

# GINGIVAL AND PERIODONTAL DISEASE PART-I

HEALTHY GUM

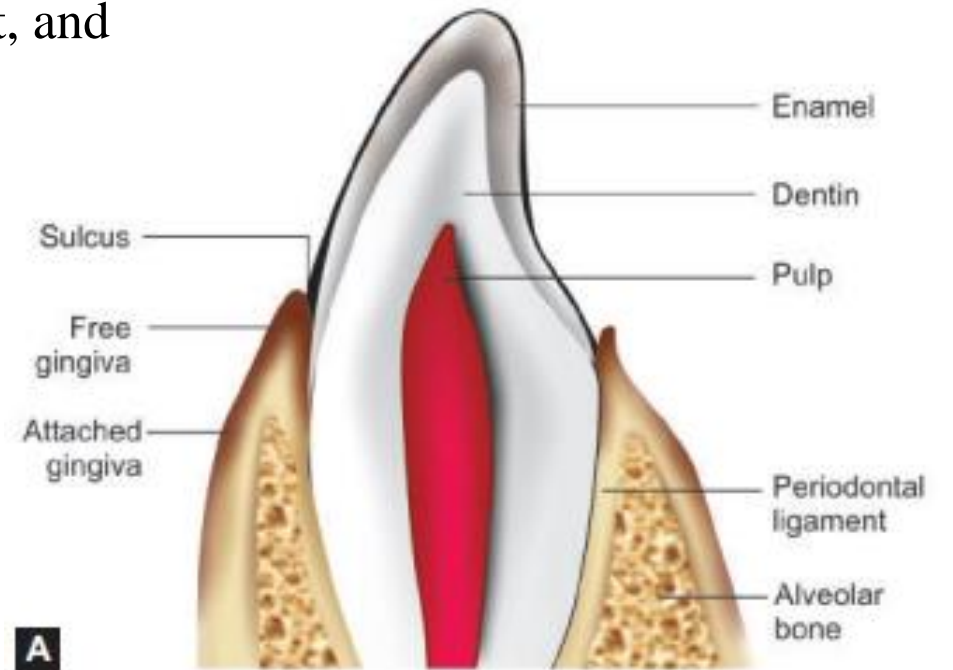
GINGIVITIS

PERIODONTITIS

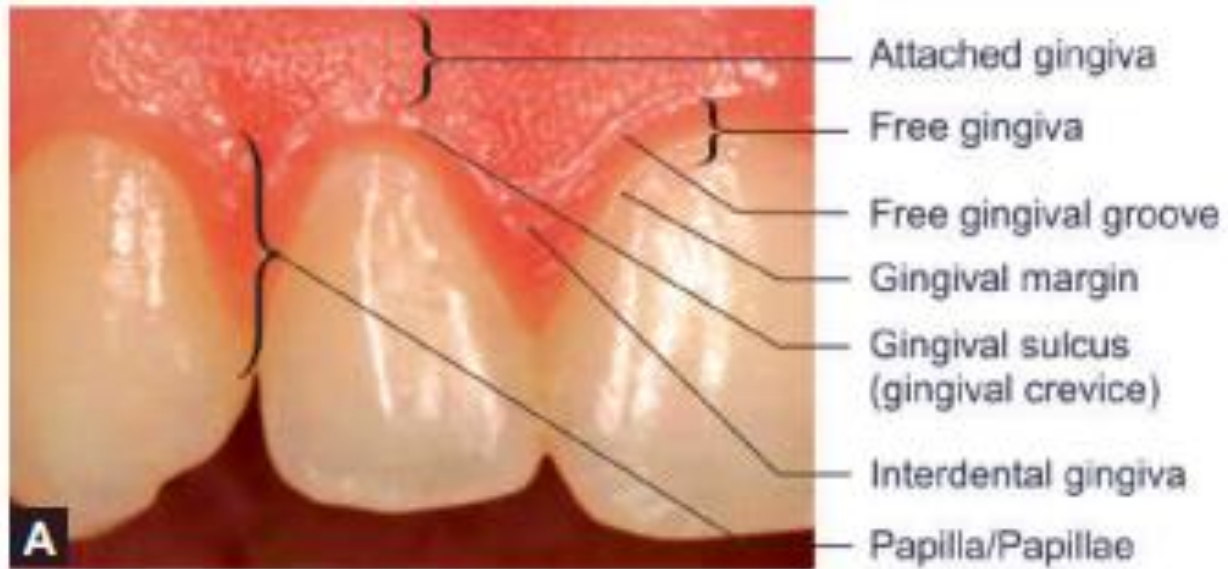


# INTRODUCTION

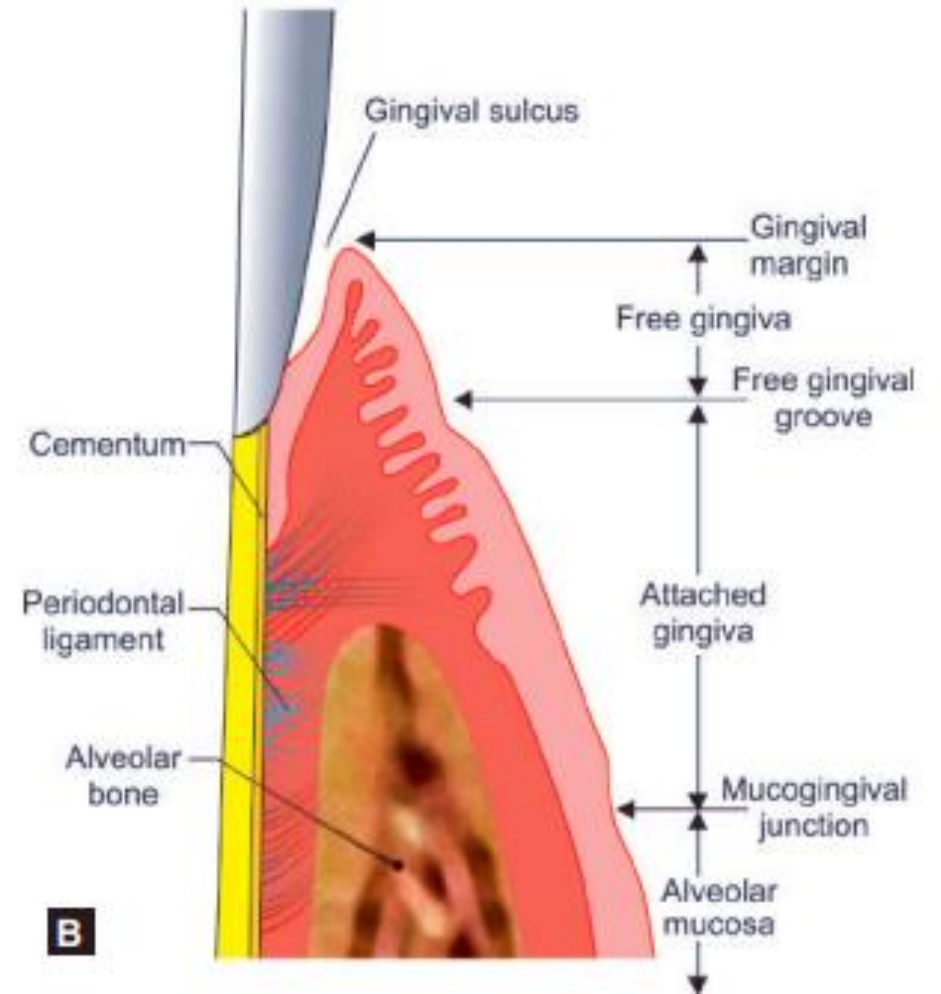
- The periodontium is the foundation for the dentition.
- The components of periodontium—the alveolar mucosa gingiva, cementum, periodontal ligament, and alveolar bone.



# GINGIVA



The texture of the gingiva varies with age and is typically smooth in infancy, stippled from 3 years



# Differentiating features of children and adults gingiva

<i>Characteristic</i>	<i>Children</i>	<i>Adult</i>
Color	Pale pink	Coral pink
Surface	Smooth	Stippled
Gingiva	Thick and round	Knife edged
Free gingiva	Keratinized saddle area	Non-keratinized interdental col
Interdental gingiva	Interdental clefts	Not present
Attached gingival	Retrocuspid papilla	Retrocuspid papilla not present
Sulcus depth	2.1–2.3 mm	2–3 mm
Alveolar mucosa	Red, thin, vascular	Pink
Periodontal ligament	Wide	Narrow
Collagen bundles	More hydrated, less differentiated	More differentiated
Polypeptide chains	Normal cross-linking	Tight cross-linked
Ground substance	Low ratio of collagen to ground substance	Ground substance to collagen ratio normal
Fibers	Gingival fibers are immature	Mature and organized
Trabeculae	Thick trabeculae with large marrow spaces	More trabeculae with less marrow spaces





# GINGIVITIS

- Gingivitis or inflammation of the gingiva-most common oral disease in children and adolescents.
- Characterized by the presence of gingival inflammation without detectable bone loss or clinical attachment loss.
- Local predisposing factor - poor oral hygiene.



# STAGES OF GINGIVITIS

Page and Shroeder (1976)

<i>Stages</i>	<i>Days</i>	<i>Vascular changes</i>	<i>Predominant immune cells</i>	<i>Clinical findings</i>	
Stage I	2-4	↑ Permeability of vascular bed	PMNs	↑ Gingival fluid flow	
Stage II	4-7	Vascular proliferation	Lymphocytes	Erythema, bleeding on probing	
Stage III	14-21	Stage II + Blood stasis	Plasma cells and B lymphocyte	Change in color, size, texture, etc.	
Stage IV	> month	Degeneration	Plasma cell	Loss of connective tissue attachment and alveolar bone	

# TYPES OF GINGIVITIS IN CHILDREN

## PLAQUE-INDUCED GINGIVITIS

- Most common - primary etiology - plaque.
- Poor oral hygiene + food debris + plaque + microorganisms = inflammation (gingivitis).
- If not taken care - gradual destruction of supporting soft and hard tissues of the teeth



## GINGIVITIS DUE TO HABIT

- Common in the maxillary anterior region -mouth breathing habit.
- Common among young children
- Predisposes to dryness of the gingival when the lubricating effect of saliva is absent





# ERUPTION GINGIVITIS

- Occurring around an erupting permanent tooth
- In eruptive phase - the epithelium displays degenerative changes at the site of fusion between dental and oral epithelia.
- Vulnerable to plaque accumulation - sets up a bacterial reaction - inflammation.



# HERPETIC GINGIVOSTOMATITIS

- It affects both the gingiva and other parts of the oral mucous membrane.
- Commonly seen in children < 3yrs
- Caused by the herpes simplex virus type 1.
- Infection followed by fevers such as malaria, measles and chickenpox.
- Symptoms - irritability, malaise, vomiting and fever and the appearance of small vesicles - rupture to reveal small yellowish painful ulcers with erythematous margins.
- Associated with drooling of saliva, inability to chew and swallow and the child may become increasingly uncooperative during tooth brushing.
- Self-limiting and the management is to encourage bed rest, plenty of fluid and maintenance of good oral hygiene through gentle debridement.
- Analgesics / topical anesthetic gel



# ACUTE NECROTIZING ULCERATIVE GINGIVITIS

- ANUG used to be known as “trench mouth” - soldiers occupying trenches during the World War I also called “Vincent’s angina”.
- An acute multiple bacterial infection of the gingivae.

Starts at the interdental papillae



spreading along the gingival margins



Destroy the underlying connective tissue and bone.



Destruction of the soft tissues of the mouth and cheek and facial bones result, a condition referred to as Cancrum Oris or Noma.



- Characteristic necrotic odor, painful with sloughing off of the necrotic ulcers on the gingivae.
- The ulcers become erythematous and bleed following minimal trauma, especially tooth brushing
- Regional lymph nodes are enlarged and tender.
- It occurs with low frequency (2–5%)
- **Predisposing factors include poor oral hygiene, malnutrition, depressed immunity and long-term hospitalization.**
- The bacteria - *Fusobacteria fusiformis* and *Borrelia vincentii*.

## **TREATMENT**

Regular gentle debridement of the gingiva and irrigation with an oxidizing antiseptic such as hydrogen peroxide, until the infection clears.

# **MALNUTRITION-INDUCED GINGIVITIS**

- Adolescence is a time of rapid growth, independent food choices.
- Caries activity - cariogenic substances and inattentiveness to oral hygiene procedures.
- Different foods- dietary proteins and carbohydrates can affect the buffering capacity of saliva and protein deficiency influences markedly the composition of whole saliva in man.

## **SCORBUTIC GINGIVITIS**

Associated with vitamin C deficiency

Involvement is limited to marginal tissue and papillae

Associated with severe pain, spontaneous hemorrhage

Management includes replacement of ascorbic acid and oral hygiene maintenance



## **PUBERTAL GINGIVITIS**

Seen in young teenagers and has been ascribed to the “rush” of sex hormones which also affects the reaction of tissues to corticosteroids.

The condition ranges from localized inflammation of one or two papillary gingivae, also called ‘gingival epulis’, to generalized marginal gingivitis.



## DRUG-INDUCED GINGIVITIS

- Drug-induced gingival enlargement (DIGE) and gingivitis are side effects and unwanted outcomes of antiepileptic therapy with phenytoin, or immunosuppressive therapy with systemic cyclosporine.
- Gingival enlargement is the most significant oral finding and can occur in up to 50 percent of patients
- Where the oral hygiene is good and food debris and plaque are not allowed to accumulate, this side effect of anticonvulsive therapy is not so significant.
- Alternation of drug



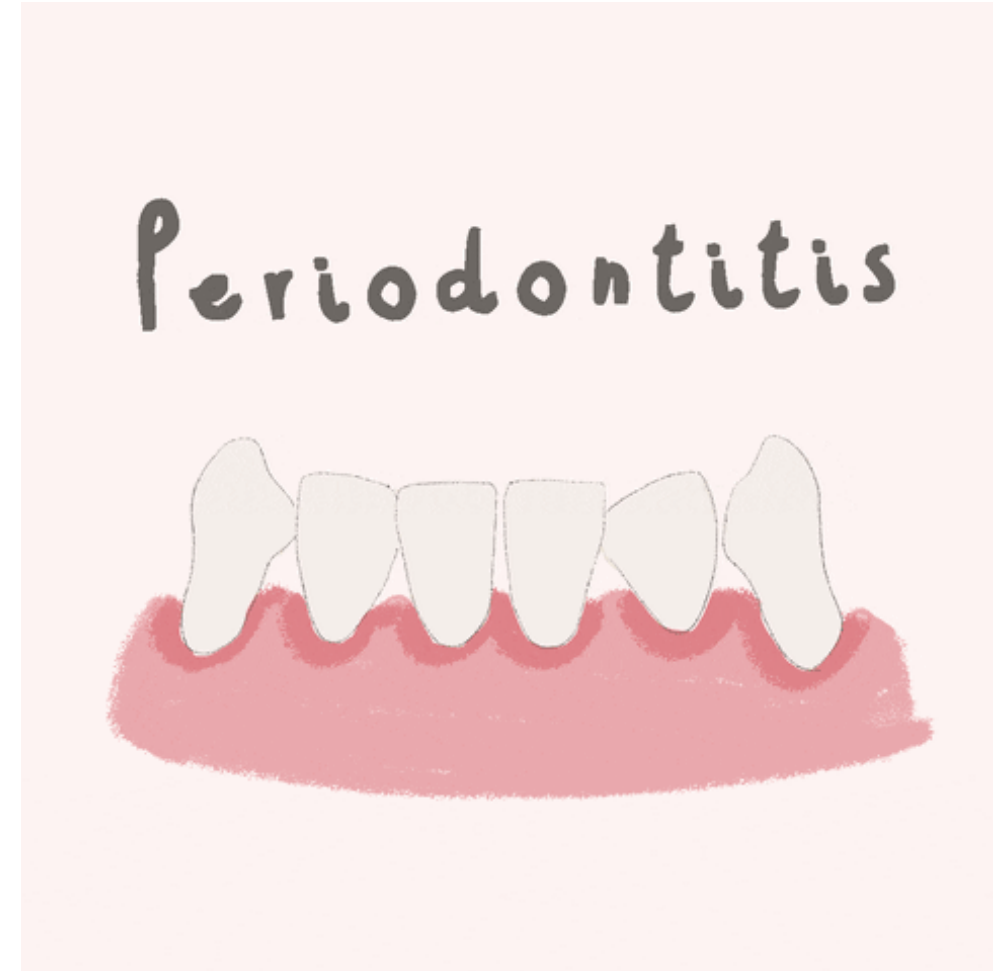


## PLASMA CELL GINGIVITIS

- Characterized by diffuse and massive infiltration of plasma cells into the sub-epithelial gingival tissue.
- Rare benign inflammatory condition with no clear etiology
- Exaggerated by bacterial plaque, immunological reaction to allergens in food such as strong spices, medications, toothpaste or herbs.
- Treatment- oral hygiene procedures and nonsurgical periodontal therapy including antimicrobials.



# GINGIVAL AND PERIODONTAL DISEASE PART-II



# CLASSIFICATION OF PERIODONTAL DISEASES

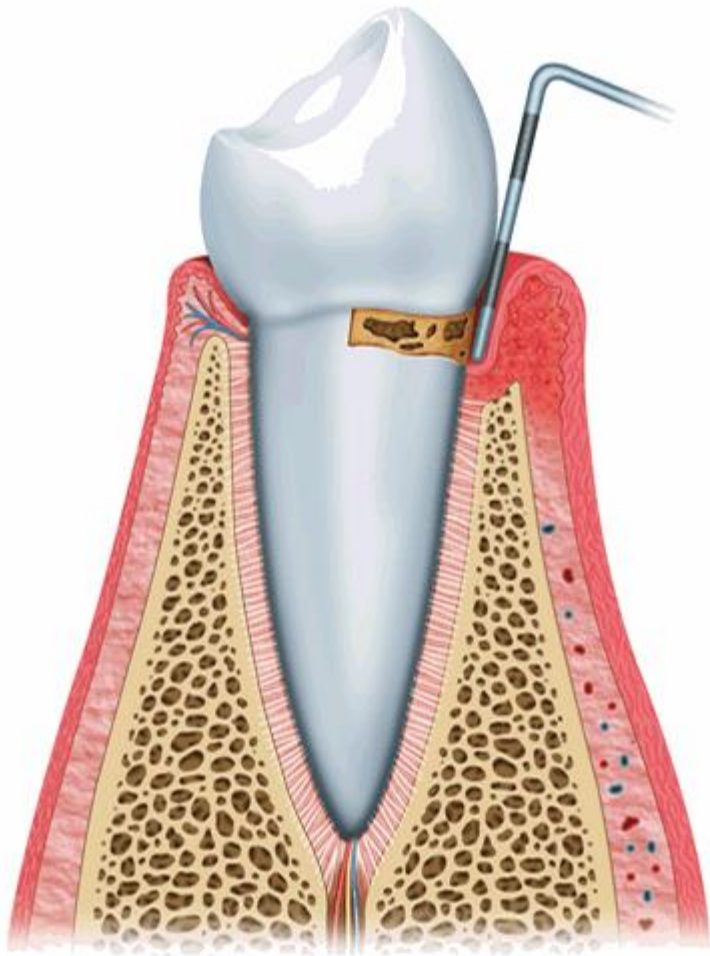
## American Academy of Periodontology

1977	1986	1989
<ul style="list-style-type: none"> <li>• Juvenile periodontitis</li> <li>• Chronic marginal periodontitis</li> </ul>	<ul style="list-style-type: none"> <li>• Juvenile periodontitis               <ul style="list-style-type: none"> <li>– Prepubertal</li> <li>– Localized juvenile periodontitis</li> <li>– Generalized juvenile periodontitis</li> </ul> </li> <li>• Adult periodontitis</li> <li>• Necrotizing ulcerative gingivo-periodontitis</li> <li>• Refractory periodontitis</li> </ul>	<ul style="list-style-type: none"> <li>• Early-onset periodontitis               <ul style="list-style-type: none"> <li>– Prepubertal periodontitis                   <ul style="list-style-type: none"> <li>- Localized</li> <li>- Generalized</li> </ul> </li> <li>– Juvenile periodontitis                   <ul style="list-style-type: none"> <li>- Localized</li> <li>- Generalized</li> </ul> </li> <li>– Rapidly progressive periodontitis</li> </ul> </li> <li>• Adult periodontitis</li> <li>• Necrotizing ulcerative periodontitis</li> <li>• Refractory periodontitis</li> <li>• Periodontitis associated with systemic disease</li> </ul>

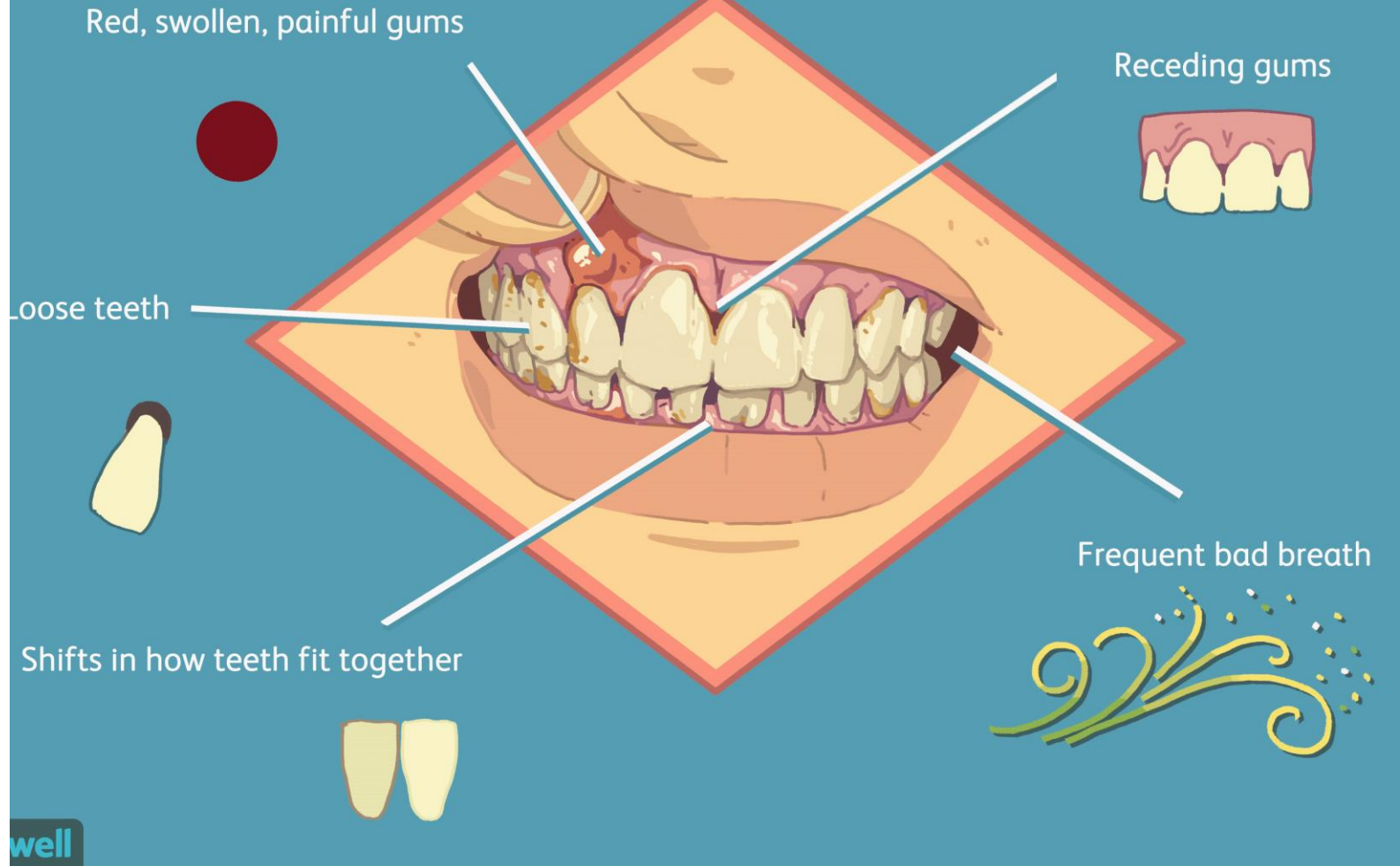
# According to International Workshop for a Classification of Periodontal Diseases and Conditions (1999)

I.	Gingival diseases
	<ul style="list-style-type: none"> <li>• Dental plaque-induced gingival diseases</li> <li>• Non-plaque-induced gingival lesions</li> </ul>
II.	Chronic periodontitis (slight: > 1-2 mm CAL; moderate: 3-4 mm CAL; severe: > 5 mm CAL)
	<ul style="list-style-type: none"> <li>• Localized</li> <li>• Generalized (&gt; 30% of sites are involved)</li> </ul>
III.	Aggressive periodontitis (slight: 1-2 mm CAL; moderate: 3-4 mm CAL; severe: > 5 mm CAL)
	<ul style="list-style-type: none"> <li>• Localized</li> <li>• Generalized (&gt; 30% of sites are involved)</li> </ul>
IV.	Periodontitis as a manifestation of systemic diseases
	<ul style="list-style-type: none"> <li>• Associated with hematological disorders</li> <li>• Associated with genetic disorders</li> <li>• Not otherwise specified</li> </ul>
V.	Necrotizing periodontal diseases
	<ul style="list-style-type: none"> <li>• Necrotizing ulcerative gingivitis</li> <li>• Necrotizing ulcerative periodontitis</li> </ul>

VI.	Abscesses of the periodontium
	<ul style="list-style-type: none"> <li>• Gingival abscess</li> <li>• Periodontal abscess</li> <li>• Pericoronal abscess</li> </ul>
VII.	Periodontitis associated with endodontic lesions
	<ul style="list-style-type: none"> <li>• Combined periodontic-endodontic lesions</li> </ul>
VIII.	Developmental or acquired deformities and conditions
	<ul style="list-style-type: none"> <li>• Localized tooth-related factors that modify or predispose to plaque-induced gingival diseases/periodontitis</li> <li>• Mucogingival deformities and conditions around teeth</li> <li>• Mucogingival deformities and conditions on edentulous ridges</li> <li>• Occlusal trauma</li> </ul>



## Periodontal Disease Signs and Symptoms



# Early-onset Periodontitis

- The term early-onset periodontitis usually diagnosed in patients under the age of 35 years.
- The destruction of the periodontium is advanced for the age of onset of the condition.
- Early-onset periodontitis has a tendency to aggregate in families

# Pre-pubertal Periodontitis

- Extremely rare category of periodontitis, usually having an onset during or soon after the eruption of the deciduous teeth.
- Higher incidence in females.
- Plaque deposits are moderate
- Mild inflammation of the gingivae
- Bleeding upon probing is present at affected sites.
- The destruction is not as rapid as in the generalized form, and the condition usually responds to treatment.



# Localized aggressive Periodontitis

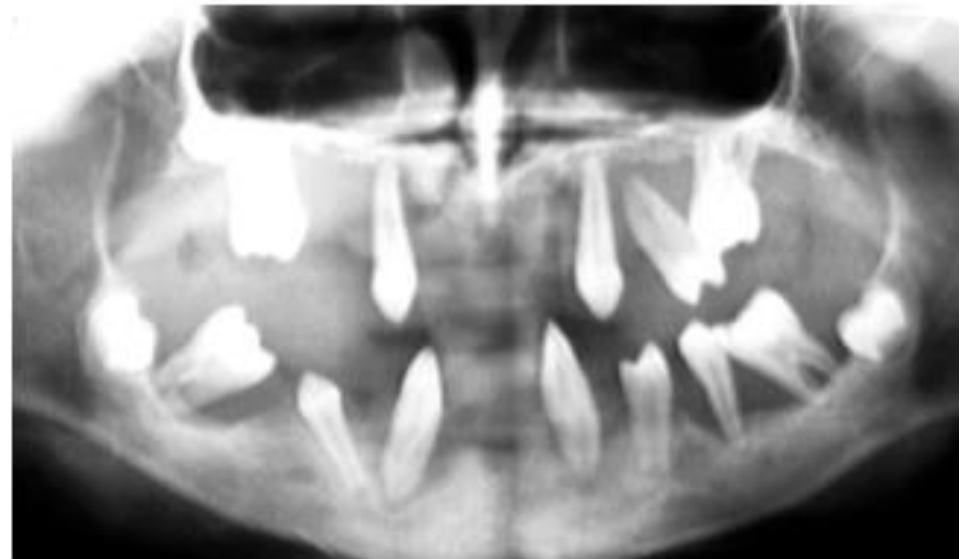
- Rapid and severe loss of alveolar bone around more than one permanent tooth involving the first molars and incisors.
- Bone loss is 3 to 4 times faster than adult periodontitis
- Management - early diagnosis, dental curettage, prophylaxis, removal of severely mobile teeth, and broad spectrum antibiotics.





# Generalized aggressive Periodontitis

- Seen at around puberty
- Affects the entire dentition
- Caused by nonmotile, facultative, anaerobic, gram negative rod *P. gingivalis*
- Management includes early diagnosis, dental curettage, prophylaxis, removal of severely mobile teeth, and broad spectrum antibiotics



# Necrotizing Forms of Periodontal Disease

- Characterized by gingival necrosis presenting as ‘punched-out’ papillae, with gingival bleeding and pain.
- Halitosis and pseudo-membrane formation may be secondary diagnostic features.
- Fusiform bacteria, other anaerobic gram-negative bacteria and Spirochetes have been associated with the gingival lesions.
- Related factors may include emotional stress, poor diet, cigarette smoking, seasonal changes and HIV infection



# Genetic conditions associated with periodontal destruction in children and adolescents

## Leukocyte disorders

- Neutropenia
- Chédiak-Higashi syndrome
- Leukocyte adhesion deficiency syndrome



- Ulceration gingivitis, periodontitis Severe gingivitis periodontitis.
- Tooth loss due to periodontal destruction.
- Ulceration mucosa, tongue, hard palate.
- Early-onset prepubertal periodontitis.
- Rapid attachment loss and bone loss shortly after eruption of deciduous dentition.
- Early exfoliation

Papillon-Lefèvre syndrome

- Early-onset prepubertal periodontitis.
- Rapid attachment loss and bone loss affecting deciduous dentition.
- Early exfoliation or need for extraction.



Down's syndrome

- Periodontal disease very prevalent and more severe than in age-matched controls especially in lower anteriors.
- Differences not explained by plaque levels.
- Rapid progression.
- Onset apparent in deciduous dentition



## Hypophosphatasia

- Cementum hypoplasia or aplasia.
- Periodontal destruction may affect deciduous dentition, resulting in premature exfoliation, tooth loss.
- Variable effects on permanent dentition, not necessarily as severe

