# PERIODONTAL PATHOLOGY

## Clinical Types of Periodontal Disease

I) GINGIVAL DISEASE

A) Dental plaque induced

1) Gingivitis associated with dental plaque only | 2) Gingival diseases modified by systemic factors

Example: Bleeding on probing | a) Associated with endocrine system

a) Without other local contributing factors | 1) Puberty

b) With local contributing factors |

2) Menstrual cycle

Example: Restorations |

3) Pregnancy

Mouth breathing |

Examples: a) Gingivitis

| b) Pyogenic granuloma

I) GINGIVAL DISEASE (continued)

A) Dental plaque induced

2) Gingival diseases modified by systemic factors

a) Associated with endocrine system

4) Diabetes mellitus associated gingivitis

Examples: I Role of diabetes in periodontal disease

II Periodontal disease in diabetic patients. Increased risk of periodontal abscess, increased gingival reaction to plaque, increased risk of periodontal disease.

b) Associated with blood dyscrasias

1) Leukemia-associated gingivitis - Examples: Bleeding into gingival tissue

Gingival enlargements

2) Other

I) GINGIVAL DISEASE (continued)

A) Dental plaque induced

| B) Non plaque induced gingival lesions

3) Gingival diseases modified by medication | 1) Gingival disease of specific bacterial origin

a) Drug induced gingival disease | a) Neisseria gonorrhea

1) Gingival enlargement | b) Treponema pallidum

Examples: I Phenytoin | c) Streptococcal

II Calcium channel blockers | d) Other

III Immunosuppresant cyclosporine | Examples: Aphtous ulcers - Periadenitis

4) Gingival diseases modified by malnutrition | Mucosan Necroticans Recurrens

a) Ascorbic acid gingivitis | 2) Gingival disease of viral origin

b) Other

| a) Herpes virus

| 1) Primary herpetic gingivostomatitis

I) GINGIVAL DISEASE (continued)

B) Non plaque induced gingival lesions

3) Gingival diseases of fungal origin

a) Candida species infections

1) Generalized gingival candidiasis

b) Linear gingival erythema

Example: HIV associated gingivitis

AIDS related periodontitis

c) Histoplasmosis

5) Lupus erythematosus

d) Other

6) Drug induced

4) Gingival lesions of genetic origin

a) Hereditary gingival fibromatosis

5) Gingival manifestations of systemic conditions

a) Mucocutaneous disorders

1) Lichen planus

2)Pemphigoid

3) Pemphigus vulgaris

4) Erythema multiforme

7) Other

I) GINGIVAL DISEASE (continued)

B) Non plaque induced gingival lesions

5) Gingival manifestations of systemic conditions

b) Allergic reactions

1) Dental restorative materials

a) Mercury

b) Nickel

c) Acrylic

d) Other - Example: Nickel allergy

2) Reactions attributable to

a) Tooth paste

b) Mouth rinse

| 3) Traumatic lesions (factitious, iatrogenic, accidental)

| a) Chemical injury - Example: Hydrogen peroxide, aspirin burn

| b) Physical injury - Example: toothbrush trauma, cotton roll burn

| c) Thermal injury

II) CHRONIC PERIODONTITIS

A) Localized

Example: Molar furcation, premolar, intrabony defect

B) Generalized Example: Upper molars and premolars

III) AGGRESSIVE PERIODONTITIS

A) Localized - Example: Juvenile onset periodontitis. Affects first molars and incisors with little signs of gingival inflammation. May be related to:

a) Actinibacillus actinomycetemcomitans.

B) Generalized

IV) PERIODONTITIS AS MANIFESTATION OF SYSTEMIC DISEASE

A) Associated with hematologic disorders

1) Acquired neutropenia

2) Leukemias

## IV) PERIODONTITIS AS MANIFESTATION OF SYSTEMIC DISEASE (continue)

### B) Associated with genetic disorders

1) Familial and cyclic neutropenia
   Example: ANUG type lesions that do not respond to local therapy.
2) Down syndrome
   a) See high prevalence of advanced periodontitis. 1 in 800 incidence. Chromosomal disorder e.g. Trisomy 21 (three chromosomes). More common in older mothers.
3) Leukocyte Adhesion Deficiency Syndromes
   b) Leukocytes can't adhere to blood vessels and migrate to inflammatory sites. Get recurrent infection.
4) Papillon Lefévre syndrome
   Example: Aggressive periodontitis in children with hyperkeratotic lesions of hands, knees and feet. Autosomal recessive inheritance. Incidence 4 per million.
5) Chediak-Higashi syndrome
   c) Functional neutrophil defects of chemotasis and bacterial killing. See severe periodontitis

## IV) PERIODONTITIS AS MANIFESTATION OF SYSTEMIC DISEASE (continue)

### B) Associated with genetic disorders

6) Histiocytosis syndrome

d) Cause unknown. Increase in monocytes and macrophages. Lesions in bone and gingival swelling.

7) Glycogen storage disease

e) Many types of genetics upsets,to enzymes with liver dysfunction. Incidence 1 in 25,000.

8) Infantile genetic agranulocytosis

9) Cohen syndrome

f) Autosomal recessive, short head and upper lip exposure of incisors.

10) Ehlers-Danlos syndrome

g) Group of inherited disorders of collagen, joint affected. Increased tissue fragility, poor healing.

11) Hypophosphatasia

Example: Disturbance to bone metabolism, loss of primary teeth. Aggressive juvenile type periodontitis

12) Other

### C) Not otherwise specified

V) NECROTIZING PERIODONTAL DISEASES

A) Necrotizing ulcerative gingivitis

Example: Associated with large amounts of fusiforms and spirochetes. Mainly adults.
Only affects children that have severe systemic problems like malnutrition.

B) Necrotizing ulcerative periodontitis

Example: Can be associated with AIDS

VI) ABSCESSES OF THE PERIODONTIUM

A) Gingival abscess

Example: Localized to gingival tissue

B) Periodontal abscess

Example: Spread to involve larger area

C) Pericoronal abscess

VII) PERIODONTITIS ASSOCIATED WITH ENDODONTIC LESIONS

A) Combined periodontic endodontic lesions

Examples: Need to have radiologic evaluation and vitality testing

## VIII) DEVELOPED OR ACQUIRED DEFORMITIES AND CONDITIONS

A) Localized tooth related factors that modify or predispose to plaque induced gingival disease, periodontitis

1) Teeth anatomic factors

Example: Development at groove on palatal of upper lateral incisor

2) Dental restorations

Example: Over contoured crowns. Poorly fitting margins

3) Root fracture

Example: Longitudinal fractures have hopeless prognoses

B) Mucogingival deformities and conditions around teeth

1) Gingival soft tissue recession

a) Facial or lingual surfaces

Example: Inadequate band of keratinized gingiva

b) Interproximal papillary

Examples: Loss of anterior papilla

VIII) DEVELOPED OR ACQUIRED DEFORMITIES AND CONDITIONS (Continued)

B) Mucogingival deformities and conditions around teeth

2) Lack of keratinized gingiva
3) Decreased vestibular depth
4) Aberrant frenum
5) Gingival excess
   a) Pseudopocket
   b) Inconsistent gingival margin
   c) Excessive gingival display
      Example:  Poor gingival esthetics
   d) Gingival enlargement
      i) See 1A3, 1A4
   e) Abnormal color

VIII) DEVELOPED OR ACQUIRED DEFORMITIES AND CONDITIONS (Continued)

C) Mucogingival deformities and conditions on edentulous ridges

1) Vertical and/or horizontal ridge deformity
   Example: Ridge deformities
2) Lack of gingiva keratinized tissue
3) Gingival/soft tissue enlargements
4) Decreased vestibular depth
5) Abnormal color

D) Occlusal Trauma

1) Primary occlusal trauma
2) Secondary occlusal trauma

I) Gingival disease
A) Dental plaque induced
1) Gingivitis associated with dental plaque only
Example: BLEEDING ON PROBING

One of the earliest signs of gingivitis is bleeding on probing.

# I) Gingival Disease (Continued)

## A) Dental plaque induced

### 1) Gingivitis associated with dental plaque only

#### b) With local contributing factors

Example: RESTORATIONS

Inflammation with pocket depth restricted to gingival tissues.

I) Gingival Disease (Continued)
A) Dental plaque induced
1) Gingivitis associated with dental plaque only
b) With local contributing factors
Example: MOUTH BREATHING

For details click on the books

This type of gingivitis affects the anterior gingiva of chronic mouth breathers or individuals with incomplete lip closure. Note the erythematous, hypertrophic maxillary anterior gingiva.

I. Gingival Disease (Continued)
A) Dental plaque induced
2) Gingival diseases modified by systemic factors
a) Associated with endocrine system
1) Puberty
2) Menstrual cycle
3) Pregnancy
Examples: a) Gingivitis
b) Pyogenic granuloma

The gingival tissues may have a modified reaction to dental plaque with changes in circulating estrogen and progesterone levels. These changes result in the inflammation having more vascular components and this is generally not very obvious in puberty or with menstrual cycles but can be quite pronounced in some pregnant patients.

I) Gingival Disease (Continued)
A) Dental plaque induced
2) Gingival diseases modified by systemic factors
a) Associated with endocrine system
3) PREGNANCY GINGIVITIS

For details click on the books

These are two examples of pregnancy gingivitis. Note the intense burgundy color and the marked gingival hypertrophy. These lesions bleed profusely.

I) Gingival Disease (Continued)
A) Dental plaque induced
2) Gingival diseases modified by systemic factors
a) Associated with endocrine system
3) PYOGENIC GRANULOMA

For details click on the books

Pyogenic granuloma is considered to be a exuberant response to a chronic mild irritant. Its clinical appearance is similar to that seen in pregnancy gingivitis but generally confined to a single area. Pyogenic granulomas also bleed easily because they contain multiple capillaries.

I) Gingival disease (Continued)
A) Dental plaque induced
2) Gingival disease modified by systemic factors
a) Associated with endocrine system
4) DIABETES MELLITUS ASSOCIATED GINGIVITIS

For details click on the books

Note the marked inflammatory reaction and hypertrophy of the free gingiva in this patient with diabetes mellitus. This reflects an increased gingival reaction to plaque with consequent increased risk of periodontal disease.

## Periodontal disease in diabetic patients

1)increased incidence of periodontal abscesses

2)increase gingival inflammatory reaction to plaque

3)increase risk of periodontal disease 2.8 to 3.4 increase

4)increase severity and rate of destruction.

Attachment and bone loss twice as much in diabetic Pima Indians compared with controls

## Role of Diabetes in Periodontal disease

1) Reduce vasculature efficiency

2) PMN defects

3) Macrophage increase cytokines with P. Gingivalis 24 to 32 times more TNF$\alpha$ 4 times increase in PGE and ILI$\beta$

4) Increase collagenase

   Increase in cross linked collagen by AGEs.

   Delayed healing and repair

I) Gingival disease (Continued)
A) Dental plaque induced
2) Gingival disease modified by systemic factors
a) Associated with endocrine system
4) DIABETES MELLITUS PERIODONTAL ABSCESS

There is a greater increase risk for diabetic patients to develop periodontal abscesses due to increased gingival reaction to plaque and increased risk of periodontal disease. The arrow points to the abscess.

Poor diabetic control and length of time increase risk of periodontal breakdown and increase chances of poor response to therapy.

I) Gingival disease (Continued)
A) Dental plaque induced
2) Gingival disease modified by systemic factors
b) Associated with blood dyscrasias
1) LEUKEMIA ASSOCIATED GINGIVITIS

For details click on the books

Note the generalized facial pallor and skin echymosis. The gingiva is hypertrophic and shows a typical intragingival hemorrhage.

I) Gingival disease (Continued)
A) Dental plaque induced
3) Gingival diseases modified by medications
a) Drug induced gingival disease
1) PHENYTOIN GINGIVAL HYPERTHROPHY

For details click on the books

Phenytoin gingival hypertrophy has an incidence of 3 to 84.5%. This enlargement is produced by hyperplasia of the connective and epithelial tissues with secondary inflammation. It may have increased expression of platelet derived growth factor.

# CALCIUM CHANNEL BLOCKERS OF SMOOTH AND CARDIAC MUSCLE

## ° TRADE NAME

| | | | |
|---|---|---|---|
| VERAPAMIC | CALAN | DILTIAZEM | CARDIAZEM |
| FECODIPINE | PLENDIL | ESRAPIDINE | PRESCAL |
| NICARDIPIDINE | CARDENE | NIFEDIPIDINE | PROCARDIA |
| NISOLPIDINE | SYSLOC | NITRENDIPIDINE | BAYOTENSIN |
| MIMODIPIDINE | NIMOTOP | | |

I) Gingival disease (Continued)
A) Dental plaque induced
3) Gingival diseases modified by medications
a) Drug induced gingival disease
1) CALCIUM CHANNEL BLOCKERS - NIFEDIPINE

For details click on the books

Nifedipine is used for coronary artery disease and hypertension to dilate blood vessel and is also used with immunosuppressant drugs in organ transplant. This medication induces gingival hypertrophy, as seen here, in 25% to 50% of patients.

I) Gingival disease (Continued)
A) Dental plaque induced
3) Gingival diseases modified by medications
a) Drug induced gingival disease
1) IMMUNOSUPPRESANT CYCLOSPORINE

For details click on the books

Cyclosporin A is an immunosuppressant used in organ transplant and it produces gingival enlargement in at least 30% of patients under treatment.

# I) Gingival disease (Continued)
## A) Dental plaque induced
### 3) Gingival diseases modified by malnutrition
#### a) ASCORBIC ACID GINGIVITIS

For details click on the books

This gingivitis seen only in the late stages of scurvy is plaque associated. Severe vitamin C deficiency induces absence of intracellular oxidation, abnormal collagen formation, gingival hypertrophy with hemorrhage and mucosal echymoses.

I) Gingival disease (Continued)

B) Non plaque induced

1) Gingival diseases of specific bacterial origin

Example: RECURRENT APHTOUS STOMATITIS

For details click on the books

Recurrent aphtous stomatitis is divided in aphthous minor, aphthous major and herpetiform ulcers. Aphthous minor rarely affects the gingiva. These ulcers are very painful and may last up to 14 days.Etiolgy is unknown.

I) Gingival disease (Continued)
B) Non plaque induced
2) Gingival diseases of viral origin
a) Herpes virus - PRIMARY HERPETIC GINGIVOSTOMATITIS

For details click on the books

To the left a 13 y.old boy and to the right a 23 y.old man both with primary herpetic gingivostomatitis. Note gingival bleeding and ulcerations which were preceded by vesicles. Also note sero-purulent exudate in the 23 y.old man.

I) Gingival disease (Continued)
B) Non plaque induced
2) Gingival diseases of viral origin
a) Herpes virus - RECURRENT INTRAORAL HERPES SIMPLEX

For details click on the books

The intraoral lesions of RHS are characterized by small linear vesicles that rupture and leave small areas of ulceration. Both the free and attached gingiva can be the site of these lesions.

I) Gingival disease (Continued)
B) Non plaque induced
2) Gingival diseases of viral origin
a) Herpes virus - RECURRENT INTRAORAL HERPES SIMPLEX GINGIVAL MUCOSAL LESIONS

These intraoral recurrent lesions of herpes simplex resulted from the minor trauma associated with root planing. Note the marked involvement one week after root planing.These lesions are infrequently seen and may occur after flap surgery.

I) Gingival disease (Continued)
B) Non plaque induced
2) Gingival diseases of viral origin
a) Herpes virus - HERPES ZOSTER INFECTION

For details click on the books

Skin and mucosal lesions of herpes zoster are characterized by linear crops of vesicles, as seen here. When the intraoral vesicles break leave painful ulcers. Post zoster neuralgia is a frequent sequela.

I) Gingival disease (Continued)
B) Non plaque induced
2) Gingival diseases of viral origin
a) Herpes virus - HERPES ZOSTER INFECTION

Herpes Zoster lesions follow the affected nerve distribution,in this case the Mandibular branch of the Trigeminal nerve. To the right healing 3 weeks later.

I) Gingival disease (Continued)
B) Non plaque induced
2) Gingival diseases of viral origin
a) Herpes virus - AIDS RELATED KAPOSI SARCOMA

For details click on the books

These are two examples of gingival Kaposi sarcoma. To the left generalized gingival involvement . To the right a localized sarcoma mimicking a pyogenic granuloma. Herpes virus 8 is considered the etiologic agent of AIDS related Kaposi sarcoma.

I) Gingival disease (Continued)
B) Non plaque induced
3) Gingival diseases of fungal origin
a) Candida species infections
1) GENERALIZED GINGIVAL CANDIDIASIS

For details click on the books

The left is an example of acute pseudo-membranous candidiasis (thrush),white lesions that can be lifted off the gingiva.The other case to the right shows an example of acute atrophic (eythematous) gingival candidiasis.

## ORAL MANIFESTATIONS OF AIDS

- Hairy leukoplakia
- Candidiasis
- Other mycotic infections
- Oral ulcers and delayed healing
- Herpetic infections
- Other viral infections
- Kaposi’s sarcoma
- Other lesions

## AIDS and the PERIODONTIUM

- Linear gingival erythema
- Necrotizing ulcerative periodontitis
- Necrotizing stomatitis
- Candidiasis
- Other mycotic infections
- Herpetic infections
- Other viral infections
- Kaposi’s sarcoma

I) Gingival disease (Continued)
B) Non plaque induced
3) Gingival diseases of fungal origin
b) Linear gingival erythema
HIV ASSOCIATED GINGIVITIS

For details click on the books

Note the well delineated erythematous band following the contour of the free gingival margin. This phenomenon reflects inflammation as a consequence to bacterial invasion and proliferation in the gingival sulcus.

I) Gingival disease (Continued)
B) Non plaque induced
3) Gingival diseases of fungal origin
b) Linear gingival erythema
AIDS RELATED PERIODONTITIS

For details click on the books

The photo to the left shows areas of gingival and periodontal necrosis and gingival hypertrophy. The photo to the right shows marked gingival recession and bone exposure.These lesions can destroy tissue rapidly Both patients were HIV positive.

I) Gingival disease (Continued)
B) Non plaque induced
4) Gingival lesions of genetic origin
a) Hereditary gingival fibromatosis
AUTOSOMAL DOMINANT GINGIVAL FIBROMATOSIS

For details click on the books

Marked gingival hypertrophy in a patient with autosomal dominant gingival fibromatosis.This is seen early affecting even the deciduous dentition. The teeth are partially covered and eruption is retarded.

I) Gingival disease (Continued)
B) Non plaque induced
4) Gingival lesions of genetic origin
b) Other

This patient is an example of a syndrome characterized by gingival hyperplasia, increased growth of hair, epilepsy and mental retardation, inherited as an autosomal dominant. Note the increased amount of facial hair and the gingival fibromatosis.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
a) Mucocutaneous disorders - LICHEN PLANUS

For details click on the books

Note the striations and erosion of the gingiva. Lichen planus may be an autoimmune response. Vesicles may be present, lace like white lesions of gingiva, tongue and cheek are also part of the clinical manifestations. In some patients the ulcerations may be related to friction.

I) Gingival disease (Continued)

B) Non plaque induced gingival lesions

5) Gingival manifestations of systemic conditions

a) Mucocutaneous disorders - LICHEN PLANUS

These are examples of squamous cell carcinoma arising in a previous erosive Lichen Planus observed in two different patients.There may be an increased risk of neoplastic change in Lichen Planus.

I) Gingival disease (Continued)

B) Non plaque induced gingival lesions

5) Gingival manifestations of systemic conditions

a) Mucocutaneous disorders - MUCOUS MEMBRANE PEMPHIGOID

For details click on the books

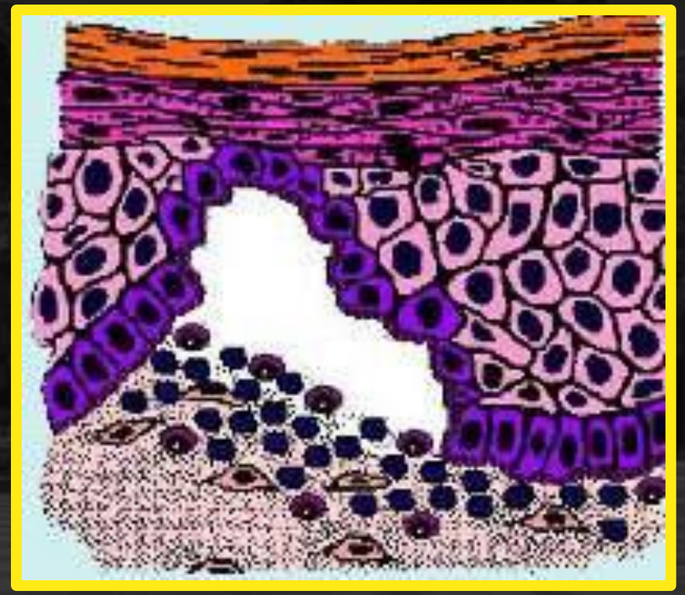
These photos show gingival erythema and desquamation with symptons of gingival pain in two patients with Benign Mucous Membrane Pemphigoid.

I) Gingival disease (Continued)

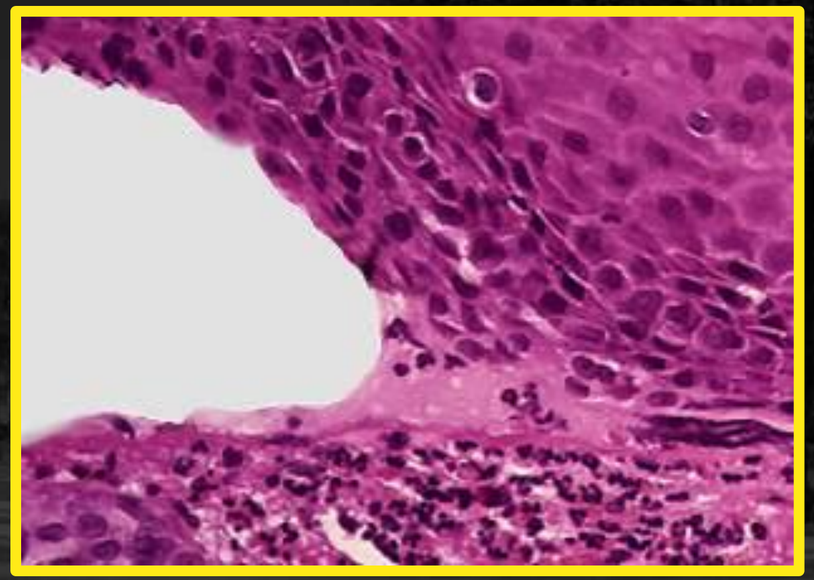
B) Non plaque induced gingival lesions

5) Gingival manifestations of systemic conditions

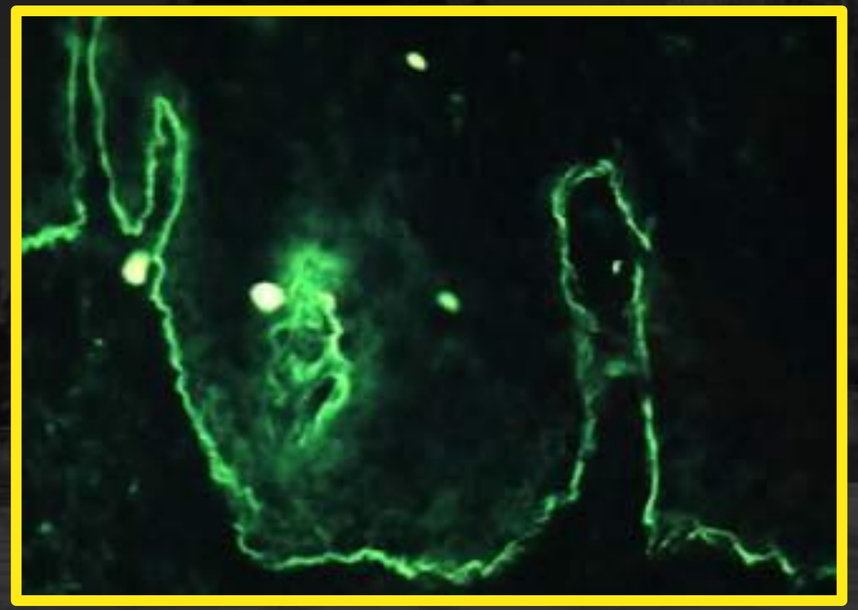
a) Mucocutaneous disorders - MUCOUS MEMBRANE PEMPHIGOID



The drawing and the microscopy show the vesicle formation beginning at the Basement Membrane typical of Benign Mucous Membrane Pemphigoid.



I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
a) Mucocutaneous disorders - MUCOUS MEMBRANE PEMPHIGOID



Indirect immunofluorescence shows that an antibody-antigen reaction is present at the level of the epithelial basement membrane as an auto immune response.

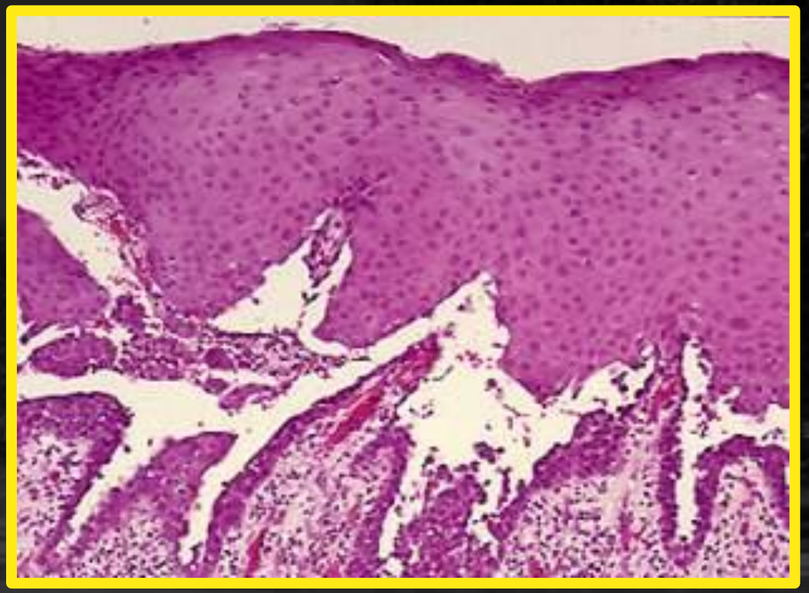
I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
a) Mucocutaneous disorders - PEMPHIGUS VULGARIS

For details click on the books

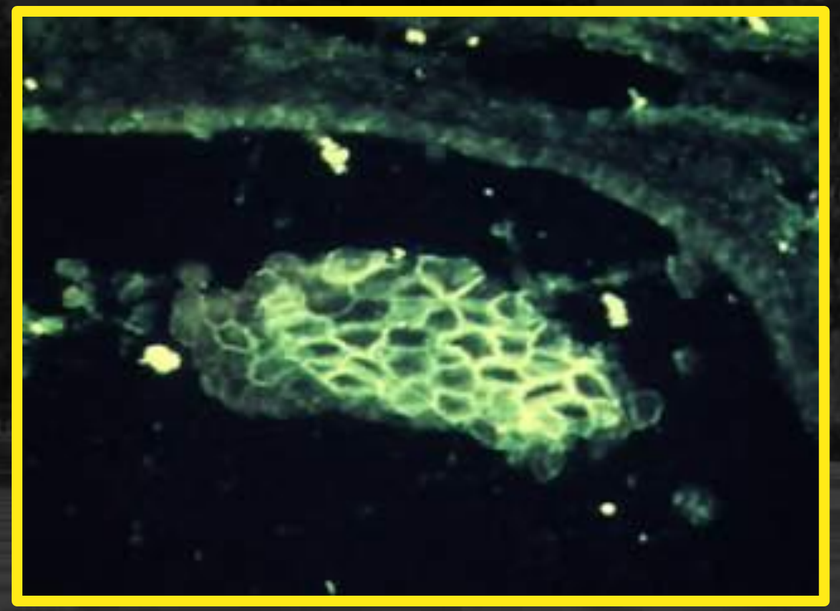
These photos of the same patient show gingival desquamation, ulcers, erythema and vesicle formation. These were the initial painful manifestations of Pemphigus in this patient.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
a) Mucocutaneous disorders - PEMPHIGUS VULGARIS

The drawing and the microscopy demonstrate the intraepithelial vesicle formation typical of Pemphigus Vulgaris. Also note Tzank cells within the vesicle lumen.



I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
a) Mucocutaneous disorders - PEMPHIGUS VULGARIS



Direct immunofluorescence of Pemphigus Vulgaris shows that the auto immune antibody-antigen reaction is present within the gingival epithelial intercellular adhesion system. This affects the desmosomes of the spinal cell layer. The result is acantholysis, that is cellular detachment and vescicles.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
a) Mucocutaneous disorders - ERYTHEMA MULTIFORME

For details click on the books

The left shows gingival erythema and ulcers, manifestations of EM, which resemble Herpes Simplex lesions. Also note crusting of the upper right lip. The photo to the right shows extensive lip crusting in another patient with EM.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
a) Mucocutaneous disorders - LUPUS ERYTHEMATOSUS

For details click on the books

The photo to the left shows the typical erythematous lesion of systemic Lupus Erythematosus affecting the butterfly area of the face. The right photo shows an intraoral lesion of discoid lupus erythematosus that looks similar to Lichen Planus,lesions can affect the gingiva.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
1) Dental restorative materials - NICKEL ALLERGY

For details click on the books

These two patients present rare localized reactions to a metal prosthesis containing nickel. Note marked erythema of gingiva and buccal mucosa, and gingival hypertrophy on the right. Systemic allergy may occur.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
2) Reactions attributable to: a) TOOTH PASTE

Some dentifrices and mouthrinses containing the herbal compound sanguinaria were shown to produce gingivo-vestibular reactions characterized by leukoplakia formation, as seen here. These lesions were considered potentially malignant.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
2) Reactions attributable to: b) Chewing gum - ALLERGY TO CINNAMON

This patient was a heavy cinnamon flavored chewing gum user. Note the multifocal white areas intermixed with areas of erythema.This may be produced by the cinnamon  present at high concentrations in chewing gums,candy, baked goods and some dental products

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
1) UNIDENTIFIED ALLERGEN

Intraoral manifestations of allergic reactions, specially in the gingiva, are characterized by marked erythema and superficial erosion. Patients generally complain of a burning sensation. The allergen was unidentified in this patient but cinnamon allergies can cause gingival lesions with this appearance.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
3) Traumatic lesions (factitious, iatrogenic, accidental)
a) Physical injury - Factitious

This patient had a destuctive habit of continually scratching this region of the gingiva with her finger nail

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
3) Traumatic lesions (factitious, iatrogenic, accidental)
a) Chemical injury - HYDROGEN PEROXIDE

For details click on the books

This photo shows a generalized gingival burn produced by rinsing the mouth with 20% hydrogen peroxide that was to be used for hair bleaching.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
3) Traumatic lesions (factitious, iatrogenic, accidental)
a) Chemical injury - ASPIRIN BURN

This photo shows a large burn produced by the local use of an aspirin tablet to ease the pain of a periodontal abscess.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
3) Traumatic lesions (factitious, iatrogenic, accidental)
a) Physical injury - TOOTHBRUSH TRAUMA

These photos show traumatic lesions as a consequence of chronic improper brushing technique with a very hard tooth brush

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
3) Traumatic lesions (factitious, iatrogenic, accidental)
a) Physical injury - COTTON ROLL BURN

This gingivo-vestibular lesion was a consequence to the use of a dry cotton roll for a long time during a restorative dental procedure. Dry cotton rolls may firmly adhere to the oral mucosa which becomes denuded during removal of the roll leaving a traumatic lesion.

I) Gingival disease (Continued)
B) Non plaque induced gingival lesions
5) Gingival manifestations of systemic conditions
b) Allergic reactions
5) Not otherwise specified
Example: COCAINE INDUCED GINGIVAL NECROSIS

This severe gingival recession was present in a cocaine user. These lesions can be associated with the habit of topical cocaine usage on the gingiva and can vary from superficial ulcerations to severe tissue necrosis, as seen in this patient.The vaso constrictive effect of cocaine is the cause.

II) Chronic Periodontitis

1) Localized

Example: MOLAR FURCATION

For details click on the books

These photos show a deep intrabony defect at the level of the furcation of the second maxillary molar below a ceramic crown.

II) Chronic Periodontitis (Continued)

2) Generalized

Example: LOWER LEFT TEETH

This photo from a patient with generalized chronic periodontitis shows marked gingival inflammation and plaque deposition. Additionally, deep pockets and bone loss were also present.

II) Chronic Periodontitis (Continued)

2) Generalized

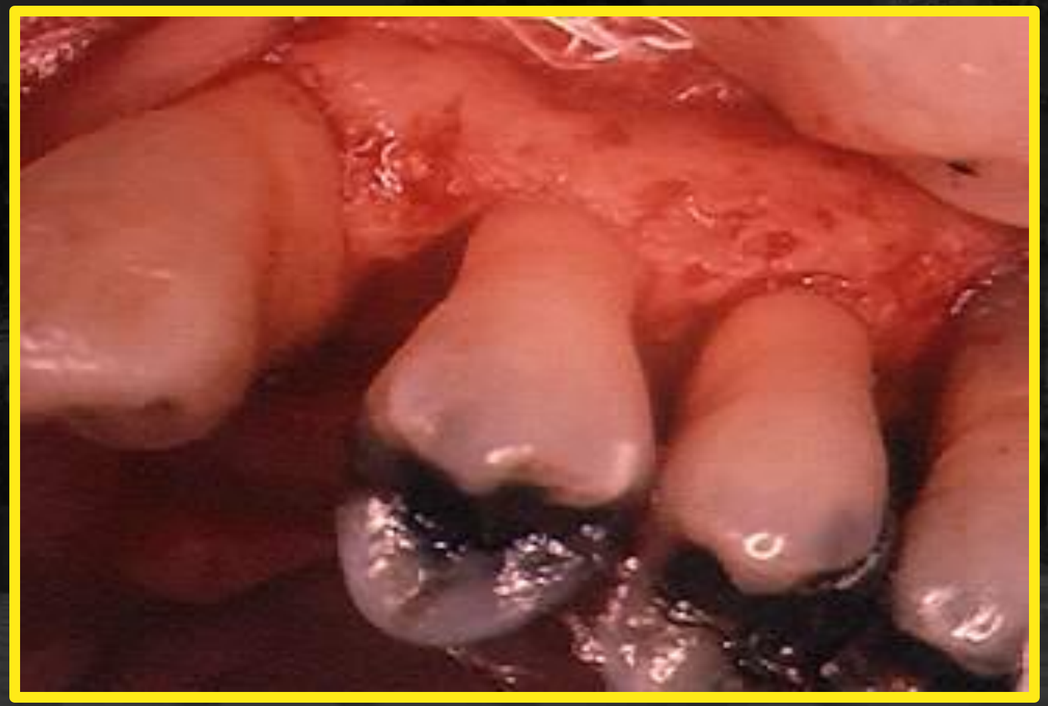
Example: UPPER MOLARS AND PREMOLARS

Generalized chronic periodontitis showing minimal gingival inflammation in a cigarette smoker. Deep pockets and bone loss were also seen.

II) Chronic Periodontitis (Continued)

2) Generalized

Example: UPPER MOLARS AND PREMOLARS



This is the same patient as in the previous slide at the time of flap surgery. There is generalized horizontal bone loss with deep vertical bone defects on the mesials of the first premolar and molar.

III) Aggressive Periodontitis

A) Localized

Example: JUVENILE ONSET PERIODONTITIS

For details click on the books

The clinical photo and the X-Ray of this 28 year-old man show the advanced alveolar bone loss in the absence of significant gingival inflammation, typical of the localized aggressive periodontitis.

III) Aggressive Periodontitis (Continued)

A) Localized

Example: JUVENILE ONSET PERIODONTITIS

Migration of teeth associated with pockets and relatively healthy gingiva in another young patient with aggressive periodontitis.

III) Aggressive Periodontitis(Continue)

A) Localized

Example: JUVENILE ONSET PERIODONTITIS

These X-rays show localized aggressive periodontitis affecting first molars.

## III) Aggressive Periodontitis (Continued)
### B) Generalized

For details click on the books

This patient has advanced generalized aggressive periodontitis with deep pockets throughout the mouth.

III) Aggressive Periodontitis (Continued)
B) Generalized

The radiographs show extensive bone loss due to aggressive periodontitis throughout the dentition.

III) Aggressive Periodontitis (Continued)
B) Generalized

Posterior segments of the patient shown in the previous slide. The upper left first premolar was extracted due to extensive generalized aggressive periodontitis.

IV) Periodontitis as a Manifestation of Systemic Disease

A) Associated with hematologic disorders

2) LEUKEMIAS (see also Leukemia associated gingivitis, IA2b1)

For details click on the books

These two patients had acute myelogenous leukemia. Note the severe gingivo-periodontal involvement as well as the lip hemorrhage.

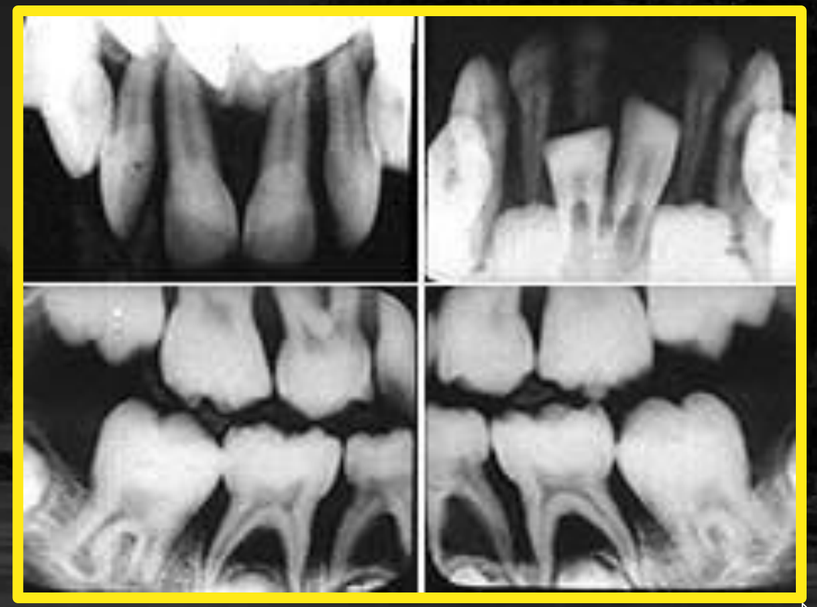
## IV) Periodontitis as a Manifestation of Systemic Disease

### B) Associated with genetic disorders

### 1) CYCLIC NEUTROPENIA

For details click on the books

These photos show the intraoral clinical and radiologic appearance in a child with cyclic neutropenia. Note the marked destruction of the periodontium and the acute necrotizing gingivitis type lesions.



## IV) Periodontitis as a Manifestation of Systemic Disease
### B) Associated with genetic disorders
#### 4) PAPILLON-LEFEVRE SYNDROME

For details click on the books

These two patients have Papillon Lèfevre Syndrome. The intraoral photo is of a 13 year old boy and the panoramic x-ray is of an 8 year old boy. Note marked inflammation with teeth mobility and aggressive periodontitis.

IV) Periodontitis as a Manifestation of Systemic Disease

B) Associated with genetic disorders

4) PAPILLON-LEFEVRE SYNDROME

These photos show the palmo-plantar hyperkeratosis present in patients with the Papillon Lèfevre Syndrome. These lesions remain for life but improve when treated with retinoic acid.

IV) Periodontitis as a Manifestation of Systemic Disease

B) Associated with genetic disorders

11) HYPOPHOSPHATASIA

For details click on the books

The intraoral photo is of a child with hypophosphatasia who lost his anterior teeth for lack of cementum formation as seen in the microscopy of the root of one of the lost teeth.

## V) Necrotizing Periodontal Disease

### A) NECROTIZING ULCERATIVE GINGIVITIS

For details click on the books

The photo to the left and the one below show necrotizing lesions affecting marginal gingiva and interdental papillae. The right photo is 3 weeks post-treatment with scaling and oral hygiene instruction.

V) Necrotizing Periodontal Disease (Continue)
B) Necrotizing Ulcerative Periodontitis
Example: AIDS ASSOCIATED

This HIV positive patient had an advanced stage of NUP characterized by horizontal loss of interdental papillae and necrosis of gingiva and bone. This lesion is associated with large amounts of fusiforms and spirochetes and it rapidly progresses in a few days.

VI) Abscesses of the Periodontium

A) Gingival abscess

Example: LOCALIZED TO GINGIVAL TISSUE

For details click on the books

This photo shows a periodontal abscess affecting the gingiva.

VI) Abscesses of the Periodontium (Continue)

B) Periodontal abscess

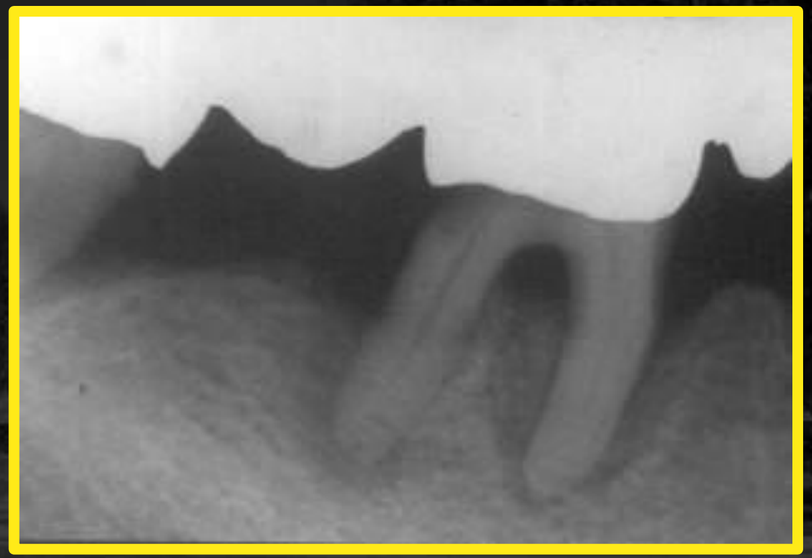
Example: SPREAD TO INVOLVE LARGER AREA

This photo shows a periodontal abscess involving a large area.

## VII) Periodontitis Associated with Endodontic Lesions

### A) COMBINED PERIODONTIC ENDODONTIC LESIONS

This case shows a combination of periodontitis and endodontic inflammation causing bone loss at the crest and at the apex.



## VII) Periodontitis Associated with Endodontic Lesions (Continue)

### A) COMBINED PERIODONTIC ENDODONTIC LESIONS

This fistula on the labial surface looks like an endodontic abscess.Diagnosis of any abscess must include periodontal probing,periapical radiographs ,vitality tests and a patient history .

## VII) Periodontitis Associated with Endodontic Lesions (Continue)
### A) COMBINED PERIODONTIC ENDODONTIC LESIONS

These photos are from the patient shown in the previous slide. The lateral incisor tested vital and the abscess was a periodontal abscess that was initiated with pockets starting in a cingulum groove of the palatal surface.

VIII) Developed or Acquired Deformities and Conditions

A) Localized tooth related factors that modify or predispose to plaque induced gingival disease, periodontitis

1) Anatomic factors

Example: DEVELOPMENT AT GROOVE ON PALATAL OF UPPER LATERAL INCISOR, RESULTING IN PERIODONTAL BONE LOSS.

VIII) Developed or Acquired Deformities and Conditions (Continue)

A) Localized tooth related factors that modify or predispose to plaque induced gingival disease, periodontitis

2) Dental restorations

Example: OVER CONTOURED CROWNS. POORLY FITTING MARGINS

For details click on the books

These photos show gingivo-periodontal reactions associated with poorly fitting margins of these over contoured crowns.

VIII) Developed or Acquired Deformities and Conditions (Continue)

A) Localized tooth related factors that modify or predispose to plaque induced gingival disease, periodontitis

3) Root fracture

Example: LONGITUDINAL FRACTURE

The left photo shows the periodontal probe deep into a palatal pocket. The right photo shows a vertical root fracture in the lateral incisor. This type of fracture has a hopeless prognosis.

VIII) Developed or Acquired Deformities and Conditions (Continue)

B) Mucogingival deformities and conditions around teeth

1) Gingival soft tissue recession

a) Facial or lingual surfaces

Example: INADEQUATE BAND OF KERATINIZED GINGIVA

Gingival recession has occurred due to an inadequate band of keratinized gingiva, excessive muscle pull and too vigorous tooth brushing.

VIII) Developed or Acquired Deformities and Conditions (Continue)

B) Mucogingival deformities and conditions around teeth

1) Gingival soft tissue recession

b) Interproximal papillary

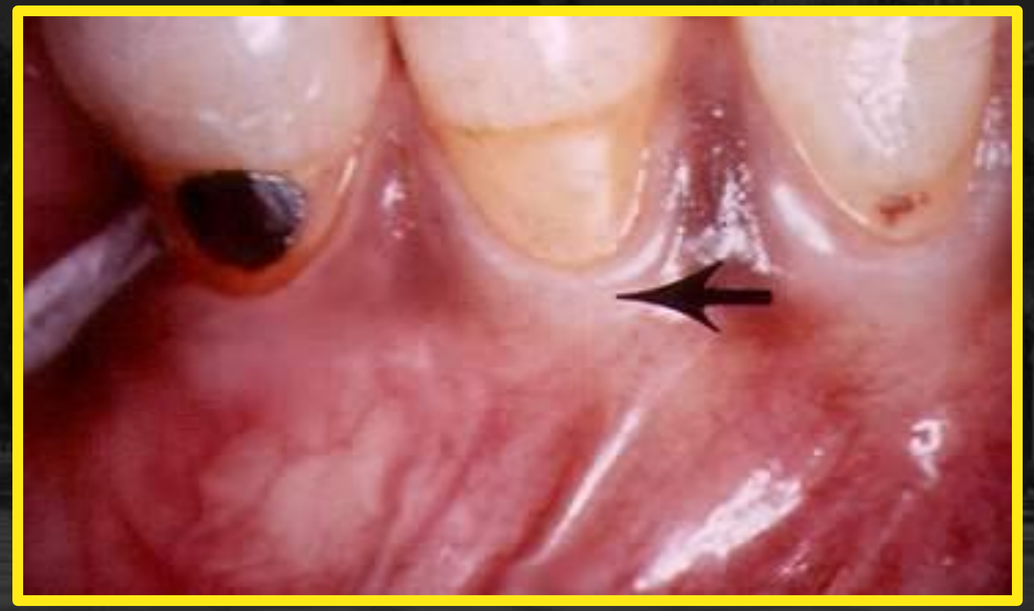
Example: LOSS OF ANTERIOR PAPILLA

This gingival deformity is associated with loss of interproximal papillae.

VIII) Developed or Acquired Deformities and Conditions (Continue)

B) Mucogingival deformities and conditions around teeth

2) LACK OF KERATINIZED GINGIVA



The lack of keratinized gingiva together with muscle pull has caused on-going gingival recession.

VIII) Developed or Acquired Deformities and Conditions (Continue)

B) Mucogingival deformities and conditions around teeth

3) DECREASED VESTIBULAR DEPTH

Inadequate keratinized gingiva combined with excessive muscle pull and decreased vestibular depth has caused progressive gingival recession.

## VIII) Developed or Acquired Deformities and Conditions (Continue)
### B) Mucogingival deformities and conditions around teeth
### 4) ABERRANT FRENUM

For details click on the books

An aberrant frenum caused excessive tension on the gingival margin and resulted in gingival recession and inflammation.

VIII) Developed or Acquired Deformities and Conditions (Continue)

B) Mucogingival deformities and conditions around teeth

5) Gingival excess

c) EXCESSIVE GINGIVAL DYSPLAY

This is an example of excessive gingival display in upper anterior teeth which results in an unesthetic gummy smile.

VIII) Developed or Acquired Deformities and Conditions (Continue)

C) Mucogingival deformities and conditions on edentulous ridges

1) Vertical and/or horizontal ridge deformity

Example: RIDGE DEFORMITIES

This is an example of vertical ridge deformity associated with a previous tooth extraction.

VIII) Developed or Acquired Deformities and Conditions (Continue)

C) Mucogingival deformities and conditions on edentulous ridges

1) Vertical and/or horizontal ridge deformity

Example: RIDGE DEFORMITIES

This is an example of horizontal concave ridge deformity following tooth extractions without regenerative procedures using bone graft materials

## VIII Developed or Acquired Deformities and Conditions (Continued)

### D. Occlusal trauma

1) Primary occlusal trauma

When trauma from occlusion is the result of alterations in occlusal forces, it is called *primary occlusal trauma*.

2) Secondary occlusal trauma

When it results from reduced ability of the tissues to resist the occlusal forces, it is known as *secondary occlusal trauma*.

This occurs when a tooth has lost bone support due to periodontitis and there is normal occlusal force.