

Aurobindo College of Dentistry

Indore, Madhya Pradesh
INDIA



Module plan

- **Topic :** REGRESSIVE ALTERATIONS
- **Subject:** Oral Pathology
- **Target Group:** Undergraduate Dentistry
- **Mode:** Powerpoint – Webinar
- **Platform:** Institutional LMS
- **Presenter:** **Dr. Bhupesh Bagulkar**



OBJECTIVES

- At the end of the lecture student should know the
 - Changes in teeth with ageing
 - Changes in enamel
 - Changes in pulp dentin complex



INTRODUCTION

Regressive Changes: Variety of changes seen in the dental tissues not necessarily related etiologically or pathologically.

- ✘ General ageing process of the individual
- ✘ Injury to the tissues



Changes in teeth with ageing

Macroscopic Changes:

- ✘ Form : starts at early age
- ✘ Affected by wear and attrition
- ✘ Perikymata, imbrication lines are lost giving enamel a flat appearance



Changes in teeth

- ✘ Colour: Qualitative & Quantitative change in dentin , gradual alteration in colour with age



Changes in Enamel

- ✘ Enamel wears away slowly with age depending on diet & masticatory habits.
- ✘ Tooth darkens in color



Pulp- Dentin Complex

- ✘ With advancing age, volume of dentin at the expense of the pulp
- ✘ Formation of secondary dentin
- ✘ Pulp chamber



Secondary dentin

- ✘ Develops after root formation
- ✘ Formed by same odontoblasts



- ✘ Reduction in size does not affect the pulp chamber evenly, varies with different types of teeth:
- ✘ Impacted teeth: starts apically & proceeds coronally



Tertiary Dentine

- ✘ Produced in reaction to stimuli
- ✘ Quality & quantity related to cellular response
- ✘ Tubular structure



Reactionary Dentin

- × Formed in response to an insult in which although some damage has occurred ; some odontoblasts die, existing odontoblasts recover & continue dentin formation
- × Irregular tubular appearance & fewer tubules



Sclerotic Dentine

- ✘ Stimuli cause collagen fibres & apatite crystals to appear in dentinal tubules sclerotic
- ✘ Seen in older individuals



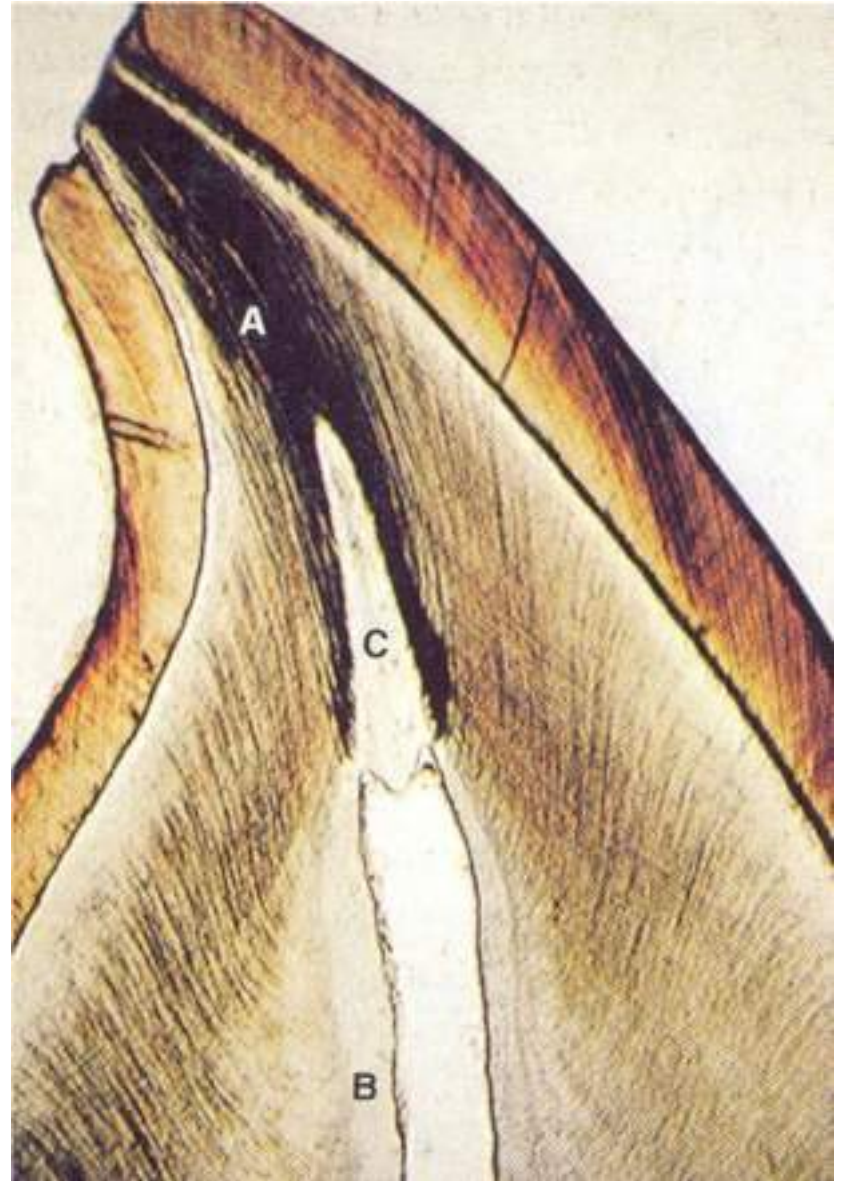
Sclerotic Dentine

- × ↑ed transparency with transmitted light
- × ↑ed hardness & density
- × ↓ed permeability



DEAD TRACTS

- ✗ Traumatic insults/ injury destroy the odontoblasts.
- ✗ Empty tubules are known as dead tracts



TOOTH WEAR

- ✘ Also called as tooth surface loss/ non carious lesions (NCL)
- ✘ It is a normal physiologic process that occurs with aging but must be considered pathologic when degree of destruction creates functional, esthetic, or dental sensitivity problems.



ATTRITION

- ✘ **Physiologic** wearing away of a tooth as a result of tooth- to-tooth contact, as in mastication
- ✘ Occurs essentially on occlusal, incisal or proximal surfaces.





Fig. 6 Labial view of mandibular anterior teeth in a 40-year-old male bruxist. The teeth have flattened incisal edges as the enamel and dentine wear at the same rate. The teeth 'match' the palatal surfaces of the maxillary teeth in excursive movements

Factors affecting:

- ✘ Sex: M>F(Greater masticatory force?)
- ✘ Diet: coarseness of food
- ✘ Habits: chewing tobacco, betel nut
- ✘ Bruxism



Consequences

✘ Chronic process

Exposure of dentinal tubules



Irritation of odontoblastic processes



Reparative dentin formation



Abrasion

- ✘ Pathologic wearing away of tooth substance through some abnormal mechanical process.
- ✘ V- shaped or wedge shaped ditch on root side of CEJ, in teeth with gingival recession
- ✘ Sharp angled



Demastication

- ✘ When tooth wear is accelerated by chewing an abrasive substance between opposing teeth
- ✘ Exhibits features of both:
Attrition + Abrasion



Erosion:

- ✘ Loss of tooth substance by a chemical process that does not involve known bacterial action
- ✘ Labial, buccal & lingual/palatal surfaces of the teeth
- ✘ May occur on proximal surfaces



Factors affecting

- ✘ Chronic vomiting → affects lingual surface, particularly anterior teeth
- ✘ Diet: Carbonated beverages, citrus fruits (orange juice)



- ✘ Anorexia nervosa (induced chronic vomiting), bulimia, psychological problems
- ✘ Industrial environmental exposure





Abfraction

- ✘ Loss of tooth structure that results from repeated tooth flexure caused by occlusal stresses





ABFRACTIONS

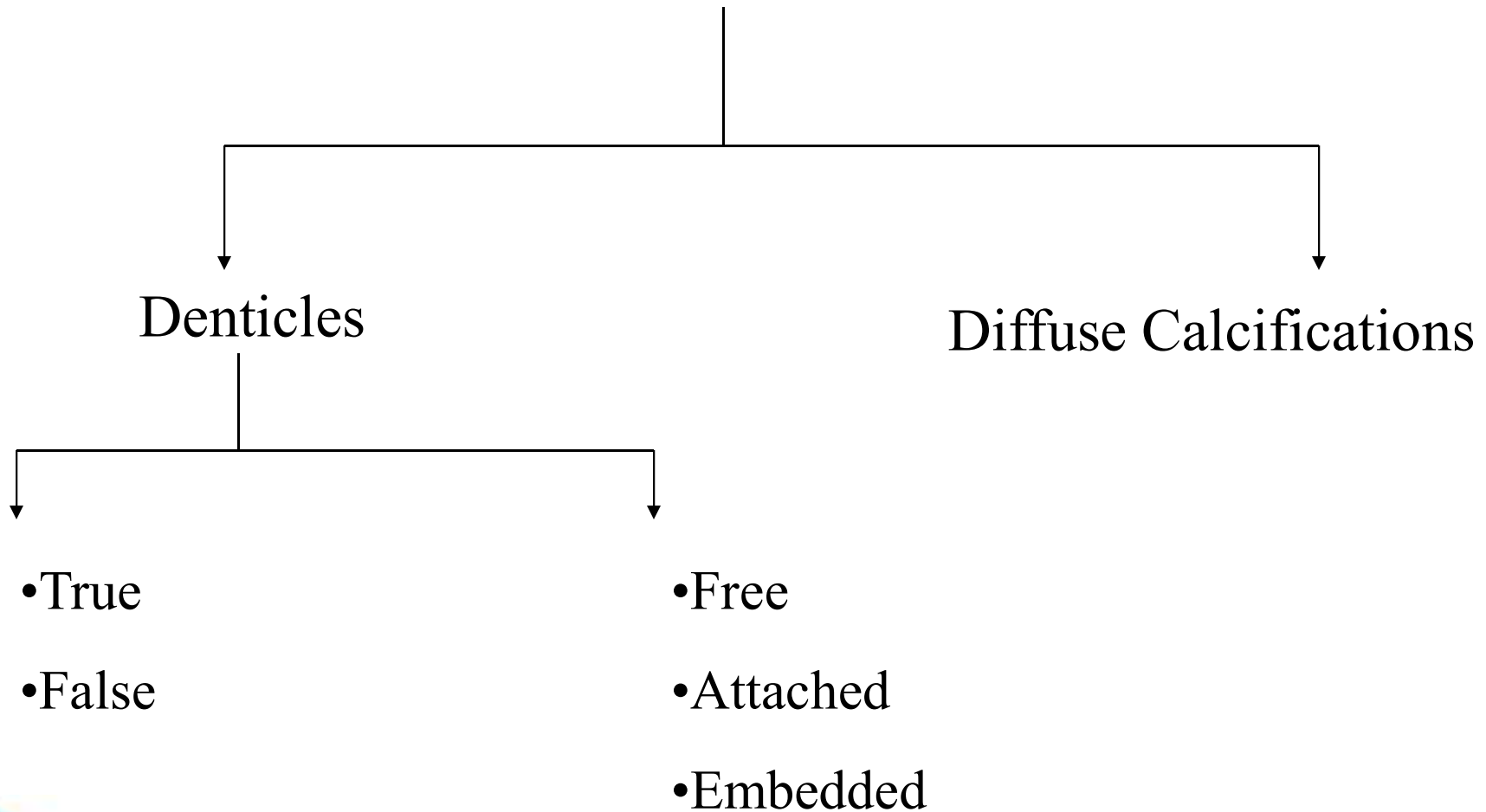
Figure13-8. Abfraction.-P-797

Alterations in Pulp

- ▶ Pulp Calcifications
- ▶ Pulp fibrosis



Pulp Calcifications



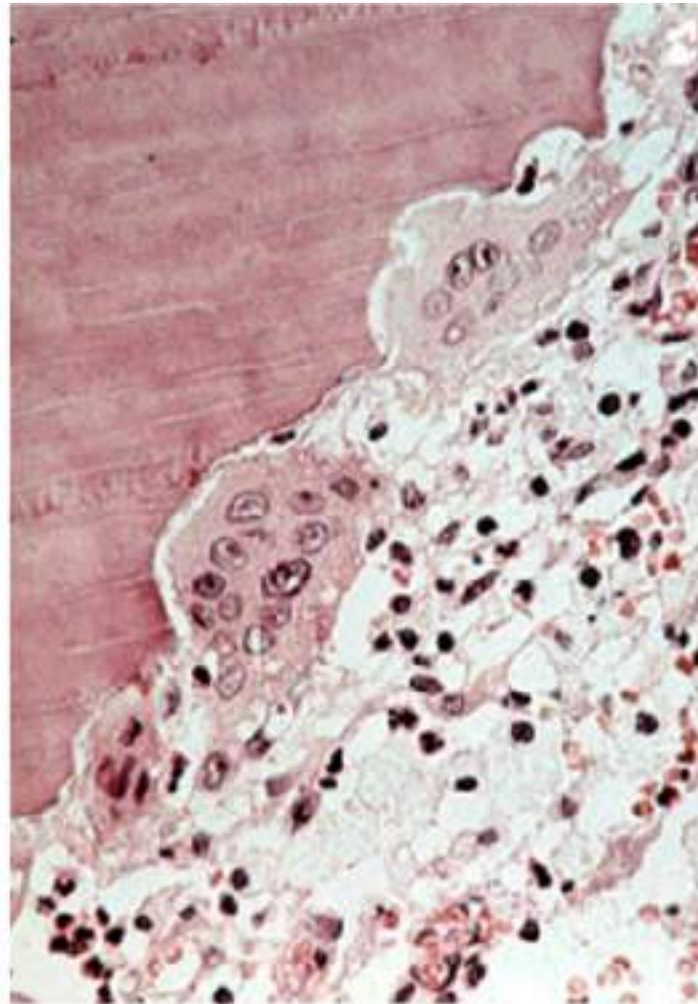
TOOTH RESORPTION

EXTERNAL

- ▶ Periapical inflammation
- ▶ Reimplantation of teeth
- ▶ Tumors & cysts
- ▶ Excessive mechanical & occlusal forces
- ▶ Impaction
- ▶ Idiopathic

INTERNAL

- ▶ Idiopathic

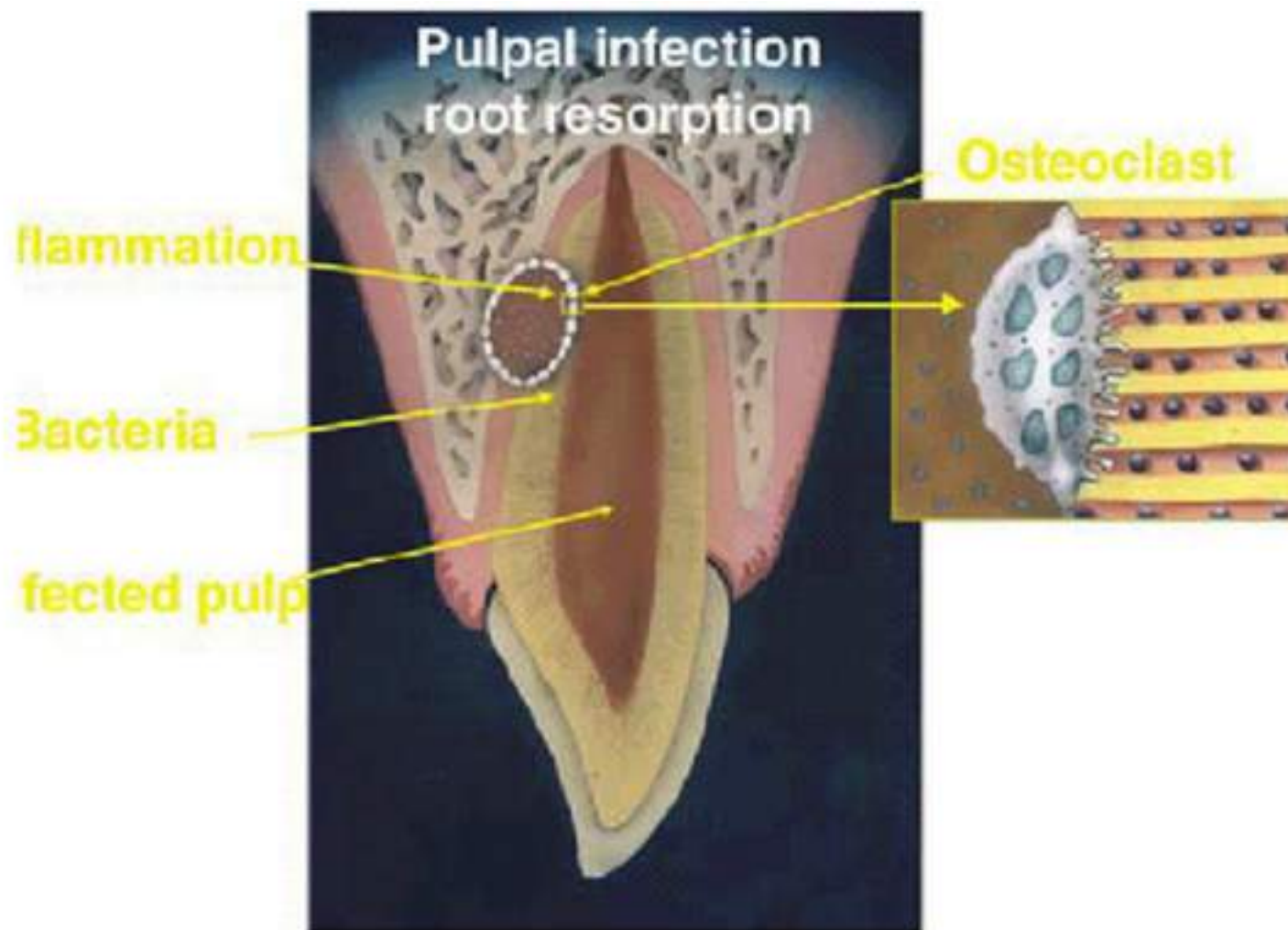


Internal Resorption

(Chronic perforating hyperplasia of the pulp, internal granuloma, odontoclastoma, pink tooth of mummery)

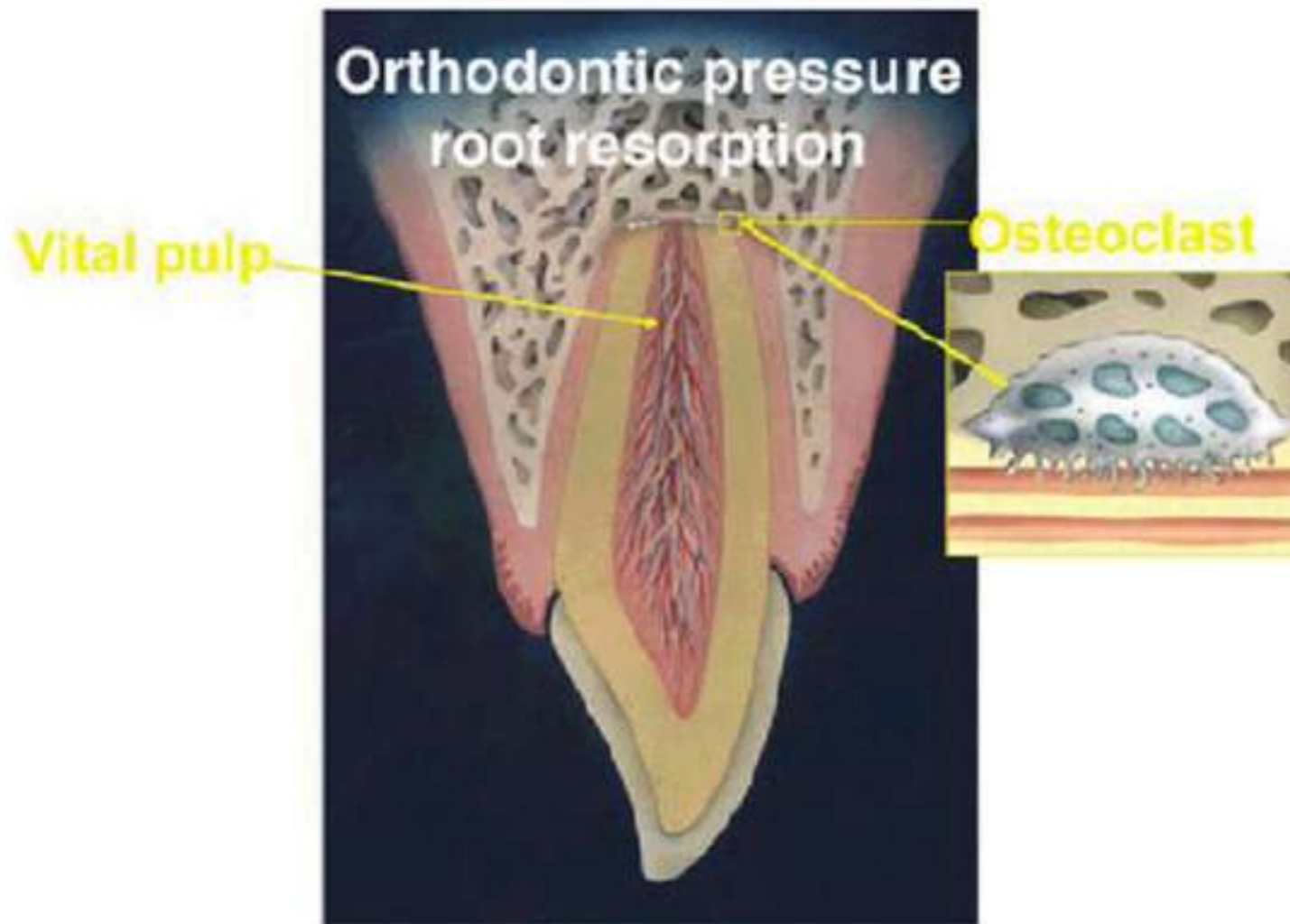
Figure 13-23. Internal resorption.

This section demonstrates the scalloped effect produced by the multinucleated odontoclasts as they surface resorb the dentinal. -P-809



IDIOPATHIC RESORPTION

Figure 13-17. Graphical illustration of pulpal infection root resorption. Root canal and dentinal tubules are necrotic and infected, and inflammatory response with osteoclastic activity is taking place in the dentin and the bone. Enlargement of osteoclast attached to dentin on the right demonstrates the stimulation factor of bacteria in the dentinal tubules. p.807



IDIOPATHIC RESORPTION

Figure13-19. Graphical illustration of orthodontic pressure root resorption. Pulp is vital and stimulation to the osteoclastic activity in the apex is related to extensive pressure during orthodontic treatment. Enlargement of an osteoclast attached to the dentin on the right demonstrates intact dentinal tubules with no bacteria p. 807

HYPERCEMENTOSIS

- ▶ Deposition of excessive amounts of sec cementum on root surfaces
- ▶ Etiology



- ▶ R/G: thickening & apparent blunting of roots
- ▶ H/P: sec or cellular cementum deposited directly over typically thin layer of primary acellular cementum.
- ▶ T/t: extraction not indicated





HYPERCEMENTOSIS
(Cementum hyperplasia)

Figure 13-25. Hypercementosis. Courtesy of Dr Charles Dunlap, 2004.-P-811



CEMENTICLES

- ▶ Small foci of calcified tissue, not necessarily true cementum, which lie free in PDL.



Summary

- Changes in teeth with ageing
- Changes in Enamel
- Changes in pulp dentin complex-Secondary dentin, Tertiary Dentine Reactionary Dentin, Reparative Dentine, Sclerotic Dentine, Dead Tracts
- Attrition



Thank You

