ENDO-PERIO INTERRELATIONSHIPS

Presented by
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ENDO PERIO LESIONS

ANATOMIC CONSIDERATIONS
- A. APICAL FORAMEN
- B. LATERAL CANALS
- C. DENTINAL TUBULES

CONTRIBUTING FACTORS
- A. IN ADEQUATE ENDODONTIC TREATMENT
- B. CORONAL LEAKAGE
- C. TRAUMATIC INJURIES
- D. CROWN ROOT FRACTURES
- E. PERFORATIONS
- F. LINGUAL DEVELOPMENTAL GROOVE
- G. DEVELOPMENTAL MALFORMATION

ETIOLOGIC FACTORS
- 1. LIVING AGENTS:
  - A. BACTERIA
  - B. FUNGI
  - C. VIRUSES
- 2. NON LIVING AGENTS:
  - A. FOREIGN BODIES
ENDO PERIO LESIONS

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RADICULAR TUBULES run a STRAIGHT COURSE

Size:
- 1 micron at the periodontum to 3 microns AT PULP

Number:
- 57000 AT PULP
- 15000 AT CERVICAL
- 8000 AT APICAL
30 to 40% of all teeth have lateral or accessory

Location:

1. 17% in the apical third of the root.
2. 9% in the middle third.
3. Less than 2% in the coronal third.

Accessory canals contain connective tissue and blood vessels that connect the pulp with the periodontium.

Several clinical aids for their identification:

1. Radiographic of a discrete lateral lesion.
2. Radiographic of a "notch" on the lateral root surface.
3. Demonstration of root canal fill material, or sealer, extruding.
Main pathways

(1) Dentinal tubules
(2) Lateral and accessory canals
(3) The apical foramen
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1

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BACTERIA

periodontal pathogens and endodontic pathogens are similar

Fungi in root canals is directly associated with their presence in saliva. Importance of using aseptic endodontic and periodontal techniques, maintaining the integrity of dental hard tissues, and covering the tooth crown as soon as practical with a well-sealed permanent restoration in order to prevent reinfection.

FUNGI

It has been suggested that ↓ of bacteria in the root canal may allow fungal overgrowth

VIRUSES

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   A. LINGUAL DEVELOPMENTAL GROOVE
EFFECT OF PULPAL DISEASE ON PERIODONTAL TISSUE:
FROM MILD INFLAMATION TO SEVER DESTRUCTION OF THE LIGAMENTS SOCKET AND BONE, CAN BE LOCALISED OR DIFFUSE

EFFECT OF PERIODONTAL DISEASE ON PULPAL TISSUE:

**Irrigants**
- Intra-canal medicaments
- Sealers
- Filling materials

**Procedural mishaps, such as:**
- Perforations pulp chamber
- Strip perforations, or lateral perforations
- Vertical root fractures

**Inflammatory response in the periodontium**

pathogens that pass from the oral cavity through the accessory canal into the pulp may cause a localized inflammatory reaction that could be followed by pulp necrosis.

**EXPOSE:**
- LATERAL & ACCESSORY CANALS
- DENTINAL TUBULES

EFFECT OF ENDO. PROCEDURES ON PERIODONTAL TISSUE:

EFFECT OF PERIODONTAL PROCEDURES ON PULPAL TISSUE:

Scaling, Curettage, or/& periodontal surgery
Treatment complications of periodontal disease can also lead to secondary endodontic involvement. Lateral canals and dentinal tubules may be opened to the oral environment by curettage, scaling, or surgical flap procedures.

In such cases, blood vessels within a lateral canal can be severed by a curette and microorganisms introduced into the area during treatment. This may often result in pulp inflammation and necrosis.
CLASSIFICATION

- PRIMARY ENDODONTIC DISEASE
- PRIMARY PERIODONTAL DISEASE
- PRIMARY ENDODONTIC WITH SECONDARY PERIODONTAL DISEASE
- PRIMARY PERIODONTAL WITH SECONDARY ENDODONTIC DISEASE

TRUE COMBINED LESIONS
Primary Endo

A chronic apical abscess drain coronally through PDL into the gingival sulcus.

Diagnosis ➔ GUTTA PERCHA TRACING TEST
A pocket Endodontic origin is typically narrow compared to a pocket of periodontal origin.
Primary endodontic lesions usually heal following RCT.
The sinus tract extending into the gingival sulcus or furcation area quickly heals once the affected pulp has been removed and the root canals cleaned, shaped, and obturated.
Untreated suppurating primary endodontic disease may sometimes become secondarily involved with marginal periodontal breakdown.

As a result, plaque formation at the gingival margin with a sinus tract.

When plaque or calculus is present, the treatment and prognosis of the tooth are different than those of teeth involved with only primary endodontic diseases.
A periodontal pocket may continue and progress until the apical tissues are involved.

In this case, the pulp may become infected due to irritants entering via lateral canals or the apical foramen & become necrotic.
True combined diseases——

Occur less often.

They are usually formed when an endodontic disease progressing coronally joins with an infected periodontal pocket progressing apically.

The degree of attachment loss in this type of lesions is large and the prognosis is poor in single-rooted teeth.
Diagnostic considerations

1. Is the tooth vital?
   - Endodontic: non vital
   - Periodontal: vital

2. Is the lesion localized or generalized?
   - Periodontitis: generalized
   - Endodontic lesion: more localized

3. Is there a periodontal pocket?
   - Isolated pocket surrounded by a normal sulcus ➔ vertical fracture

4. Radiographic presence of severe pulpal calcifications & pocket type?
   - Pulpal pathology may be 2ry to Periodontal pathology.

5. What are the pain symptoms?
   - Endodontic: Acute, sharp
   - Periodontic: chronic, dull, tolerable
Primary Endodontic Lesion

Characteristics and Diagnostic Findings

1. Pulp testing: negative due to necrotic pulp.
2. Drainage through PL in gingival sulcus.
3. Periodontal probing: narrow deep isolated pocket.
4. History of acute exacerbation
5. Sharp, acute pain
6. Tenderness to pressure and percussion.
7. Slight tooth mobility
8. Localized osseous destruction
**Primary Endodontic Lesion**

**Treatment:** Root canal treatment only

Pre-operative:
Periapical and furcal radiolucency
and a deep narrow periodontal defect

1year follow-up:
Complete healing of radiolucency and buccal defect
Primary Endodontic Lesion with secondary periodontal involvement

Characteristics and Diagnostic Findings

1. Pulp testing: negative (necrotic pulp or failed RCT).
2. Continuous irritation of periodontium from necrotic pulp or failed root canal treatment.
3. Isolated deep pocket and attachment loss.
4. Purulent pocket resulting in periodontal breakdown.
5. Superimposition of plaque & calculus.
Primary Endodontic Lesion with 2ry periodontal involvement

Treatment

First: Root canal treatment
Then: Periodontal treatment

Pre-operative interradicular defect extends to the apex

Post-operative

1 year follow-up
Primary Periodontal lesion.

Characteristics and diagnostic findings

1. Pulp test: positive (vital pulp)
2. Generalized bone loss
3. Plaque or calculus build up
4. Broad based pockets that bleed easily when probed.
5. Tooth mobility
6. Receding gums that expose the root of the tooth.
Primary Periodontal lesion.

Treatment:

- Oral hygiene instructions
- Scaling and root planning
- Periodontal surgery to remove granulation tissues
Primary periodontal lesion with 2ry endodontic involvement.

Characteristics and Diagnostic Findings
- Periodontal destruction.
- History of periodontal disease
- Generalized periodontal disease
- Tooth mobility
- Deep pocketing (the apical progression of a periodontal pocket continues until the apical tissues are involved)

Treatment:
1. Root Canal Treatment
2. Periodontal surgery
True Combined Endo-Perio Lesions

Characteristics
- Separate progression of endodontic disease and periodontal disease
- The tooth remained untreated and consequently the two lesions joined together.

Treatment:
- Root Canal Treatment
- Periodontal Treatment
- Apical microsurgery to remove granulation tissue
- Resective approaches
- Regenerative therapy