DENT5311 Integrated Dental Practice 2 TS-CC-2 2025

Periodontal disease in children

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PERIODONTAL CONDITIONS IN CHILDREN

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Sound periodontium

Healthy primary gingiva

- Bulky, rounded appearance
- Saddle like interdental tissues in gaps
- Interdental papilla in proximal contacts
- Epithelium is thinner and less keratinised



Matsson. J Clin Periodontol 1978
Lindhe et al, Clinical periodontology and implant dentistry 5th Ed. 2008

3

Sound periodontium

Healthy primary gingiva

- Thick junctional epithelium
  - Resistant
- Shallow depth to junctional epithelium < 2mm
- Wide, elastic PDL
- Porous and vascular alveolar bone

"Might protect against attachment loss"



Matsson. J Clin Periodontol 1978
Lindhe et al, Clinical periodontology and implant dentistry 5th Ed. 2008

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Physiological pigmentation

- increased melanocyte activity that causes an increased amount of melanin within the epithelium



Photo from Simms & Lewis, Dental Update 2024 48:4, 707-709

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GINGIVITIS

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Plaque induced gingivitis

- Most common periodontal condition!
- Result of poor Oral Hygiene and Plaque control

Key features
- Accumulation of plaque at gingival margin
- Colour change and swelling
  - Red, puffy and shiny
- Reversible!



Matson. J Clin Periodontol 1978
Bimstein et al J Dent Child 2002

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Eruption gingivitis

- Transient inflammation in areas of eruption teeth
- Result of poor oral hygiene and plaque control due to tenderness

Key features
- Accumulation of plaque at gingival margin
- Colour change and swelling
  - Red, puffy and shiny
- Subsides when the tooth erupts or exfoliates



Matson. J Clin Periodontol 1978
Bimstein et al J Dent Child 2002

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Local factors



9

Local factors



10

Puberty gingivitis

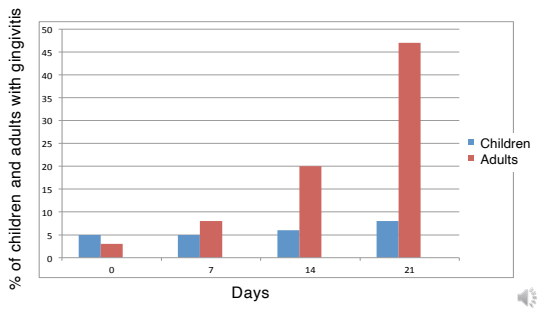
- Hormonal changes amplify gingival response to plaque
- Bacteria taking advantage of growth factors

Key features
- Minimal accumulation of plaque at gingival margin
- Colour change and swelling
  - Red, puffy and shiny
- Subsides with adequate hygiene and normalising hormone levels



Matson. J Clin Periodontol 1978
Bimstein et al J Dent Child 2002

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Matson. J Clin Periodontol 1978

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Why are there age-differences?

- Differs in microbiology
- Increased cell proliferation
- Quick turnover of collagen
- Altered immunresponse
  - T-lymphocytes- child
  - B-lymphocytes- adult
- Thicker junctional epithelium

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Poor nutrition and medications

- Vitamin deficiencies
  - Vitamin C
- Medications:
  - Anticonvulsants
  - Blood pressure
    - CCBs
  - Typically involving interdental papillae



Lim. P. P Int. Journal of Clin Pediatris 2018

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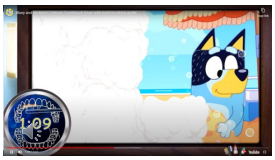
Parental responsibility to brush

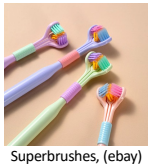
Help parents help their children

Give them a tool-box

- Technique
- Tooth paste
- Tooth brush
- …any tricks

Bluey Tooth brush timer

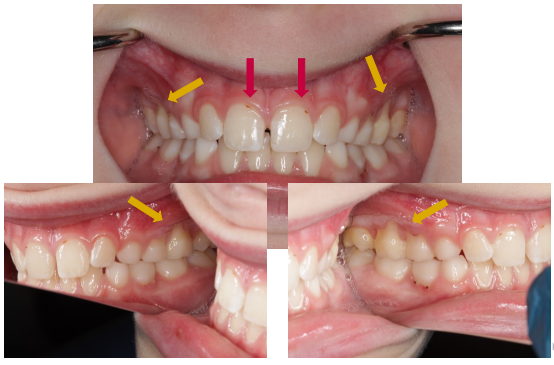




Superbrushes, (ebay)

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Gingival recession



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Necrotising periodontal diseases

NUG/NUP/NUS
Under the same disease but different stages

- Ulceration of interdental papilla
- Painful
- Bleeding
- Fever, lymphadenopathy, malaise



Herrera et al 2014, Stevens et al. 1984

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Risk factors

- Necrotizing ulcerative disease may be observed among
  - Severe malnutrition
  - Developed countries-Young people (15-34yrs)
  - Developing countries-children
- Immunosuppressed patients
- Poor oral hygiene
- Smoking
- Insufficient sleep
- Psychological stress

Herrera et al 2014, Robinson et al. 1998

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Treatment

- Gentle removal of plaque and necrotic debris (LA)
- Chlorhexidine 0.2% or hydrogen peroxide 3%
- Antibiotics Metronidazole 400mg 3-5 days
- Analgesic

- IF too painful to oral hygiene
- Hydrogen peroxide 3 % solution 5ml mixed with 5ml warm water , rinse 1 min twice a day until pain reduced

Therapeutic Guidelines Oral and Dental, version 3

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PERIODONTITIS

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J Clin Periodontol. 2018 Jun;45 Suppl 20:S1-S8. doi: 10.1111/jcpe.12935.

A new classification scheme for periodontal and peri-implant diseases and conditions – Introduction and key changes from the 1999 classification

Jack G Caton [1], Gary Armitage [2], Tord Berglundh [3], Iain L C Chapple [4], Søren Jepsen [5], Kenneth S Kornman [6], Brian L Mealey [7], Panos N Papapanou [8], Mariano Sanz [9], Maurizio S Tonetti [10]

TABLE 3

Periodontitis Consensus Report	Staging and Grading of Periodontitis: Framework and Proposed New Classification and Case Definition
Papapanou, Sanz et al. 2018	Tonetti, Greenwell, Kornman 2018
Active link to consensus report	Active link to case definitions

FORMS OF PERIODONTITIS

1. Necrotizing Periodontal Diseases
   - a. Necrotizing Gingivitis
   - b. Necrotizing Periodontitis
   - c. Necrotizing Stomatitis
2. Periodontitis as Manifestation of Systemic Diseases
   - Jepsen, Caton et al. 2018 Consensus Report link | Albandar et al. 2018 link

   Classification of these conditions should be based on the primary systemic disease according to the International Statistical Classification of Diseases and Related Health Problems (ICD) codes
3. Periodontitis
   - Fine et al. 2018 link | Needleman et al. 2018 link | Billings et al. 2018 link
   - a. **Stages:** Based on Severity[1] and Complexity of Management[2]
     - Stage I: Initial Periodontitis
     - Stage II: Moderate Periodontitis
     - Stage III: Severe Periodontitis with potential for additional tooth loss
     - Stage IV: Severe Periodontitis with potential for loss of the dentition
   - b. Extent and distribution[3]: localized; generalized; molar-incisor distribution
   - c. **Grades:** Evidence or risk of rapid progression[4], anticipated treatment response[5]
     - i. Grade A: Slow rate of progression
     - ii. Grade B: Moderate rate of progression
     - iii. Grade C: Rapid rate of progression

[1] Severity: Interdental clinical attachment level (CAL) on site with greatest loss. Radiographic bone loss & tooth loss.
[2] Complexity of management: Probing depths, pattern of bone loss, furcation lesions, number of remaining teeth, tooth mobility, ridge defects, secondary occlusal trauma.
[3] Add in Stage or descriptor: Localized <30% teeth; generalized ≥ 30% teeth
[4] Risk of progression: direct evidence by PD radiographs or CAL loss, or indirect (bone loss/age ratio)
[5] Anticipated treatment response: sore phenotype, smoking, hyperglycemia

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Prevalence

Primary teeth				
Authors (year)	**Diagnostic criteria**	**Age (yr)**	**Percent %**	**Country**
Bimstein et al. (1988)	CEJ-ABC >2 mm	4-8	3.1	United States
Bimstein et al. (1993a)	CEJ-ABC >2 mm	4-8	8.2	Israel
Sjödin & Matsson (1994)	CEJ-ABC >2mm	7-9	3.2	Sweden

Periodontology 2000, Vol. 29, 2002, 153–176
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PERIODONTOLOGY 2000

Global epidemiology of periodontal diseases in children and young persons

Jasim M. Albandar & Eduardo M. B. Tinoco

Aggressive periodontis
0.4–0.8% in North America
0.3–1.0% in South America
0.1–0.5% in West Europe
0.5–5.0% in Africa
0.4–1.0% in Asia

22 Lperio is very rare in children

Prevalence

Primary teeth				
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Periodontology 2000, Vol. 29, 2002, 153–176
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PERIODONTOLOGY 2000

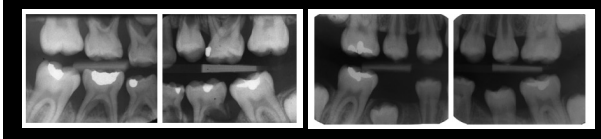
Global epidemiology of periodontal diseases in children and young persons

Jasim M. Albandar & Eduardo M. B. Tinoco

Chronic periodontitis
2.0–5.0% in North America
4.0–8.0% in South America
1.0–3.0% in West Europe
10.0–20.0% in Africa
5.0–8.0% in Asia

23

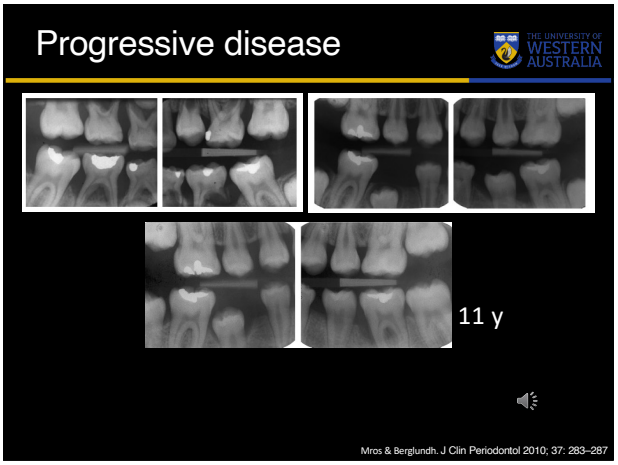
Progressive disease



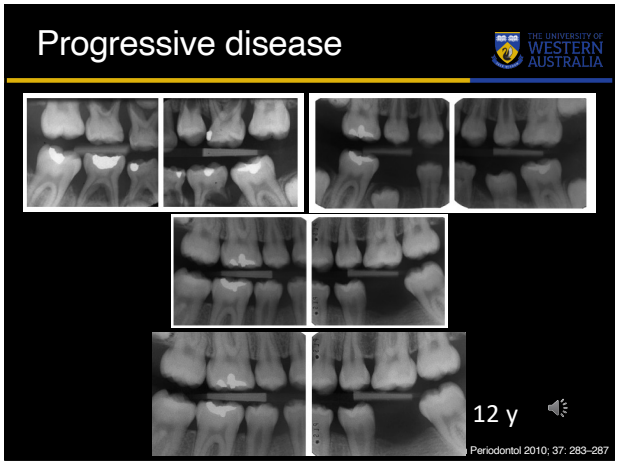
8 y 10 y

Mros & Berglundh. J Clin Periodontol 2010; 37: 283–287

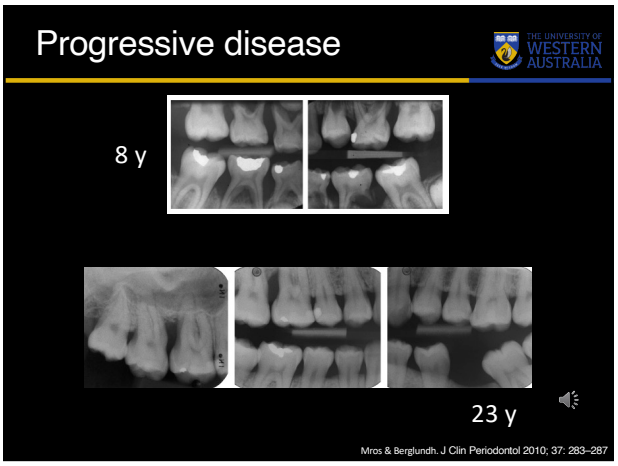
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Progressive disease
THE UNIVERSITY OF WESTERN AUSTRALIA
11 y
Mros & Berglundh. J Clin Periodontol 2010; 37: 283–287

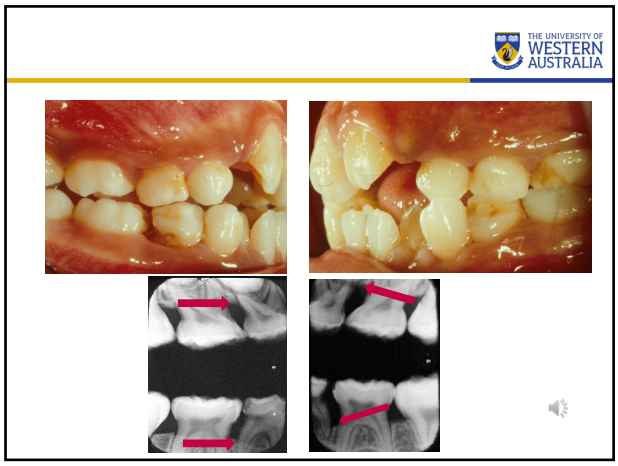
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Progressive disease
THE UNIVERSITY OF WESTERN AUSTRALIA
12 y
Periodontol 2010; 37: 283–287

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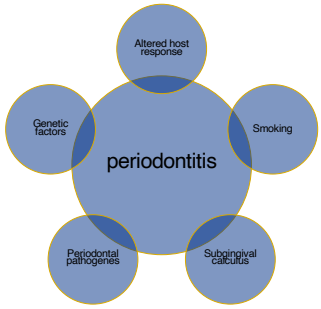

Progressive disease
THE UNIVERSITY OF WESTERN AUSTRALIA
8 y
23 y
Mros & Berglundh. J Clin Periodontol 2010; 37: 283–287

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THE UNIVERSITY OF WESTERN AUSTRALIA

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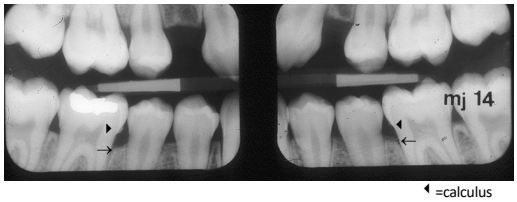
Risk factors among children



Julihn et al 2008
Höglund-Åberg c et al 2014
Haubek D et al 2014
Nadkarni M et al 2015

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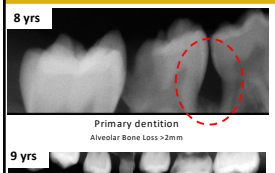
Subgingival calculus



=calculus
← = Bone loss

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From diagnosis to treatment



Periodontal disease
Oral hygiene training
Scaling and root planing



Refer for specialist treatment as many children are associated with systemics condition

Therapeutic guidleines Oral and Dental V 3

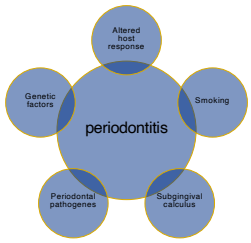
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Systemic diseases and conditions

Blood disorders
- Papillon Lefevre
- Langerhans Cell histiocytosis
- …….

Metabolic disorders
- Ehlers–Danlos
- ……

Other conditions
- Downs syndrome
- Obesity
- Diabetes



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PERIOD

Papillon Lefevre syndrome

- Autosomal recessive condition
- Hyperkeratosis of palms and feet
- Periodontitis- early loss of primary teeth
- A.a.

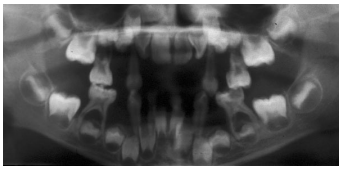


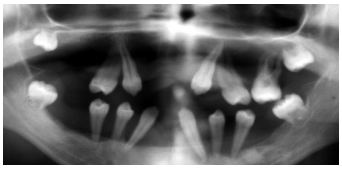


Ullbro et al 2004, Khocht et al 2014

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Management PLS





- Intensive periodontal therapy
- Metronidazole and chlorhexidine
- Extractions to prevent bone-loss

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Langerhans cell histiocytosis

- Rare condition
- Dental presentation
  - Premature loss of primary molars
  - "Floating in air"
  - All 4 quadrants involved
  - Primary molars, possible canine
  - Incisors – rarely involved
- Management
  - Excision and curettage of oral lesions
  - Extractions
  - Multiagent chemotherapy

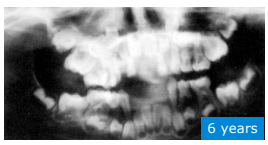


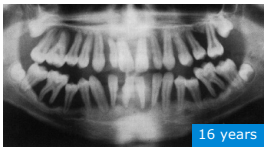
Fig. 1. Clinical symptoms of LCH in oral cavity.

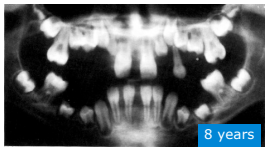
Merglová et al. Journal of Cranio-Maxillo-Facial Surgery 42 (2014) 93e10

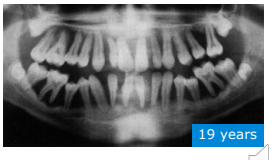
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Congenital Neutropenia





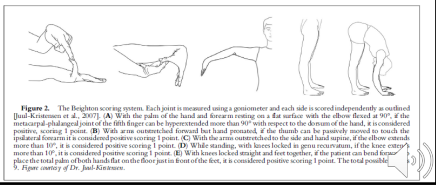




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Ehler Danlos Syndrome



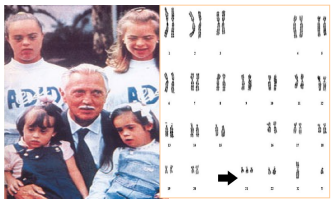


Mitakides & Tinkle, 2017
Bowen et al 2017
Malfait et al 2017

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Downs syndrome

The most common recognizable genetic syndrome associated with immune defects
Cruz NV et al 2009

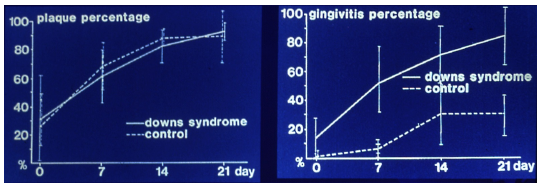


Prevalence periodontits = 30%
- Early onset
- Increases with age
- More frequent in lower central incisors

Altered immune response
- Weaker innate response
- Altered adaptive response

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Experimental gingivitis around deciduous teeth in children with Down's syndrome

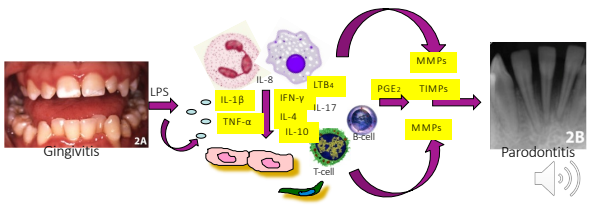


Reuland-Bosma et al 1986

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Clinical implications

- Inform parents with DS children about differences in immuno-response and the increased risk of periodontal disease
- Prevention on regular basis will reduce plaque, gingivitis and pocket depth (Cheng RHW et al 2008)



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Obesity

- Enhanced risk for exhibiting pathological periodontal pockets
- Enhanced level of cytokines
- Increased plauque accumulation and bleeding on probing
- Increased levels of periodontal patogens

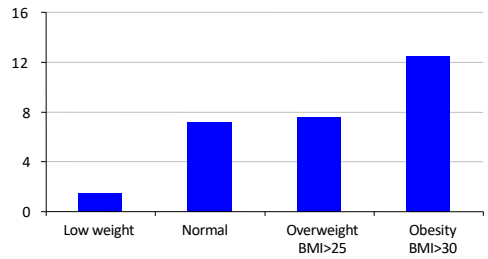




Owens S et al 2014
Modeer T et al 2011
Zeigler et al 2012
de Castilhos et al 2012

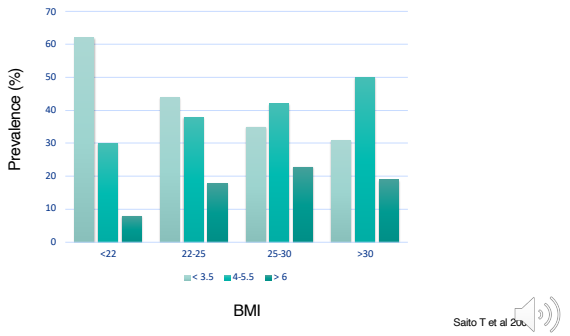
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Periodontitis and BMI



Al-Zahrani MS et al 2003

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Saito T et al 20..

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Rationale for treatment

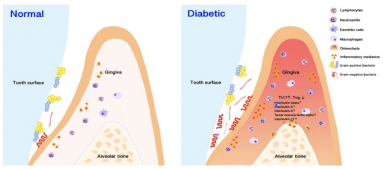
- Prevention
- Information
- Help parents to help their children
- Regular re-calls



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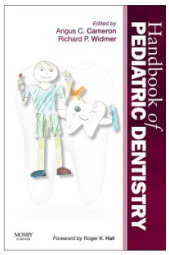
Diabetes

- 4x increased risk of loss of periodontal support
- Increased gingival inflammation
- Changes in bacterial composition with enhanced pathogenicity



Graves et al 2019

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Read more in textbook!

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