Acute

Gingival and Periodontal Conditions

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Okanagan Periodontal Study Club

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Objectives

By the end of this lecture you will:

- know what constitutes an "acute" periodontal problem
- know how to identify and manage the **most common** acute periodontal problems
- know how to behave when confronted with an acute periodontal problem (or any acute problem, for that matter)

Overview

1. Introduction
2. Periodontal abscesses
3. Necrotizing periodontal diseases
4. Acute gingival conditions of viral and fungal origin
5. Miscellaneous acute situations
6. A final word of caution

Overview

1. Introduction

Introduction

- The overwhelming majority of disease entities we deal with regarding the periodontium are chronic in nature
- A **chronic condition** is a human health condition or disease that is persistent or otherwise long-lasting in its effects (3 months is the cut-off)[1]

Chronic vs. ?????

- When diagnosing periodontitis, the "opposite" of chronic is usually considered to be aggressive
- Aggressive ≠ acute

"Acute"

- Refers to an entity "with a rapid onset and/or a short course"[2]
- Acute ≠ severe

Armitage Classification

- This classification comprises every currently recognized periodontal diagnosis in existence
- Some are chronic in nature, while others are

ACUTE

Armitage Classification

I. 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 (See VIII A)
  - 2. Gingival diseases modified by systemic factors
    - a. associated with the endocrine system
      - 1) puberty-associated gingivitis
      - 2) menstrual cycle-associated gingivitis
      - 3) pregnancy-associated
        - a) gingivitis
        - b) pyogenic granuloma
      - 4) diabetes mellitus-associated gingivitis
    - b. associated with blood dyscrasias
      - 1) leukemia-associated gingivitis
      - 2) other
  - 3. Gingival diseases modified by medications
    - a. drug-influenced gingival diseases
      - 1) drug-influenced gingival enlargements
      - 2) drug-influenced gingivitis
        - a) oral contraceptive-associated gingivitis
        - b) other
  - 4. Gingival diseases modified by malnutrition
    - a. ascorbic acid-deficiency gingivitis
    - b. other
- B. Non-plaque-induced gingival lesions
  - 1. Gingival diseases of specific bacterial origin
    - a. *Neisseria gonorrhea*-associated lesions
    - b. *Treponema pallidum*-associated lesions
    - c. streptococcal species-associated lesions
    - d. other
  - 2. Gingival diseases of viral origin
    - a. herpesvirus infections
      - 1) primary herpetic gingivostomatitis
      - 2) recurrent oral herpes
      - 3) varicella-zoster infections
    - b. other
  - 3. Gingival diseases of fungal origin
    - a. *Candida*-species infections
      - 1) generalized gingival candidosis
    - b. linear gingival erythema
    - c. histoplasmosis
    - d. other
  - 4. Gingival lesions of genetic origin
    - a. hereditary gingival fibromatosis
    - b. other
  - 5. Gingival manifestations of systemic conditions
    - a. mucocutaneous disorders
      - 1) lichen planus
      - 2) pemphigoid
      - 3) pemphigus vulgaris
      - 4) erythema multiforme
      - 5) lupus erythematosus
      - 6) drug-induced
      - 7) other
    - b. allergic reactions
      - 1) dental restorative materials
        - a) mercury
        - b) nickel
        - c) acrylic
        - d) other
      - 2) reactions attributable to
        - a) toothpastes/dentifrices
        - b) mouthrinses/mouthwashes
        - c) chewing gum additives
        - d) foods and additives
      - 3) other
  - 6. Traumatic lesions (factitious, iatrogenic, accidental)
    - a. chemical injury
    - b. physical injury
    - c. thermal injury
  - 7. Foreign body reactions
  - 8. Not otherwise specified (NOS)

Figure 1.
Classification of periodontal diseases and conditions.
* Can occur on a periodontium with no attachment loss or on a periodontium with attachment loss that is not progressing.

II. Chronic Periodontitis†
- A. Localized
- B. Generalized

III. Aggressive Periodontitis†
- A. Localized
- B. Generalized

IV. Periodontitis as a Manifestation of Systemic Diseases
- A. Associated with hematological disorders
  - 1. Acquired neutropenia
  - 2. Leukemias
  - 3. Other
- B. Associated with genetic disorders
  - 1. Familial and cyclic neutropenia
  - 2 Down syndrome
  - 3. Leukocyte adhesion deficiency syndromes
  - 4. Papillon-Lefèvre syndrome
  - 5. Chediak-Higashi syndrome
  - 6. Histiocytosis syndromes
  - 7. Glycogen storage disease
  - 8. Infantile genetic agranulocytosis
  - 9. Cohen syndrome
  - 10. Ehlers-Danlos syndrome (Types IV and VIII)
  - 11. Hypophosphatasia
  - 12. Other
- C. Not otherwise specified (NOS)

V. Necrotizing Periodontal Diseases
- A. Necrotizing ulcerative gingivitis (NUG)
- B. Necrotizing ulcerative periodontitis (NUP)

VI. Abscesses of the Periodontium
- A. Gingival abscess
- B. Periodontal abscess
- C. Pericoronal abscess

VII. Periodontitis Associated With Endodontic Lesions
- A. Combined periodontic-endodontic lesions

VIII. Developmental or Acquired Deformities and Conditions
- A. Localized tooth-related factors that modify or predispose to plaque-induced gingival diseases/periodontitis
  - 1. Tooth anatomic factors
  - 2. Dental restorations/appliances
  - 3. Root fractures
  - 4. Cervical root resorption and cemental tears
- B. Mucogingival deformities and conditions around teeth
  - 1. Gingival/soft tissue recession
    - a. facial or lingual surfaces
    - b. interproximal (papillary)
  - 2. Lack of keratinized gingiva
  - 3. Decreased vestibular depth
  - 4. Aberrant frenum/muscle position
  - 5. Gingival excess
    - a. pseudopocket
    - b. inconsistent gingival margin
    - c. excessive gingival display
    - d. gingival enlargement (See I.A.3. and I.B.4.)
  - 6. Abnormal color
- C. Mucogingival deformities and conditions on edentulous ridges
  - 1. Vertical and/or horizontal ridge deficiency
  - 2. Lack of gingiva/keratinized tissue
  - 3. Gingival/soft tissue enlargement
  - 4. Aberrant frenum/muscle position
  - 5. Decreased vestibular depth
  - 6. Abnormal color
- D. Occlusal trauma
  - 1. Primary occlusal trauma
  - 2. Secondary occlusal trauma

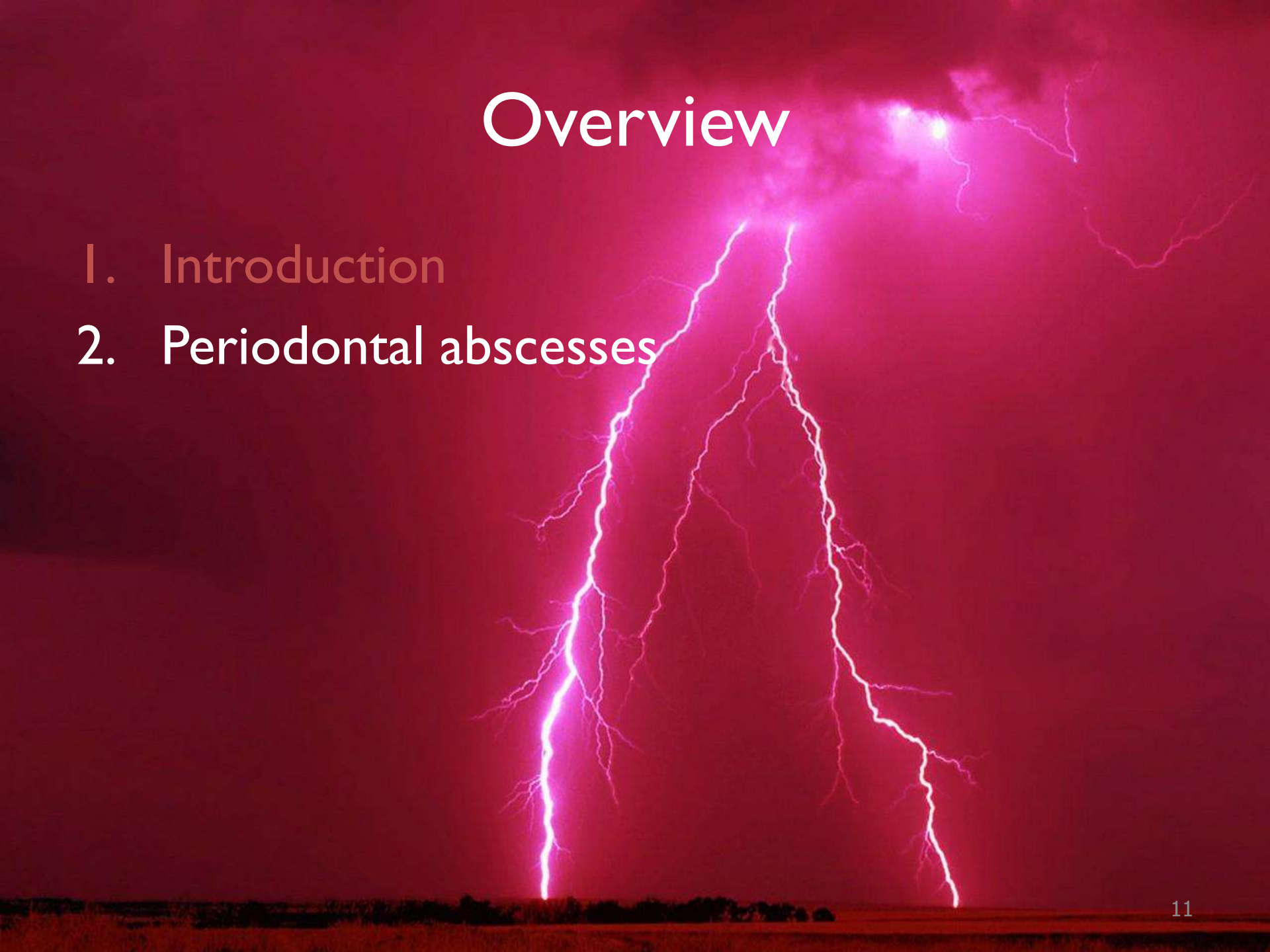
Figure 1. (Continued)
† Can be further classified on the basis of extent and severity. As a general guide, extent can be characterized as Localized = ≤30% of sites involved and Generalized = >30% of sites involved. Severity can be characterized on the basis of the amount of clinical attachment loss (CAL) as follows: Slight = 1 or 2 mm CAL, Moderate = 3 or 4 mm CAL, and Severe = ≥5 mm CAL.

Armitage Classification

- This list is very long, so this lecture is going to focus mainly on the clinical entities you will see **most commonly**

Overview

1. Introduction
2. Periodontal abscesses

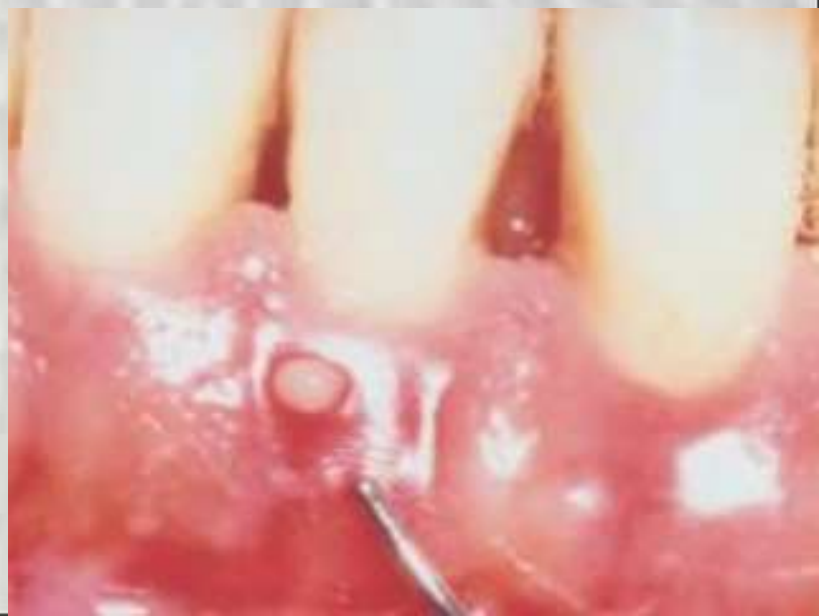


Abscesses

- The general process of abscess formation involves neutrophil activation and migration toward the site of an infectious pathogen or foreign body
- The concomitant cytokine release recruits other WBCs and increases regional blood flow
- **The area is encapsulated by healthy cells**

Gingival Abscess

- This implies that the process is confined to the marginal gingiva or interdental papilla, without involvement of the supporting structures of the tooth
- Usually presents as a localized, painful, rapidly expanding papule with a red swollen periphery and shiny surface
- Filled with seropurulent exudate

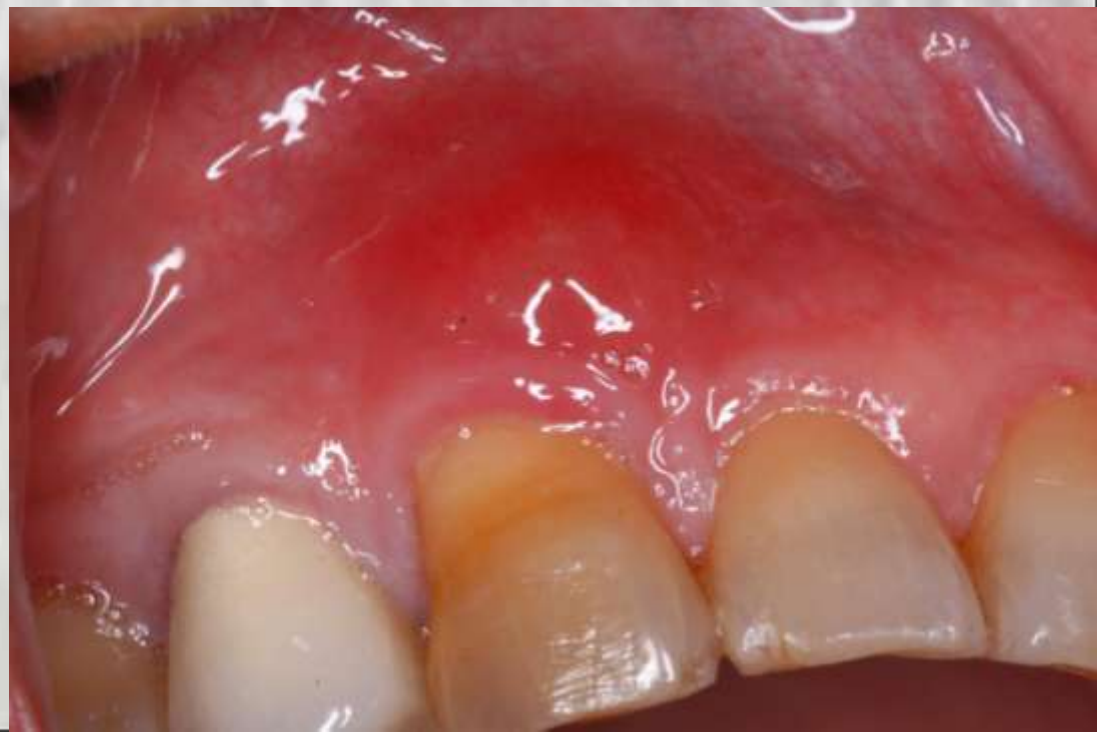


Periodontal Abscess

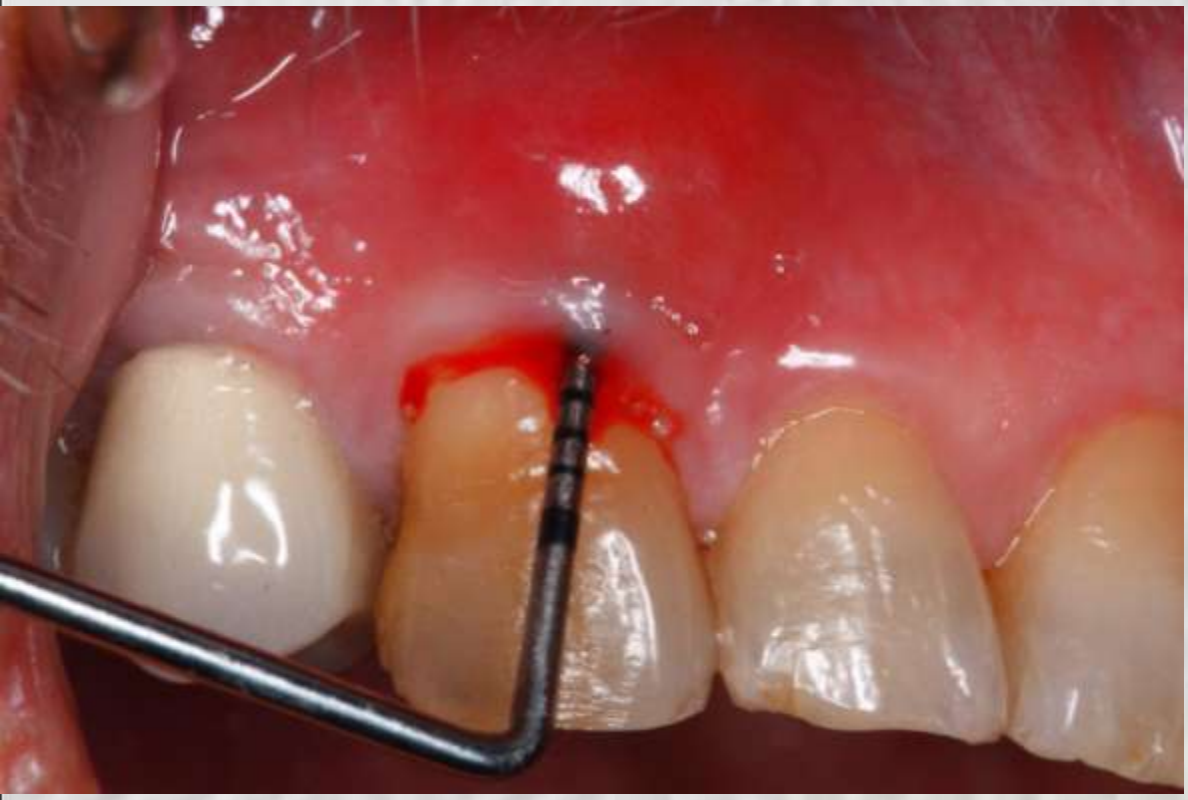
- This now implies that the supporting structures of the tooth have become involved, with some level of associated destruction of bone/pdl

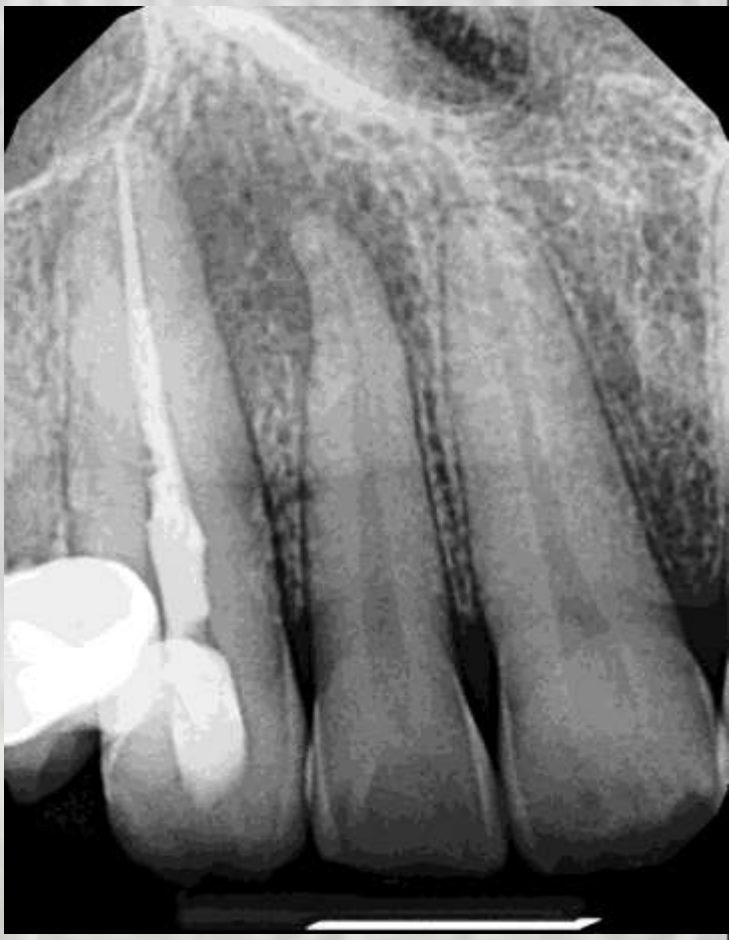
Case 1

- 53 y.o. ♀ healthy, non-smoking patient presented for emergency exam relating to 4-day history of severe pain in sextant 2, fever, and malaise. All teeth in sextant 2 were vital except 13, which had been endo-treated many years before



Case 1





Signs and Symptoms

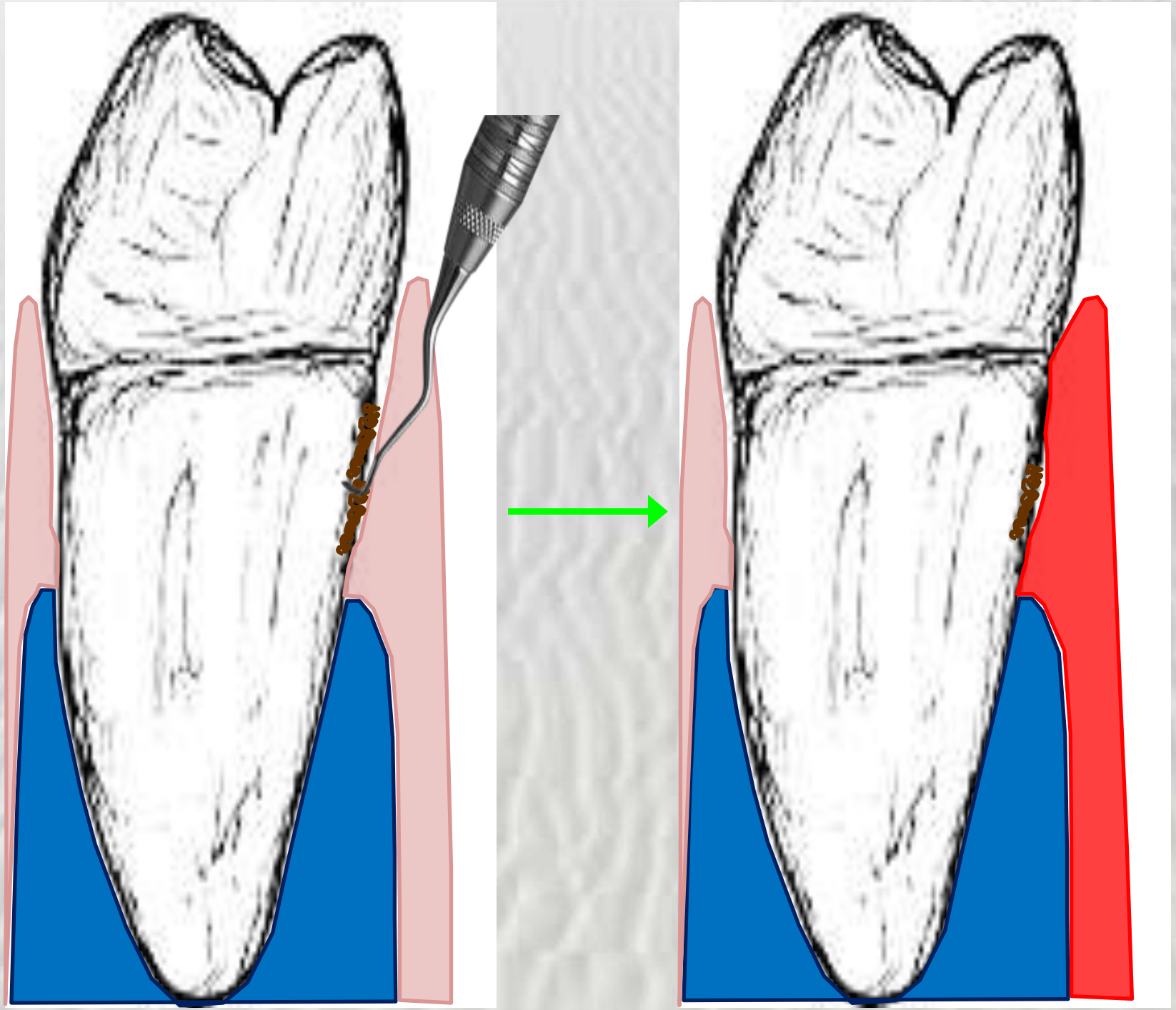
- PAIN is the most common presenting symptom
- Swelling, mobility, extrusion, draining sinus tract, radiographic bone loss, regional lymphadenopathy and body temperature increase are all secondary features which may be present

Environmental Etiology

- Frequently occurs in a pre-existing periodontal pocket
- Basically, the offending pathogens or foreign bodies get into a situation where they are encapsulated and have nowhere to go

Environmental Etiology

- One common scenario is when a deep pocket is not scaled adequately, and the coronal portion heals by repair, leaving bacteria in the apical portion



Microbial Etiology

- A mixed infection, highly gram-negative (66.2%) and highly anaerobic (65.2%)[3]
- Some of the microorganisms isolated from abscesses include:
  - *B. melaninogenicus subspecies*[3]
  - *F. nucleatum*[3]
  - *Vibrios*[3]
  - *Capnocytophagae*[3]
  - *Peptococci*[3]
  - *Peptostreptococci*[3]
  - *P. gingivalis*[4,6]
  - *P. intermedia*[4,6]
  - *C. albicans*[5]
  - *A. actinomycetemcomitans*[6]
- Very similar to chronic periodontitis

Differential Diagnosis

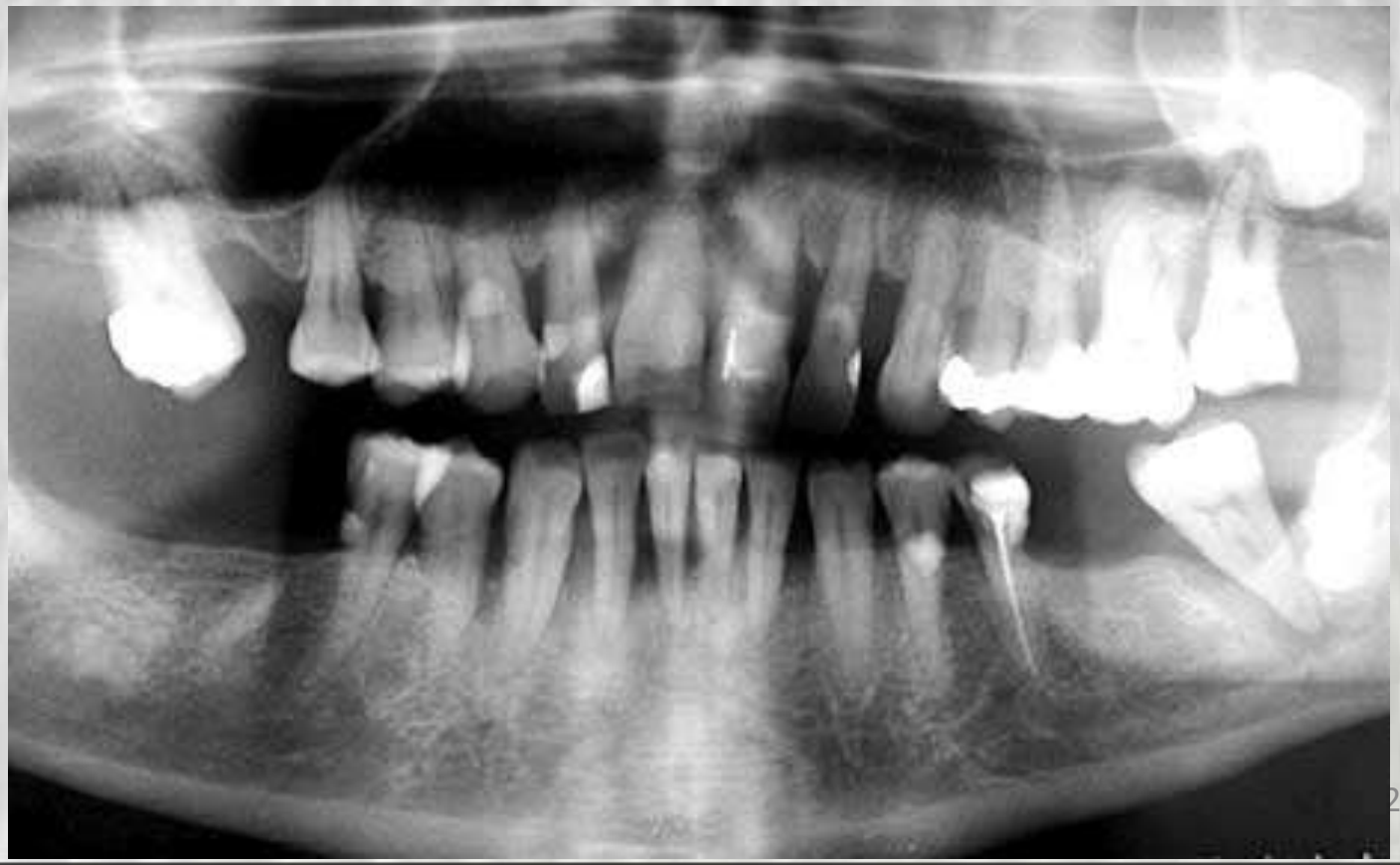
- Develop a mental algorithm for eliminating the following possibilities:
  - Periapical abscess (vitality of the tooth)
  - Acute pulpitis (radiographic appearance)
  - Vertical root fracture (pain profile/radiographic appearance/probing profile/inflammation)
  - Pericoronitis (presence of an overlying flap of tissue)
  - Periodontal Cyst (pain profile)
  - Osteomyelitis (radiographic appearance/patient profile)

Treatment Options

- (Incision and drainage)
- Thorough scaling and root planing ± systemic antibiotics
- Surgical debridement ± systemic antibiotics
  - Use of systemic chemotherapy should be based on systemic symptoms

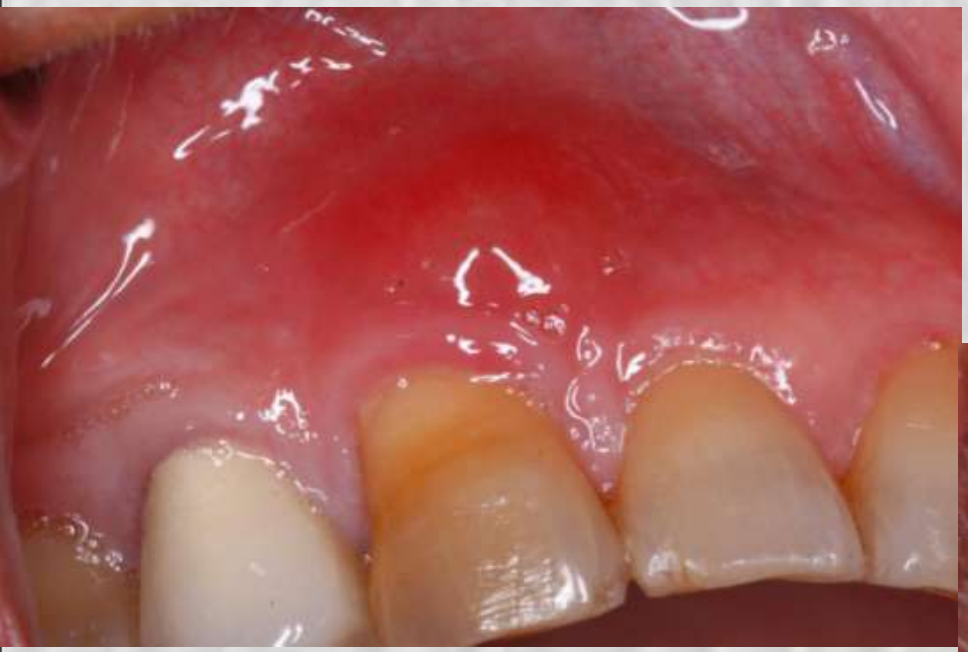
Periodontal Abscesses – Diabetes Mellitus

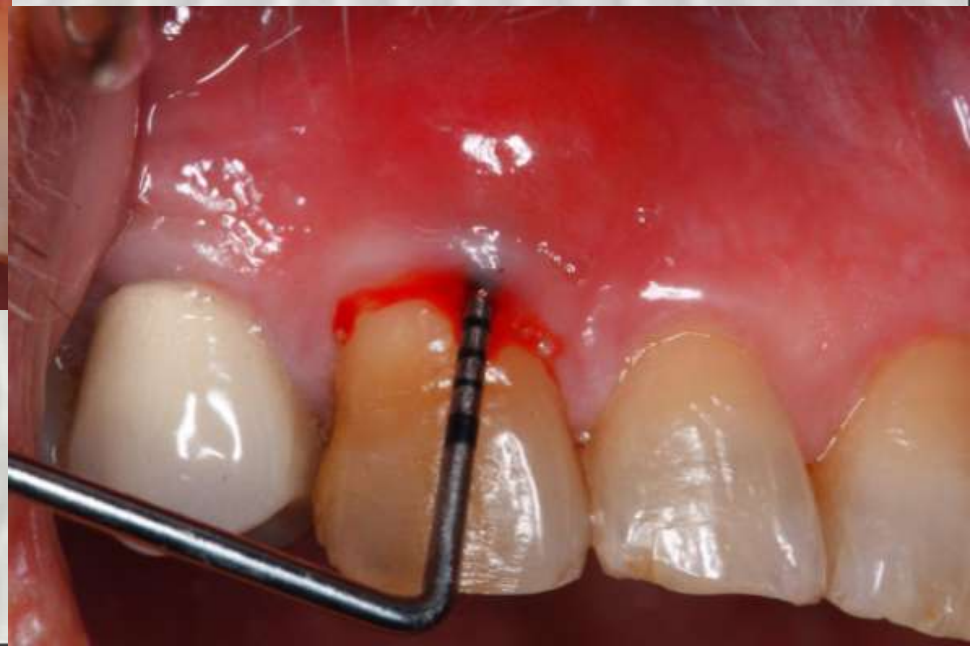
- Multiple periodontal abscesses are nearly pathognomonic of an uncontrolled diabetic state



Case 1

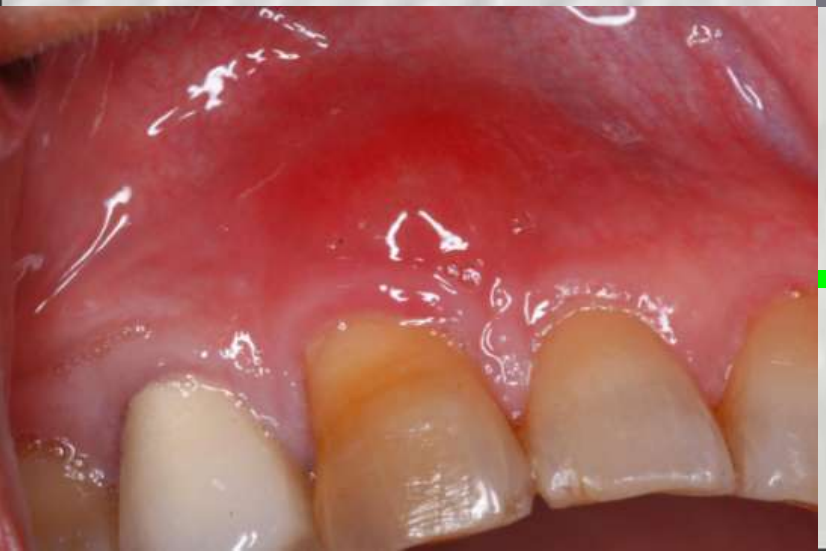
- So what ended up happening to our friend?

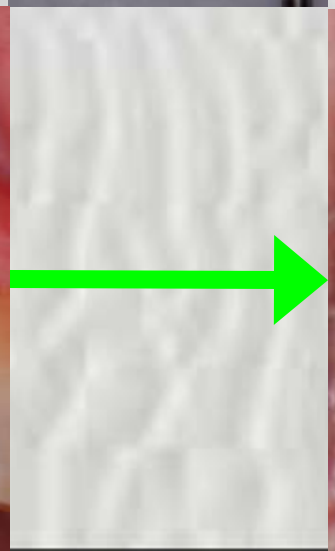


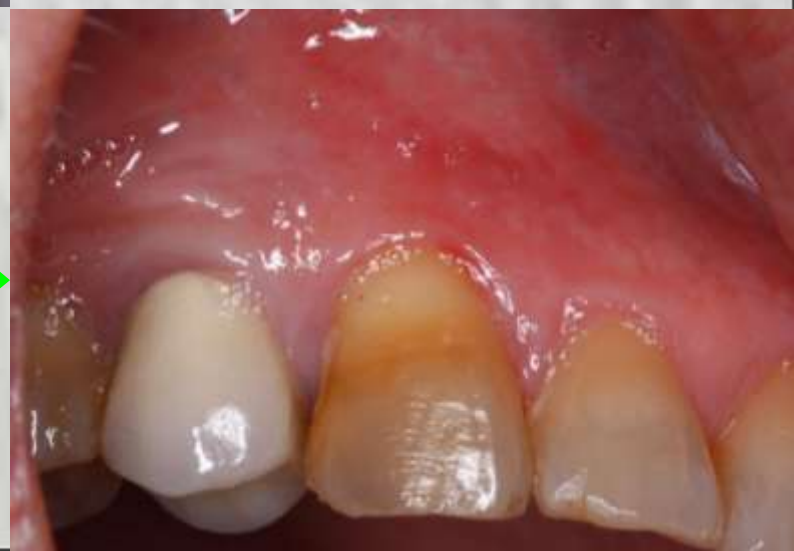


Case 1

- After Sc/RP with a course of amoxicillin….







Overview

1. Introduction
2. Periodontal abscesses
3. Necrotizing periodontal diseases

Necrotizing Periodontal Diseases

- Necrosis implies some form of cellular injury which leads to premature cell death[7]
- A continuum of necrotizing diseases exist in the current periodontal diagnostic classification system which begins with the gingiva, progresses to the periodontium, and may eventually lead to involvement of the basal bone and overlying tissues of the oral cavity

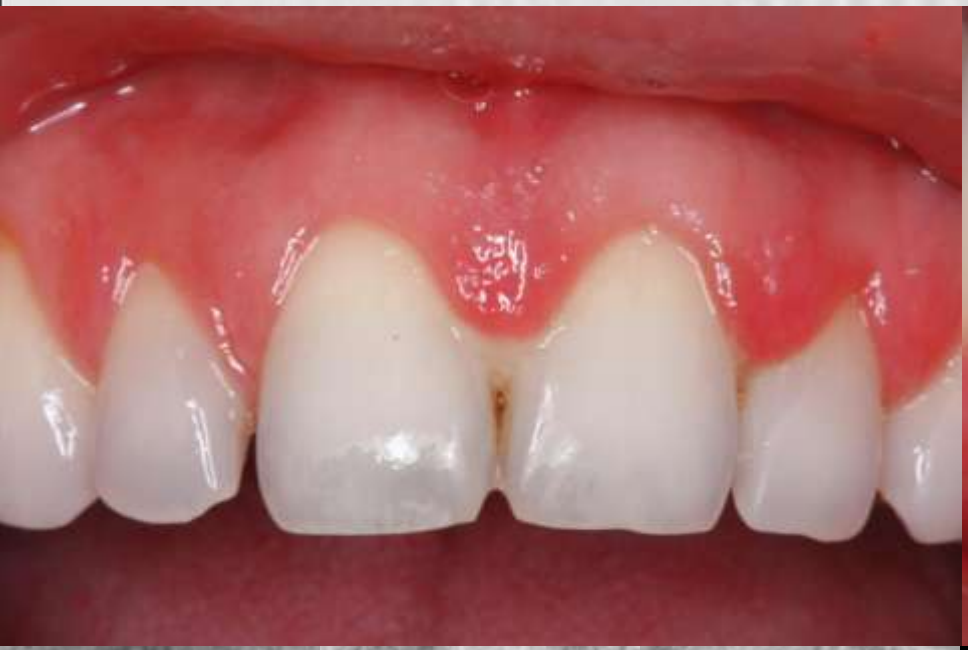
The Continuum

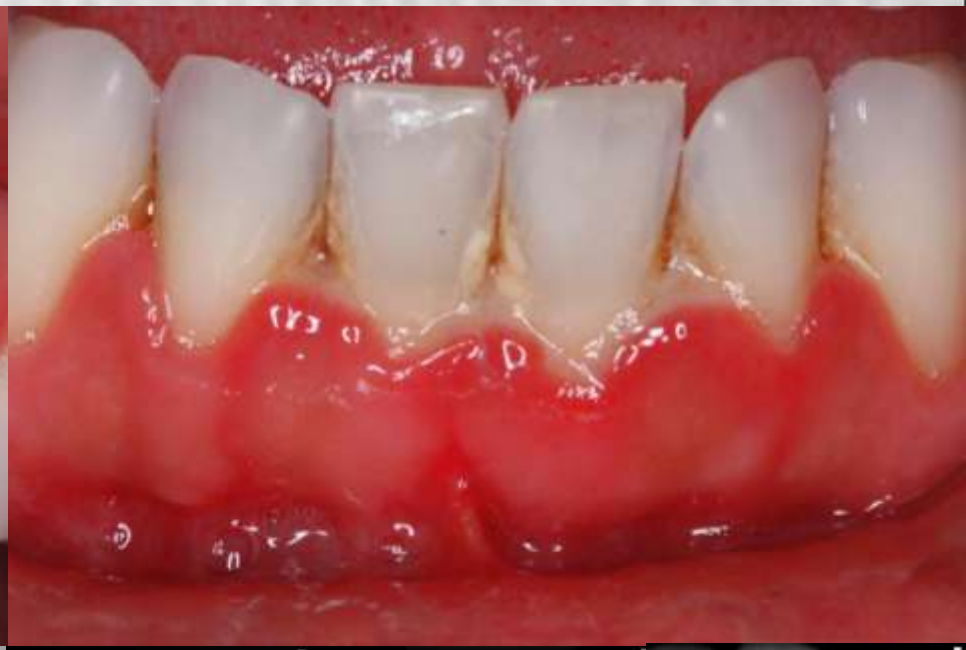
1. NUG = necrotizing ulcerative gingivitis, implies involvement restricted to the gingiva
2. NUP = necrotizing ulcerative periodontitis, implies the supporting structures of the tooth have become involved, with some level of associated destruction of bone/pdl[8]

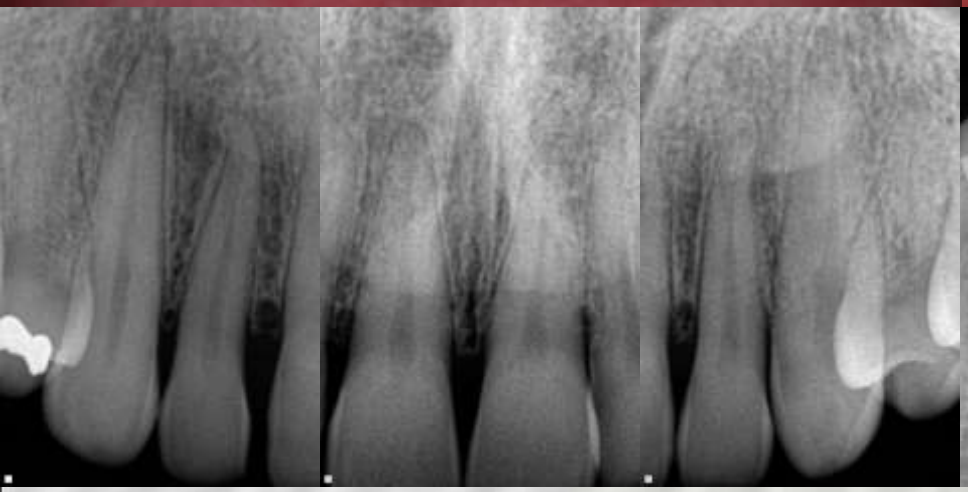
Case 2

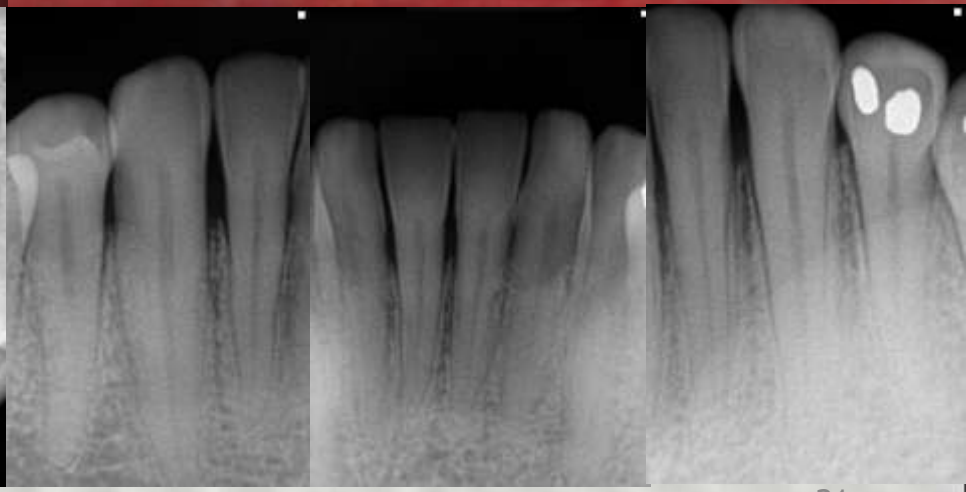
- 38 y.o. ♂ HEAVY smoker presents for emergency exam. 6 month hx of progressively worsening pain and oral malodour with "something funny on my gums." Pt. complains of feeling "stressed."

Case 2



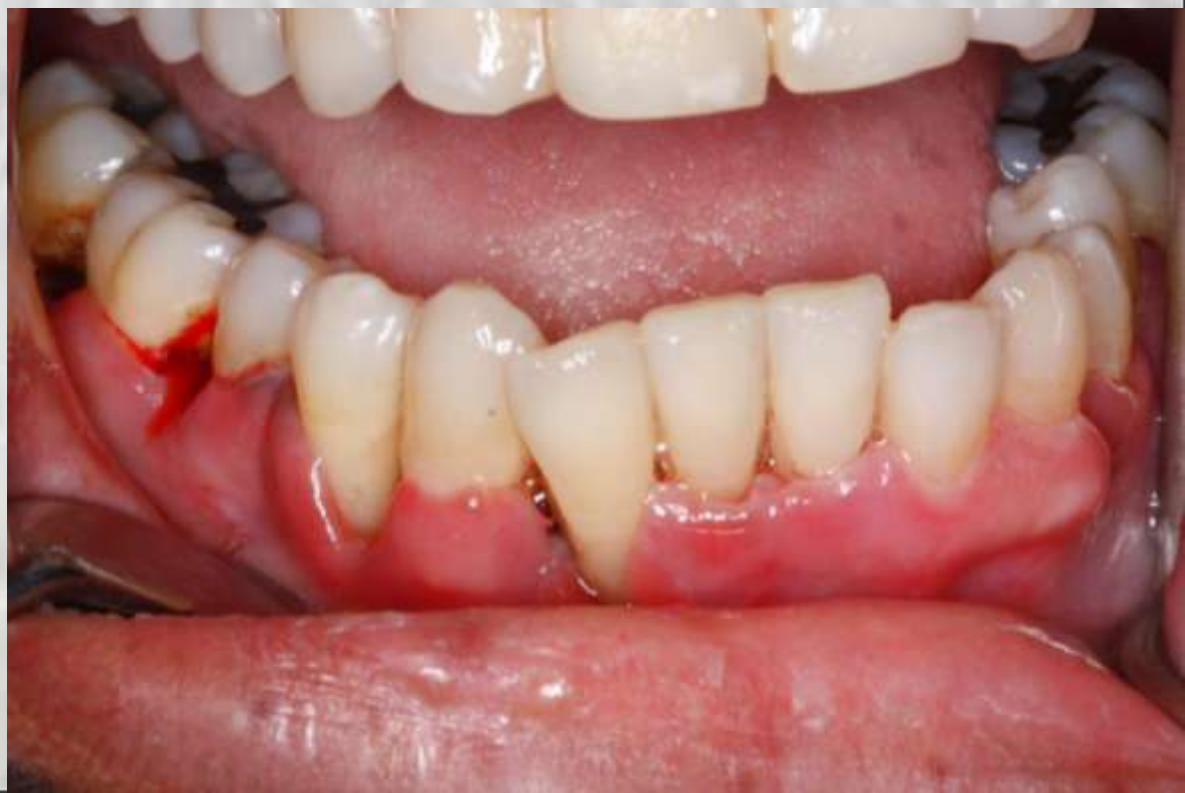




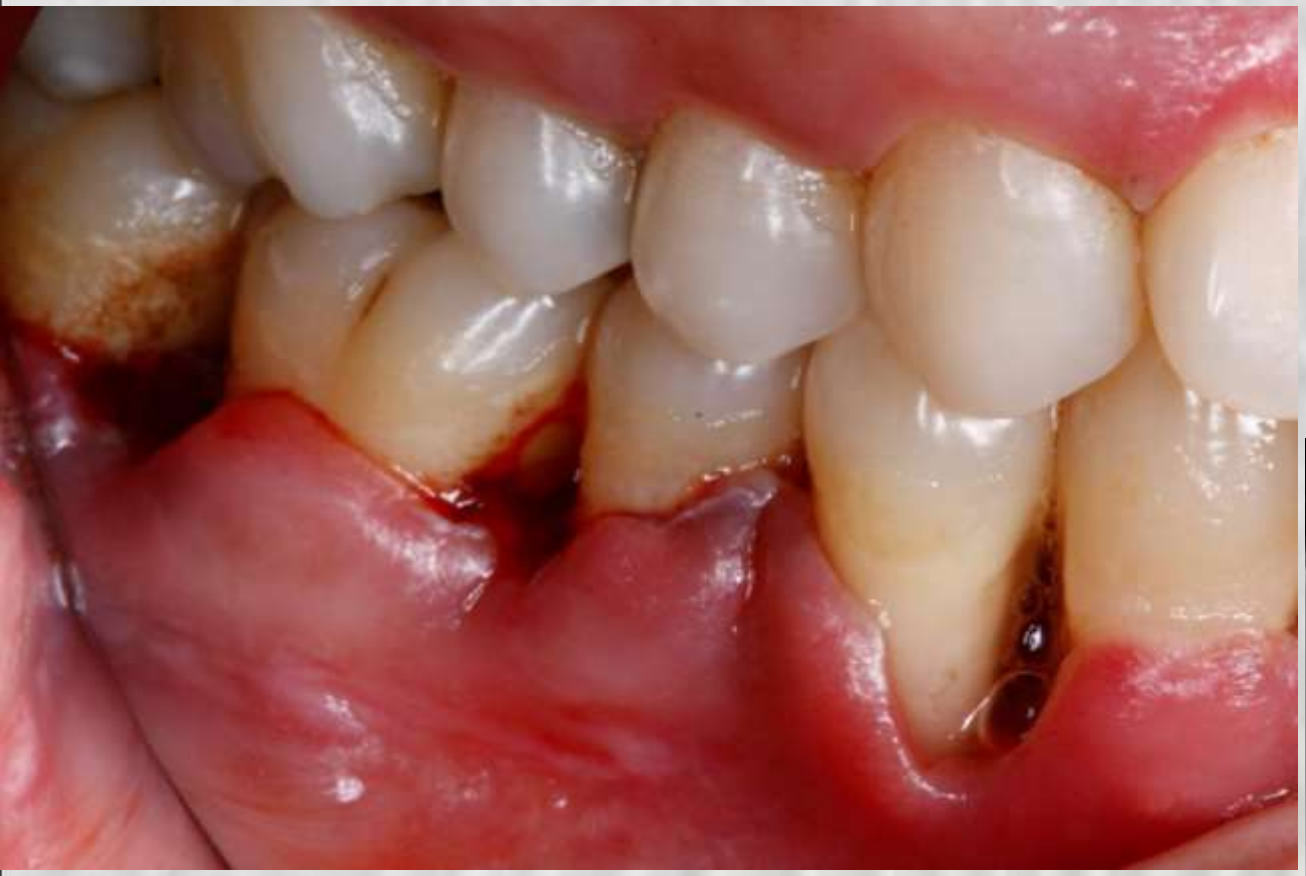


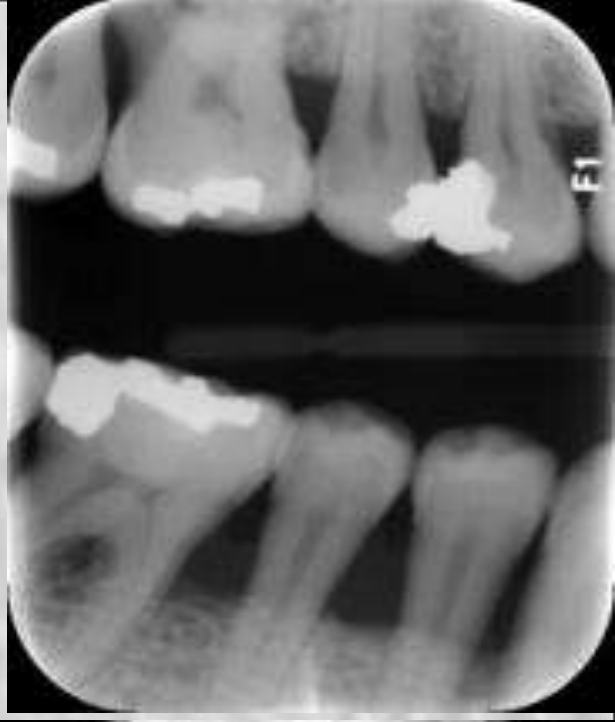
Case 3

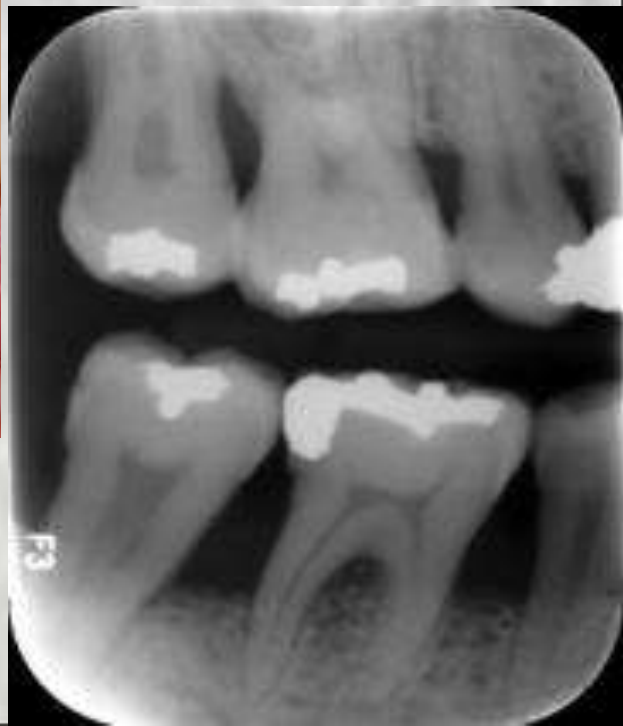
- 29 y.o. ♂ malnourished immigrant presents for emergency exam. 1 year hx of progressively worsening pain and oral malodour. Pt. has not seen a physician in over 20 years.



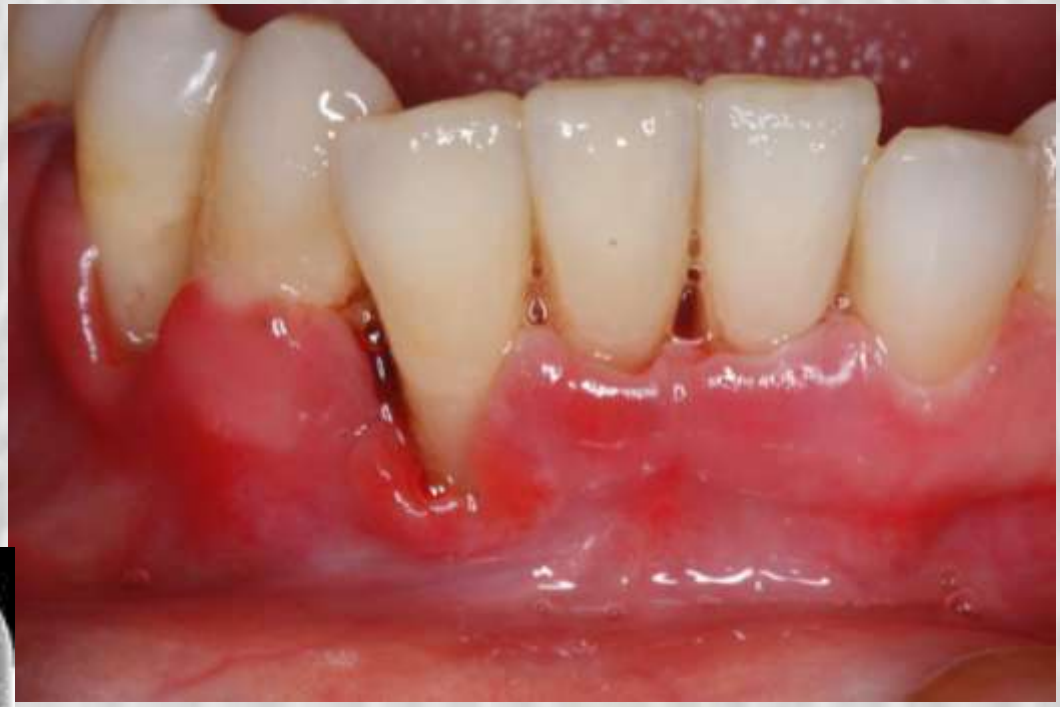
Case 3

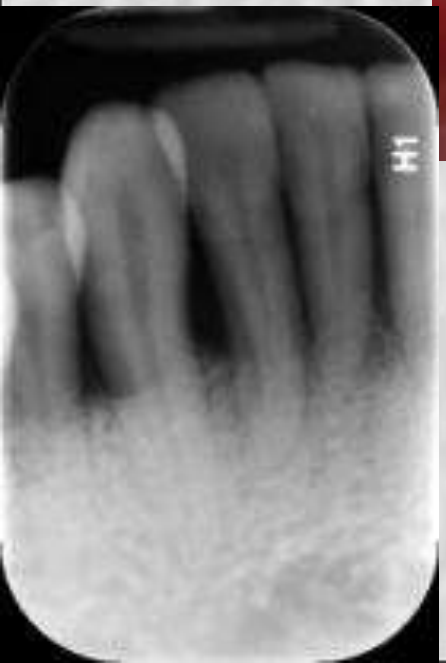




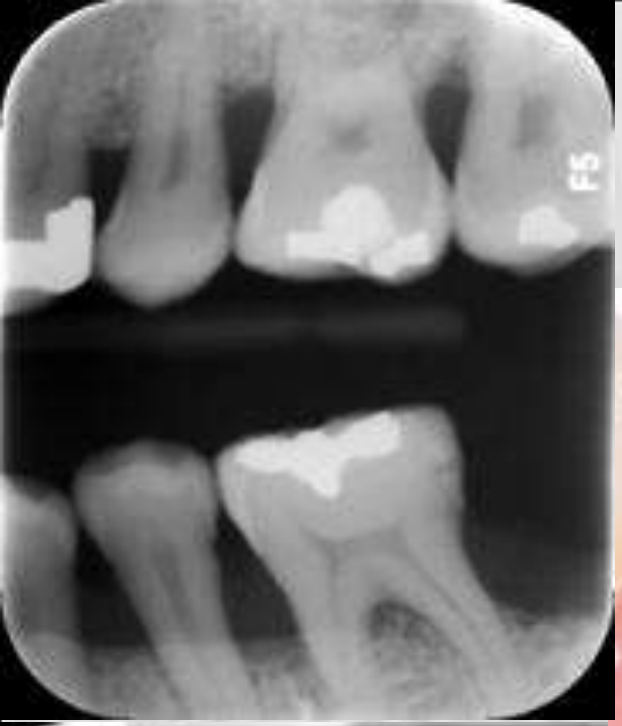


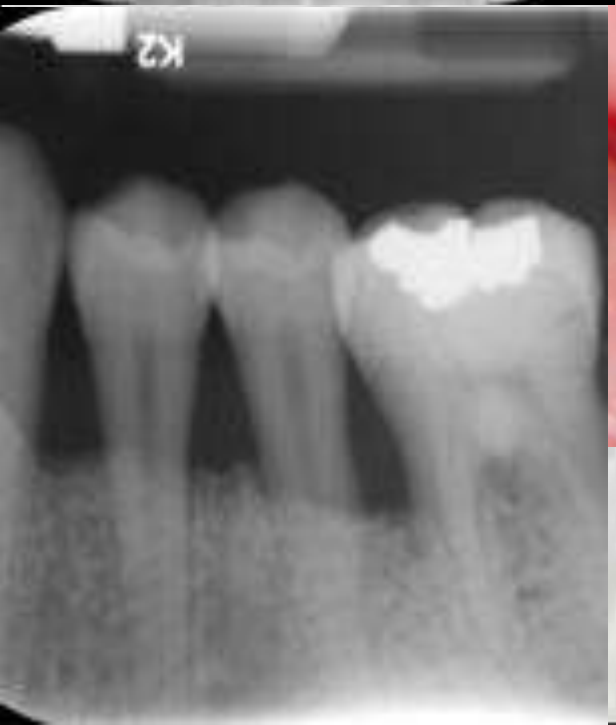
Case 3

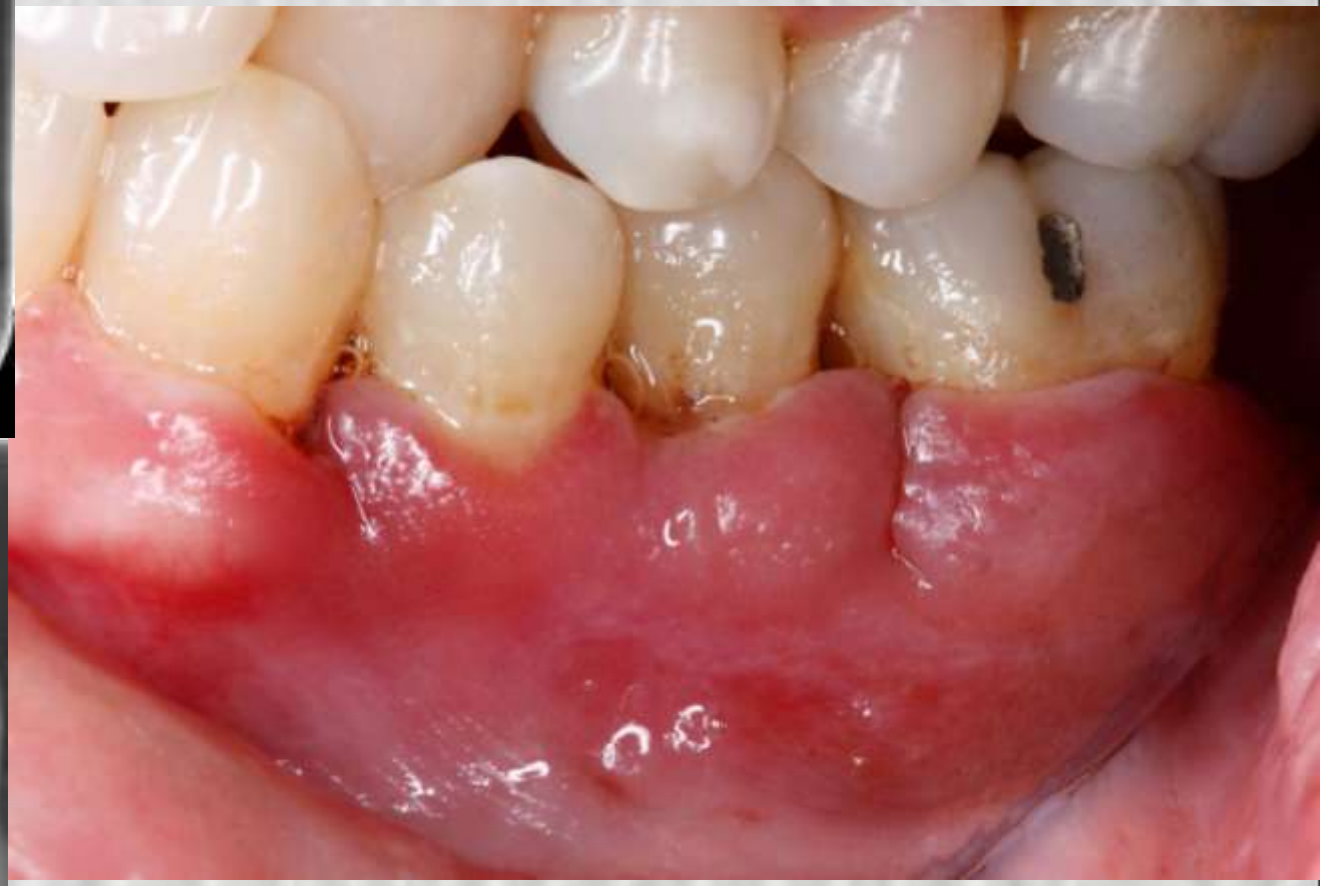




Case 3







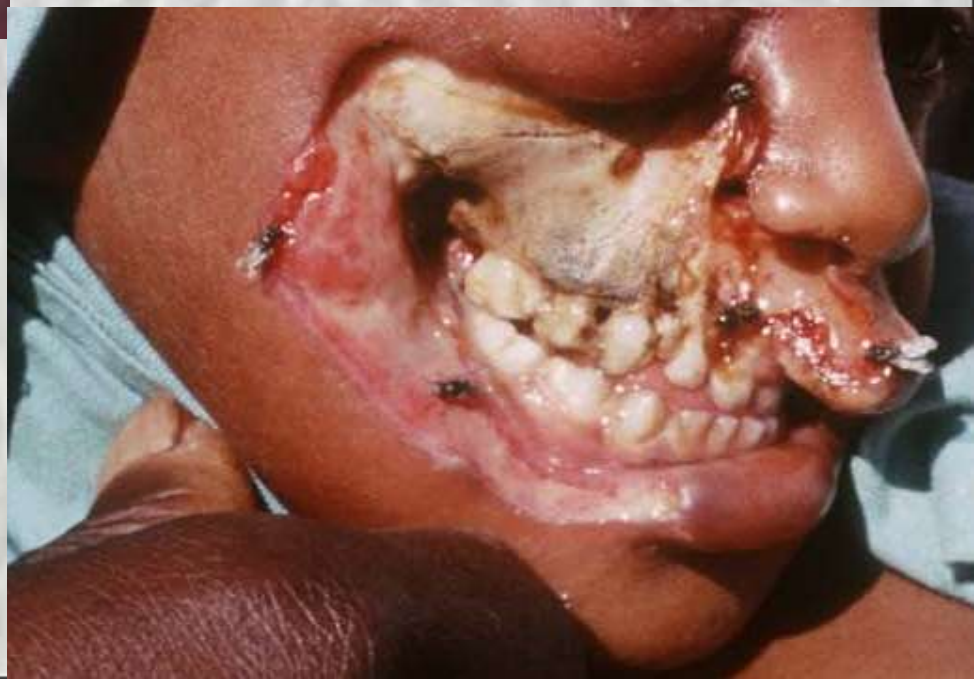
Signs and Symptoms

- PAIN
- Ulcerated/eroded/punched-out interproximal papillae
- Gingival tissue covered by a pseudomembrane (yellowish or gray-white film of desquamative tissue), covering erythematous tissue
- Gingival hemorrhage
- Pronounced foul odour

The Continuum

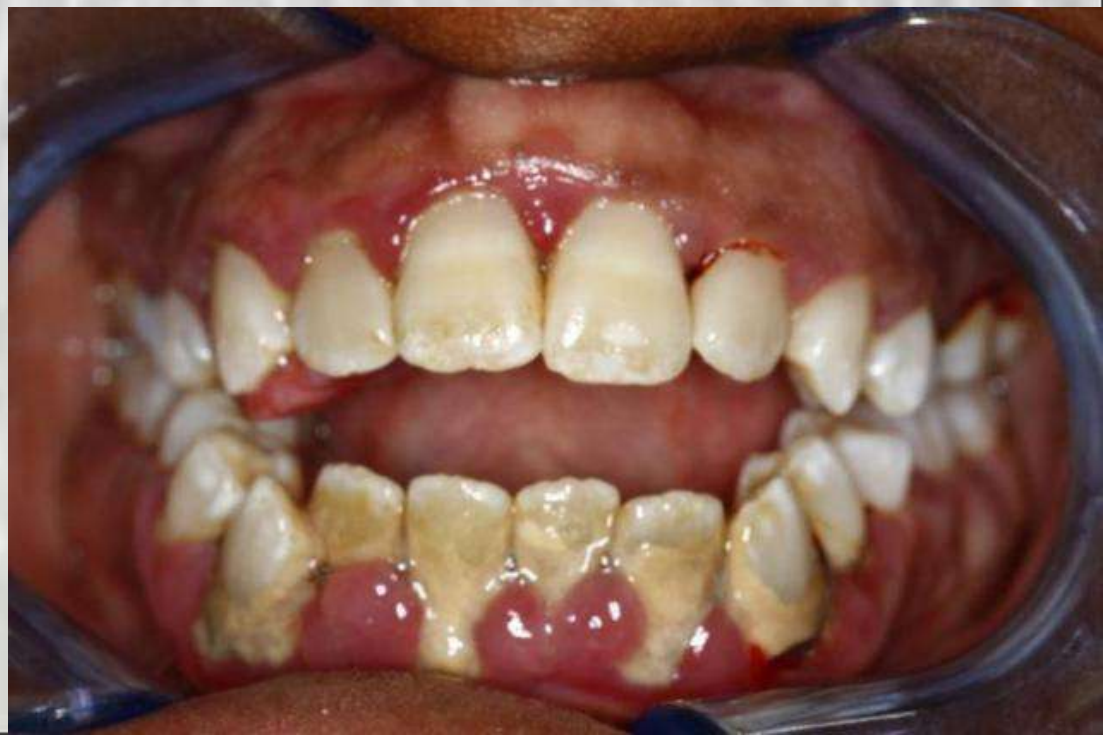
3. Necrotizing stomatitis implies that the destruction has gone beyond the mucogingival junction[9]
4. In principle, if left unchecked, this can progress to noma/*cancrum oris*

Necrotizing Stomatitis/Noma



Environmental Etiology

- Poor oral hygiene[10,11]
- Pre-existing gingivitis/periodontitis[10,11]
- Previous NUG/NUP[12,13]



Systemic Etiology

- Stress[14,15]
- Smoking[10,15]
- Malnutrition[16]
- AIDS, or other immunocompromise[17]

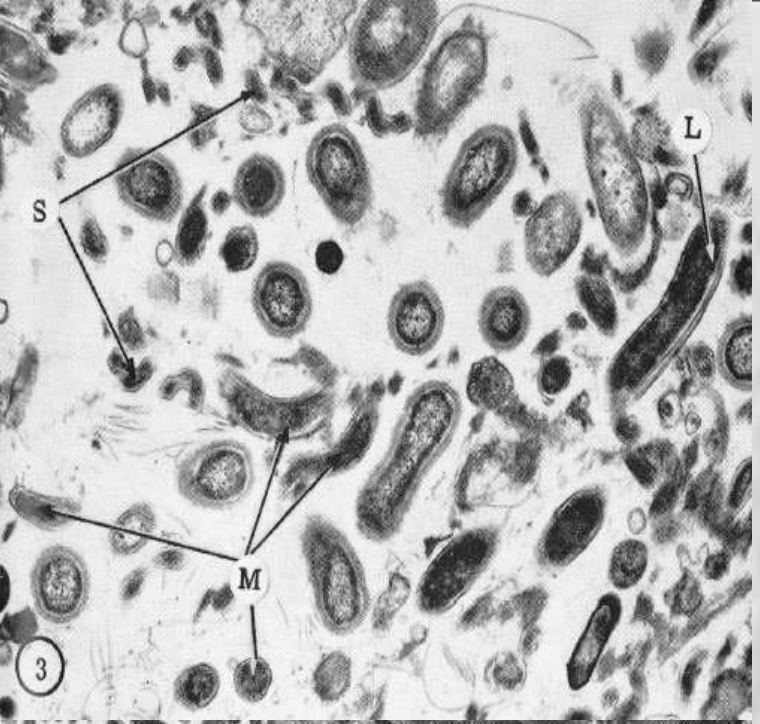
Microbial Etiology

- Some of the bacteria associated with necrotizing periodontal diseases include[18]:
  - *Treponemae*
  - *Selenomae*
  - *B. melaninogenicus* subspecies *intermedius*
  - *Fusobacteria*

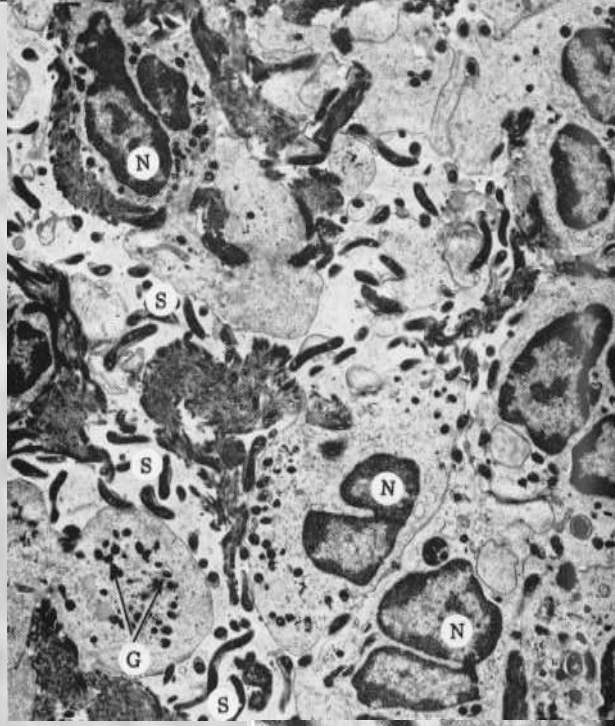
Histological Appearance

- Famous histological study characterized 4 distinct zones, starting with the most superficial[19]:
  1. Bacterial zone
  2. Neutrophil-rich zone
  3. Necrotic zone
  4. Zone of spirochetal infiltration

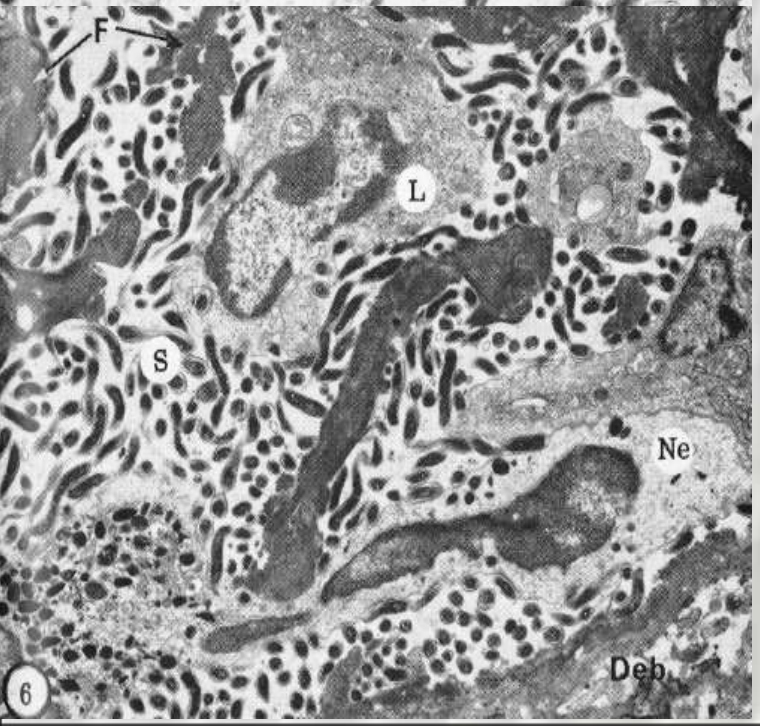
1. Bacterial zone



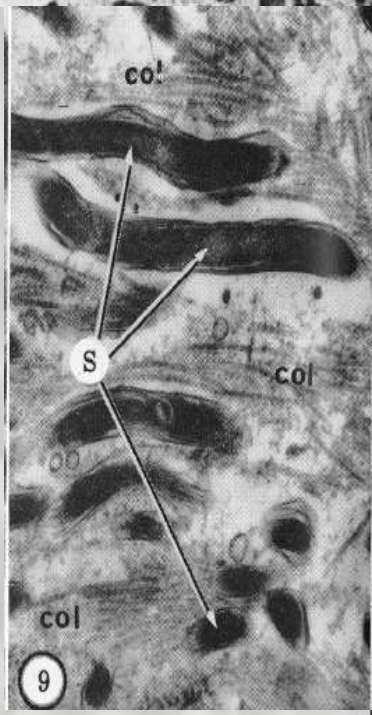
2. Neutrophil-rich zone



3. Necrotic zone



4. Zone of spirochetal infiltration



Treatment

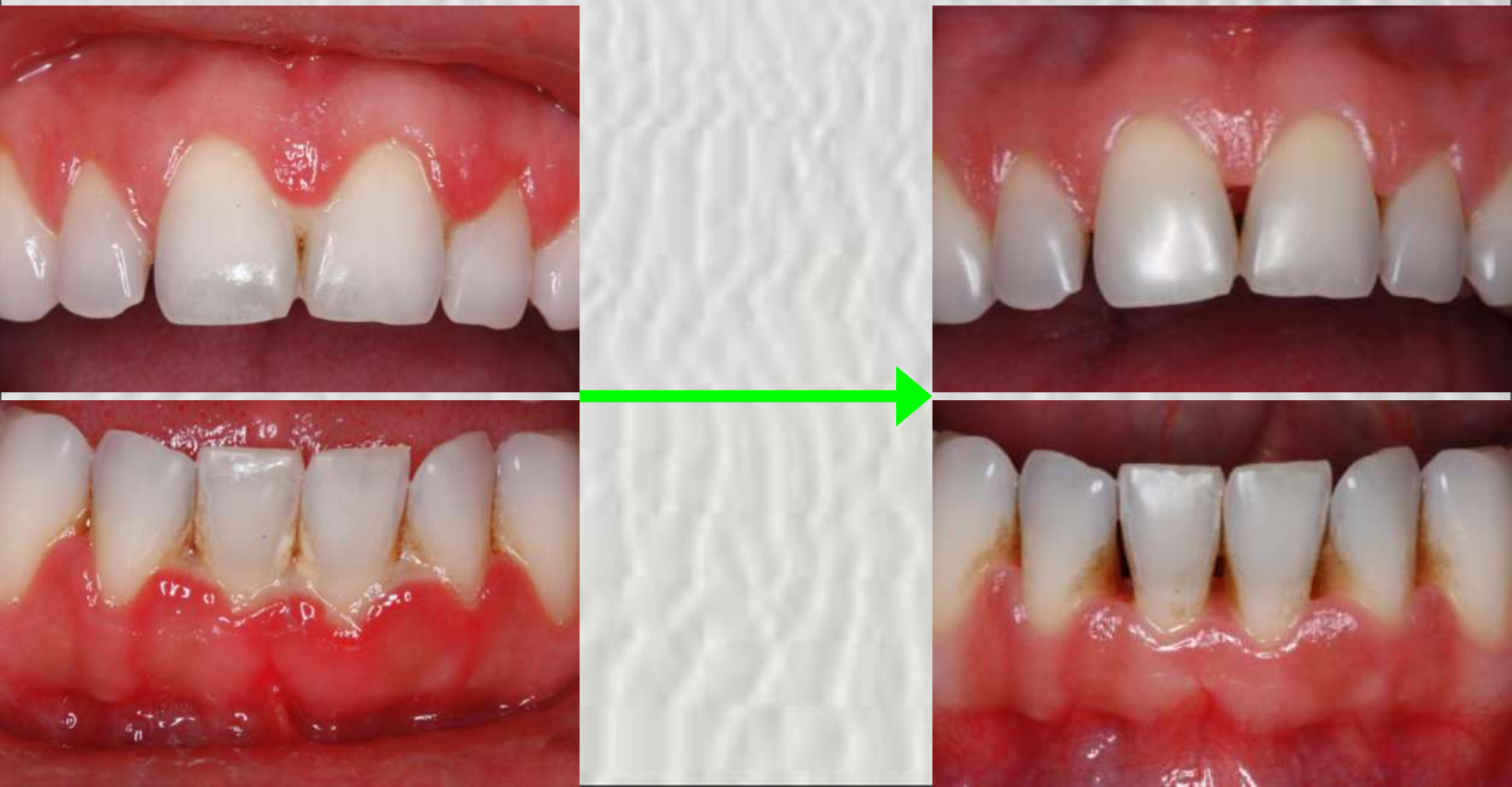
- Scaling and root planing of all affected areas ± systemic antibiotics
  - Use of systemic chemotherapy should be based on systemic symptoms (metronidazole, tetraycline or penicillin)
- Antibacterial mouthrinses (chlorhexidine 0.12% or hydrogen peroxide 3%)
- Close follow-up (1-2 days)

Prognosis

- With appropriate treatment, patients' clinical symptoms should regress within 4-6 days
- The decision then becomes, "Is there anything that requires surgical therapy to correct?"

Case 2

- After Sc/RP, metronidazole and chlorhexidine….



Overview

1. Introduction
2. Periodontal abscesses
3. Necrotizing periodontal diseases
4. Acute gingival conditions of viral and fungal origin

Primary Herpetic Gingivostomatitis

- Diffuse intraoral ulcerative gingivitis and mucositis
- Pain
- Fever
- Lymphadenopathy

Primary Herpetic Gingivostomatitis

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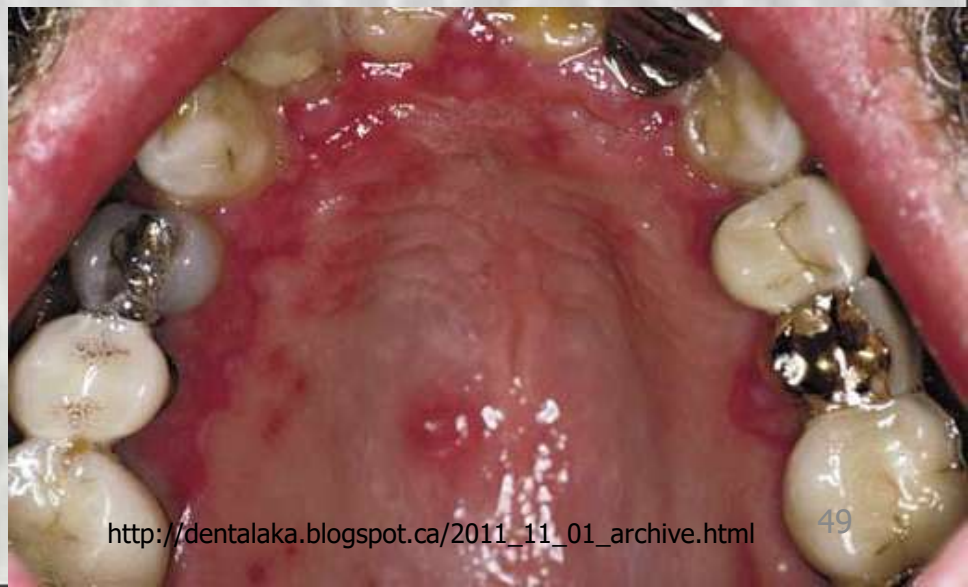
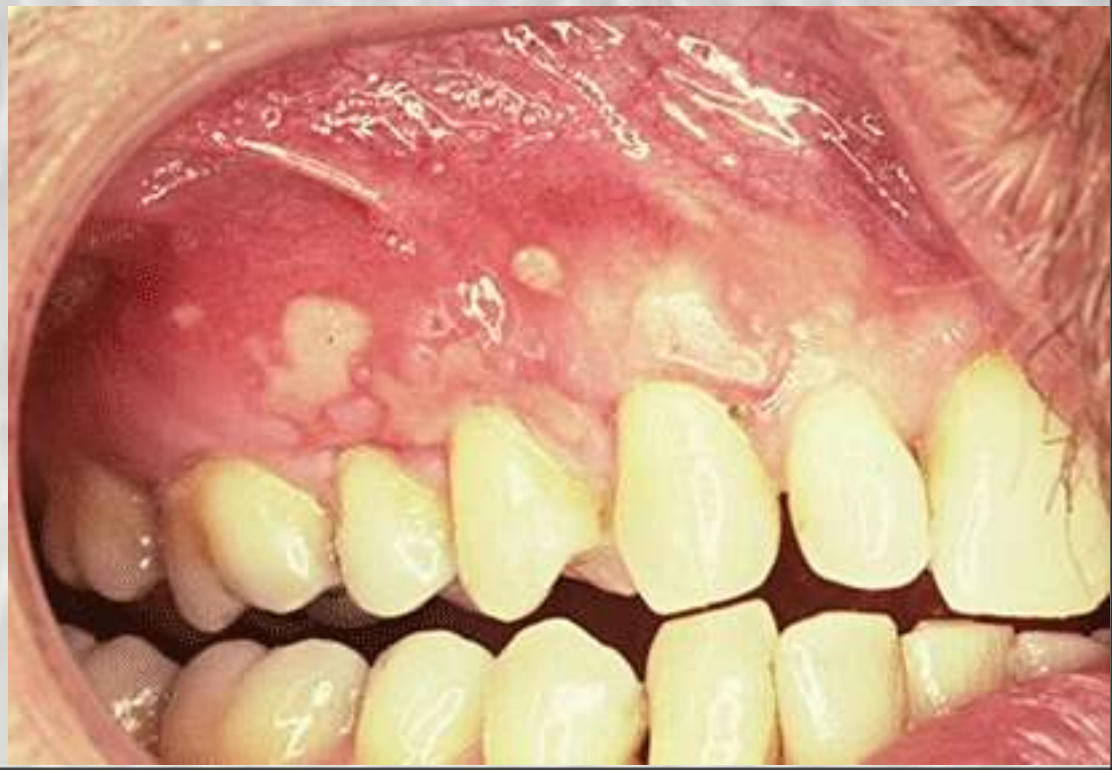


http://dentalaka.blogspot.ca/2011_11_01_archive.html

Recurrent Intra-oral Herpes

- May have similar systemic symptoms to primary herpetic gingivostomatitis, but lesions appear on keratinized tissue only, such as gingiva and palate[20]



https://www.researchgate.net/figure/45089093_fig5_Figure-4-Recurrent-intraoral-herpes-Ulcers-started-as-small-individual-vesicles-that

Etiology

- HSV-1 or HSV-2 infection
- Most infections are subclinical, but clinical signs and symptoms may be precipitated by:
  - Trauma[21,22]
  - Illness[21,22]
  - Emotional stress[21,22]
  - Ultraviolet radiation[21,22]

Treatment

- Treatment of intra-oral herpetic infections is essentially palliative in nature, though there is some suggestion that if initiated within first 3 days of onset of symptoms, antiviral meds may help[23]:

Rx: Acyclovir 200mg caps
Disp: 33 caps
Sig: take 3 caps stat, then 2 caps tid x 5 days
or

Rx: Famciclovir 125mg tab
Disp: 10 tabs
Sig: take 1 tab bid x5 days until all finished
or

Rx: Valacyclovir 500mg tabs
Disp: 10 tabs
Sig: take 1 tab bid x 5 days
and/or

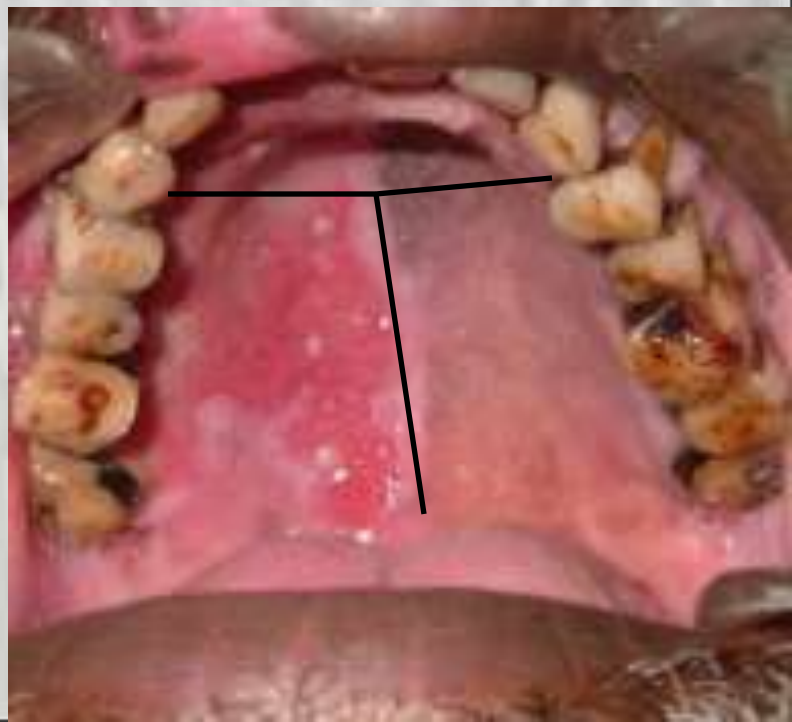
Rx: Acyclovir 5% ointment
Disp: 15g tube
Sig: Apply to affected area 6x/day

Varicella Zoster

- Primary infection with VZV manifests as chickenpox, but then the virus remains latent in neural ganglia
- Reactivation is termed shingles
- It can affect the trigeminal ganglion, and cause intra-oral shingles

Varicella Zoster

- Typical intra-oral presentation is of vesicles or ulcerations, surrounded by an erythematous halo, unilaterally on the palate[24], though can present on other tissues
- **Circumscribed dermatomally**[24]
- Painful, but heal in a few days
- Can result in post-herpetic neuralgia (not fun)



Etiology

- VZV reactivation occurs more often in the:
  - Immunocompromised
  - Elderly (confounded by immune status?)
- Stress and trauma may also precipitate an outbreak

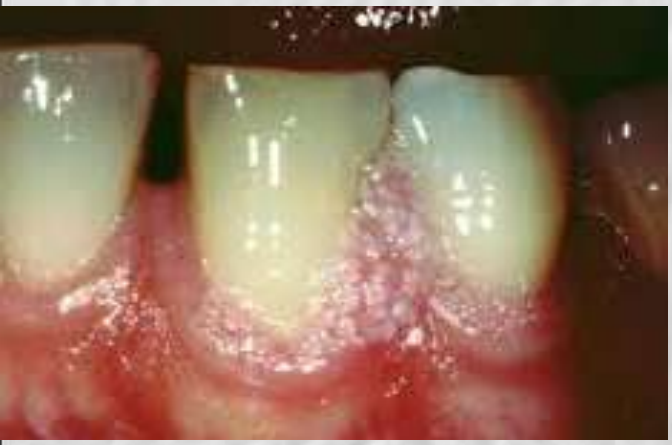
Treatment

- Again, treatment is essentially palliative, including a soft diet, hydration, rest, gentle oral hygiene (supplemented by chlorhexidine)
- All the previously described systemic antiviral prescriptions have been used, and all have been shown to reduce the severity of the symptoms and to prevent post-herpetic neuralgia[25]

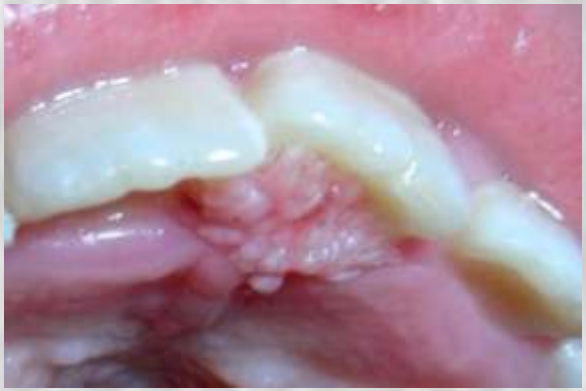
Human Papilloma Virus

- Can occur on multiple oral sites, including the gingiva[26,27,28]
- HPV types 6, 11 associated with squamous papilloma[29]
- HPV types 2, 4, 40 associated with verruca vulgaris[29]
- HPV types 2, 6, 11, 53, 54 associated with condyloma acuminatum[30]

Human Papilloma Virus

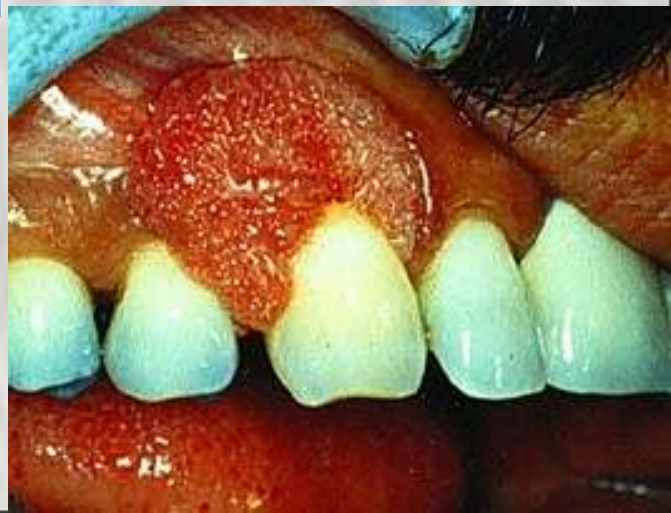


Squamous Papilloma



Verruca Vulgaris

Condyloma Acuminatum



Rose & Mealey

Treatment

- Complete sexual history is indicated[31]
- Treatment of choice is excisional biopsy
- Recurrence is rare
- REMEMBER that some types of HPV (16, 18) are associated with malignant transformation

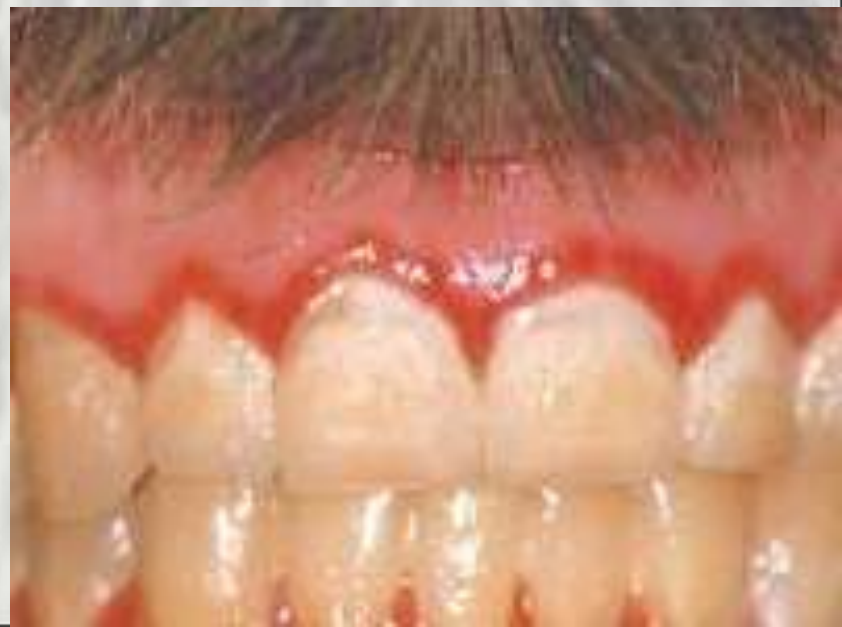
Linear Gingival Erythema

- Most often seen in HIV+ patients
- Really a mixed bacterial/fungal infection[32]
- Needs scaling to remove plaque, but if no response then systemic antifungal therapy is indicated[33]:

Rx: Ketoconazole 200 mg tabs

Disp: 8 tabs

Sig: take 1 tab w/ breakfast



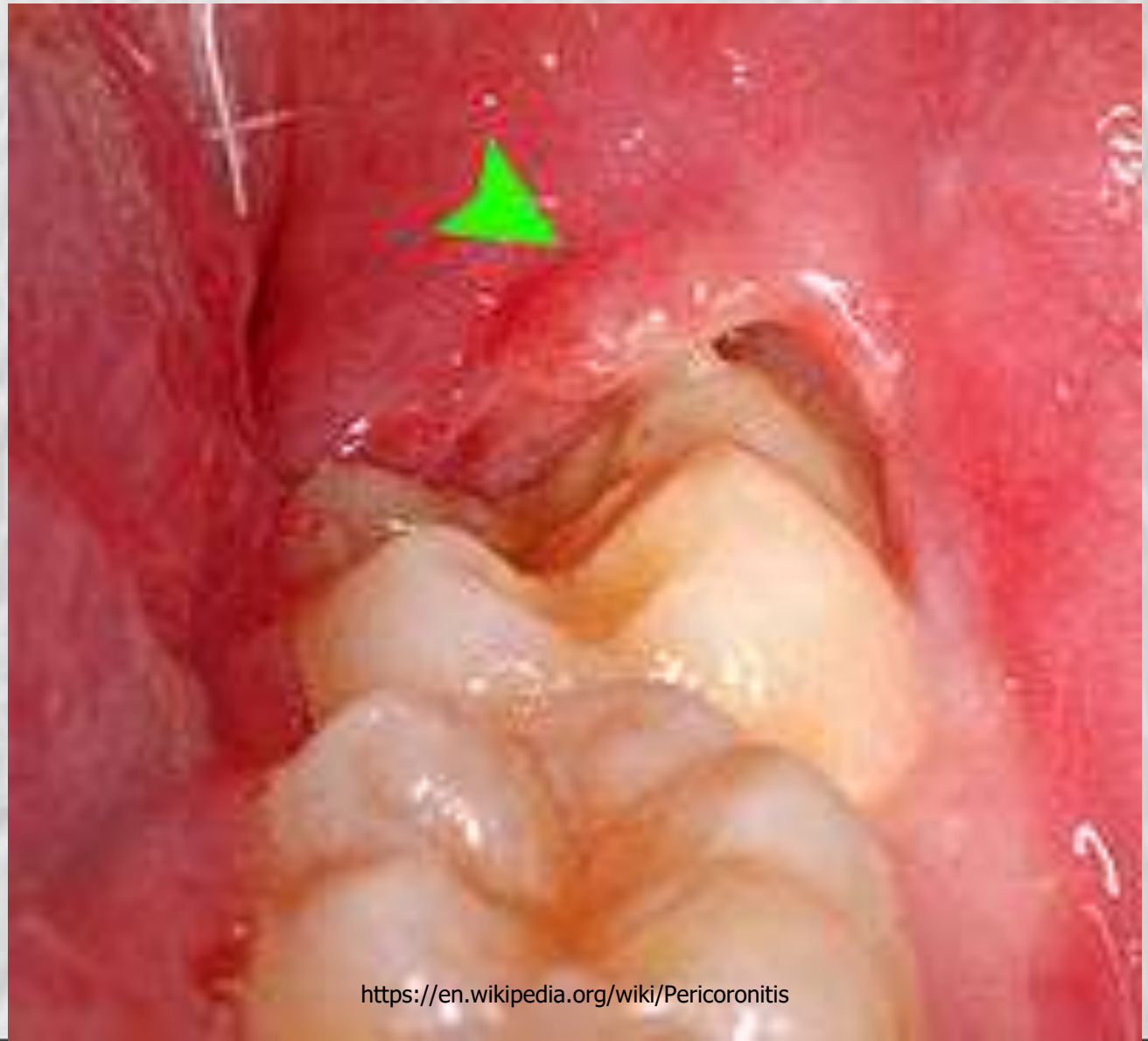
Overview

1. Introduction
2. Periodontal abscesses
3. Necrotizing periodontal diseases
4. Acute gingival conditions of viral and fungal origin
5. Miscellaneous acute situations

Pericoronitis

- Implies an inflammation of gingival tissue overlying the crown of a tooth
- Most often happens with 3rd molars, but can in theory happen when any tooth erupts into the mouth

Pericoronitis



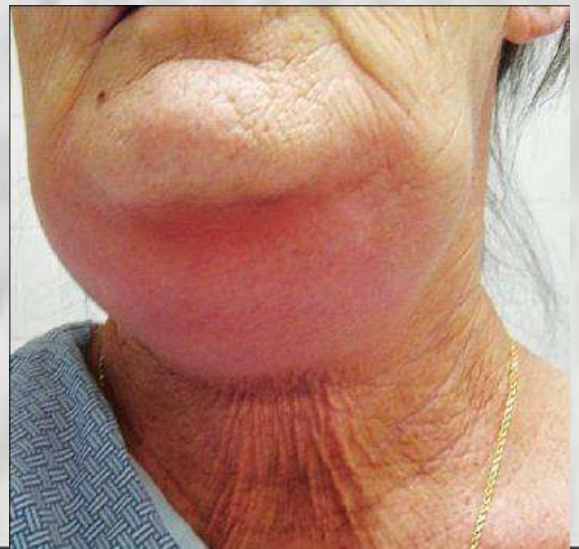
https://en.wikipedia.org/wiki/Pericoronitis

Signs and Symptoms

- PAIN
- Inflamed operculum
- Trismus/soreness upon opening
- Foul taste
- Fever
- Lymphadenopathy
- Malaise

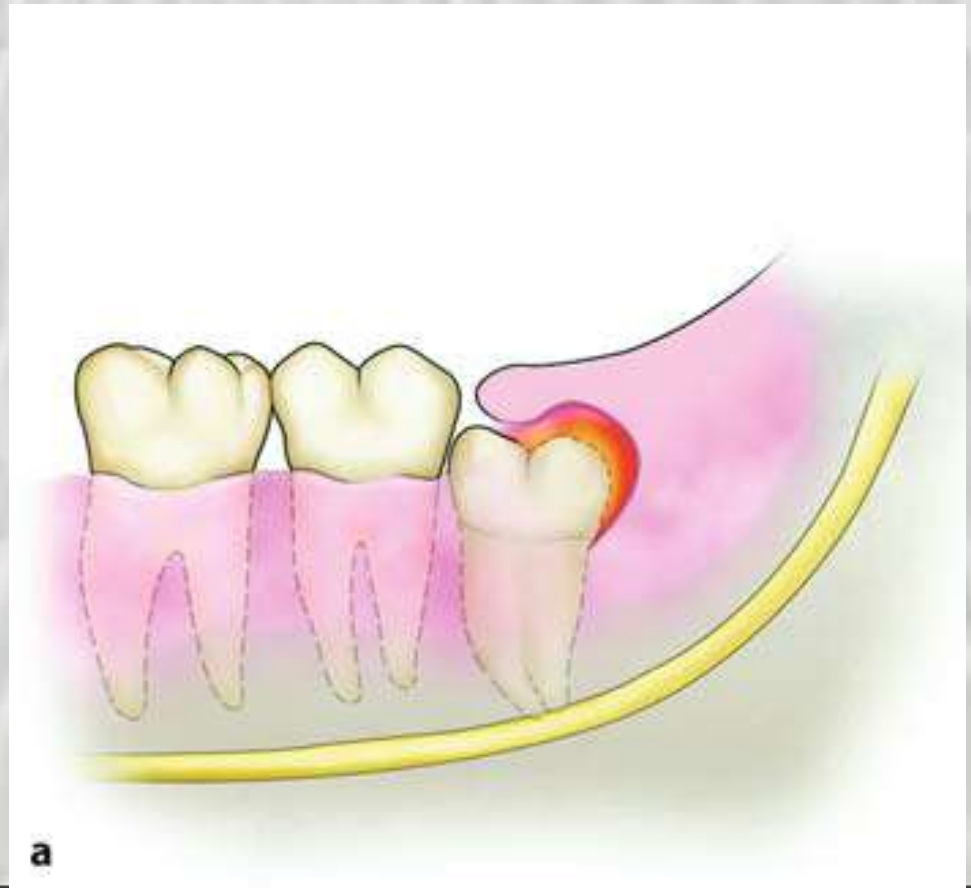
Negative Sequelae

- Untreated periocoronitis can lead to:
  - Peritonsillar abscess
  - Cellulitis
  - Dysphagia
  - Ludwig's Angina



Etiology

- Occurs when plaque, calculus, food, or any other debris becomes lodged under the operculum



Treatment

- Irrigation/debridement under the operculum to remove the local irritant ± systemic antibiotics

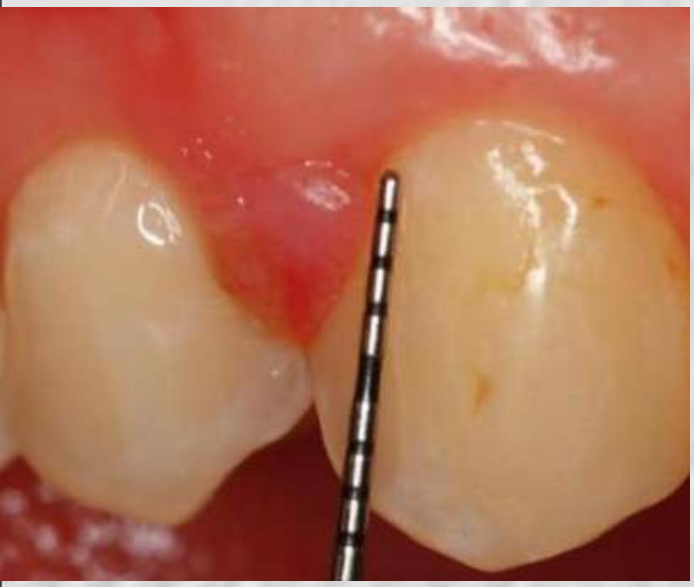
Then, once acute phase has healed….

- Operculectomy?
- Extraction of the offending tooth?

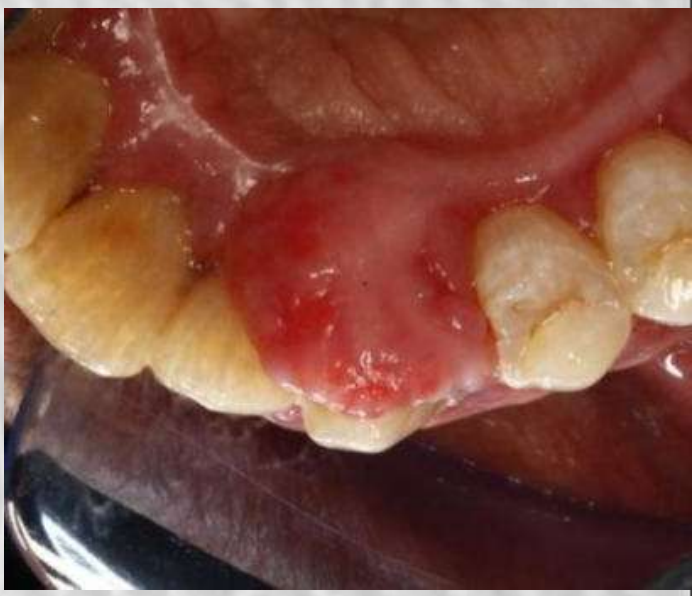
Reactive Nodular Lesions

- The Big 4:
  - Fibroma
  - Pyogenic Granuloma
  - Peripheral Ossifying Fibroma
  - Peripheral Giant Cell Granuloma

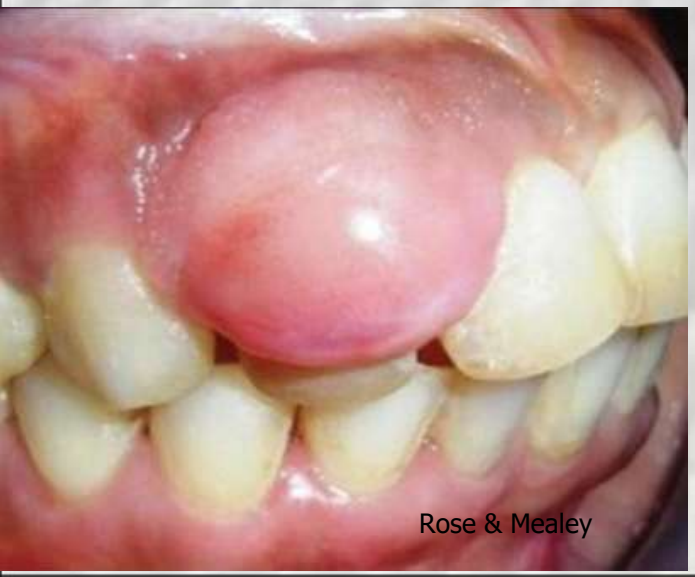
Reactive Nodular Lesions



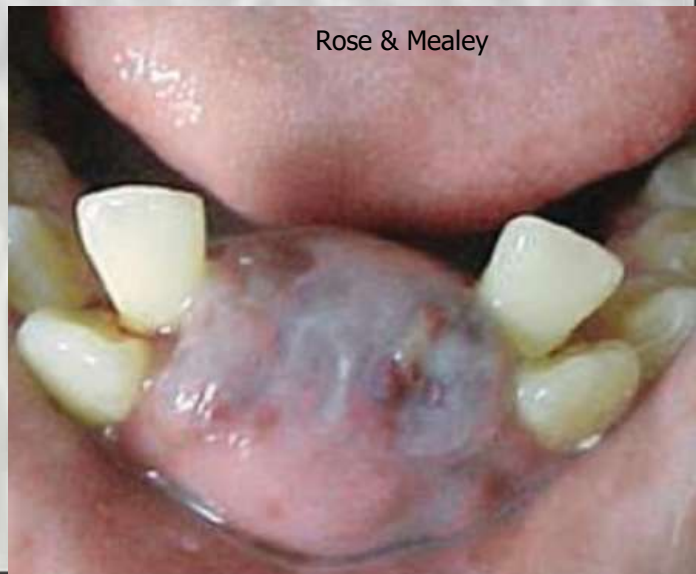
Pyogenic Granuloma



Peripheral Ossifying Fibroma



Fibroma



Peripheral Giant Cell Granuloma

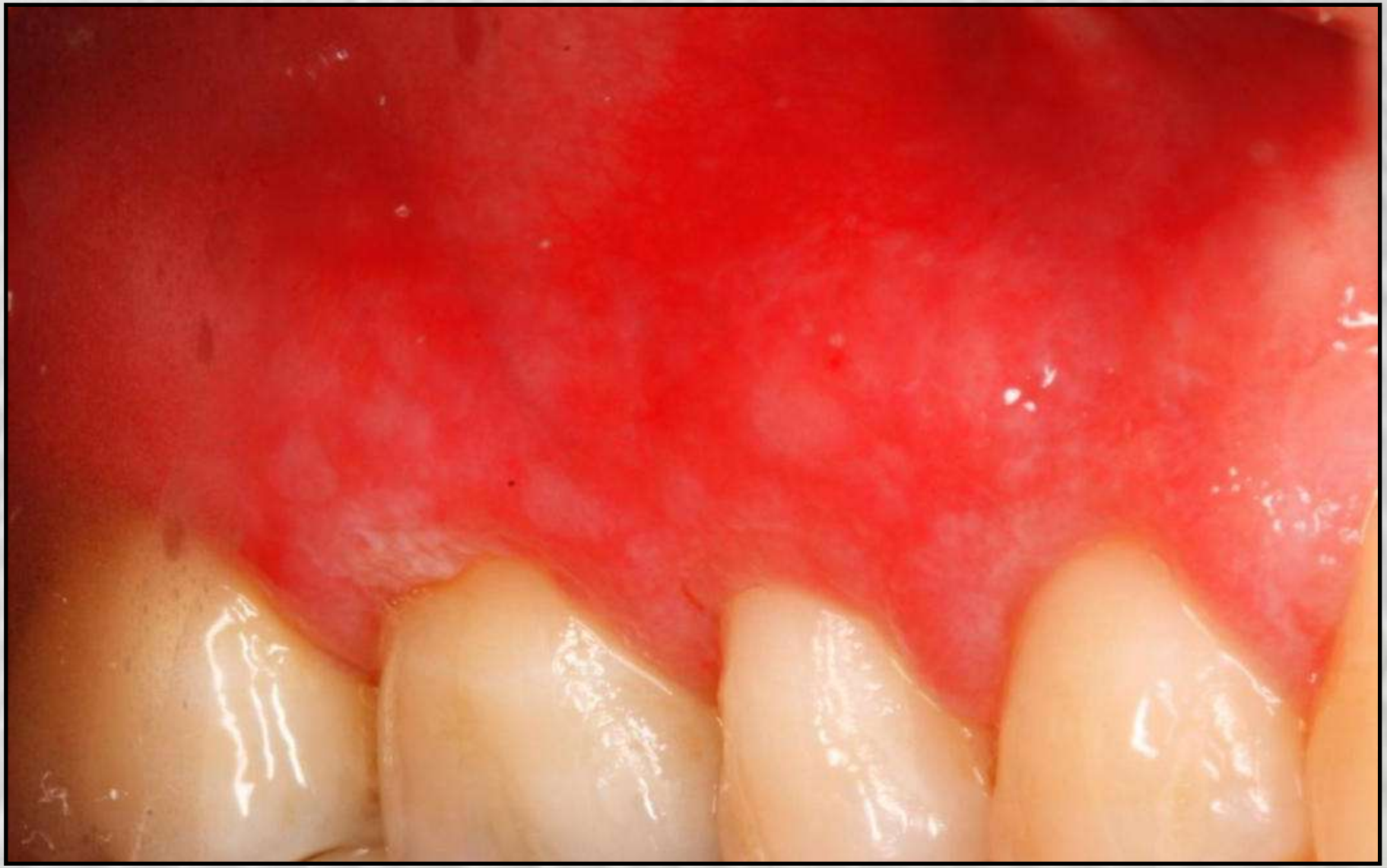
Treatment

- Excisional biopsy with localized Sc/RP
- Why Sc/RP? They're called reactive because they *REACT* to local factors
- In the case of a pregnant patient, if suspecting pyogenic granuloma, have the option to monitor until after baby is born…lesion may spontaneously regress

Desquamative Gingivitis

- Generally a manifestation of a mucocutaneous disorder:
  - Lichen Planus
  - Mucous Membrane Pemphigoid
  - Pemphigus Vulgaris
  - Systemic Lupus Erythematosus
  - Epidermolysis Bullosa
  - Erythema Multiforme

Desquamative Gingivitis



Diagnosis

- Take a thorough medical history
- Check Nikolsky's sign!
- Biopsy is indicated to identify the exact disease process
- Request direct and indirect immunofluorescence, in addition to routine pathology

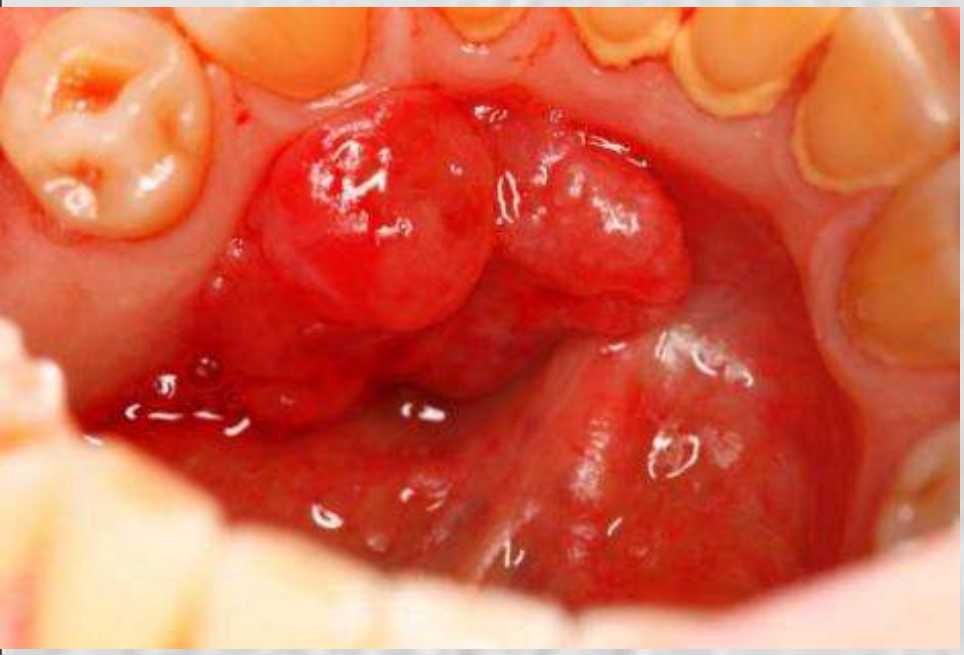
Treatment

- Referral to an oral pathologist, oral medicine specialist, dermatologist, or ophthalmologist may be indicated
- Depending on the diagnosis, a variety of topical/systemic medications may be indicated

Malignancies

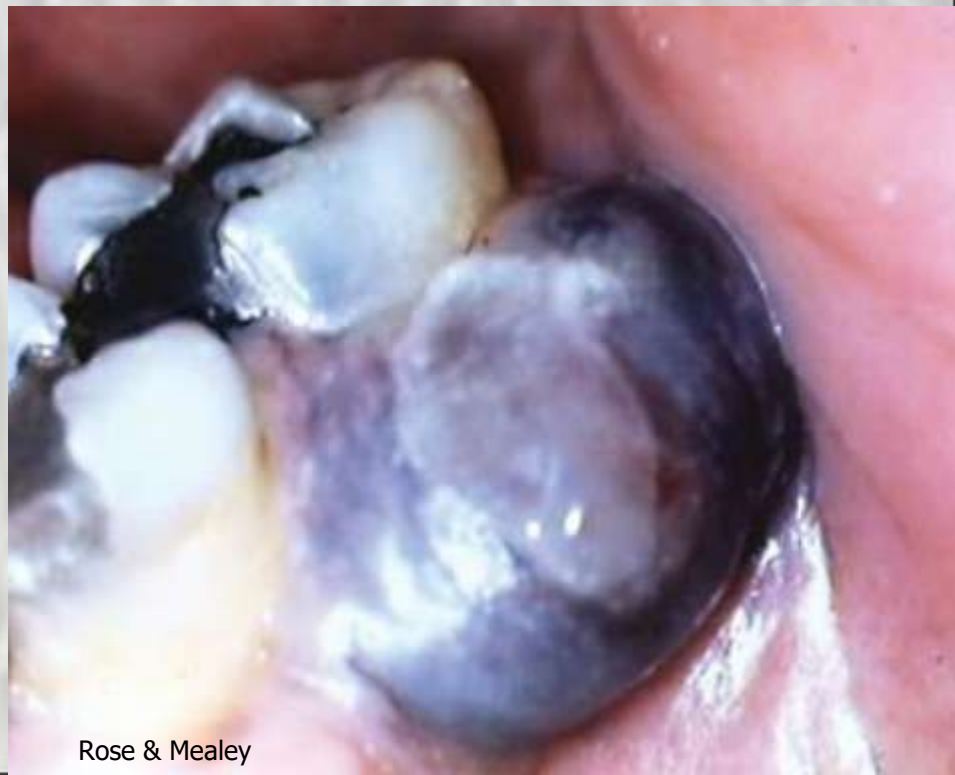
- Though some malignancies may be insidious and therefore best considered more as chronic problems, their prognosis is usually better the earlier they are identified
- Other malignancies are acute in nature

Malignancies



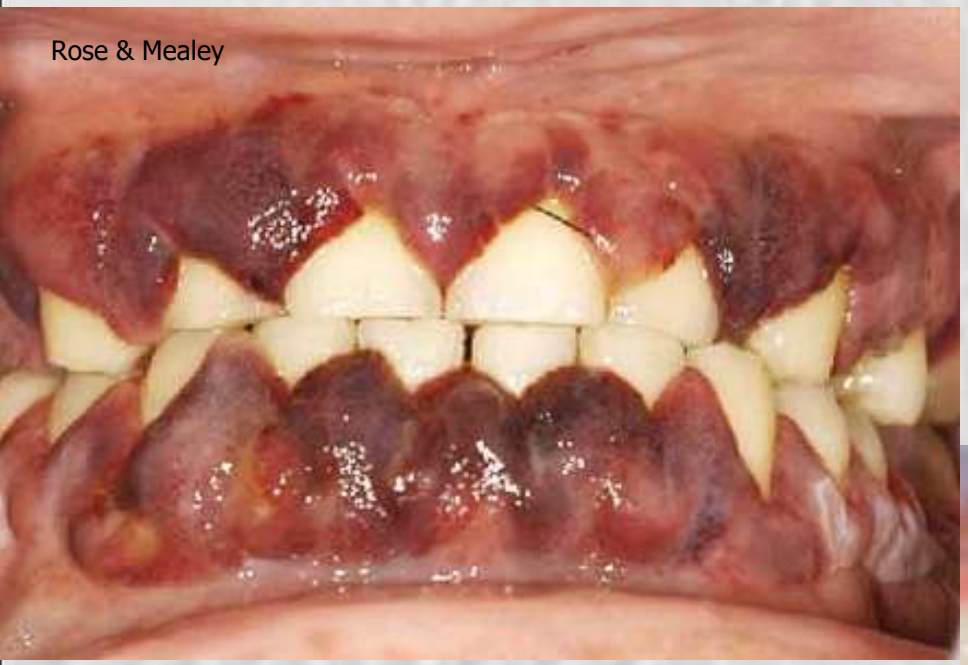
Squamous Cell Carcinoma

Melanoma



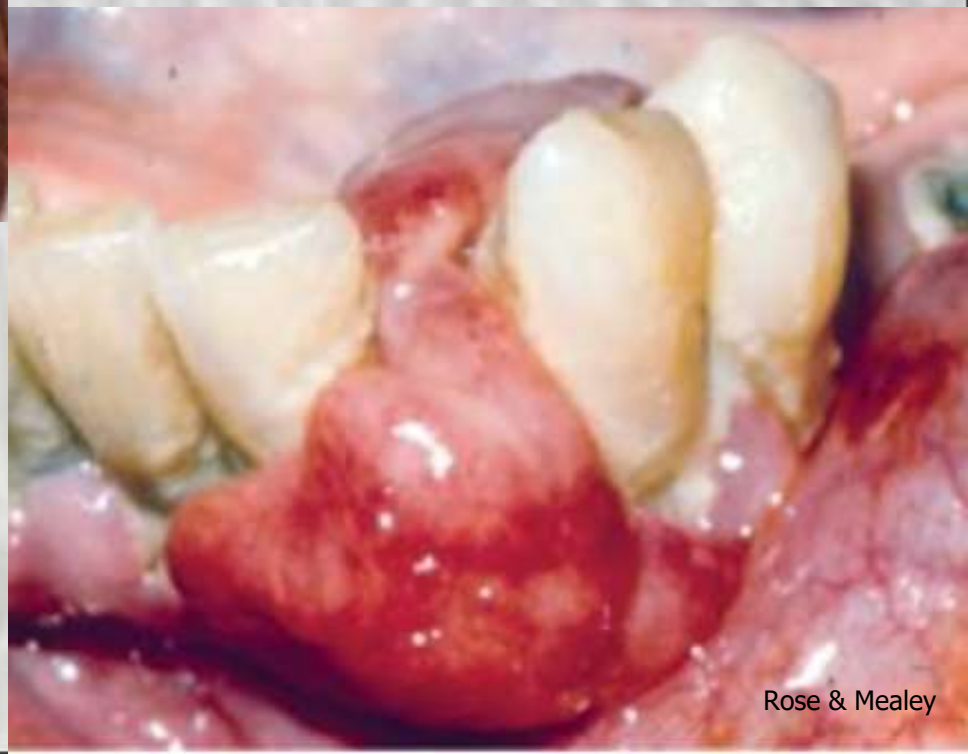
Rose & Mealey

Malignancies



Acute Myelogenous Leukemia

Metastatic Adeno-carcinoma



Diagnosis and Treatment

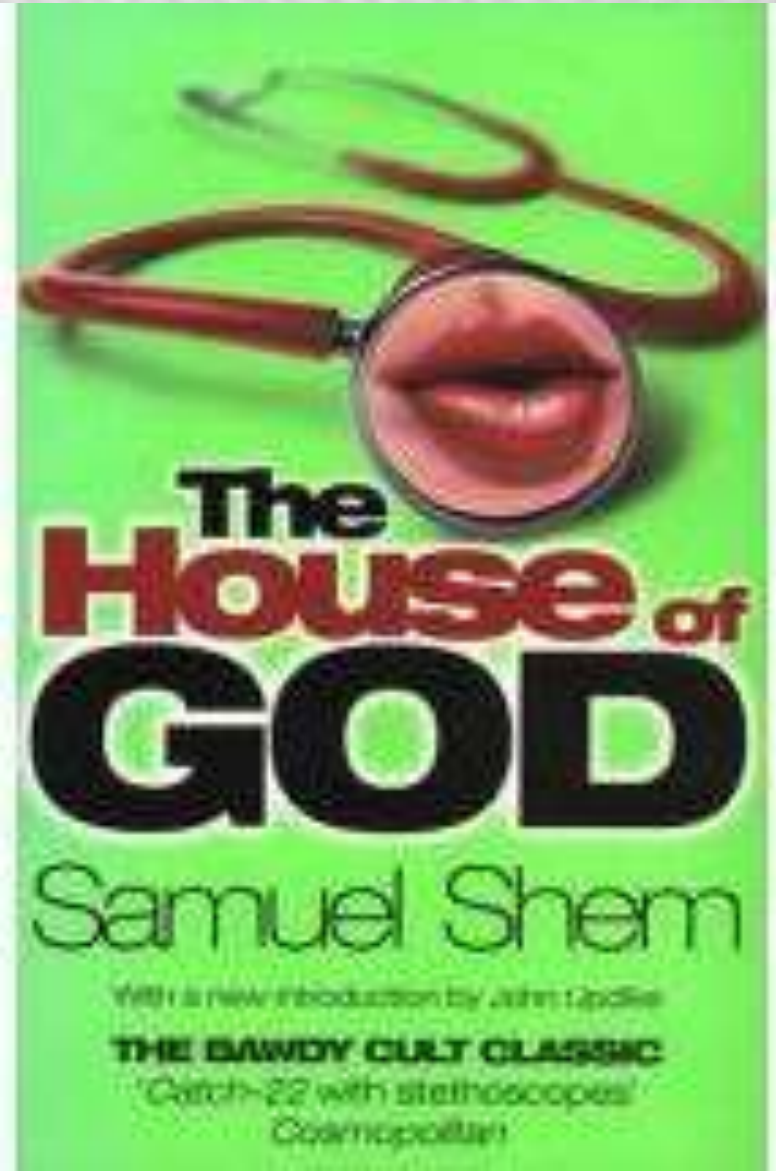
- A thorough history and time course is essential
- A comprehensive exam is a MUST
- Referral to oral pathology/OMFS, or in the case of a suspected hematological malignancy, to a hematologist

Overview

1. Introduction
2. Periodontal abscesses
3. Necrotizing periodontal diseases
4. Acute gingival conditions of viral and fungal origin
5. Miscellaneous acute situations
6. A final word of caution

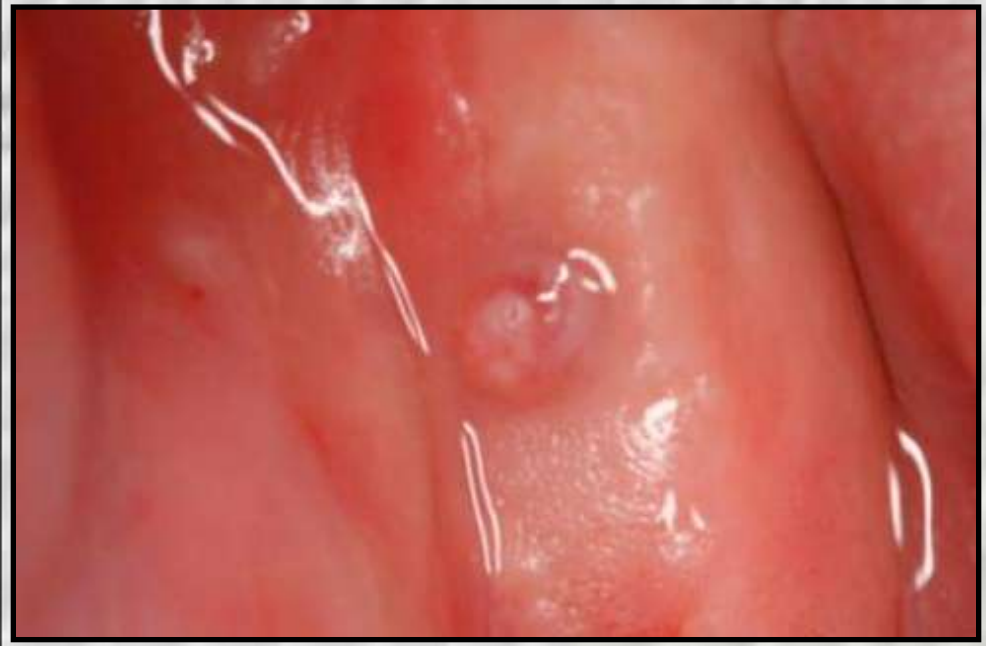
Wisdom

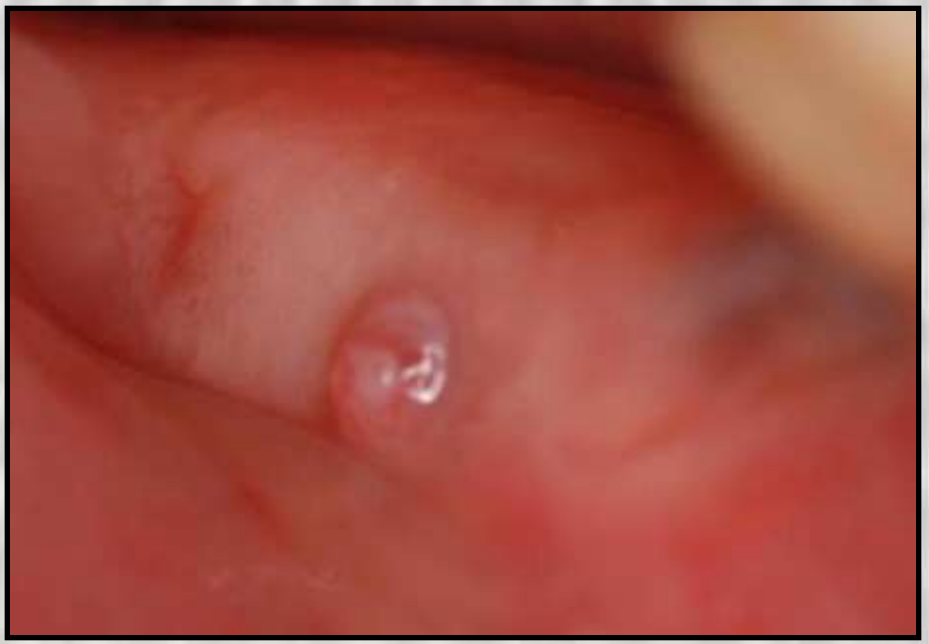
- The House of God by Samuel Shem, pub. 1978, semi-fictional account of the experiences of medical interns
- 13 laws about how to survive residency:
  - Law III: At a cardiac arrest, the first procedure is to take your own pulse.
  - Law X: If you don't take a temperature, you can't find a fever.



Case 3

- 44 y.o. ♂ presents **FRIGHTENED OUT OF HIS #$%&ING MIND**, with a 1 month hx of a slightly tender 2x2mm papule on the crestal gingiva overlying the edentulous area of #46





Why so scared?

- Because the GP who had referred the case had taken one look at the papule, and said, "Oh my G-d you have to go and see the specialist right away!"
- Aside from scaring the patient, she also omitted a very important step

Why did I relate this story?

- To remind you all that you're expected to do what you're supposed to do, and that not doing so can have negative consequences for the patient

“You don’t want no drama.”

-Stacy Ann “Fergie” Ferguson

Singer, as heard in the song “My Humps”

Any questions?

Thanks for listening, enjoy lunch!

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