Classification of periodontal diseases and conditions

Part I.: Gingival Diseases
The systemic collection of data or knowledge and its arrangement in sequential manner in order to facilitate its understanding or knowledge.

Used for a variety of applications:
- Identification of the etiology and understanding of the pathology
- Knowledge-based and decision support system
- Statistical analysis of diseases and therapeutic actions
- Direct surveillance of epidemic or pandemic outbreaks
- Predict treatment outcomes
Historical development

- Until 1920: after clinical symptoms. Eg.: „Pyorrhoe alveolaris”

- From 1930 until 1970: classical pathology paradigm. Eg.: degenerative or destructive periodontal disease: „Periodontosis”

- From 1980: infection-host response paradigm

- Modern classifications: combines every aspect
Clinical characteristics paradigm

**G.V. Black classification (1889):**

- Constitutional gingivitis
- Painfull form of gingivitis
- Simple gingivitis
- Inflammation of the periodontal membrane due to calculus
- Suppurative pericementitis
Gottlieb and Orban histopathological surveys

**Orban classification (1942):**

1. Inflammation
2. Degeneration (*periodontosis*)
3. Atrophy
4. Hypertrophobia
5. Pathologic reaction produced by occlusal trauma
Infection-inflamatory respons principles

- Robert Koch (1876): Germ theory
- W.D. Miller (1880’s): 3 factors are considered as ethiological factor: a, bacterias; b, local irritating factors; c, systemic predisposition
- Löe et al.: experimental gingivitis
- 1977-78: „host-parasite interactions” paradigms
- Page and Schroeder’s classification
Infection-inflammatory responses principles

Classification of the World Workshop in Clinical Periodontics (modifications of Page and Schreoder’s) 1989:

I. Adult periodontitis

II. Early onset periodontitis
   1. Prepubertal periodontitis
      a. Generalised
      b. Localised
   2. Juvenile periodontitis
      1. Generalised
      2. Localised
   3. Rapidly progrediating periodontitis

III. Periodontitis associated with systemic diseases

IV. Necrotising ulcerative periodontitis

V. Refractory periodontitis
CURRENT CLASSIFICATION

- American Association of Periodontology (AAP) 1999

- Focuses:
  - Ethiology: dental plaque?
  - Localisation: gingiva or attaching apparatus
  - Ongoing disease: inactive or progressing
  - Background: local factors or systemic factors

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PERIODONTAL DISEASES

1. DISEASES OF THE GUM

2. DISEASES OF THE ATTACHMENT APPARATUS

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GINGIVAL DISEASES

1. DENTAL PLAQUE INDUCED GINGIVAL DISEASES

2. NON-PLAQUE-INDUCED GINGIVAL LESIONS
GINGIVAL DISEASES

A. Dental plaque-induced gingival diseases
   1. Gingivitis associated with dental plaque only
   2. Gingival diseases modified by systemic factors
   3. Gingival diseases modified by medications
   4. Gingival diseases modified by malnutrition

B. Non-plaque-induced gingival lesions
   1. Gingival diseases of specific bacterial origin
   2. Gingival diseases of viral origin
   3. Gingival diseases of fungal origin
   4. Gingival lesions of genetic origin
   5. Gingival manifestations of systemic conditions
   6. Traumatic lesions (iatrogenic, accidental)
   7. Foreign body reactions
   8. Not otherwise specified (NOS)
CHARACTERISTICS COMMON TO ALL GINGIVAL DISEASES
A. Dental plaque-induced gingival diseases

1. Gingivitis associated with dental plaque only
   a. without other local contributing factors
   b. with local contributing factors

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
   b. associated with blood dyscrasias

3. Gingival diseases modified by medications
   a. drug-influenced gingival enlargements
   b. drug-influenced gingivitis

4. Gingival diseases modified by malnutrition
   a. ascorbic acid-deficiency gingivitis
   b. other
CHARACTERISTICS OF PLAQUE-INDUCED GINGIVITIS

1. PLAQUE PRESENT AT GINGIVAL MARGIN
2. DISEASE BEGINS AT THE GINGIVAL MARGIN
3. CHANGE IN GINGIVAL COLOR
4. CHANGE IN GINGIVAL CONTOUR
5. SULCULAR TEMPERATURE CHANGE
6. INCREASED GINGIVAL EXUDATE
7. BLEEDING UPON PROVOCATION
8. ABSENCE OF ATTACHMENT LOSS
9. ABSENCE OF BONE LOSS
10. HISTOLOGICAL CHANGES
11. REVERSIBLE WITH PLAQUE REMOVA
A. *Dental plaque-induced gingival diseases*

1. Gingivitis associated with dental plaque only
   a. without other local contributing factors
   b. with local contributing factors
      ✓ Tooth anatomic factors
      ✓ Pathological factors
      ✓ Iatrogenic factors
CHARACTERISTICS OF PLAQUE-INDUCED GINGIVITIS ON A REDUCED PERIODONTIUM

1. Resolution of a periodontitis, therefore, pre-existing attachment loss or bone loss may be present
2. Plaque present at gingival margin
3. Disease begins at the gingival margin
4. Change in gingival color
5. Change in gingival contour
6. Sulcular temperature change
7. Increased gingival exudate
8. Bleeding upon provocation
9. Histological changes
10. Reversible with plaque removal
A. Dental plaque-induced gingival diseases

1. Gingivitis associated with dental plaque only
   a. without other local contributing factors
   b. with local contributing factors
      ✓ Tooth anatomic factors
      ✓ Pathological factors
      ✓ Iatrogenic factors

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A. Dental plaque-induced gingival diseases

1. Gingivitis associated with dental plaque only
   a. without other local contributing factors
   b. with local contributing factors
      ✓ Tooth anatomic factors
      ✓ Pathological factors
      ✓ Iatrogenic factors

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GINGIVAL DISEASES

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   a. without other local contributing factors
   b. with local contributing factors
      ✓ Tooth anatomic factors
      ✓ Pathological factors
      ✓ Iatrogenic factors

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A. Dental plaque-induced gingival diseases

1. Gingivitis associated with dental plaque only
   a. without other local contributing factors
   b. with local contributing factors

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
   b. associated with blood dyscrasias

3. Gingival diseases modified by medications
   a. drug-influenced gingival enlargements
   b. drug-influenced gingivitis

4. Gingival diseases modified by malnutrition
   a. ascorbic acid-deficiency gingivitis
   b. other

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A. \textit{Dental plaque-induced gingival diseases}

2. Gingival diseases modified by systemic factors
   
a. associated with the endocrine system
      \begin{itemize}
      \item puberty-associated gingivitis
      \item menstrual cycle-associated gingivitis
      \item pregnancy-associated gingivitis
         \begin{itemize}
         \item gingivitis
         \item pyogenic granuloma
         \end{itemize}
      \item diabetes mellitus-associated gingivitis
      \end{itemize}
   
b. associated with blood dyscrasias
      \begin{itemize}
      \item leukemia-associated gingivitis
      \item other
      \end{itemize}

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CHARACTERISTICS OF PUBERTY ASSOCIATED GINGIVITIS

1. PLAQUE PRESENT AT GINGIVAL MARGIN
2. PRONOUNCED INFLAMMATORY RESPONSE OF GINGIVA
3. MUST BE CIRCUMPUBERTAL
4. CHANGE IN GINGIVAL COLOR
4. CHANGE IN GINGIVAL CONTOUR WITH POSSIBLE MODIFICATION OF GINGIVAL SIZE
5. SULCULAR TEMPERATURE CHANGE
6. INCREASED GINGIVAL EXUDATE
7. BLEEDING UPON PROVOCATION
8. ABSENCE OF ATTACHMENT LOSS
9. ABSENCE OF BONE LOSS
10. REVERSIBLE WITH PLAQUE
A. *Dental plaque-induced gingival diseases*

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
      - puberty-associated gingivitis
      - menstrual cycle-associated gingivitis
      - pregnancy-associated
        - gingivitis
        - pyogenic granuloma
      - diabetes mellitus-associated gingivitis
   b. associated with blood dyscrasias
      - leukemia-associated gingivitis
      - other

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CHARACTERISTICS OF MENSTRUAL CYCLE-ASSOCIATED GINGIVITIS

1. PLAQUE PRESENT AT GINGIVAL MARGIN
2. MODEST INFLAMMATORY RESPONSE OF GINGIVA PRIOR TO OVULATION
3. MUST BE AT OVULATORY SURGE WHEN LUTENIZING HORMONE LEVELS ARE > 25MLU/ml OR OSTRADIOL LEVELS ARE > 200 pg/ml
4. INCREASE IN GINGIVAL EXUDATE BY AT LEAST 20% DURING OVULATION
5. ABSENCE OF ATTACHMENT LOSS
6. ABSENCE OF BONE LOSS
7. REVERSIBLE WITH PLaque REMOVAL
GINGIVAL DISEASES

A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
      ➢ puberty-associated gingivitis
      ➢ menstrual cycle-associated gingivitis
      ➢ pregnancy-associated
         • gingivitis
         • pyogenic granuloma
      ➢ diabetes mellitus-associated gingivitis
   b. associated with blood dyscrasias
      ➢ leukemia-associated gingivitis
      ➢ other

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CHARACTERISTICS OF PREGNANCY ASSOCIATED GINGIVITIS

1. PLAQUE PRESENT AT GINGIVAL MARGIN
2. PRONOUNCED INFLAMMATORY RESPONSE OF GINGIVA
3. ONSET IS IN PREGNANT WOMEN (2nd OR 3rd TRIMESTER)
4. CHANGE IN GINGIVAL COLOR
5. CHANGE IN GINGIVAL CONTOUR
6. INCREASED GINGIVAL EXUDATE
7. BLEEDING UPON PROVOCATION
8. ABSENCE OF ATTACHMENT LOSS
9. ABSENCE OF BONE LOSS
10. REVERSIBLE WITH PLAQUE REMOVAL
A. **Dental plaque-induced gingival diseases**

2. **Gingival diseases modified by systemic factors**
   
a. **associated with the endocrine system**
   - puberty-associated gingivitis
   - menstrual cycle-associated gingivitis
   - pregnancy-associated
     - gingivitis
     - pyogenic granuloma
   - diabetes mellitus-associated gingivitis

b. **associated with blood dyscrasias**
   - leukemia-associated gingivitis
   - other
CHARACTERISTICS OF PREGNANCY ASSOCIATED PYOGENIC GRANULOMA

1. PLAQUE PRESENT AT GINGIVAL MARGIN
2. PRONOUNCED INFLAMMATORY RESPONSE OF GINGIVA
3. CAN OCCUR ANYTIME DURING PREGNANCY
4. MORE COMMON IN MAXILLA
5. MORE COMMON INTERPROXIMALLY
6. SESSILE OR PEDUNCULATED PROBUSTERANT MASS
7. NOT A NEOPLASM; HAS HISTOLOGIC APPEARANCE OF A PYOGENIC GRANULOMA
8. REGRESSES FOLLOWING PARTURITION
A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
      - puberty-associated gingivitis
      - menstrual cycle-associated gingivitis
      - pregnancy-associated
        - gingivitis
        - pyogenic granuloma
      - diabetes mellitus-associated gingivitis
   b. associated with blood dyscrasias
      - leukemia-associated gingivitis
      - other
CHARACTERISTICS OF DIABETES MELLITUS-ASSOCIATED GINGIVITIS

1. PLAQUE PRESENT AT GINGIVAL MARGIN
2. PRONOUNCED INFLAMMATORY RESPONSE OF GINGIVA
3. CHANGE IN GINGIVAL COLOR
4. CHANGE IN GINGIVAL CONTOUR
5. INCREASED GINGIVAL EXUDATE
6. BLEEDING UPON PROVOCATION
7. MOST COMMONLY ASSOCIATED IN CHILDREN WITH POORLY CONTROLLED TYPE I DIABETES MELLITUS
8. NO BONE LOSS
9. NO ATTACHMENT LOSS
10. REVERSIBLE WITH CONTROL OF DIABETIC STATE
11. REDUCTION OF DENTAL PLAQUE CAN LIMIT SEVERITY OF LESION
A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
      ➢ puberty-associated gingivitis
      ➢ menstrual cycle-associated gingivitis
      ➢ pregnancy-associated
         • gingivitis
         • pyogenic granuloma
      ➢ diabetes mellitus-associated gingivitis
   b. associated with blood dyscrasias
      ➢ leukemia-associated gingivitis
      ➢ other
CHARACTERISTICS OF LEUKEMIA-ASSOCIATED GINGIVITIS

1. PRONOUNCED INFLAMMATORY RESPONSE OF GINGIVA IN RELATION TO THE PLAQUE PRESENT BUT PLAQUE IS NOT A PREREQUISITE FOR ORAL LESIONS
2. GINGIVAL LESIONS ARE PRIMARILY FOUND IN A CUT LEUKEMIA
3. CHANGE IN GINGIVA COLOR
4. CHANGE IN GINGIVAL CONTOUR WITH POSSIBLE GINGIVAL ENLARGEMENTS
5. ENLARGEMENT FIRST OBSERVED AT THE INTERDENTAL PAPILLA
6. BLEEDING UPON PROVOCATION MAY BE ONE OF THE EARLIEST SIGNS
7. REDUCTION IN DENTAL PLAQUE CAN LIMIT THE SEVERITY OF LESION
Leukemia-associated gingivitis
A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
      ➢ puberty-associated gingivitis
      ➢ menstrual cycle-associated gingivitis
      ➢ pregnancy-associated
         • gingivitis
         • pyogenic granuloma
      ➢ diabetes mellitus-associated gingivitis
   b. associated with blood dyscrasias
      ➢ leukemia-associated gingivitis
      ➢ other

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Associated with blood dyscrasias

Bleeding disorder

Anemia
A. Dental plaque-induced gingival diseases

1. Gingivitis associated with dental plaque only
   a. without other local contributing factors
   b. with local contributing factors

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
   b. associated with blood dyscrasias

3. Gingival diseases modified by medications
   a. drug-influenced gingival enlargements
   b. drug-influenced gingivitis

4. Gingival diseases modified by malnutrition
   a. ascorbic acid-deficiency gingivitis
   b. other
A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by medications
   a. drug-influenced gingival enlargements
      • Dilantin (phenytoin)
      • Ca channel blockers
      • Cyclosporin-A
   b. drug-influenced gingivitis
      ➢ oral contraceptive-associated
      ➢ others

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CHARACTERISTICS OF DRUG-INDUCED GINGIVAL ENLARGEMENT

1. VARIATION IN INTERPATIENT AND INTRAPATIENT PATTERN
2. PREDILECTION FOR ANTERIOR TEETH
3. HIGHER PREVALENCE IN CHILDREN
4. ONSET WITHIN 3 MONTH
5. CHANGE IN GINGIVAL CONTOUR LEADING TO MODIFICATION OF GINGIVAL SIZE
6. ENLARGEMENT FIRST OBSERVED AT THE INTERDENTAL PAPILLA
7. CHANGE IN GINGIVAL COLOR
8. INCREASED GINGIVAL EXUDATE
9. BLEEDING UPON PROVOCATION
10. FOUND IN GINGIVA WITH OR WITHOUT BONE LOSS BUT IS NOT ASSOCIATED WITH ATTACHMENT LOSS
11. PRONOUNCED INFLAMMATORY RESPONSE OF GINGIVA IN RELATION TO THE PLAQUE PRESENT
12. REDUCTION IN DENTAL PLAQUE CAN LIMIT THE SEVERITY OF LESION
13. MUST BE USING PHENITOTTIN, CYCLOSPORINE A, OR SECRETION CALCIUM CHANNEL BLOCKERS; THE PLASMA CONCENTRATIONS TO INDUCE THE LESION HAVE NOT BEEN CLEARLY DEFINED IN HUMANS
Drug influenced gingival enlargements - Dilantin (phenytoin)

Fibroblast ↑, collagenase ↓
Drug influenced gingival enlargements - Ca-channel blockers

Ca-metabolism disorder: proteinsynthesis↑, collagenase↓, macrophag stimulation
Drug influenced gingival enlargements - Cyclosporin-A

Fibroblast activity ↑ phagocitosis of fibroblast ↓
A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by medications
   a. drug-influenced gingival enlargements
   b. drug-influenced gingivitis
      • oral contraceptive-associated gingivitis
      • others

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CHARACTERISTICS OF ORAL CONTRACEPTIVE-ASSOCIATED GINGIVITIS

1. PLAQUE PRESENT AT GINGIVAL MARGIN
2. PRONOUNCED INFLAMMATORY RESPONSE OF GINGIVA
3. CHANGE IN GINGIVAL COLOR
4. CHANGE IN GINGIVAL CONTOUR
5. INCREASED GINGIVAL EXUDATE
6. BLEEDING UPON PROVOCATION
7. REVERSIBLE FOLLOWING DISCONTINUATION OF ORAL CONTRACEPTIVE
A. Dental plaque-induced gingival diseases

1. Gingivitis associated with dental plaque only
   a. without other local contributing factors
   b. with local contributing factors

2. Gingival diseases modified by systemic factors
   a. associated with the endocrine system
   b. associated with blood dyscrasias

3. Gingival diseases modified by medications
   a. drug-influenced gingival enlargements
   b. drug-influenced gingivitis

4. Gingival diseases modified by malnutrition
   a. ascorbic acid-deficiency gingivitis
   b. other
GINIVAL DISEASES

A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by malnutrition
   a. ascorbic acid-deficiency gingivitis
   b. other

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GINGIVAL DISEASES

A. Dental plaque-induced gingival diseases

2. Gingival diseases modified by malnutrition
   a. ascorbic acid-deficiency gingivitis
   b. other

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GINGIVAL DISEASES

A. Dental plaque-induced gingival diseases
   1. Gingivitis associated with dental plaque only
   2. Gingival diseases modified by systemic factors
   3. Gingival diseases modified by medications
   4. Gingival diseases modified by malnutrition

B. Non-plaque-induced gingival lesions
   1. Gingival diseases of specific bacterial origin
   2. Gingival diseases of viral origin
   3. Gingival diseases of fungal origin
   4. Gingival lesions of genetic origin
   5. Gingival manifestations of systemic conditions
   6. Traumatic lesions (iatrogenic, accidental)
   7. Foreign body reactions
   8. Not otherwise specified (NOS)
GINGIVAL DISEASES

B. Non-plaque-induced gingival lesions

1. Gingival diseases of specific bacterial origin
   a. Neisseria gonorrhoea-associated lesions
   b. Treponema pallidum-associated lesions
   c. Streptococcal species-associated lesions
   d. Other

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B. **Non-plaque-induced gingival lesions**

2. **Gingival diseases of viral origin**
   
a. **herpesvirus infections**
      - primary herpetic gingivostomatitis
      - recurrent oral herpes
      - varicella-zoster infections
   b. **other**

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B. Non-plaque-induced gingival lesions

2. Gingival diseases of viral origin

a. herpesvirus infections
   - primary herpetic gingivostomatitis
   - recurrent oral herpes
   - varicella-zoster infections

b. other
B. Non-plaque-induced gingival lesions

2. Gingival diseases of viral origin
   a. herpesvirus infections
      - primary herpetic gingivostomatitis
      - recurrent oral herpes
      - varicella-zoster infections
   b. other
B. Non-plaque-induced gingival lesions

2. Gingival diseases of viral origin
   a. herpesvirus infections
      > primary herpetic gingivostomatitis
      > recurrent oral herpes
      > varicella-zoster infections
   b. Other: HPV infection

In
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B. Non-plaque-induced gingival lesions

3. Gingival diseases of fungal origin
   a. Candida-species infections
      ➢ Generalised gingival candidosis
   b. linear gingival erythema
   c. histoplasmosis
   d. other
B. Non-plaque-induced gingival lesions

3. Gingival diseases of fungal origin
   a. Candida-species infections
      ➢ Generalised gingival candidosis
   b. Linear gingival erythema
   c. Histoplasmosis
   d. Other
B. Non-plaque-induced gingival lesions

4. Gingival lesions of genetic origin
   a. hereditary gingival fibromatosis
   b. other
B. Non-plaque-induced gingival lesions

4. Gingival lesions of genetic origin
   a. hereditary gingival fibromatosis
   b. other
B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions
   a. mucocutaneous disorders
   b. allergic reactions
B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions
   a. mucocutaneous disorders
      - lichen planus
      - pemphigoid
      - pemphigus vulgaris
      - erythema multiforme
      - lupus erythematosus
      - drug-induced
      - other
   b. allergic reactions


B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions

a. mucocutaneous disorders
   - lichen planus
   - pemphigoid
   - pemphigus vulgaris
   - erythema multiforme
   - lupus erythematosus
   - drug-induced
   - other

b. allergic reactions

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B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions
   a. mucocutaneous disorders
      ➢ lichen planus
      ➢ pemphigoid
      ➢ pemphigus vulgaris
B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions
   a. mucocutaneous disorders
      ➢ lichen planus
      ➢ pemphigoid
      ➢ pemphigus vulgaris
      ➢ erythema multiforme
      ➢ lupus erythematosus
      ➢ drug-induced
      ➢ other
   b. allergic reactions

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B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions
   a. mucocutaneous disorders
      - lichen planus
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      - pemphigus vulgaris
      - erythema multiforme
      - lupus erythematosus
      - drug-induced
      - other
   b. allergic reactions
B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions
   a. mucocutaneous disorders
      ➢ lichen planus
      ➢ pemphigoid
      ➢ pemphigus vulgaris
      ➢ erythema multiforme
      ➢ lupus erythematosus
      ➢ drug-induced
      ➢ other
   b. allergic reactions

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B. Non-plaque-induced gingival lesions

5. Gingival manifestations of systemic conditions
   a. mucocutaneous disorders
   b. allergic reactions
      ➢ dental restorative materials
         • nickel
         • acrylic
         • mercury
      ➢ oral hygenic materials
         • toothpastes
         • mouthrinses
         • chewing gum
B. Non-plaque-induced gingival lesions

6. Traumatic lesions (iatrogenic, accidental)
   a. chemical injury
   b. physical injury
   c. thermal injury

Aspirin

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GINGIVAL DISEASES

B. Non-plaque-induced gingival lesions

6. Traumatic lesions (iatrogenic, accidental)
   a. chemical injury
   b. physical injury
   c. thermal injury
B. Non-plaque-induced gingival lesions

6. Traumatic lesions (iatrogenic, accidental)
   a. chemical injury
   b. physical injury
   c. thermal injury
B. Non-plaque-induced gingival lesions

6. Traumatic lesions (iatrogenic, accidental)
   a. chemical injury
   b. physical injury
   c. thermal injury

Radiofrequency device

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B. Non-plaque-induced gingival lesions

7. Foreign body reactions

Amalgam tattoo

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B. Non-plaque-induced gingival lesions

8. Not otherwise specified (NOS)
Leukoplakie on gingiva
THANK YOU FOR YOUR KIND ATTENTION