

Endodontics

Ø Introduction to endodontics:

1. Pulp anatomy:

It follows the contour of the tooth surface & it is formed of two parts coronal & radicular.

2. Composition of pulp:

- a) Blood vessels & nerves.
- b) Connective tissue formed of cells, intracellular substance & tissue fluid.

3. Pulp pathology:

- a) Reversible pulpitis: hyperemia – reversible pulpitis.
- b) Irreversible pulpitis: acute pulpitis – chronic pulpitis - chronic hyperplastic pulpitis.

Ø Endodontic diagnosis:

1. Case history:

- a) Subjective examination.
- b) Objective examination.
- c) Medical history.
- d) Dental history.
- e) Patient complaints.

2. Clinical examination:

Extra-oral examination – intra-oral examination.

3. Diagnostic tests:

- a) Palpation: it determines whether the inflammation extended to the apical tissue.
- b) Percussion: it elicits any tenderness.
- c) Mobility: mobility may be of grade 1, 2 or 3.
- d) Radiographs: it is the most reliable test.
- e) Thermal sensitivity tests: cold test – hot test.
- f) Selective anesthesia test: it is not used on mandibular teeth.
- g) Vitality test: used to assess vital or non vital pulp.
- h) Transillumination test: it identifies vertical crown fracture.

- i) Fiber optic light: it shows interproximal caries, fracture, opacity or discoloration.
- j) Cutting a test cavity: a cavity is cut in a tooth believed to be non vital.

Ø Basic instruments used for endodontics:

1. Mouth mirror:

It prevents double image.

2. Endolocking tweezers:

Allow small items to be gripped.

3. Endodontic probe:

It detects canal orifices.

4. Excavator:

It allows access into the pulp chamber.

5. Pocket measuring probe:

It measures the pockets & have a clear graduations.

6. Furcation probe:

Indicates furcation involvement.

7. Broaches:

Used to remove bulk of the pulp tissues.

8. Endodontic files:

Used to smooth & enlarge the root canal, they have two types:

a) The K type file: used in the initial debridement of the canal.

b) Hedstroem file: used for final enlargement of the canal.

They have standardized size & color codes.

They have rubber stopper that prevents the file from penetrating the apex.

9. Endodontic spoon excavator:

Used to remove deep canal pulp tissues.

10. Burs:

Used for cutting an access cavity.

11. Patient protection:

Eye glasses – waterproof bib.

12. Rubber dam:

It is essential to prevent patient from swallowing instrument & materials, also to provide a field free from contamination.

13. Radiographic equipment:

Long cone parallel technique is the one used for endodontics.

14. Handpiece-driven instruments.

Ø Materials used in endodontics:

1. Irrigation solutions:

- a) Sodium hypochlorite: it is the most suitable solution.
- b) Chlorhexidine solution: it shows prolonged antimicrobial activity.
- c) EDTA paste: it is a chelating agent.

2. Root canal filling materials:

- a) Paper points: made of absorbent paper rolled into long points used to dry the canal.
- b) Gutta percha: the most common used material for root canal obturation.

3. Sealers & cements:

- a) Eugenol: as Tubliseal & Tubliseal EWT.
- b) Non-eugenol: as Sealapex & AH26 & Roekoseal.
- c) Medicated: the active ingredient is paraformaldehyde & corticosteroid.

Ø Root canal filling instruments:

1. Spiral root canal fillers:

Their main use is for insertion of calcium hydroxide.

2. Spreaders & pluggers:

They are used to obturate the canal, pluggers are used for apical condensation & spreaders are used for lateral condensation.

3. Heat carriers:

It is used for application of heat to gutta percha.

4. Measurement of the working length:

By using radiographs or electronic device apex locator.

Ø Surgical endodontic treatment:

1. Apicoectomy:

It is the surgical removal of the apical portion of the root.

2. Retrograde restoration:

It is done when the apical seal is not adequate.

3. Root amputation:

The removal of one or more root of multirooted tooth.

4. Hemisection:

The root & the crown are cut lengthwise & removed.