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# [ Endodontic-Periodontic Considerations ]

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## CONNECTIONS BETWEEN THE PULP & PERIODONTIUM:

Through:

- Dentinal tubules
- Apical foramen
- Lateral and Accessory canals

What?? Through Dentinal tubules!!!

### Some facts about root dentin

- Dentinal tubules are straight (Not S-shaped)
- Size ranges from 1 $\mu$  to 3 $\mu$
- Number of tubules range from 8,000/mm<sup>2</sup> to 57,000/mm<sup>2</sup>
- At the CEJ it is 15,000/mm

Can there be a connection???

How??

Lateral Canals & Accessory Canals???

### Some facts about lateral canals

- They exist at all levels of the root
- More common apically
- 30-40% of canals have lateral or accessory canals
- Furcal canals occur in molars 30-50% of the time
- Difficult to find radiographically
- The more progressed the periodontal diseases the more possibility of endodontic involvement

When should we consider perio-endo communications?

Necrotic or Vital?

### Apical Foramina...

- Most common route of communication between pulp & periodontium
- May occur the other way round in severe cases of periodontal destruction

## 1. Effects of Pulpal Disease & Endodontic Procedure on the Periodontium

### *Pulpal Disease*

- Spread to periodontium through apical foramen, lateral or accessory canals causing inflammatory response in the Periodontium ranging from minimum one to extensive destruction in the Periodontium.
- May produce a sinus that drains through the gingiva, attached mucosa or the sulcus.
- If the root canals is done properly a high percentage of cases resolve

### *Endodontic Procedures*

- Irrigant solutions
- Debris
- Overinstrumentation
- Sealer
- Filling material

### Transient Inflammatory Response

- Transmission occurs through
  - Apical foramen
  - Accessory or lateral canals (Not Dentinal Tubules)

### *Procedural errors*

- Destructive inflammatory response
- Doesn't heal well

## **2. Effects of Endodontically Involved Teeth on Periodontal Health & Healing**

Do pulpless teeth have an effect on periodontal healing & health???

What is a pulpless tooth? Tooth with dead pulp or with RCT

Necrotic teeth & relation to pocketing.

Teeth with proper root canal filling have little effect on the periodontal health & don't differ from teeth without root canal treatment.

## **3. Effects of Periodontal Disease & Procedures on the Pulp**

### *Periodontal Disease*

There is little evidence to support that any degree of periodontal disease will generally affect the pulp tissues

### *Periodontal Procedures*

- Root planning removes cementum and dentin
- Creates sensitivity & opens patent tubules
- The pulp is robust enough to heal itself in these instances
- Unless periodontal disease extends to the apical foramen the effect of periodontal disease on the pulp is negligible.
- Prophylactic endodontic treatment maybe required...

## **Clinical Diagnostic Procedures**

### *1. Radiographic Findings*

- Look for the level of crestal bone
- Look for discreet lesions at apical foramina or related to accessory canals

### *2. Pulp Testing Procedures*

- Single rooted teeth (Not a problem)
- Multitrooted teeth...

### *3. Periodontal Probing*

- Most important test
- Each periodontal lesion has unique characteristics
- Careful examination around tooth surface

### **Probing or Sounding???**

Probing is defined as the tactile discrimination of the level of the epithelial attachment through use of the periodontal probe.

Sounding implies penetrating through the attachment to define the most coronal level of the alveolar bone.

## **Definition of a Perio-Endo Lesion:**

1. The tooth involved must be pulpless.
2. There must be destruction of the periodontal attachment apparatus from the gingival sulcus to either the apex of the tooth or to the area of an involved lateral canal
3. Both root canal treatment and periodontal therapy are required to resolve the entirety of the lesion.

## CLINICAL SITUATIONS

### 1. Acute or 'Blow out' lesions

- Tooth is pulpless
- Patient may present with swelling
- Pocketing on buccal or labial sides (Sometimes lingually)
- Probing shows normal gingival depth except at area of defect
- Broad pocket
- Gingiva is 'blown out'
- Usually no loss of crestal bone (Cortical plate perforation)
- **Treatment:** Endodontic treatment only
- **Prognosis:** Pocketing heals spontaneously most of the time

### 2. Typical Periodontal Lesion

- Lesions begins at crestal level and progresses apically
- It is a conical lesion
- One side maybe abrupt while the other is gradual
- **Treatment:** Periodontal
- Will not resolve in response to root canal treatment
- If associated tooth is necrotic RCT should be done first
- **Prognosis:** Depends on periodontal condition

### 3. Radiolucent lesions in which the gingival sulcus is intact

- Intact gingival sulcus eliminates periodontal disease
- Radiographically appears as radiolucency extending up the root even to furcation
- Adequate root canal treatment will resolve the situation
- If tooth is vital???

### 4. Lesions with narrow sinus tract type probing

- Tooth is pulpless
- Probing reveals very narrow pocketing (1 mm) may extend all the way to the apex
- Usually no swelling
- This is actually a sinus tract
- **Treatment:** Conventional RCT without curettage
- It may be a wide sinus tract (5-6 mm) attributed to chronicity
- **Prognosis:** Healing will occur spontaneously
- **Prognosis Exceptions:**
  1. Palatal surface of maxillary anteriors
  2. Furcation of multirooted teeth
  3. Furcation of multirooted teeth with horizontal defect

### 5. Lesions with narrow sinus tract type probing

#### **Developmental grooves**

- Lingual surface of laterals and sometimes centrals
- Periapical pathosis may develop
- **Treatment:** RCT will resolve the periapical lesion
- The periodontal condition will not be improved
- **Prognosis:** Depends on periodontal condition

#### **Vertical root fracture**

- Associated with previously treated tooth with RCT or large post
- Diagnosis accomplished visually (See or feel the fracture)
- Radiographically the Halo
- **Prognosis:** Very bad

## Periodontal Defect after Trauma

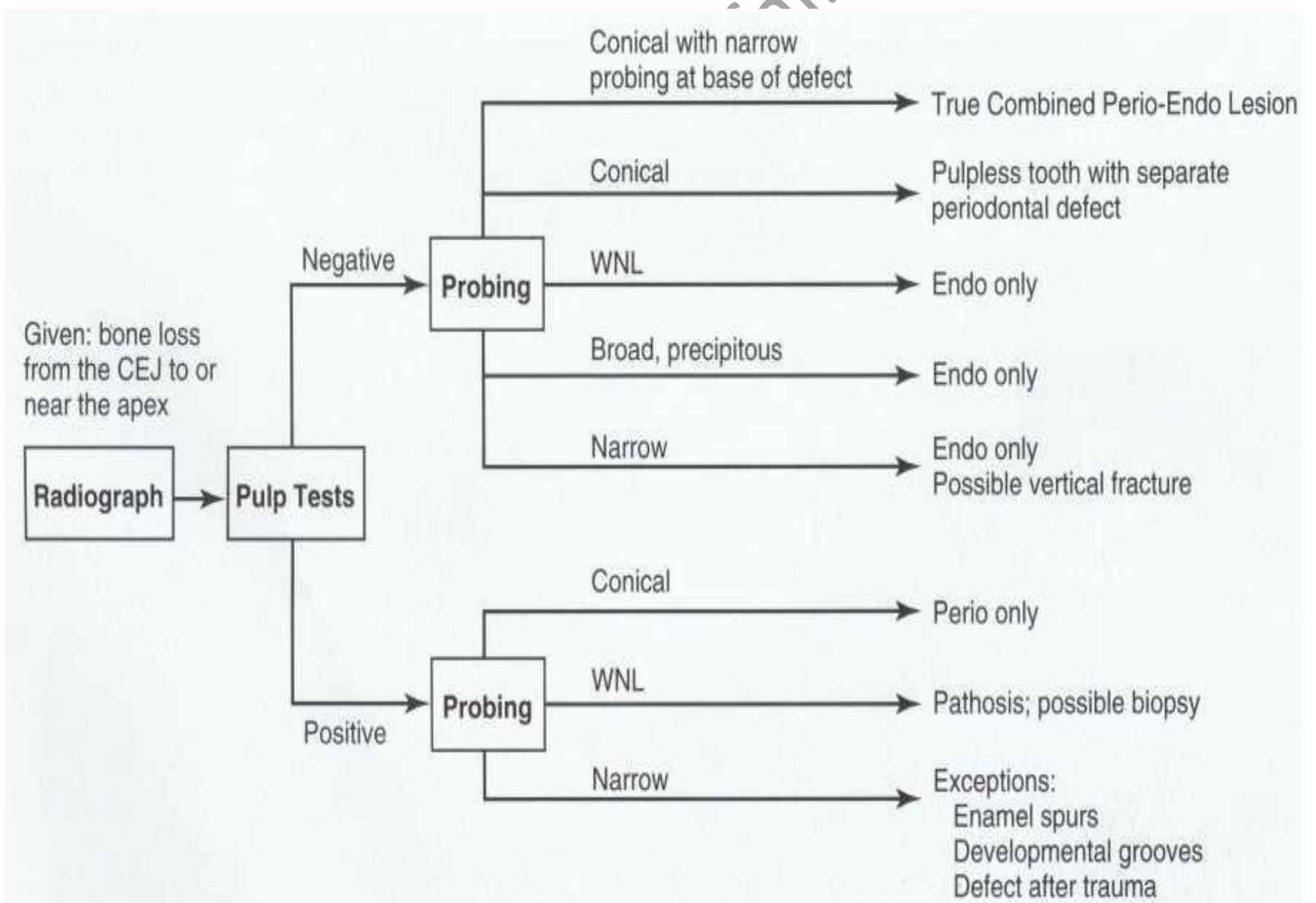
- With trauma related to anterior teeth
- Pulp testing is normal
- Defect on lingual surface
- **Prognosis:** Will resolve on its own

## 6. Independent Periodontal & Periapical or Lateral Lesions That do not communicate

- Separate periodontal & endodontic lesions
- No communication between periapical lesion & pocket
- **Treatment:** RCT will resolve the periapical lesion
- **Prognosis:** Depends on the periodontal condition

## 7. True Combined Perio-Endo Lesions

- Separate lesions which **do communicate**
- Extremely rare
- Radiographically loss of bone on the lateral root surface from crestal bone
- Typical conical lesion on probing
- Will drop to the apex at the base of the lesion
- Similar to sinus tract lesion from that point
- **Treatment:** RCT will resolve lesion up to the drop point
- **Prognosis:** Depends on periodontal condition



Wrap up...

Communication between pulp & periodontium

Dentinal Tubules

Accessory & lateral canals

Apical foramina

Effect of pulpal disease & endodontic procedures on the periodontium

Effect of endodontically involved teeth on periodontal health

Effects of periodontal disease & procedures on the pulp

Clinical diagnostic procedures

Definition of perio-endo lesions

**Clinical Situations**

Acute or 'Blow out' lesions

Typical periodontal lesion

Radiolucent lesion in which the gingival sulcus is intact

Lesions with narrow sinus tract probing

Developmental grooves

Vertical fractures

Periodontal defect after trauma

Independent periodontal & periapical or lateral lesions that do not communicate

True perio-endo lesions

Thank you

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