



Periodontology- fourth stage



First semester-Classification of Diseases and Conditions Affecting the Periodontium

Lec.6 (Part 2)

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Content

- **Classification of periodontitis.**
- **Necrotizing periodontal disease.**
- **Abscesses of the Periodontium.**
- **Periodontitis Associated With Endodontic Lesions.**
- **Developmental or Acquired Deformities and Condition.**

Periodontitis

- ❖ **Periodontitis** is defined as “an inflammatory disease of the supporting tissues of the teeth caused by specific microorganisms or groups of specific microorganisms, resulting in progressive destruction of the periodontal ligament and alveolar bone with increased probing depth formation, recession, or both.

- The disease periodontitis can be sub classified into the following three major types based on clinical, radiographic, historical, and laboratory characteristics
 - ✓ **Chronic periodontitis.**
 - ✓ **Aggressive periodontitis.**
 - ✓ **Periodontitis as a Manifestation of Systemic Diseases.**

Periodontitis

The disease periodontitis can be subclassified into the following three major types based on clinical, radiographic, historical, and laboratory characteristics.

Chronic Periodontitis

The following characteristics are common to patients with chronic periodontitis:

- Prevalent in adults but can occur in children.
- Amount of destruction consistent with local factors.
- Associated with a variable microbial pattern.
- Subgingival calculus frequently found.
- Slow-to-moderate rate of progression with possible periods of rapid progression

- Possibly modified by or associated with the following:
 - Systemic diseases such as diabetes mellitus and human immunodeficiency virus (HIV) infection.
 - Local factors predisposing to periodontitis.
 - Environmental factors such as cigarette smoking and emotional stress.

❖ Chronic periodontitis may be further subclassified into localized and generalized forms and characterized as mild, moderate, or severe based on the common features described previously and the following specific features:

- Localized form: <30% of teeth involved
- Generalized form: >30% of teeth involved

- Mild: 1 to 2 mm clinical attachment loss (CAL)
- Moderate: 3 to 4 mm CAL
- Severe: ≥ 5 mm CAL

❖ **Aggressive Periodontitis**

The following characteristics are common to patients with aggressive periodontitis:

- Otherwise clinically healthy patient (note the distinction with periodontitis as a manifestation of systemic disease)

- Rapid attachment loss and bone destruction
- Familial aggregation of diseased individuals

- **The following characteristics are common but not universal:**
 - Amount of microbial deposits inconsistent with disease severity.
 - Increased levels of *Actinobacillus actinomycetemcomitans*.
 - Abnormalities in phagocyte function.
 - Hyper-responsive macrophages, producing increased prostaglandin E2 (PGE2) and interleukin-1 β (IL-1 β).
 - In some cases, self-arresting disease progression.

- **Aggressive periodontitis may be further classified into localized and generalized forms based on the common features described here and the following specific features.**

❑ **Localized Form**

- Circumpubertal onset of disease.
- Localized first molar or incisor disease with proximal attachment loss on at least two permanent teeth, one of which is a first molar.
- Robust serum antibody response to infecting agents.

❑ Generalized Form

- Usually affecting persons under 30 years of age (however, may be older).
- Generalized proximal attachment loss affecting at least three teeth other than first molars and incisors.
- Pronounced episodic nature of periodontal destruction.
- Poor serum antibody response to infecting agents.

❖ Periodontitis as a Manifestation of Systemic Diseases

Periodontitis may be observed as a manifestation of the following systemic diseases:

1. Hematologic disorders

- a. Acquired neutropenia
- b. Leukemias
- c. Other

2. Genetic disorders

- a. Familial and cyclic neutropenia
- b. Down syndrome
- c. Leukocyte adhesion deficiency syndromes
- d. Papillon–Lefèvre syndrome
- e. Chédiak–Higashi syndrome
- f. Histiocytosis syndromes
- g. Glycogen storage disease
- h. Infantile genetic agranulocytosis
- i. Cohen syndrome
- j. Ehlers-Danlos syndrome (types IV and VIII autosomal dominant [AD])
- k. Hypophosphatasia
- l. Other

3. Not otherwise specified

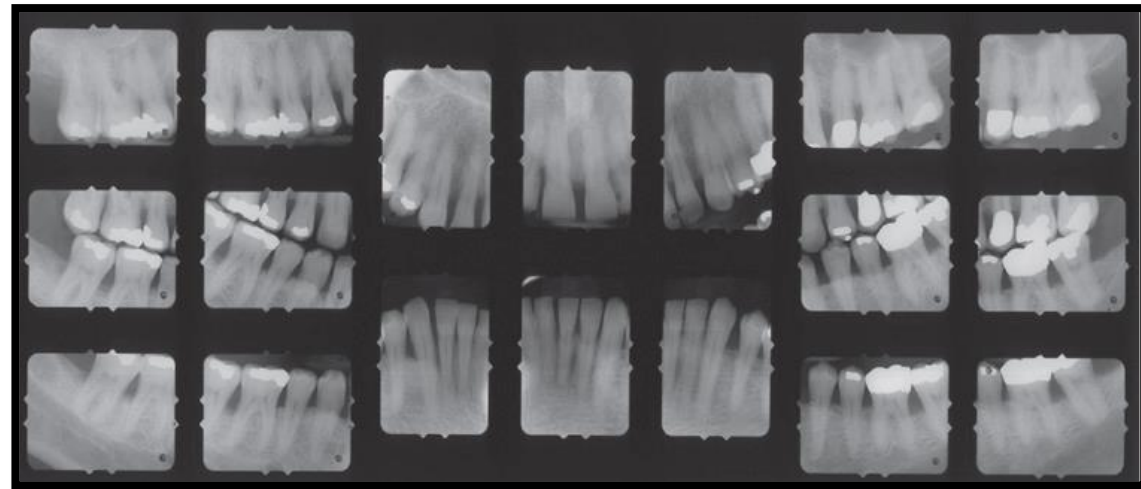
❑ Chronic periodontitis

- ❖ Chronic periodontitis is the most common form of periodontitis; it is most prevalent in adults, but it can also be observed in children. Different classification schemes have confirmed or discarded the age range of more than 35 years to separate chronic versus aggressive periodontitis.
- ❖ Chronic periodontitis associated with the accumulation of plaque and calculus. It generally has a slow to moderate rate of disease progression, but periods of more rapid destruction may also be observed. Increases in the rate of disease progression may be caused by the impact of local, systemic, or environmental factors that may influence the normal host–bacteria interaction.
- ❖ Local factors may influence plaque accumulation whereas systemic diseases (e.g., diabetes mellitus, HIV) may influence the host's defenses, and environmental factors (e.g., cigarette smoking, stress) may influence the response of the host to plaque accumulation.



□ Aggressive periodontitis

- Aggressive periodontitis characterized by the rapid rate of disease progression seen in an otherwise healthy individual. The absence of large accumulations of plaque and calculus, with a positive family history of aggressive disease, is suggestive of a genetic trait. This form of periodontitis was previously classified as early-onset periodontitis
- Aggressive forms of periodontitis usually affect young individuals during or shortly after puberty and may be observed during the second and third decades of life (i.e., 10 to 30 years of age). The disease may be localized, generalized.



- ❑ At present, ***periodontitis as a manifestation of systemic disease*** is the diagnosis to be used when the systemic condition is the major predisposing factor and when local factors (e.g., large quantities of plaque and calculus) are not clearly evident or their presence alone does not justify the severity or progression of disease.

- ❑ The removal of local factors as part of conventional periodontal therapy in such cases is often inadequate to arrest the periodontal destruction due to the systemic effect. When periodontal destruction is clearly the result of local factors but has been exacerbated by the onset of conditions such as diabetes mellitus or HIV infection, the diagnosis should be ***chronic periodontitis modified by the systemic condition***.

❖ Necrotizing Periodontal Diseases

- The clinical characteristics of necrotizing periodontal diseases may include ulcerated and necrotic papillary and marginal gingiva that is covered by a yellowish white or grayish slough or pseudomembrane, blunting and cratering of the papillae, bleeding on provocation or spontaneous bleeding, pain, and fetid breath.
- These diseases may be accompanied by fever, malaise, and lymphadenopathy, although these characteristics are not consistent.
- Two forms of necrotizing periodontal disease have been described: *necrotizing ulcerative gingivitis (NUG)* and *necrotizing ulcerative periodontitis (NUP)*
- Both NUG and NUP have been determined to constitute a separate group of diseases that have tissue necrosis as a primary clinical feature.

(A) Necrotizing Ulcerative Gingivitis (NUG)

- Necrotizing ulcerative gingivitis (NUG) is a microbial disease of the gingiva that most often occurs in an impaired host. It manifests with the characteristic clinical signs of necrosis and sloughing of the gingival tissues and may be accompanied by systemic symptoms.



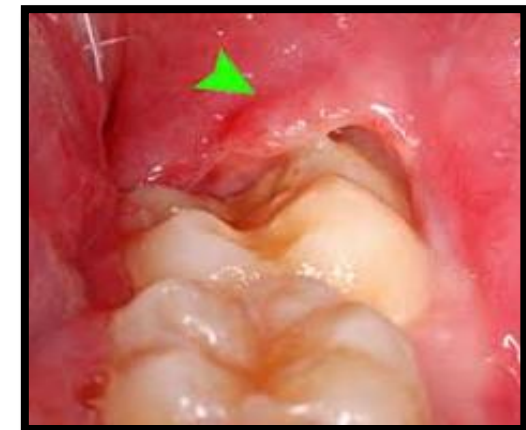
(B) Necrotizing ulcerative periodontitis (NUP)

- Necrotizing ulcerative periodontitis (NUP) are defined by necrosis and ulceration of the coronal portion of the interdental papillae. Gingival margins are bright red and bleed easily. Lesions are painful. The feature that distinguishes NUP from NUG is the destructive progression of NUP, which includes periodontal attachment and bone loss.



❖ Abscesses of the Periodontium

- periodontal abscess is a localized purulent infection of periodontal tissues, and it is classified by its tissue of origin as gingival, periodontal, or pericoronal abscesses.
- **Gingival abscess:** A localized purulent infection that involves the marginal gingiva or interdental papilla.
- **Periodontal abscess:** A localized purulent infection within the tissue adjacent to the periodontal pocket that may lead to the Destruction of periodontal ligament and alveolar bone.
- **Pericoronal abscess:** A localized purulent infection within the tissue surrounding the crown of a partially erupted tooth.



❖ **Abscesses of the periodontium may be associated with various combinations of the following clinical features :**

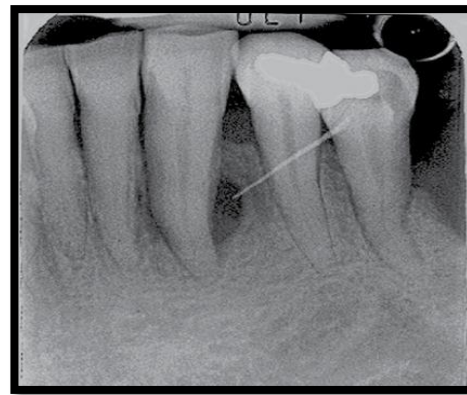
1. Pain, swelling,
2. Color change,
3. Tooth mobility,
4. Extrusion of teeth, purulence,
5. Sinus tract formation, fever,
6. Lymphadenopathy,
7. Radiolucency of the affected alveolar bone.

❖ **Gingival abscess** : is usually an acute. inflammatory response to foreign substances forced into the gingiva. It starts as red painful swelling with Smooth shiny Surface. Within 24 - 48 hours, the lesion become fluctuant and pointed with a surface orifice from which a purulent exudate may be expressed.

- ❖ **Periodontal abscess** : is usually associated with more advanced destruction of periodontal structures and it is located along the lateral Surface of the root. The lesion may be acute or chronic.
- **Acute abscess** may progress to chronic if the purulent contents drain through a fistula into outer gingival surface, the acute periodontal abscess _ characterized by slight discomfort to Severe pain and swelling.
- **Chronic periodontal abscess** is usually asymptomatic or with dull pain with a history of intermittent exudate.
- A common cause for periodontal abscess formation is the incomplete removal of the calculus from periodontal pocket, shrinkage of the gingival wall will occur causing occluding of the pocket orifice and formation of the abscess.

- ❖ The periodontal abscess need to be differentiated from the periapical abscess in the followings:

	Periodontal abscess	Periapical abscess
1	The tooth is vital	Tooth is not vital
2	The lesion lateral to the tooth surface	The lesion is most likely periapical
3	X-ray finding show area of radiolucency along the lateral surface of the root	X-ray finding show apical radiolucency
4	The tooth is tender to lateral percussion	The tooth is tender to vertical percussion



❖ Periodontitis Associated With Endodontic Lesions

The classification of lesions that affect the periodontium and the pulp is based on the sequence of the disease process.

A. Endodontic–Periodontal Lesions

- Pulpal necrosis precedes periodontal changes in endodontic–periodontal lesions. A periapical lesion that originates with pulpal infection and necrosis may drain to the oral cavity through the periodontal ligament, resulting in the destruction of the periodontal ligament and the adjacent alveolar bone.
- This may present clinically as a localized, deep, periodontal probing depth that extends to the apex of the tooth.



- Pulpal infection may also drain through accessory canals, especially in the area of the furcation, which may lead to furcal involvement through the loss of clinical attachment and alveolar bone.

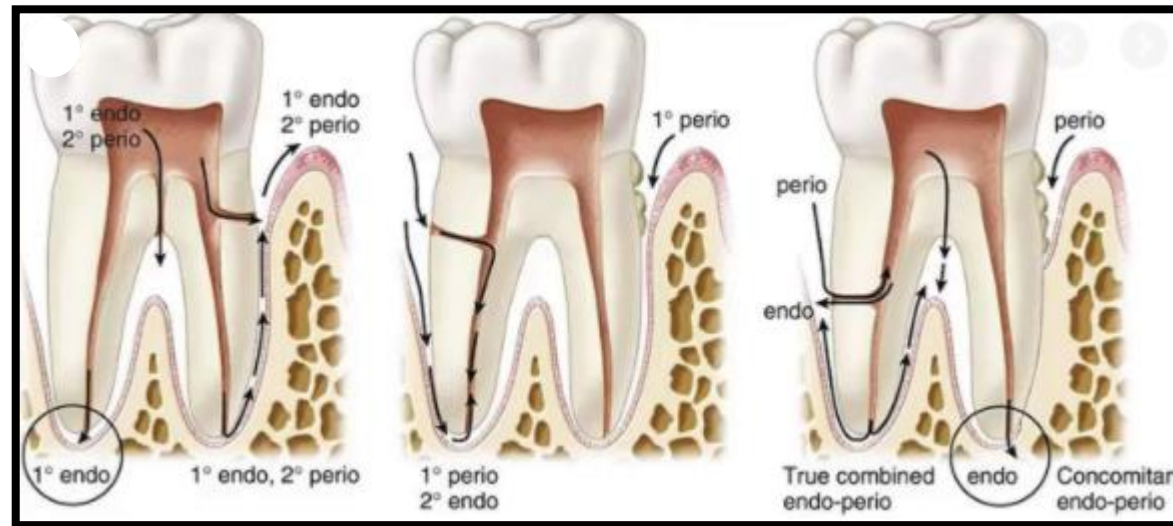


(B) Periodontal–Endodontic Lesions

- It is more uncommon for periodontal disease to lead to endodontic disease than vice versa.
- In a periodontal–endodontic lesion, the bacterial infection from a periodontal pocket leads to loss of attachment, and root exposure then spreads to the pulp, resulting in pulpal necrosis.
- In the case of advanced periodontal disease, the infection may reach the pulp through the apical foramen. Nonetheless, existing studies have shown that although scaling and root planning remove cementum and underlying dentin, they may lead to dentine hypersensitivity but not to irreversible pulpitis.

(C) Combined Lesions

- Combined lesions occur when pulpal necrosis and a periapical lesion occur on a tooth that is also periodontally involved. An intrabony defect that communicates with a periapical lesion of pulpal origin results in a combined periodontal–endodontic lesion.
- In all cases of periodontitis associated with endodontic lesions, the endodontic infection should be controlled before the definitive management of the periodontal lesion begins, especially when regenerative or bone-grafting techniques are planned. Tooth prognosis in combined lesions highly depends on the outcome of the periodontal treatment.



BOX 5.4 Developmental or Acquired Deformities and Conditions

Localized Tooth-Related Factors That Modify or Predispose to Plaque-Induced Gingival Diseases or Periodontitis

1. Tooth anatomic factors
2. Dental restorations or appliances
3. Root fractures
4. Cervical root resorption and cemental tears

Mucogingival Deformities and Conditions Around Teeth

1. Gingival or soft tissue recession
 - a. Facial or lingual surfaces
 - b. Interproximal (papillary)
2. Lack of keratinized gingiva
3. Decreased vestibular depth
4. Aberrant frenum or muscle position
5. Gingival excess
 - a. Pseudopocket
 - b. Inconsistent gingival margin
 - c. Excessive gingival display
 - d. Gingival enlargement (see Box 5.2)
 - e. Abnormal color

Mucogingival Deformities and Conditions on Edentulous Edges

1. Vertical and/or horizontal ridge deficiency
2. Lack of gingiva or keratinized tissue
3. Gingival or soft tissue enlargements
4. Aberrant frenum or muscle position
5. Decreased vestibular depth
6. Abnormal color

Occlusal Trauma

1. Primary occlusal trauma
2. Secondary occlusal trauma

❖ Developmental or Acquired Deformities and Conditions

□ Localized Tooth-Related Factors that Modify or Predispose Individuals to Plaque-Induced Gingival Diseases or Periodontitis

In general, localized tooth-related factors contribute to the initiation and progression of periodontal disease through the enhancement of plaque accumulation or the prevention of effective plaque removal via normal oral hygiene measures.

1. *Tooth Anatomic Factors*

- ✓ Tooth anatomic factors are associated with malformations of tooth development or tooth location.
- Anatomic factors (e.g., cervical enamel projections, palatal grooves, enamel pearls) have been associated with clinical attachment loss, especially in furcation areas.



cervical enamel projections



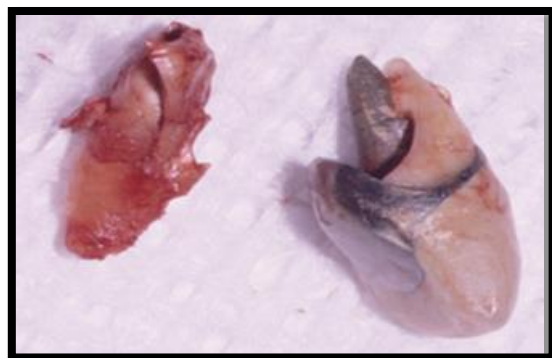
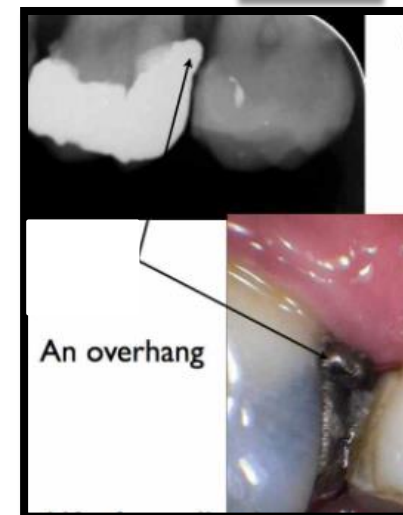
palatal grooves

2- Dental Restorations and Appliances

- Dental restorations or appliances are frequently associated with the development of gingival inflammation. Restorations placed deep in the sulcus or within the junctional epithelium may impinge on the biologic width resulting in inflammation and the loss of clinical attachment and bone.

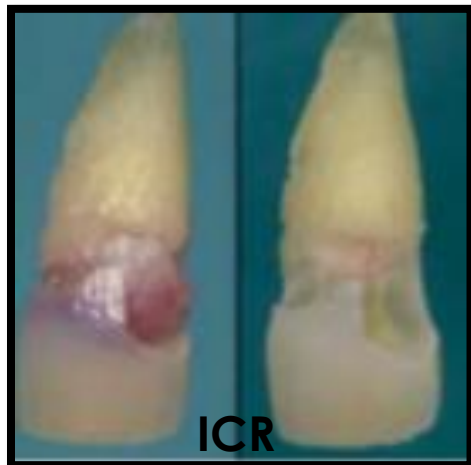
3- Root Fracture

- Root fractures may be associated with endodontic or restorative procedures as well as traumatic forces and may lead to periodontal involvement through the apical migration of plaque along the fracture line.



(4) Cervical Root Resorption and Cemental Tears

- Invasive cervical root resorption (ICR) and cemental tears may lead to periodontal destruction when the lesion communicates with the oral cavity and allows bacteria to migrate subgingivally.



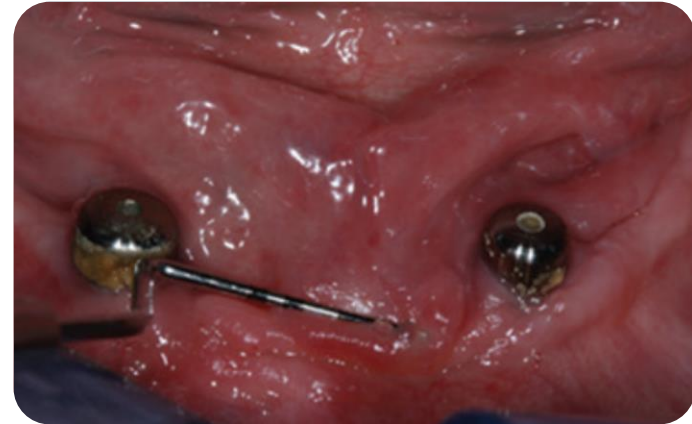
□ Mucogingival Deformities and Conditions Around the Teeth

- Mucogingival deformity is a generic term used to describe the mucogingival junction and its relationship to the gingiva, the alveolar mucosa, and frenula muscle attachments.



□ Mucogingival Deformities and Conditions of the Edentulous Ridges

- Mucogingival deformities, such as a lack of stable keratinized gingiva between the vestibular fornices and the floor of the mouth, may require soft-tissue grafting and vestibular deepening before prosthodontic reconstruction.
- Alveolar bone defects in edentulous ridges usually require corrective surgery to restore form and function before the placement of implants and prostheses to replace missing teeth.



□ Occlusal Trauma

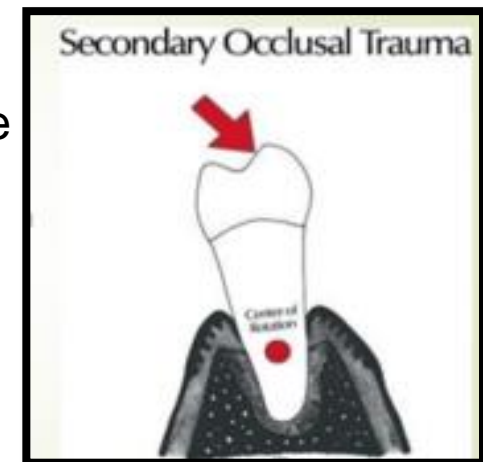
▪ Primary Occlusal Trauma

- ✓ The *primary* form includes tissue reactions (damage) elicited around a tooth with normal periodontium height.



▪ Secondary Occlusal Trauma

- ✓ The *secondary* form is related to situations in which occlusal forces cause injury to a periodontium of reduced height



Thank
you

