



Acute gingival and periodontal conditions

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Content courtesy of Dr Anna Hughes and Dr Tina Choo



Acknowledgement of country

On Noongar land. Our university is located alongside the Derbal Yerrigan (Swan River) on Whadjuk Noongar Boodja (land). The University of Western Australia acknowledges that we are situated on Noongar land and that Noongar people remain the spiritual and cultural custodians of their land and continue to practise their values, languages, beliefs and knowledge.

Everyone is welcome



Learning outcomes

- Diagnose and classify the most common acute gingival and periodontal conditions by recognising risk factors and clinical presentation
- Explain the aetiology of acute gingival and periodontal conditions
- Describe the rationale and methods for management of the most common acute gingival and periodontal conditions

Lecture outline

- Necrotising periodontal diseases
 - Necrotising gingivitis (NG)
 - Necrotising periodontitis (NP)
- Viral lesions
- Abscesses of the periodontium
 - Gingival abscess
 - Pericoronitis
 - Periodontal abscess
- Other less common conditions
- Endo-perio lesions covered in dedicated lecture from DENT4212 endodontics module

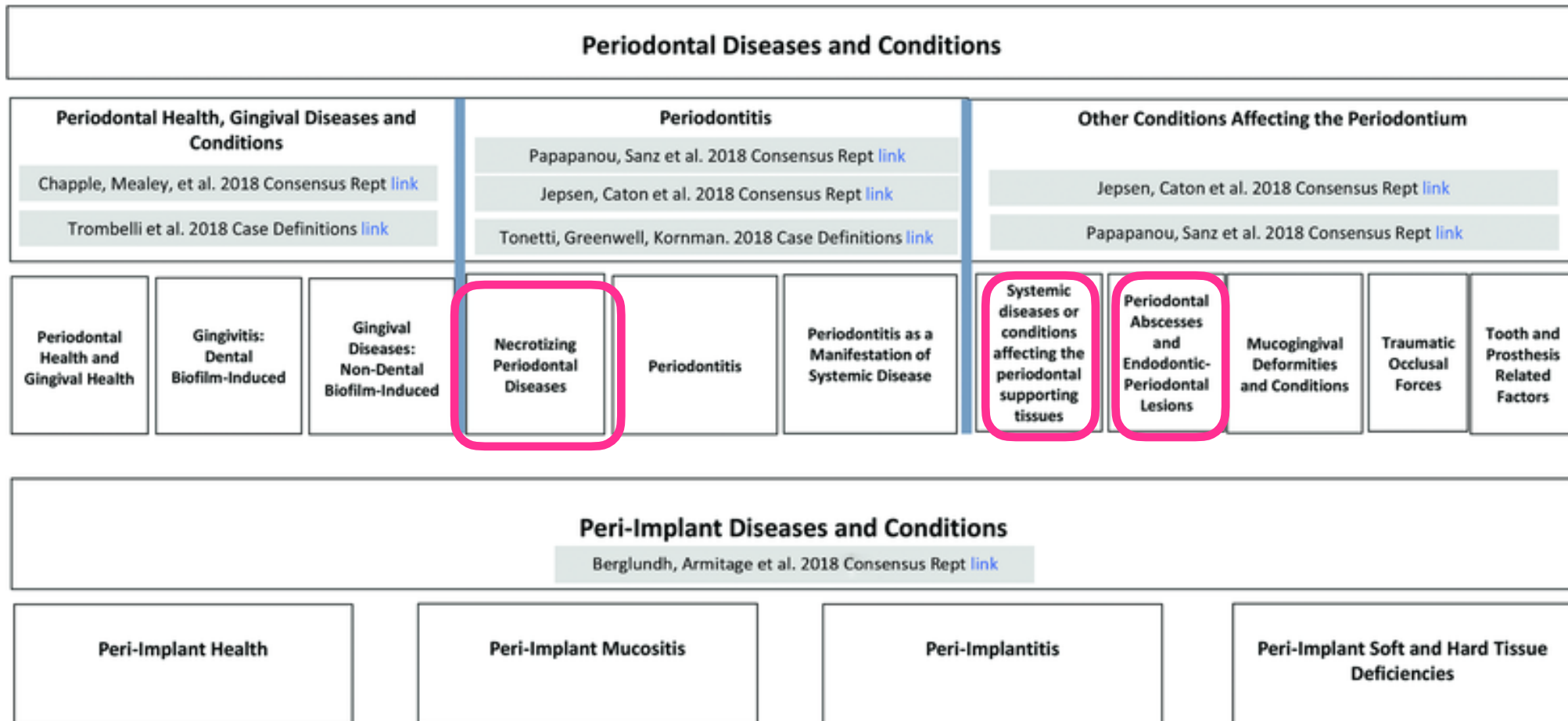
Acute characteristics

- Rapid onset
- Pain or discomfort
- Tissue destruction +/- infection
- Patients usually seek urgent care (pain)

It is important to identify and eliminate predisposing factors to prevent recurrence

Classification

CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS 2017



Treatment plan

PERIODONTAL TREATMENT PLAN

EMERGENCIES PHASE OF PERIODONTAL TREATMENT ☐ Item Proposed ☐ Item Completed

RISK MANAGEMENT PHASE OF PERIODONTAL TREATMENT (step1) ☐ Item Proposed ☐ Item Completed

FUNDAMENTAL PHASE OF PERIODONTAL TREATMENT (step1&2) ☐ Item Proposed ☐ Item Completed

RE-EVALUATION PHASE OF PERIODONTAL TREATMENT (step3) ☐ Item Proposed ☐ Item Completed

CORRECTIVE PHASE OF PERIODONTAL TREATMENT (step3) ☐ Item Proposed ☐ Item Completed

MAINTENANCE PHASE (step4) ☐ Item Proposed ☐ Item Completed

PROPOSED MAINTENANCE INTERVAL: ☐ 3 Months ☐ 6 Months ☐ 12 Months ☐ Other:

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Tutor Signature

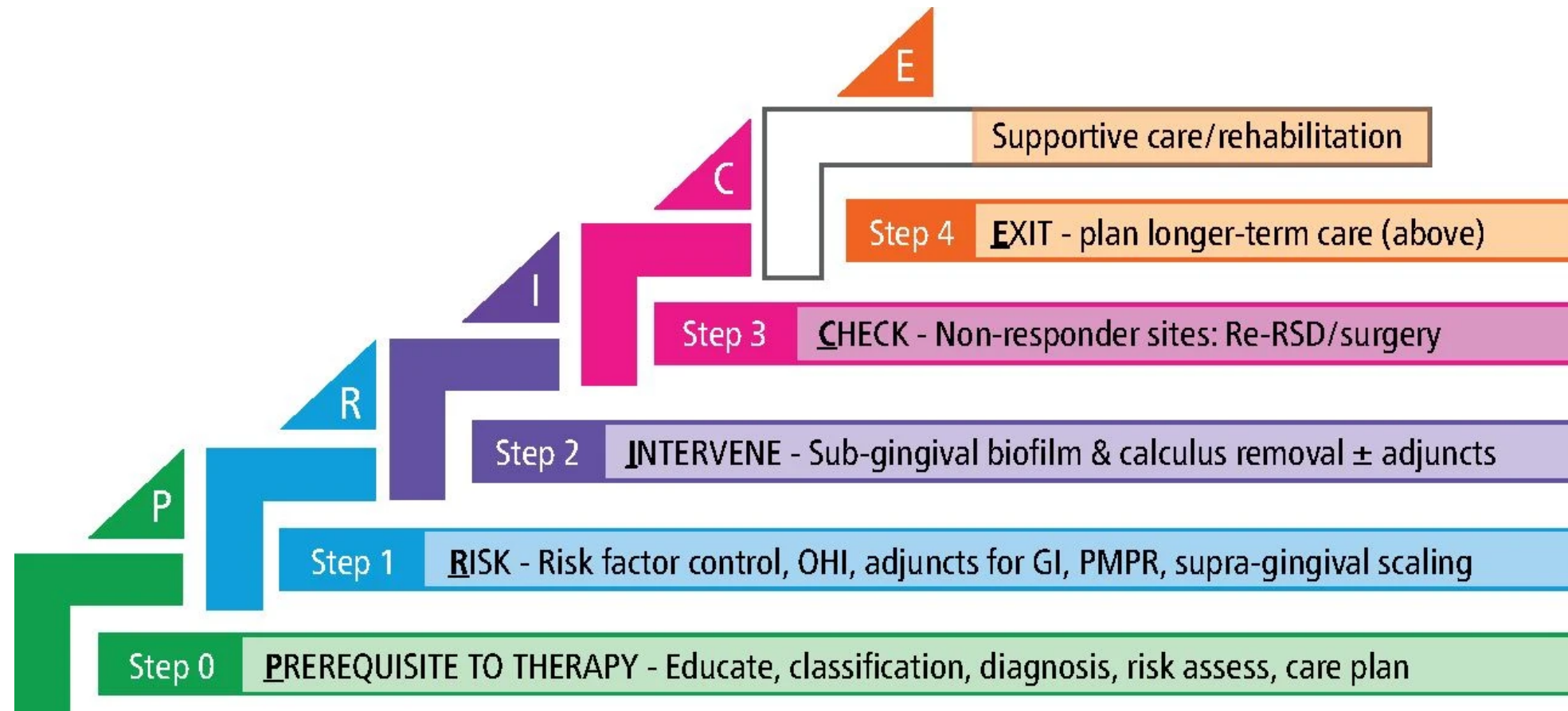
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PERIODONTAL TREATMENT PLAN

EMERGENCIES PHASE OF PERIODONTAL TREATMENT ☐ Item Proposed ☐ Item Completed

Periodontal Treatment Step



Necrotising periodontal diseases



- NG and NP appear to be the same disease but at different stages.
- Differentiated by:
 - Severity
 - Extent of tissue destruction

Glick et al 1994, Robinson et al 1998

Necrotising periodontal diseases

Category	Patients	Predisposing conditions	Clinical condition
Necrotizing periodontal diseases in chronically, severely compromised patients	In adults	HIV+/AIDS with CD4 counts < 200 and detectable viral load	NG, NP, NS, Noma. Possible progression
		Other severe systemic conditions (immunosuppression)	
	In children	Severe malnourishments ^a	
		Extreme living conditions ^b	
		Severe (viral) infections ^c	
Necrotizing periodontal diseases in temporarily and/or moderately compromised patients	In gingivitis patients	Uncontrolled factors: stress, nutrition, smoking, habits	Generalized NG. Possible progression to NP
		Previous NPD: residual craters	
		Local factors: root proximity, tooth malposition	Localized NG. Possible progression to NP
	In periodontitis patients	Common predisposing factors for NPD (see paper)	NG. Infrequent progression
			NP. Infrequent progression

NG, necrotizing gingivitis; NP, necrotizing periodontitis; NS, necrotizing stomatitis

^aMean plasma and serum concentrations of retinol, total ascorbic acid, zinc, and albumin markedly reduced, or very marked depletion of plasma retinol, zinc, and ascorbate; and saliva levels of albumin and cortisol, as well as plasma cortisol concentrations, significantly increased

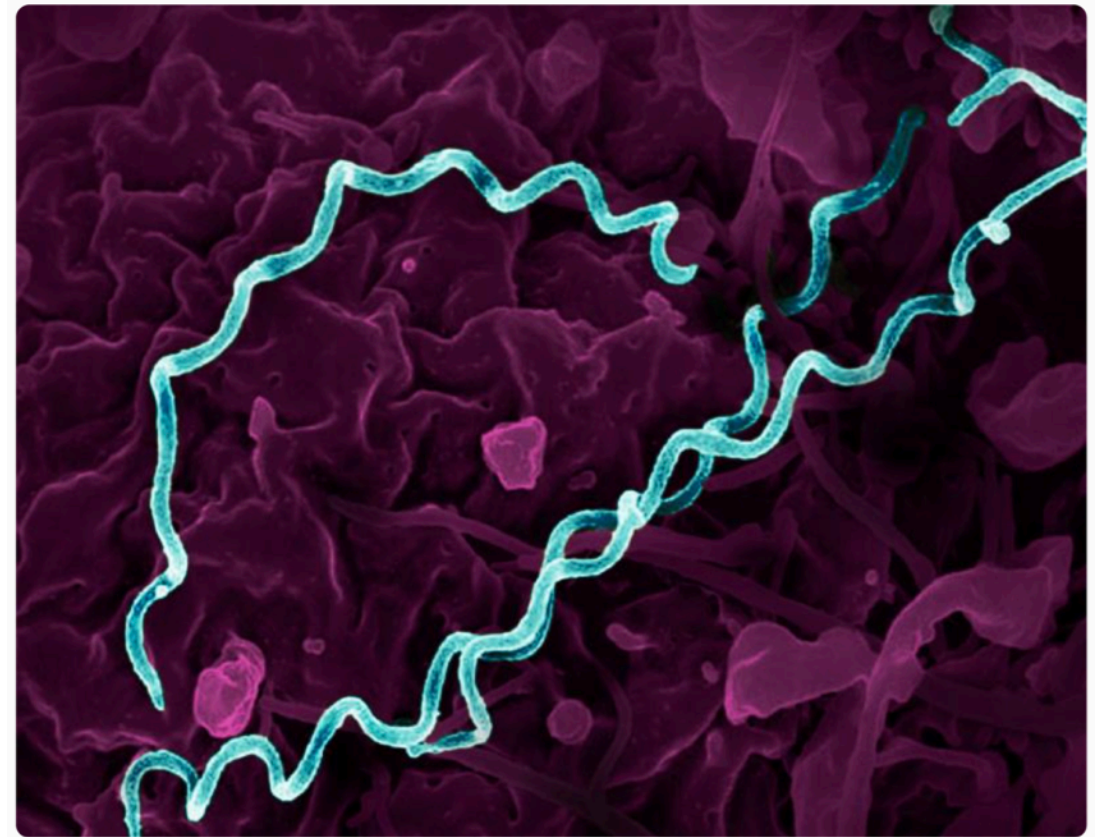
^bLiving in substandard accommodations, exposure to debilitating childhood diseases, living near livestock, poor oral hygiene, limited access to potable water and poor sanitary disposal of human and animal fecal waste

^cMeasles, herpes viruses (cytomegalovirus, Epstein-Barr virus-1, herpes simplex virus) chicken pox, malaria, febrile illness

Necrotising periodontal diseases

Aetiology

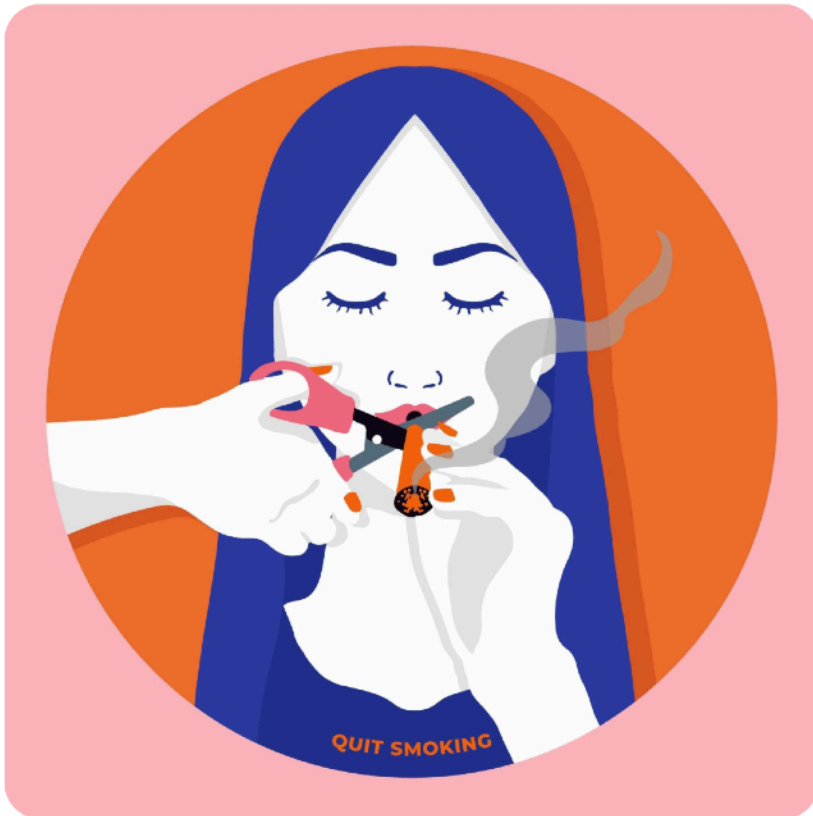
- Opportunistic / dysbiotic microbiome in a susceptible host
- Fusiform bacteria, *Prevotella intermedia*, & spirochaetes
- Bacterial invasion of soft tissues occurs
- Intense release of cytokines and tissue destruction



Falkler *et al* 1987, Stevens *et al* 1984

Necrotising periodontal diseases

Risk Factors



- Poor oral hygiene
- Smoking
- Insufficient sleep & Psychological STRESS – inability to cope with stress
- HIV +ve patients & Immunosuppressed patients
- Severe malnutrition
- Developed countries - Young people (15-34yrs)
- Developing countries - children

Necrotising periodontal diseases

Epidemiology

- Unclear, but low in developed countries
- Higher in developing countries - 5-25%
- Higher in children - 54-68% are children <10 yrs
- HIV +ve patients 2% (30% if not on HAART)
- Higher in military population
- High during WWI & WWII



Necrotising gingivitis

- Sudden Onset- Rapid development and painful, more common to affect anterior teeth
- Starts with ulceration of interdental papilla, leading to papillary necrosis
- “Punched out” papillae appearance
- Fibrinous pseudomembrane
- +/- Fever, lymphadenopathy, malaise
- No bone loss
- Bleeding
- Malodour



Fig. 19-7 Necrotizing gingivitis in a 22-year-old woman: bleeding, necrosis, and pseudomembrane can be observed.

Necrotising gingivitis

(a)



(b)



Fig. 19-9 Healing of necrotizing gingivitis lesions in the upper anterior sextant. (a) Active lesions with necrosis the interdental papillae. (b) Complete resolution after 60 days.

(Source: Courtesy of Dr. Nidia Castro dos Santos and Dr. Mauro Santamaria.)

Necrotising gingivitis

Essential clinical features

- Lesions are painful
- Lesions are gingival ulcers, punched-out crater-like affecting the interdental papilla and may involve marginal gingiva
- Gingival ulcers bleed spontaneously or readily
- The acute condition may occur from an existing chronic gingival condition or de novo

Non-essential clinical features

- "Pseudomembrane" of sloughed necrotic debris & bacteria covering the ulcerated area
- Bad breath
- Fever, malaise
- Lymphadenopathy – (submandibular & cervical)

Necrotising periodontitis

- Lesions extend into alveolar bone
- Exposed bone, gingival recession, tooth mobility
- Malodour, lymphadenopathy, fever and malaise
- Severe pain and spontaneous bleeding
- Exfoliation of teeth within months of onset of NP



Fig. 19-8 Necrotizing periodontitis: presence of necrosis/ulcer of the interdental papillae.

(Source: Courtesy of Dr. Mauro Santamaria.)

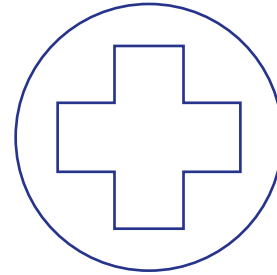
Necrotising periodontitis



Necrotising periodontitis



NG and NP management



- Needs **urgent** treatment
- Disease can progress rapidly (necrotic bone & soft tissue)
- If left untreated:

NG → NP

NG and NP management

- Gentle debridement with ultrasonic (with LA) to remove slough, plaque & necrotic tissues, saline irrigation
- Rx metronidazole 400mg 12-hourly for 3-5 days, pain management, OHI (gentle)
- Mouthwash for 2-3 weeks, 2 x daily for 1 min
 - CHX 0.2%
 - OR**
 - H₂O₂ 1.5%
- Stop smoking!
- Review 2-3 days later - further Rx may be needed

Robinson *et al* 1998



NG and NP management



Guidelines ▾ Drugs Quick links ▾ Favourites Saved Searches Available Offline ✓ Search

Therapeutic Guidelines > Oral and Dental > Necrotising periodontal disease

Necrotising periodontal disease



metronidazole 400 mg orally, 12-hourly for 3 to 5 days.



If pain and inflammation restrict oral hygiene practices, recommend short-term use of a mouthwash to reduce plaque formation; use:

- 1 hydrogen peroxide 3% solution 5 mL, mixed with 5 mL of warm water, rinsed in the mouth for 1 minute then spat out, 12-hourly until pain has reduced



OR

- 1 hydrogen peroxide 1.5% solution 10 mL, rinsed in the mouth for 1 minute then spat out, 12-hourly until pain has reduced



OR

- 2 chlorhexidine 0.2% mouthwash 10 mL rinsed in the mouth for 1 minute then spat out, 8- to 12-hourly until pain has reduced [\[Note 1\]](#)



OR

- 2 chlorhexidine 0.12% mouthwash 15 mL rinsed in the mouth for 1 minute then spat out, 8- to 12-hourly until pain has reduced [\[Note 1\]](#)

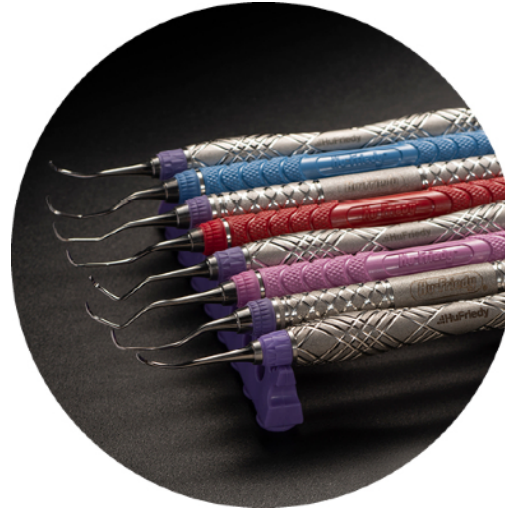


NG and NP management

Response to treatment is diagnostic

At 1-2 week review:

- Subgingival debridement if necessary (earlier may hinder regenerative potential of tissues) and treat chronic disease if present
- Reinforce oral hygiene
- Review again - maintenance or needs surgery?
- Failure to resolve may be due to incomplete debridement/ stress/ malnutrition/ smoking/ immunological conditions



- Regimen shown to have 94% resolution within 1 week & 100% within 1 month
- If not resolved, you need to rule other non-infective conditions that resemble NG, e.g. desquamative gingivitis

Robinson et al 1998

NG and NP management

Longer term management

- Review at 1 month
- If resolved, place on 3/12 maintenance,
(may need periodontal surgery if deformities present)
- If no resolution, refer to periodontist or oral medicine specialist, (blood test, microbiological sample & biopsy -> histopathology investigations)
- Up to 30% of patients will experience recurrence within 2 years
- Maintenance of meticulous OH and scaling/debridement



Robinson *et al* 1998

NG and NP management



Image courtesy of
Dr Anna Hughes

NG and NP management



Image courtesy of
Dr Anna Hughes

NG and NP management



Image courtesy of
Dr Anna Hughes

NG and NP management



Image courtesy of
Dr Anna Hughes

Acute herpetic gingivostomatitis

- Herpes Simplex virus
- 70-80% of population exposed
- Less in developed countries
- Young adults & children
- Affects whole mouth & gingiva
- 1-2mm blisters that rupture to form small, shallow, painful & irregular ulcers, 7-10 days
- Ulcers covered by a yellowish-gray center & surrounded by a red halo



Acute herpetic gingivostomatitis



- Ulcers may take up to 2 weeks to heal
- Heal with no scarring
- Rare to get gingival recession
- Sore to touch, food & drinks
- Worse with salty, acidic, hard foods
- Fever & malaise
- Ddx recurrent aphthous ulcers?
These are not seen on keratinised tissues

Acute herpetic gingivostomatitis

Table 4. Differences in clinical features of necrotizing ulcerative gingivitis (NUG) and acute herpetic gingivostomatitis (AHG)

	NUG	AHG
Site of ulcers	Interdental papilla Marginal gingival	Gingiva, no predilection for interdental papilla Entire oral mucosa
Character of ulcers	Punched-out, crater-like Covered by yellow/white/gray slough Bleed readily or spontaneously Painful on stimulation	Multiple vesicles that coalesce and form shallow, fibrin-covered, regular-shaped ulcers No marked tendency to bleed Not specially tender
Fever	Doubtful or slight only	38 °C (or more)
Symptoms	Painful gums, 'dead-feeling teeth'	Sore mouth
Duration of ulcers and discomfort	Short-lived (1–3 days), with appropriate therapy	More than 1 week, even with therapy

Acute herpetic gingivostomatitis

Management

- Pain relief: analgesics & topical anaesthetics rinses
- Advice to have adequate fluid intake & food
- Use of antiviral medication questioned: ACYCLOVIR, only if started immediately
- Inform - AHG is CONTAGIOUS!
- Review in 2wks to confirm correct diagnosis
- Recurrence can occur- dental tx, stress, fever, trauma



Reactivation of viruses

Herpes simplex virus

Cold sores



Fig. 20.4 Herpetic vesicles recurred in the lip. (A) Early stage. (B) Late stage, showing brownish, crusted lesions. (From Sapp JP, Eversole LR, Wysocki GP: Contemporary oral and maxillofacial pathology, ed 2, St Louis, 2002, Mosby.)

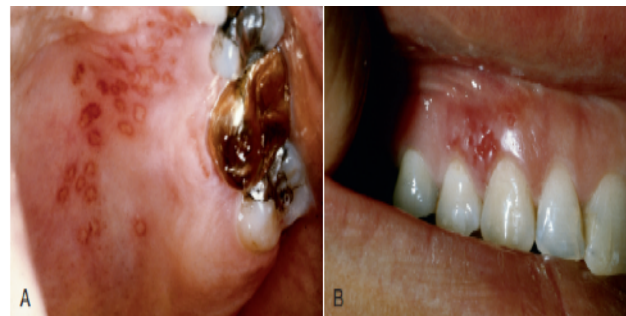


Fig. 20.5 Recurrent intraoral herpetic vesicles are seen (A) in the palate and (B) in the gingiva. The latter location is rare. (From Sapp JP, Eversole LR, Wysocki GP: Contemporary oral and maxillofacial pathology, ed 2, St Louis, 2002, Mosby.)

Varicella Zoster

Shingles (from chicken pox)



Abscesses of the periodontium



Fig. 19-5 Periodontal abscess associated with an upper right third molar. Note how this lesion is associated with tooth extrusion and mobility.

Abscesses of the periodontium

- Classified based on aetiology

Table 4. Classification of periodontal abscesses based on the etiologic factors involved

Periodontal abscess in periodontitis patients (in a pre-existing periodontal pocket)	Acute exacerbation	Untreated periodontitis	
		Non-responsive to therapy periodontitis	
		Supportive periodontal therapy	
	After treatment	Post-scaling	
		Post-surgery	
		Post-medication	
Periodontal abscess in non-periodontitis patients (not mandatory to have a pre-existing periodontal pocket)	Impaction		Dental floss, orthodontic elastic, toothpick, rubber dam, or popcorn hulls
	Harmful habits		Wire or nail biting and clenching
	Orthodontic factors		Orthodontic forces or a cross-bite
	Gingival overgrowth		
	Alteration of root surface	Severe anatomic alterations	Invaginated tooth, dens evaginatus or odontodysplasia
		Minor anatomic alterations	Cemental tears, enamel pearls or developmental grooves
		Iatrogenic conditions	Perforations
		Severe root damage	Fissure or fracture, cracked tooth syndrome
		External root resorption	

Abscesses of the periodontium



- Pericoronal Abscess (Pericoronitis)
- Gingival Abscess
- Periodontal Abscess
 - Combined perio-endo abscess
 - Other acute abscesses

Abscesses of the periodontium



Pericoronitis

- Easy to diagnose as can see partially erupted tooth with inflamed gum flap
- Gingiva in 3rd molar area appear red & swollen, infection may be due to biofilm, trauma, food debris
- Infection may spread posteriorly into the oropharyngeal area and medially to the base of the tongue and involve the regional lymph nodes, may have difficulty swallowing
- Patients may have a history of pericoronitis
- Gram-negative anaerobic pathogens

Abscesses of the periodontium

Pericoronitis



Abscesses of the periodontium

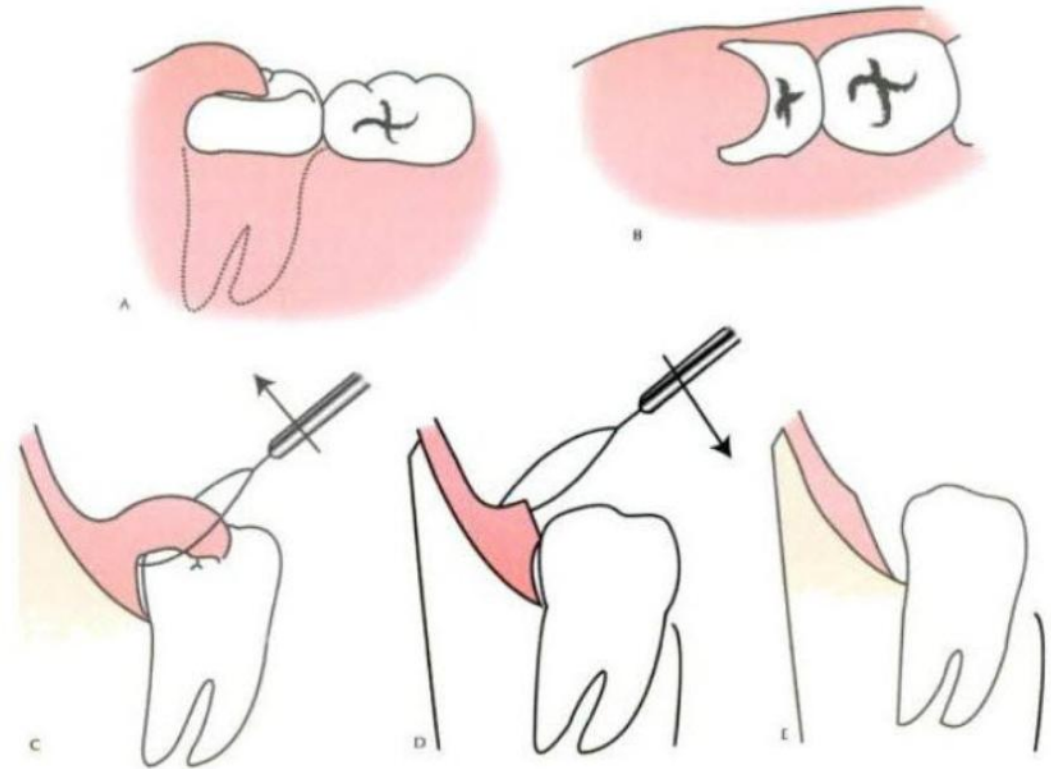
Pericoronitis



Abscesses of the periodontium

Management

- Acute phase and initial Treatment:
 - debride & irrigate under the pericoronal flap
- Rx. Antibiotics if systemic involvement (fever, lymphadenopathy), warm salt water mouthwash
- Manage underlying condition:
 - operculectomy
 - distal debridement
 - extract third molar(s)



Abscesses of the periodontium



Before



After



Before



After

Abscesses of the periodontium

Gingival abscess

- Localised purulent infection - smooth, red, painful swelling
- Confined to marginal gingival tissue, often at previously non-diseased sites
- Usually an acute inflammatory response (1-2 days) to plaque, trauma or foreign substances forced into the gingiva (Piksters, dental floss, food)
- If left untreated, lesion may rupture spontaneously
- Diagnosis - find & retrieve the offending foreign material if applicable
- Treatment: debride & irrigate pocket

Abscesses of the periodontium

Gingival abscess



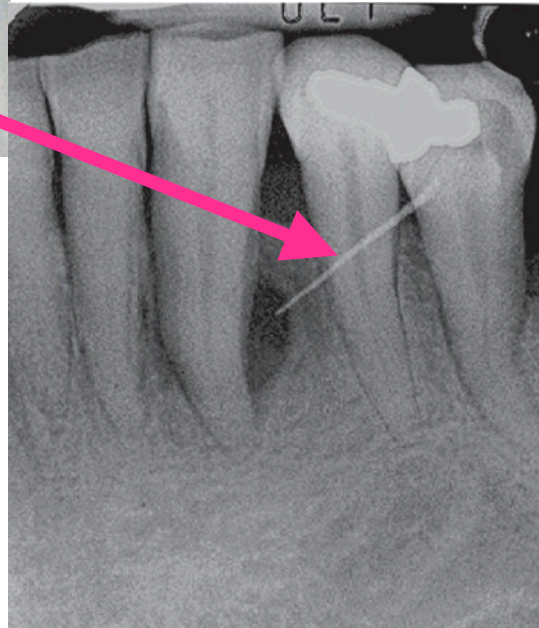
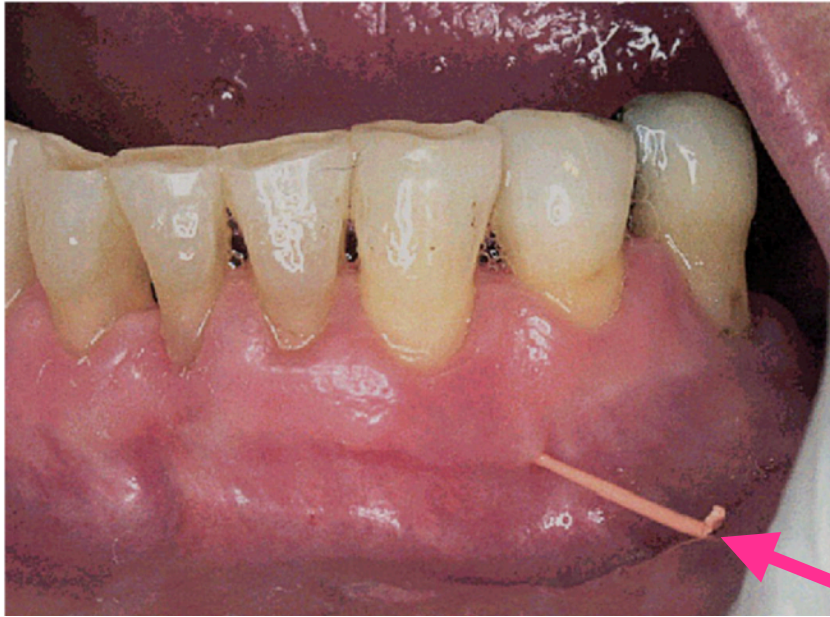
Abscesses of the periodontium

Periodontal abscess

- 3rd most common emergency in general practice (UK data)
- 8-14% of all dental emergencies
- More common in patients with untreated gum disease (60%) vs patients undergoing active periodontal treatment (13.5%)
- Patients in maintenance – 38% (5-29yrs follow up)
- Usually around molars & lower incisors



Abscesses of the periodontium

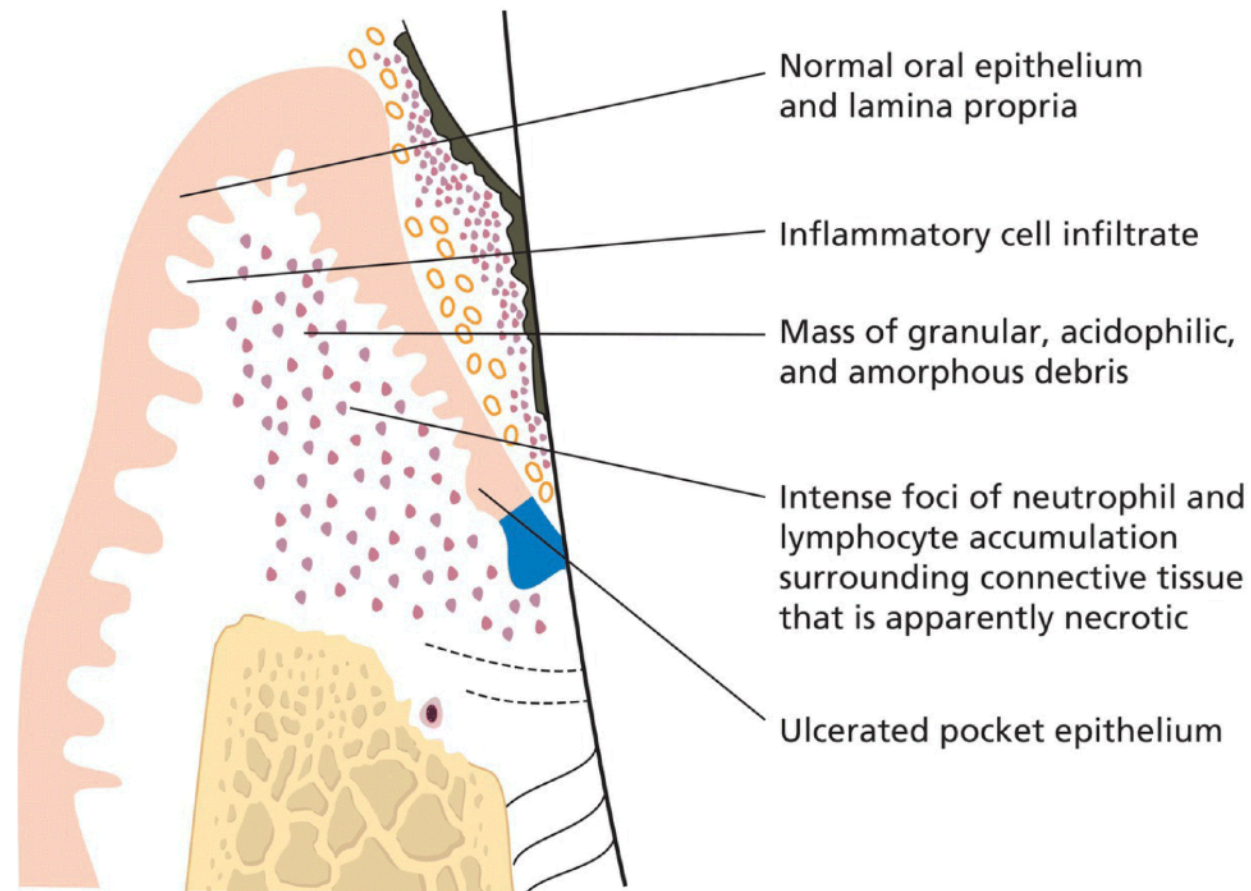


Periodontal abscess

- Rapid destruction of periodontal tissues, with a negative effect on the prognosis of the affected tooth. Bacterial invasion of soft tissues ulceration of the PE occurs.
- May lead to tooth loss
- During SPT, main reason for tooth extraction
- Teeth with repeated abscess formation – prognosis considered “hopeless”
- Severe systemic consequences can occur

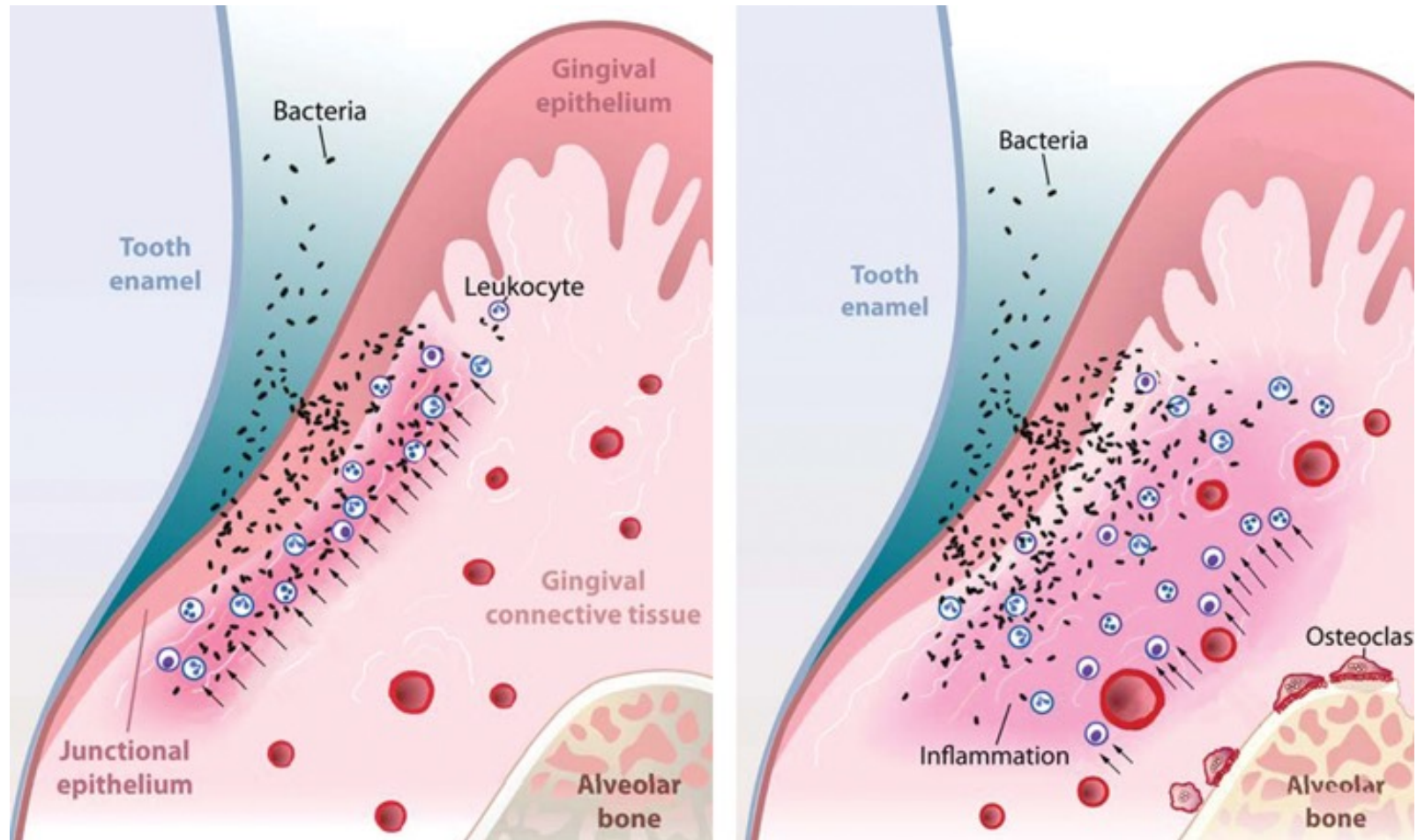
Abscesses of the periodontium

Periodontal abscess



Abscesses of the periodontium

Periodontal abscess



Abscesses of the periodontium

Periodontal abscess - why?

- Untreated periodontitis
- Poor access/residual calculus-anatomical difficulties in furcations, vertical defects, root concavities
- Non-inflammatory- root fractures/perforations
- Systemic antimicrobial intake, without subgingival debridement
- Poorly controlled diabetics - higher risk



Abscesses of the periodontium

Periodontal abscess

- Microbial composition similar to periodontitis
- Most prevalent bacterial species were *Porphyromonas gingivalis* (50-100%), *Prevotella intermedia*, *Prevotella melaninogenica*, *Fusobacterium nucleatum*, *Tannerella forsythia*, *Treponema* species, *Campylobacter* species, *Capnocytophaga* species, *Aggregatibacter actinomycetemcomitans* or gram-negative enteric rods

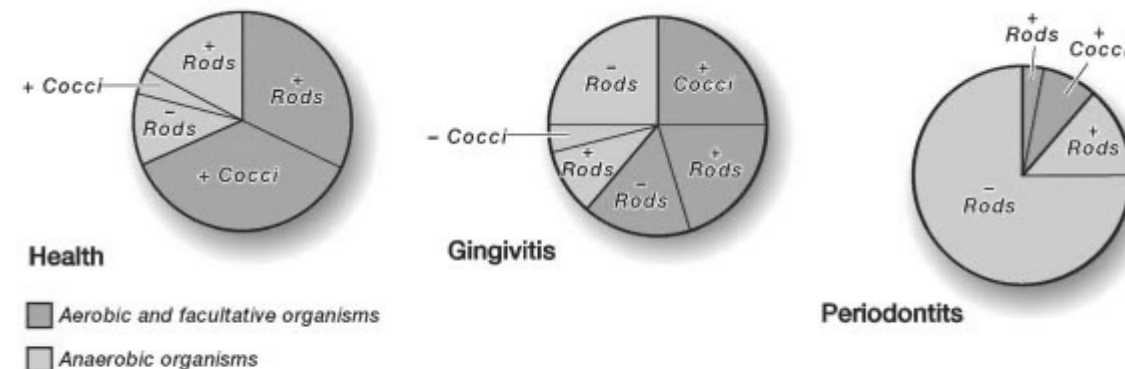


Figure 6.6. **Proportions of Bacteria in Health Versus Disease.** The relative proportions of facultative and anaerobic organisms found in subgingival samples in cases of periodontal health, gingivitis, and periodontitis.

Herrara *et al* 2018

Abscesses of the periodontium



Periodontal abscess

- Confined to marginal gingival tissue
- Ovoid swelling in gum
- Gingiva is oedematous & red, with a smooth, shiny surface
- Very common - Pus may be expressed from the gingival margin by gentle digital pressure, or by probing
- Uncommon - Fistula

Abscesses of the periodontium

Periodontal abscess

- Symptoms vary from a slight discomfort, tender gums, to severe pain & swelling, or tooth “elevation”
- Increased tooth mobility, TTP or soreness with chewing
- Extra-oral uncommon – swollen face (3.6%)
- Lymphadenopathy, fever & malaise (7-40%)



Abscesses of the periodontium

Periodontal abscess diagnosis

- Deep probing depths >5mm (7-9mm on average)
- Positive response to pulp vitality test
- Radiographs – no apical radiolucency or endodontic lesion, but bone loss observed



Abscesses of the periodontium



Periodontal abscess

- Can occur in patients undergoing perio tx, during maintenance, or untreated perio patients
- Usually in patients with a history of periodontitis & smokers
- May occur post scaling due to remaining subgingival calculus on root surface - deep periodontal pockets, furcations, & intrabony defects
- May occur when antibiotics Rx without debridement in patients with periodontal disease

Abscesses of the periodontium

Periodontal abscess - management

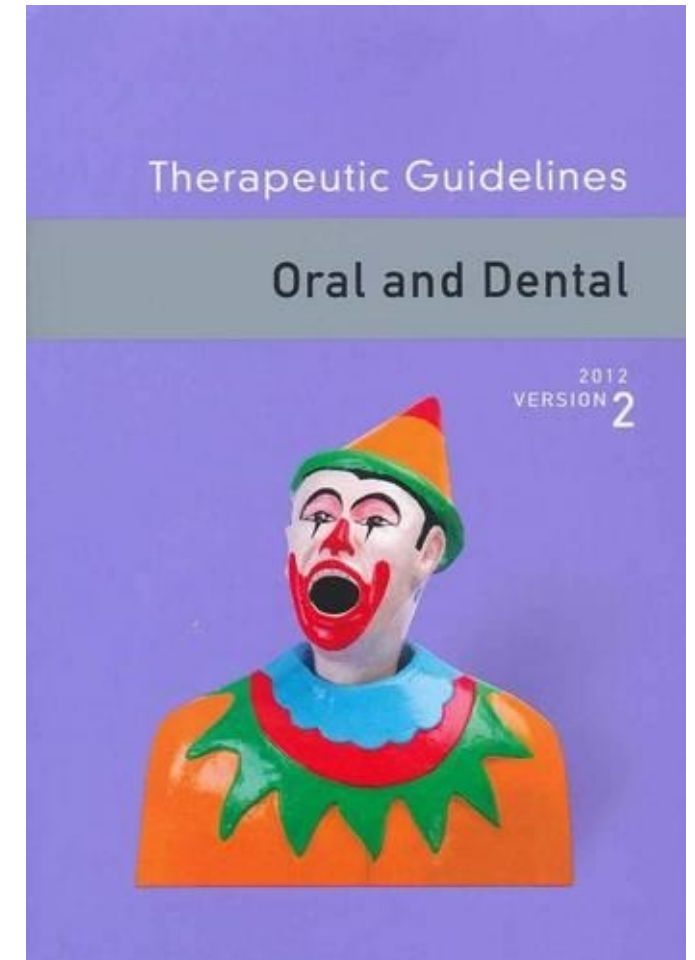
- Drain abscess by debriding through the pocket or an incision & removing plaque, calculus, & other irritants
- Occlusal adjustment
- CHX mouthwash
- Rx. Analgesics
- Resolution 2-7 days
- Recurring abscess – surgery to access site to find other cause for abscess



Abscesses of the periodontium

Periodontal abscess - management

- Rarely needed!
- Only if spreading locally + mild systemic involvement
- Phenoxymethypenicillin 500mg x4 daily for 5 days or Amoxycillin 500mg tds for 5 days (plus metronidazole 400mg bds 5 days) TG
- PENICILLIN ALLERGY: CLINDAMYCIN 300mg tds for 5 days
- If severe systemic + spreading- immediate referral to a hospital!!



Abscesses of the periodontium

Periodontal abscess - without treatment...

- Tooth loss
- Spread of infection to other parts of the body – bacteraemia, lung infection, brain abscess



Differential diagnosis

TABLE 20.2 Differentiation of Necrotizing Ulcerative Gingivitis, Chronic Desquamative Gingivitis, and Chronic Periodontal Disease

Necrotizing Ulcerative Gingivitis	Desquamative Gingivitis	Chronic Destructive Periodontal Disease
Bacterial smears show fusospirochetal complex	Bacterial smears reveal numerous epithelial cells and few bacterial forms	Bacterial smears vary
Marginal gingiva affected	Diffuse involvement of marginal and attached gingivae and other areas of oral mucosa	Marginal gingiva affected
Acute history	Chronic history	Chronic history
Painful	May or may not be painful	Painless if uncomplicated
Pseudomembrane	Patchy desquamation of gingival epithelium	Usually no desquamation, but purulent material may appear from pockets
Papillary and marginal necrotic lesions	Papillae do not undergo necrosis	Papillae do not undergo noticeable necrosis
Affects adults of both genders and occasionally affects children	Affects adults, most often women	Usually found in adults, occasionally found in children
Characteristic fetid odor	No odor	Some odor but not strikingly fetid

Other less common conditions

Acute Candida infection in a cancer patient receiving chemotherapy



Other less common conditions

Desquamative gingivitis in a patient with auto-immune disease



Other less common conditions

Desquamative gingivitis in a patient with auto-immune disease



Other less common conditions

Neoplasia



Other less common conditions

Allergic reactions



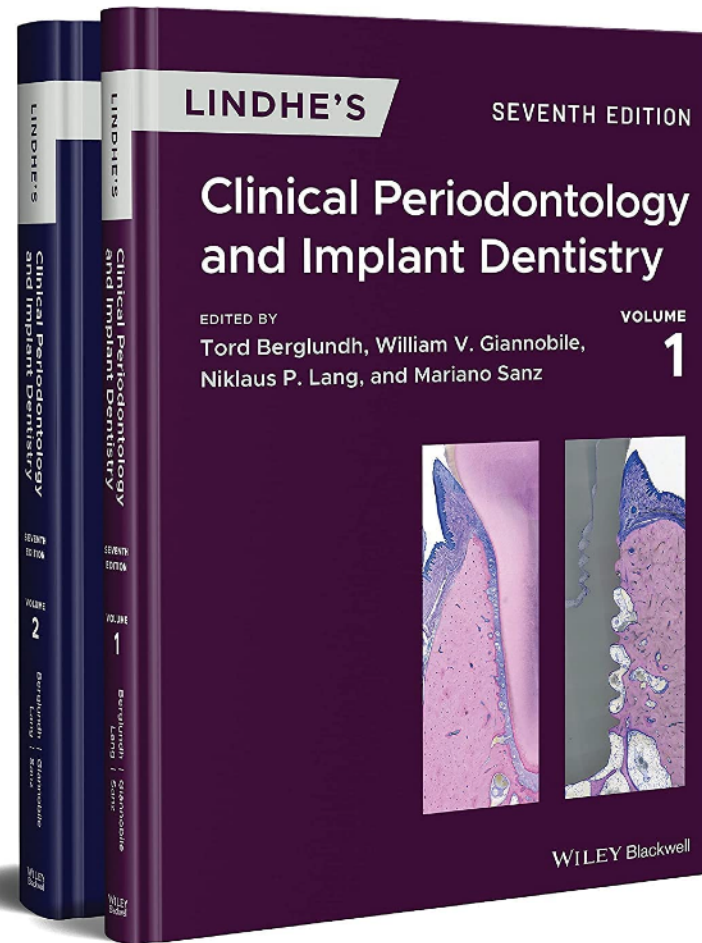
Reading

Chapter 14 Non-Plaque-Induced Gingival Diseases

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² Oral Medicine and Pathology, Institute of Odontology, The Sahlgrenska Academy at University of Gothenburg, Gothenburg, Sweden



Chapter 19 Abscesses, Necrotizing Lesions of the Periodontium, and Endo-Periodontal Lesions

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Questions?



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