إعادة المعالجة اللبية: اعتبارات اتخاذ القرار وعوامل النجاح

أ.م.د. حسان الحلبية

رئيس قسم مداواة الأسنان

نائب عميد كلية طب الأسنان للشؤون العلمية – جامعة حماه

ENDODONTIC RETREATMENT: RATIONAL OF MAKING DECISION & SUCCESS FACTORS

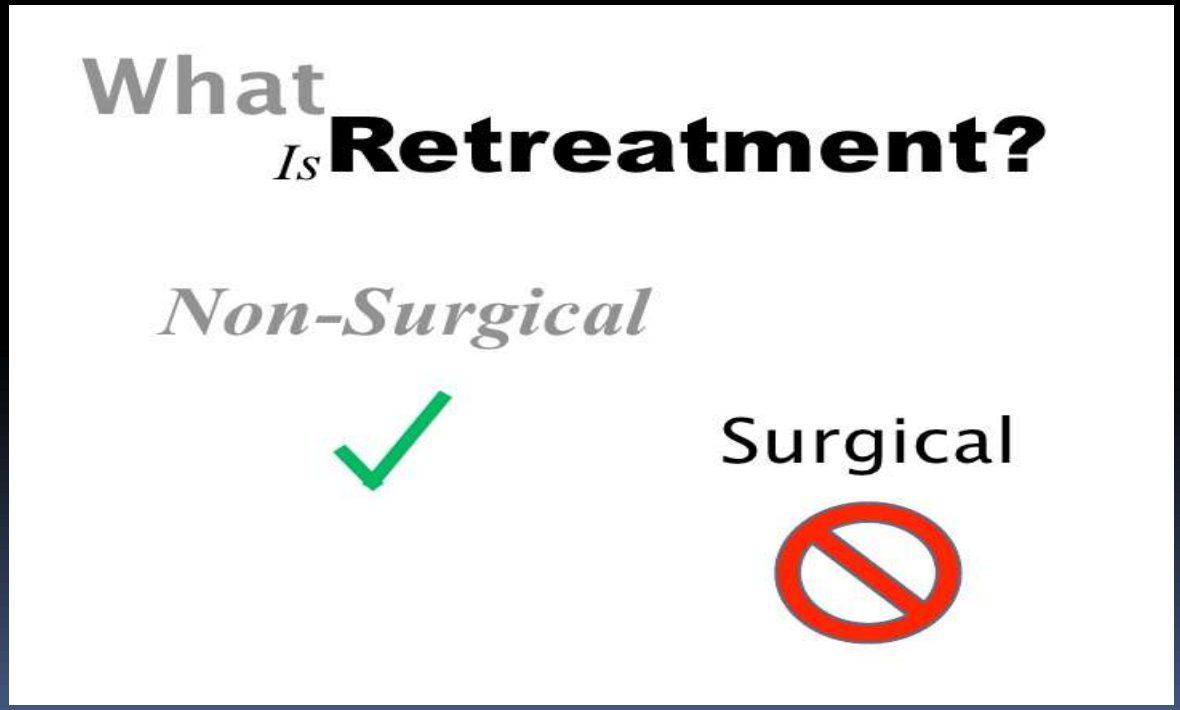
DR. HASSAN AL HALABIAH

Endodontic Retreatment:
Rational of Making Decision & Success Factors

- Introduction
- Common Causes of Endodontic Treatment Failure
- Rational for Endodontic Retreatment
- Decision Making & Treatment Planning
- Clinical challenge in endodontic retreatment
- Prognosis
- Conclusion

Introduction

- Rate of endodontic treatment failure # 10 %
- So endodontic retreatment is a common procedure



Common causes of initial endodontic treatment failure

- Internal causes: Calcifications

Common causes of initial endodontic treatment failure

- Internal causes: Complicated root canal anatomy

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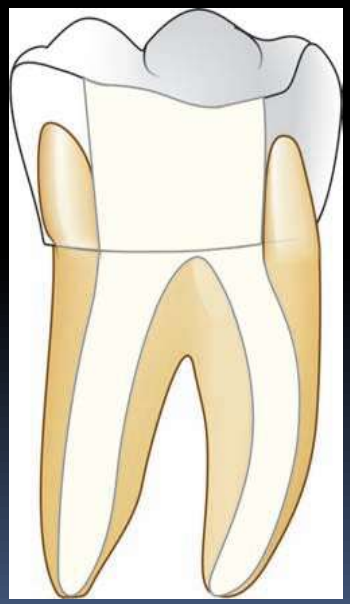
Common causes of initial endodontic treatment failure

- Root Fractures:
  - Excessive instrumentation of root canal
  - Excessive condensing of root canal obturation material
  - Malocclusion



Common causes of initial endodontic treatment failure

- Root Fractures:
  - Excessive instrumentation of root canal
  - Excessive condensing of root canal obturation material
  - Malocclusion

Common causes of initial endodontic treatment failure

- Iatrogenic causes: Missed canals: untreated canal
  - Inadequately cleaned &shaped canals

Common causes of initial endodontic treatment failure

- Iatrogenic causes: perforations
  - Inadequately cleaned &shaped canals

Common causes of initial endodontic treatment failure

- Iatrogenic causes: perforations
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Common causes of initial endodontic treatment failure

- Iatrogenic causes: perforations
  - Inadequately cleaned &shaped canals

Common causes of initial endodontic treatment failure

- Iatrogenic causes: Separated instruments
  - Inadequately cleaned &shaped canals

Common causes of initial endodontic treatment failure

- Iatrogenic causes:
  - Inadequately filled canals: under & overextension of root obturation

Common causes of initial endodontic treatment failure

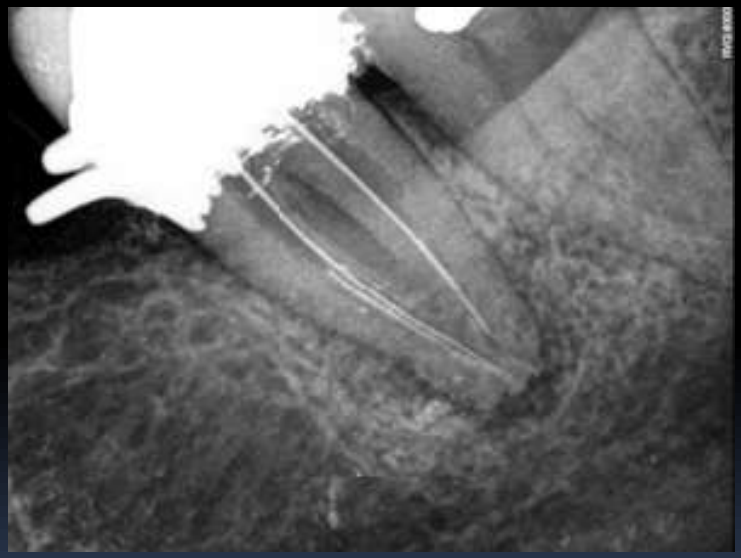
- Iatrogenic causes:
  - Inadequately filled canals: under & overextension of root obturation

Common causes of initial endodontic treatment failure

- Iatrogenic causes:
  - Inadequately filled canals: **TIMID** root canal obturation

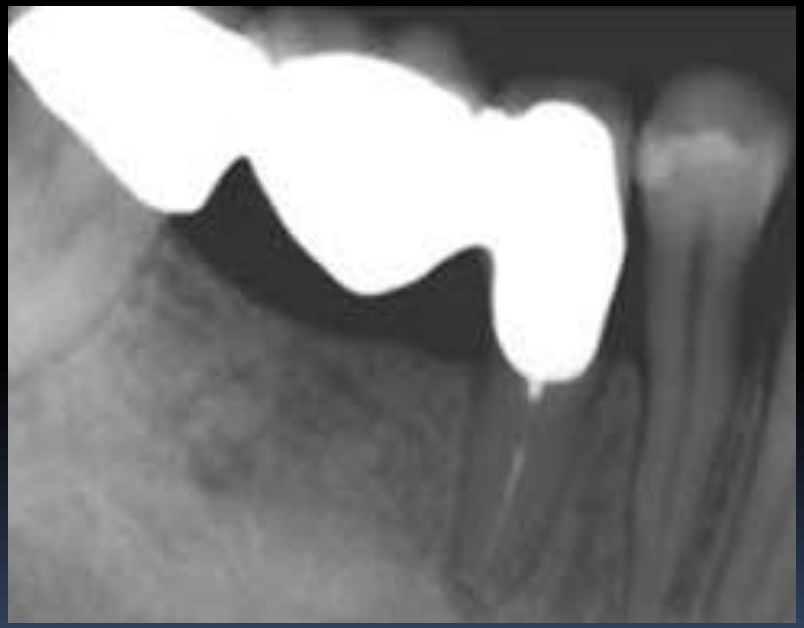
Common causes of initial endodontic treatment failure

- Iatrogenic causes:
  - Inadequately filled canals **TIMID** root canal obturation



Common causes of initial endodontic treatment failure

- Iatrogenic causes:
  - Post placement errors

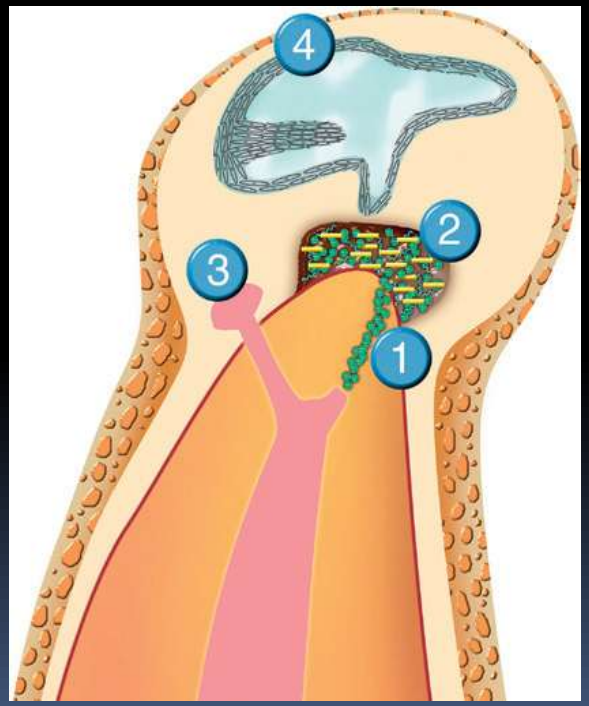


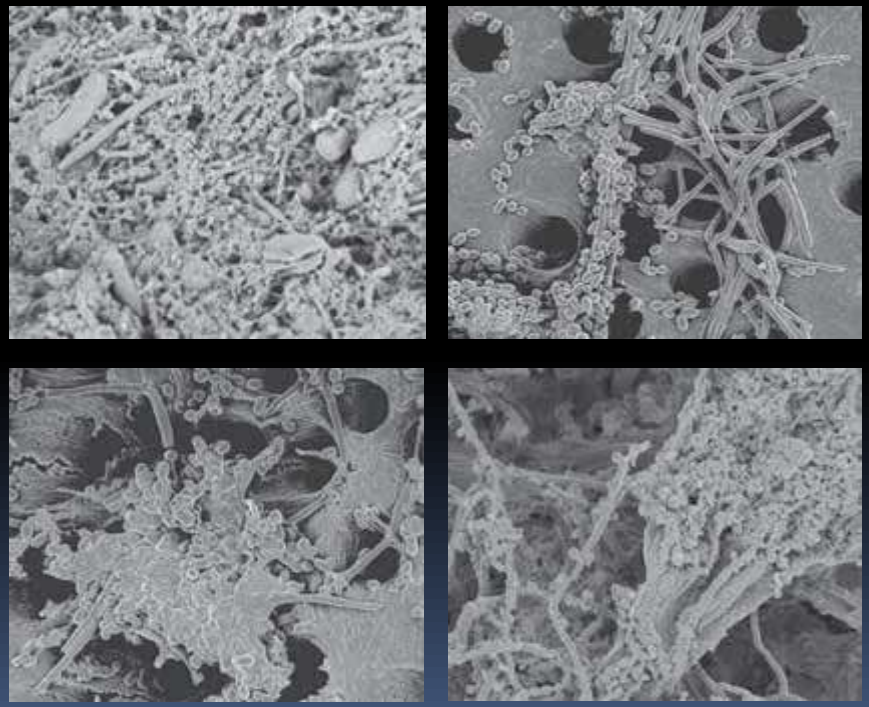
Common causes of initial endodontic treatment failure

- Iatrogenic causes:
  - Post placement errors

Common causes of initial endodontic treatment failure

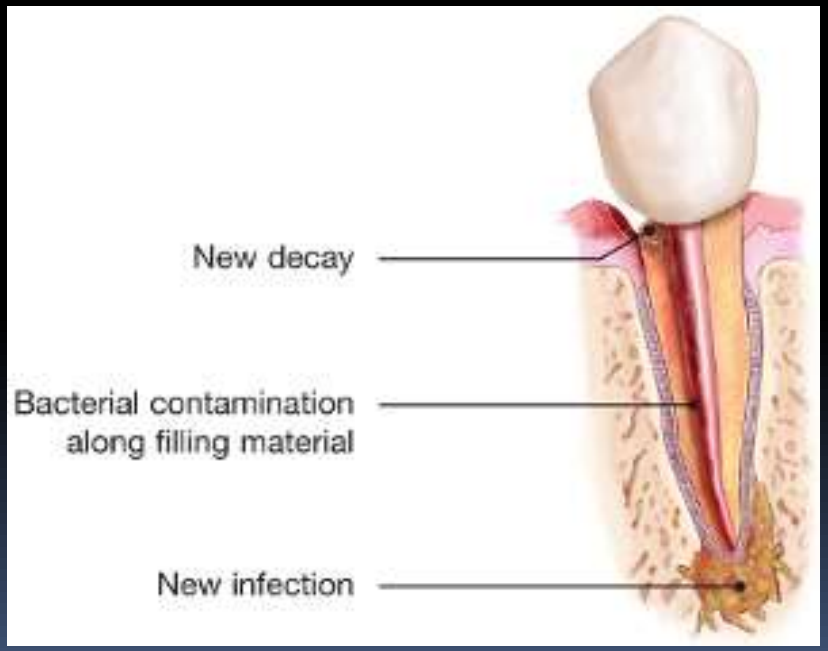
- Iatrogenic causes:
  - Blocks, ledges
  - Inadequately cleaned &shaped canals

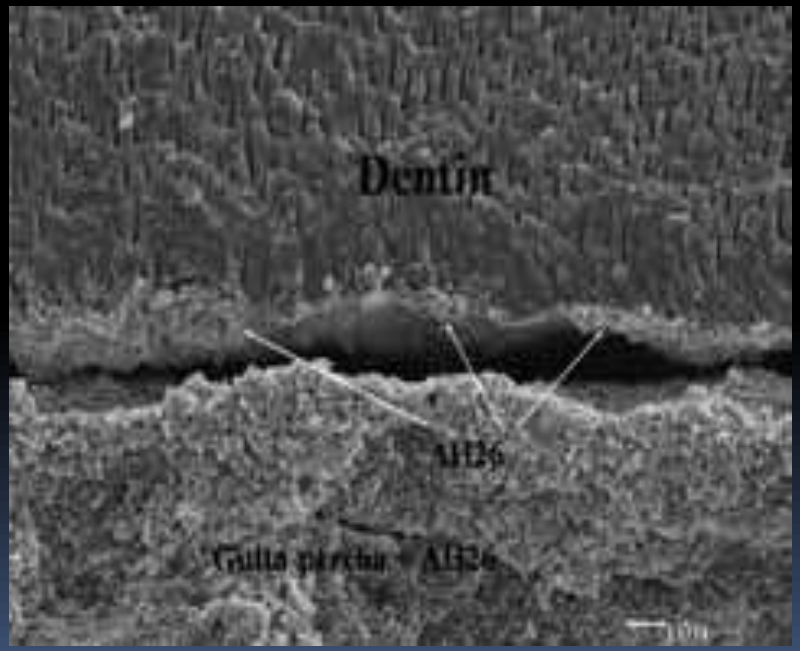




Common causes of initial endodontic treatment failure

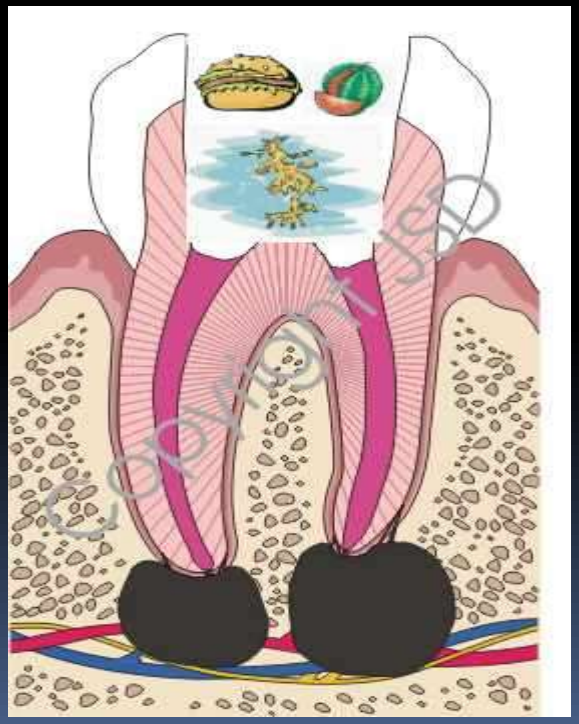
- Iatrogenic causes:
  - Restoration failure
  - Coronal leakage





Common causes of initial endodontic treatment failure

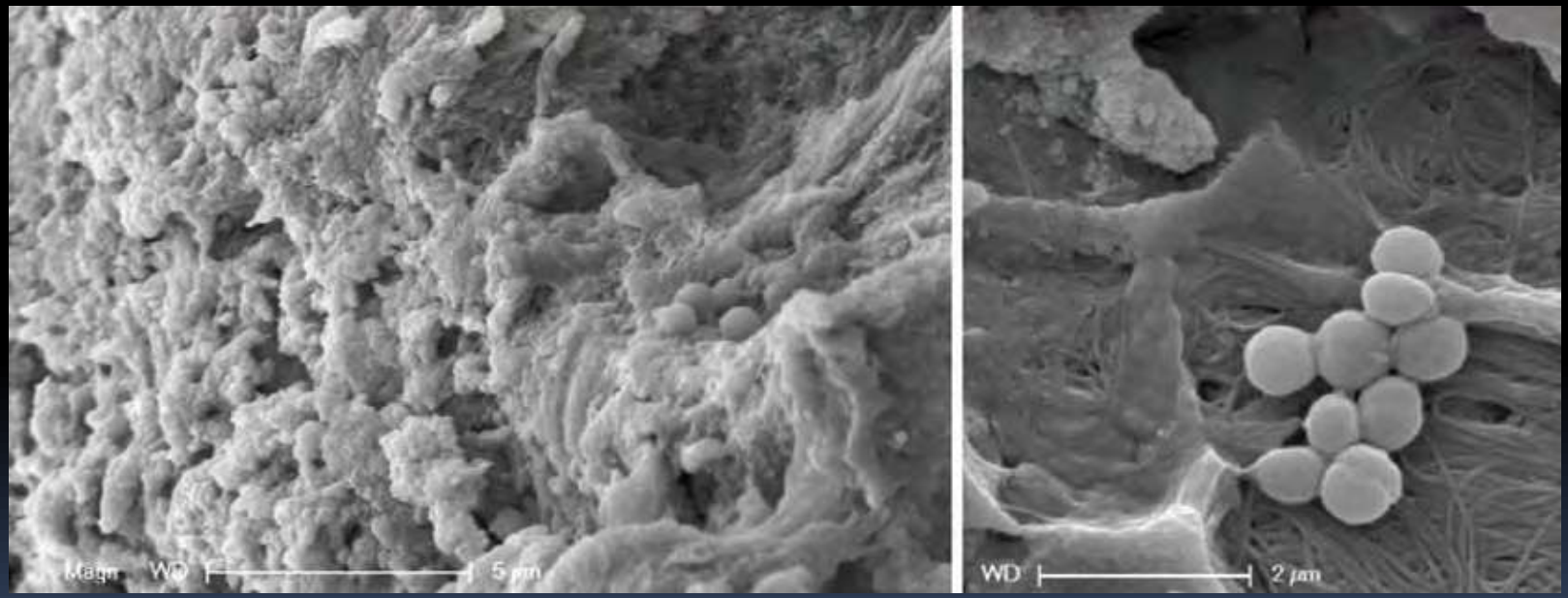
- Root canal obturation contaminated with saliva
  - Temporary restorations: 4 mm = 3 weeks (AAE, 2002)
- Primary etiological factor is **BACTERIA**



Bacterium involved

- Root-filled teeth differ significantly from untreated teeth regarding bacteria species
  - Facultative anaerobes predominate
  - Gram-positive Facultative bacterium,
    - Enterococcus faecalis

Bacterium involved



Rational for Endodontic Retreatment

- Endodontic failure can be attributable to several causes
- Regardless of the etiology, the sum of all causes result in:
  - Surviving of microorganism in root canal system (**soon**)
  - Root canal system bacterial contamination (**late**).
-

Rational for Endodontic Retreatment

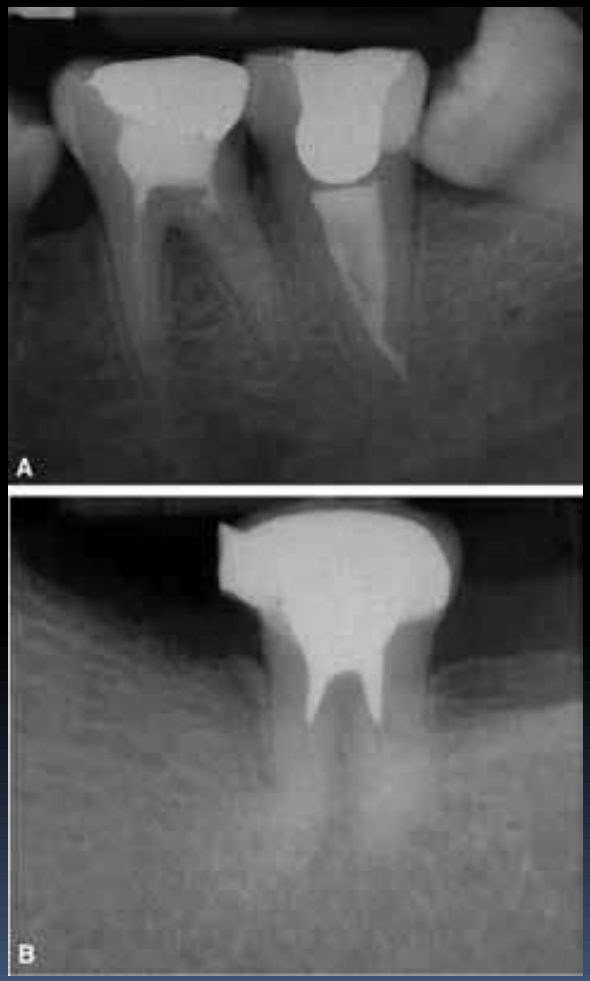
- These endodontic failures can be managed by combat the infection, by renegotiating root canal via:
  - Orthograde method: Endodontic retreatment
  - or Retrograde method: Surgical retreatment

Rational for Endodontic Retreatment

- Selection of endodontic retreatment has to be primarily based on:
  - Case-specific factors:
    - Root canal system Anatomy
    - Nature of procedural errors
    - Quality of root canal obturation
    - Bacterium activity
    - Variables of final restoration
  - personal evaluation:
    - Risks
    - Costs

Decision Making and Treatment Planning

Decision Making and Treatment Planning



Decision Making and Treatment Planning

Decision Making and Treatment Planning

- Do nothing
- Endodontic retreatment
- Surgical treatment
- Extraction
- Referral

1. **Do nothing**

- It is carried out when:
  - No symptom i.e. tooth is symptom free.
  - No signs of inflammation
- No chances of future disease.
  - No faulty restoration: does not require a new restoration.
  - Root canal treatment has recently completed and the outcome is uncertain

2. Endodontic Retreatment:

- **Definition**: **Non–surgical procedure to** :
  - Remove previous obturation materials
  - Identification & Correction Cause of failure
  - Revise cleaning & shaping of root canal system
    - Disinfection of root canal system
  - Reobturation of root canal system

2. Endodontic Retreatment:

- **Objectives**: **Optimizing endodontic treatment to** :
  - Resolve clinical & radiological symptoms & signs
  - Return the treated tooth to function
  - Allow the supporting structures to repair completely

Indications

- Endodontic retreatment is performed on a tooth that diagnostically demonstrates:
  - inadequate treatment,
  - symptoms & Signs of clinical and radiological failure

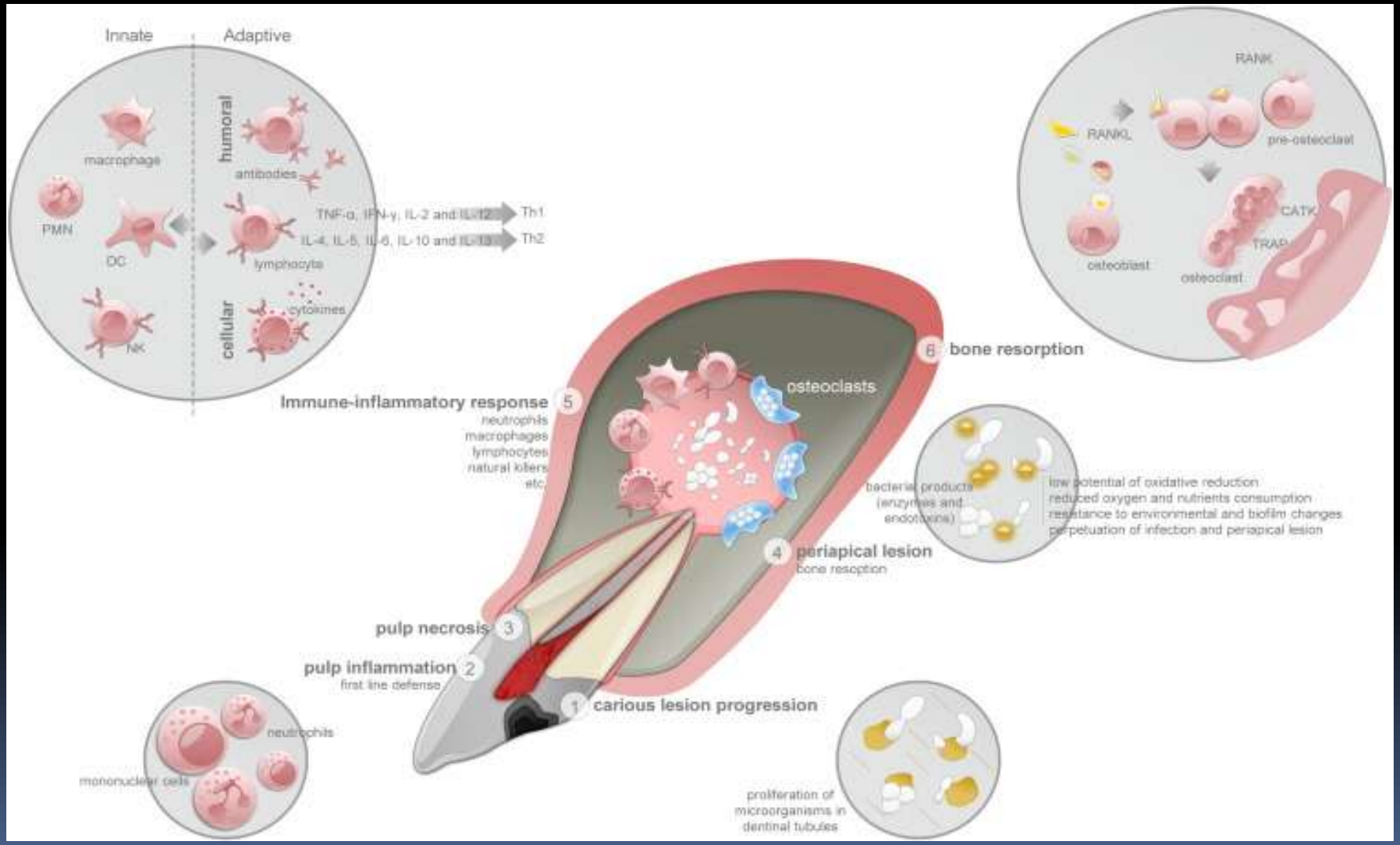
- **Clinical symptoms**
  - Swelling
  - Fistula
  - Tenderness to percussion

Swelling

Fistula

- Radiological signs
  - Persistence of periradicular radiolucency
  - Enlargement of existing periradicular radiolucency
  - New periradicular radiolucency

Histologically



3. **Surgical treatment**

- It is usually preferred:
  - very large post were well cemented in an already weakened root, resulting in a high risk of fracture on removal
  - Root canal retreatment has been unsuccessful.
  - Intern obstruction
  - As an adjunct to root canal retreatment:
    - perforation repair
    - remove apical cyst
    - Resection Root or tooth

4. Extraction

- It is opted when:
  - Vertical Root Fracture
  - Unrestorable tooth
  - Non strategic tooth like 3rd molar

5. **Referral**

- Patient is usually referred when:
  - Clinician is unable to make a diagnosis.
  - Complexity of treatment is greater than the clinician's expertise

The Clinical Challenge in Endodontic Retreatment

Retreatment steps

- Coronal Accessibility
  - Post removal
  - Crown penetration
- Obturation removal
- Cause: identification & correction
- Root Canal System:
  - Cleaning & shaping
  - Disinfection
- Root canal system Obturation
- Final restoration

Endodontic Treatment vs Retreatment Procedure Steps

- **Initial Treatment**
  - Patency
  - Coronal
  - WL
  - Middle
  - Apical
- **Retreatment**
  - Coronal
  - Middle
  - Solvent
  - Patency
  - WL
  - Apical

Endodontic Retreatment:

- **Advantages**
  - Greater patient acceptance than surgery
  - Does not compromise cr/root ratio
  - Less medical contraindications than surgery

Endodontic Retreatment:

- **Disadvantages**:
  - Risk of :
    - root fracture
    - root perforation
    - Instrument separation or canal transportation
  - Could take more time than surgery
  - Can cost significantly more than surgery
  - Can not eliminate every surgery

Prognosis

- Depend on:
  - **Mechanically**:
    - **Alterations** in the natural course of the root canals
  - **Biologically**:
    - **Bacterial** activity – Size of the **lesions**
    - The greater the lesion, the lower the success rate

Prognosis

- Retreatment **DECISION** is based on different points :
  - Technical Accessibility
  - Biological resolution: Periapical Radiolucencies
  - Advantages & disadvantages: Risks – Costs

Prognosis

- Endodontic retreatment has a success rate similar to that of initial endodontic **if the cause of failure is**:
  - **identified and corrected**.

Prognosis

Retreatment: criteria of success

- Symptom FREE tooth
- Healthy periodontium with normal attachment apparatus
- Progressive bone HEALING

Conclusion

- Causes of endodontic treatment failure can be multivalent.
- Accurate diagnosis is essential for deciding retreatment option.
- Nonsurgical retreatment should be the first choice,
- Correct option can be made only with adequate :
  - knowledge about anatomy & armamentarium
  - Experience & equipment
  - Time & patience
  - *****

Before & After

Before & After

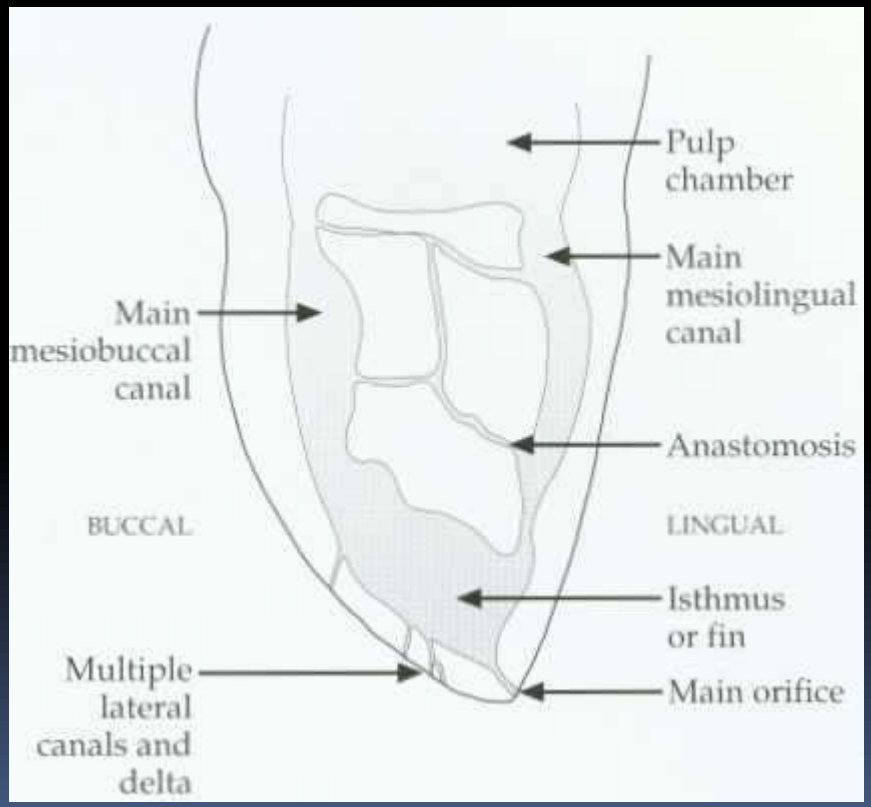
Before & After

Before & After

Before & After & After

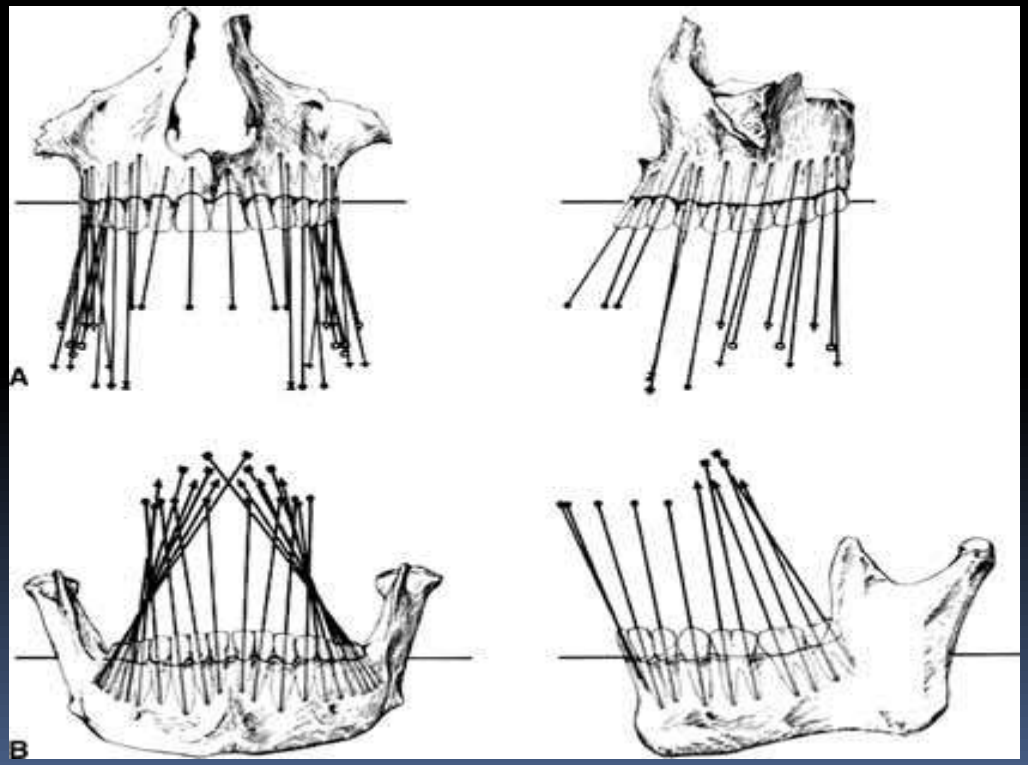
Clinical Pearls

- You have to take what root canal system offer



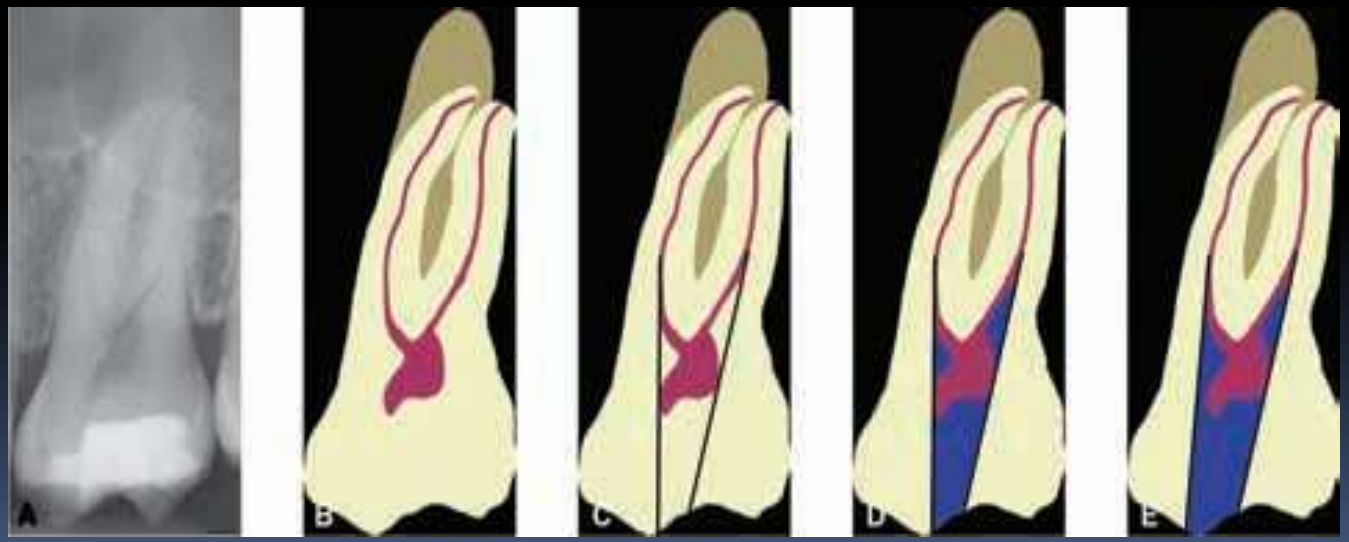
Clinical Pearls

- Root canal system negotiation:
  - 3D Direction



Clinical Pearls

- Remove:
  - What necc & suff
  - Where necc & suff

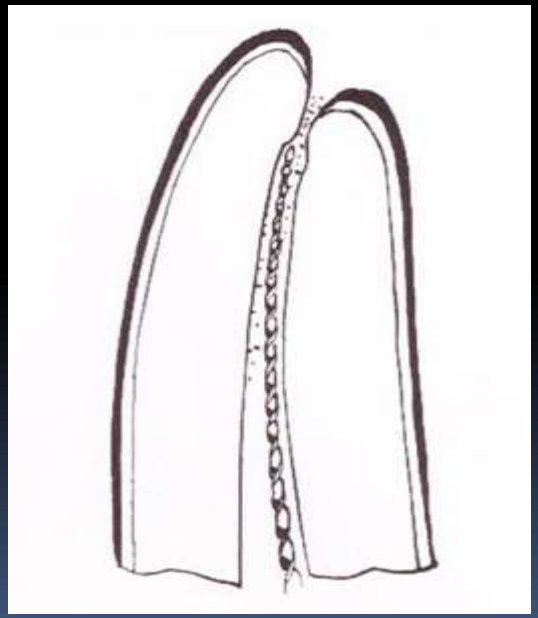


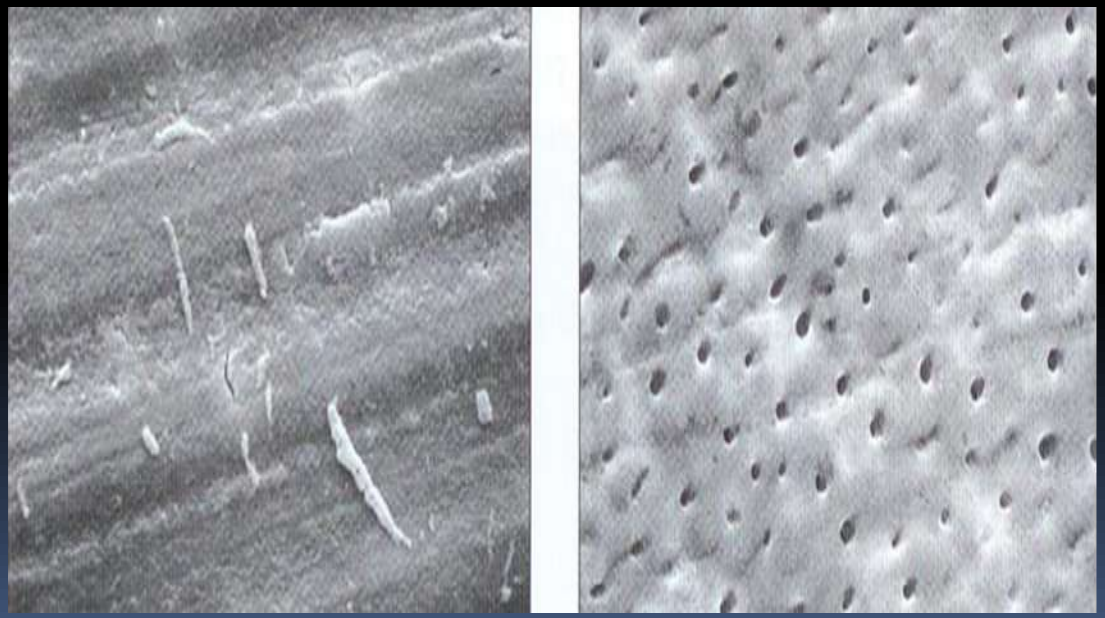
Clinical Pearls

- Remove:
  - What necc & suff
  - Where necc & suff

Clinical Pearls

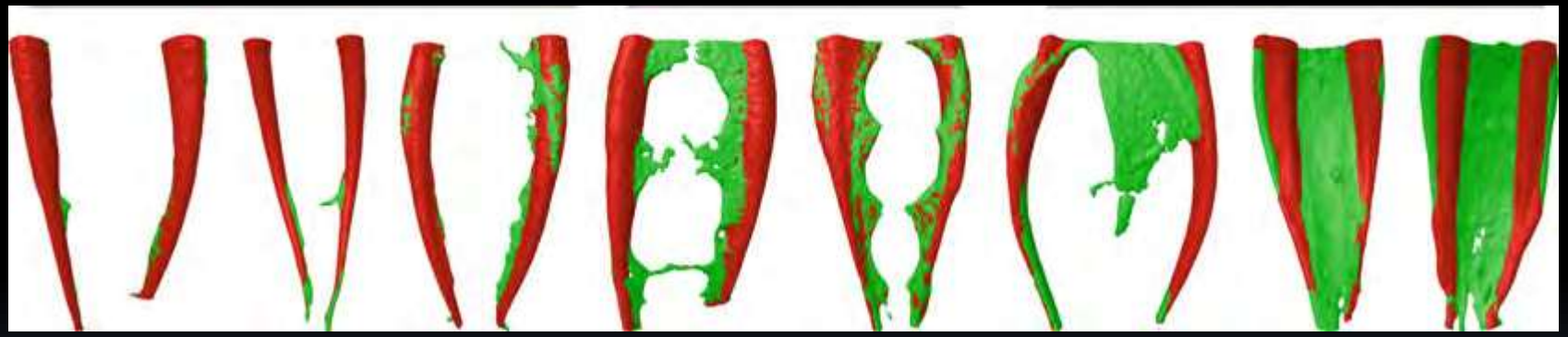
- Root canal Patency
- Root canal Irrigation

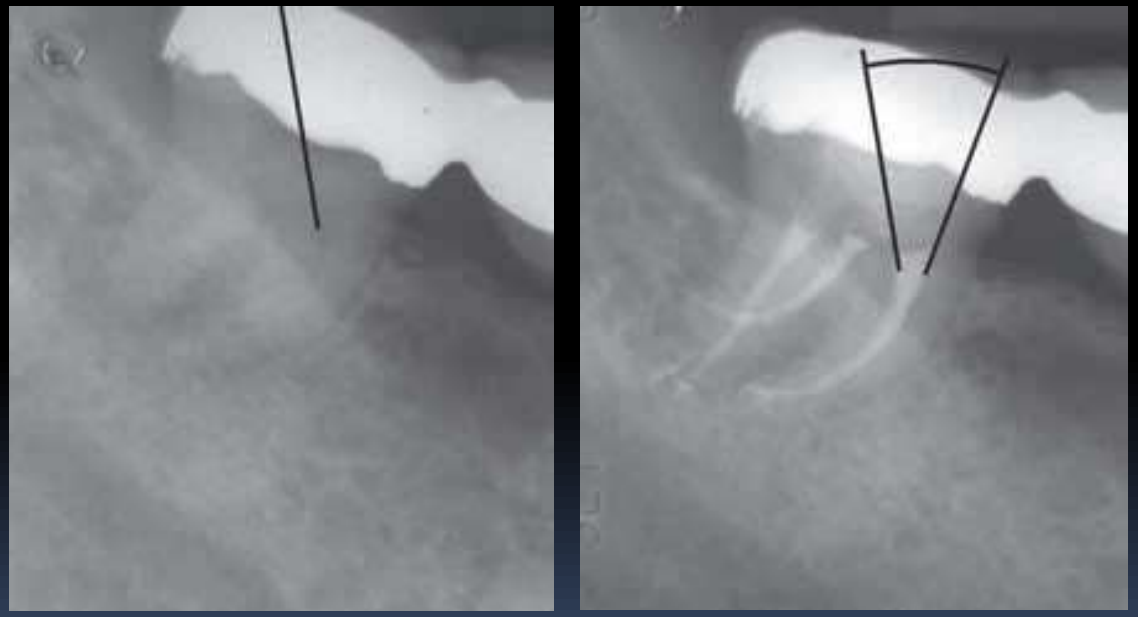




Clinical Pearls

- Macroscopic procedure & Microscopic consequences



Clinical Pearls

- "DO NO HARM"