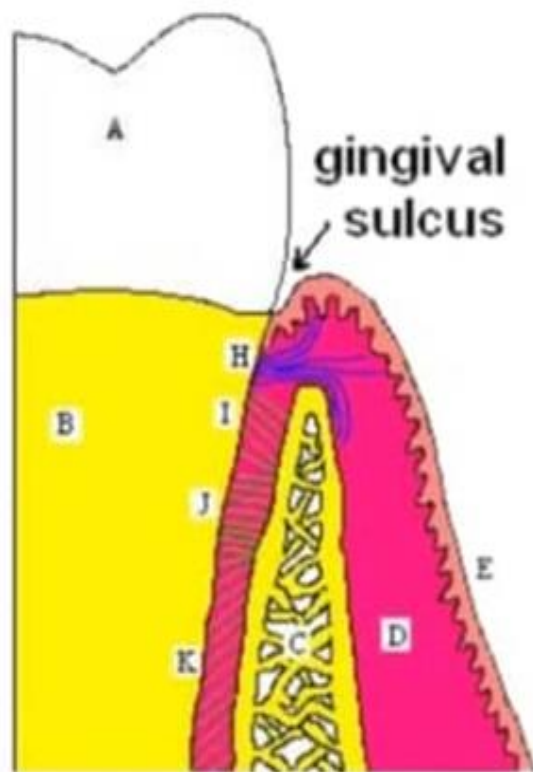
- Crestal Perforation

questionable

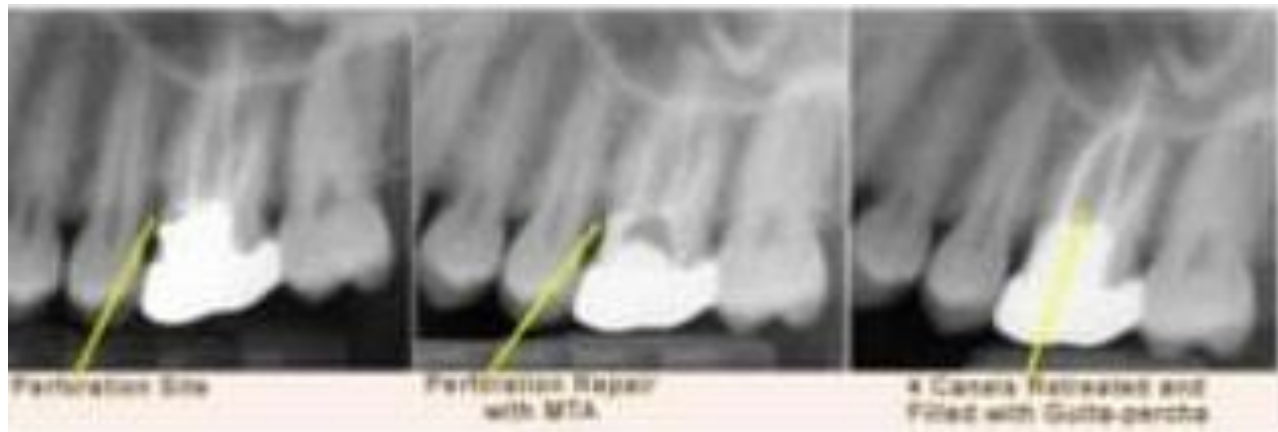
- Apical Perforation

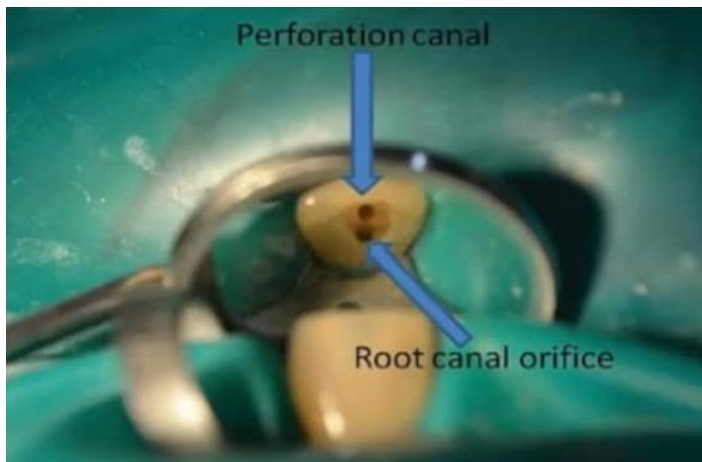
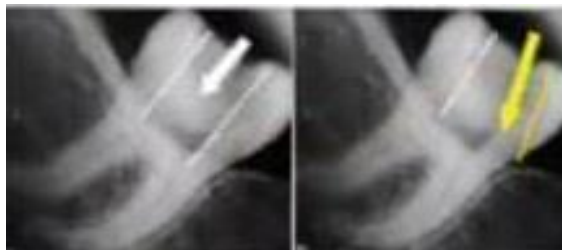
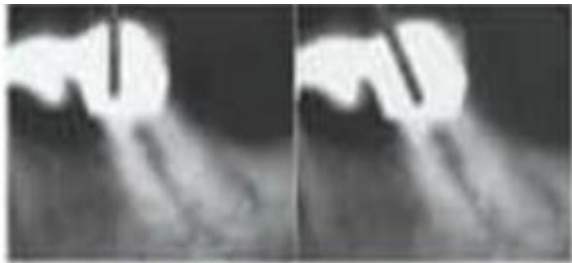
Good

Prognosis : periodontal status

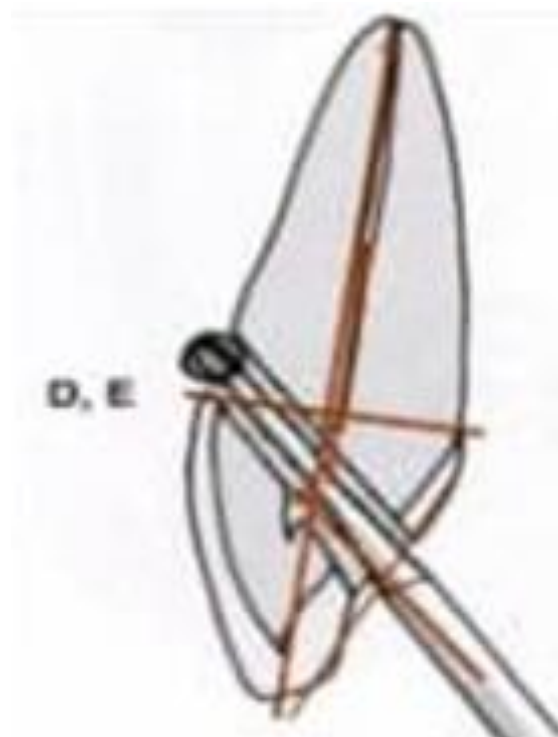


Access preparation perforation

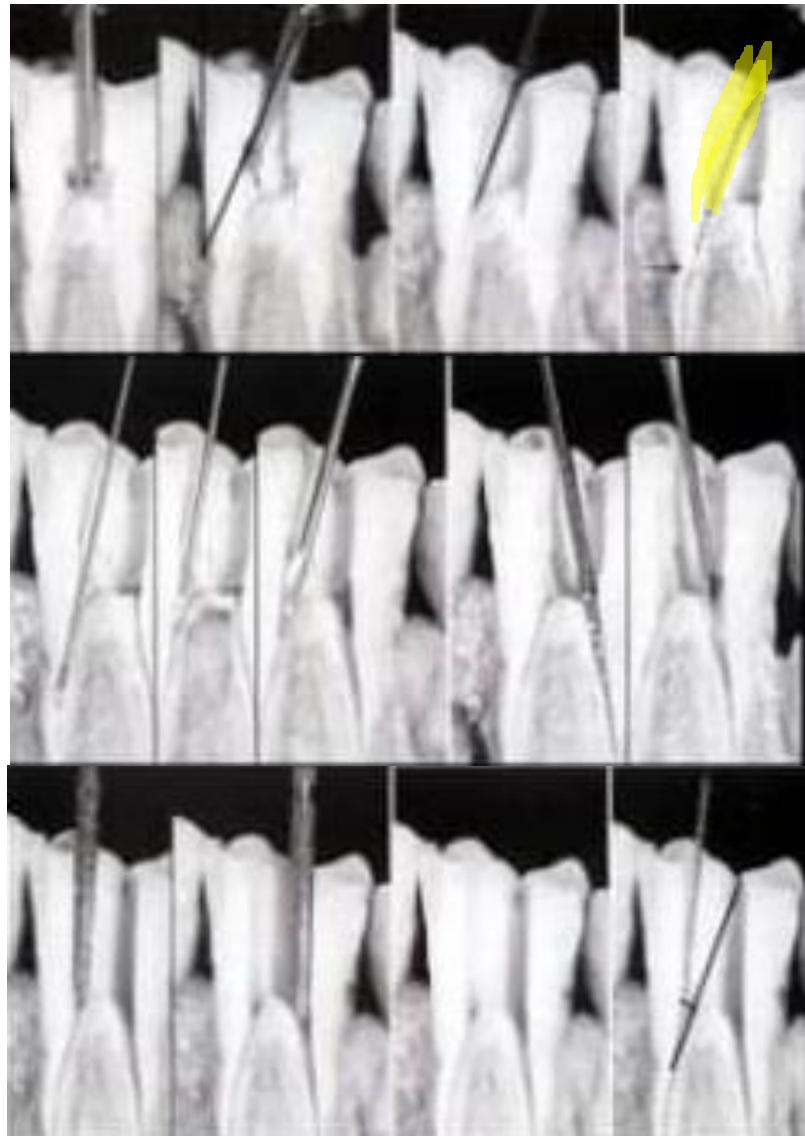














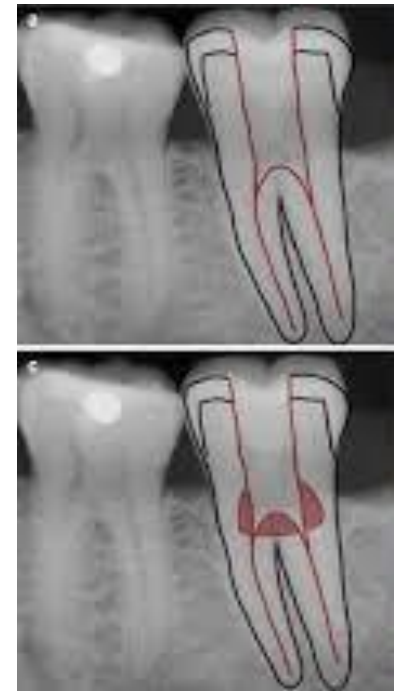


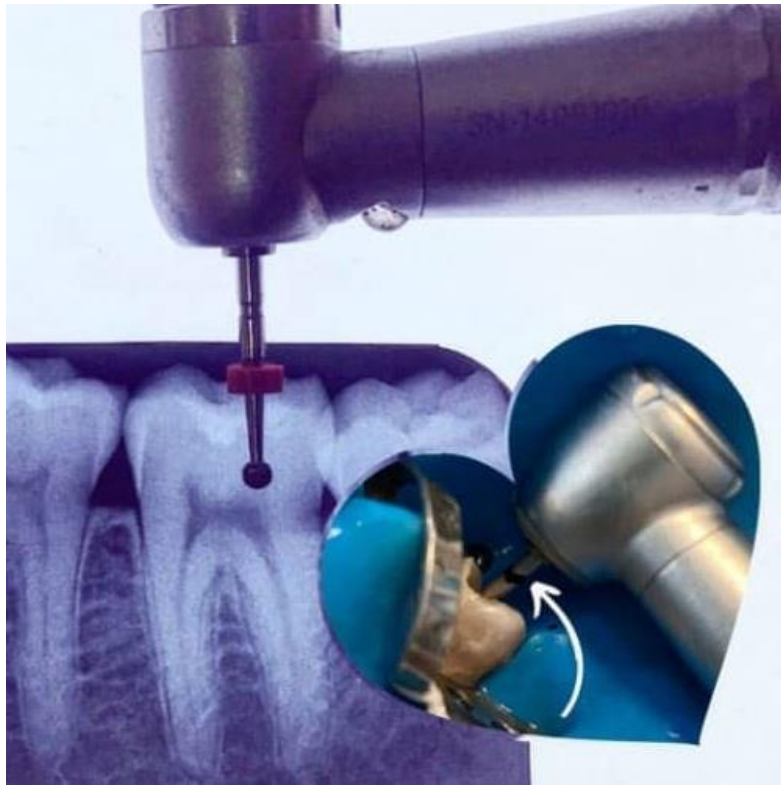
Recognition

- sudden pain
- Sudden hemorrhage
- Radiography
- Apex locator
- Taste of irrigant during irrigation

Access preparation perforation

- Prevention:
 - Knowledge of tooth morphology and outlines of the access cavities
 - Parallel , Bitewing radiographs:
 - Measured depth and size of pulp chamber*
 - Radiograph from different angles
 - Check the long axis
 - Note degree of calcification







Cervical root canal perforation

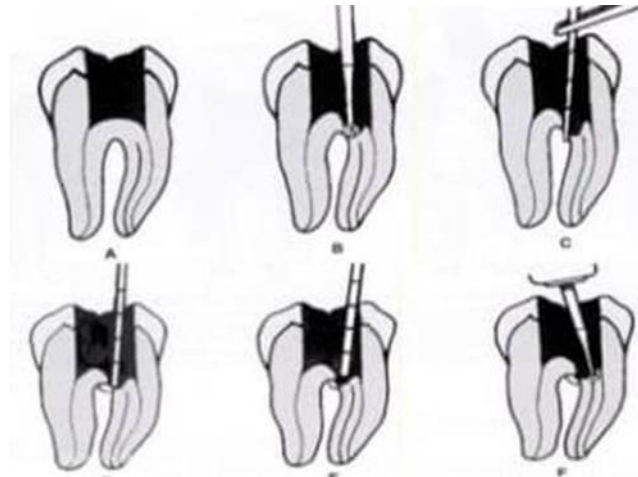
➤ Etiology :

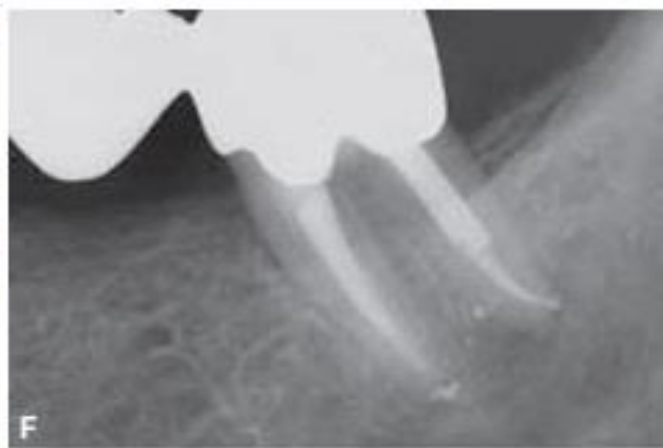
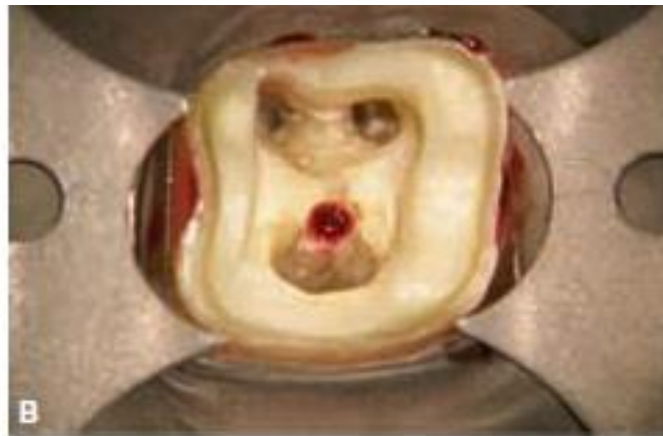
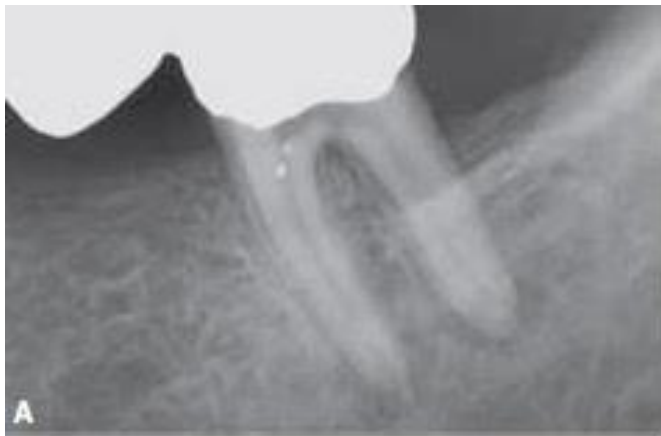
- *Locating orifice*
- *Widening orifice*
- *G.G bur*



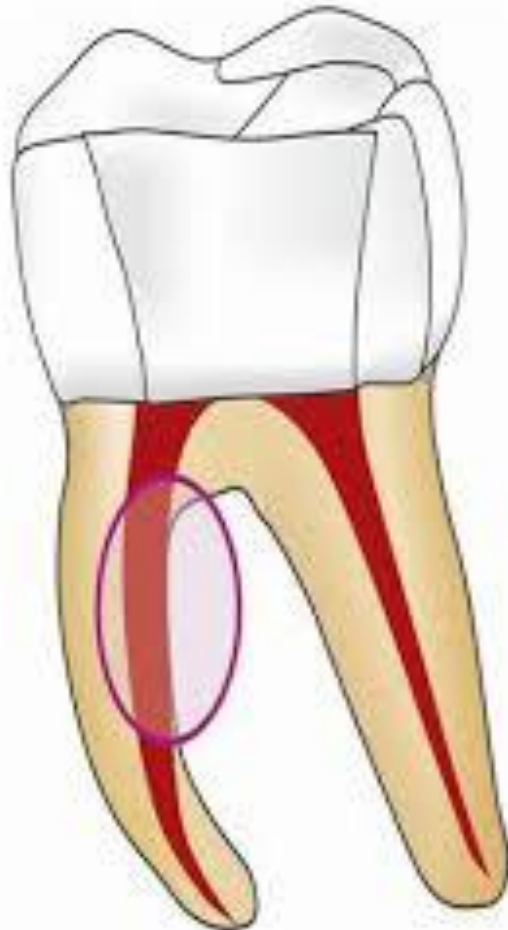
➤ Recognition :

- *Blood*
- *direct visualization*
- *Magnification*
- *Radiography*
- *Apex locator*





Midroot perforation



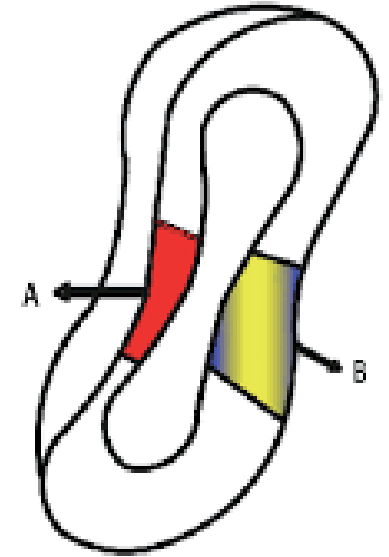
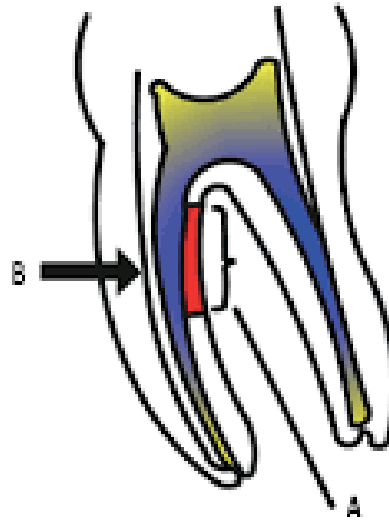
Midroot perforation

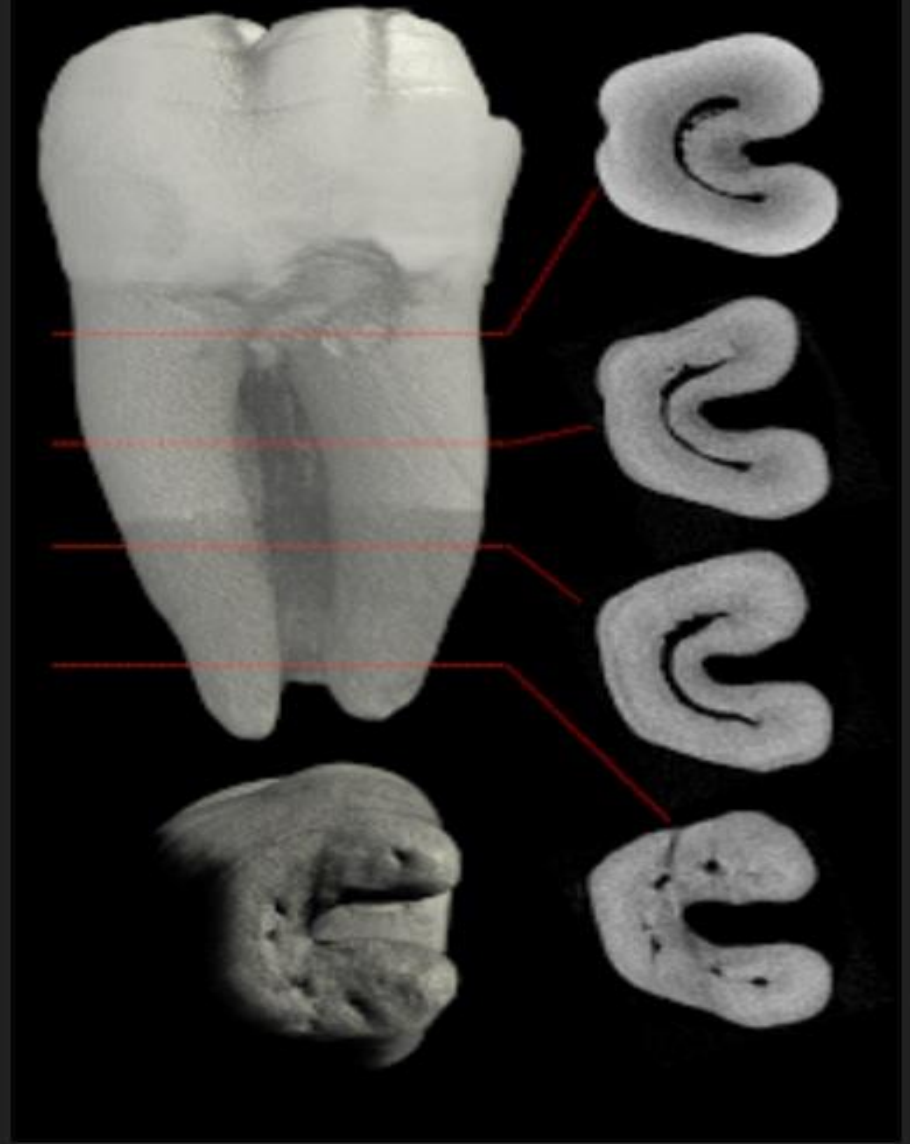
➤ Etiology:

- In curved canal:
 - In continuation of ledge
 - Straighten out lead to strip perforation

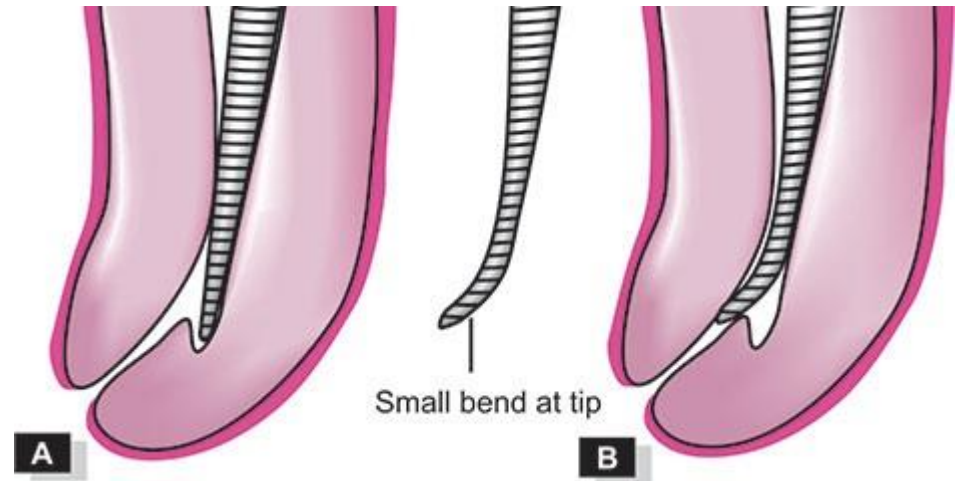
Midroot perforation

- Prevent over instrumentation
- Use anticurvature tech





Midroot perforation

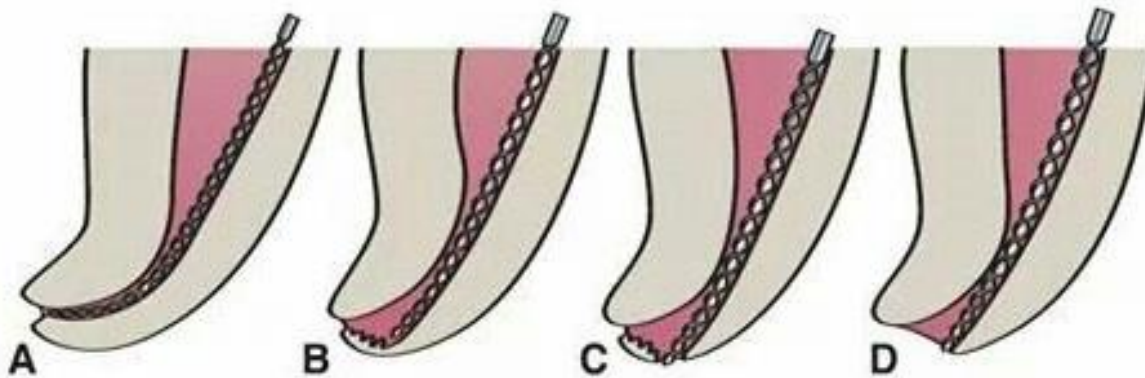
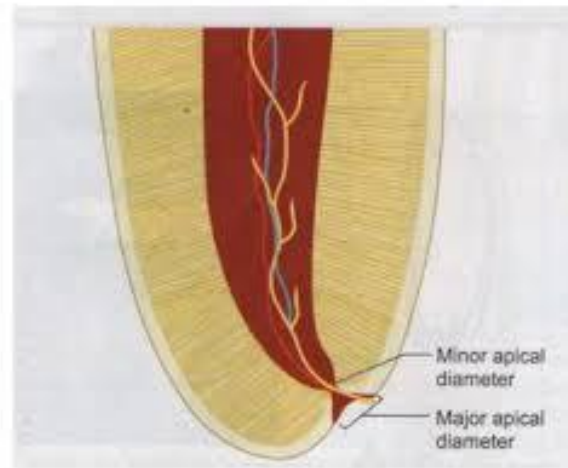


Prevention of ledge formation :

- Correct WL determination
- Stay on the correct length with patency & recap
- Not forcing instrument
- Work sequentially without jumping to large instruments
- Not packing debris



Apical perforation



materials

➤ Hemostatics

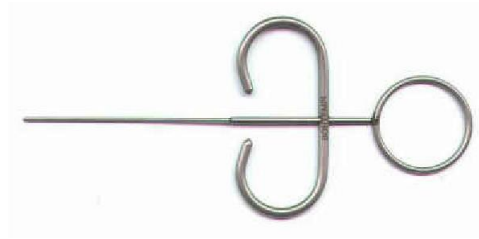
- *Calcium hydroxide, Collagen, Calcium sulfate , MTA*

➤ Barriers

- Resorbable :Collagen , calcium sulfate
- Nonresorbable :Biodentine , MTA

➤ Restorations

- GI, MTA, other calcium sulfate cements

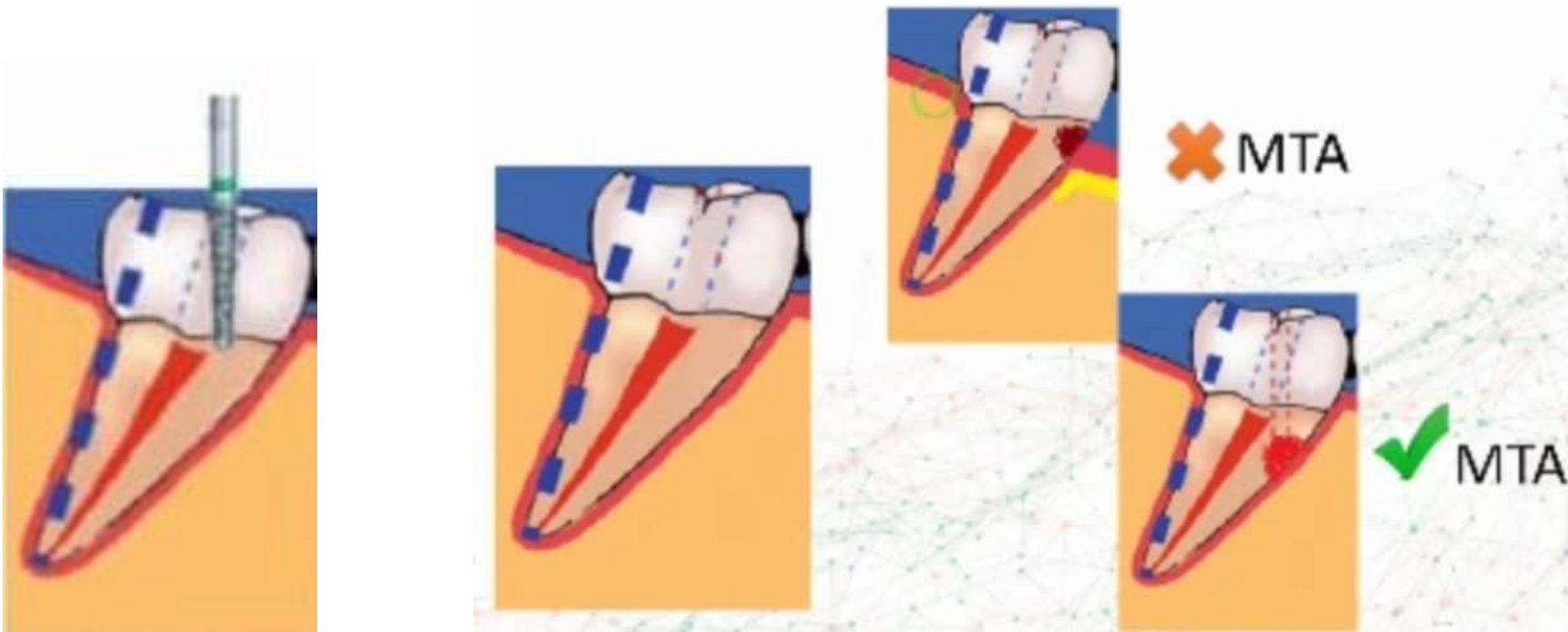


Mixing

- Powder mixed with Water, Saline or Local anesthesia
- Powder: Water = 3:1
- Mixed on glass slab with plastic or metal instrument
- Setting Time (**Old 2 hours**)



Management of access preparation perforation



Management of coronal one-third and furcal perforations



Management of perforations in the middle one-third



Management of perforations in the apical one-third



ممنون از حسن توجه شما

