

Endodontic and Periodontal Interrelationship

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Based on

Mahmoud Torabinejad, Richard E. Walton, ENDODONTICS: PRINCIPLES AND PRACTICE 4th
edition, Chapter 6

And

Cohen's Pathways of the Pulp 10th edition, Chapter 18

Practical relevance

- Diagnosis:
 - Pulpitis/necrosis in sound tooth due to periodontal reason or pocket formation without periodontitis
 - Differential diagnosis:
 - apical abscess vs periodontal abscess
 - vertical root fracture
- Prognosis:
 - Endodontal (well anticipated) and **periodontal** (less anticipated)
- Treatment:
 - Endo + perio

(Differential) Diagnosis of endodontic-periodontal lesions

- Subjective Signs and Symptoms
- Clinical findings
 - Inspection, Palpation, Percussion
 - Sensibility testing
 - Pocket probing
- Radiographic findings

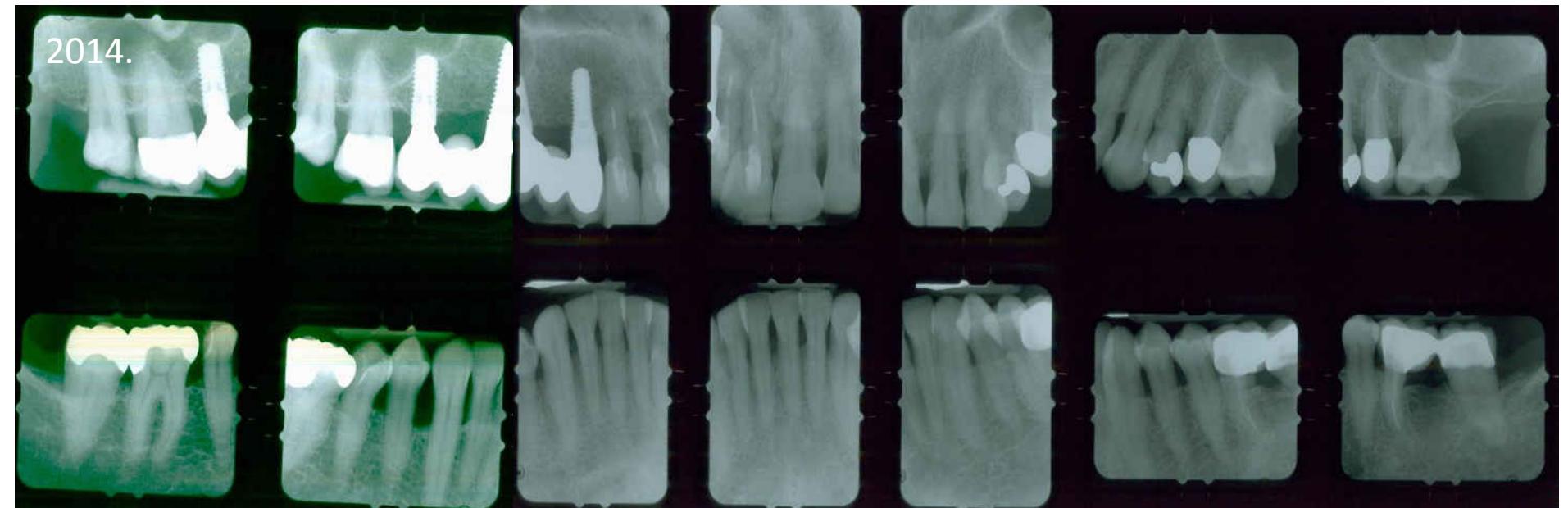
2000.



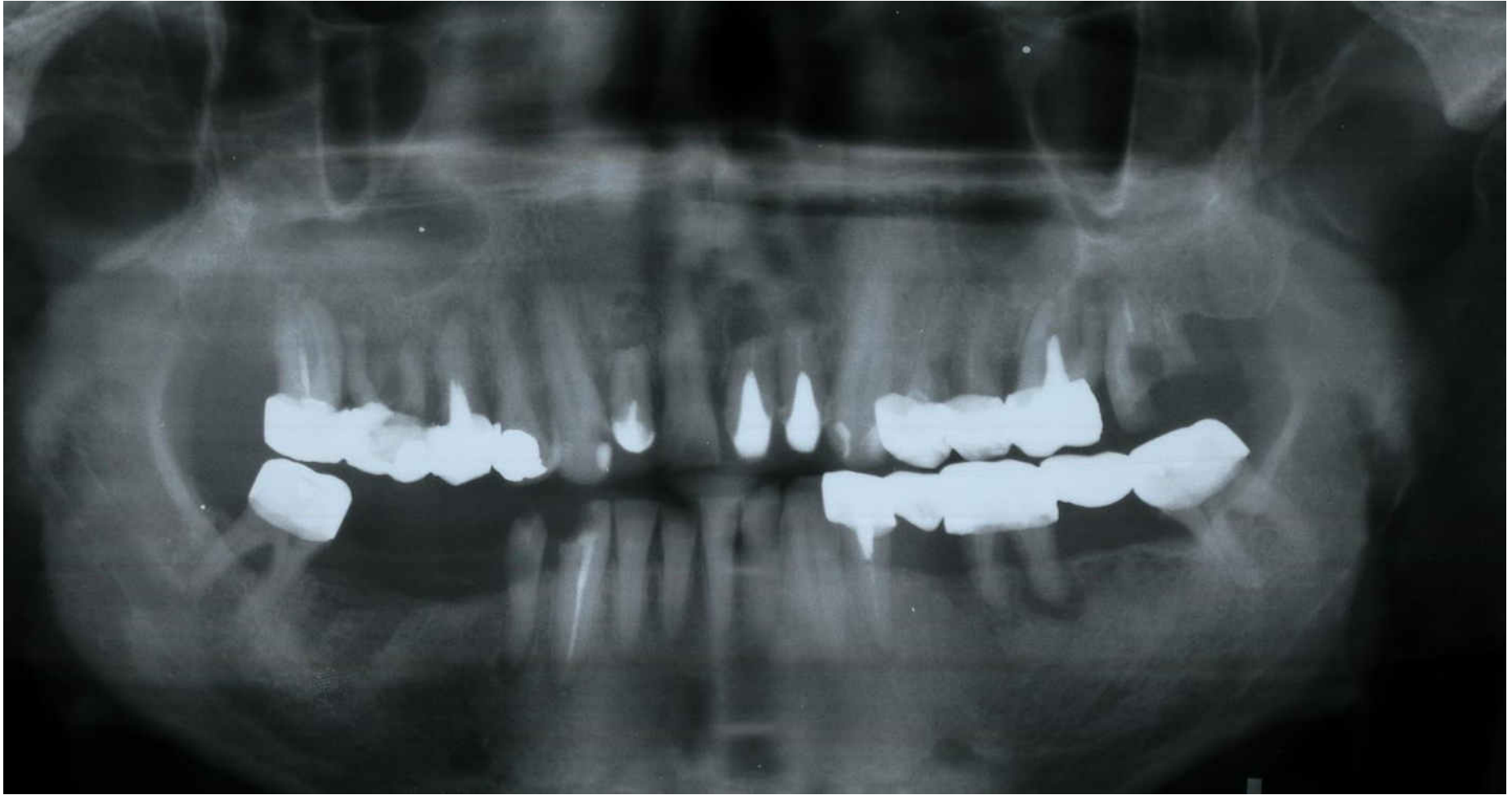
2004.



2014.



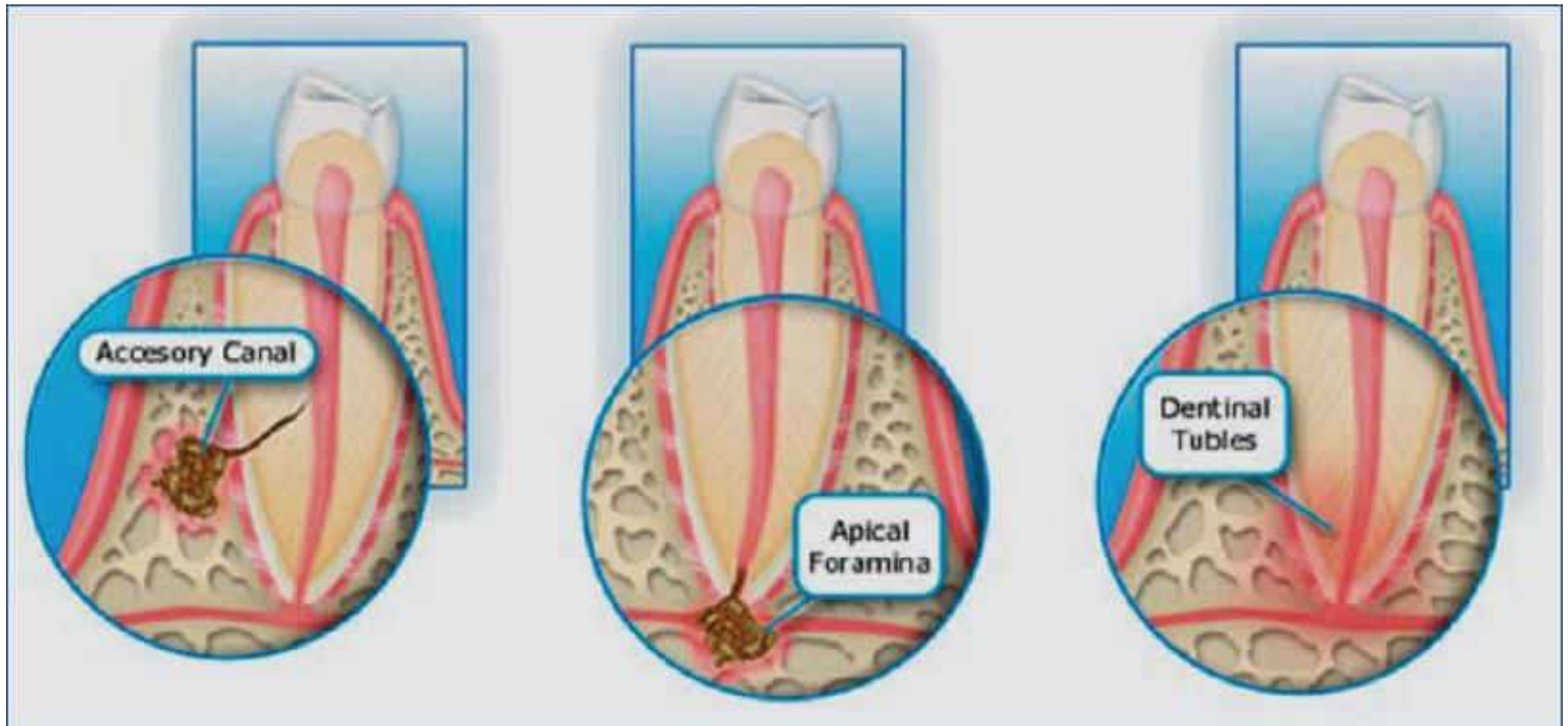
Oral hygiene - operative dentistry – endodontics – prosthetic - **periodontology**



Oral hygiene - operative dentistry – endodontics – prosthetic - **periodontology**

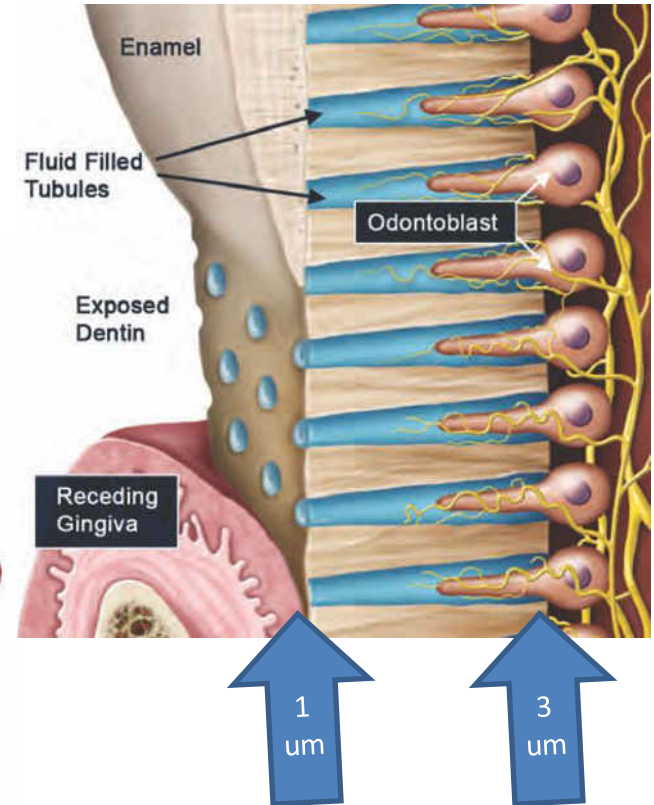
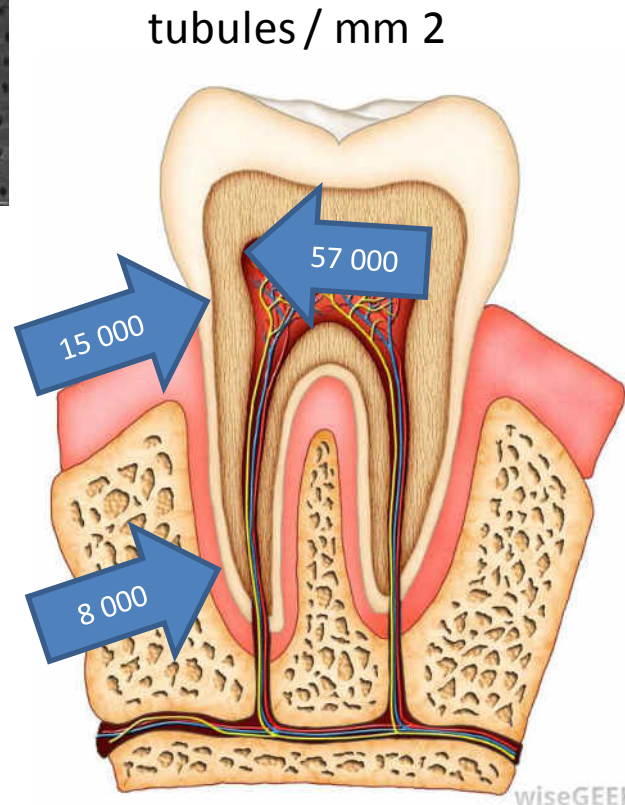
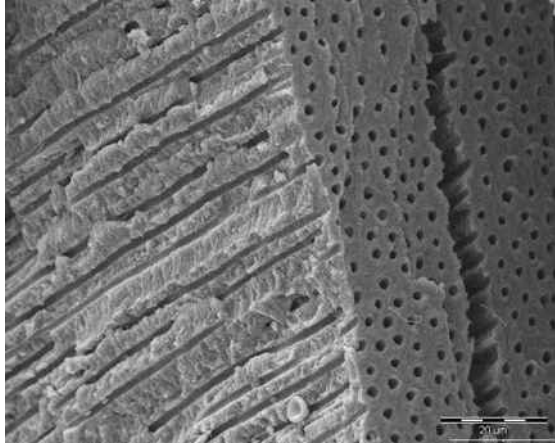
Anatomical background

Communication between the dental pulp and the periodontium



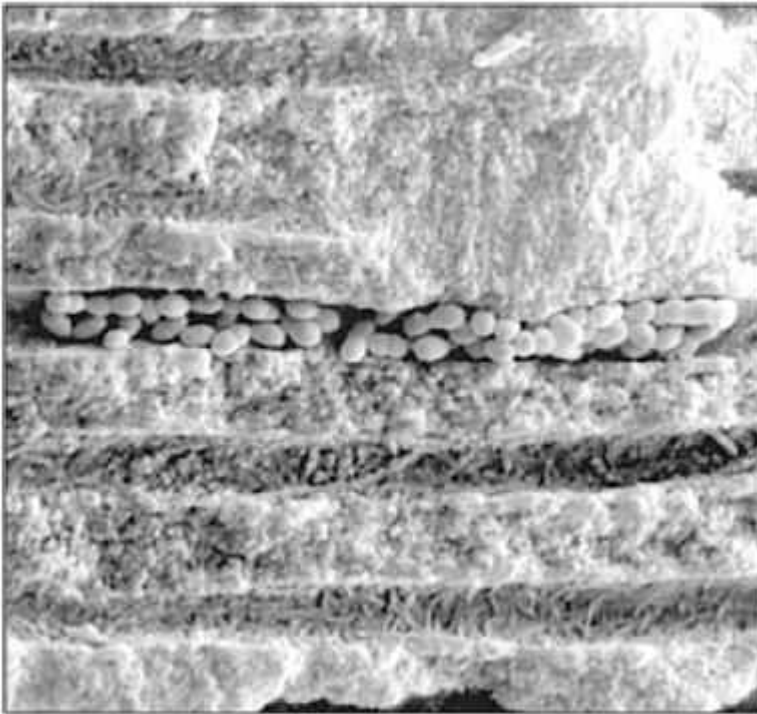
Communication I.

Dentinal tubules



Permeability of Dentine, [Farid Bin Che Ghazali](#)

Malays J Med Sci. 2003 Jan; 10(1): 27–36.

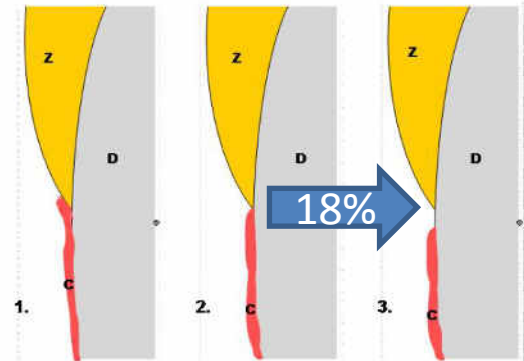
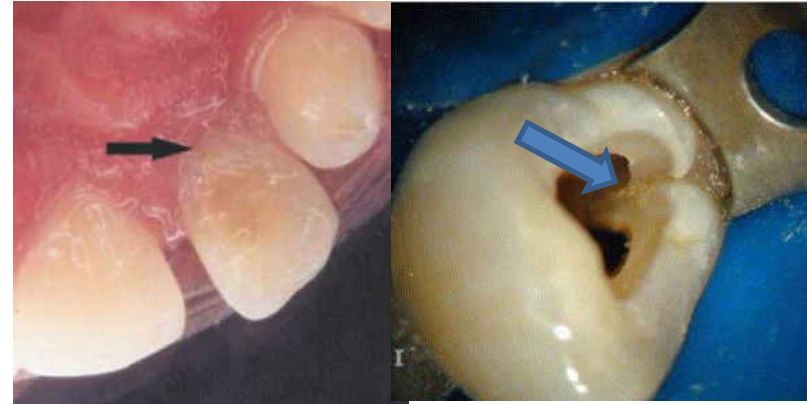


- „Functional” dimension

Figure 1 - Dentin infection after 60 days.

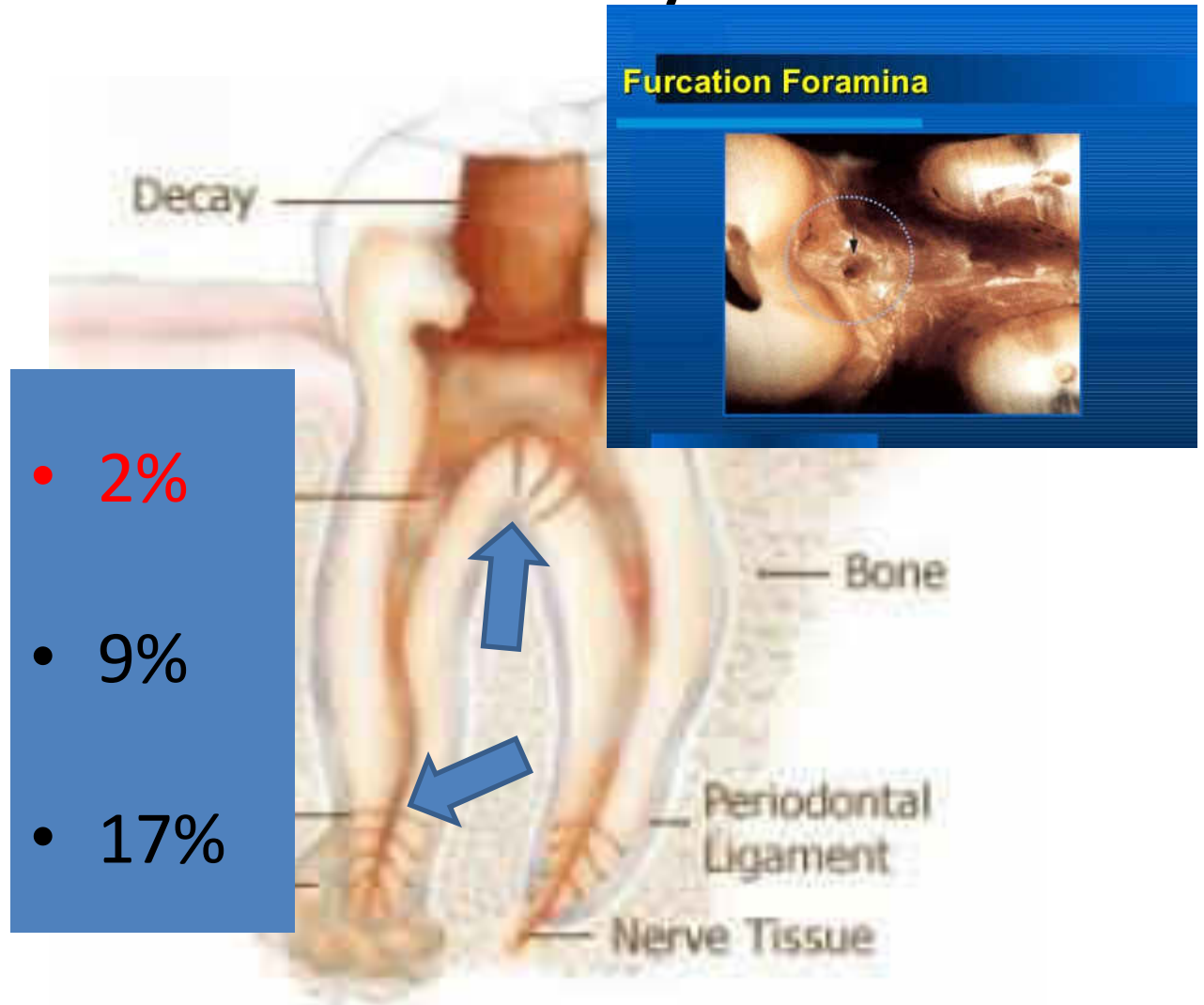
Reasons of the Dentin exposure

- Developmental grooves
- Congenital absence of cementum exposing tubules
- Gingival recession
- Following root planning



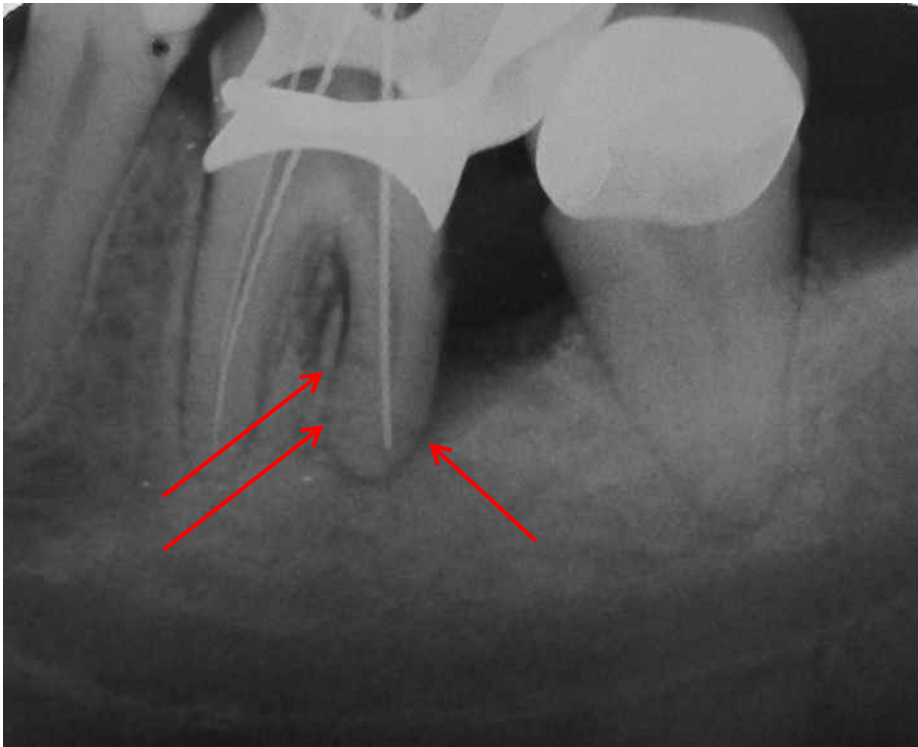
Communication II.

Lateral and Accessory Canals



Identification of the accessory/lateral canals

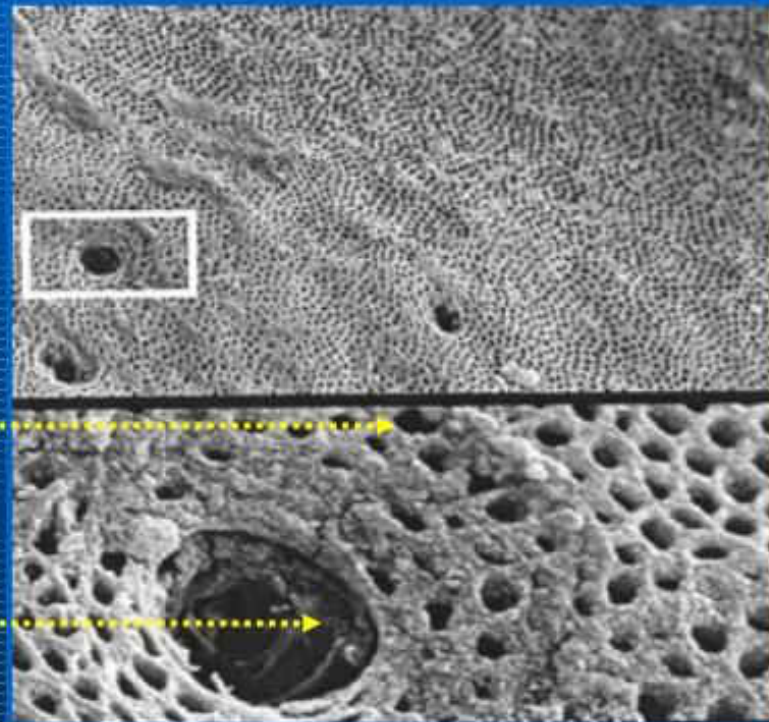
- X-ray
 - Discrete lateral lesion
 - Notch on the lateral surface
 - Filling material extrusion



Dentinal Tubules Vs. Accessory Canals

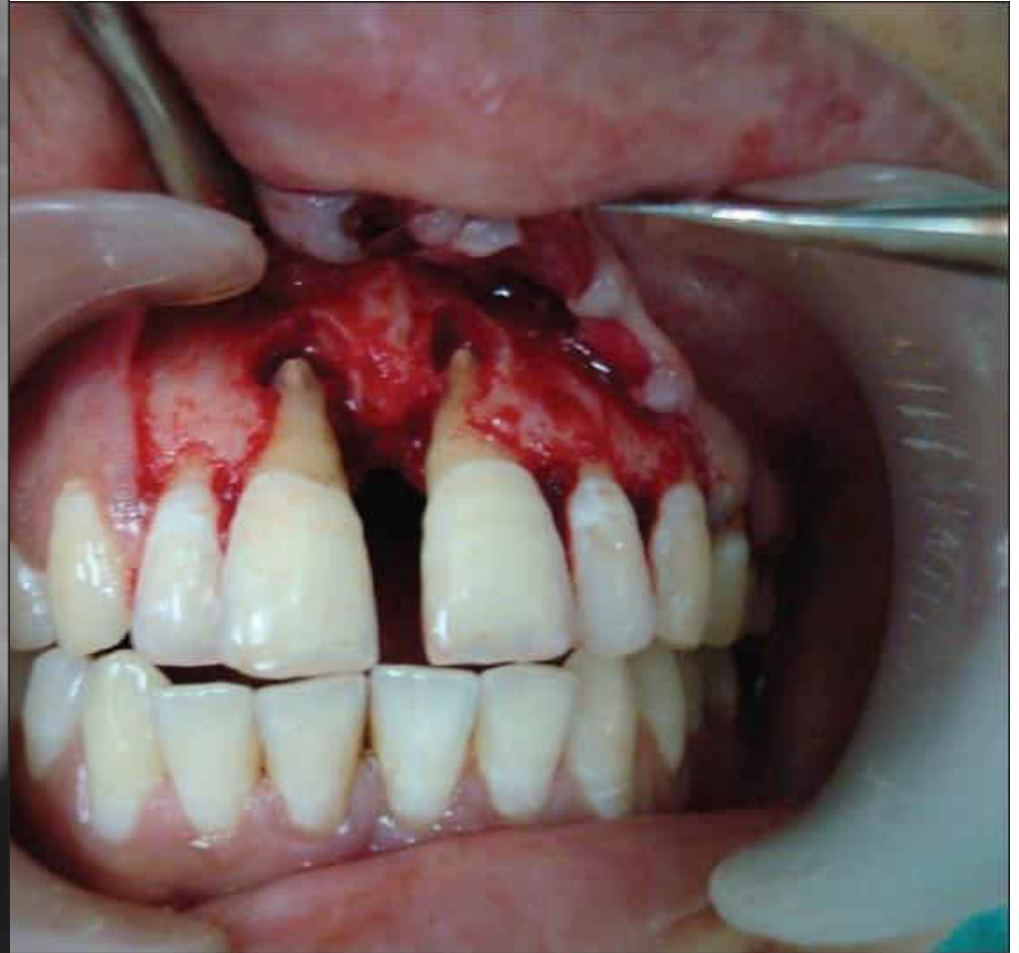
Dentinal
Tubules

Accessory
Canal



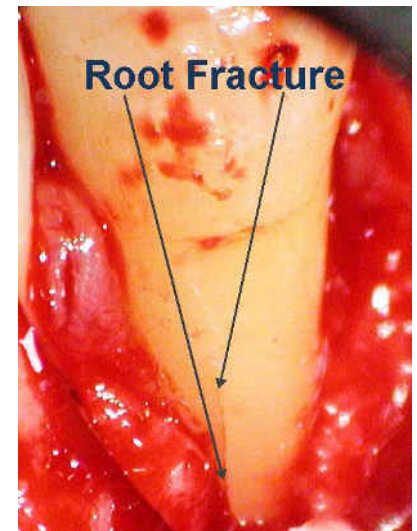
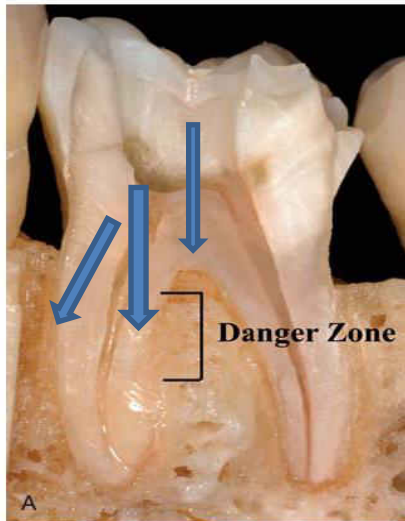
Communication III.

Apical foramen



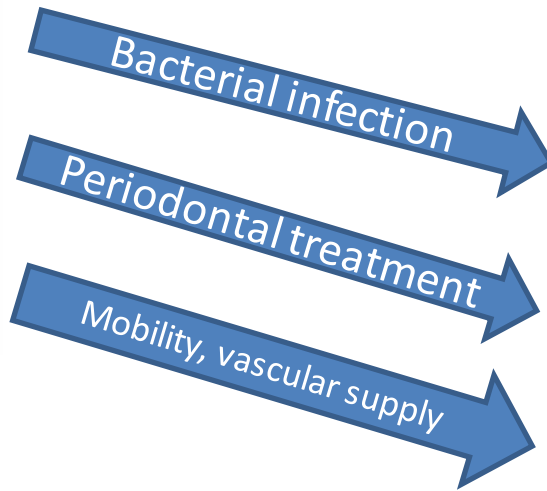
EFFECT OF ENDODONTIC DISEASE ON THE PERIODONTIUM

- Spreading of **infection**
- normal endodontic therapy resulting short term inflammation
- Procedural errors:
 - Perforation: floor, strip, root
 - Inadvertent irrigation
 - obturation



EFFECT OF PERIODONTAL DISEASE ON THE PULP

Primary Perio

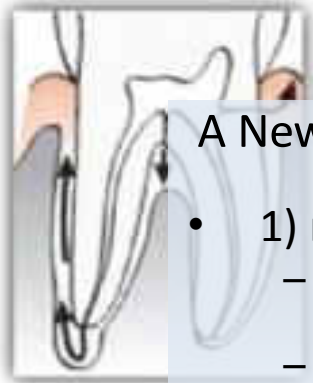


Secondary Endo

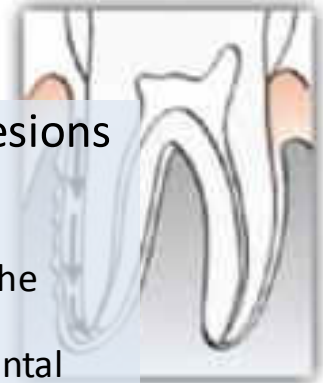


CLASSIFICATION AND DIFFERENTIAL DIAGNOSIS

Primary Endo



Primary Perio

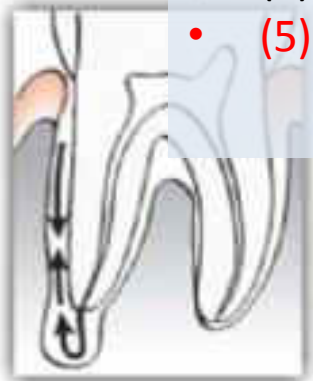


A New Classification of Endodontic-Periodontal Lesions

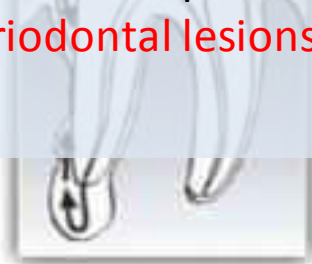
Khalid S. Al-Fouzan, International Journal of Dentistry 2014

- 1) retrograde periodontal disease:
 - (a) primary endodontic lesion with drainage through the periodontal ligament,
 - (b) primary endodontic lesion with secondary periodontal involvement;
- (2) primary periodontal lesion;
- (3) primary periodontal lesion with secondary endodontic involvement;
- (4) combined endodontic-periodontal lesion;
- (5) iatrogenic periodontal lesions.

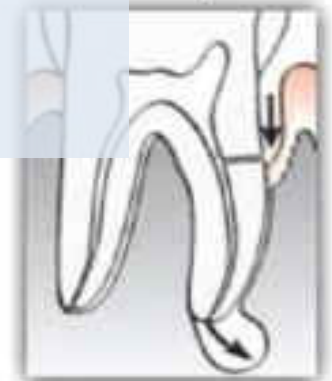
Secondary Perio



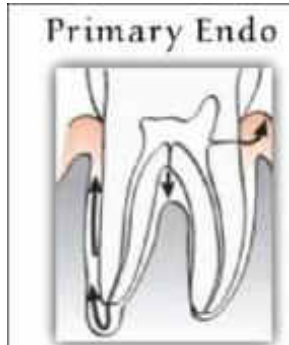
True Combined lesion



Secondary Endo



Primary Endodontic Disease



Pulpal necrosis

Probing

normal sulcus or narrow drainage to the sulcus

Radiographic Findings

Radiolucency: **apical, lateral, furcation**

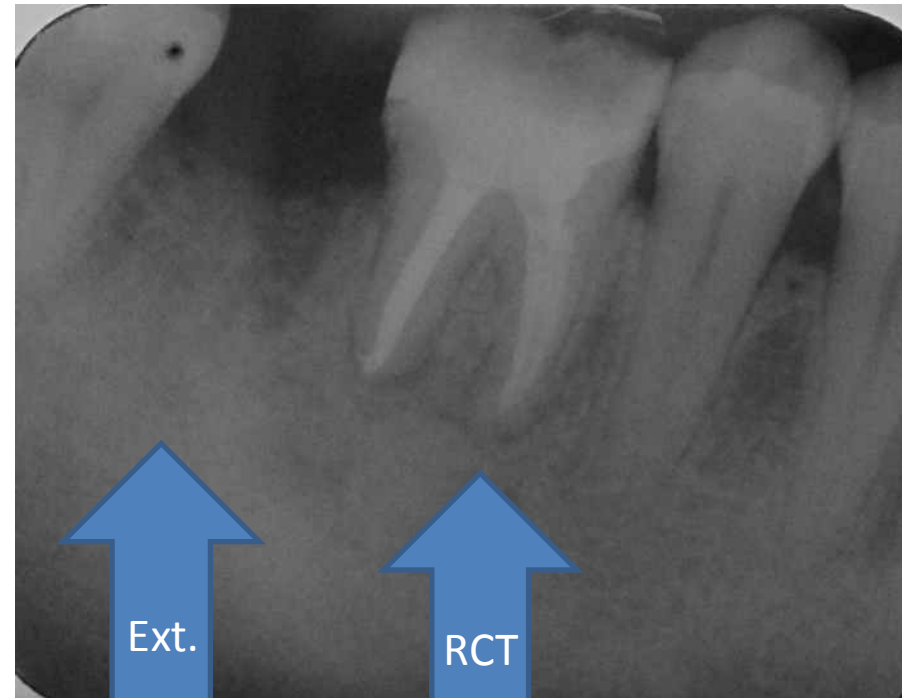


Prognosis/treatment

good after **rct**



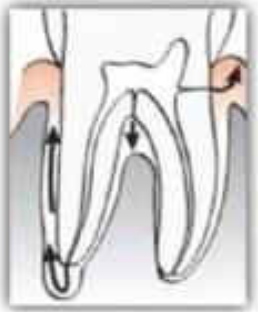
Treatment of the primary endodontic disease



Due to the recurrent pain
and suppuration

Primary Endodontic Disease with Secondary Periodontal Involvement

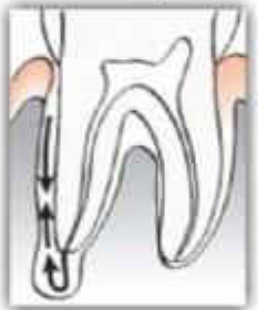
Primary Endo



Not treated



Secondary Perio



Primary Endodontic Disease with Secondary Periodontal Involvement

rct + reevaluation of periodontal status in 2 to 3 months



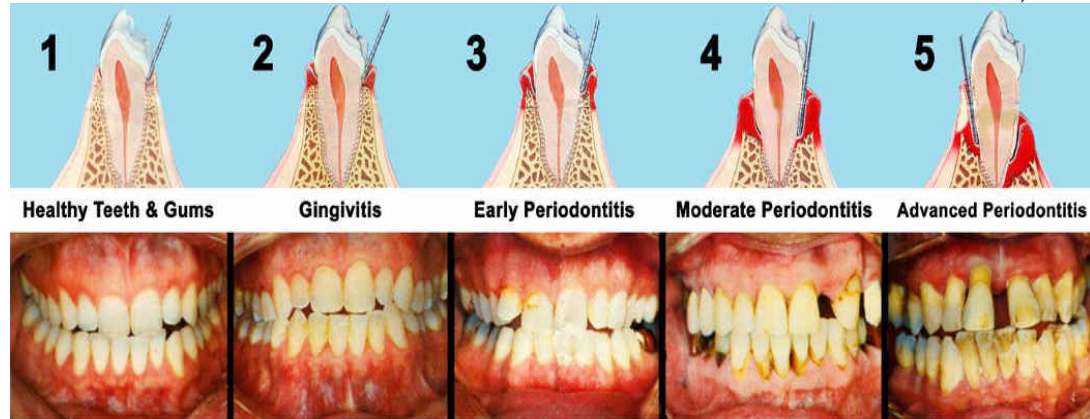


Primary Periodontal Disease

Progression of the periodontal disease

Probing
wide pockets that do not necessarily extend toward the apex.

Clinical Findings
Attachment loss, gingival bleeding, tooth mobility, calculus, plaque



Radiographic Findings:

Gradually lost marginal bone: **horizontal or vertical (angular) bone defect, furcation lesion**

Pulp Tests

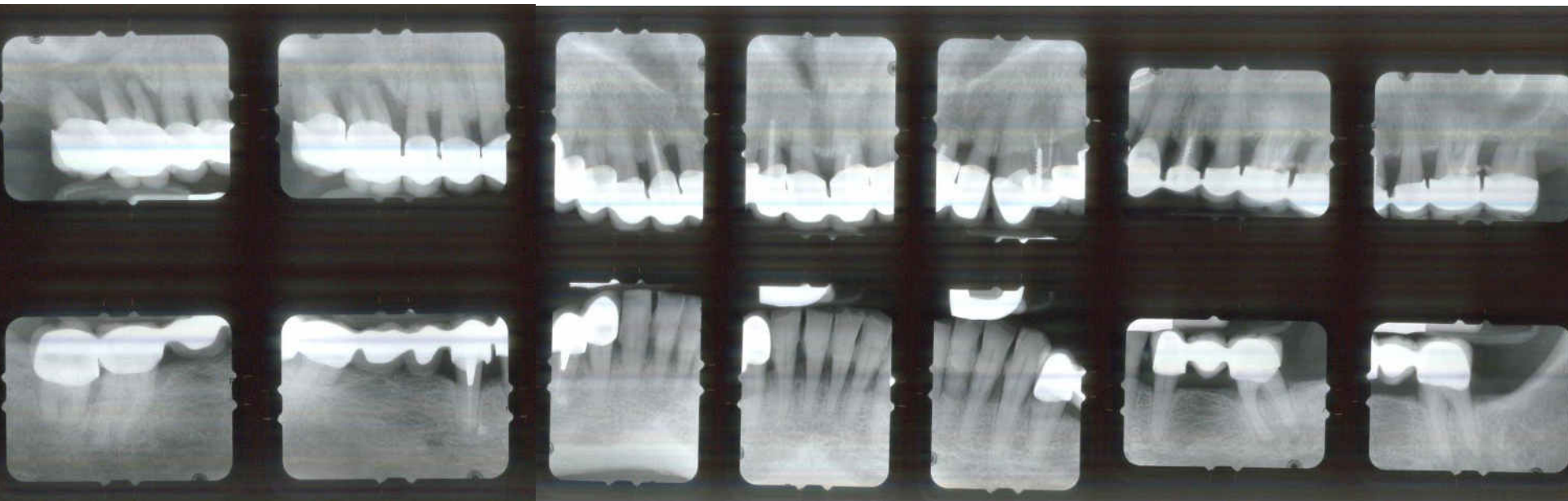
normal

Prognosis/treatments

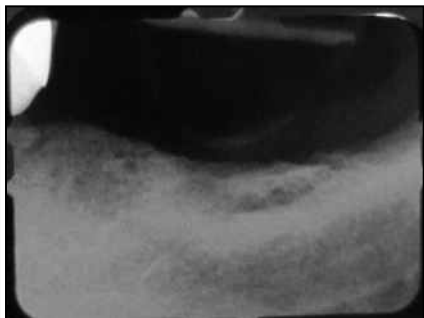
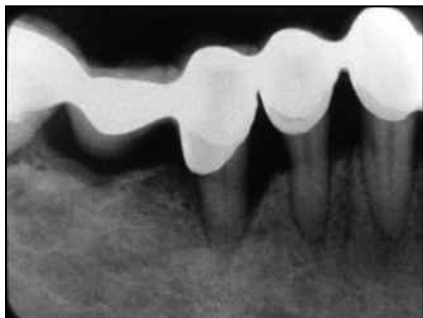
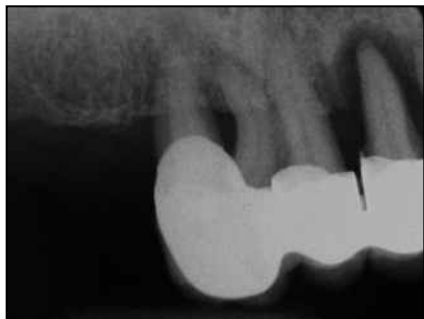
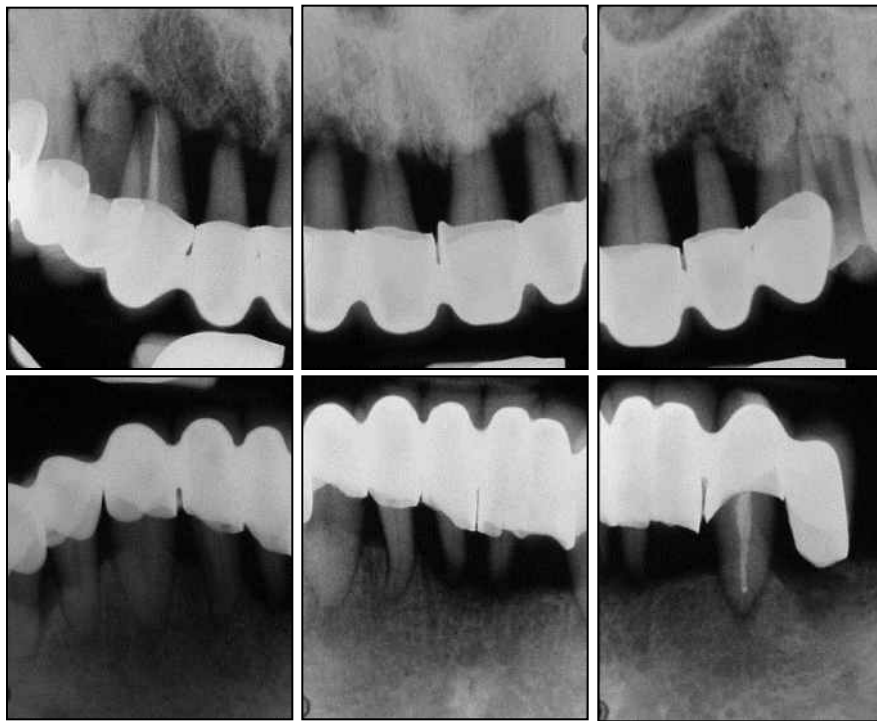
The prognosis depends on the stage of periodontal disease and the efficacy of periodontal treatment.

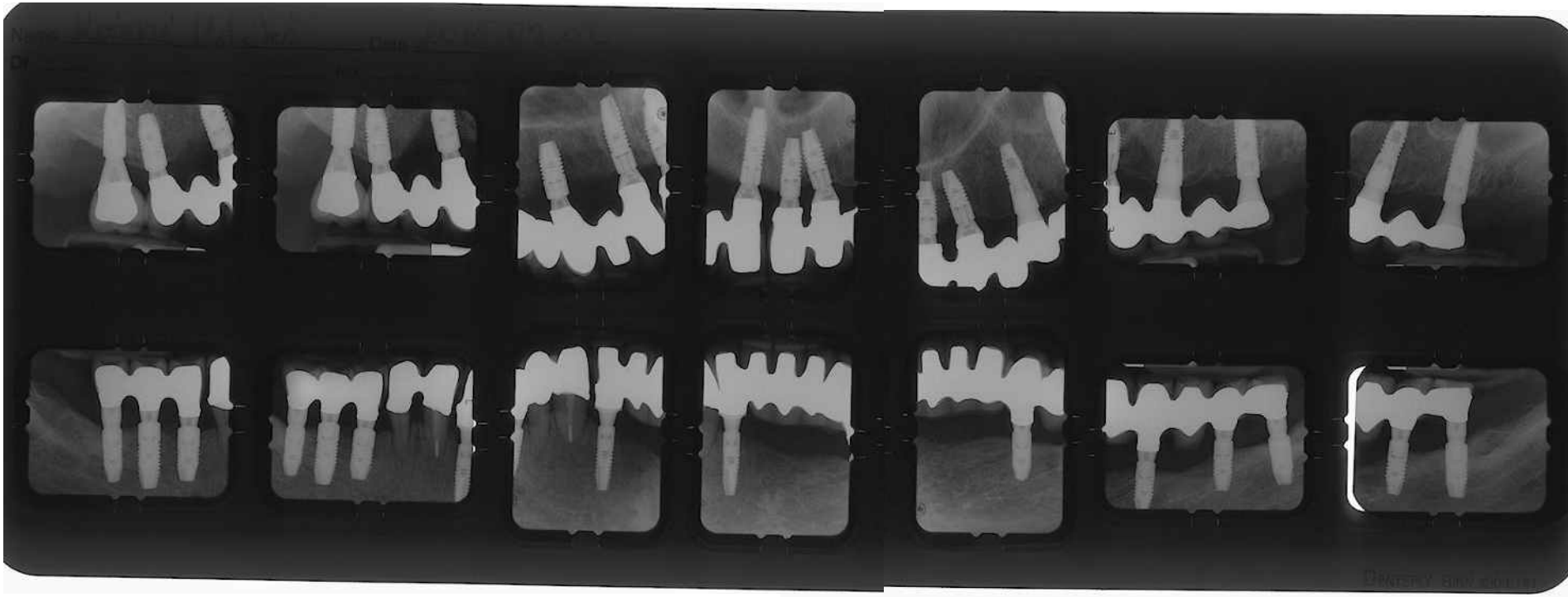
Periodontal therapy, Extraction, hemisection

Radiographic view of periodontal disease

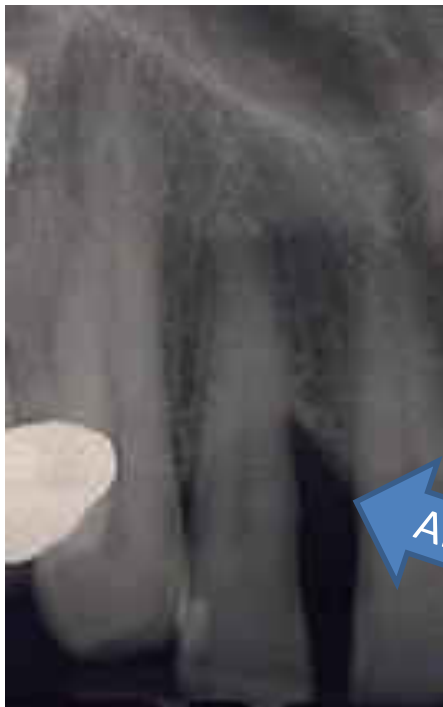








Primary perio versus primary endo

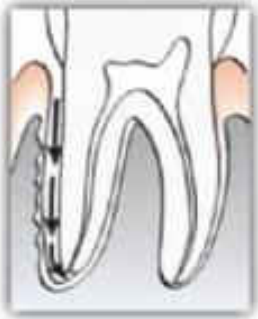


Angular defect



Primary Periodontal Disease with Secondary Endodontic Involvement

Primary Perio



Vascular supply



Secondary Endo



Clinical Findings

- History of **extensive periodontal disease**, generalized periodontitis

Pulp Tests

- Necrotic pulp

Probing

- wide pocket extending apically

Radiographic Findings

- **angular bone loss** extend from the cervical region toward the apex.

Prognosis

- **Extraction, hemisection**

Primary Endodontic Disease with Secondary Periodontal Involvement



hemisection & periosurgery



prosthetic rehab.



Clinical and Radiographic findings
no sign of generalized periodontitis

pulp test:



Non-vital:
Primary endo + sec. perio

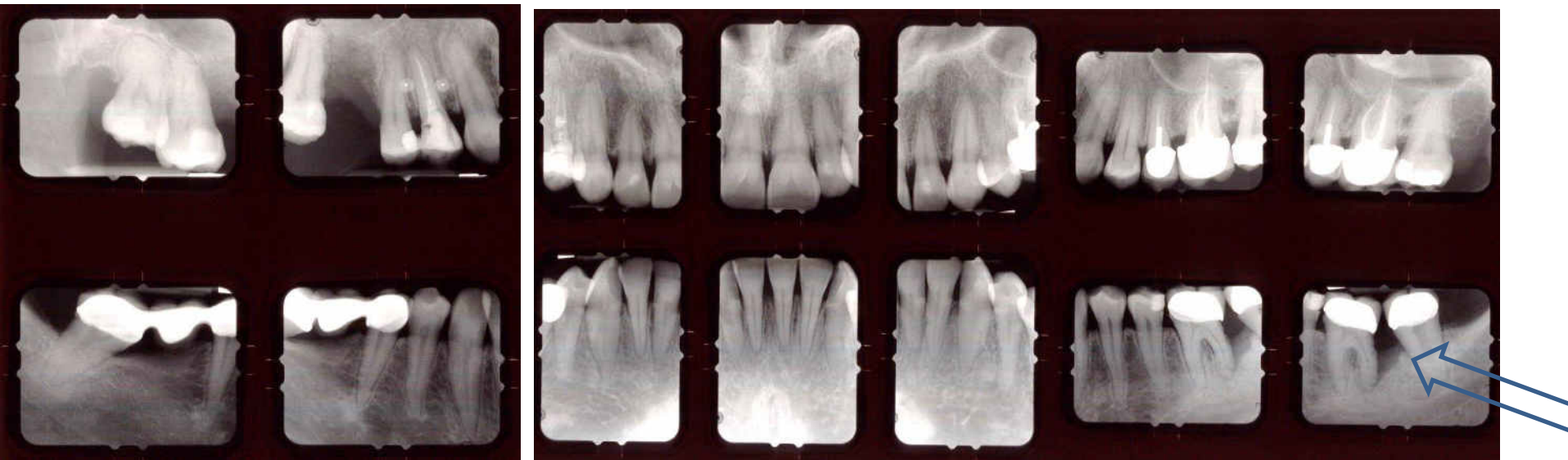


RCT usually
enough

Vital:
Primary perio + sec. endo
*Localized periodontitis at 36 due to the inadequate
contact point*

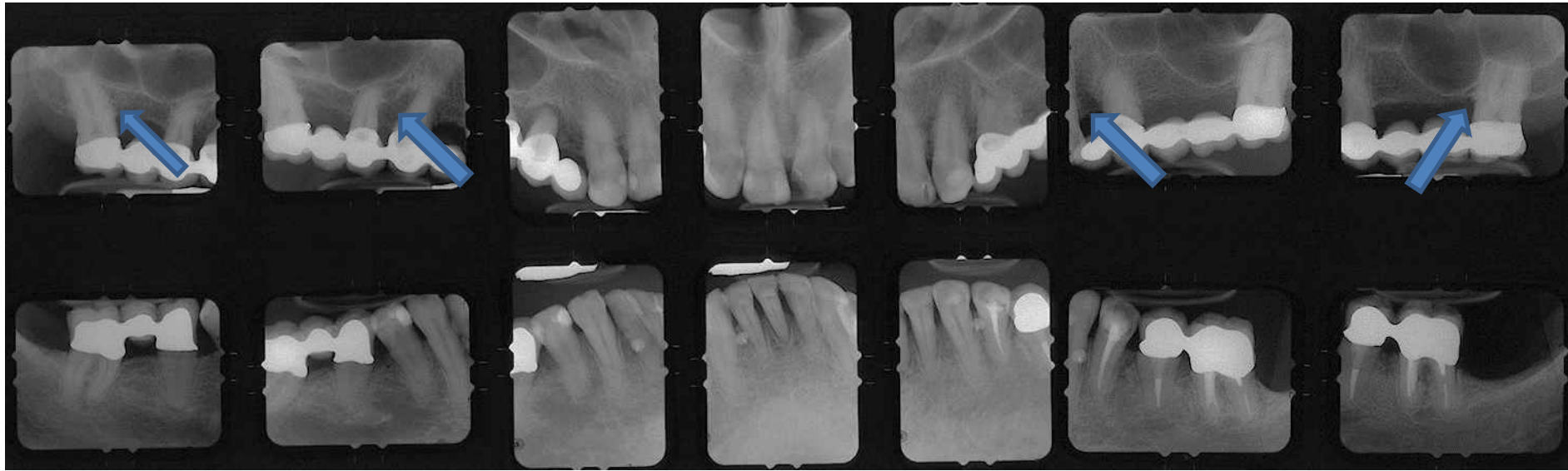


RCT + surgery



Primary Periodontal Disease with Secondary Endodontic Involvement

*generalized periodontitis, pulpitis in 14 induced by periodontal surgery treatment
(note: missing 13&23)*



Deep pocket



perio-surgery



6 months



pulpitis, rct



True Combined Diseases

True Combined lesion



Clinical Findings

- History of extensive periodontal disease, generalized periodontitis is common but not always
- severe **attachment loss**

Pulp Tests

- absence

Probing

- wide and conical pocket

Radiographic Findings

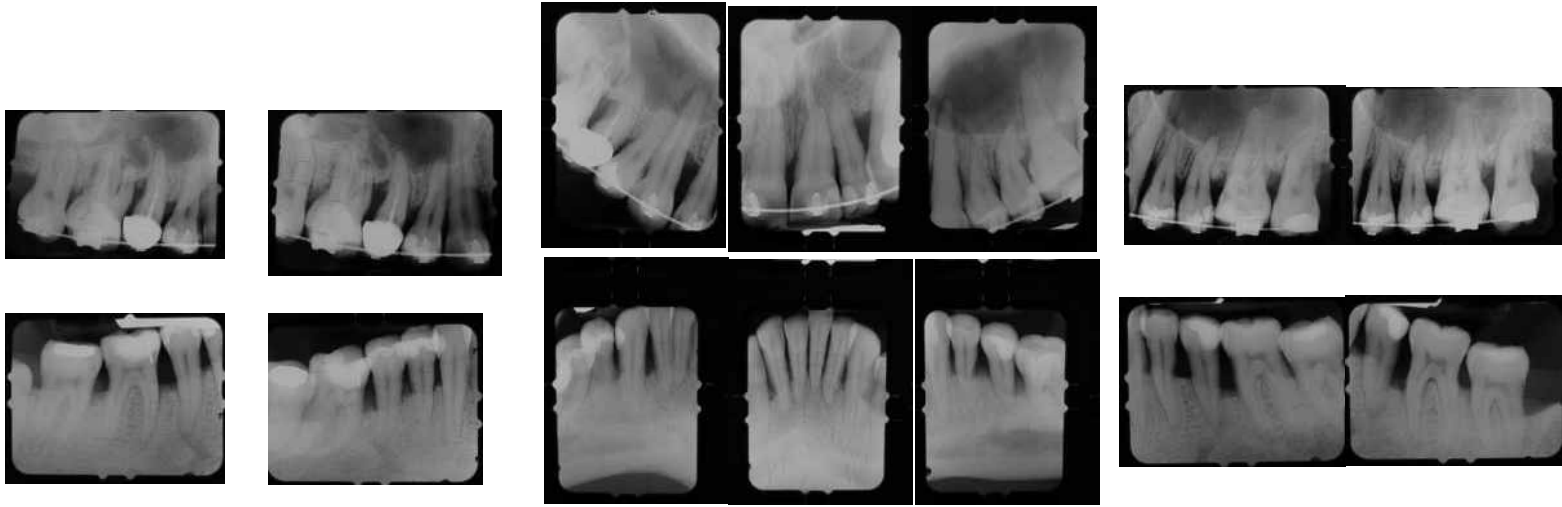
- **Extensive bony radiolucency** (endo + perio), may or may not communicate.
- may be similar to that of a **vertically fractured** tooth

Prognosis

- periapical healing may be anticipated after successful endodontic treatment.
- The **periodontal healing** depends on the severity of the condition.

True Combined Diseases

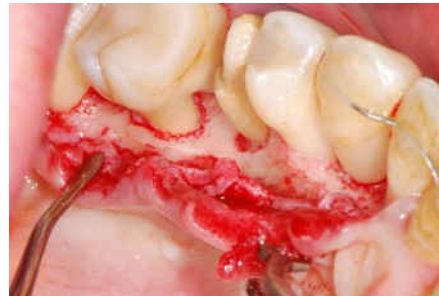
Generalized periodontitis and incomplete rct in 15&16



rct & pros.rehab.



Perio-surgery



e.g. Rapidly developed periodontal abscess. Both molars were free of pulpal disease



e.g. acute exacerbation of chronic apical lesion



Differential Diagnosis of Primary endo with secondary perio versus vertical tooth fracture



Three years



Treatment: curettage and monitoring



Two weeks

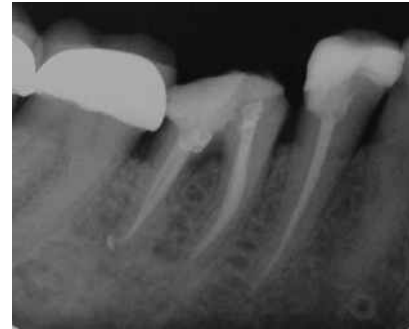


Iatrogenic Primary Endodontic Disease with Secondary Periodontal Involvement

Procedural errors in rct

Coronal leakage, pulp necrosis, periapical radiolucency, no periodontitis

rct with strip perforation, MTA



2 years later:

furcation lesion

hemisection/bicuspidization

post&core, PFG crown

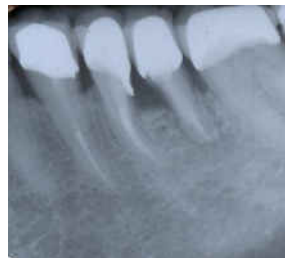


sinus tract at the distal root

further marginal bone loss in spite of the curettage

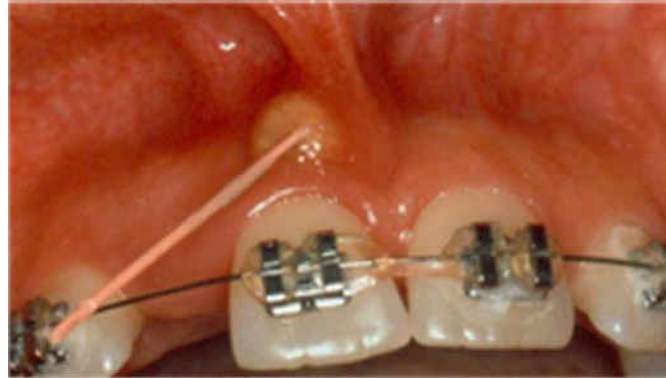
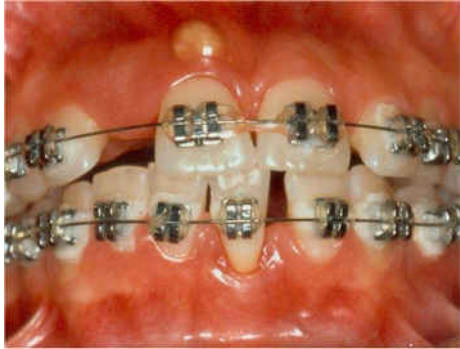
Vertical fracture

1 year later:



Periodontal Abscess Due to Inadequate Orthodontics Forces:

Case Report Acta Stomatol Croat. 2012;46(2):142-145.



Thank you for your attention