



Periodontology- fourth stage



First semester-Gingivitis Lec-7

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- Treatment of gingivitis

Gingival Diseases

- ❖ Gingivitis is inflammation of the of the gingival tissue.
- ❖ Gingivitis is characterized by areas of redness and swelling, and there is a tendency for the gingiva to bleed easily.
- ❖ Gingivitis is limited to the epithelium and gingival Connective tissues.
- ❖ It is important to note that there is no tissue recession or loss of connective tissue or bone.

Classification of Gingivitis

According to course and Duration

- ❖ *Acute Gingivitis* can develop with sudden onset and have a short duration, and it can be painful.
- ❖ *Chronic gingivitis* develops slowly and has a long duration. It is painless, unless it is complicated by acute or subacute exacerbations.
- ❖ *Recurrent gingivitis* reappears after having been eliminated by treatment or after disappearing spontaneously.

According to the distribution

- *Localized gingivitis* is confined to the gingiva of a single tooth or group of teeth.
- *Generalized gingivitis* involves the entire mouth.
- *Marginal gingivitis* involves the gingival margin, and it can include a portion of the contiguous attached gingiva.
- *Papillary gingivitis* involves the interdental papillae, and it often extends into the adjacent portion of the gingival margin.
- *Diffuse gingivitis* affects the gingival margin, the attached gingiva, and the interdental papillae.



Generalized diffuse gingivitis



Localized diffuse gingivitis



Generalized papillary gingivitis.



Generalized marginal gingivitis in the lower jaw with areas of diffuse gingivitis.

ETIOLOGY

A. Local etiological factor

1. Local irritating factors-

- (a) Initiating factor – bacterial (dental) plaque
- (b) predisposing factors
 - (1) Materia alba
 - (2) Food debris and retention
 - (3) Dental stains
 - (4) Calculus
 - (5) Caries
 - (6) Food impactions

- (7) Smoking and tobacco
- (8) Deficient dental treatment
- (9) Improper oral hygiene
- (10) Soft, sticky food (food consistency)

2. Local functional factors -

- (a) Missing tooth
- (b) Malocclusion
- (c) tongue thrusting, mouth breathing
- (d) parafunctional habits
- (e) trauma from occlusion



B. Systemic etiological factor

1. Endocrine (hormonal) factors

- (a) Puberty
- (b) Pregnancy
- (c) Menopause

2. Nutritional disorders and deficiencies

- (a) Vitamin deficiency
- (b) Protein deficiency
- (c) Malnutrition

3. Drugs

- (a) Phenytoin
- (b) Contraceptive medication

4. Psychological (emotional factors)

- (a) Stress
- (b) Tensions
- (c) Fatigue
- (d) Anxiety

5. Heredity

6. Metabolic disease

- (a) Diabetes mellitus

7. Hematological disturbances and disease

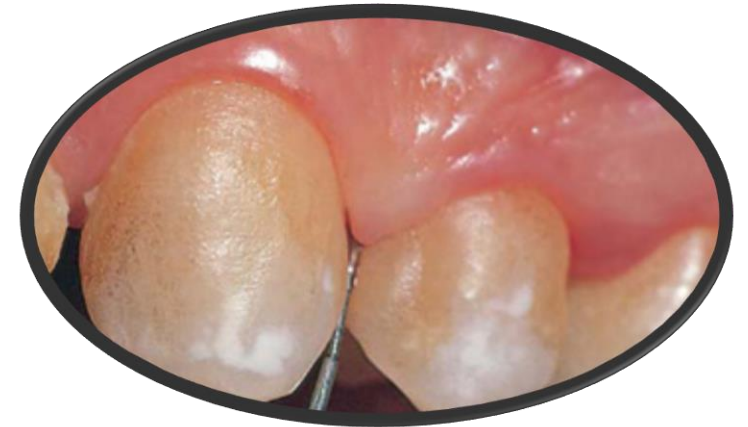
- (a) Leukemia
- (b) Anaemia
- (c) Hemophilia
- (d) Infectious mononucleosis

Clinical Features of Gingivitis

1. Gingival Bleeding on Probing
2. Color Changes With Gingivitis
3. Changes in Gingival Consistency
4. Changes in Gingival Surface Texture
5. Change in the gingival contour

Gingival Bleeding on Probing

- The two earliest signs of gingival inflammation that precede established gingivitis are increased gingival crevicular fluid production and bleeding from the gingival sulcus on gentle probing.
- ✓ ***Gingival Bleeding associated with medication***
 - Drugs such as antiplatelet medications (e.g., aspirin) or anticoagulants (e.g., warfarin) that are prescribed for specific medical indications also increase the bleeding tendencies of gingival tissues.
 - women taking oral contraceptives are significantly more prone to gingivitis and therefore to gingival bleeding.



✓ ***Gingival Bleeding Associated With Systemic Changes***

- With some systemic disorders, gingival hemorrhage occurs spontaneously or after irritation (usually generalized), and it is excessive and difficult to control.
- Hemorrhagic disorders in which abnormal gingival bleeding is encountered include:
 - Vascular abnormalities (e.g., vitamin C deficiency)
 - Platelet disorders (e.g., thrombocytopenic purpura), hypoprothrombinemia (e.g., vitamin K deficiency),
 - Other coagulation defects (e.g., hemophilia, leukemia)

Color Changes With Gingivitis

- The normal gingival color is **coral pink**, and it is produced by the tissue's vascularity and modified by the overlying epithelial layers.

- ❖ The color of the gingiva is determined by several factors, including:
 1. The number and size of blood vessels,
 2. The epithelial thickness,
 3. The quantity of keratinization,
 4. The pigments in the epithelium.

- The gingiva becomes red when **vascularization increases** or the **degree of epithelial keratinization is reduced** or disappears.
 - The color becomes pale when **vascularization is reduced** (in association with fibrosis of the corium) or **epithelial keratinization increases**.
 - Chronic inflammation intensifies the red or bluish red color as a result of vascular proliferation and a reduction of keratinization.
- ❑ The color changes can be marginal, diffuse, or patch like, depending on the underlying acute condition**
- ✓ With acute necrotizing ulcerative gingivitis, the involvement is marginal;
 - ✓ with herpetic gingivostomatitis, it is diffuse;
 - ✓ with acute reactions to chemical irritation, it is patch like or diffuse.

❖ **Metallic Pigmentation**

- Heavy metals (i.e., bismuth, arsenic, mercury, lead, and silver) that are absorbed systemically as a result of therapeutic use or occupational exposures can discolor the gingiva and other areas of the oral mucosa.
- Metals typically produce a black or bluish line in the gingiva that follows the contour of the margin.



Bismuth gingivitis. Note the linear black discoloration of the gingiva in a patient who is receiving bismuth therapy.



Discoloration of the gingiva is caused by embedded metal particles (i.e., amalgam).

Color Changes Associated With Systemic Factors

- Many systemic diseases can cause color changes in the oral mucosa, including the gingiva.
- ✓ Diseases that increase melanin pigmentation include the following:
 - Addison disease is caused by adrenal dysfunction, and it produces isolated patches of discoloration that vary from bluish black to brown.
 - Albright syndrome (i.e., polyostotic fibrous dysplasia) produce areas of oral melanin pigmentation.



Changes in Gingival Consistency

- Chronic and acute inflammations produce changes in the normal firm and resilient consistency of the gingiva.
- In patients with chronic inflammation, the gingival surface is smooth and shiny or firm and nodular, depending on whether the dominant changes are **exudative** or **fibrotic**.



The gingiva is soft and friable and bleeds easily.



Firm gingiva is produced when fibrosis predominates in the inflammatory process.

Changes in Gingival Surface Texture

- The surface of normal gingiva usually exhibits numerous small depressions and elevations that give the tissue an orange-peel appearance referred to as *stippling*.
- Stippling is restricted to the attached gingiva and is predominantly localized to the subpapillary area, but it extends to various degrees into the interdental papilla.
- some investigators conclude that the loss of stippling is an early sign of gingivitis.



Changes in Gingival Contour

- ✓ The marginal gingiva envelop the teeth in collar like fashion and follow the scalloped outline on the facial and lingual surfaces.
- ✓ Changes in gingival contour are primarily associated with gingival enlargement, Marginal gingiva appears rounded with blunted interdental papilla



Hallmarks of Gingivitis

Feature	Healthy Gingiva	Gingivitis
Color	Coral pink	Red
Contour	Knife-edged and scalloped	Rolled with bulbous papillae
Consistency and texture	Firm and resilient with stippling of the attached gingiva	Edematous and with loss of stippling

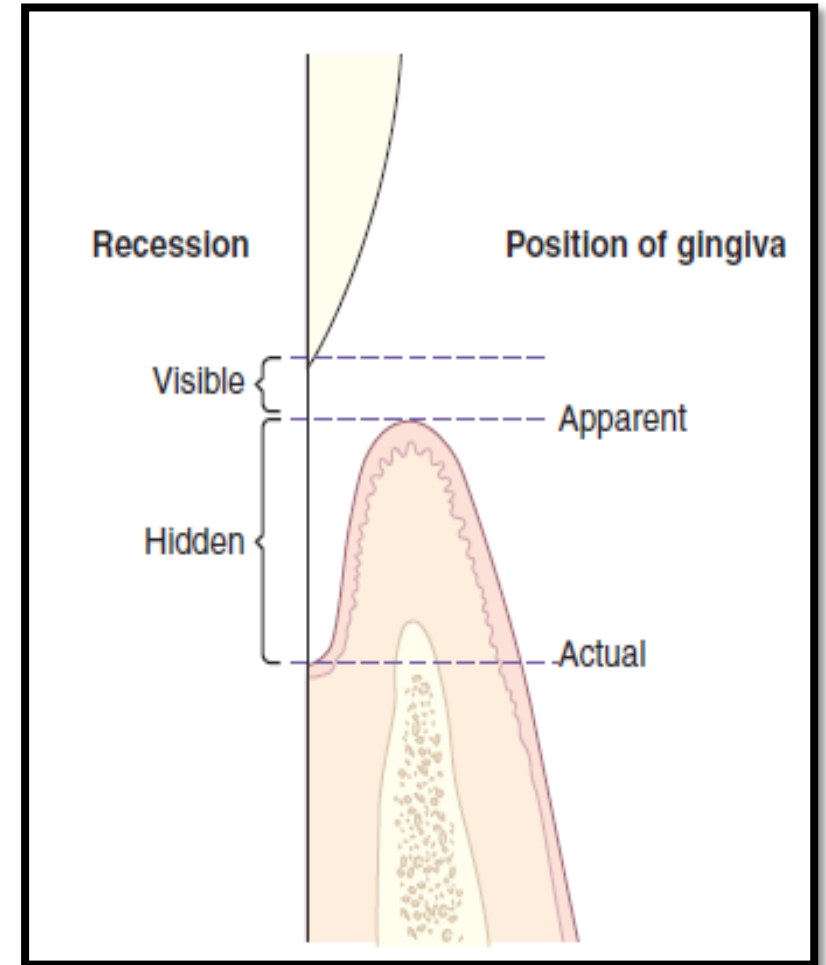
Gingival Recession

- Gingival recession is a common finding. The prevalence, extent, and severity of gingival recession increase with age, and this condition is more prevalent among males.
- **Positions of the Gingiva**
 - ✓ By clinical definition, recession is exposure of the root surface by an apical shift in the position of the gingiva.
 - ✓ To understand recession, it helps to distinguish between the **actual** and **apparent positions of the gingiva**.
 - The actual position is the level of the coronal end of the epithelial attachment on the tooth,
 - The apparent position is the level of the crest of the gingival margin .

The severity of recession is usually determined by the apparent position of the gingiva. However, the **actual gingival position is used to determine the clinical attachment loss.** For example, in periodontal disease, the inflamed pocket wall covers part of the denuded root; some of the recession is hidden, and some maybe visible. The total amount of clinical attachment loss is the sum of the two.

- The following etiologic factors have been implicated in gingival recession
 - ✓ Faulty tooth brushing technique (i.e., gingival abrasion)
 - ✓ Tooth malposition,
 - ✓ Friction from the soft tissues (i.e., gingival ablation)

▪ Faulty technique or brushing with hard bristles can cause significant injury. This type of injury can manifest as lacerations, abrasions, keratosis, or recession, with the facial marginal gingiva being affected most often. In these cases, recession tends to be more frequent and more severe in patients with clinically healthy gingiva, little bacterial plaque, and good oral hygiene.



Histopathological changes associated with gingivitis

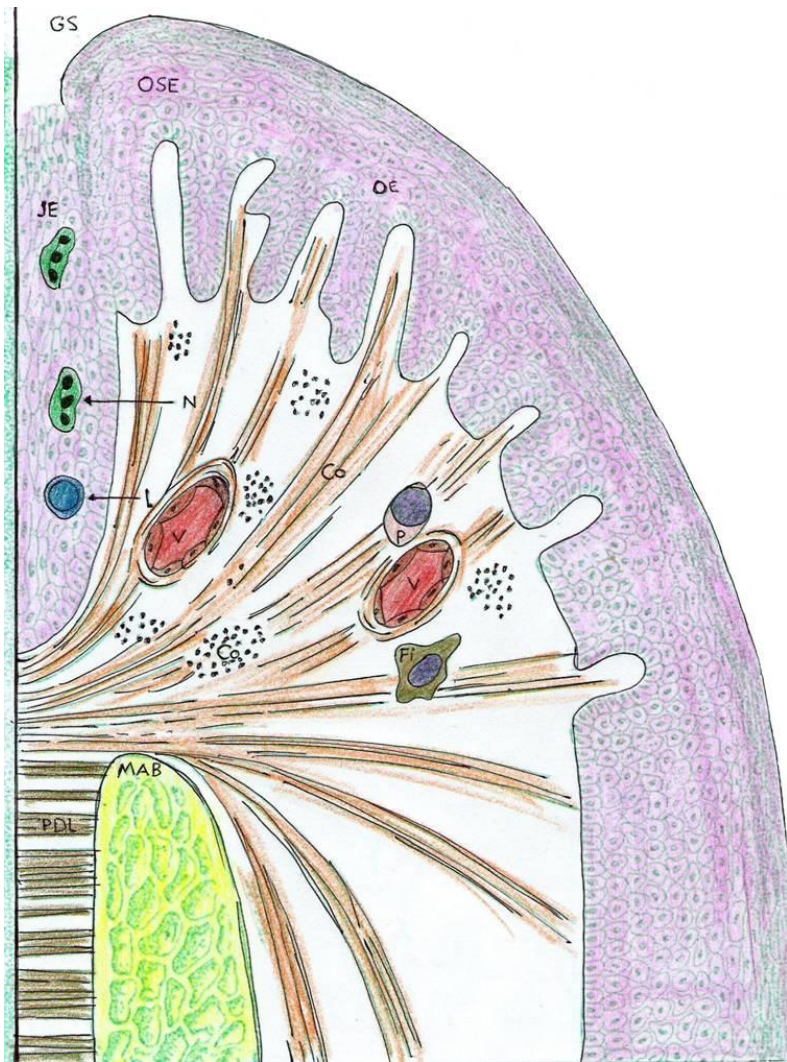
□ Stage I Gingival Inflammation: The Initial Lesion

(Corresponds With Clinically Healthy Gingival Tissues)

- The initial lesion was reported to develop within 2 to 4 days of the accumulation of plaque.

□ Key Features of the Histological changes

1. Slightly elevated vascular permeability and vasodilation.
2. Gingival crevicular fluid flows out of the sulcus.
3. Migration of leukocytes, primarily neutrophils, in relatively small numbers through the gingival connective tissue, across the junctional epithelium, and into the sulcus.



Normal Gingival

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Stage – 1 Initial lesion

□ Stage II Gingival Inflammation: The Early Lesion

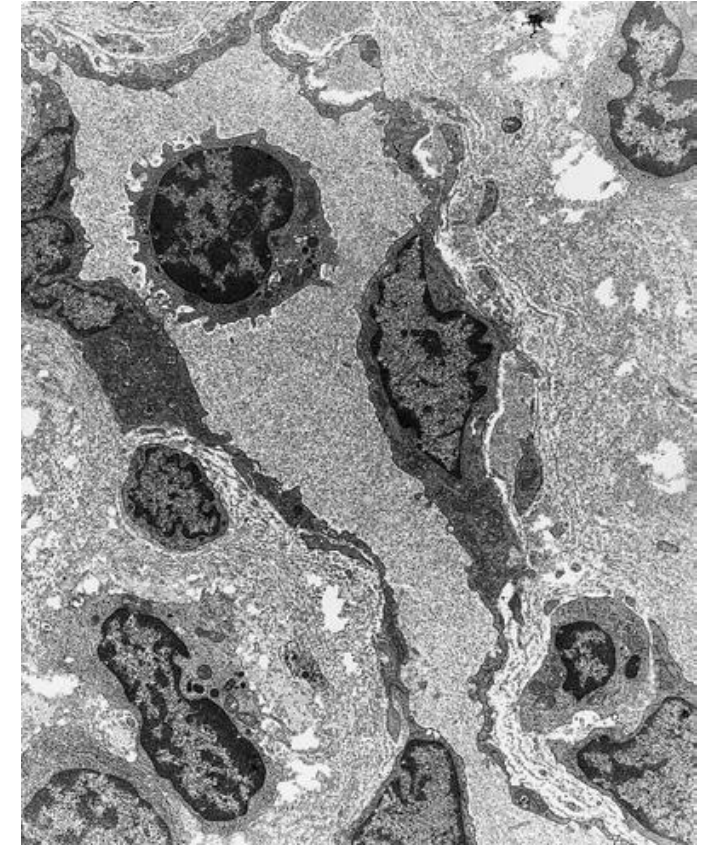
(Corresponds With Early Gingivitis. That Is Evident Clinically)

- ✓ The early lesion evolves from the initial lesion within about 1 week after the beginning of plaque accumulation.

□ Key Features of the Histological changes

- Increased vascular permeability, vasodilation, and gingival crevicular fluid flow.
- Large numbers of infiltrating leukocytes (mainly neutrophils and lymphocytes).

3. Degeneration of fibroblasts.
4. Collagen destruction that results in collagen-depleted areas of the connective tissue.
5. Proliferation of the junctional and sulcular epithelium into collagen-depleted areas.



Stage – 2 Early lesion

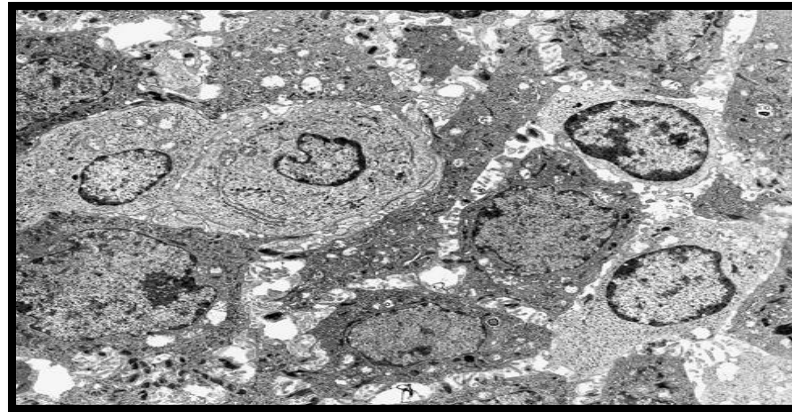
□ Stage III Gingival Inflammation: The Established Lesion

(Corresponds With Established Chronic Gingivitis)

- The established lesion roughly corresponds to what clinicians would refer to as “**chronic gingivitis**”, which occurs 2 to 3 weeks after the beginning of plaque accumulation.
- The progression from the early lesion to the established lesion depends on many factors, including the plaque challenge (the composition and quantity of the biofilm), host susceptibility factors, and risk factors (both local and systemic)

Key Features of the Histological changes

1. Dense inflammatory cell infiltrate (i.e., plasma cells, lymphocytes, and neutrophils).
2. Accumulation of inflammatory cells in the connective tissues.
3. Elevated release of matrix metalloproteinases and lysosomal contents from neutrophils.
4. Significant collagen depletion and proliferation of epithelium.
5. Formation of pocket epithelium that contains large numbers of neutrophils.



Stage – 3 Established lesion

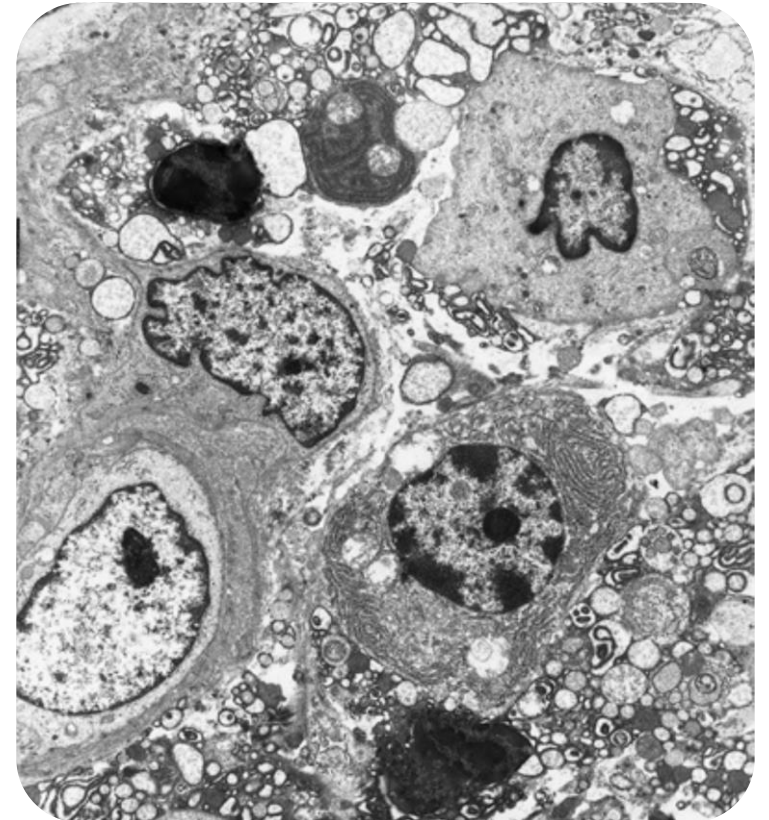
□ Stage IV Gingival Inflammation: The Advanced Lesion

(Marks the Transition From Gingivitis to Periodontitis)

- The extension of the lesion into alveolar bone characterizes the fourth stage, which is known as the advanced lesion or phase of periodontal breakdown.
- This transition is determined by many factors, the relative importance of which is currently unknown but which includes the **bacterial challenge** (both the composition and the quantity of the biofilm), **the host inflammatory response** and **susceptibility factors**, including environmental and genetic risk factors.
- The advanced lesion has essentially the same cellular make-up and features as the established lesion. The main difference lies in the overt loss of attachment that is evident clinically and histologically.

□ Key Features of the Histological changes

1. Predominance of neutrophils in the pocket epithelium.
2. Dense inflammatory cell infiltrate in the connective tissues (primarily plasma cells).
3. Apical migration of junctional epithelium to preserve an intact epithelial barrier.
4. Continued collagen breakdown that results in large areas of collagen-depleted connective tissue.
5. Osteoclastic resorption of alveolar bone.



Stage4-Advanced gingivitis

TREATMENT OF GINGIVITIS

- ❖ The treatment of chronic gingivitis is aimed at eliminating the local etiological factors to control the agents that initiate the inflammatory process.
- ❖ Treatment of gingivitis is concerned with creating a dento-gingival environment that allow healing to take place.

➤ **Typical treatment for a patient with moderate gingivitis is as follows –**

❑ Diagnosis and assessment of etiological factor.

❑ Implementation of the following treatment plan and repetition of plan until gingival health is attained.

(a) Patient education and instruction in plaque control.

(b) Supragingival and subgingival scaling the teeth.

(c) Removal and provisional replacement of dental restoration and any prosthetic appliance contributing to the gingival diseases.

(d) Treatment of carious lesions contributing to plaque accumulation

(e) Evaluation of patient diet with appropriate recommendation for modification or supplementation.

(f) Reevaluation of gingival health

❖ Establishment of recall interval (3-6 months) based on patient cooperation and rate of plaque accumulation.

Bibliography

- *Newman and Carranza's Clinical Periodontology, THIRTEENTH EDITION*

Thank
you