

# Operational techniques in periodontology

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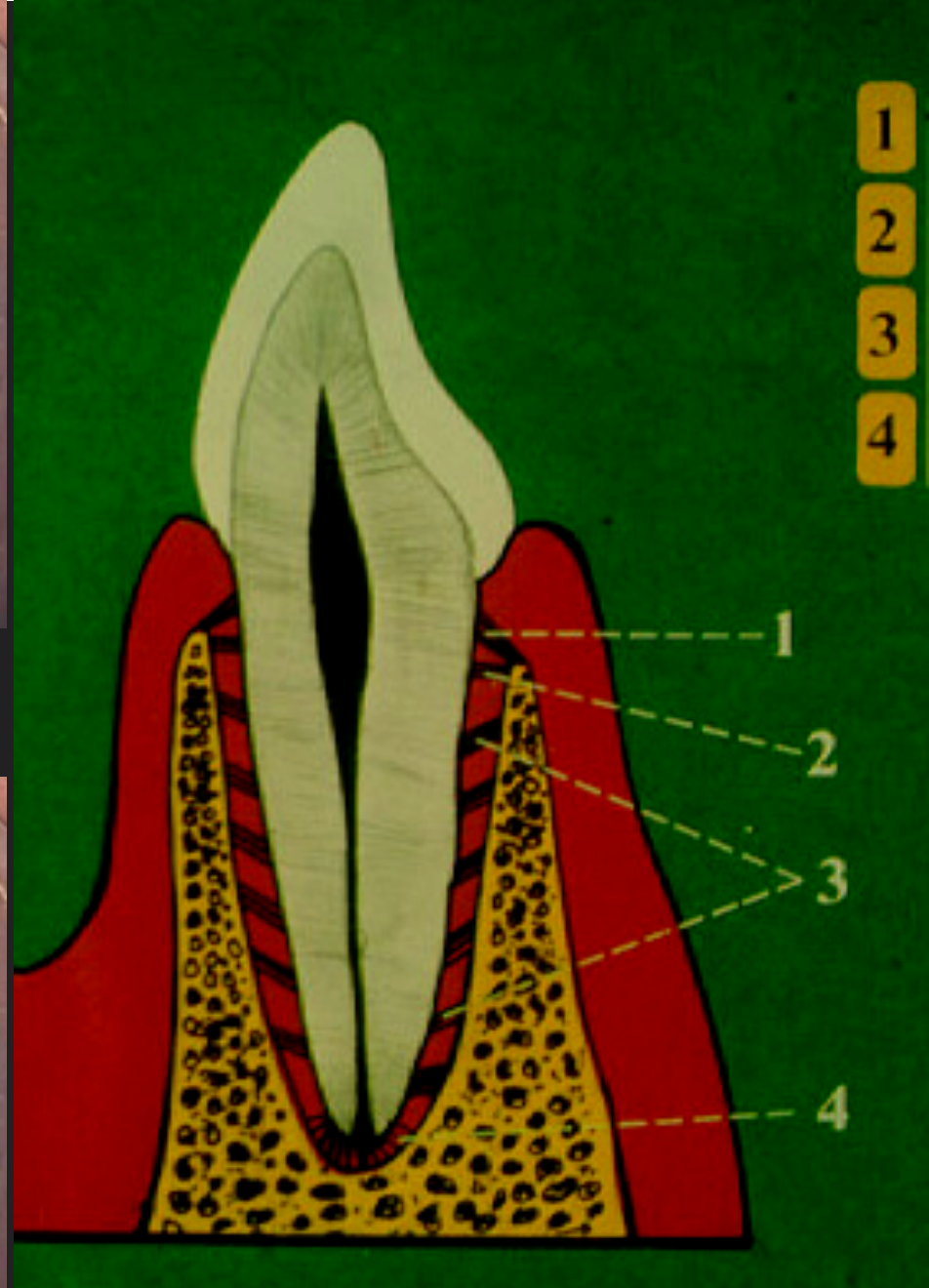


## **PERIODONTIUM**

### **SUPPORTING TISSUES OF THE TEETH**

- 1 . GINGIVA
2. CEMENTUM
3. PERIODONTAL (SHARPEY'S)  
LIGAMENTS
4. ALVEOLAR BONE





# **DENTAL PLAQUE - CAUSATIVE FACTOR OF MOST PERIODONTAL DISEASES**







**MASSIVE  
SUPRAGINGIVAL  
DENTAL CALCULUS**



QUITE GOOD ORAL  
HYGIENE, BUT HUGE  
QUANTITY  
SUBGINGIVAL  
CALCULUS  
FORMATION





Dental plaque



Gingivitis



Periodontitis



## **GINGIVITIS:**

**DISEASE OF THE FREE  
GINGIVAL MARGIN**

**DEFENSIVE MECHANISMS  
AGAINST DENTAL PLAQUE**





**TOOTH MOBILITY**

**ATTACHEMENT-LOSS** 00 2 26

**PERIODONTITIS:**

**IRREVERSIBLE  
DERANGEMENT OF THE  
ATTACHING APPARATUS**

**RESULT OF THE INSUFFICIENT  
GINGIVAL IMMUN-DEFENSE**

Dental plaque  
**WHY DOES NOT**

**EVERYBODY WITH**

**POOR ORAL**  
Gingivitis  
**HYGIENE SUFFER**

**FROM**

**PERIODONTITIS???**  
Periodontitis



Dental plaque

```
graph TD; A[Dental plaque] --> B[Gingivitis]; B --> C[Periodontitis]; C --> D[Severe periodontitis]; E[Risk factors] --> B; E --> C;
```

The diagram illustrates the progression of periodontal disease. It starts with 'Dental plaque' in a light green box, which leads to 'Gingivitis' in a blue box. From 'Gingivitis', the progression leads to 'Periodontitis' in a red box, and finally to 'Severe periodontitis' in a red box. A green box on the left, titled 'Risk factors:', lists 'Genetics', 'Behavioural', 'Systemic conditions', and 'Local factors'. Two green arrows point from this box to the transitions between 'Gingivitis' and 'Periodontitis', and between 'Periodontitis' and 'Severe periodontitis'.

Gingivitis

Periodontitis

Severe periodontitis

**Risk factors:**

- Genetics
- Behavioural
- Systemic conditions
- Local factors



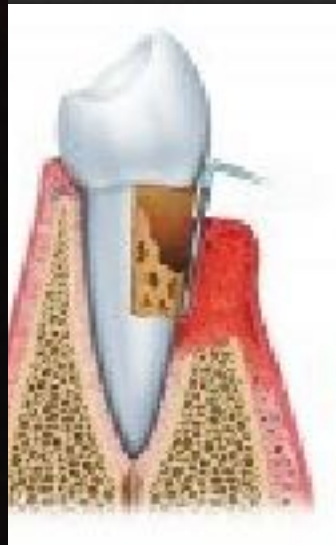
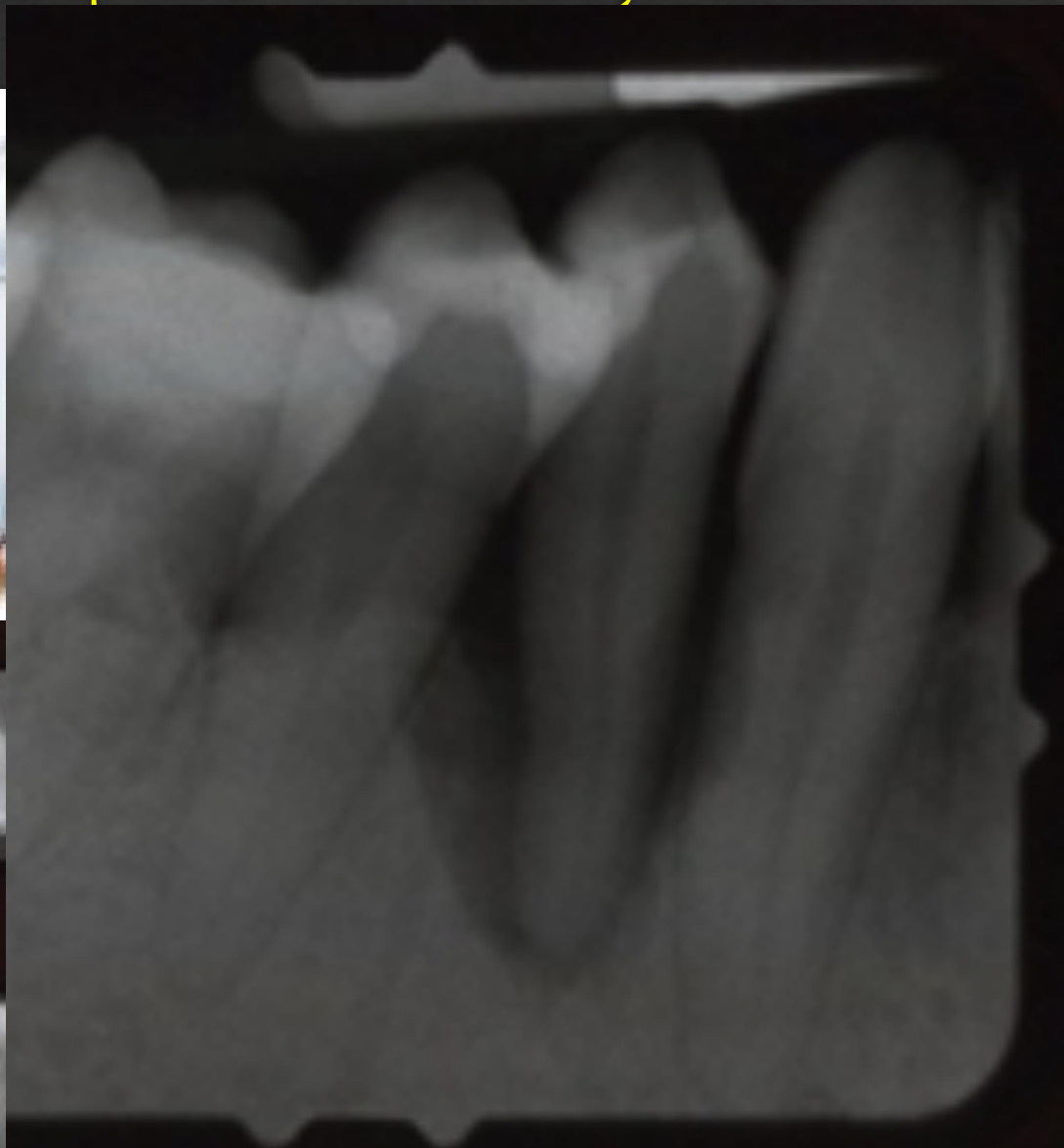
## **ROBUST SUPRA- AND SUBGINGIVAL PLAQUE AND CALCULUS**

**THE SUBGINGIVAL PLAQUE EXISTS  
INDEPENDENTLY, CREATES A MASSIVE  
BIOFILM, WHICH CAN BE ELIMINATED  
ONLY BY MECHANICAL MEANS OF  
PROFESSIONAL CLEANING**





Progression: pocket formation, bone- and attachment loss





**SEVERE ALVEOLAR  
BONELOSS**



Cause related periodontal treatment: forgo the surgical therapy



# Types of periodontal surgical therapy, aims

1. *Resective period. surgery*
2. *Regenerative surgery*
3. *Mucogingival (perio plastic) surgery*

## Aims:

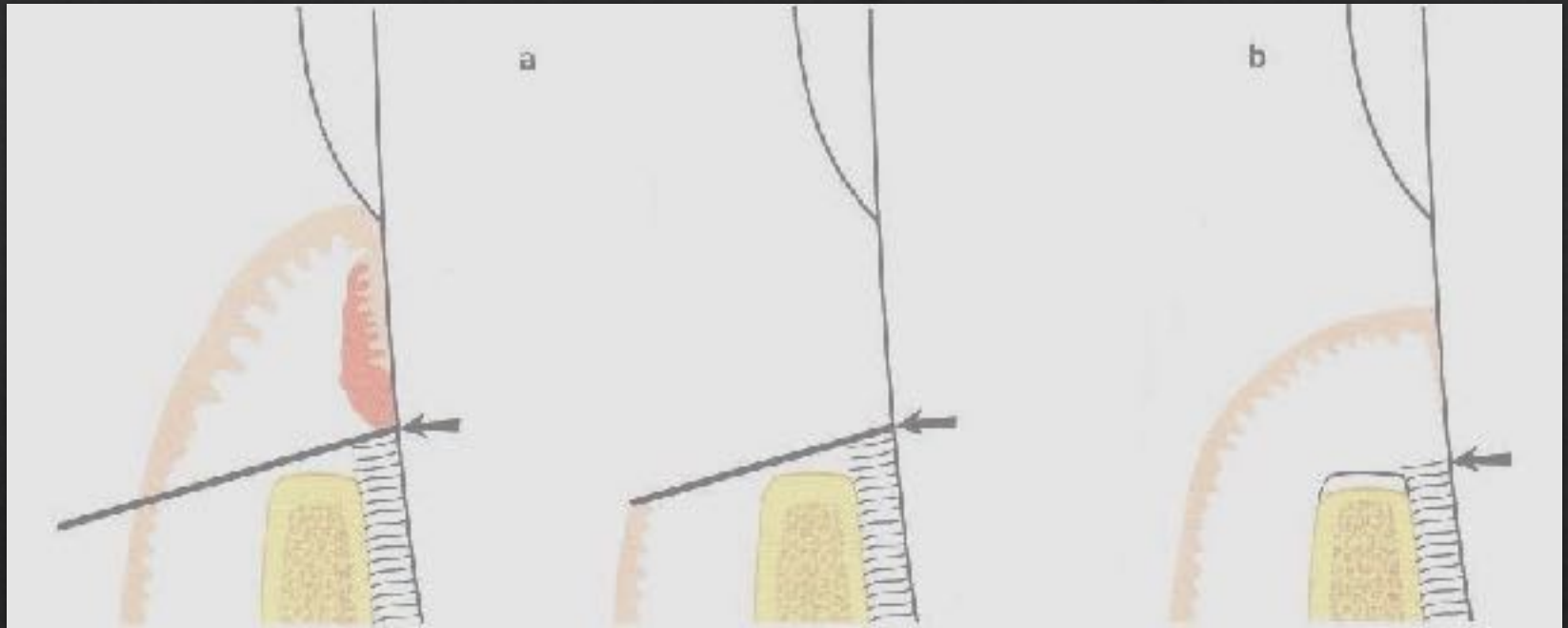
- support cause related period. treatment, thorough root surface debridement with visual control
- pocket depth reduction (establish complete inflammation-free state)
- regain attachment, improve prognosis of the teeth
- gain a marginal gingiva and bone contour, which functions and looks like as the original one
- improve esthetics, (reduce cervical hypersensitivity)

# I. Resective period. surgical techniques

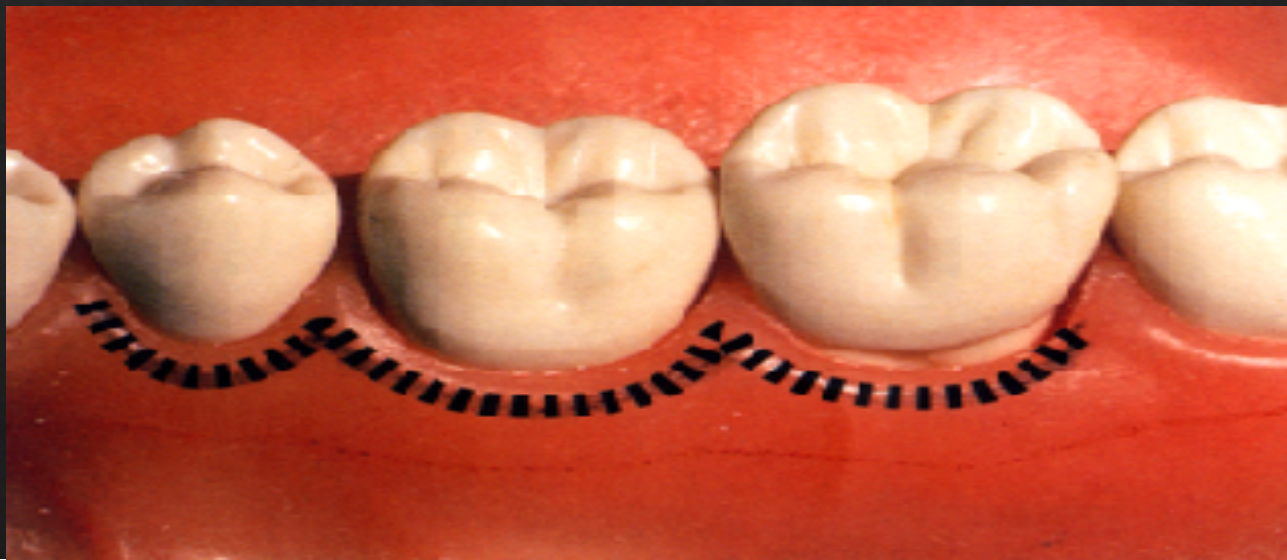
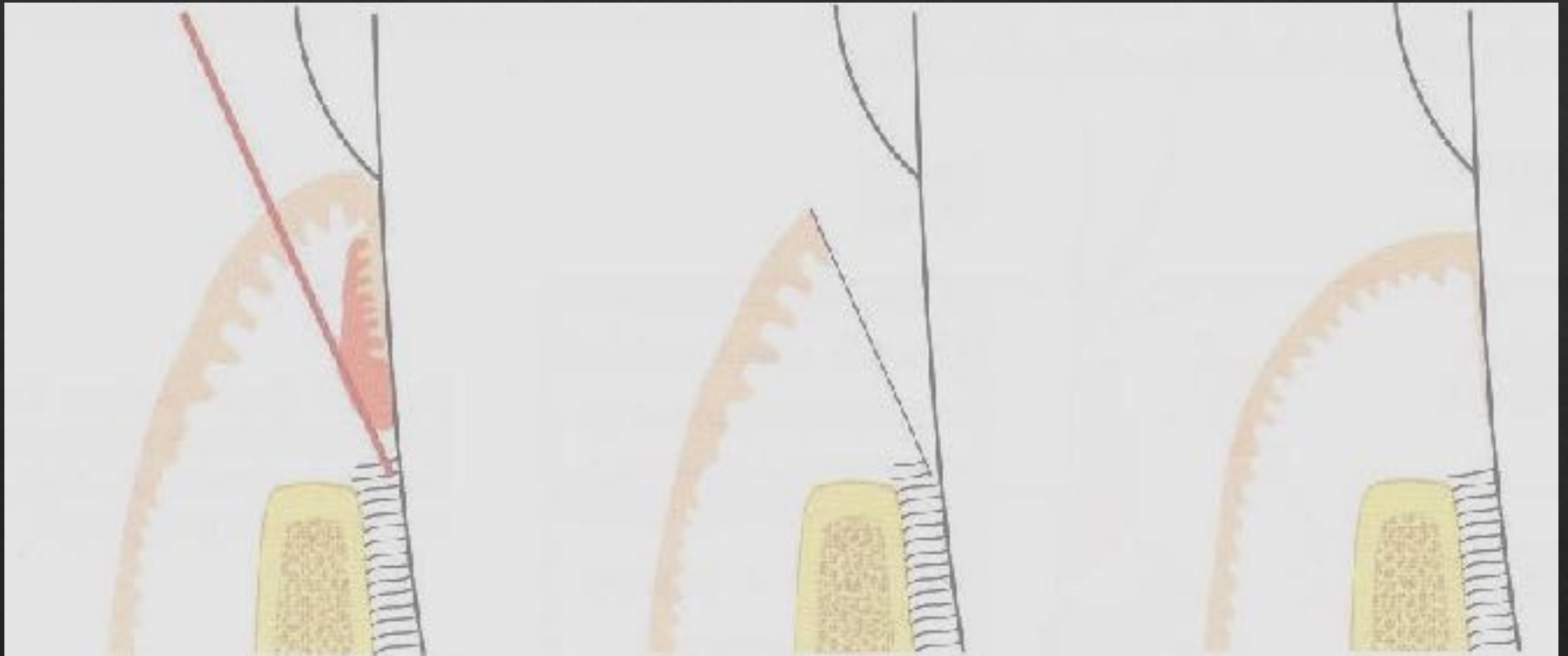
- ◊ *Gingivectomy (conventional, internal bevelled reversed)*
- ◊ *Apically transpositioned flap*
- ◊ *Modified- Widman flap*



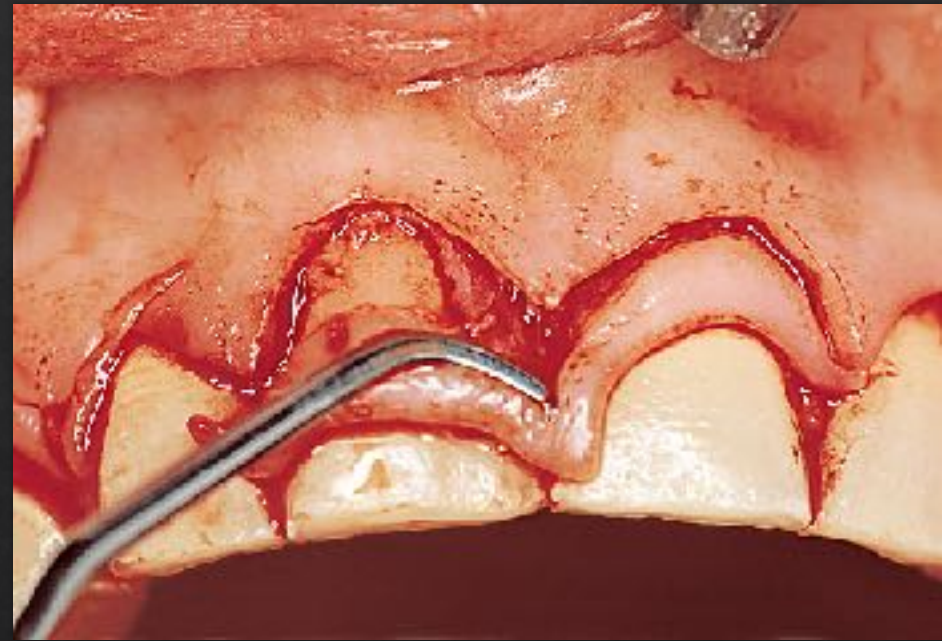
# I. Resective: Gingivectomy



# Internal bevelled reversed incision



# 1. Resective: internal bevelled reversed gingivectomy



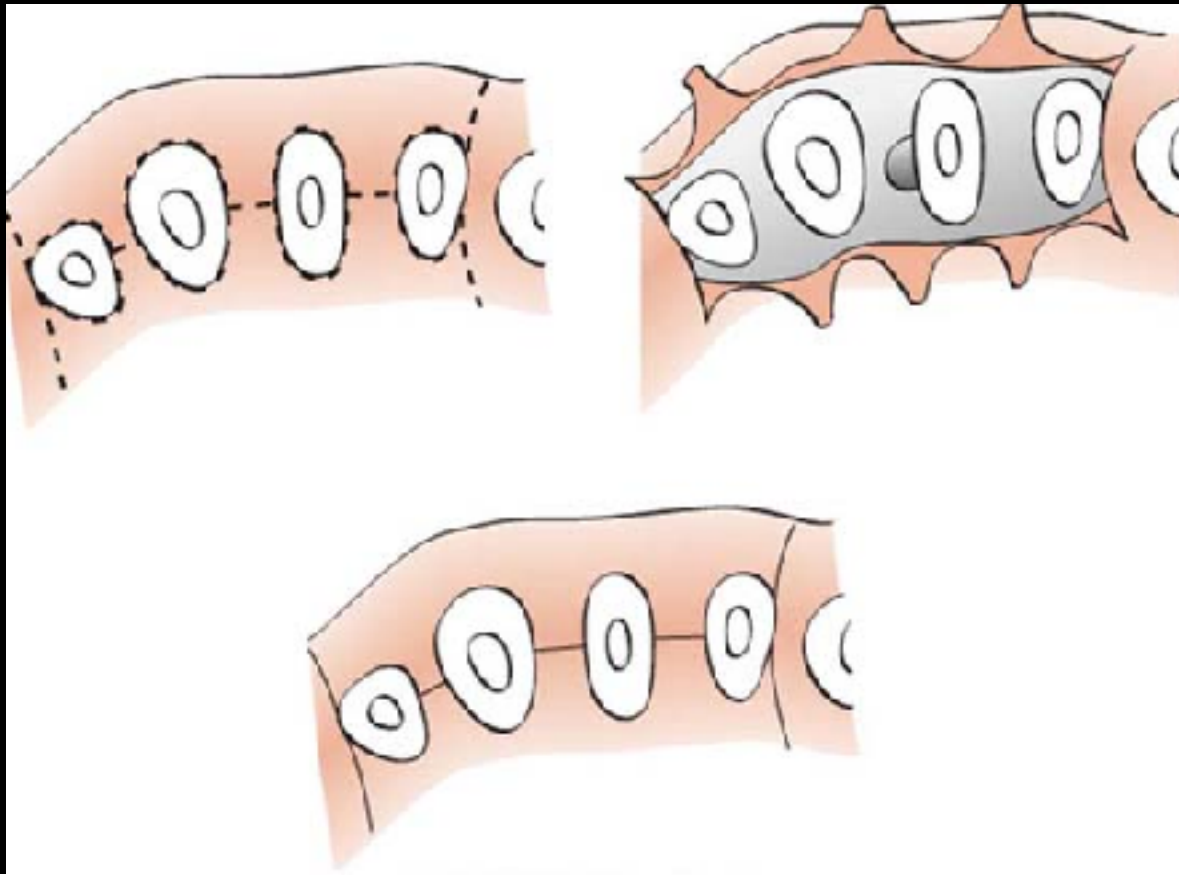


# I. Resective: internal bevelled reversed gingivectomy

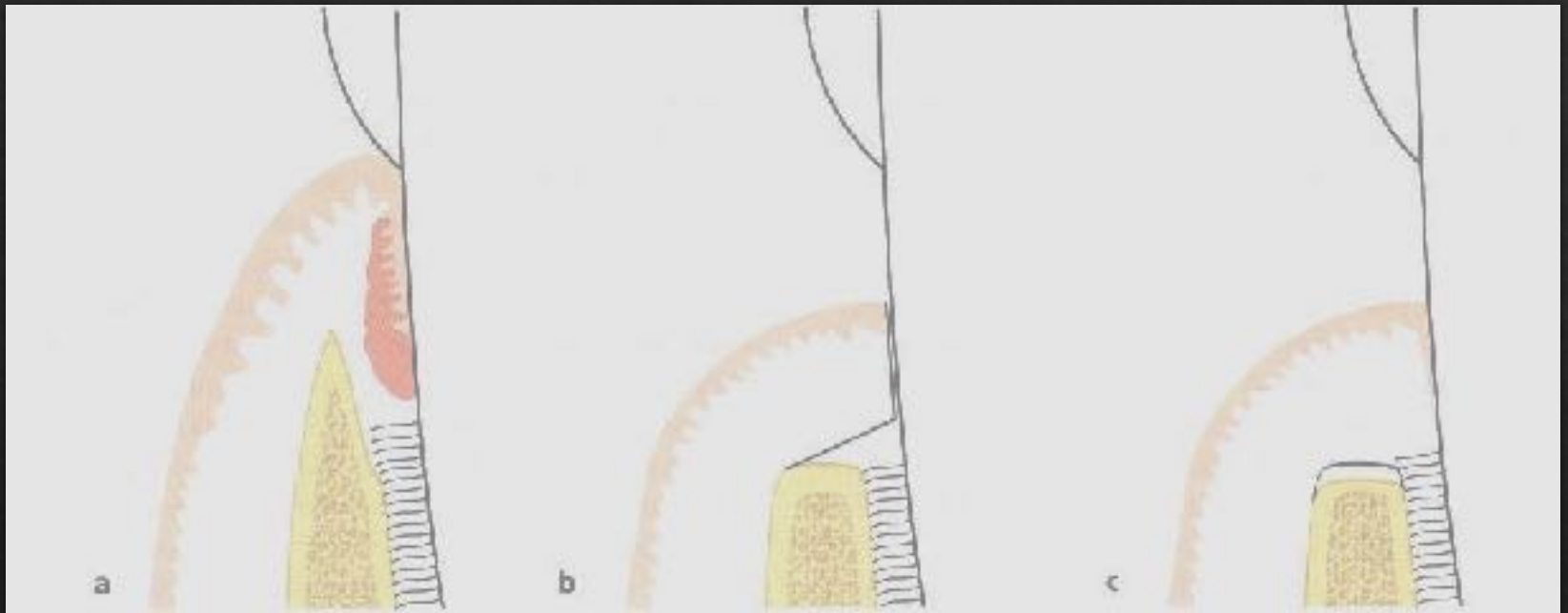


# I. Resective: pocket surgery with flaps!!

THE INCISION FOLLOWS THE ORIGINAL GINGIVAL CONTOUR AND WE CUT THROUGH THE PAPILLA INTERDENTALLY IN THE MIDDLE, TRY TO PRESERVE AS MUCH GINGIVAL TISSUES AS POSSIBLE TO GAIN A BETTER INTERDENTAL FLAP CLOSURE



# I. Resective: apically transpositioned flap







## **APICALLY TRANSPOSITIONED FLAP AIMING POCKET DEPTH REDUCTION**

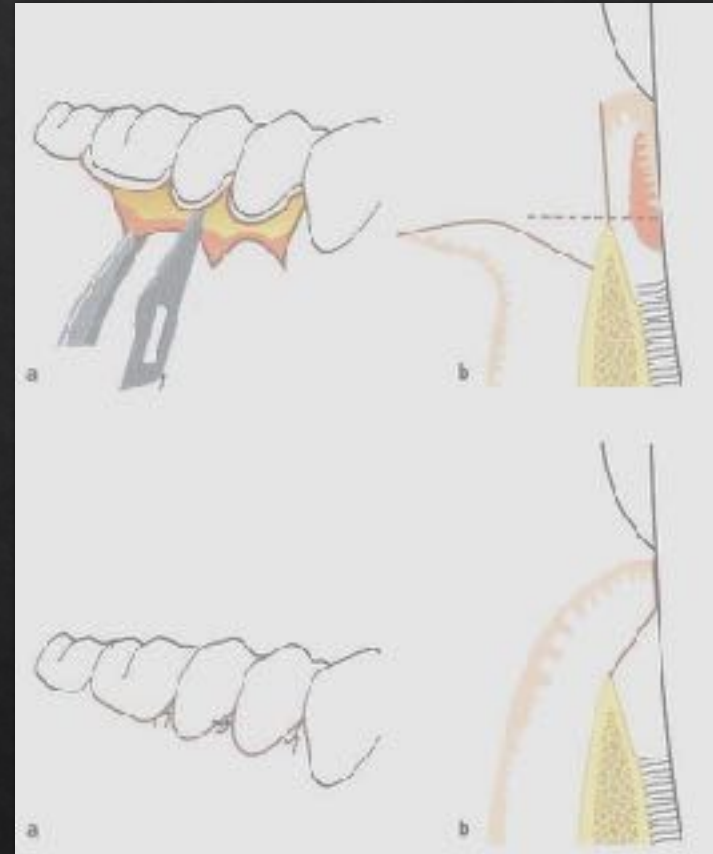
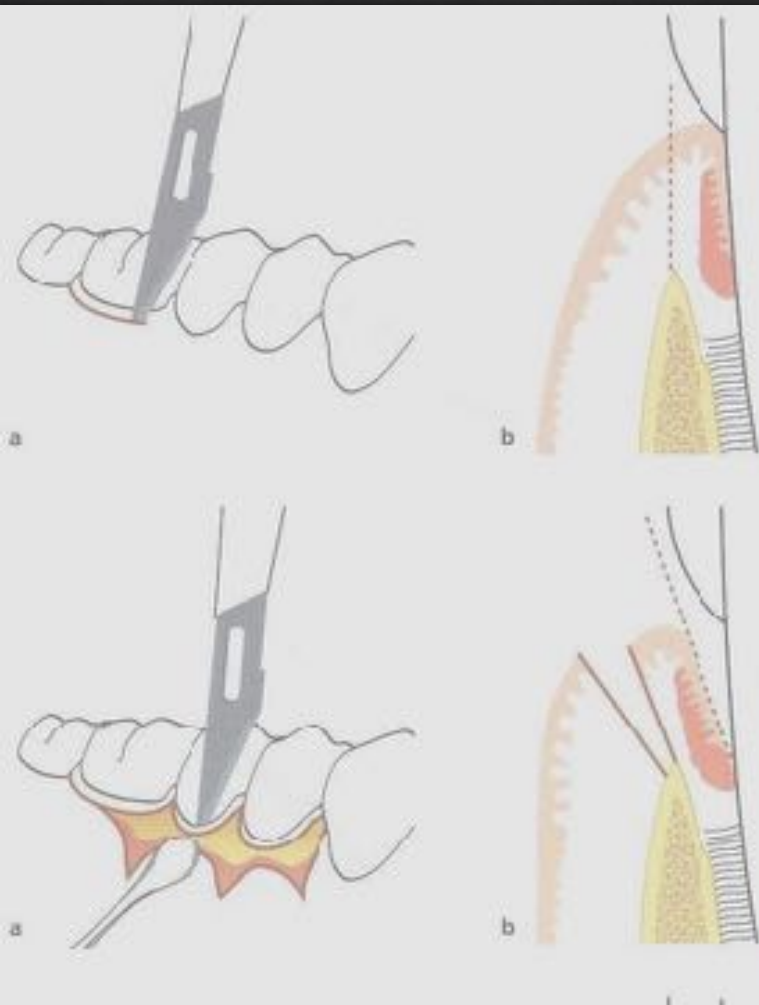




***APICALLY TRANSPOSITIONED FLAP + OSTEOTOMY***



# I. Resective: modified-Widman flap





# I. Rezekatív: modified-Widman flap



# I. Resective: modified-Widman flap



## II. Regenerative surgical techniques:

- GTR (guided tissue regeneration)= MEMBRANES
- Biological modifiers (ENAMEL MATRIX PROTEIN=Emdogain)
- Bone fillers
- Combined techniques



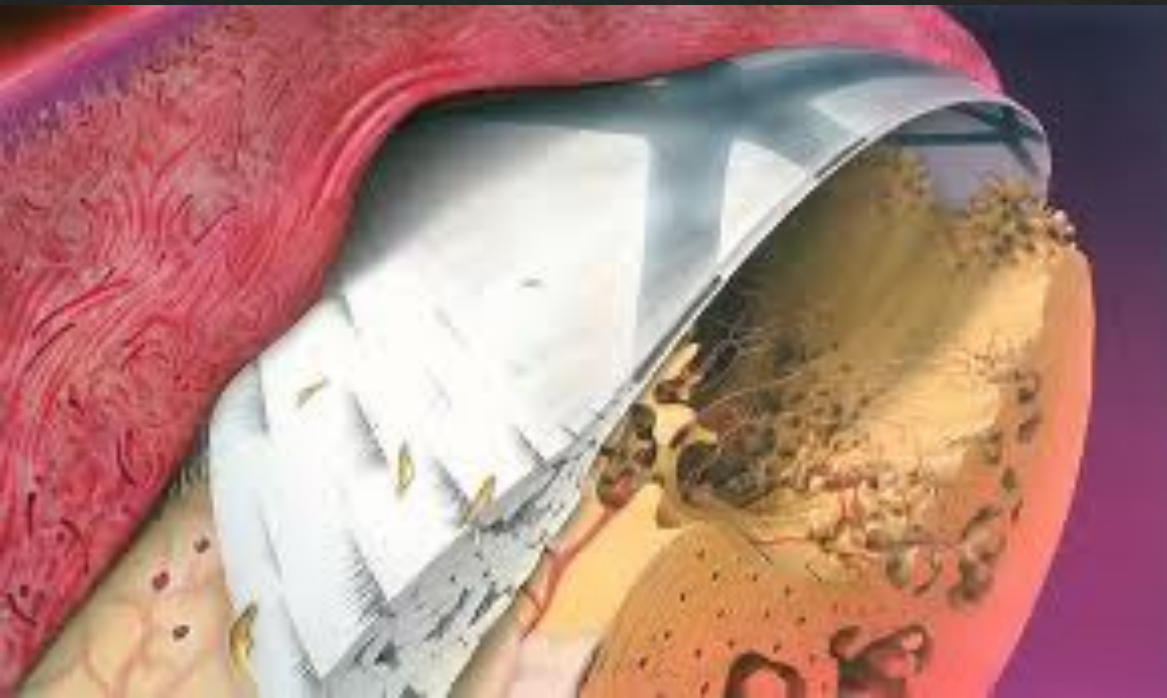
## II. Regenerative: GTR



After cleaning, a special membrane is inserted between the gum and bone.



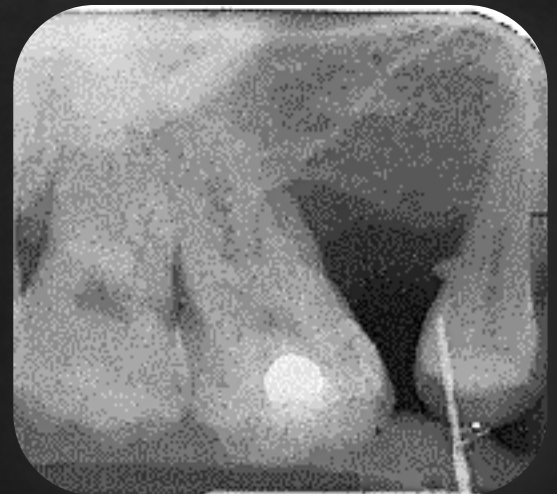
The membrane blocks unwanted tissue, allowing ligament fibers and bone to grow. Once strong ligament fibers attach root to bone, the membrane dissolves or is removed.



Needleman IG, Worthington HV, Giedrys-Leeper E, Tucker RJ. Guided tissue regeneration for periodontal infra-bony defects. *Cochrane Database Syst Rev.* 2006 Apr 19;(2):CD001724. Review.

# II. Regenerative: GTR

Initial state





## II. Regenerative: GTR

### Incision, flap elevation





## II. Regenerative: GTR

Flap releasing, membrane shaping



## II. Regenerative: GTR

Defect filling with bone substitute, covering it with the membrane



## II. Regenerative: GTR

### Wound closure, control X-ray





## II. Regenerative: GTR

1 week postoperative



2 weeks postoperative

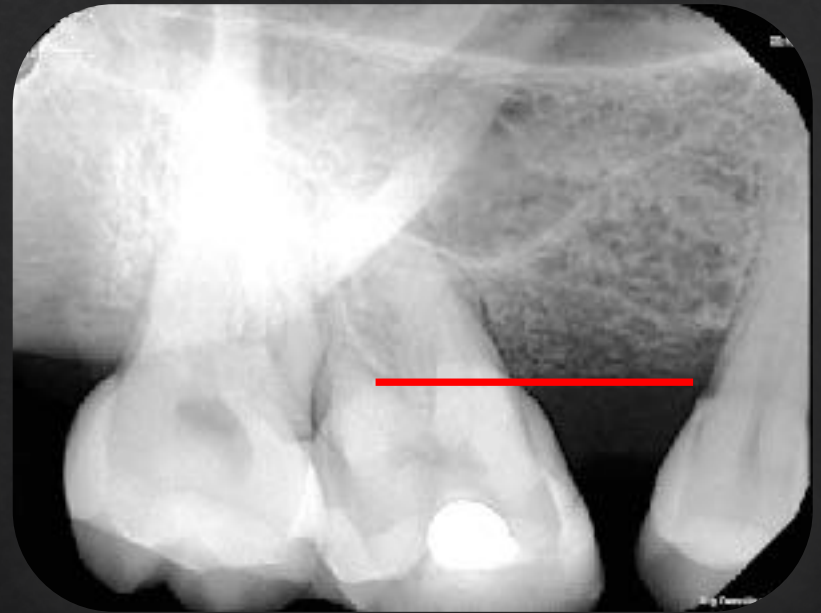
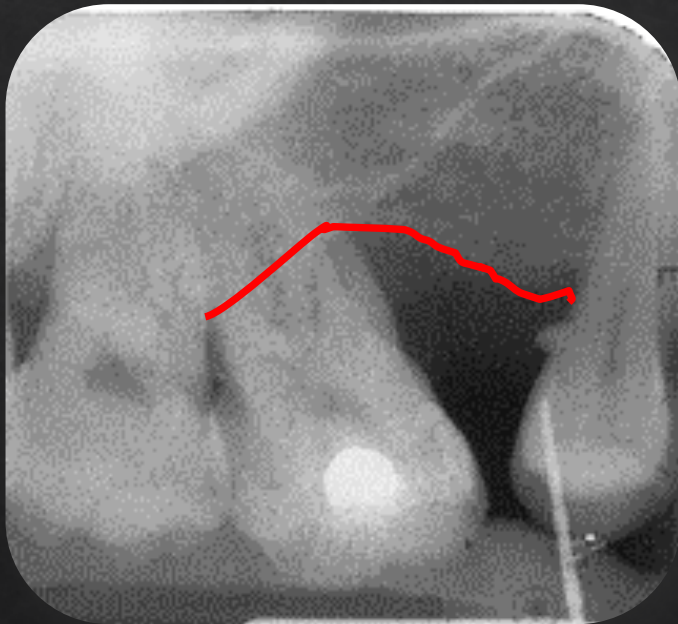


## II. Regenerative: GTR



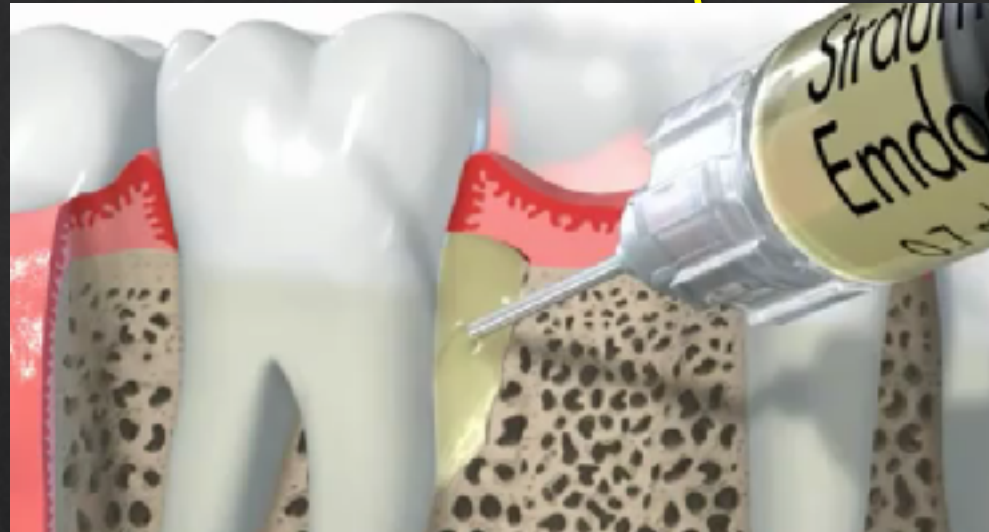
Initial

## II. Regenerative: GTR Half year postoperative





## II. Regenerative: Emdogain (enamel matrix protein)



1 When Straumann Emdogain is applied, the enamel matrix derived proteins penetrate the defect surface to form a matrix layer.



2 The matrix induces the attraction and proliferation of epithelial cells from the healthy part of the periodontium.



3 The cells become oriented and specific cytokines and growth factors stimulate the secondary proliferation.



4 Supporting cells are attracted and differentiate into cementoblasts which are active for formation of the cement matrix in which the periodontal fibers will be fixed.



5 The newly formed cement layer increases in thickness, anchoring the periodontal ligament.



6 Within months, the defect fills with newly formed periodontal ligament.



7 As the periodontal ligament is formed, more bone continues to develop.

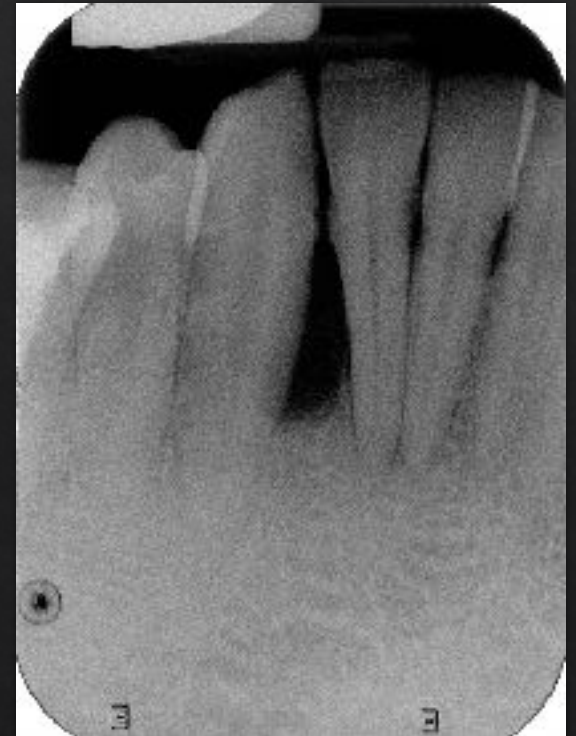


8 Success: If Emdogain is used in the regeneration of a complete dental structure of the periodontium, building a new functional attachment.

**Tonetti MS, Lang NP, Cortellini P, et al. Enamel matrix proteins in the regenerative therapy of deep intrabony defects. J Clin Periodontol 2002;29:317-325.**

## II. Regeneratív: Emdogain (zománemártix protein)

Preoperative clinical and radiological pictures

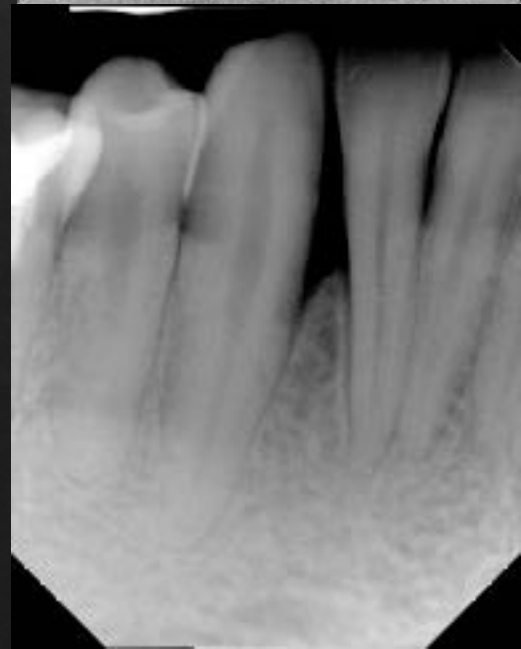


## II. Regenerative: Emdogain (enamelmatrix protein)





## II. Regeneratív: Emdogain (zománemártix protein) 9th month result



## II. Regenerative: Bone fillers

Granule type



## II. Regenerative: Combination (Emdogain + bone filler)

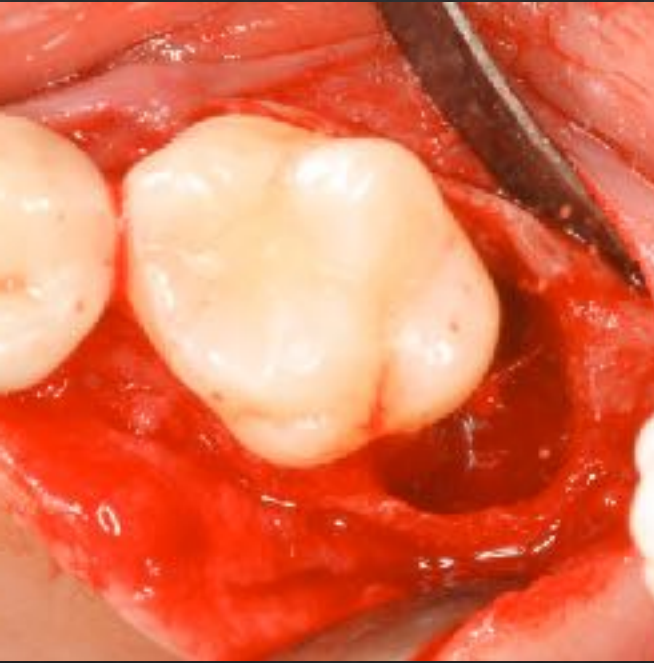
Preoperative clinical and radiological pictures





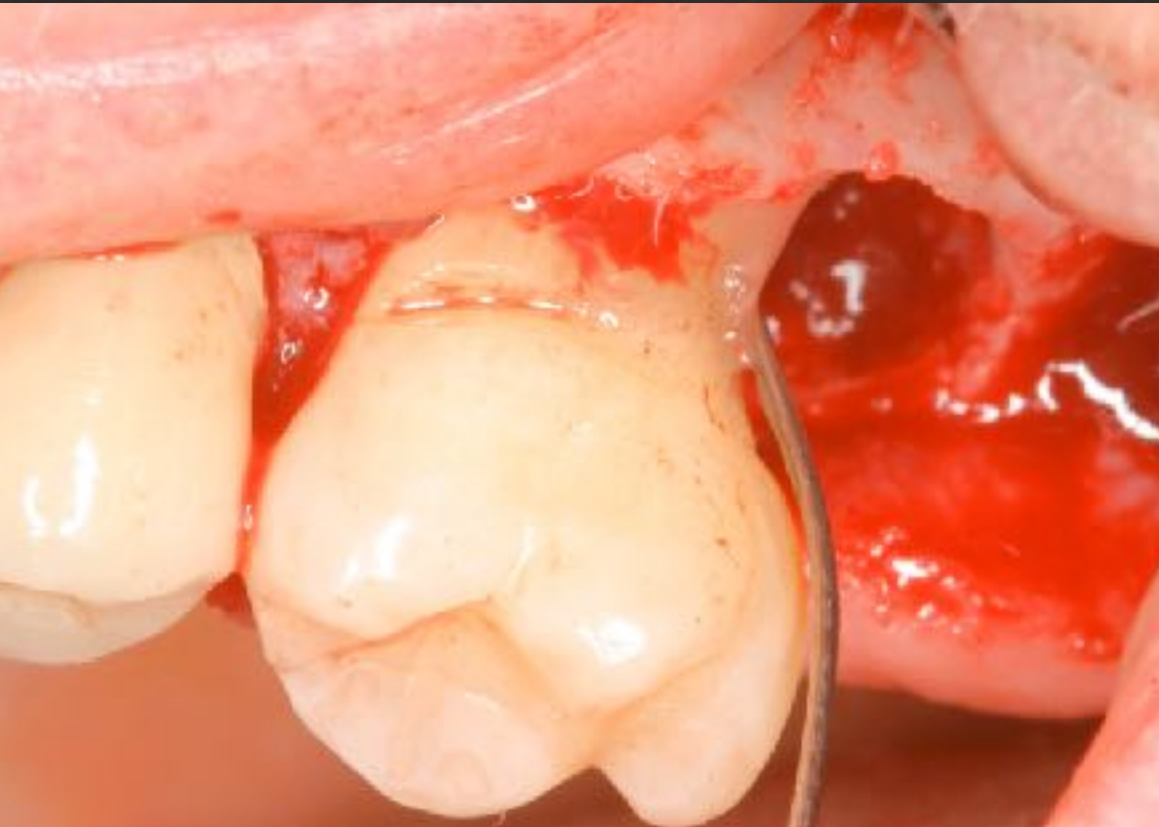
## II. Regenerative: Combination (Emdogain + bone filler)

Root surface modification with Emdogain and filling the defect with mixed bone fillers



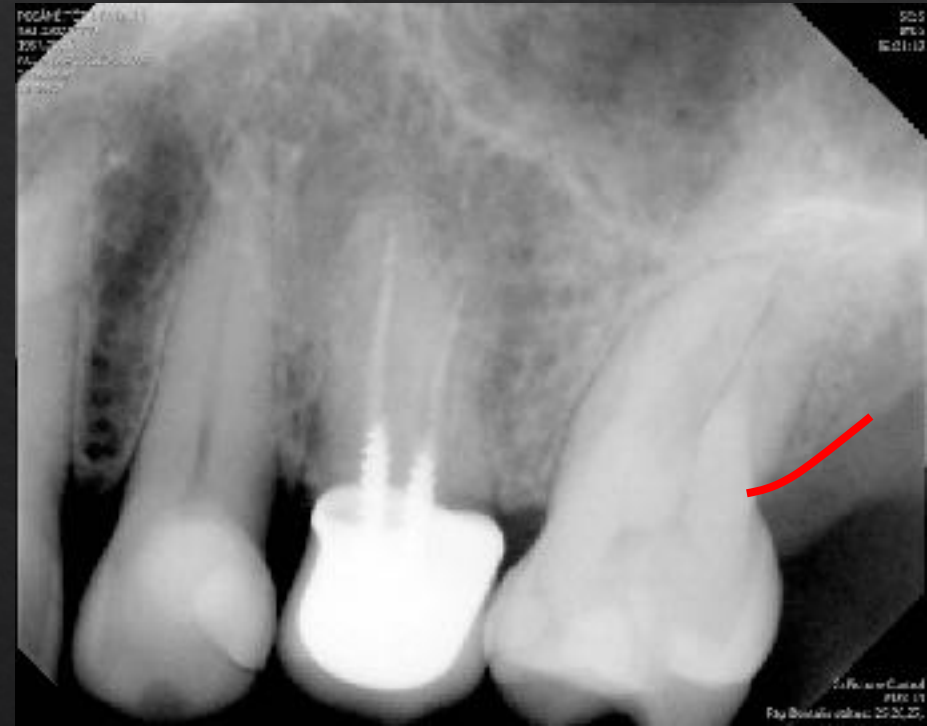
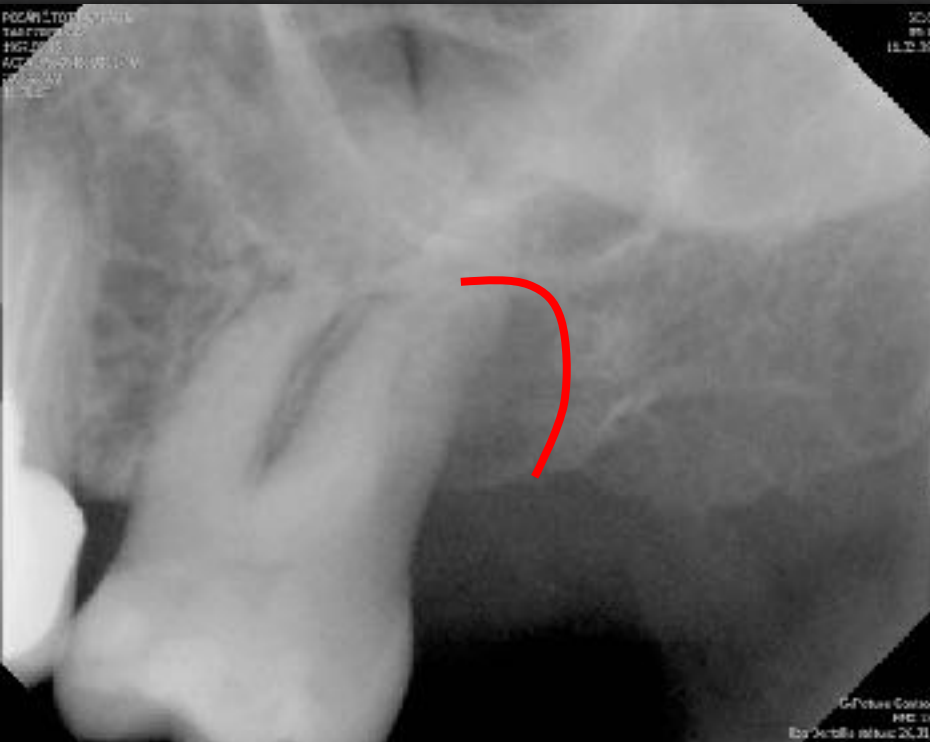
## II. Regenerative: Combination (Emdogain + bone filler)

Root surface modification with Emdogain and filling the defect with mixed bone fillers



## II. Regenerative: Combination (Emdogain + bone filler)

## 6 months radiological result





# III. Mucogingival surgery

- **Gingival recession's coverage**
- Narrow attached gingiva widening
- Negative papilla
- Gingival asymmetry
- Shallow vestibular fold

### III. Mucogingival surgery: recession coverage

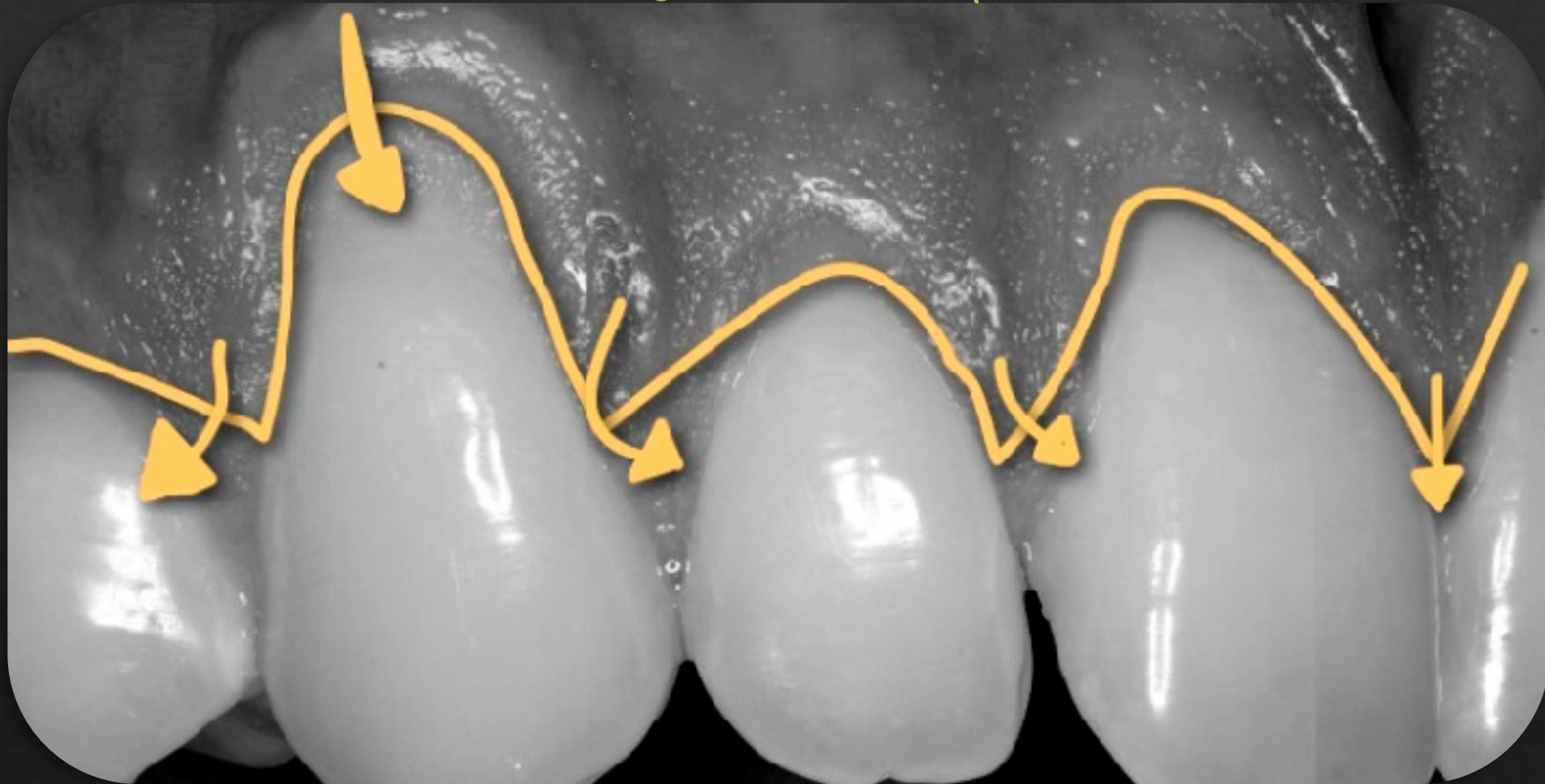
#### Initial state



The modified coronally advanced flap (MCAF) + connective tissue graft

### III. Mucogongivalis sebészet: ínyrecesszió fedése

The modified coronally advanced flap (MCAF)(MCAF)



**Zucchelli G, De Sanctis M.** The coronally advanced flap for the treatment of multiple recession defects: a modified surgical approach for the upper anterior teeth. *J Int Acad Periodontol.* 2007 Jul;9(3):96-103.



### III. Mucogingival surgery: recession coverage

Submarginal bevelled incisions, the flap, deepithelialisation of the papillas, connective tissue graft from the palate



## Root surface biomodification, securing the connective tissue graft

EDTA



Emdogain





## Sutures, coronally positioning

### Palate





# Preoperative and postoperative pictures



1 year after

### III. Mucogingival surgery: recession coverage

Initial and current state

Initial



Current



### III. Mucogingival surgery: recession coverage

#### Initial state



**Aroca S, Keglevich T, Nikolidakis D, Gera I, Nagy K, Azzi R, Etienne D.:** Treatment of class III multiple gingival recessions: a randomized-clinical trial. *J Clin Periodontol.* 2010 Jan;37(1):88-97.



### III. Mucogingival surgery: recession coverage

Root planing



Conditioning (EDTA)



Coronally advanced modified tunnel technique



### III. Mucogingival surgery: recession coverage

#### Connective tissue graft harvesting from the palate



**Hürzeler, M. & Weng, D.:** A single-incision technique to harvest subepithelial connective tissue graft from the palate. *International Journal of Periodontics and Restorative Dentistry* 1999 19: 279–287



### III. Mucogingival surgery: recession coverage

Pulling in the graft under the tunnel flap





### III. Mucogingival surgery: recession coverage

Stabilize the tunnel flap coronally with sutures and applying Emdogain



### III. Mucogingival surgery: recession coverage

Preoperative and postoperative pictures



QR code is coming

ATTENTION!





Thank You for Your attention ☺

