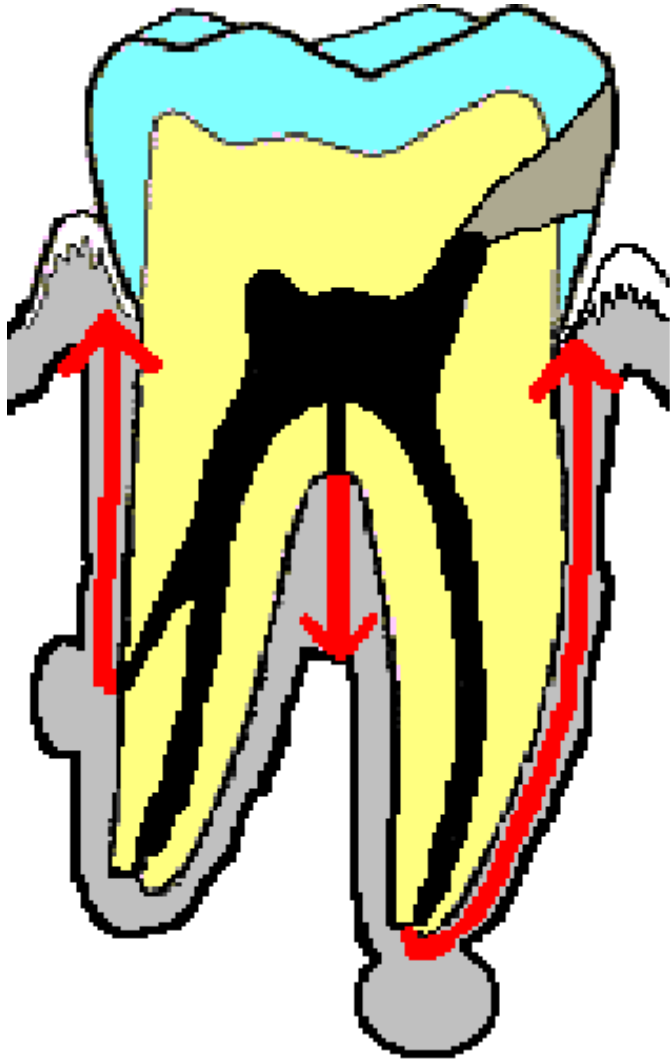


PERIODONTOLOGY

MUDr. Hana Poskerová Ph.D.

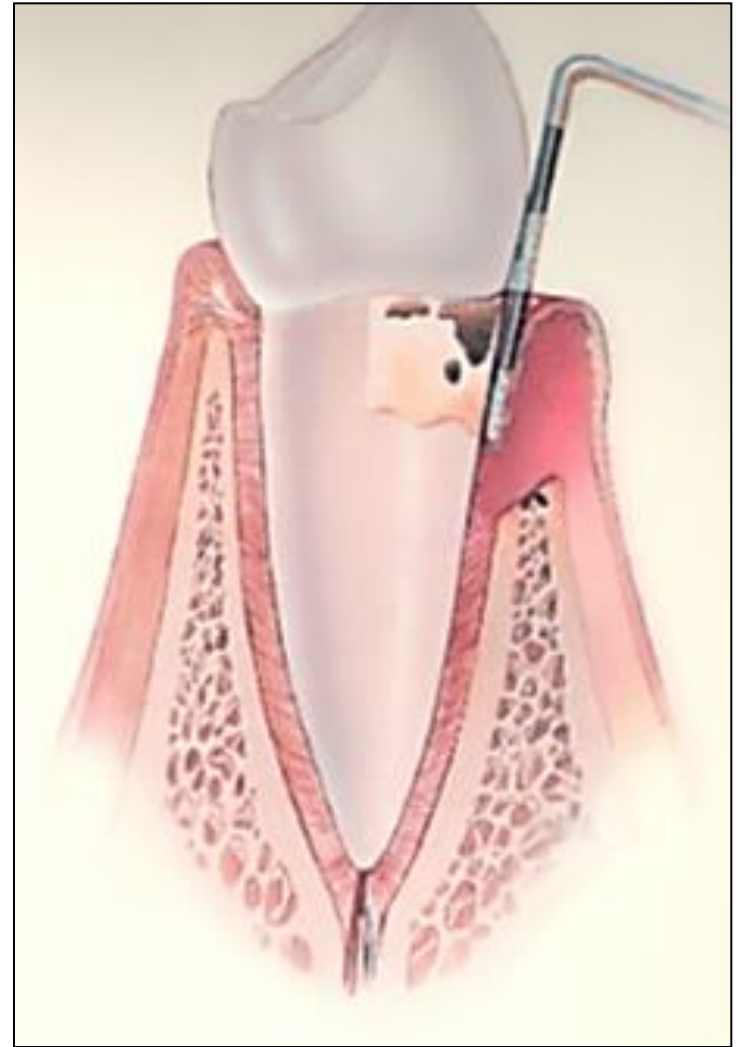
Dental Clinic St. Anne's Hospital and
Faculty of Medicine Masaryk University
Brno

Do not confuse it, these are two completely different diseases !!!



Periodontitis apicalis

- result of caries

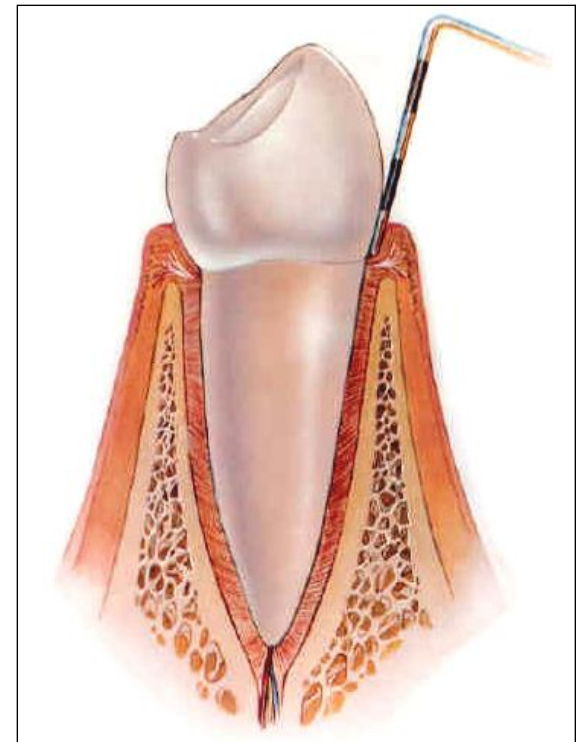


Periodontitis marginalis

- see below

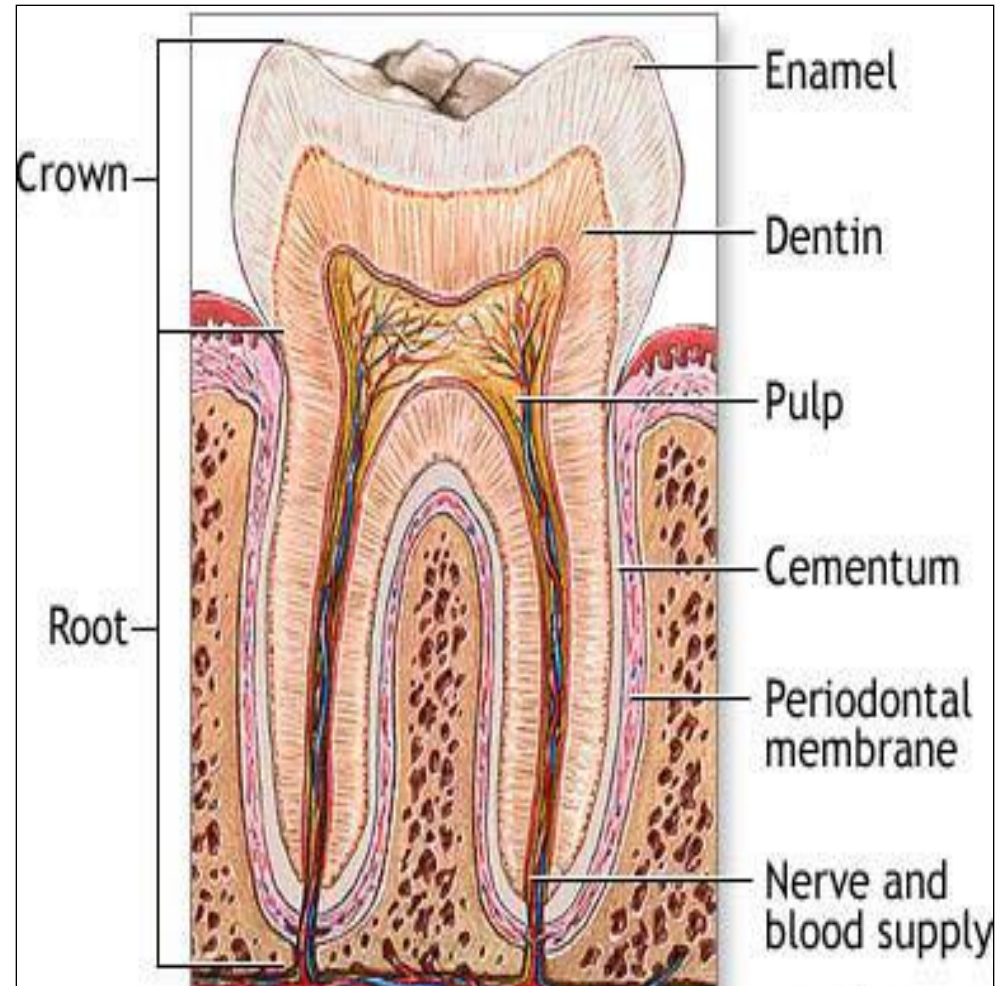
Periodontium - the tooth supporting structures

- complex highly specialized shock-absorbing pressure sensing system
- consist of four interrelated tissues supporting the teeth
 - covering tissues
 - supporting tissues



Periodontal tissue

- Gingiva
- Periodontal membrane with periodontal ligaments (fibers)
- Root cementum
- Alveolar bone (tooth socket)



Dentin

Papilla saddle

inneres Saumepithel

Interdental papila

Cementum

Alveolar bone - septum

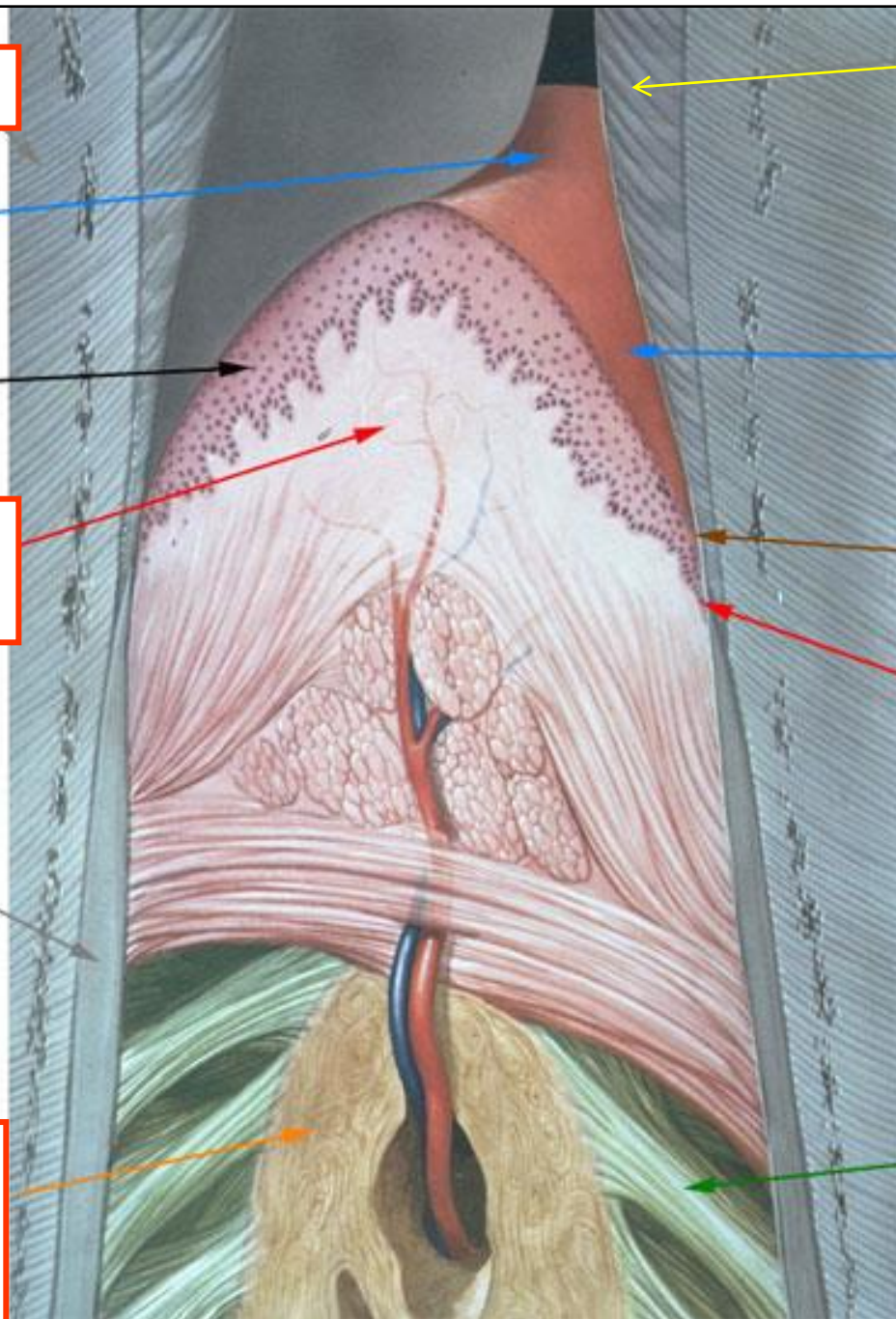
Enamel

Sulcus gingivalis

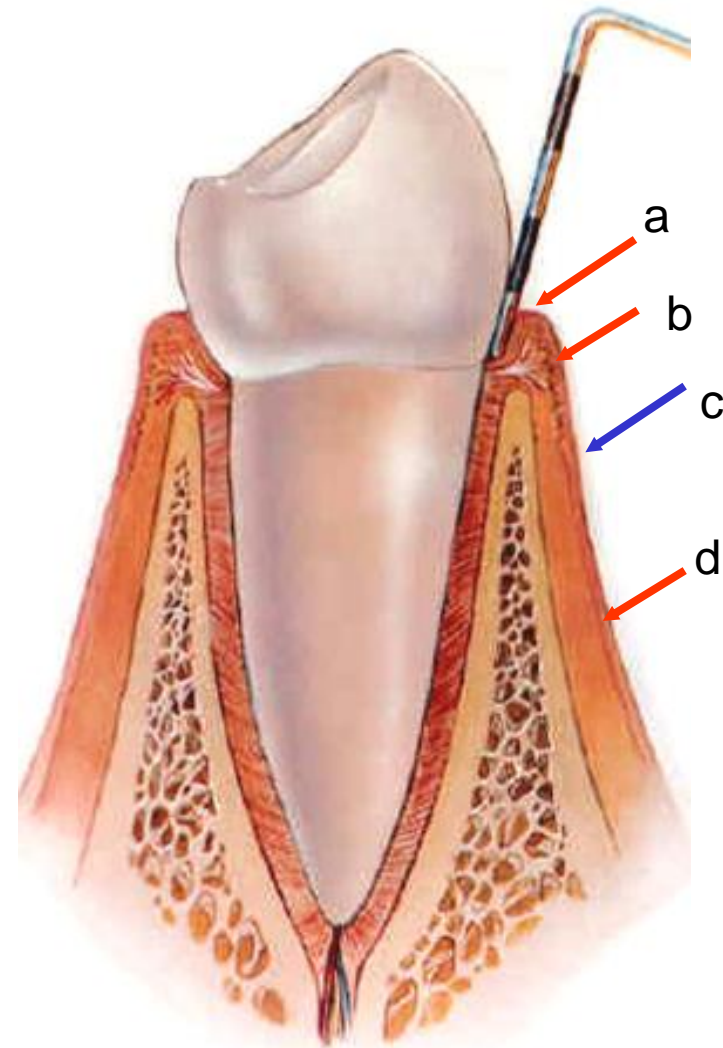
Taschenboden

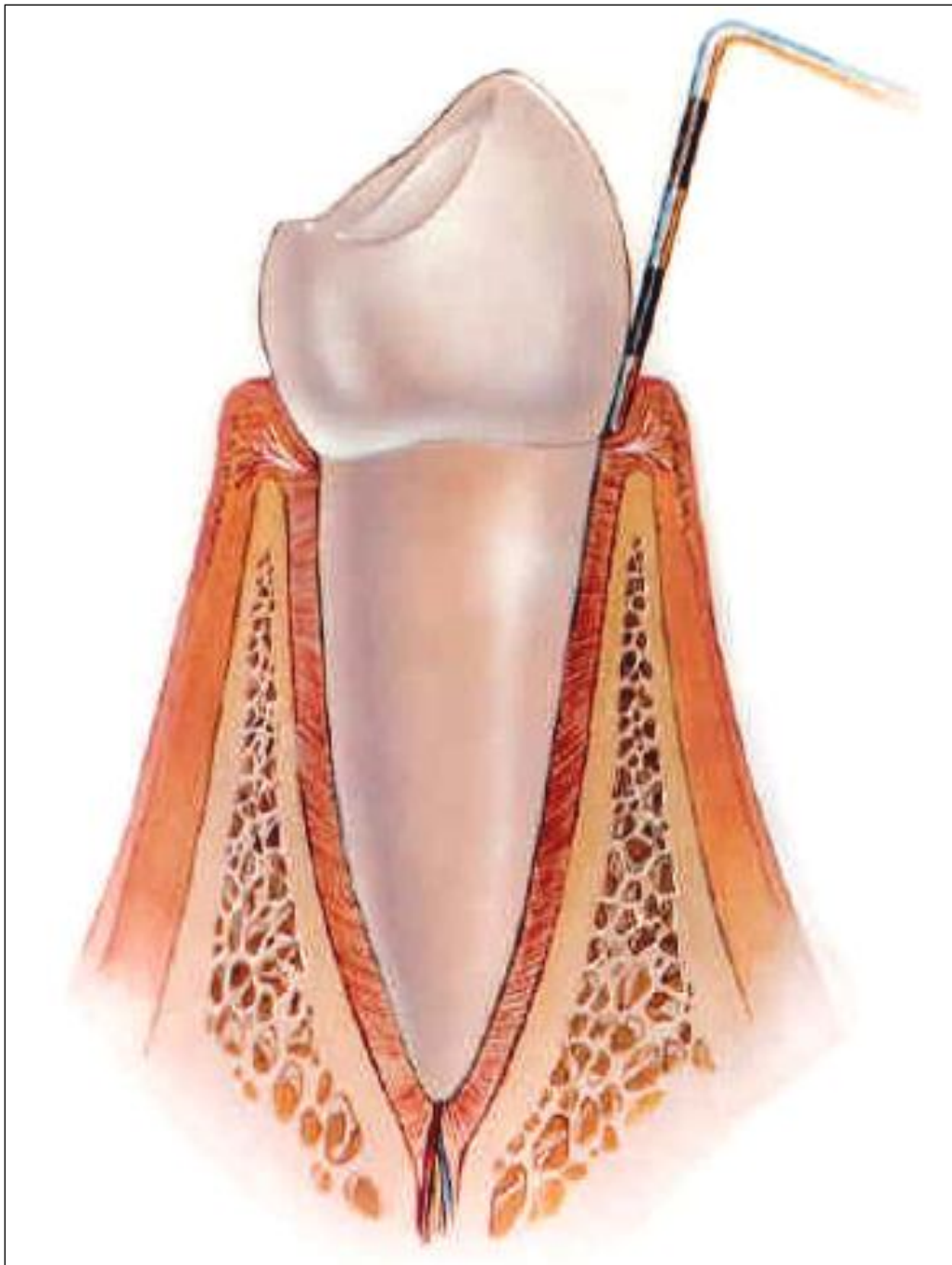
Junctional epithelium

Periodontal fibers



- **GINGIVA**
 - is one portion of the oral mucosa
 - covers limbal part of the alveol
- **Free gingiva** (a – b)
 - forms a rim around a tooth neck
- Sulcus gingivalis – gingival fluid
- Dentogingival junction
- Interdental papilla – fills the interdental space
- **Attached gingiva** (b – c)
 - firmly attached to the subgingival structures
- **Mucogingival line** c
- **Alveolar mucous** d





Healthy gingiva

- white/pink color
- stiff consistency
- stippling
- relatively firm
- no bleeding



Sulcus gingivalis

Sulcular epithelium

Enamel

Oral epithelium

Epithelial attachment

Dentin

Free gingiva

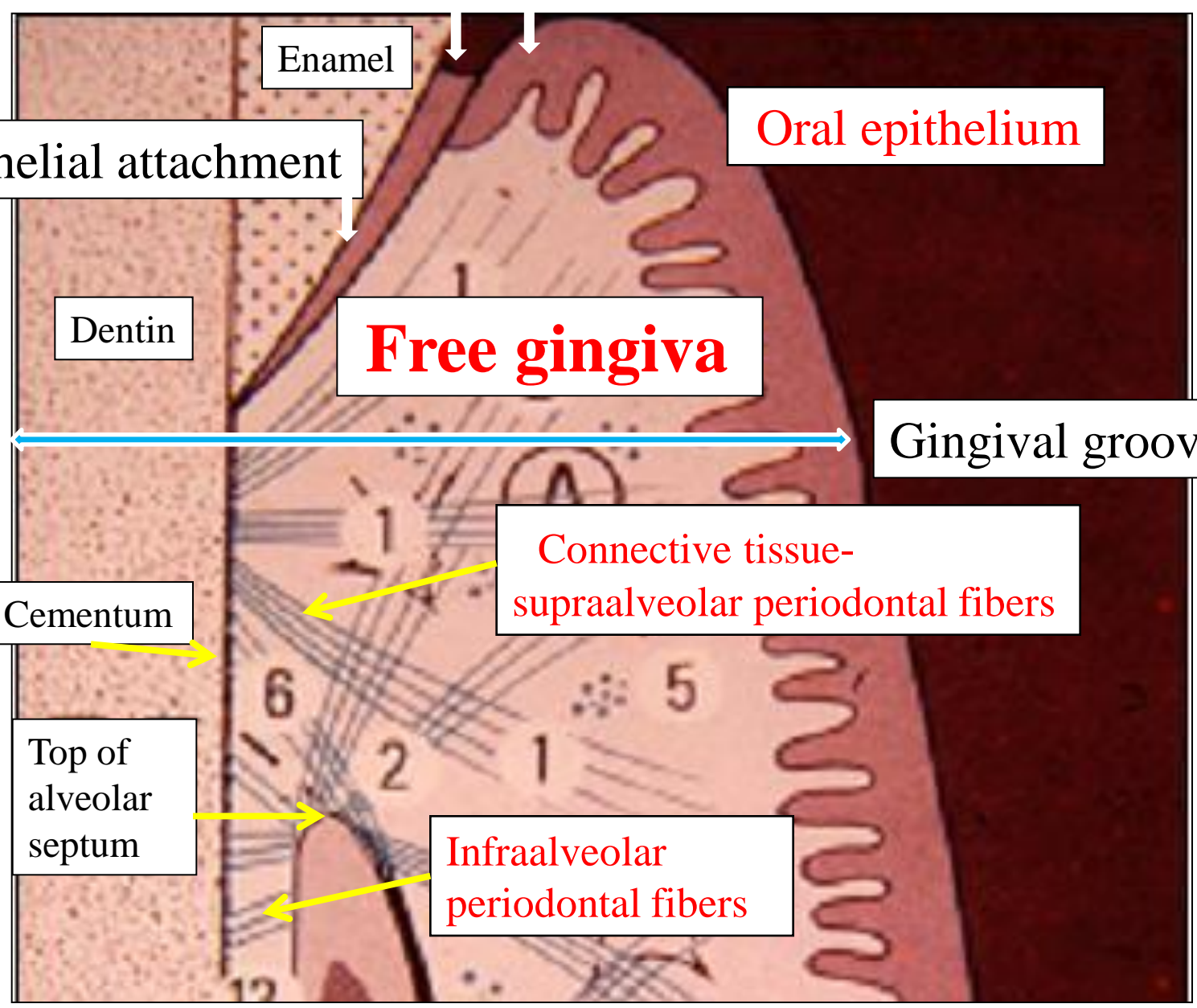
Gingival groove

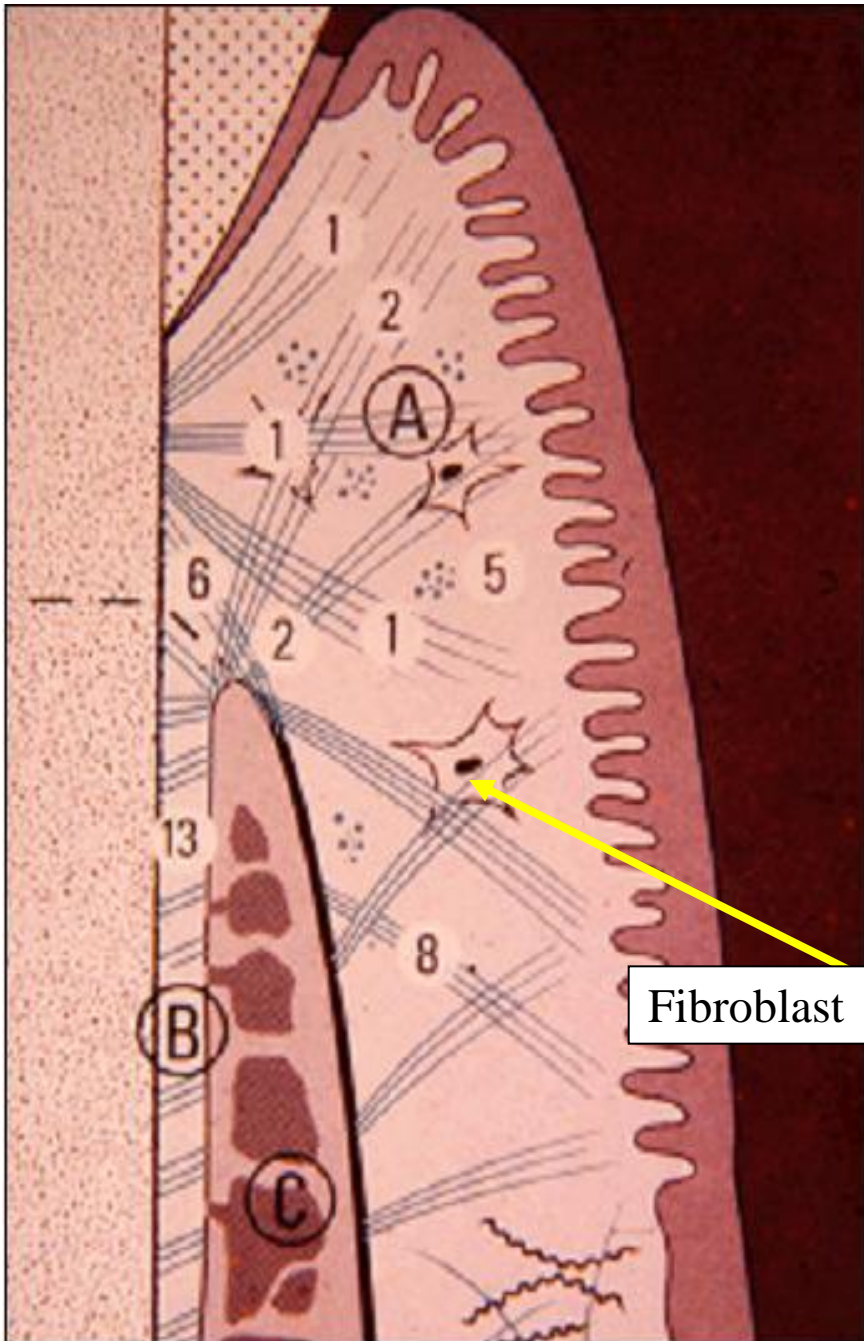
Cementum

Connective tissue-
supraalveolar periodontal fibers

Top of
alveolar
septum

Infraalveolar
periodontal fibers



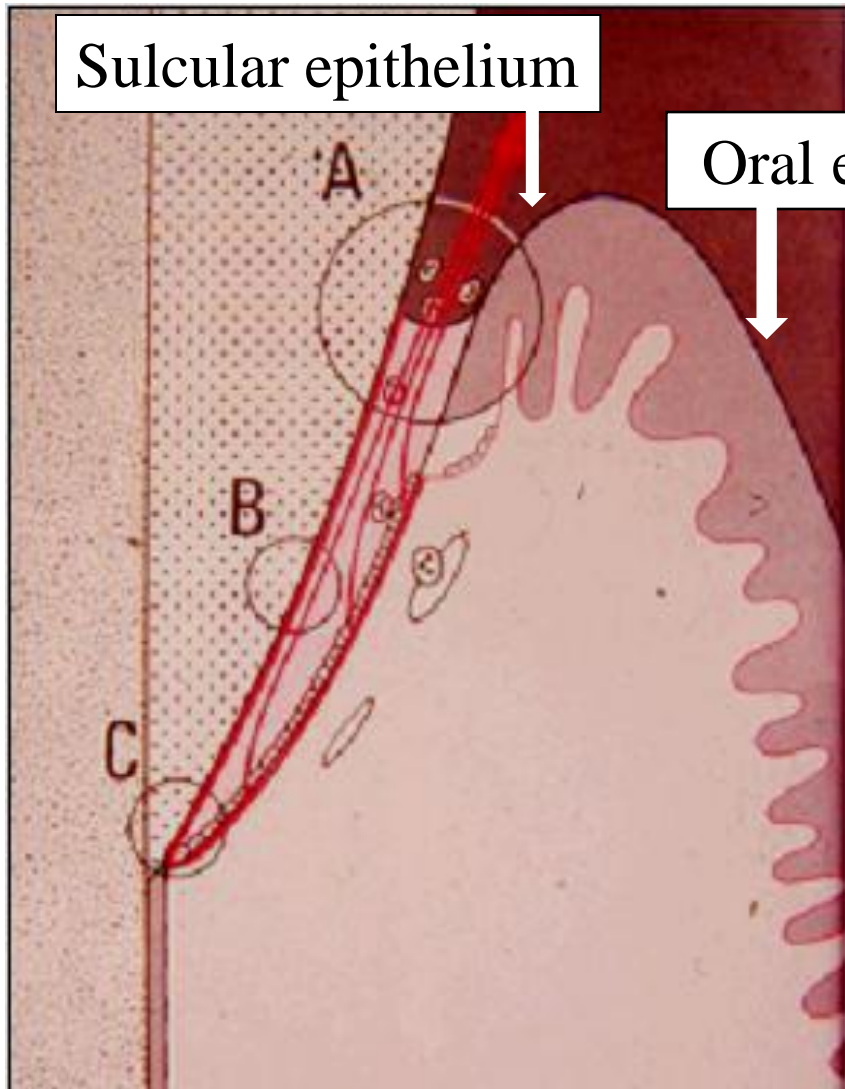


A – **Gingival fibers**
supraalveolar part of
periodontium – supracrestal
attachment

- fix a gingiva to the bone base, to the tooth root
- provide **turgor** of gingiva and its firm adherence to the tooth surface
- composed from **collagen** (that are produced by fibroblasts)

A - sulcus gingivalis 0,5-1mm

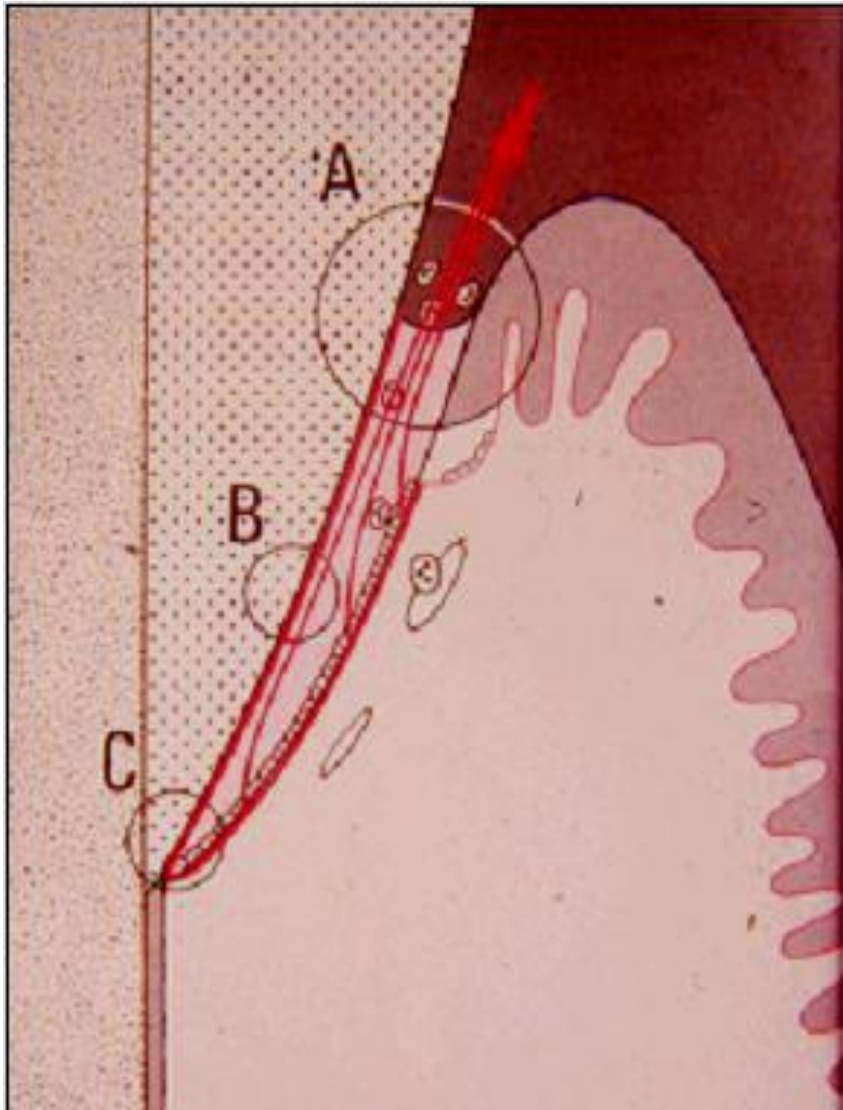
Sulcus gingivalis



- narrow groove surrounding the tooth
- one wall is made up of the tooth structure
- the other wall is the nonkeratinized oral sulcular epithelium

B,C - junctional epithelium 2mm

A - sulcus gingivalis 0,5-1mm



Junctional epithelium

(≈ dentogingival junction, epithelial attachment)

- surrounds the neck of each tooth
- connection between soft and hard tissue, formed by cells
- basal layer and 10-20 suprabasal cell layers
- cells quickly regenerate 4-6 days (oral epithelium 6-12 days)
- undifferentiated, nonkeratinized epithelium
- attached by hemidesmosomes

B,C - junctional epithelium 1-2mm

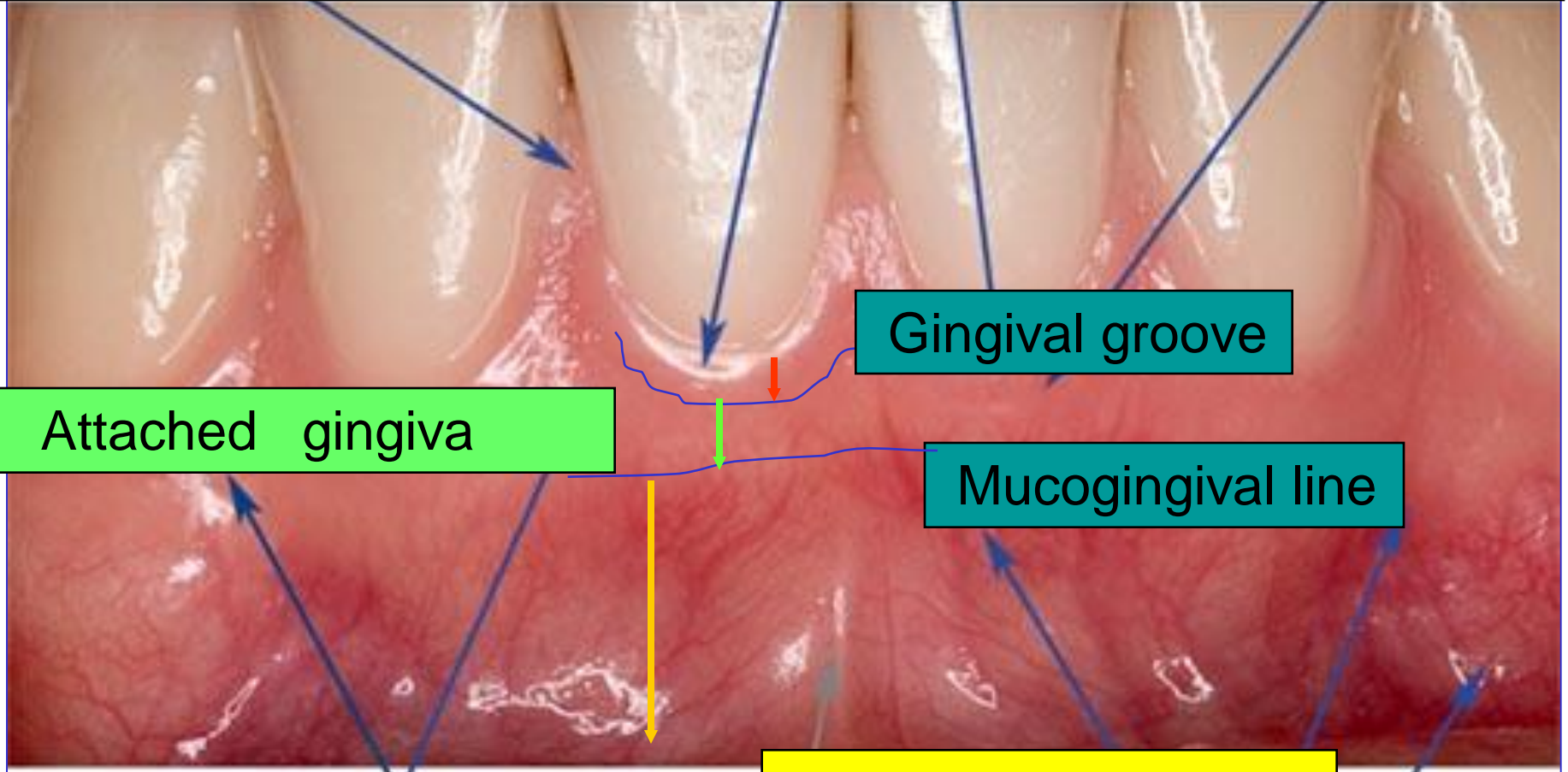
Free gingiva

Gingival groove

Attached gingiva

Mucogingival line

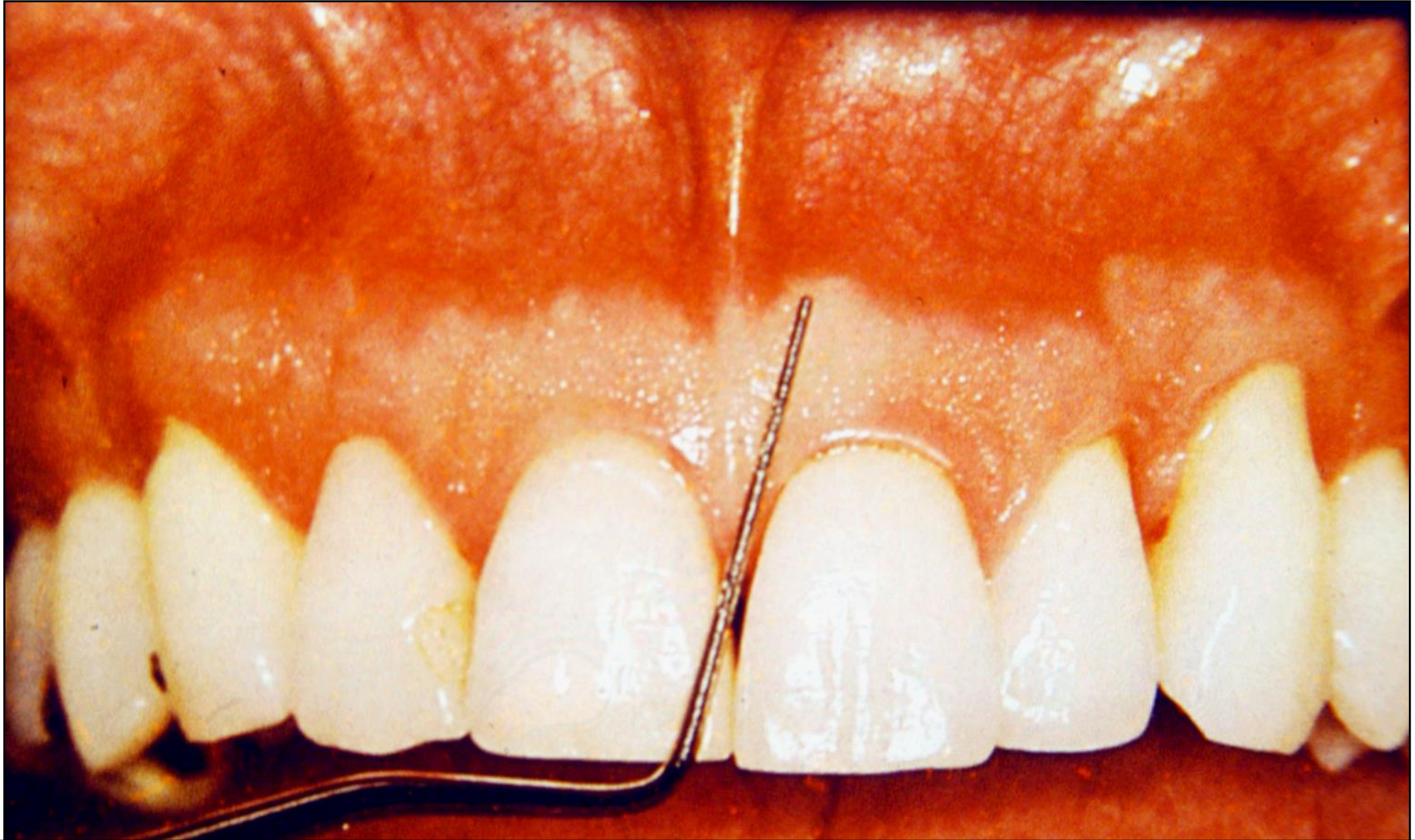
Alveolar mucous
membrane



On the **palatal aspect**

- the mucogingival line is absent
- gingiva is a part of keratinized mucosa
- rugae palatinae



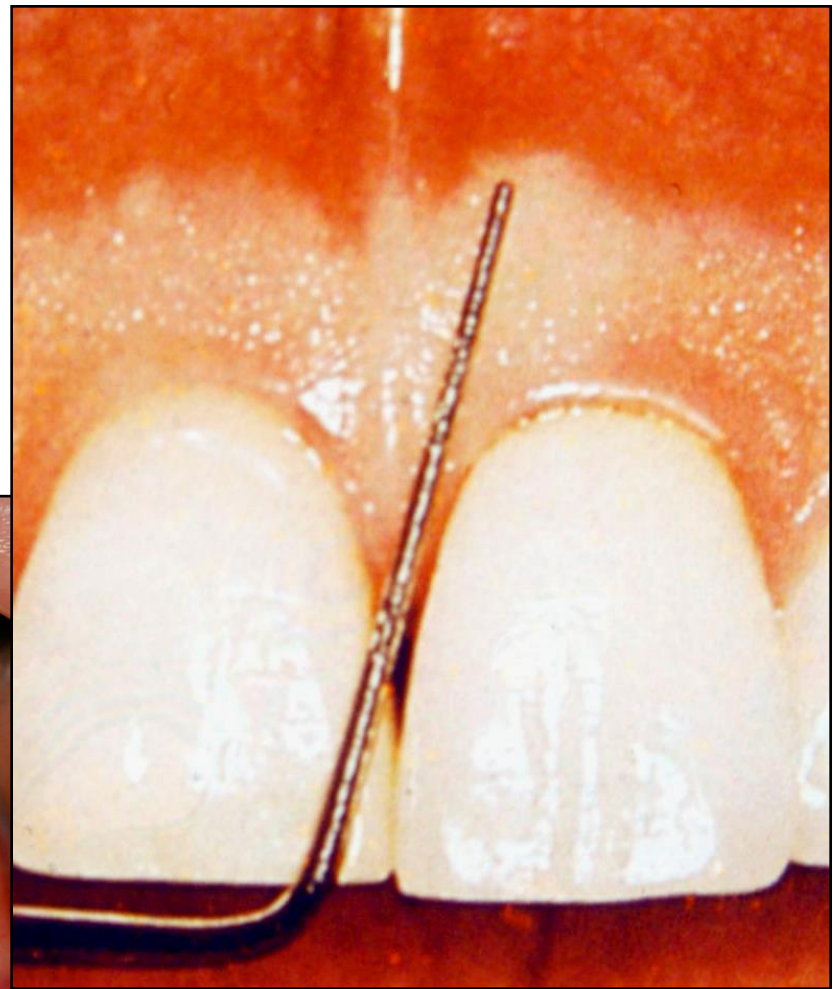


Width of attached gingiva varies from tooth to tooth and the width is individual (healthy minimum is 1-2 mm)

Gingival biotype - thick, medium, thin



Sufficient width of attached gingiva
and thick gingival biotype



Thin gingival phenotype, gingival recession at the
tooth 41 - consequence of piercing



There is insufficient width of the attached gingiva at the tooth 41 (and 42) and gingival recession (exposed neck)



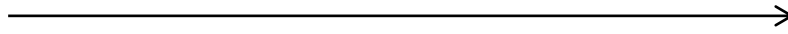
Attached gingiva is completely absent at lower canines, there is insufficient width of the attached gingiva in lateral incisors - association with gingival recessions



- Shallow vestibulum**
(\approx insufficient width of the attached gingiva)
- pulls the marginal gingiva
 - gingiva is chronically irritated \rightarrow inflammation
 - worsens hygienic condition
 - gingival recessions

- Lip frenula attachment

Fyziological



Gingival



Papillary



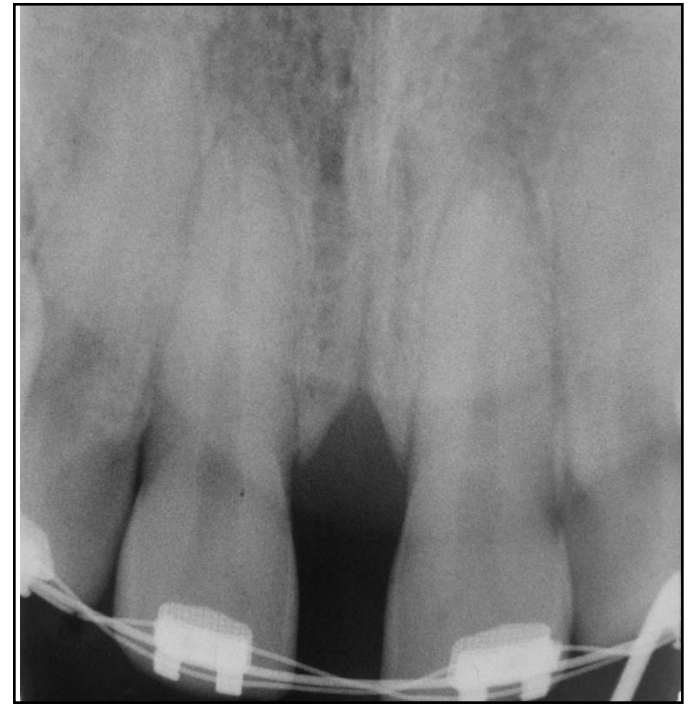
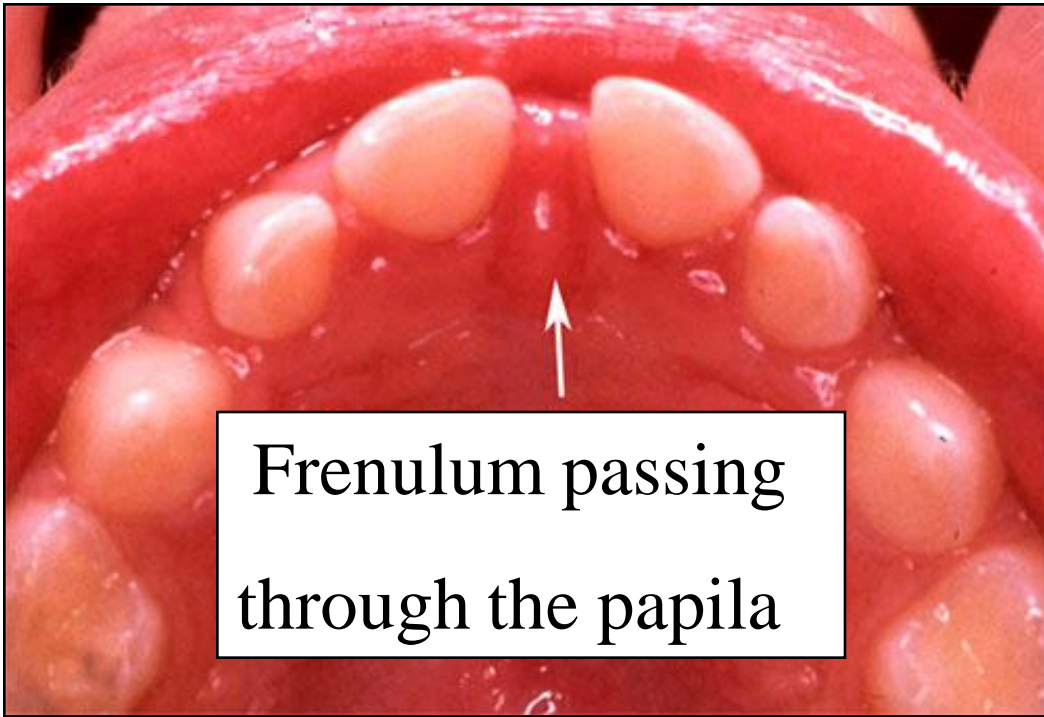
Frenulum passing through the papila



- Lip frenula with „high attachment“



- pulls upon the gingival margin and the interdental papilla
- worsens hygienic condition
- gingiva is chronically irritated and inflammed
- it can cause locallized recession





Sublingual frenulum breve

Children -
breast-feeding and
pronunciation is
more difficult

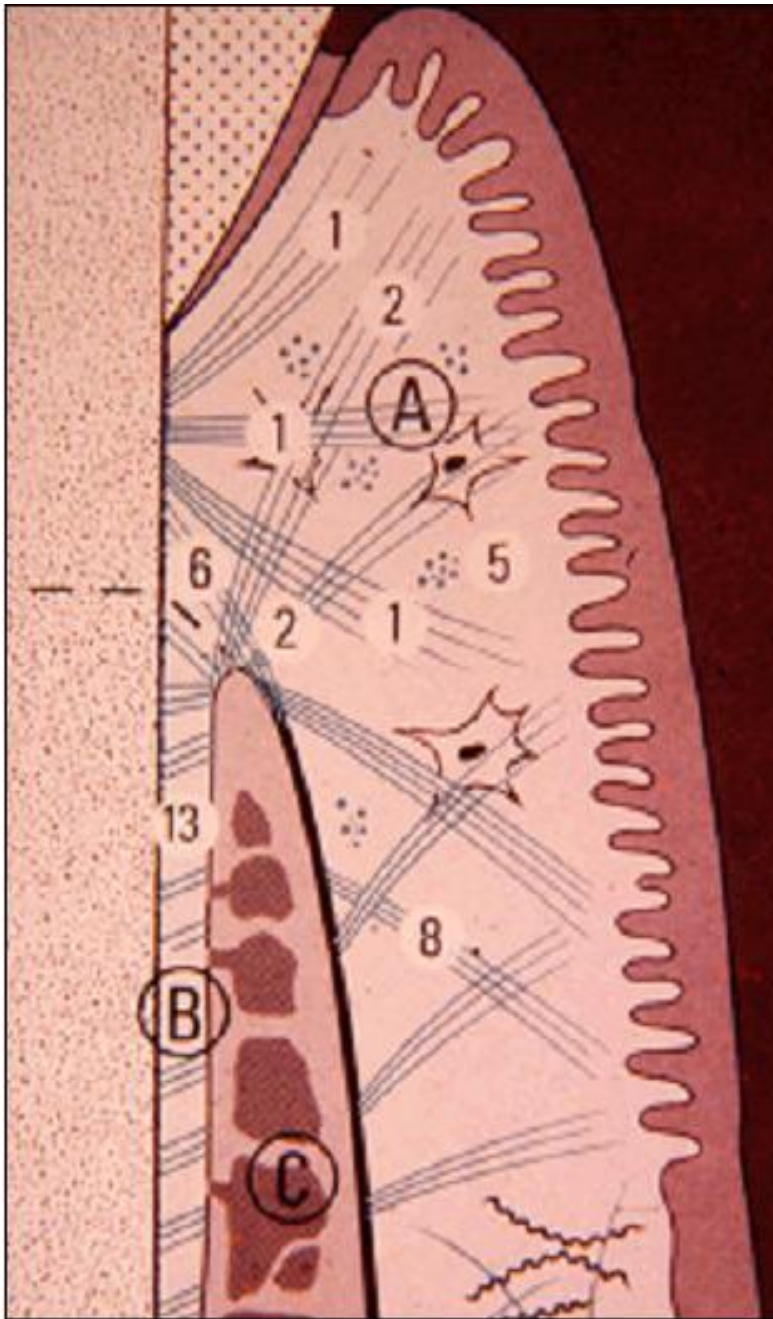
Adults - gingival
recessions

Periodontal membrane with periodontal ligaments

B – Periodontal fibers

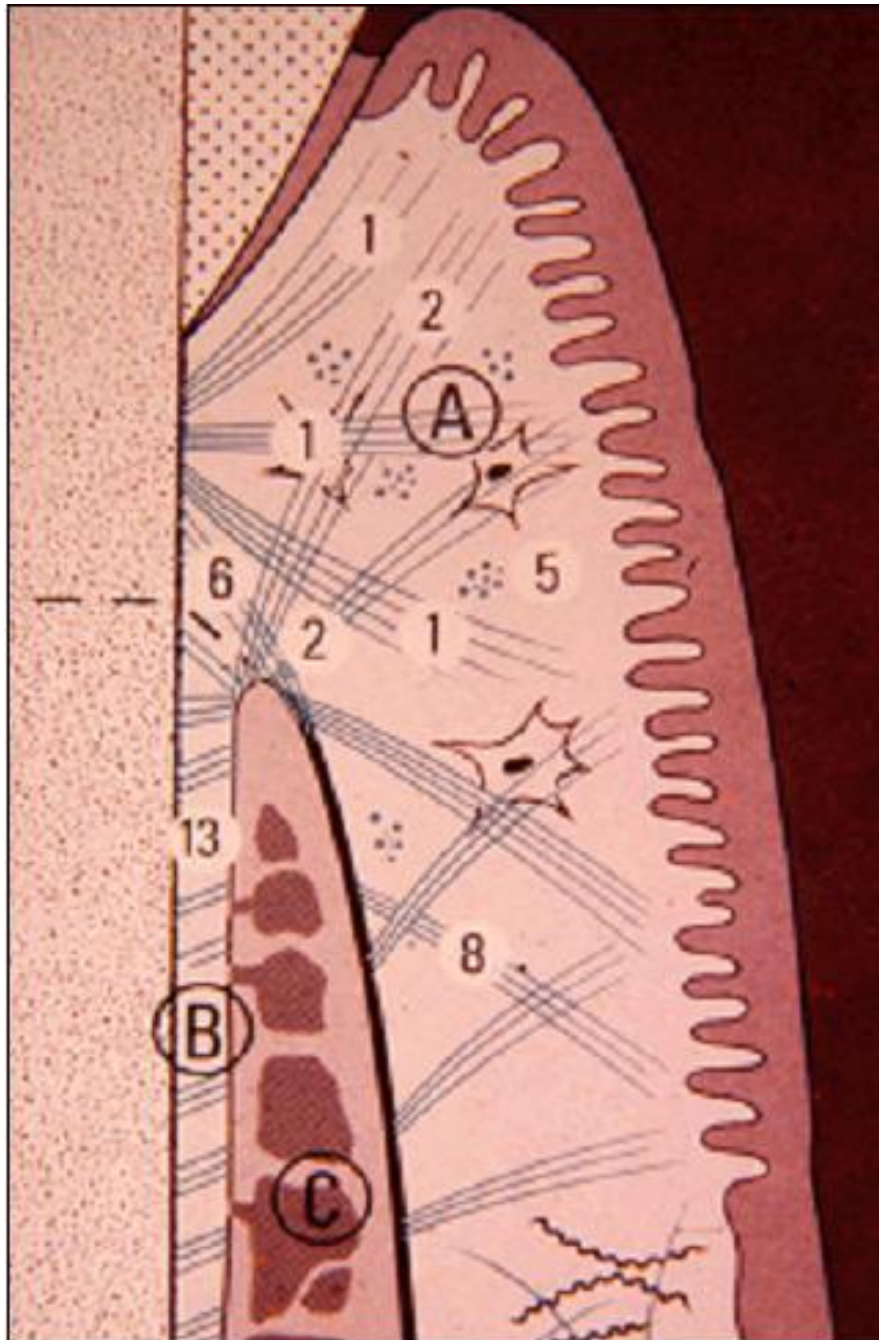
infraalveolar part connects the tooth to the alveolar bone

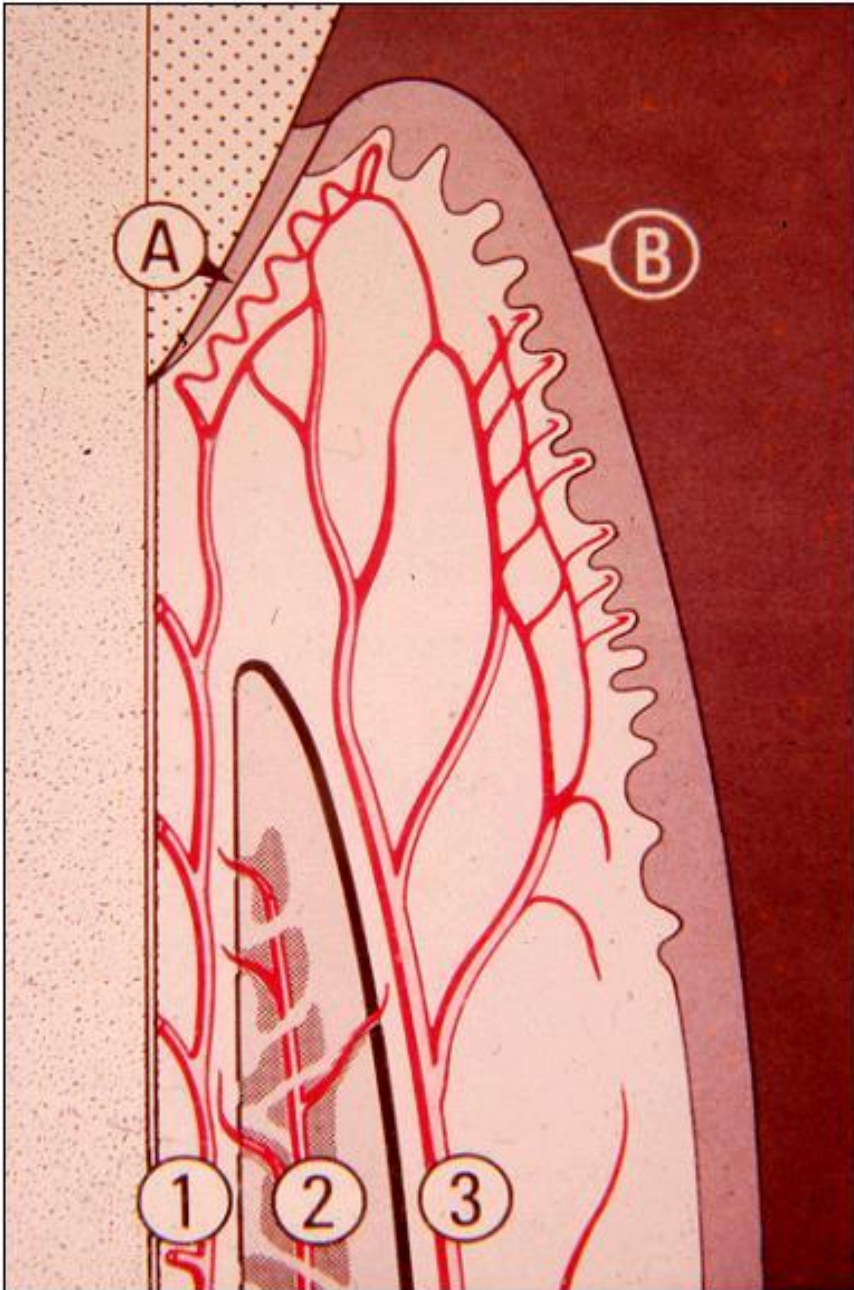
- composed from collagen (produced by fibroblasts)
- very adaptable and able to react to the physiological forces
- high rate of remodeling and turnover



Periodontal fibers

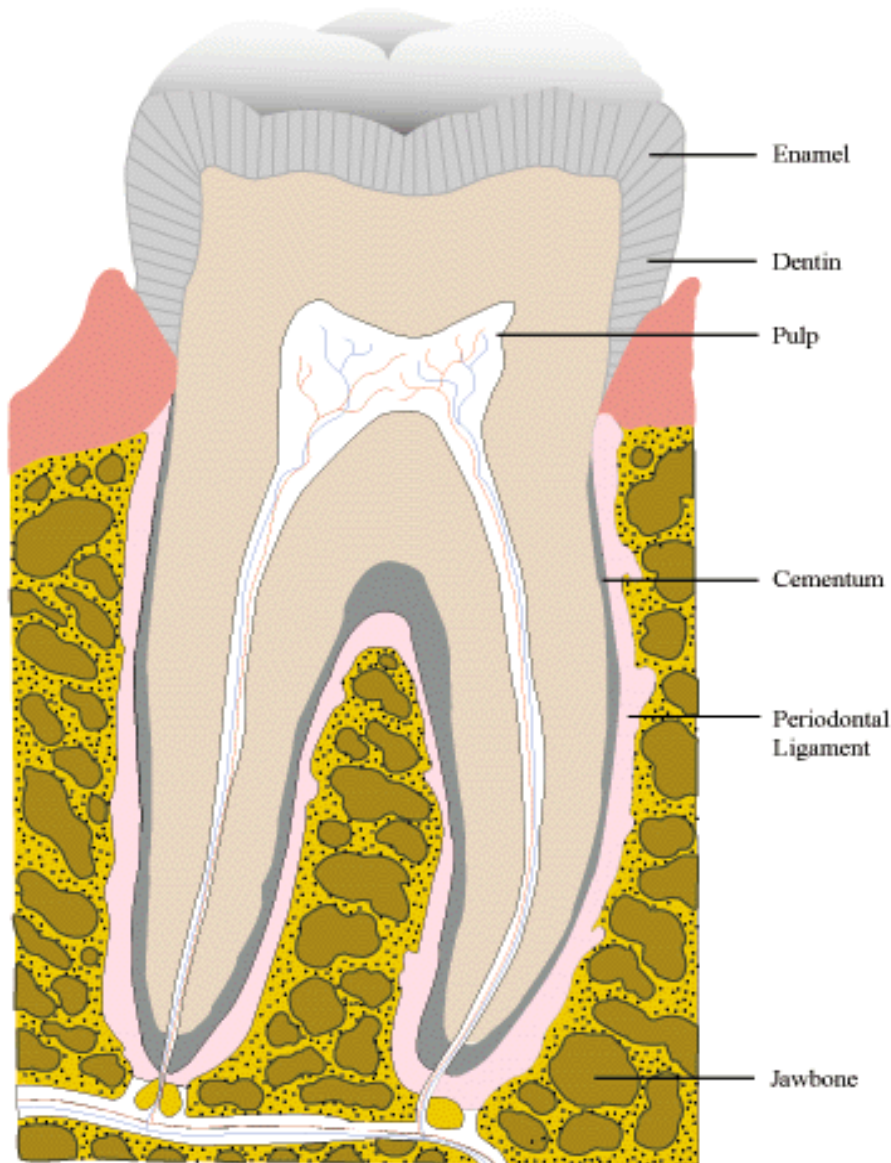
- Ligaments lead from lamina dura of an alveolus to the cement of a root's surface
- Tooth is set in an alveolus and may move slightly upon a mastication load
- Chewing pressure distributes on the whole bone socket without overloading





Plexus gingivalis

- vascular plexus, has rich blood supply
- enable high metabolism of cells and tissue
- hydraulic pressure distribution of chewing pressure
- forms a source of immunocompetent cells to migrate from this location to the surrounding tissue



- **Root cementum**

- covers the root surface
- thickness 0,2 - 1 mm
- avascular
- histologically more types

- **Alveolar bone**

tooth socket, interdental septa, interradicular septa

- **spongy bone**

- **compact bone** (lamina corticalis)

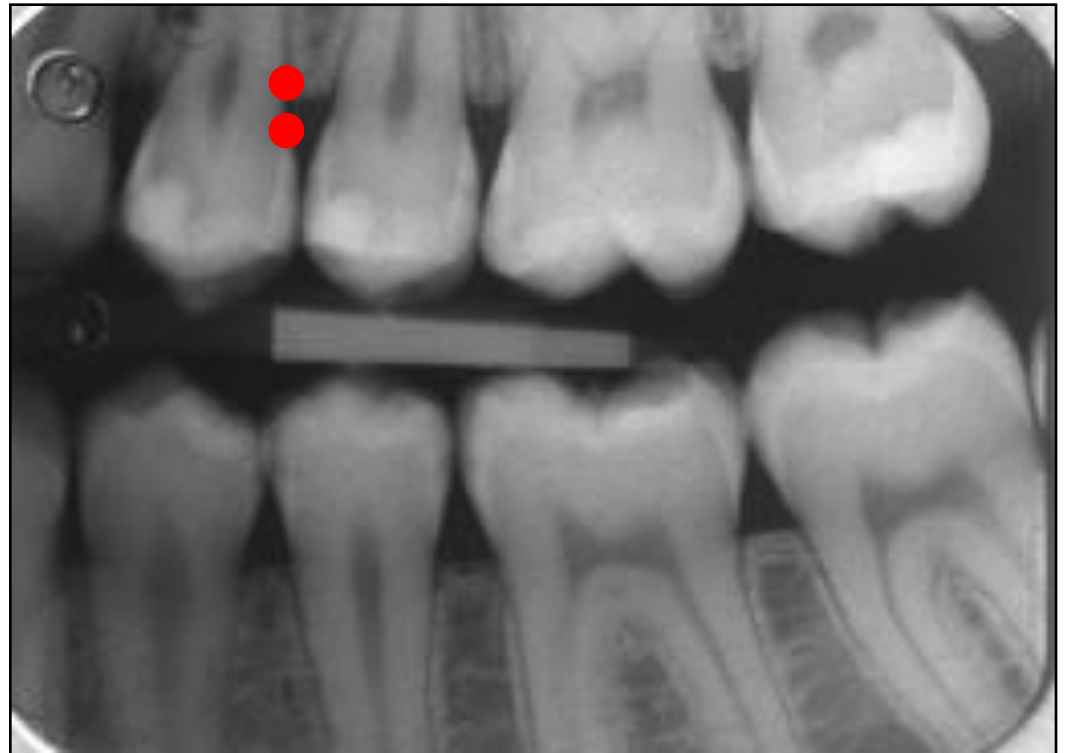
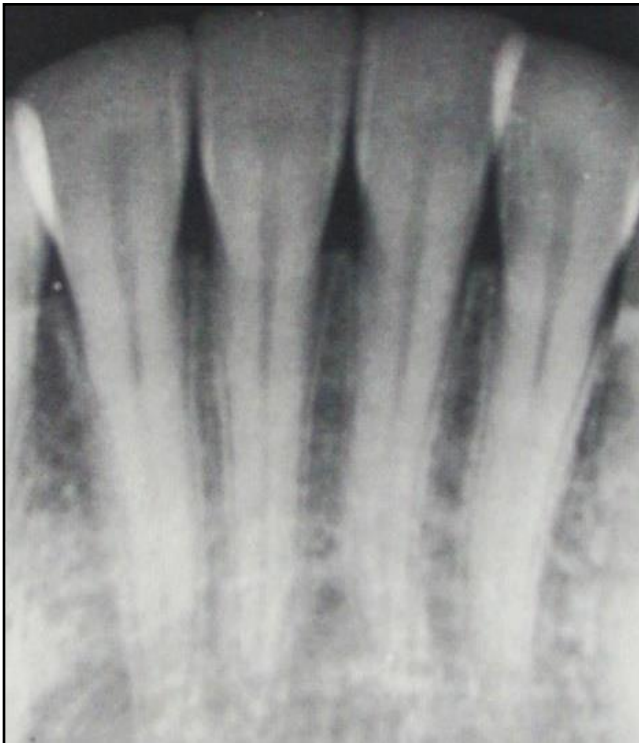
in the radiograph - linea corticalis - **lamina dura**

in the region of root apex - lamina cribrosa

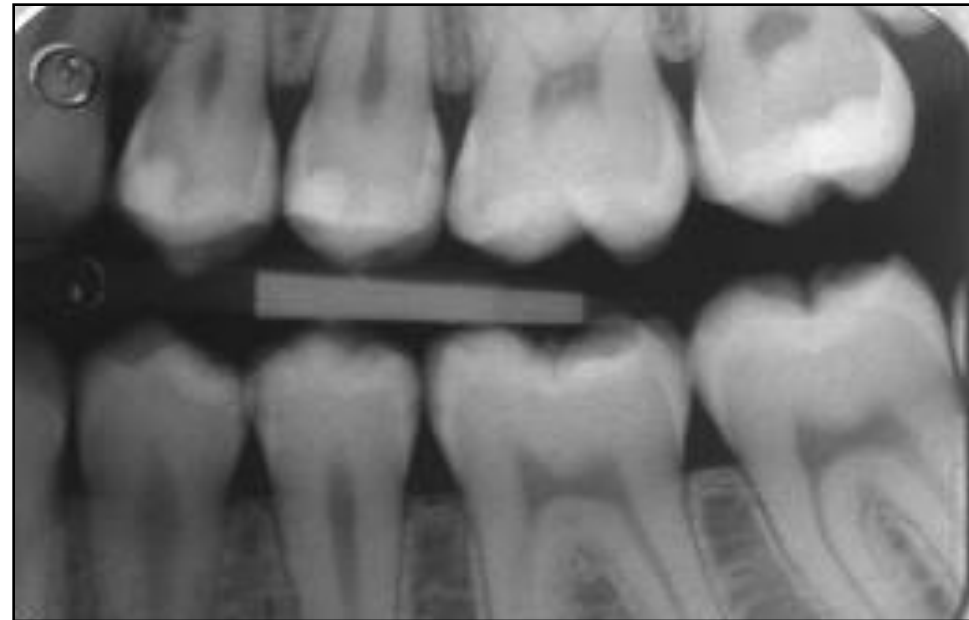
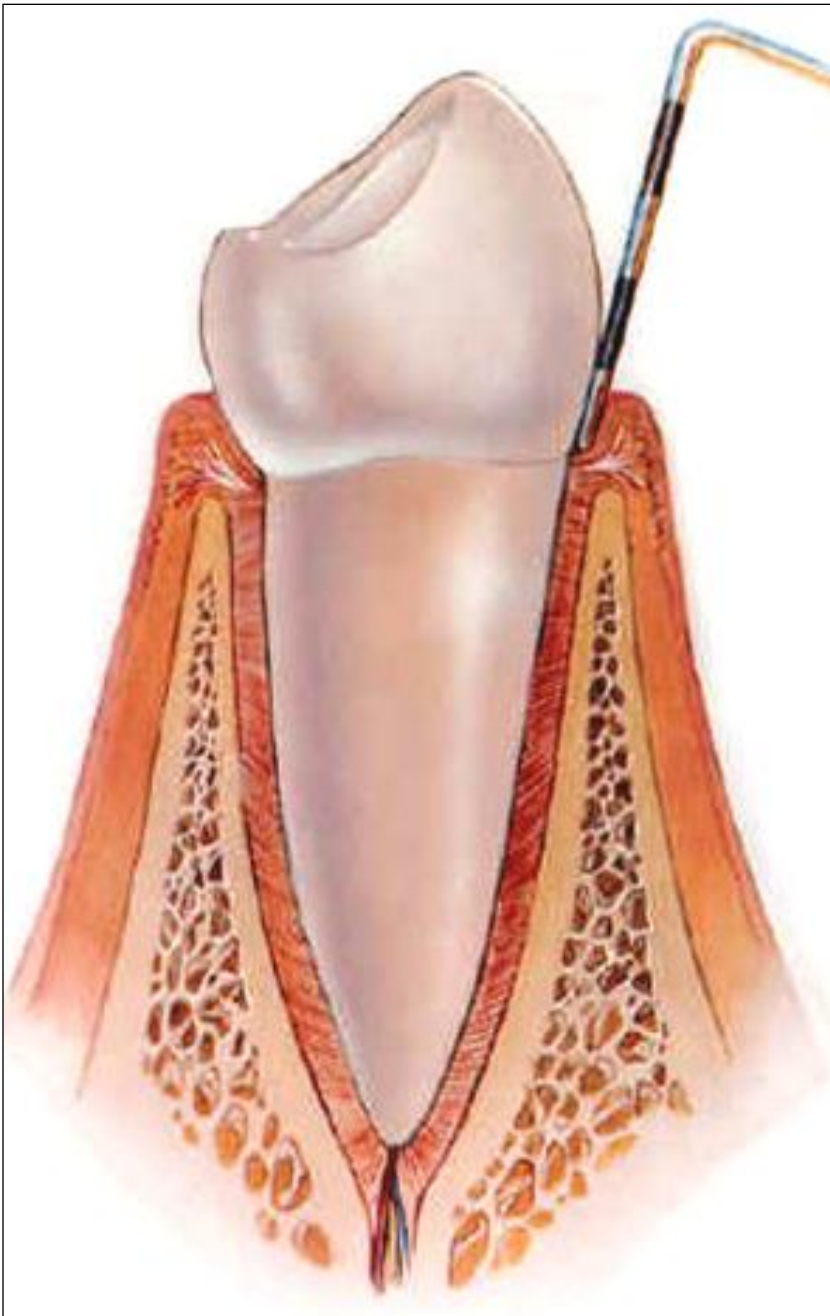


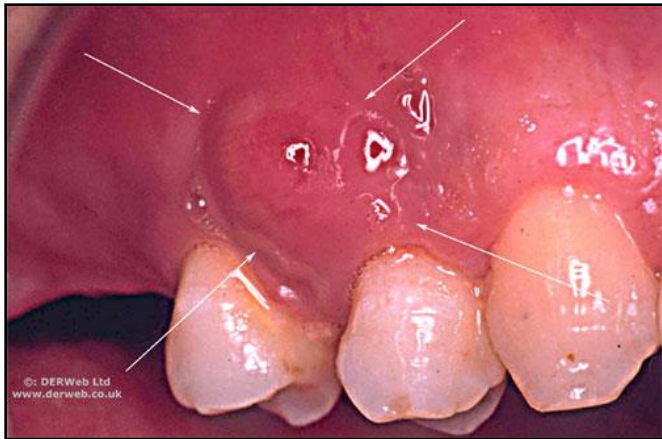
Healthy periodontium

- lamina dura is present
- distance cemento-enamel junction - margin of alveolar bone is 1-2 mm



Healthy periodontal tissue





**Healthy
gums ?**



Etiology of inflammatory perio diseases

- gingivitis, periodontitis

- Exogenous factors

- dental microbial plaque (main factor)
- other local (irritant) factors: calculus and other plaque retention factors, articulation, orthoanomalies, soft tissue anomalies...
- smoking

- Endogenous factors (systemic)

- immunity
- systemic diseases (diabetes mellitus, ...)

Calculus - calcified dental plaque

- calculus is **always covered by** an unmineralized layer of bacterial **plaque**
- good place for plaque accumulation
- **reservoir and retention web for bacteria and endotoxins**



Calculus - calcified dental plaque

- Calculus is formed by the deposition of calcium and phosphate salts **in bacterial plaque**
- salts are present in saliva, in crevicular fluid



Calculus - calcified dental plaque

- **inorganic** compounds (40% - 80%), as well as proteins and carbohydrates, microorganisms
- the mineralization starts in centers intracellularly in bacterial colonies or extracellularly from matrix with **crystallization nuclei** (different crystals of calcium phosphate)
- time required for the formation of calculus is individually variable
- **rate of formation depends on the quality of saliva and on the level of OH**

Origin of minerals and Location

- **Supragingival calculus**
 - source - saliva
 - excretion ducts of the major salivary glands
 - on the lingual surfaces of the mandibular incisors
 - on the buccal surfaces of maxillary molars
- **Subgingival calculus**
 - source - sulcular fluid
 - on the root surfaces below the gingival margin
 - can extend deep into periodontal pockets

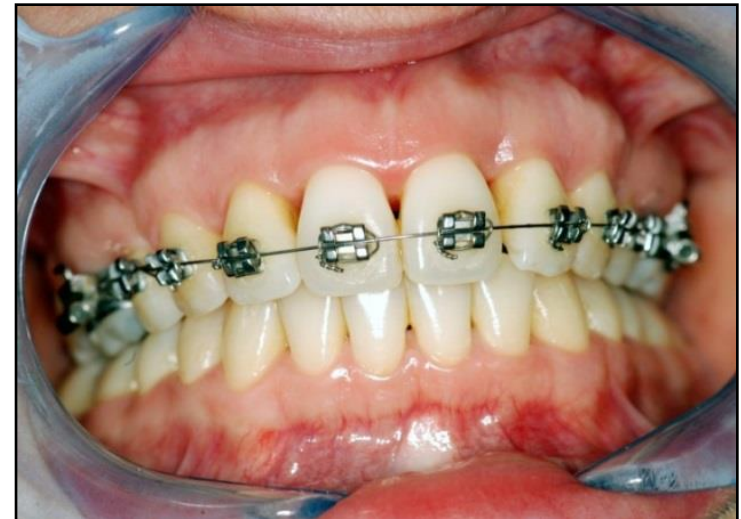
- **Subgingival calculus**

- on the root surfaces below the gingival margin
- can extend deep into periodontal pockets



Local plaque retention factors

- Locations where there is a worse approach to teeth brushing and thus more plaque accumulation
- **Dental calculus (plaque carrier)**
- Faulty restorations
 - overhanging fillings
 - non-fitting crowns
- Orthoanomalies (crowded teeth...)
- Orthodontic appliances, dentures



Local plaque retention factors

- Anatomical deviations of mucous membranes
 - lip frenula with high attachment
 - shallow vestibulum, gingival recessions



DENTAL microbial PLAQUE

- soft deposits (bacterial mass) that form the **biofilm** adhering to the tooth and other intraoral surfaces
- may be removed by mechanical means only

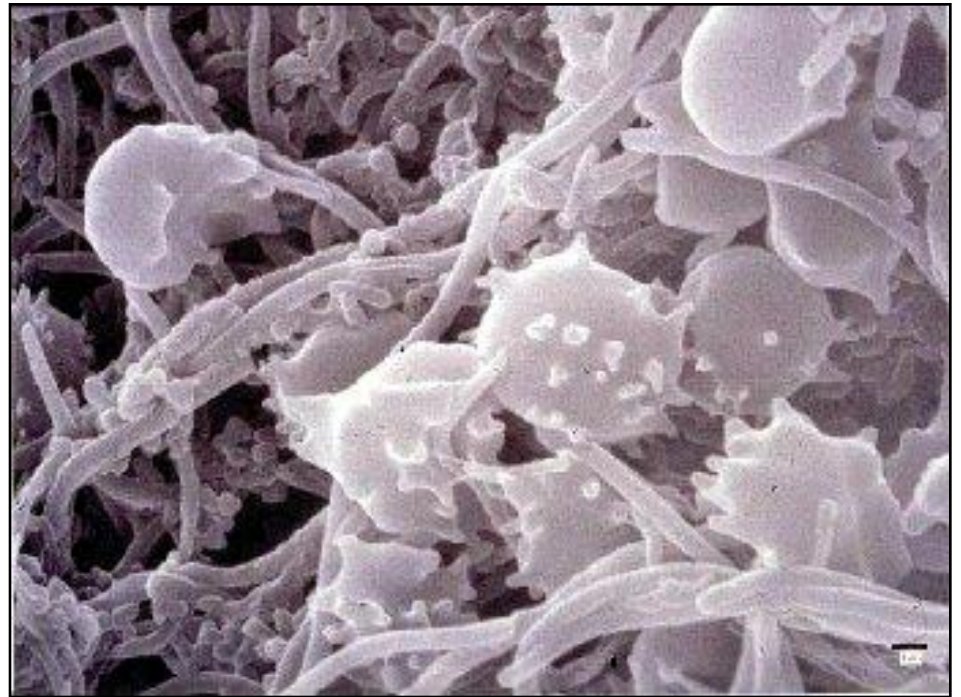


DENTAL microbial PLAQUE

- Composed of **bacteria** in a **matrix**
- **Microorganisms** (75 %) a their products
- **Matrix** (25%)
 - bacterial (extracellular polysacharids) and salivary origin (salivary glycoproteins and mucopolysacharids)
 - calcium, phosphates (mineralization of plaque)

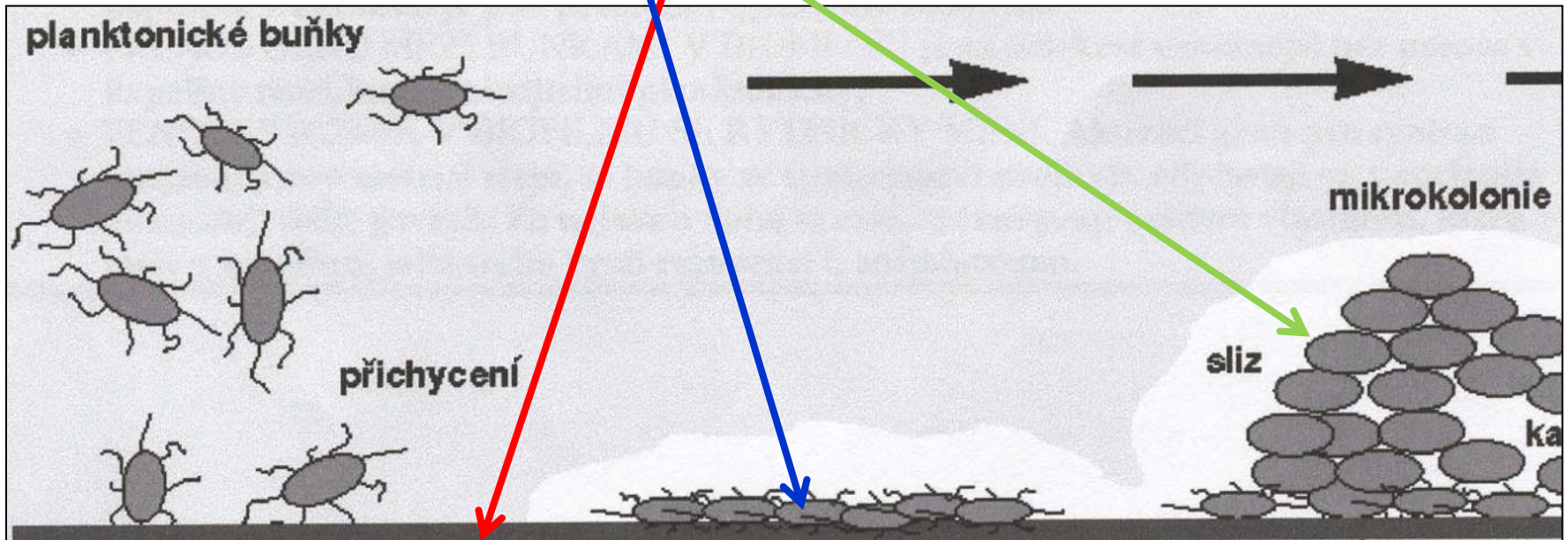
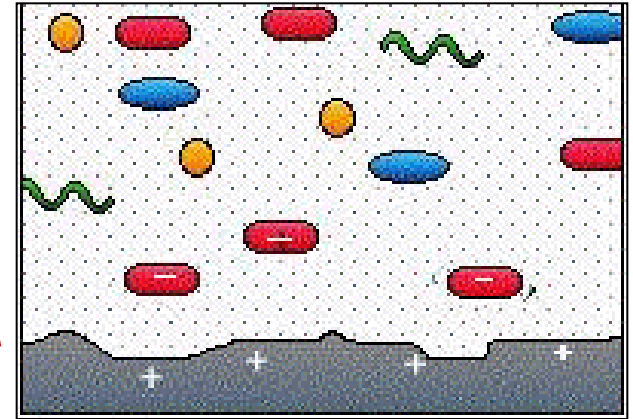
DENTAL microbial PLAQUE

- Composition and formation rate depends on
 - quality of OH
 - quality of saliva
 - food, smoking
 - immunity



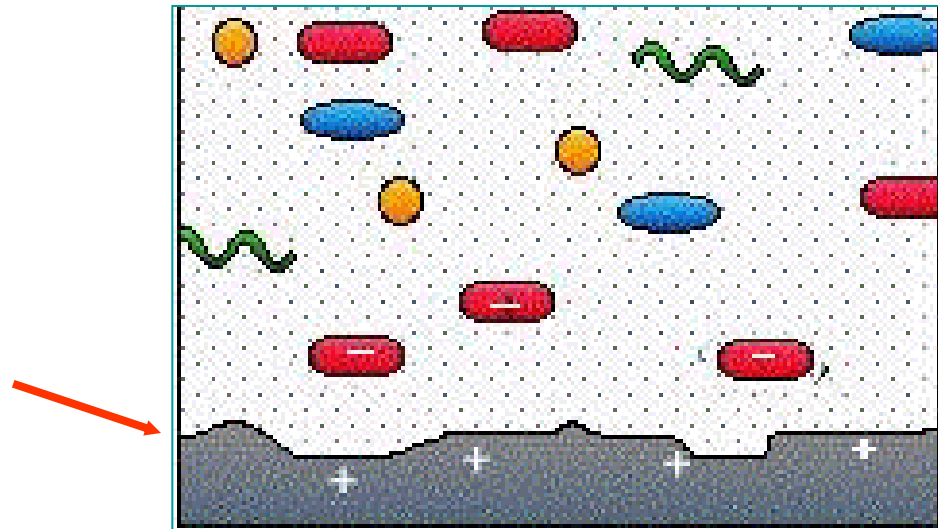
Plaque Formation

- Acquired Pellicle Formation
- Primarily Bacterial Colonization
- Growth of Plaque
- Maturation of Plaque



1/ Plaque Formation

- **Acquired Pellicle Formation**
 - minutes, 1-2 microns thick
 - amorphous film from **salivary glycoproteins**
 - increases the efficiency of bacterial adhesion



2/ Plaque Formation

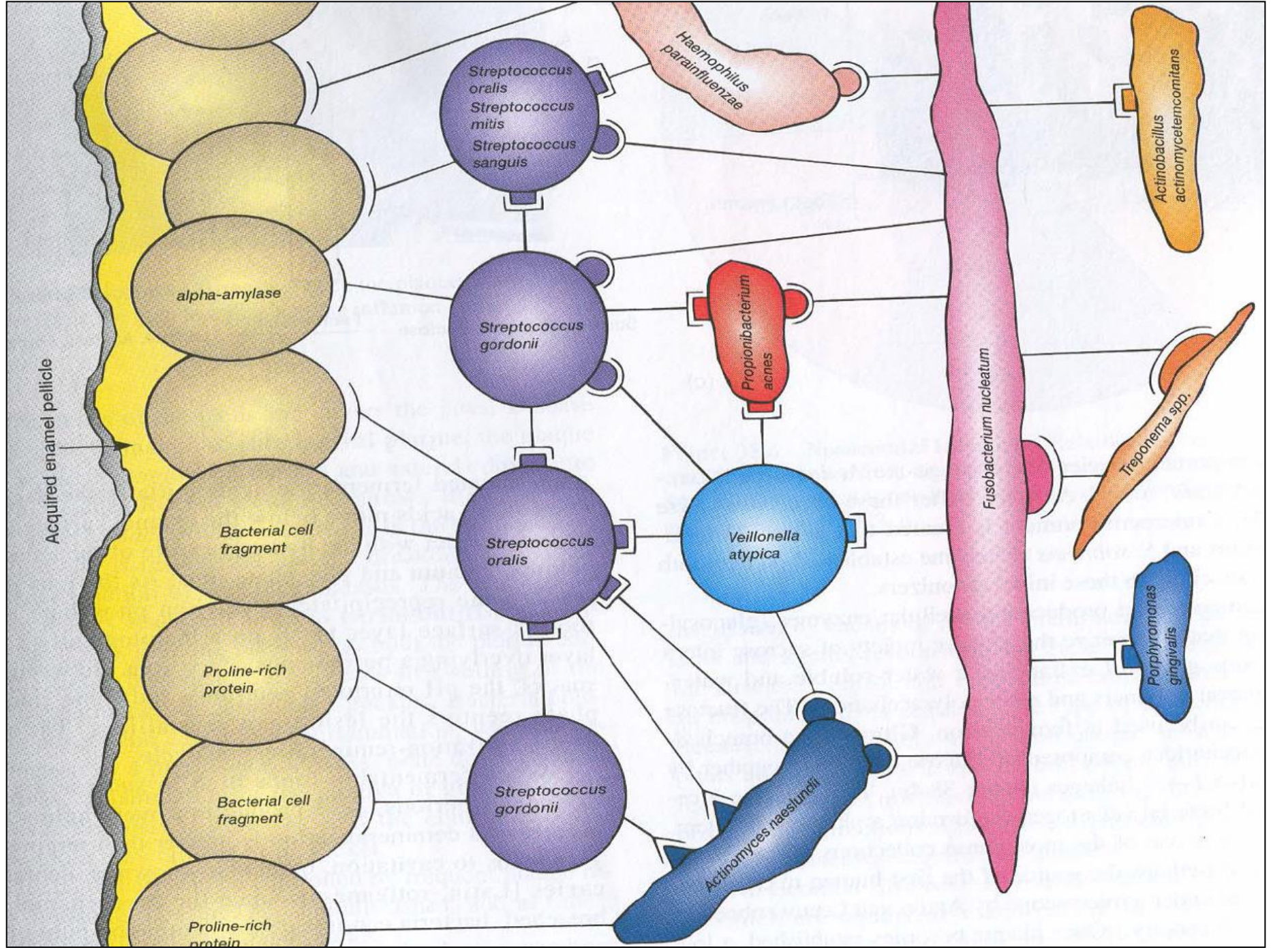
- **Primarily Bacterial Colonization**
 - bacterial **adhesion by single microorganisms**
 - extracellular polymeric substances and fimbriae, enable them to attach rapidly upon contact
 - become established within 24 hours
 - **G+ aerobs**, cocci (*Streptococcus sanguis*), G+ rods, G+ fillaments (*Actinomyces sp.*)
 - **immature plaque** - less adherent

3/ Plaque Formation

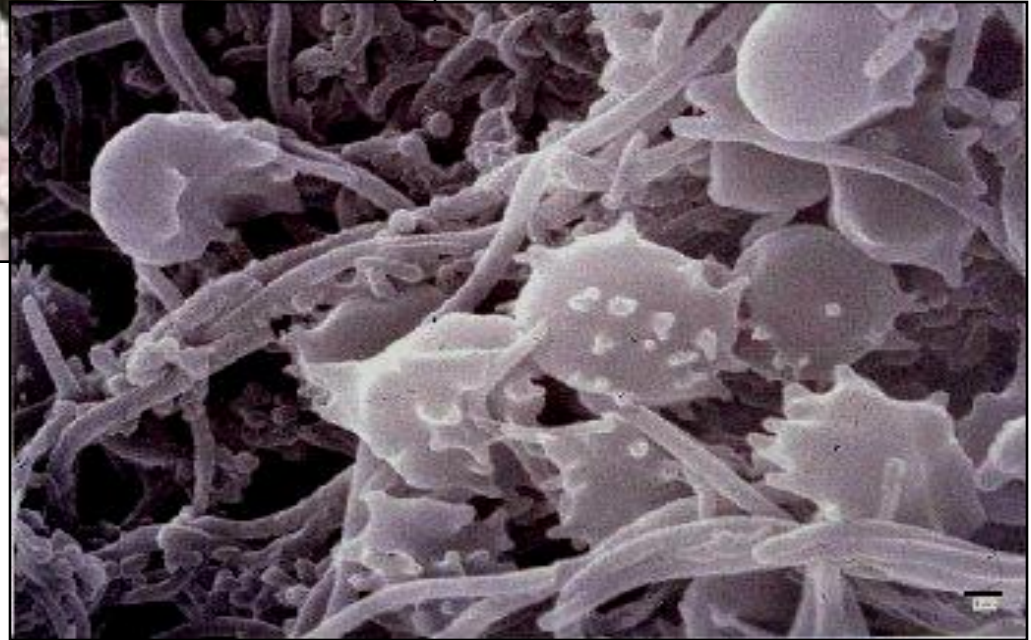
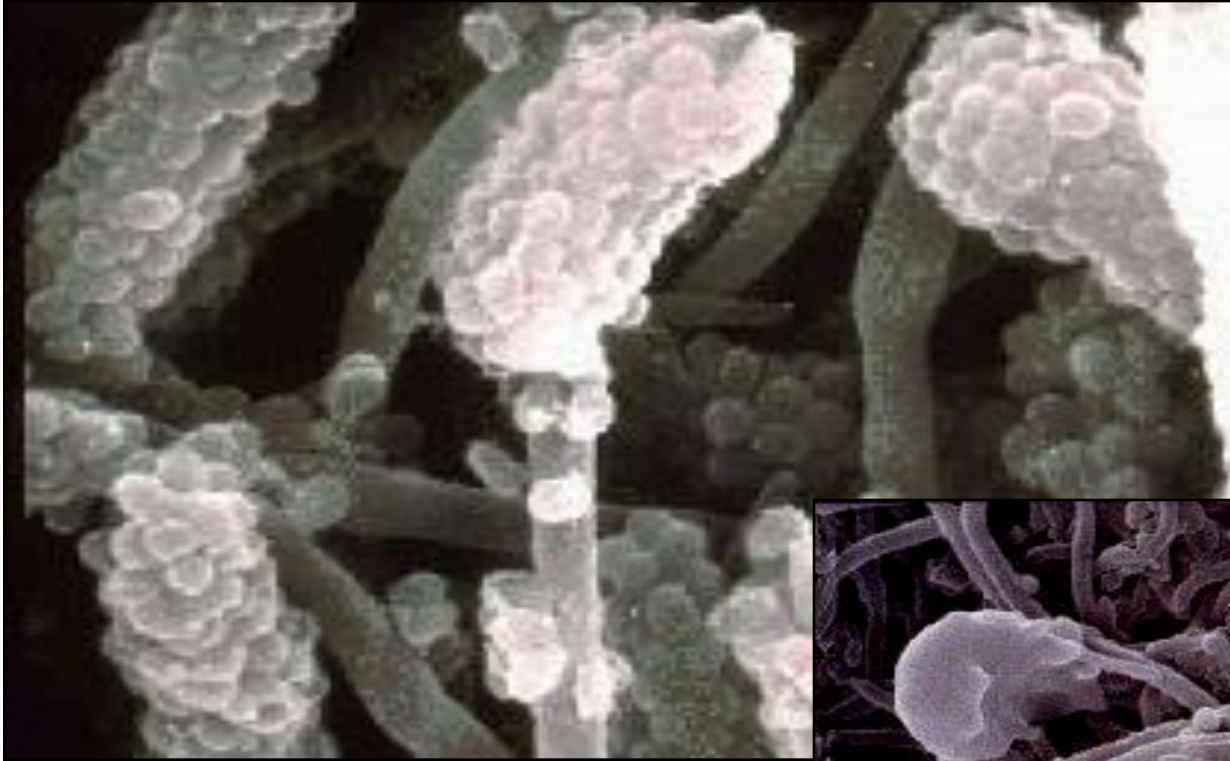
- **Growth of Plaque** in next few days
- bacterial mass increases in quantity due to adhesion of **new bacteria** (surface receptors on G+ cocci and rods allow adherence of G- (*Fusobacterium nucleatum*) and synthesis of **extracellular polymers**
- multiplication of adhering bacteria and growth of extracellular matrix
- increasing of thickness - diffusion is more difficult - poor diffusion of oxygen - **anaerobic conditions**
- G- cocci, G+ G- rods and filaments (fusobacteria), aerobs and anaerobs

4/ Plaque Formation

- **Maturation of Plaque**
 - formation of more **complex and mature biofilm**
 - stable bacterial biofilm
 - **different morphotypes** - cocci, motile rods, spirochetes (filamentous organisms predominate)
multiplication of bacteria, new bacterial species
 - **mature plaque** - very pathogenic



Plaque Formation



- **DENTAL microbial PLAQUE**

- microbial community
- coexistence of different populations in the biofilm
- **bacteria communicate in different ways** (coaggregation, adherence, provide nutrients, exchange of genetic material)
- this **symbiosis** gives **new features and greatly increases the resistance** of dental plaque
- can be removed by mechanical means only

Bacterial complexes as described by Socransky et al :

• 5 complexes:

• Primary colonizers:

Streptococcus
species

Actinomyces
odontolyticus

• Secondary colonizers:

- Eikenella corrodens
- A.a comitans serotype a
- Capnocytophaga species

- Fusobacterium
- Prevotella intermedia
- Campylobacter sp.

- Porphyromonas gingivalis
- Tannerella forsythia
- Treponema denticola

- perio pathogens

Perio pathogens

- **Aggregatibacter (Actinobacillus) actinomycetemcomitans** **AAC**
serotype b



- **Porphyromonas gingivalis** **PG** →
- **Tannerella forsythia** **TF** →
- **Treponema denticola**

capable of invading the soft tissues of the gingiva



- **Prevotella intermedia**
- **Fusobacterium nucleatum**
- **Peptostreptococcus micros**



DENTAL microbial PLAQUE

- coronar
- fissural



- **supragingival** – in gingival region



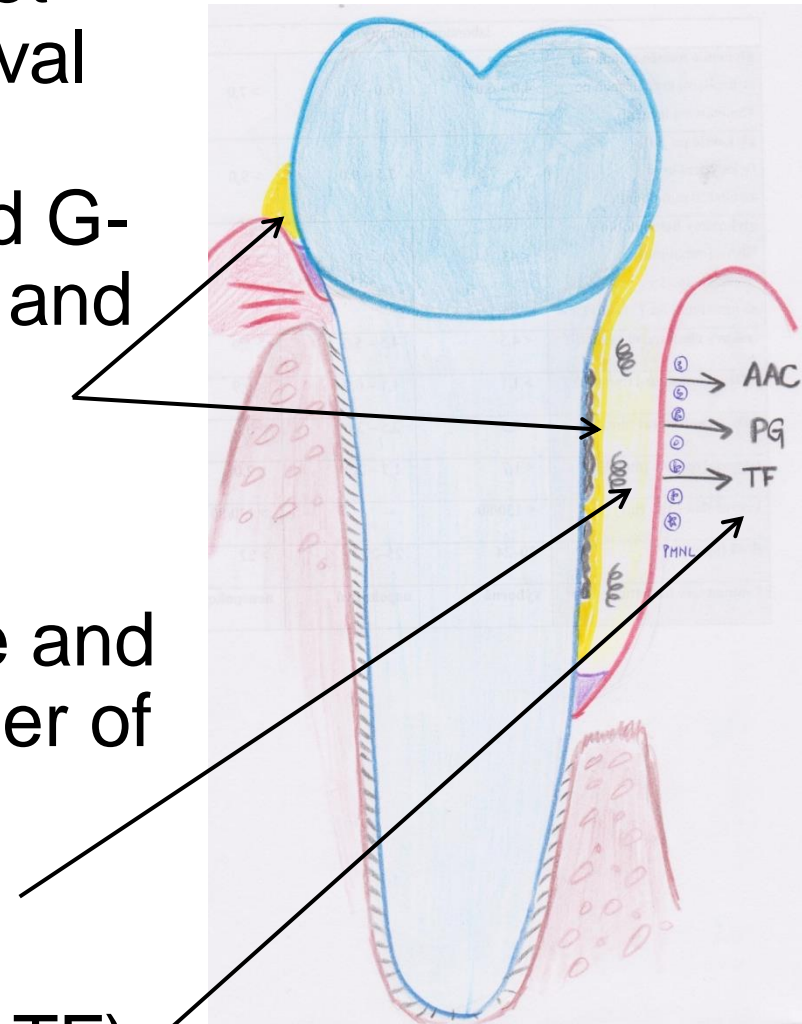
- **subgingival**

1 - in sulcus gingivalis of healthy periodontium

2 - in periodontal pocket

Subgingival plaque (sulcus × pocket)

- **adherent plaque** (enamel, root surface) composition in gingival sulcus resembles the supragingival plaque (G+ and G-cocci, Actinomyces sp., rods and filaments), can become mineralized
- **non adherent plaque** - freely moving, G - anaerobs (motile and nonmotile rods), larger number of spirochetes, no intermicrobial matrix, important role in the progression of periodontitis, bacterial invasion (AAC, PG, TF)



DENTAL microbial PLAQUE - pathogenity

Supragingival plaque – consequences:

- bacteria in dental plaque produce acids →
caries
- mineralization → supragingival dental
calculus
- increase amount and source of bacterias in
oral cavity

DENTAL microbial PLAQUE – pathogenity for perio tissue

1 Direct effect

a / bacterial products

- **enzymes** (proteases, collagenases, hyalouronidases)
- **endotoxins** (lipopolysaccharides of the bacterial wall)
- **exotoxins** (leucotoxin AAC)
- indole, skatol, ammonia, hydrogen sulphide

b / **invasion of microorganisms into perio tissue** (AAC, PG, TF)

DENTAL microbial PLAQUE - pathogenity

2 Indirect effect

- via **inflammatory mediators** (IL –1,6, TNF, PGE)
- bacterial antigens sensitize cells of the immune system and activate the immune response of the host
- there is hypersecretion of inflammatory mediators (especially by macrophages), which **activate osteoclasts**, resulting in **bone resorption**

Pathogenicity of plaque

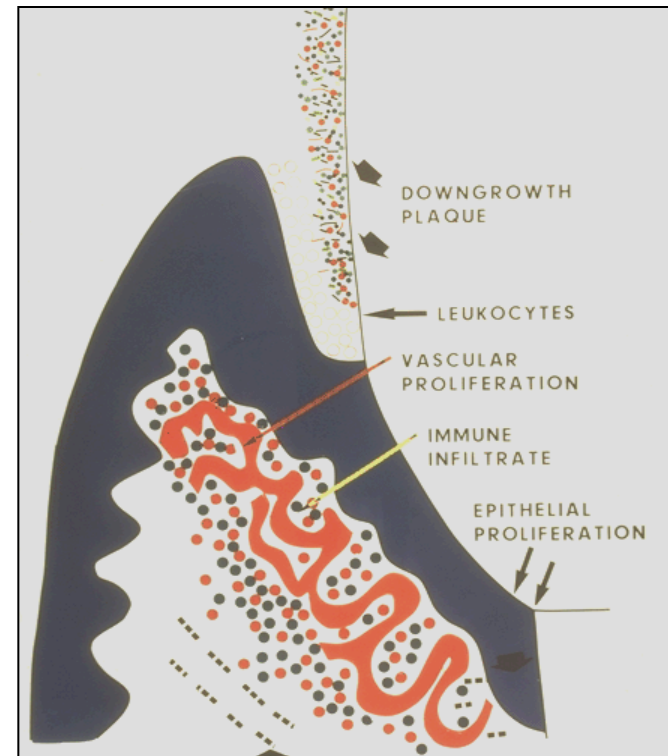
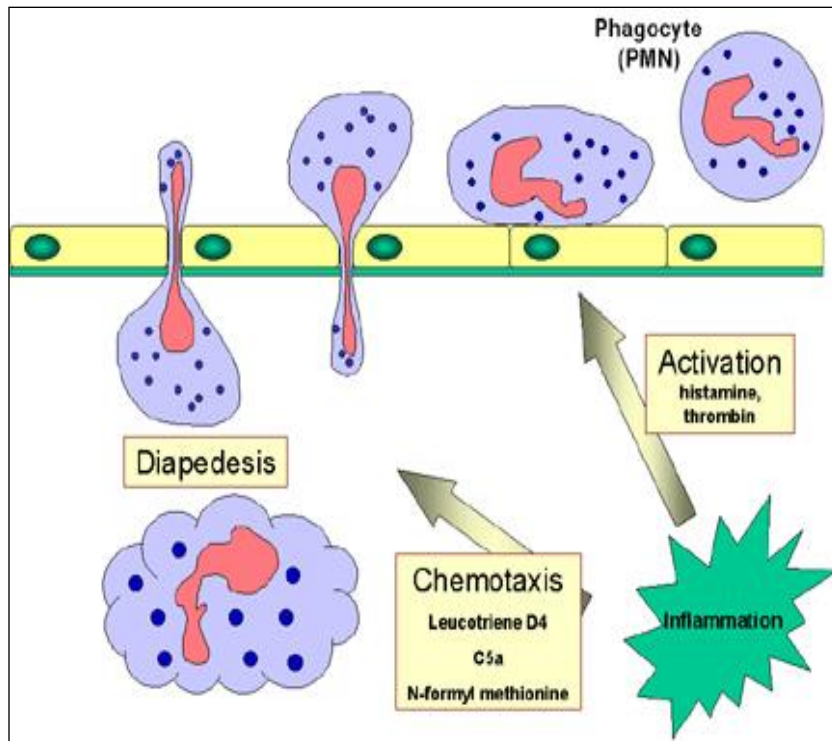
- depends on
 - **amount** and composition of plaque
 - **virulence** of microorganisms
 - ability to **invade tissues** (direct invasion - true infection)
- **immunity reaction of organism**
accumulation of plaque along the gingival margin leads to inflammatory reaction of the soft tissue

Host defence reaction

- **Acute non-specific host response** - first and rapid reaction
 - non-specific immune cells (macrophage, neutrophil, or dendritic cell) function in the first line of defense against infection or injury
 - cells of the innate immune system do not have specific responses and respond to each foreign invader using the same mechanism
- **Specific (acquired, adaptive) immunity reaction**
 - this type of immunity creates immunological memory after an initial response to a specific pathogen
 - leads to an enhanced response to subsequent encounters with that pathogen. This process of acquired immunity is the basis of vaccination
 - includes both humoral immunity components and cell-mediated immunity components

Acute nonspecific host response

- **Inflammation** - PolyMorphoNuclearLeucocytes - chemotaxis, diapedesis, adherence to bacteria, phagocytosis, microbicidal activity, complement system



Specific immunity reaction

- immunological memory after an initial response to a specific pathogen
- the immune system responds to antigens by producing cells that directly attack the pathogen, or by producing special proteins called antibodies
- defense cells recognize antigen
- **Lymfocytes**
 - T cells - cell mediated reaction
 - B cells - antibody response upon contact with antigen; they differentiate into plasma cells (that produce antibody)

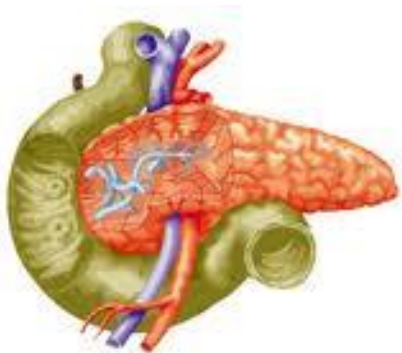
Dental biofilm and systemic diseases

- Inflammation is not only a local matter of the periodontal tissue, but bacteria and inflammatory mediators enter the systemic circulation
- Bacteremia
- Inflammatory mediators in systemic circulation (interleukins, TNF alpha, prostaglandins...)

see <http://www.efp.org/newsupdate/oral-health-and-general-health>

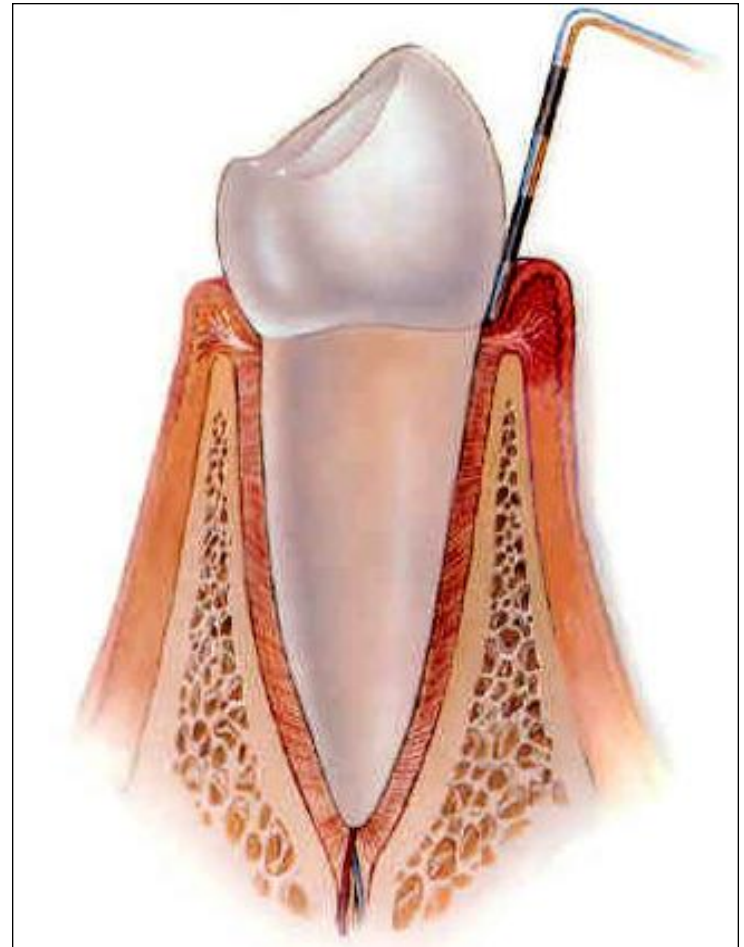
Dental biofilm and systemic diseases

- 9th European Workshop in Periodontology “Periodontitis and Systemic Diseases” 2012
- The Perio-Diabetes Workshop 2017 (organised jointly by the European Federation of Periodontology (EFP) and the International Diabetes Federation (IDF))
- See below <https://www.efp.org/perioworkshop/workshop-2012/index.html>



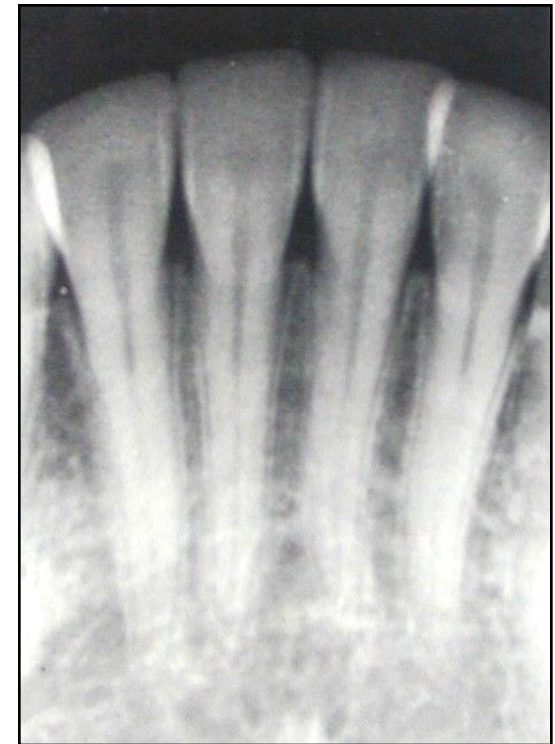
Gingivitis - symptoms

- gingival bleeding
 - redness to livid colour
 - swelling
 - gingiva loses its turgor
 - tenderness or pain
- inflammation of the gingival tissue surrounding a tooth
- **reversible**





Gingivitis showing edema, redness and bleeding on probing



Gingivitis

1. Plaque - Associated Gingivitis (90 - 95%)

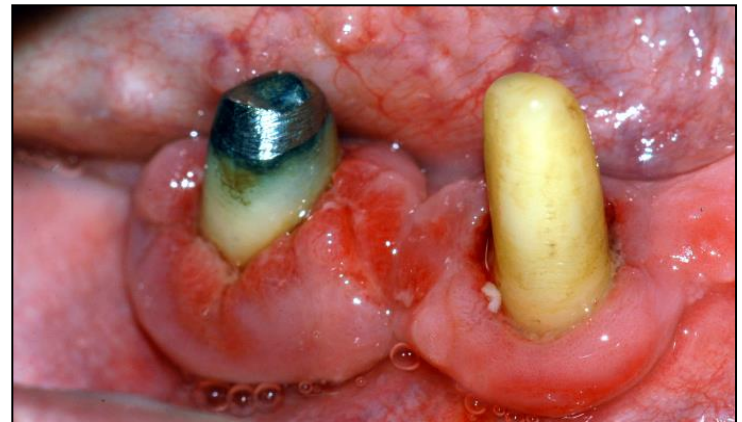
- Gingivitis induced - with plaque only
 - modified by local factors
- Gingivitis modified by systemic factors
 - hormone induced gingivitis (puberty, pregnancy)
 - DM
 - medications
 - malnutrition (vit C)

1/ Gingivitis induced **with plaque only**

with plaque only/+ local factors



(overhanging fillings, crowns, bridges, mouth breathing, crowding of teeth, fixed ortho appliances, soft tissue anomalies,...)



2/ Gingivitis modified by **systemic factors**

- **hormone** induced gingivitis - puberty, pregnancy



2/ Gingivitis **modified by systemic factors**

- diabetes mellitus



3/ Gingivitis modified by medication – hyperplastic gingivitis



- Calcium channel blockers (nifedipin)
- Hydantoins (fenytoin)
- Cyklosporin



4/ Gingivitis modified by **nutrition**

- Avitaminosis C (scurvy)



Acute necrotizing ulcerative gingivitis

- Painful, rapidly progressive inflammation of gingiva
- Spirochets, fusiform bacterias
- Starts usually without general symptoms
- Gingivitis + crateriform ulcerations of ID papillae, necrosis at ID papillae



2. Non - Plaque - Associated Gingival Diseases (5 – 10%)

- Bacterial, Viral or Fungal associated lesions
- Hereditary Gingival Diseases
Gingival fibromatosis
- Gingival Manifestations of Systemic Diseases
Mucocutaneous Diseases (Lichen Planus, Cicatricial Pemphigoid, Pemphigus)
- Allergic reactions of the gingiva
- Traumatic lesions of the gingiva

2. Non - Plaque - Associated Gingival Diseases



Primary Herpetic
Gingivostomatitis



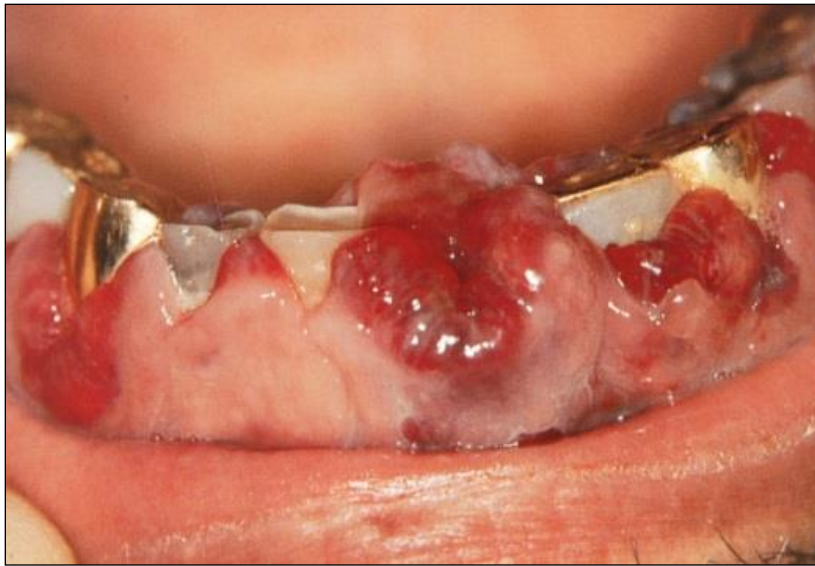


Desquamative gingivitis

- pemphigus
- pemphigoid
- lichen planus



Overgrowth of gingiva (hyperplastic gingivitis) in acute leucemia



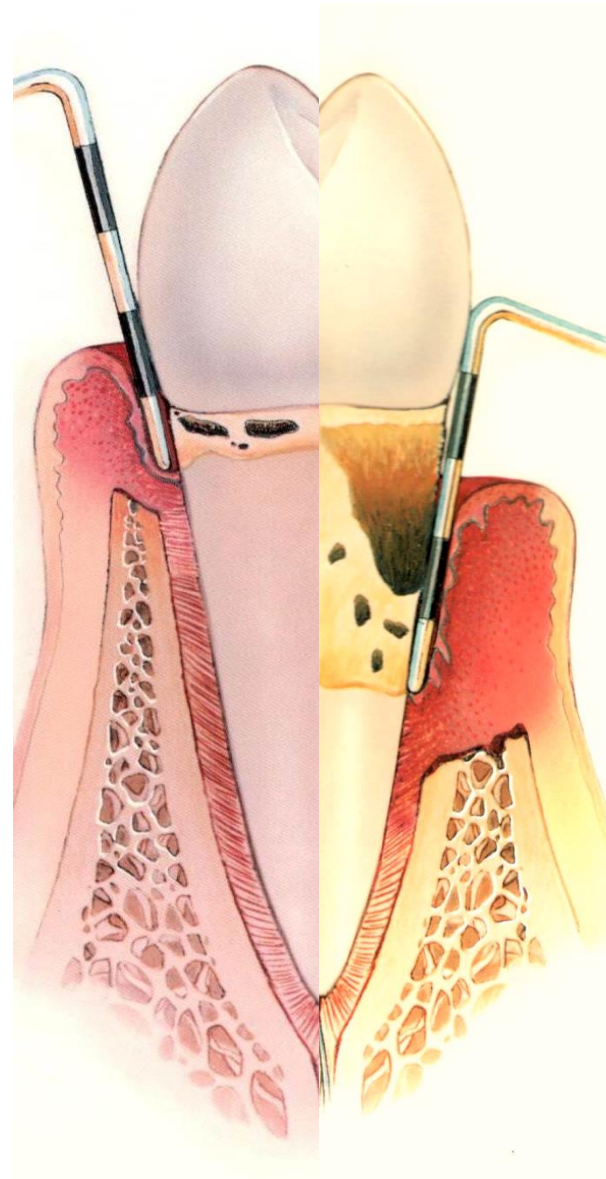
- there is a multiplication of leukemic cells in the gingiva
- gingival ulcerations



2/ Periodontitis

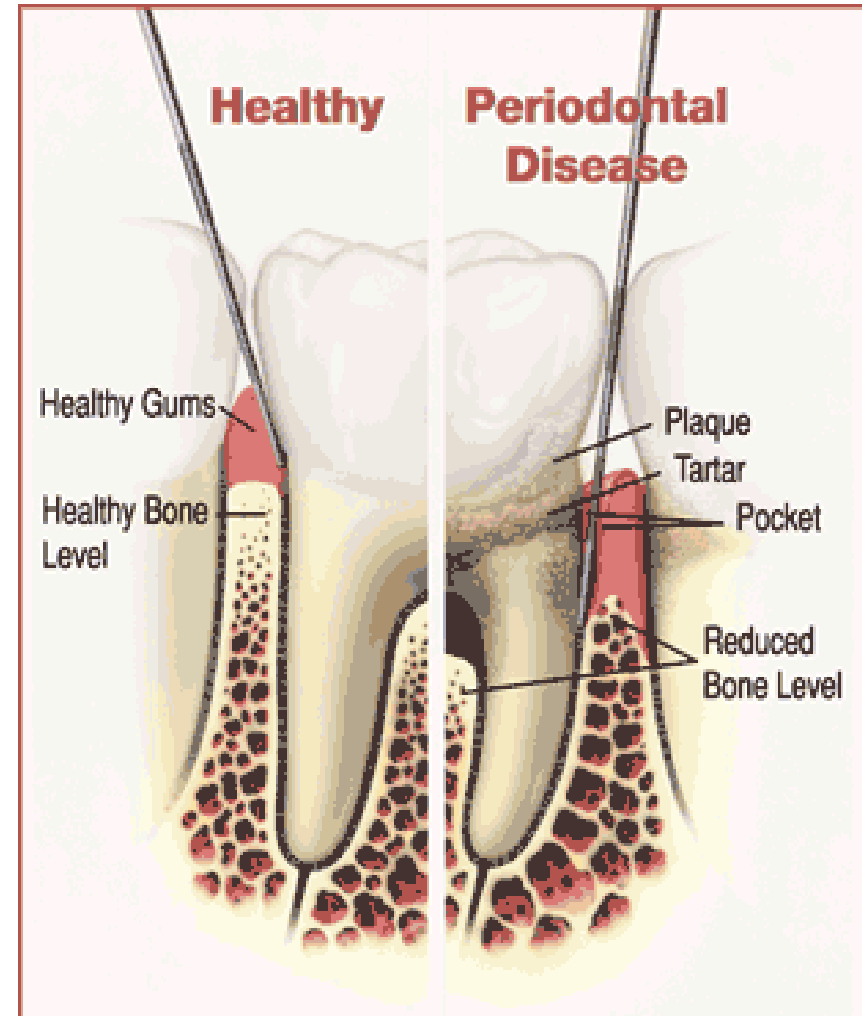
Inflammation of the periodontal apparatus of the tooth

- inflammatory destruction of the junctional epithelium and gingival ligaments
- periodontal pocket formation
- resorption of alveolar bone
- irreversible



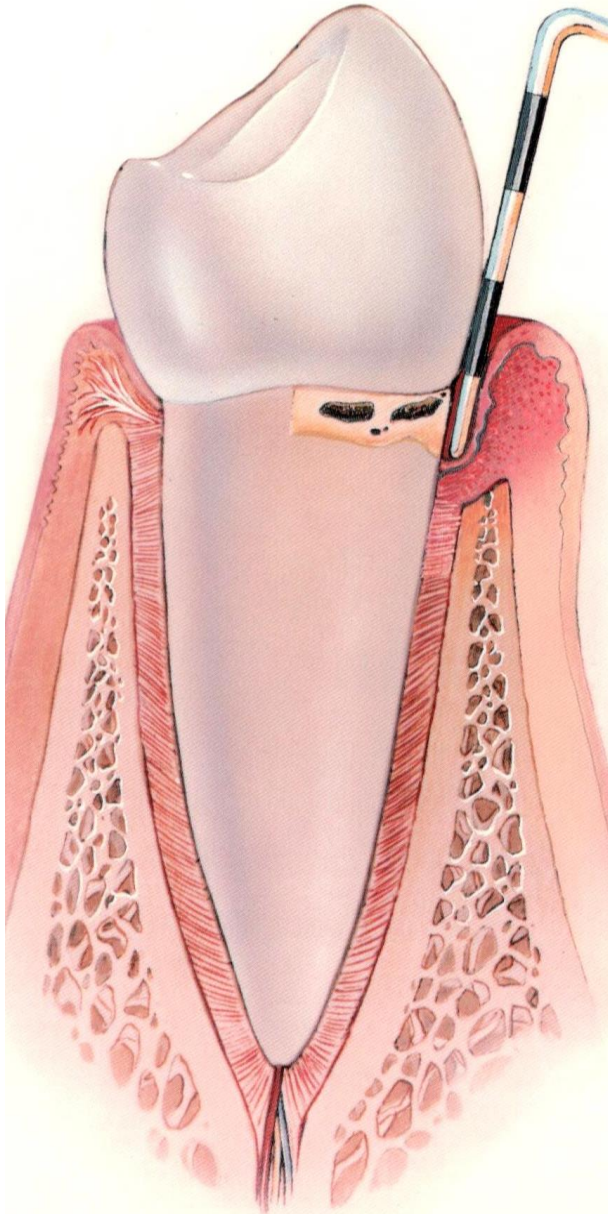
Periodontitis

- inflammation of gingival tissue extends into the junctional epithelium
- attachment damage
- loss of alveolar bone
- periodontal pocket
- irreversible

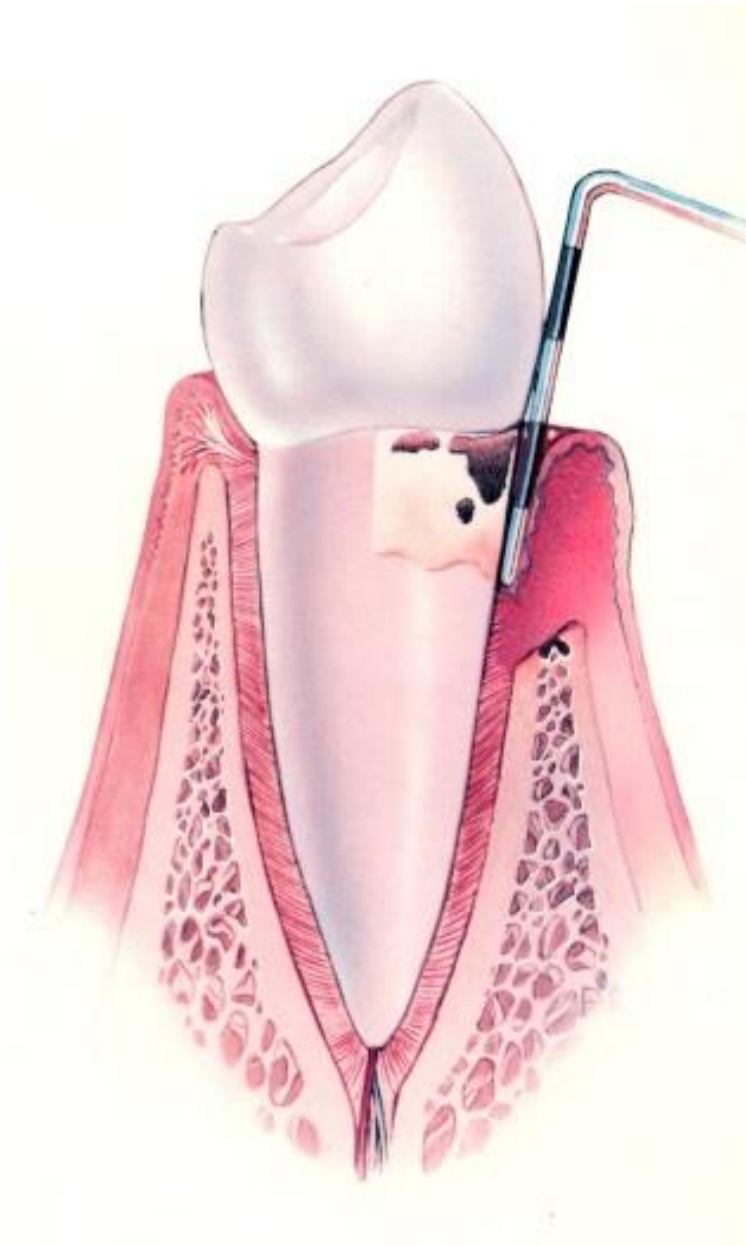


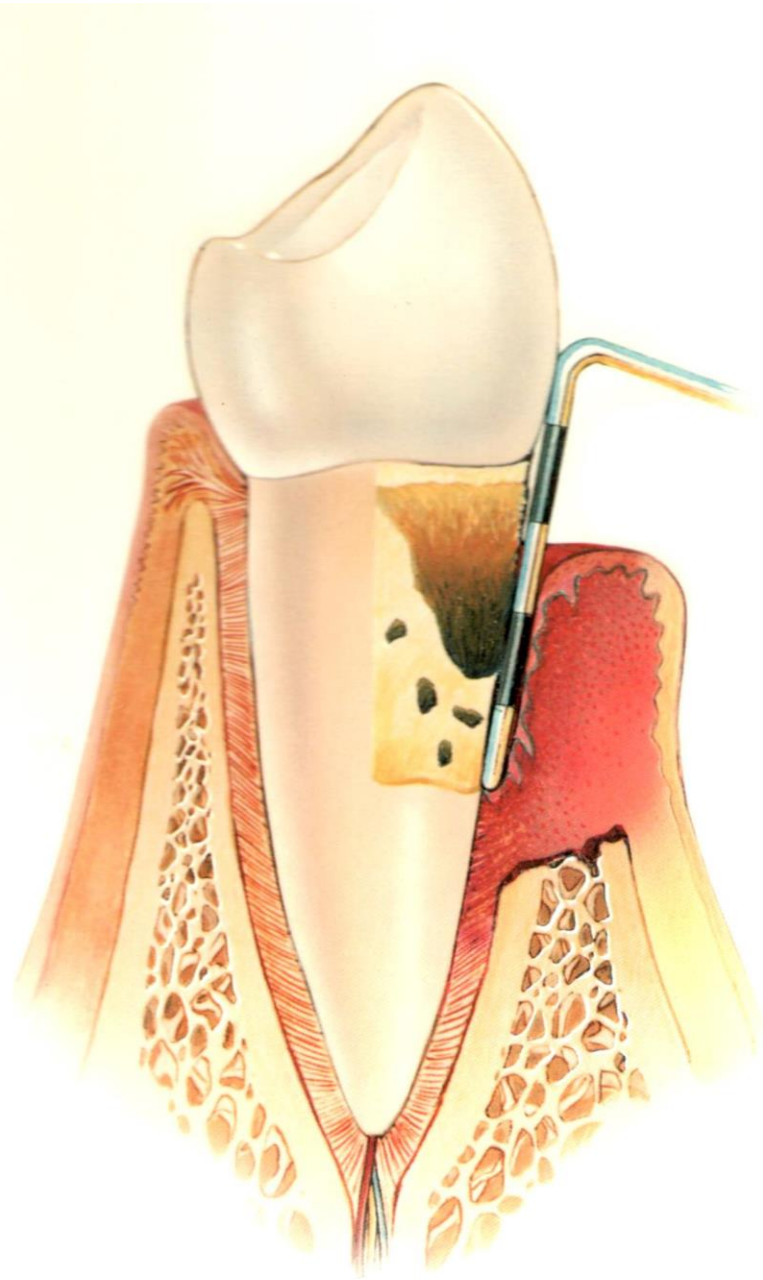
Initial periodontitis

- Symptoms are mild
 - gum bleeding after irritation
 - gingival edema
 - redness of the gingiva
 - probing up to 6 mm
 - mild bone resorption



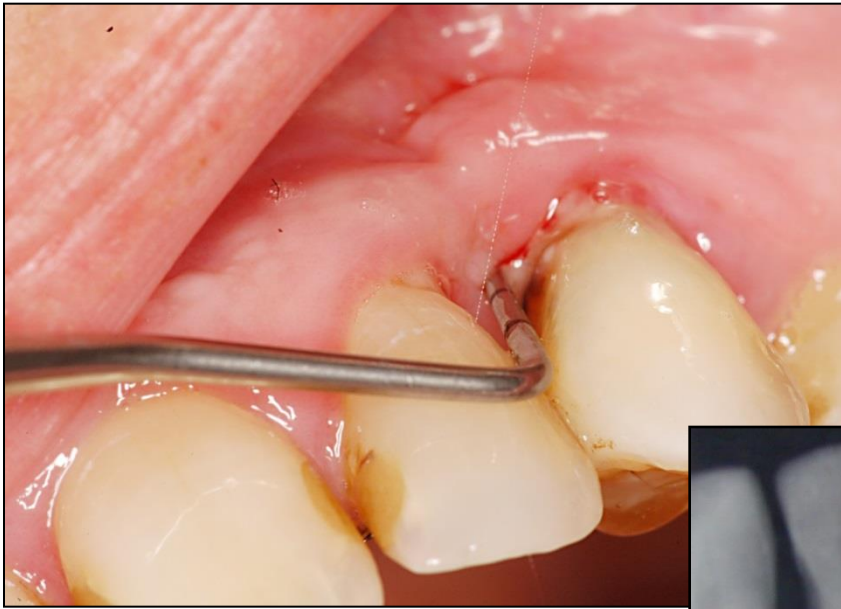
Moderate periodontitis



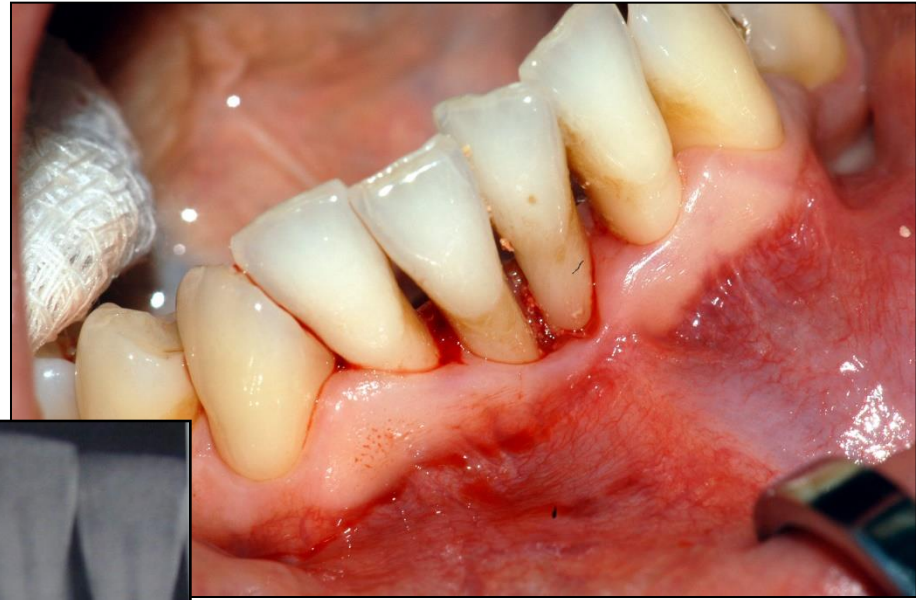


Advanced periodontitis

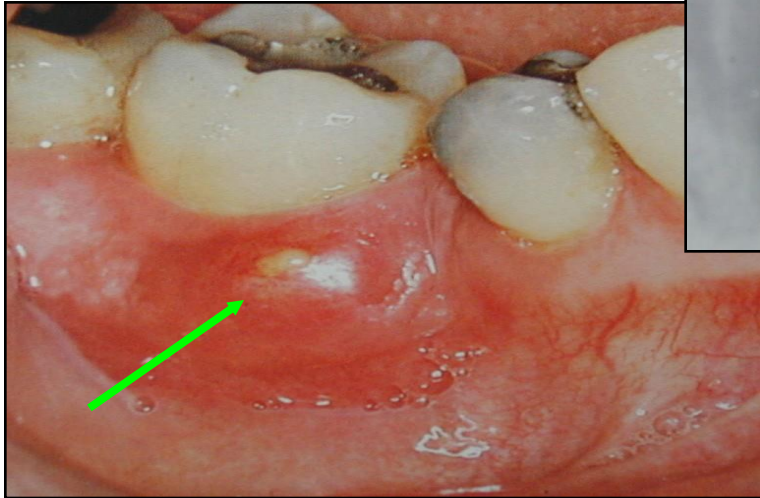
- deep periodontal pockets over 6 mm
- periodontal abscess, pus between teeth and gums
- tooth mobility, teeth tend to shift or lose itself
- significant bone resorption
- bad breath



periodontal pocket



gingival recessions



periodontal abscess



tooth mobility, teeth shifted

Periodontitis - classification

- Older classification

Chronic periodontitis (adults, slower progression)

Aggressive periodontitis (beginning in younger age, rapid progression, significant proportion of AAC)

- New classification (from 2018)

Stage I - IV (depending on attachment loss)

Grades A - C (slow, medium, fast progress)

Periodontitis

Chronic periodontitis (90 %)

localized / generalized

Aggressive periodontitis (5-10 %)

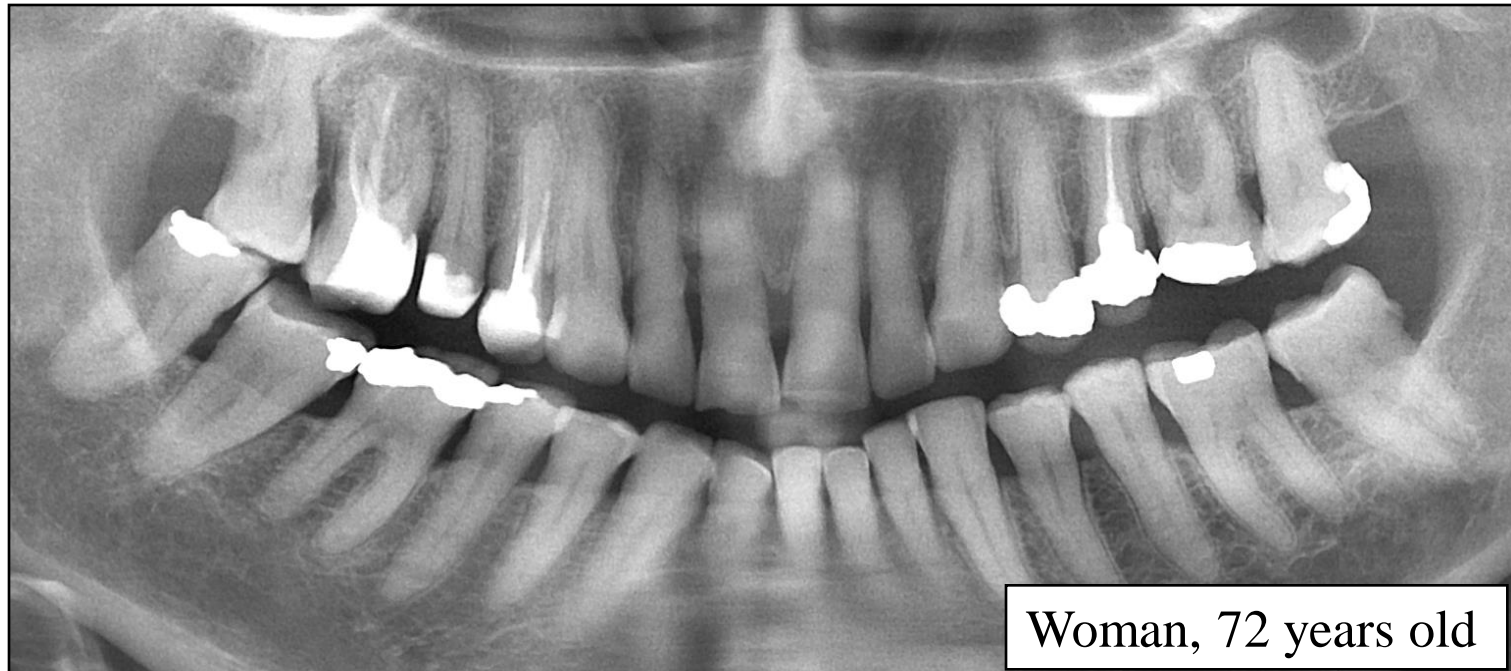
localized / generalized

Periodontitis – **as a manifestation of systemic disease** associated with genetic disorders
(rare cases)



Aggressive
periodontitis
- generalized
- IV/C

Man, 35 years old



Chronic
periodontitis
- generalized
- III/A

Woman, 72 years old

- **Chronic periodontitis**
 - adults
 - polymicrobial infection
 - continuous and slowly progression
 - horizontal resorption



- Aggressive periodontitis
 - early onset
 - rapid attachment loss and bone destruction
 - possible familial aggregation of disease
 - except for periodontal disease, patients are systemically healthy
 - tissue destruction is greater than would be expected given the level of local factors including bacterial plaque

- **Agressive periodontitis**

- elevated levels of

- Actinobacillus actinomycetemcomitans* (AAC)

- Porphyromonas gingivalis* (PG)

- phagocyte abnormalities and increased production of prostaglandin E_2 and interleukin- 1β

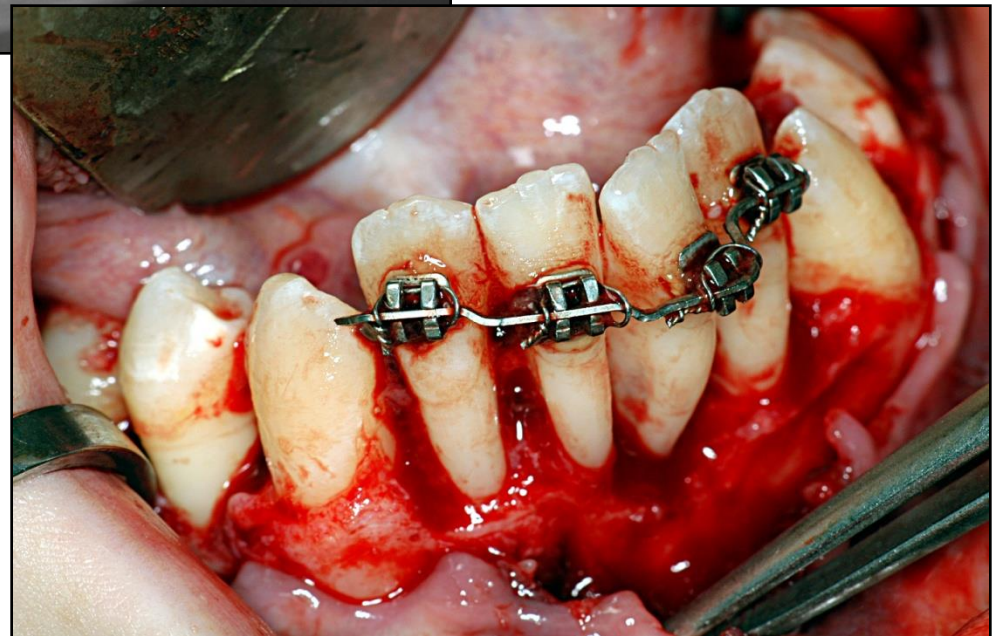


Periodontitis – as a manifestation of systemic disease

- associated with genetic disorders
- **Papillon - Lefevre syndrom**
 - uncommon inherited autosomal recessive disease
 - **hyperkeratosis** of the palms and soles (knee, elbows)
 - **advanced periodontitis** (both deciduous and permanent dentitions)
 - at 20% immunologic defects



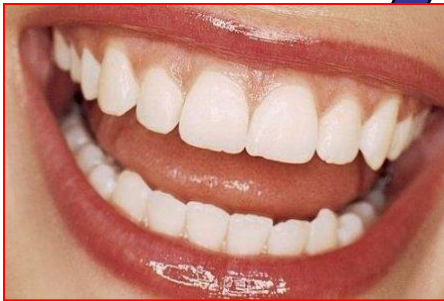
12 years old boy



80%

Gingivitis + Mild or moderate chronic periodontitis

Prevalence of perio diseases 90-95%



10%

Healthy



10%

Aggressive advanced periodontitis

Periodontal therapy

- inseparable part of dental therapy
- the goal is to eliminate the etiologic factor
- decrease the level of pathogenic microorganisms
- eliminate inflammation and periodontal pocket
- Gingivitis ? Type?
- Periodontitis ? Chr - Agr?
- Gingival recessions?

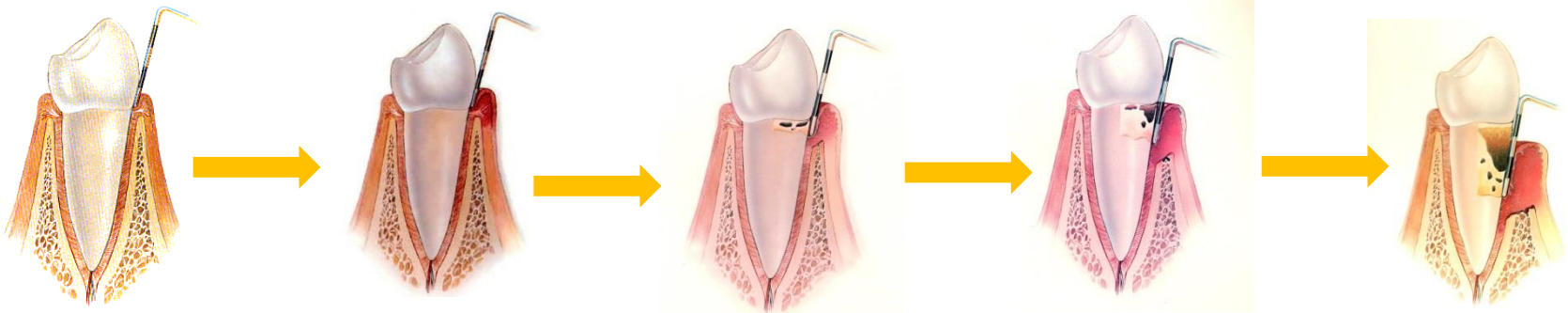
Periodontal therapy

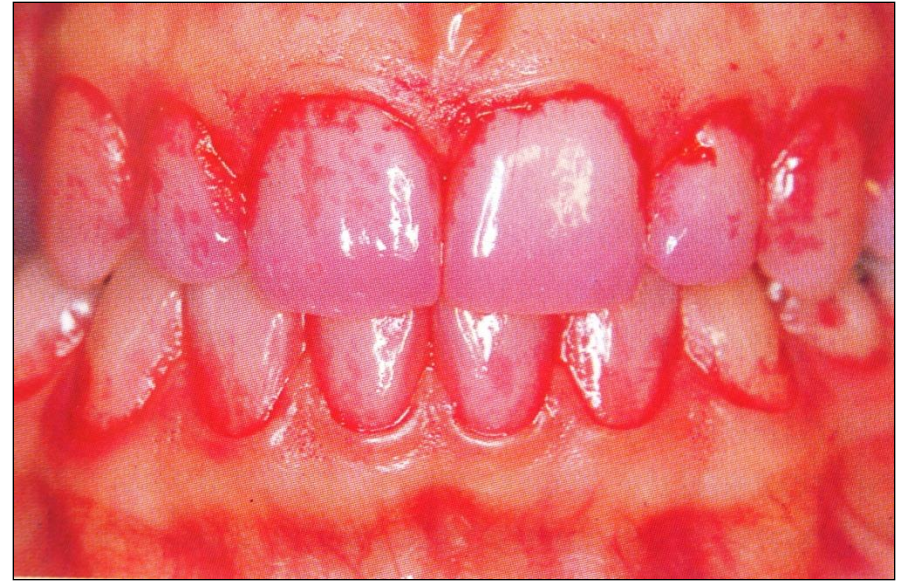
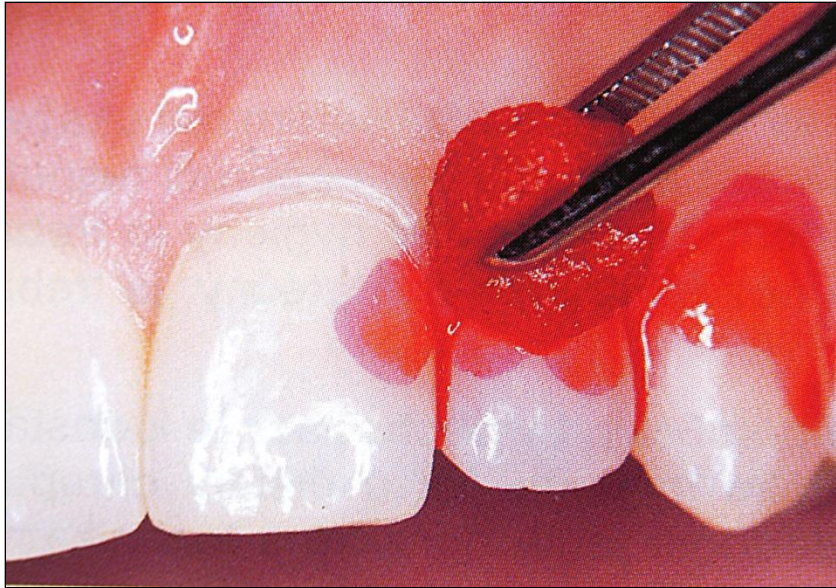
- Preliminary phase
- 1 - Initial phase of periodontal therapy
- Evaluation of response
- 2 - Surgical phase
- Evaluation of response
- 3 - Restorative phase
- Evaluation of response
- 4 - Maintenance phase (supportive therapy, recall)

1- Initial phase of periodontal therapy

- **Plaque control** - oral hygiene
(motivating and instructing the patient, control)
- **Elimination of plaque retentive areas and Correction of irritating factors** - removing all local irritants that may cause gingival inflammation)
 - reduction of naturally occurring plaque retentive areas
 - removal of iatrogenic irritants
- **Supragingival calculus removal**
- **Subgingival scaling and root planing**
- **Antimicrobial therapy**
- Temporary restorative treatment and prosthetics (caries, root canal therapy, occlusal therapy, splinting)

1a - Motivation, education, oral hygiene instruction



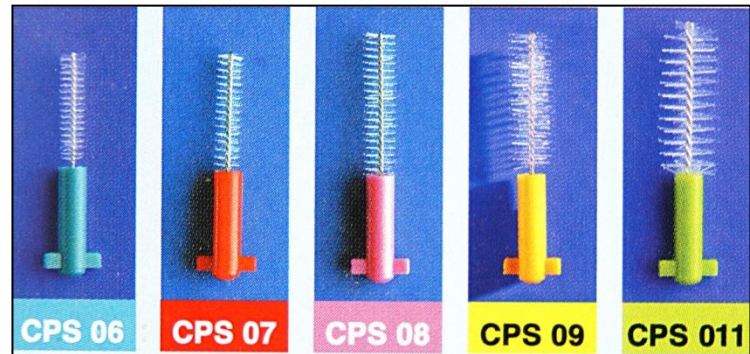


Special tablets or rinses can colour plaque



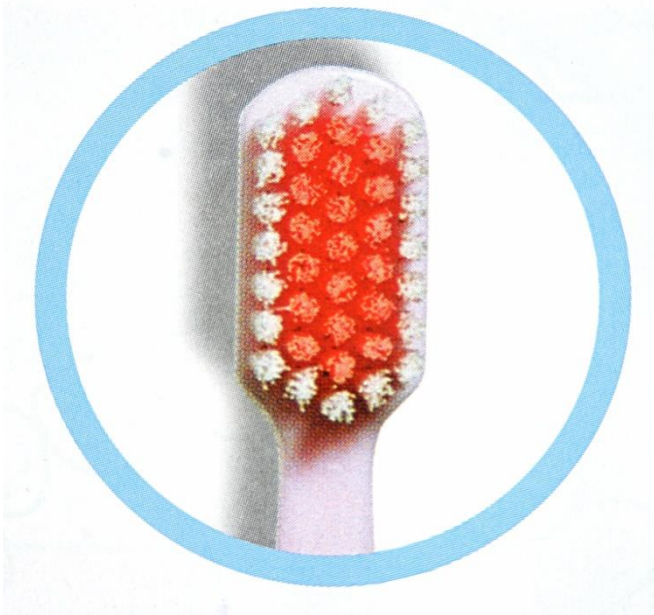
Oral hygiene products

- Toothbrush
- Single toothbrush
- Dental floss (waxed, unwaxed, tape, flossholder)
- Interdental cleaners (correct size !)
- Toothpaste (fluorid, antimicrobial agents, anticalculus agents)
- Oral irrigators
- Mouth rinses



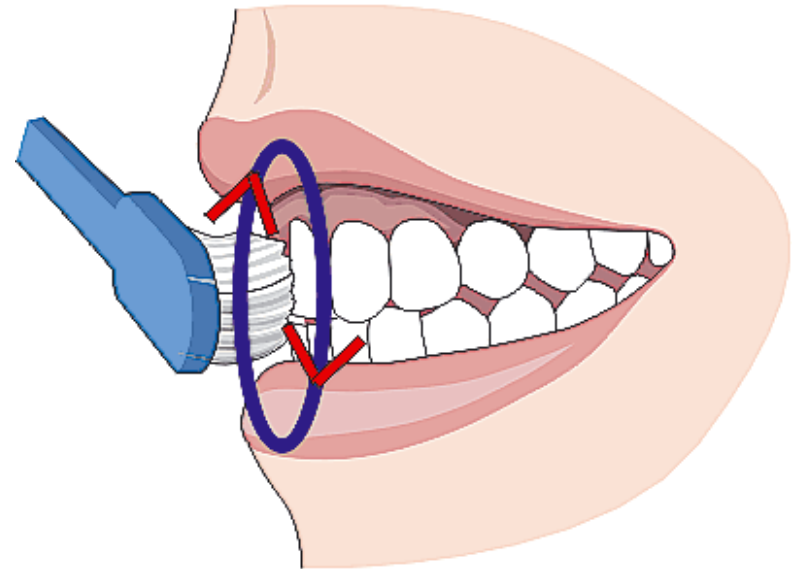
Toothbrush

- short head
- soft, medium, multitufted, straight bristles



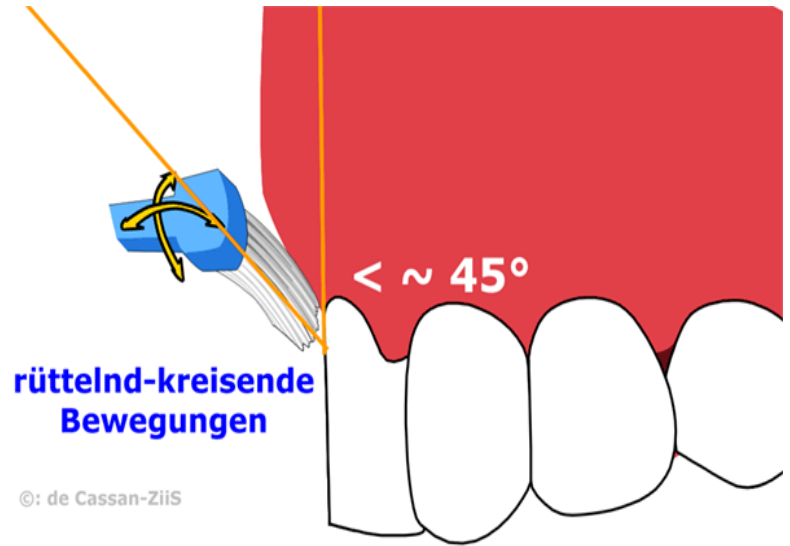
Totth brushing techniques

- **Fones method** – for children
- Charters method
- Stillmann method
- Bass method



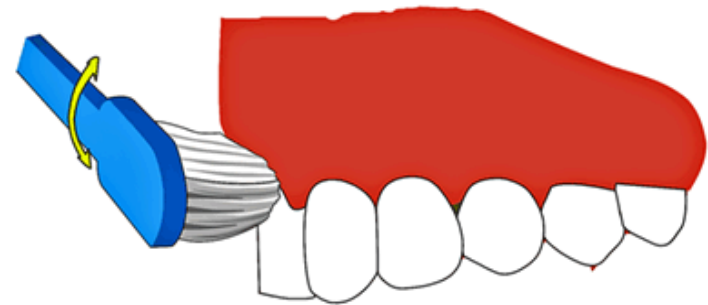
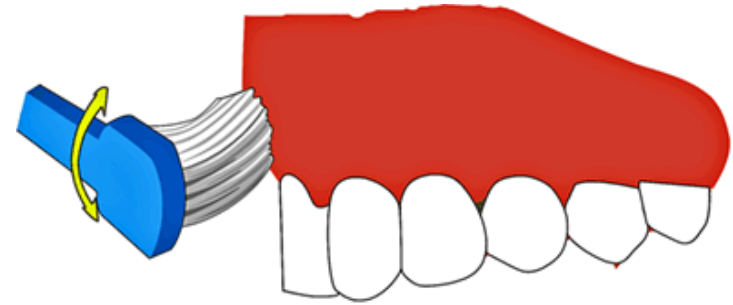
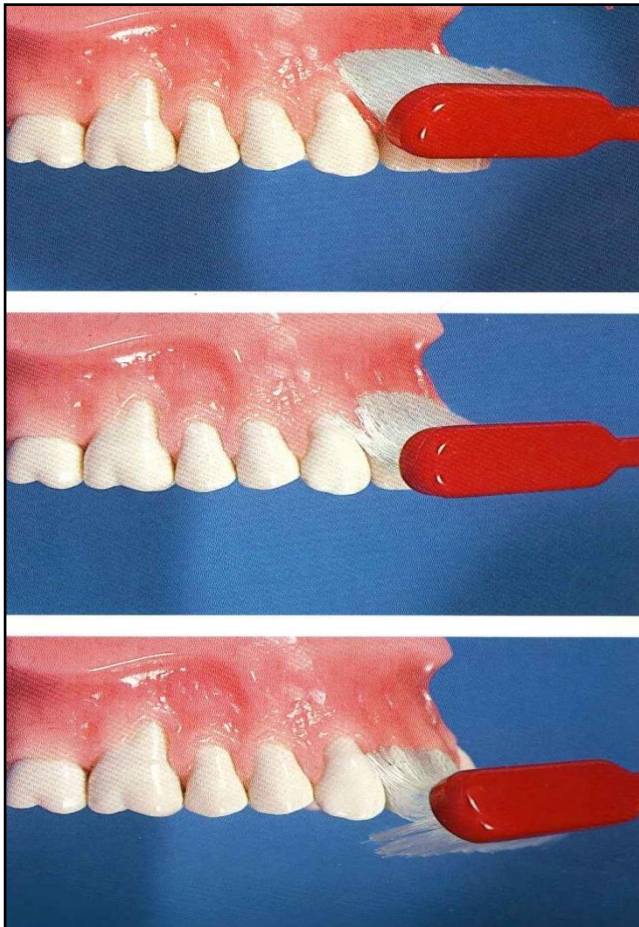
Totth brushing techniques

- Charters method



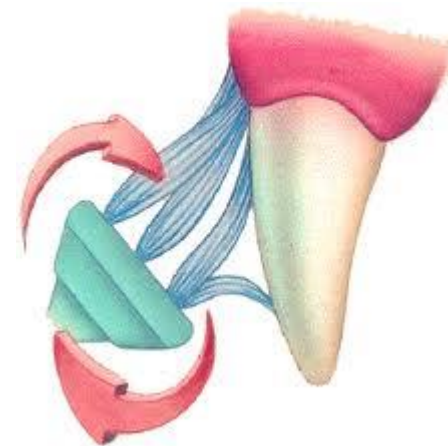
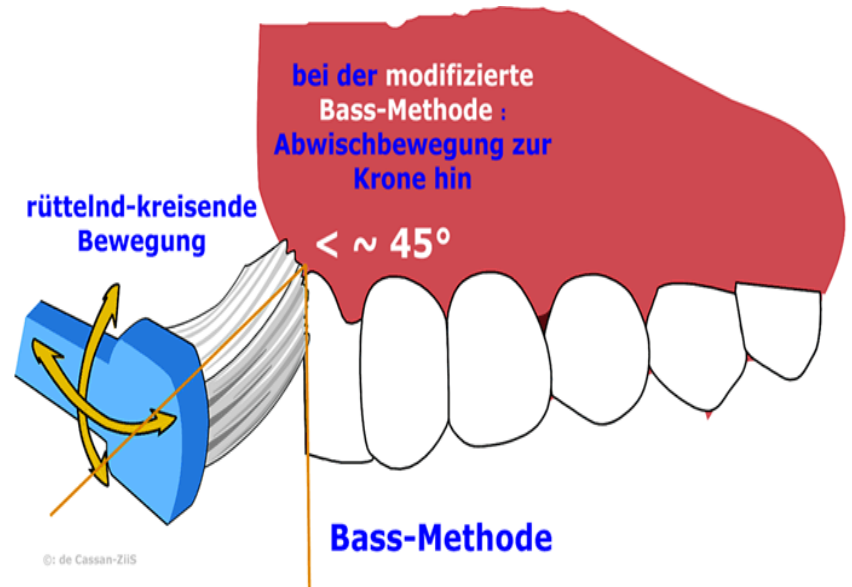
Totth brushing techniques

- **Stilmann method**



Totth brushing techniques

- Bass method





Pay attention !!!

- Horizontal toothbrushing
- Hard bristles
- Toothbrushing too frequently



- abrasion of the tooth structure
- gingival recession (root exposure, hypersensitivity)

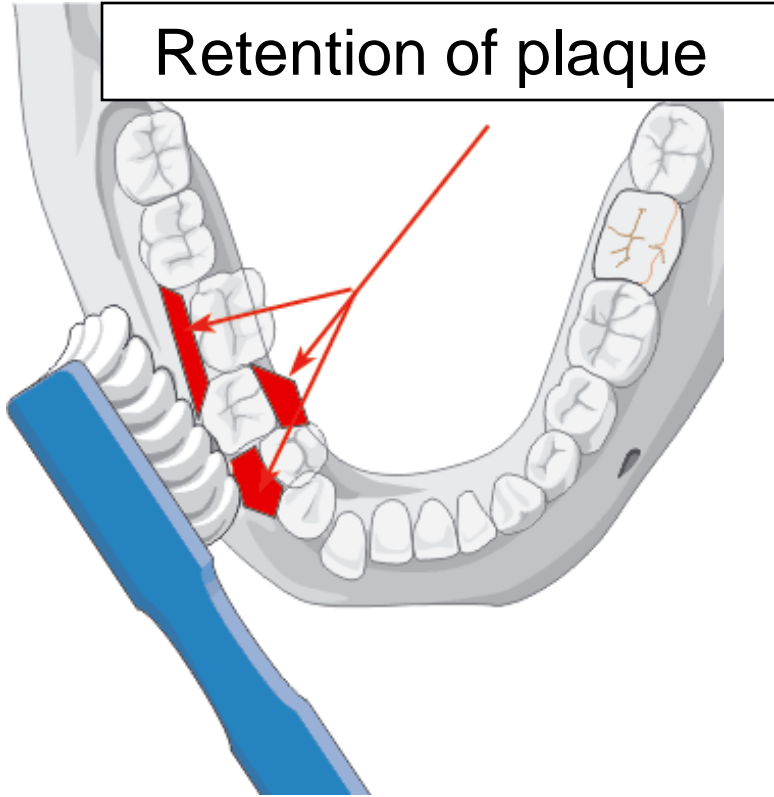


Single toothbrush

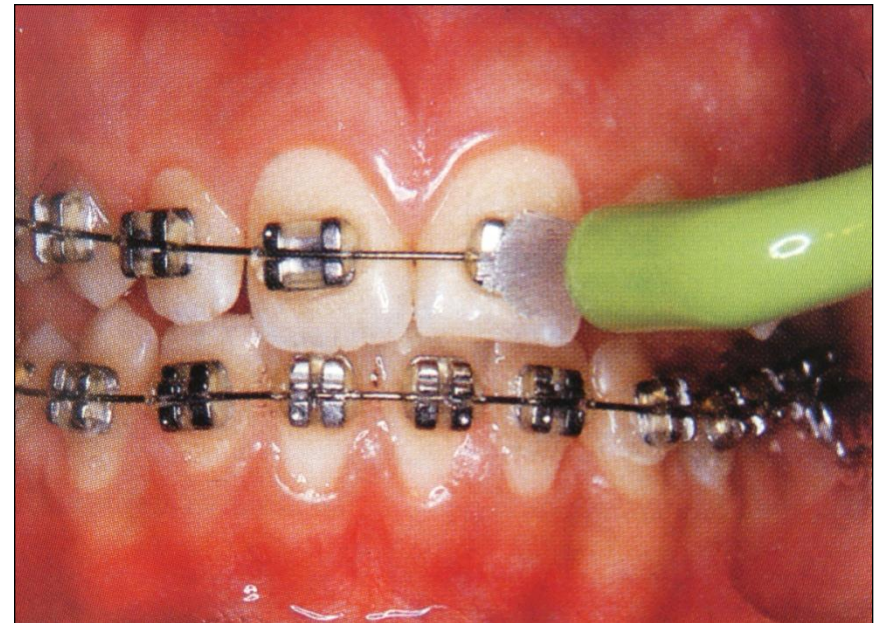


„ siwak“

Retention of plaque

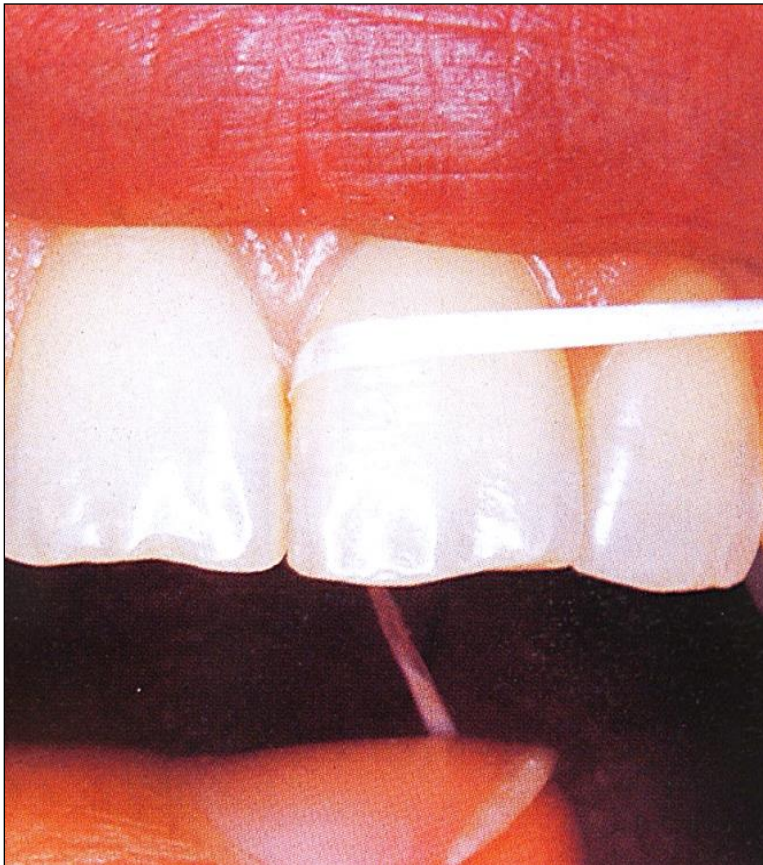


- Crowded teeth
- Orthodontic appliances (braces)
- Implants

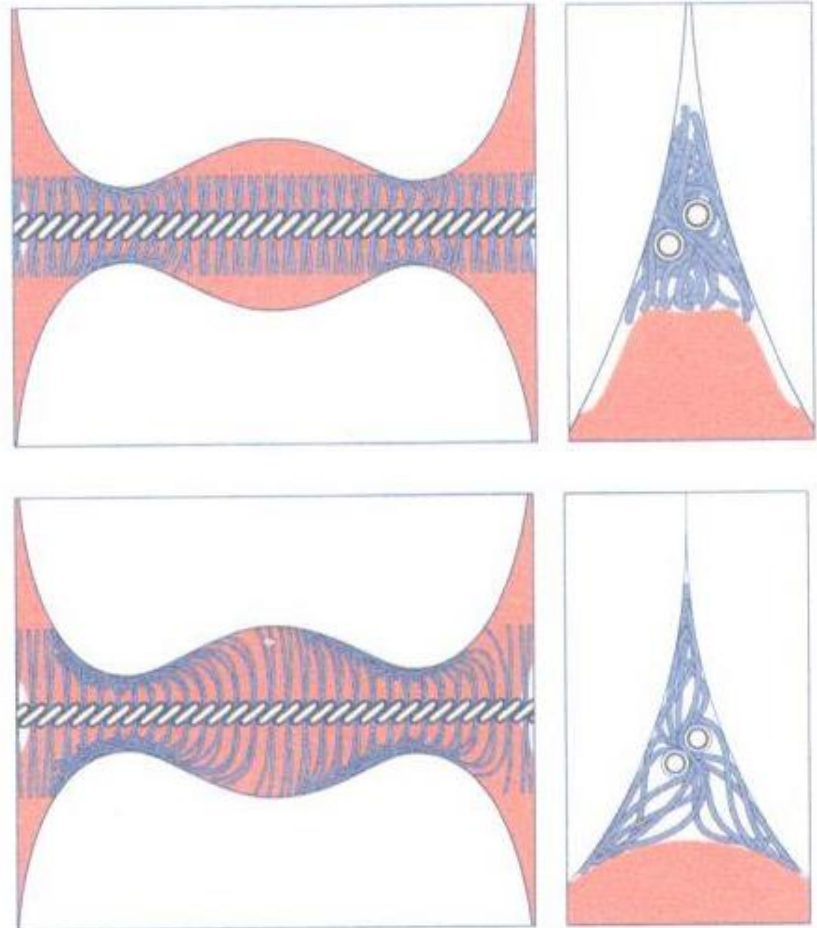


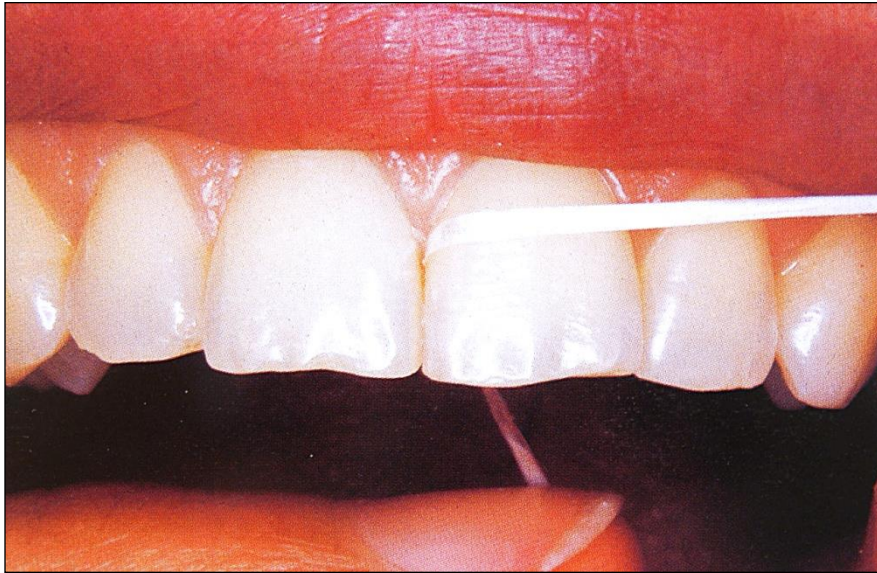
Interdental hygiene

- Dental floss

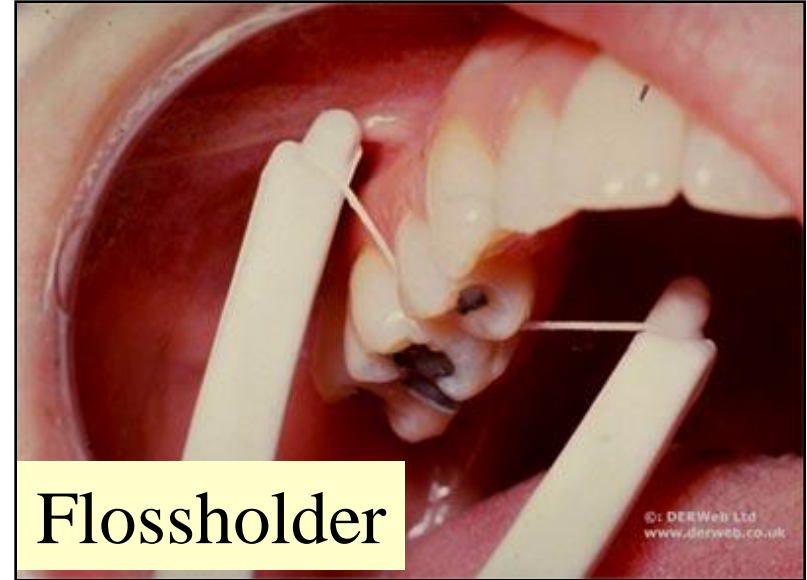


- Interdental cleaners

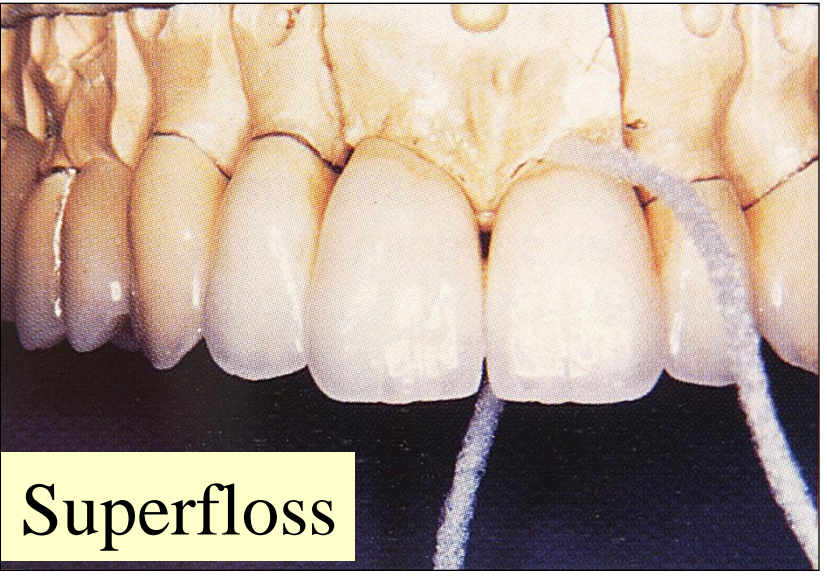




Floss - waxed, unwaxed



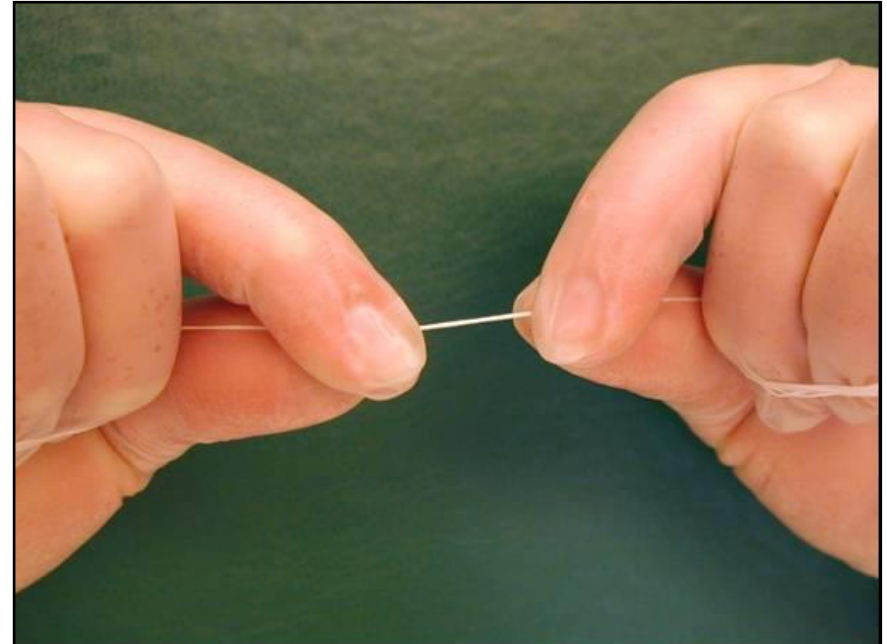
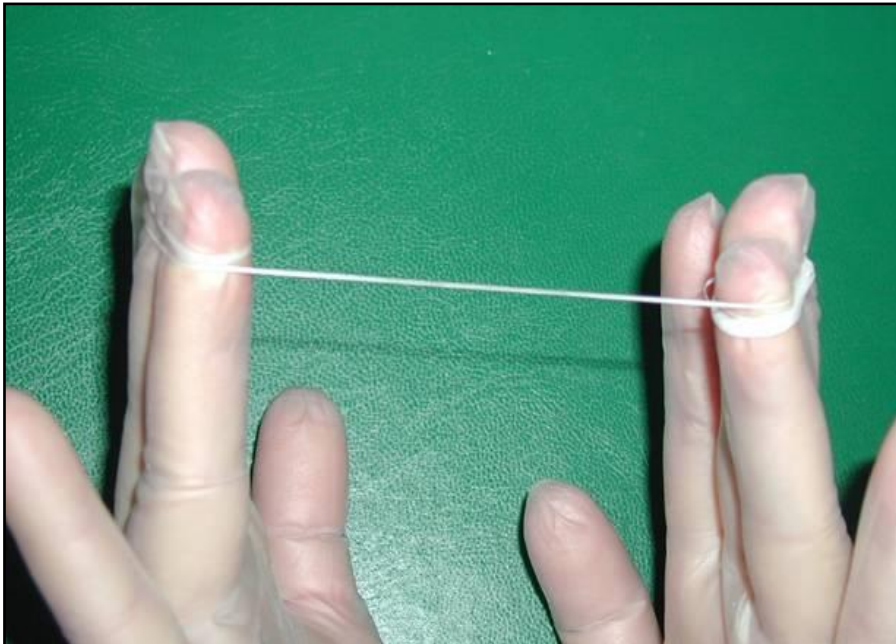
Flossholder

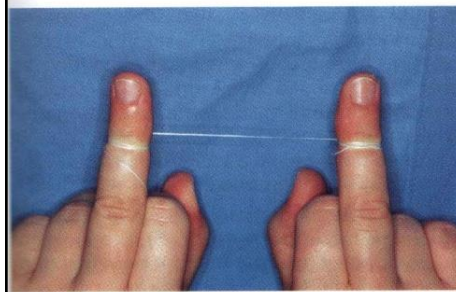


Superfloss

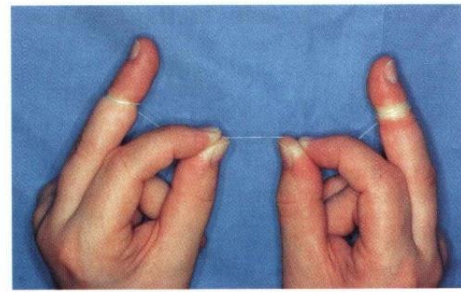
Flossing

- break off about 15 - 20 cm
- roll floss around middle fingers
- hold the floss between thumbs and index finger
- guide floss between your teeth- curve it into a C shape against one tooth
- slide it into the space between the gum and the tooth
- move the floss up and down
- do not forget back side of last tooth





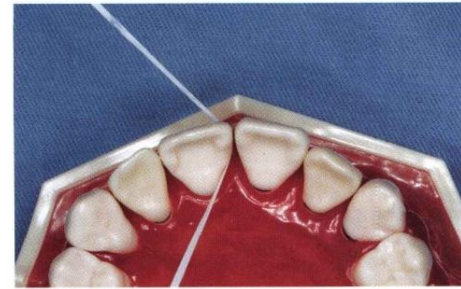
Obr. 9a „Upevnění“ dentální nitě namotáním na prostředníky obou rukou.



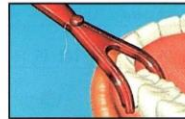
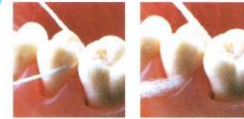
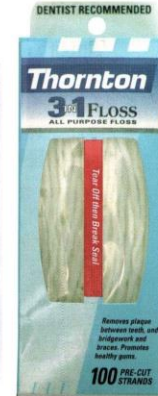
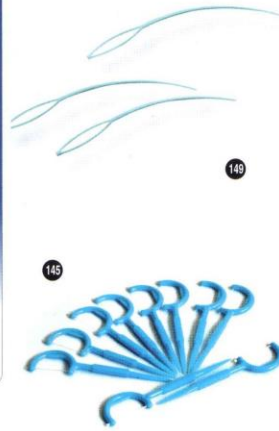
Obr. 9b Zbylé konce se uchopí palci a ukazovky obou rukou.



Obr. 10 Dentální nit musí být napjata kolem každé číštěné proximální plochy.

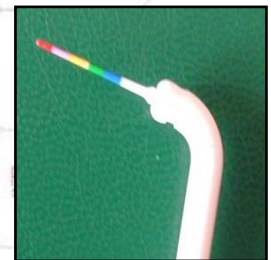


Obr. 11a a b Rozsah pohybu dentální nitě ve vertikálním směru.

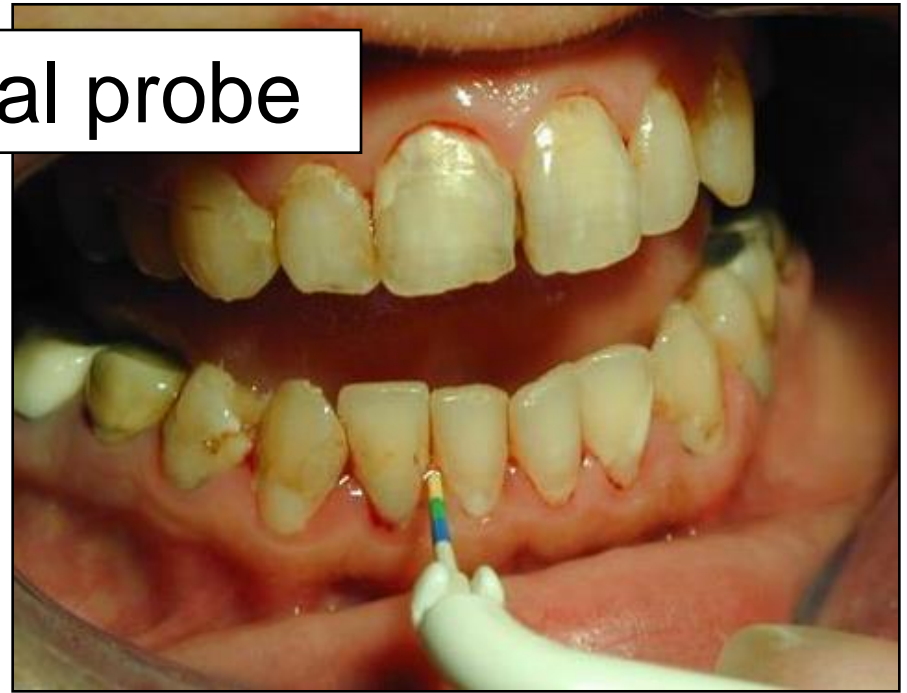
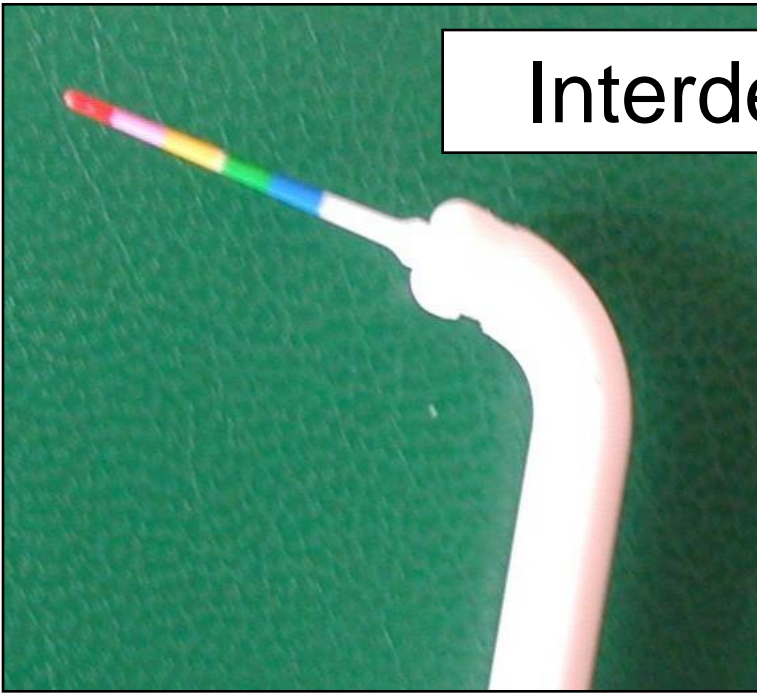


	TePe	TePe	TePe	GUM	GUM	GUM	TANDEX	DOFT	CURAPROX	CURAPROX	Oral-B
	Original	Extra soft	Angle	Trav-Ler	SoftPicks	Bi-Direction	Flexi	Interdental Brush	CPS-prime	CPS-regular	Interdental
	● ↓	● ↓	● ↓	●★ ↓↓	● ↓	● ↓	● ↓				● ↓
	137610 0,4 mm		154610 0,4 mm	G1312			TA 819070 0,35 mm TA 819071 0,4 mm	IB04 0,4 mm	CPS 06		
	137620 0,45 mm	122625 0,45 mm	154620 0,45 mm	G1314	G632M40 G632M80	G2114 0,43 mm	TA819072 0,45 mm		CPS 07		
	137630 0,5 mm	122635 0,5 mm	154630 0,5 mm	G1312	G634MA40	G2314 0,43 mm	TA819073 0,5 mm	IB05 0,5 mm	CPS 08 CPS 09	CPS 10	
	137640 0,6 mm	122645 0,6 mm	154640 0,6 mm	G1414▲ G1512		G2614 0,53 mm ▲	TA819074 0,6 mm	IB06 0,6 mm	CPS 011	CPS 11	OB2209130
	117650 0,7 mm	122655 0,7 mm	154650 0,7 mm	G1514▲ G1612	G636M40		TA819075 0,7 mm	IB07 0,7 mm		CPS 12	
	117660 0,8 mm	122665 0,8 mm	154660 0,8 mm	G1614▲			TA819076 0,8 mm ▲	IB08 0,8 mm		CPS 14▲ CPS 14Z	OB2209125 ▲
	114670 1,1 mm	122675 1,1 mm		G1618			TA819077 1,0 mm ▲	IB09 0,9 mm			
							TA819078 1,2 mm			CPS 15	
	114680 1,3 mm									CPS 18	
	114690 1,5 mm										

Beware of choosing the **right** sizes of interdental brushes !!!



Interdental probe





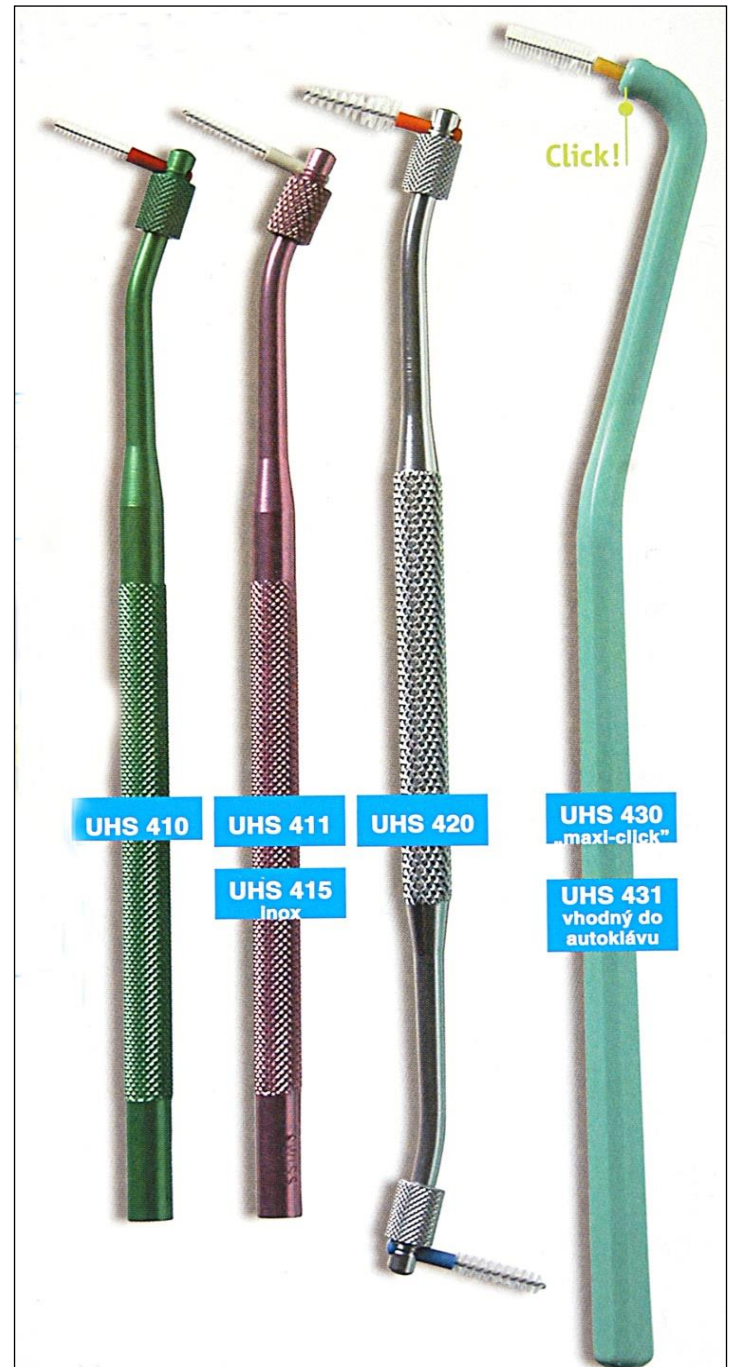
0.5
mm

0.6
mm

0.7
mm

0.8
mm

1.1
mm



UHS 410

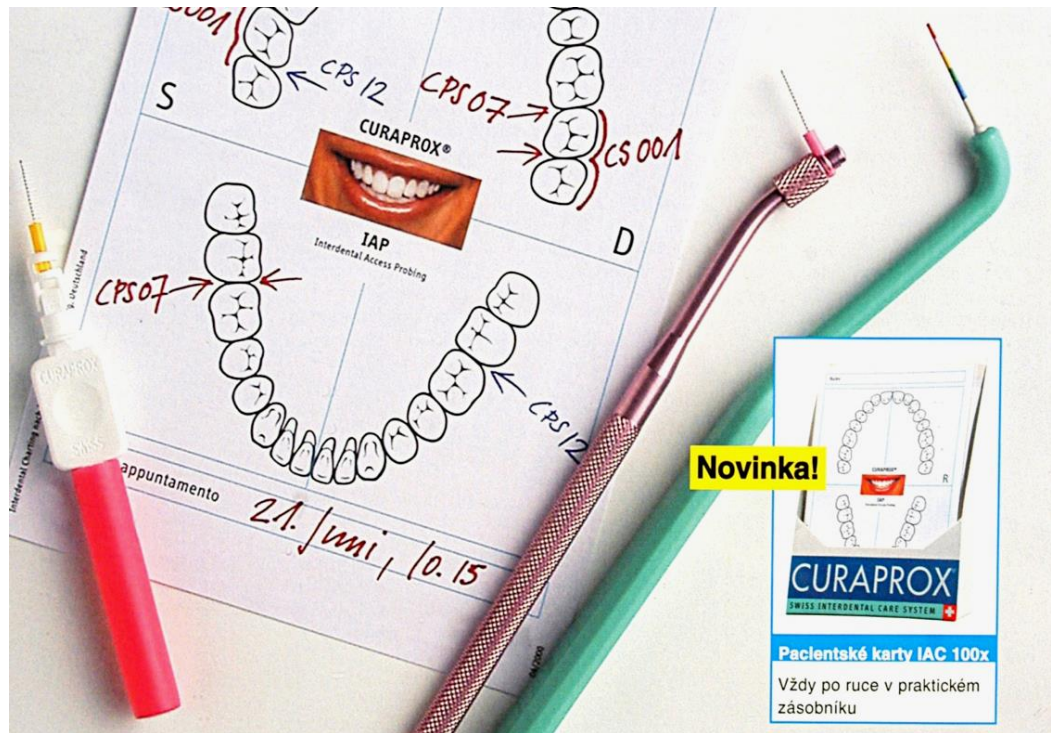
UHS 411

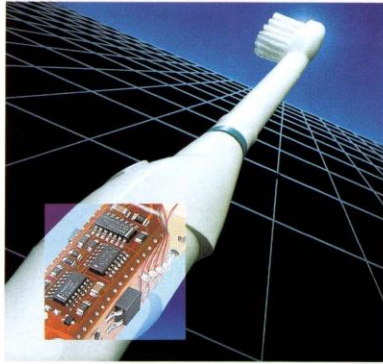
UHS 420

UHS 430
maxi-click™

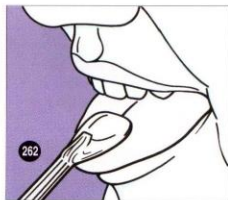
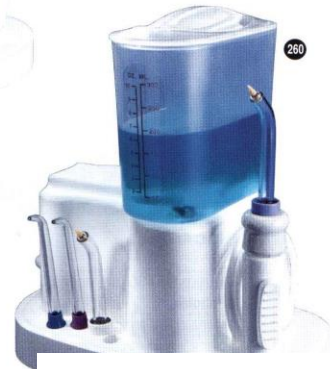
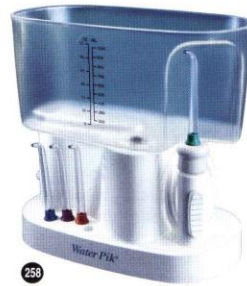
UHS 415
Inox

UHS 431
vhodný do
autoklávy





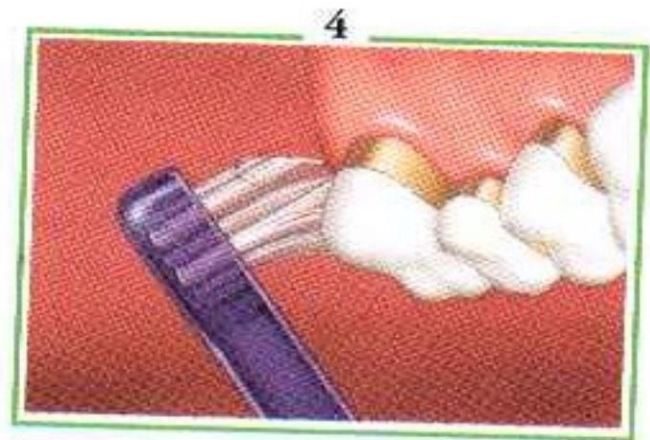
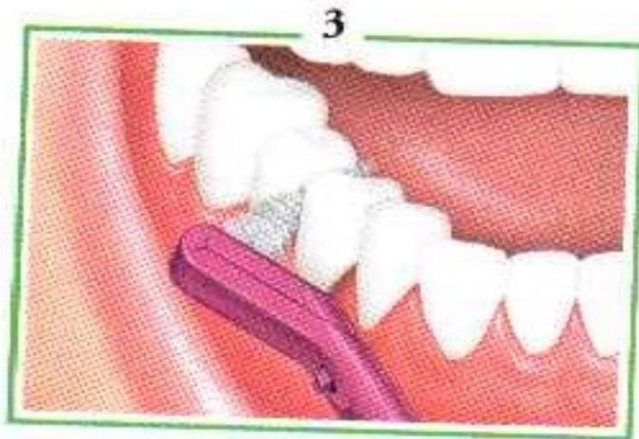
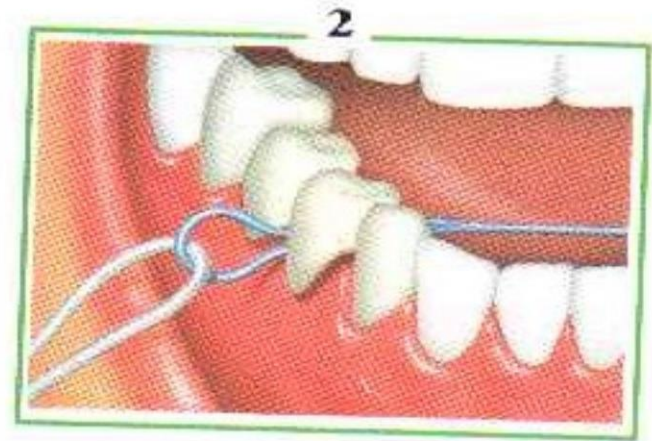
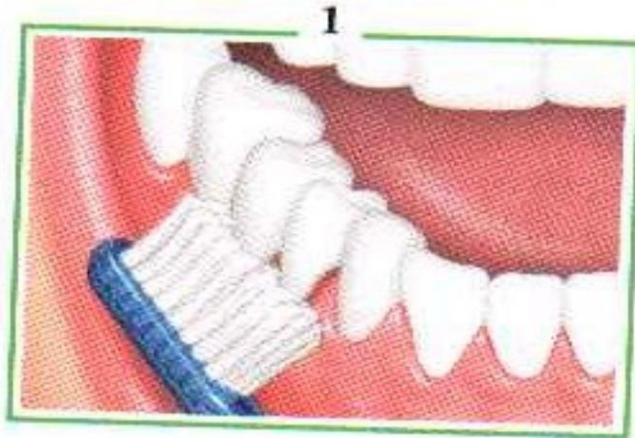
WaterPik



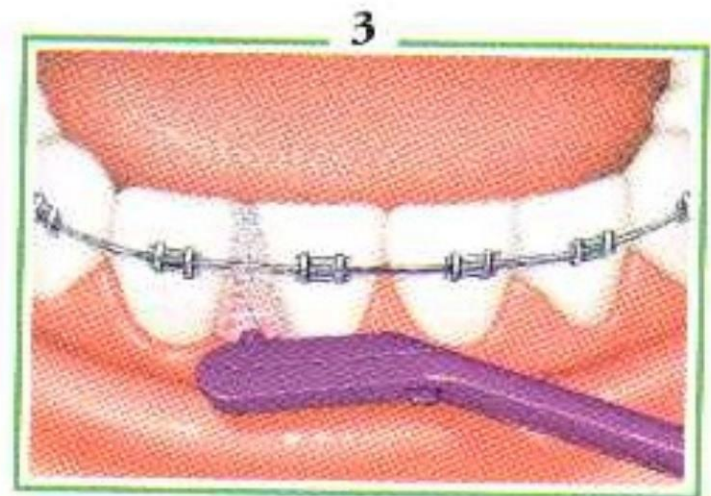
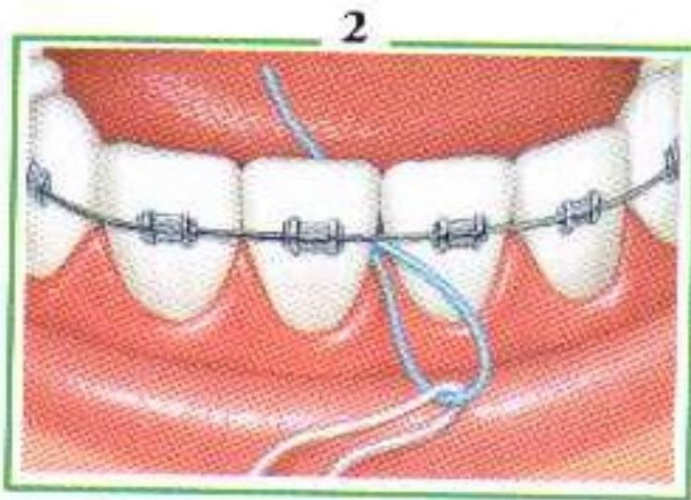
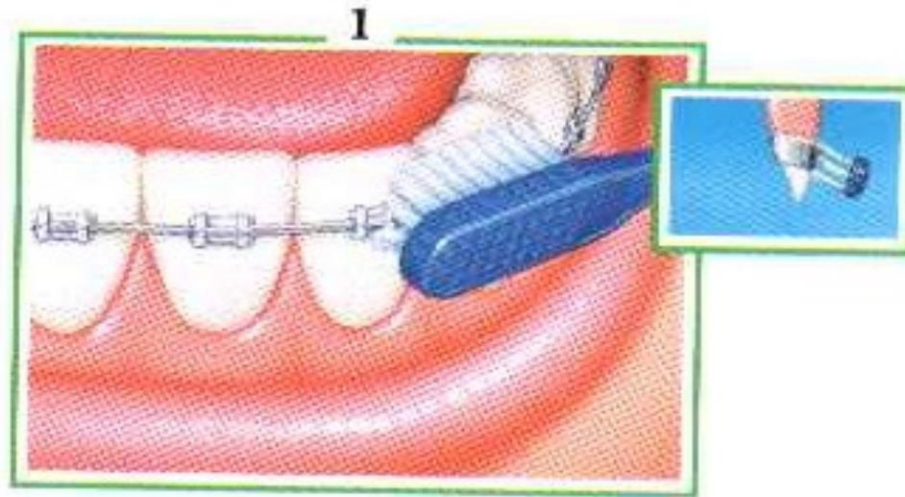
Irrigators

water sprays don't remove plaque !!!

How to clean bridges

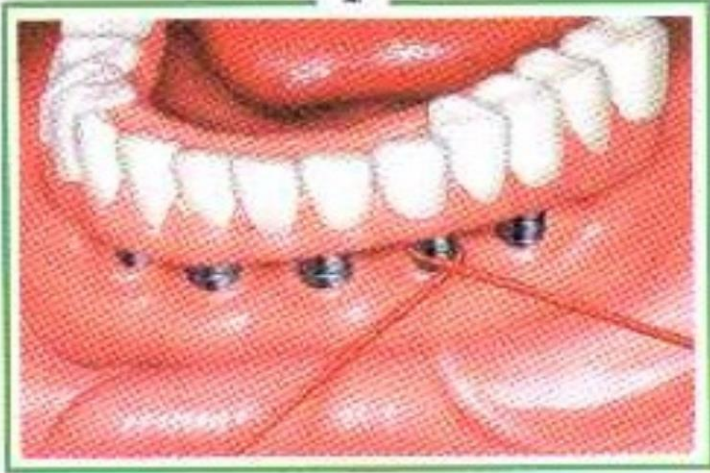


How to clean orthodontic appliances

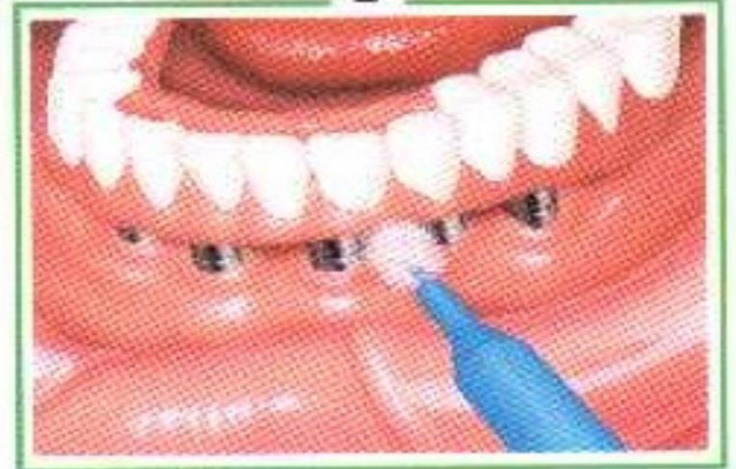


How to clean implants

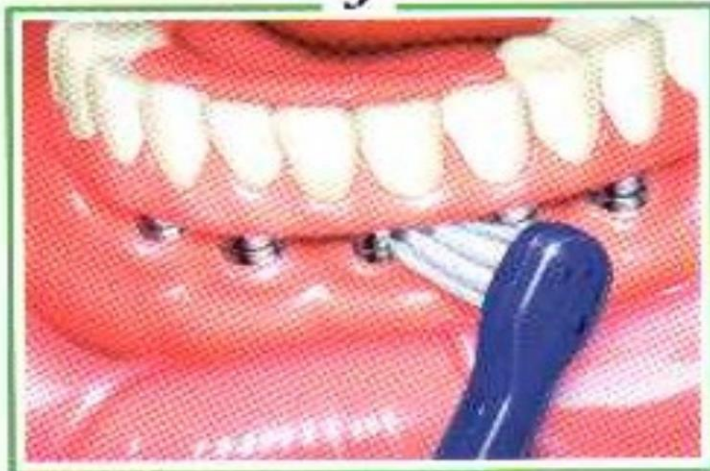
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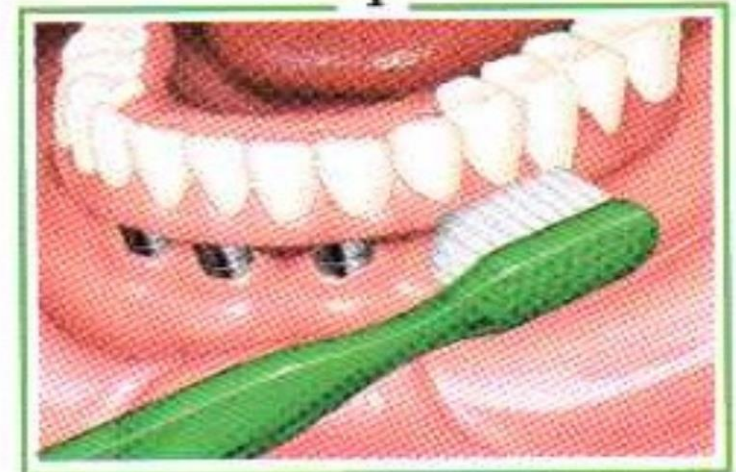
2



3



4



Toothpaste

- Abrasive - polishing compounds (improve mechanical cleaning)
- Fluorid compounds (NaF, Aminofluorid)
- Antimicrobial compounds (triclosan, CPC, CHX)
- Anticalculus compounds

Mouthwash - antiseptic agents

- Chlorhexidin (0.06 – 0.2 %) gold standard



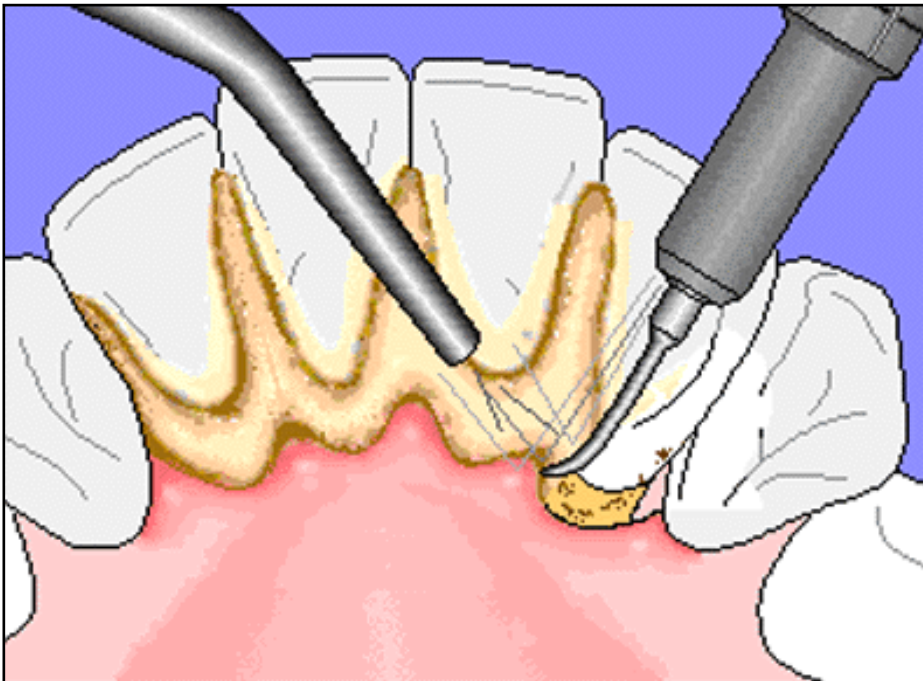
- 0,2% CHX max 2 weeks; 0,12% 0,1% 0,06%
- Unpleasant side effects
 - staining of teeth and tongue
 - taste disturbances
 - mucosal desquamation

It is not necessary to rinse daily with antiseptic mouthwash, we use it at some stage of periodontal treatment

- Adjunct during initial therapy
- Desinfection of oral cavity before dental treatment
- In handicapped patients
- Periodontal surgery

Initial phase

- 1b - Supragingival** - removal of the calculus and bacteria (hand and sonic /ultrasonic instruments)
- recontouring defective restorations and crowns



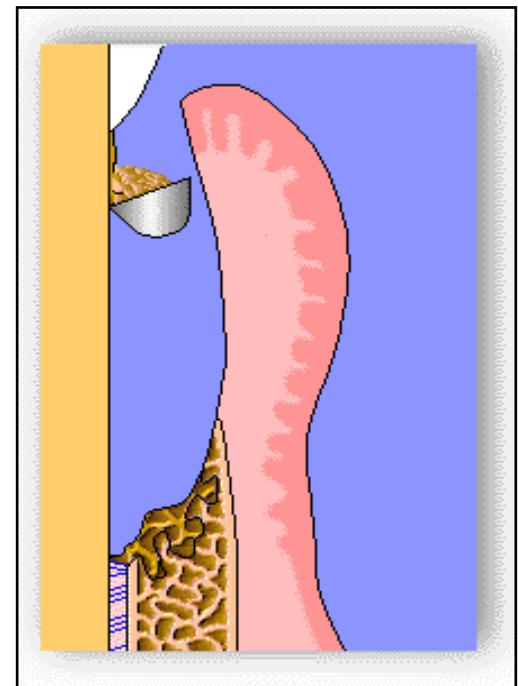
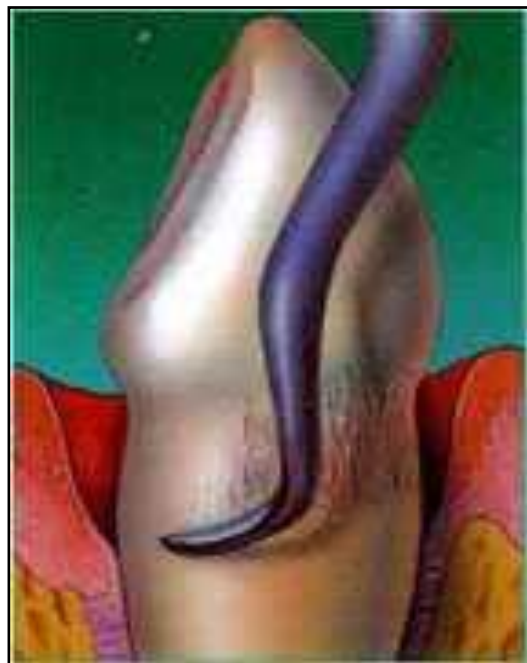
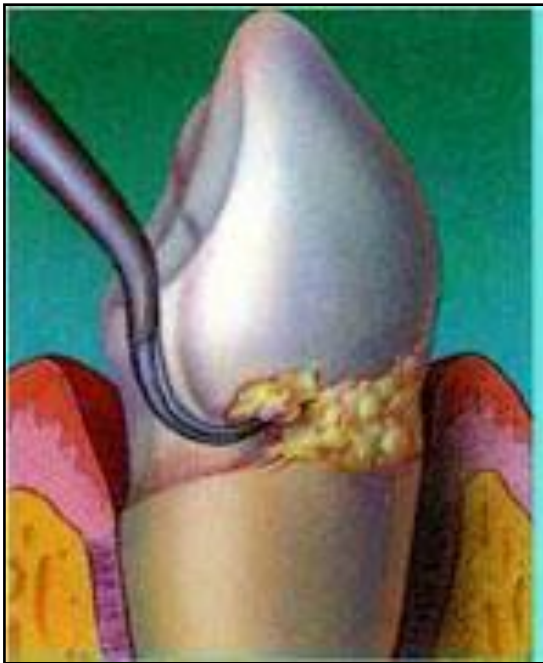


Scalers – hand instruments

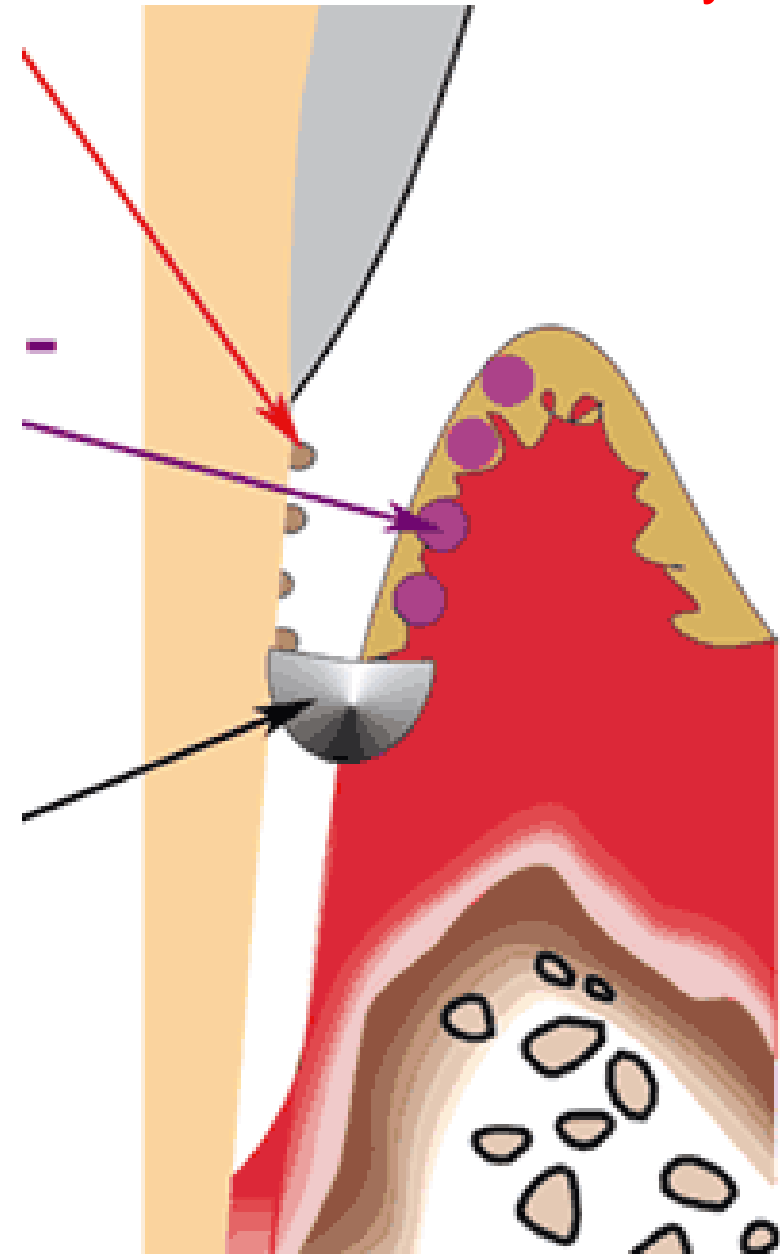


Initial phase

- 1c - Subgingival treatment of perio pocket -
scaling and root planing (SRP)
- removal of subgingival plaque and calculus
 - smoothing of the dental root surface



Gracey curettes – scaling and root planing



Results of scaling and root planing

- debridement of bacteria and calculus
- removal of infected cementum and dentin
- a shift in the microbial population

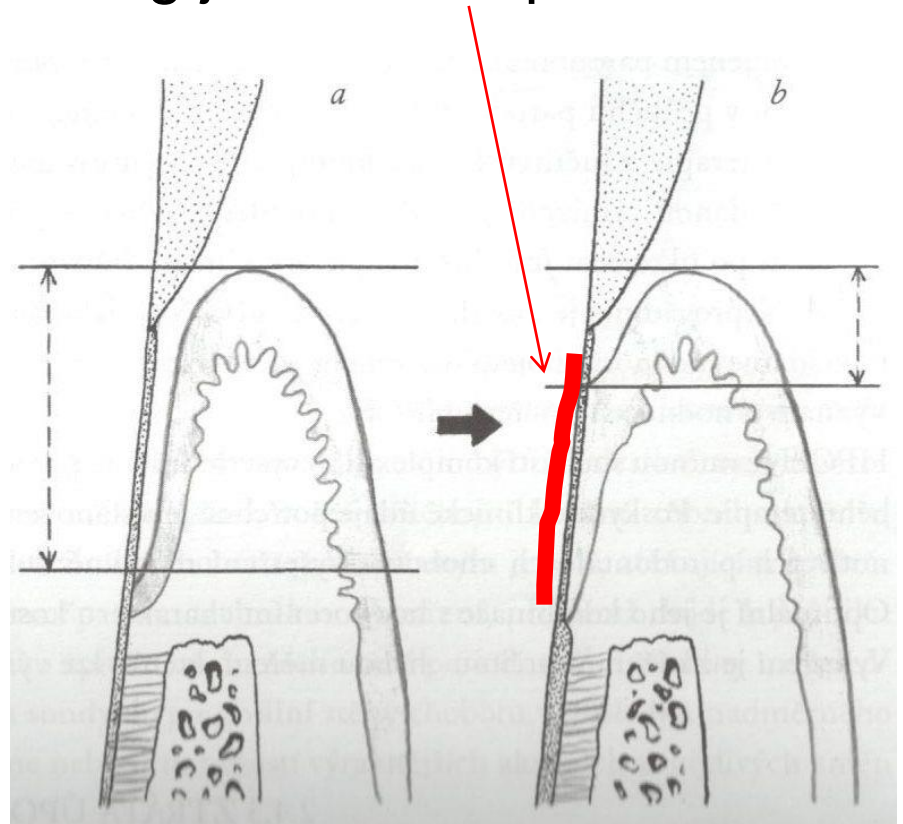
G- → G+

anaerobes → aerobes

spirochetes, rods → cocci

Healing after scaling and root planing – by repair (scar healing)

- epithelial and connective tissue
- long junctional epithelium

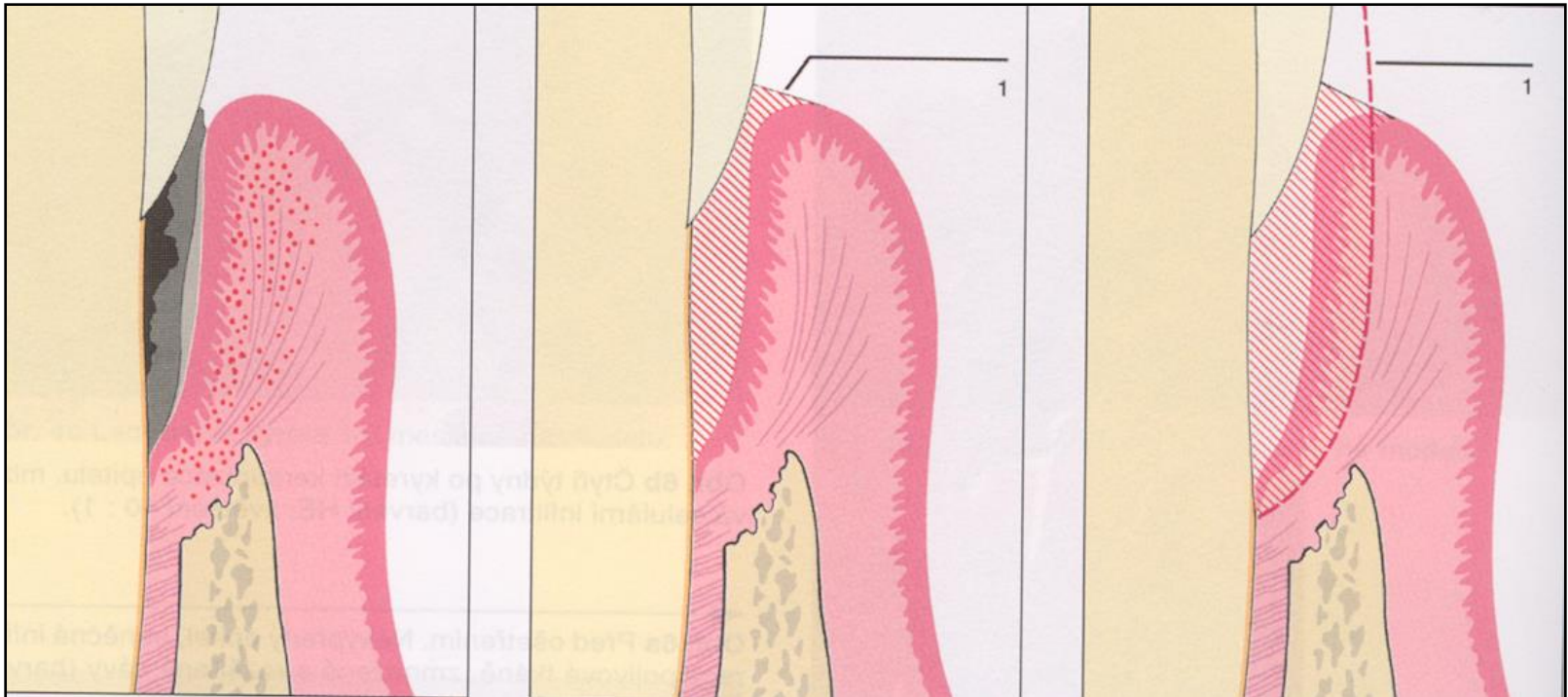


1d - Antimicrobial prophylaxis

- **Local** - oral rinse (usually with CHX) reducing growth of plaque, **CHX is not able to destroy existing plaque !!!**
- **Systemic** antibiotics treatment (against anaerobes - metronidazol, amoxycilin, tetracyclin) if needed (**aggressive periodontitis**), **always at the same time as treatment of perio pockets (SRP)**

2 - Surgical phase

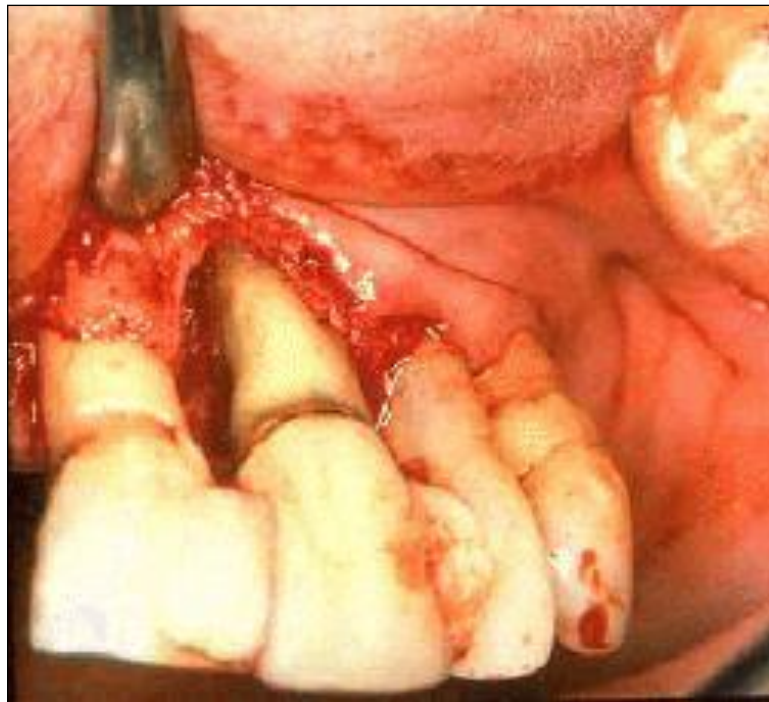
- Elimination of periodontal pockets
- Better gingival configuration
 - better conditions for oral hygiene





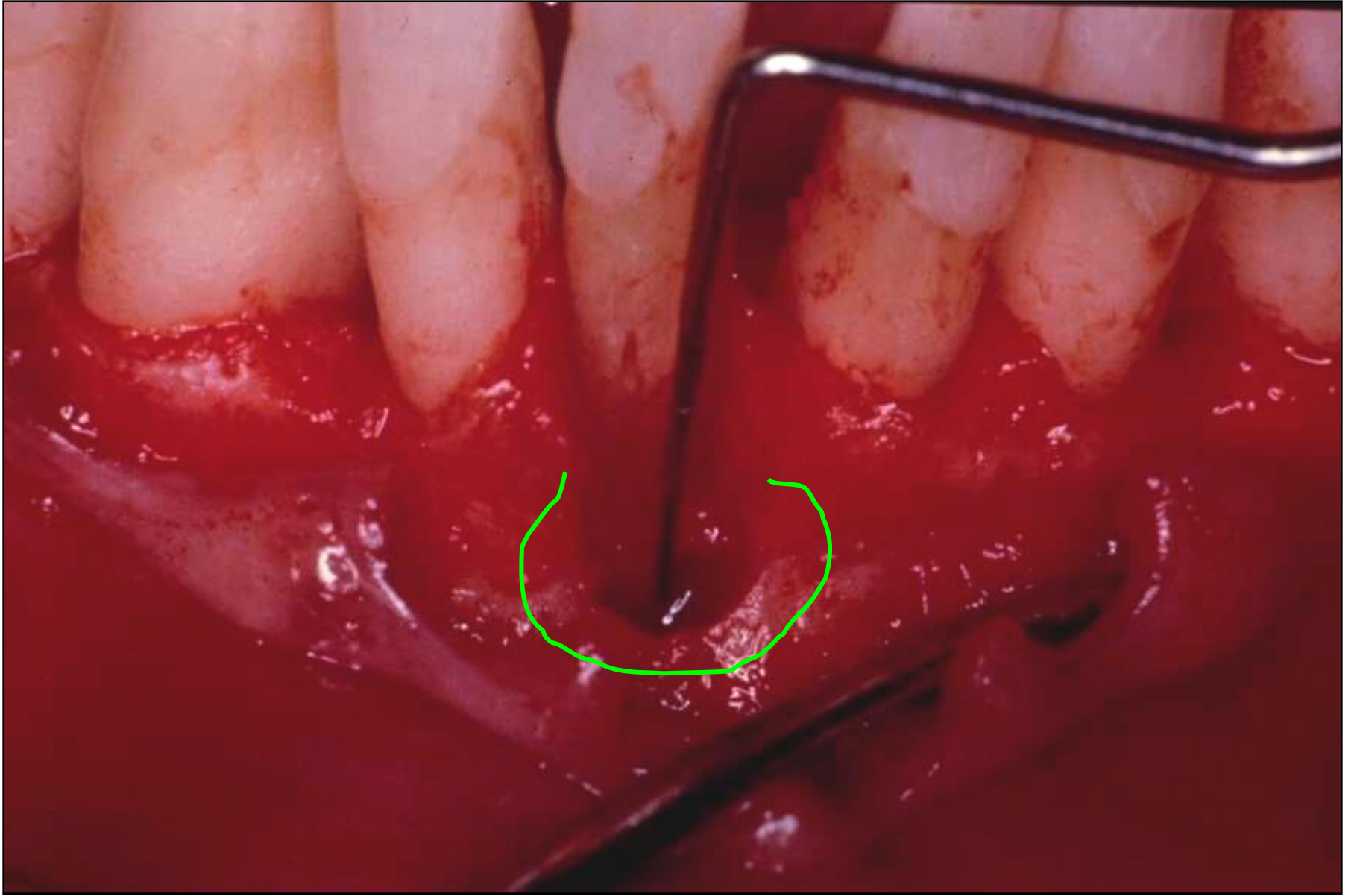
2a/ Flap surgery in case of unsuccessful conservative therapy

- treatment of a defect under direct visual control
- surgical exposure of the root by opening gingival flap
- removal of residual subgingival plaque and calculus
- smoothing of the dental root surface
- open operation field
- the flap is raised and then fixed



Flap surgery – open flap curettage

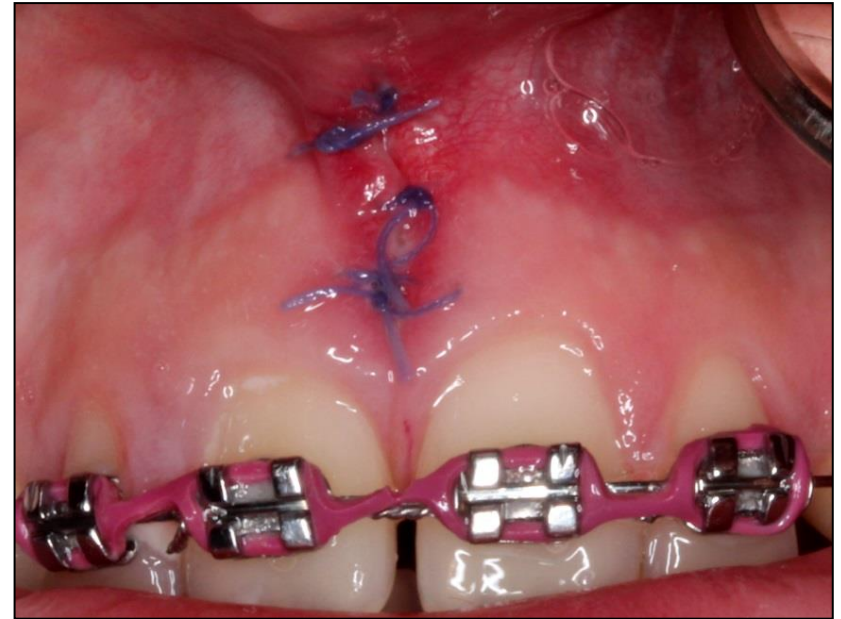




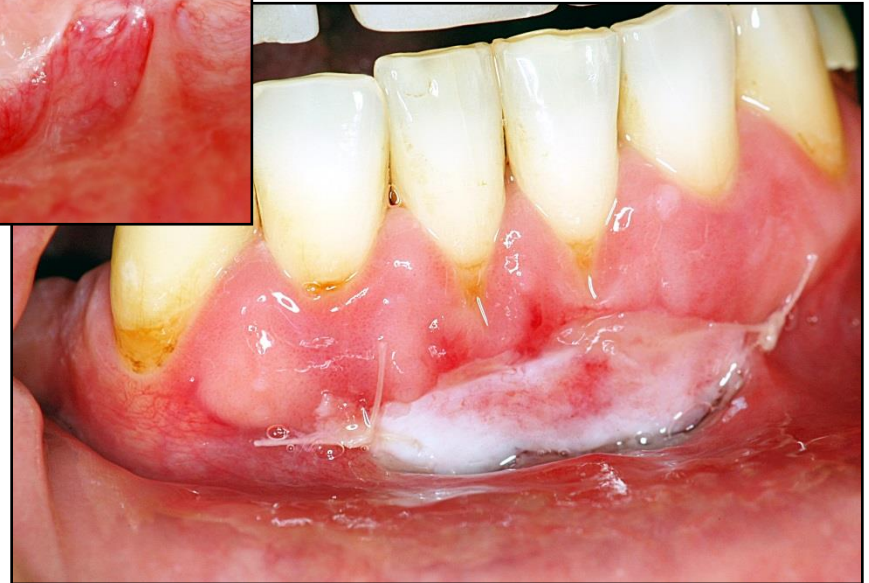
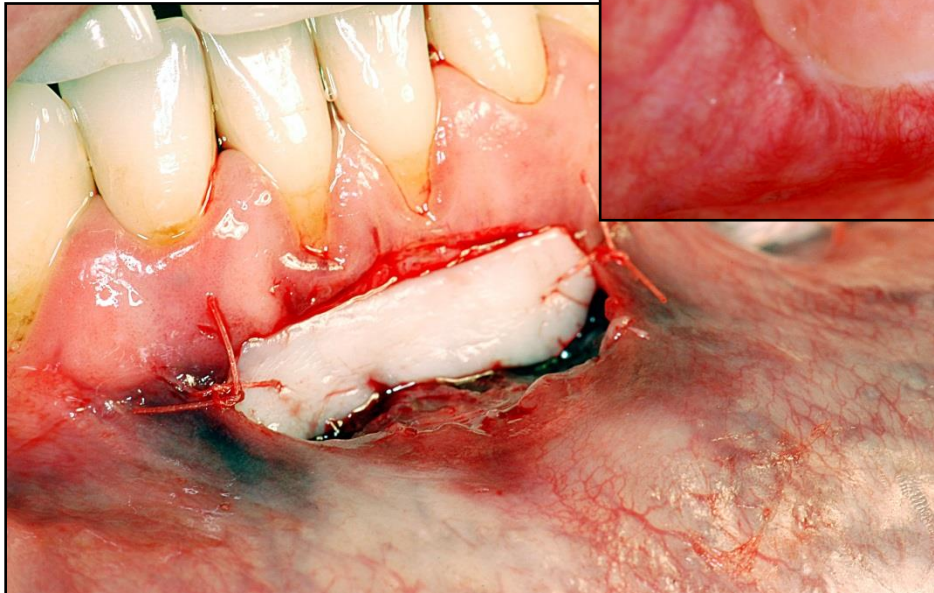
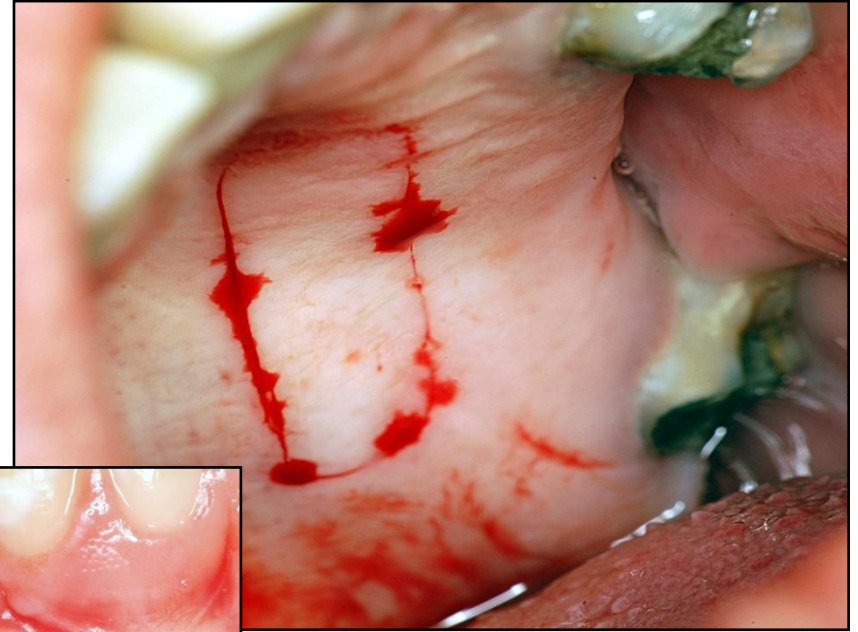
2b/ Mucogingival surgery

- Periodontal-prosthetic corrections • Crown lengthening • Socket preservation • Ridge augmentation • Esthetic surgical corrections • Coverage of the denuded root surfaces • Reconstruction of papillae • Esthetic surgical correction around implants •

Upper frenulectomy in connection with ortotreatment of diastema



Enlargement of attached gingiva with epithelial graft from palate



Clean teeth are the main condition of healthy teeth and periodontium

