

Introduction to Endodontics

Introduction to Endodontics – Study Notes

1. Definition & Scope

Aspect	Description
Endodontics	Dental specialty concerned with the health of the dental pulp and periradicular (surrounding) tissues.
Primary Goal	Preserve natural teeth by diagnosing, preventing, and treating diseases of the pulp and root canal system.
Common Procedures	- Root canal therapy (RCT) - Pulp capping & pulpotomy - Apicoectomy (surgical RCT) - Trauma management - Management of internal/external resorption
Related Disciplines	Prosthodontics, Periodontics, Orthodontics, Oral pathology, Radiology.

2. Anatomy Relevant to Endodontics

Structure	Key Points
Dental Pulp	- Soft connective tissue containing nerves, blood vessels, and odontoblasts. - Occupies the pulp chamber (crown) and root canals (roots).
Root Canal System	- Main canal, lateral canals, accessory canals, isthmi, and apical deltas. - Complexity varies by tooth type (e.g., maxillary molars often have 3-4 canals).
Periapical Tissue	- Periodontal ligament, alveolar bone, and cementum surrounding the root apex.
Dentinal Tubules	- Pathways for bacterial ingress when enamel is compromised; important for pulp infection spread.

3. Etiology of Pulpal & Periapical Disease

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Cause	Mechanism
Caries progression	Bacterial invasion through enamel/dentin ? pulp inflammation (pulpitis).
Trauma	Direct impact ? pulp necrosis, internal/external resorption, or calcific metamorphosis.
Cracks & fractures	Provide bacterial pathways; may cause reversible or irreversible pulpitis.
Iatrogenic factors	Over?preparation, perforations, inadequate restoration leading to pulp exposure.
Systemic factors	Diabetes, immunosuppression can exacerbate infection and healing.

4. Diagnosis – Step?by?Step

1. Medical & Dental History

- Systemic conditions, medications, previous trauma, symptoms (pain type, duration).

2. Clinical Examination

- Visual inspection, probing, percussion, palpation, mobility, thermal and electric pulp testing.

3. Radiographic Assessment

- **Periapical radiograph (PA)** – standard for most cases.
- **Cone?Beam CT (CBCT)** – 3?D view for complex anatomy, resorption, or missed canals.

4. Diagnostic Tests

- **Vitality tests** (cold, heat, electric).
- **Periodontal probing** to rule out periodontal origin.

5. Diagnosis Classification (per AAE/AAOMS guidelines)

- **Reversible pulpitis** – mild, transient pain, normal response to cold.

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- **Irreversible pulpitis** – lingering pain, spontaneous episodes, hyperresponsive to thermal stimuli.
 - **Pulp necrosis** – no response to vitality tests, possible discoloration.
 - **Chronic apical periodontitis** – radiolucency at apex, often asymptomatic.
 - **Acute apical abscess** – severe pain, swelling, possible systemic signs.
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