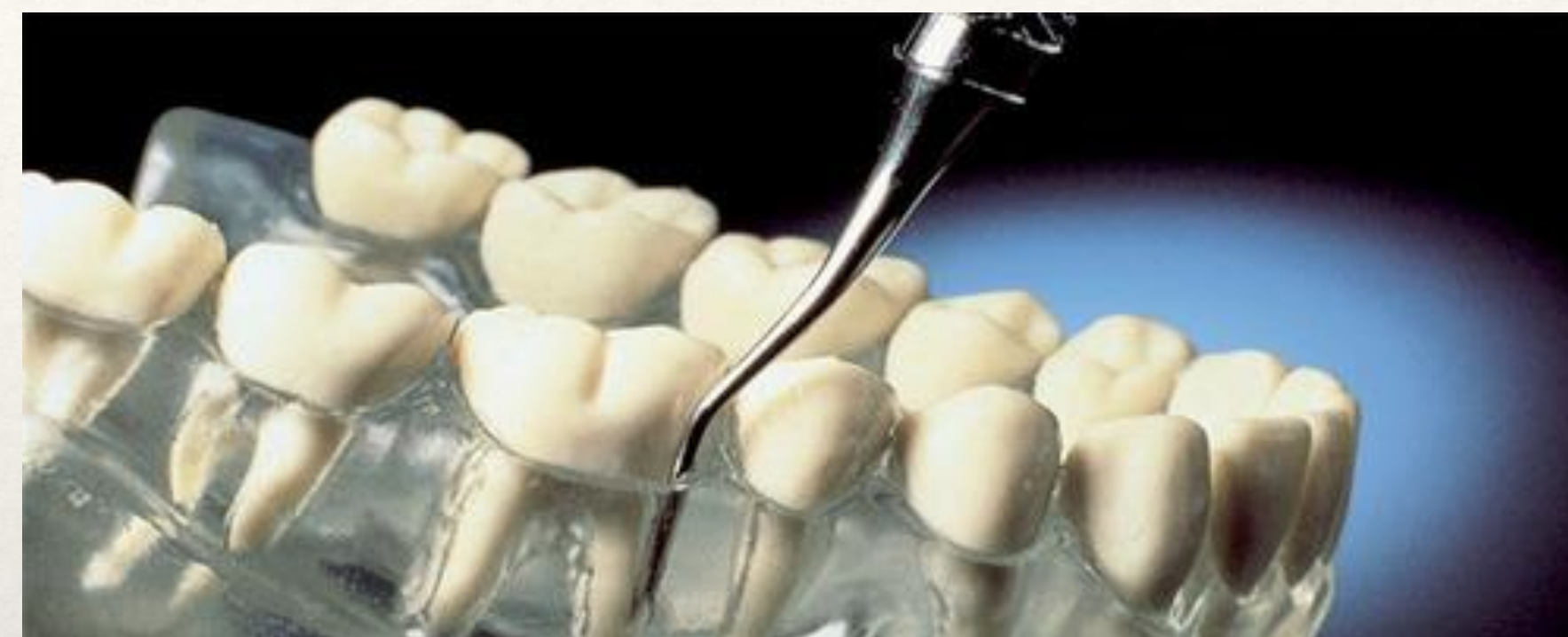*2022.november*

# Periodontal Propedeutics I.

DIAGNOSIS

# The aim of diagnosis

- Recognise illness, distinguish from healthy
- Causative and risk factors
- **The precise diagnosis is essential for the correct treatment planning**

Diagnostic methods:
- Anamnesis
- Clinical examination
- Radiological examination
- (Laboratorial examination)

# Diagnosis

**1. Clinical examination**

- Oral hygiene (plaque, calculus)

- Examination of the condition of the gingiva (inspection, probing, bleeding)

- Examination of the occlusion

- Examination of the periodontium (probing depth, tooth mobility)

**2. (BPE/ Basic Periodontal Examination)**

**3. Detailed periodontal chart** – Probing pocket depth, gingival recession, clinical attachment loss, etc..

**4. Detailed radiological examination** – Besides the OP, detailed periodontal status x-rays (14 intraoral recordings)

**1 and 2: duty of every dentist**

# Anamnesis

What are the patients main complaints?
Tooth migration, bleeding, recessed gums, mobile teeth, chewing difficulties?

**Systematic disease**
- Heart - (pacemaker, artificial valve, congenital heart disease, heart transplant, IE)
- Vascular-
- Hormonal (diabetes)
- Hematopoietic - (leukemie, agranulocytosis)
- Immunological
- Infectious disease
- etc.

**Medicine:**
- Anticoagulant
- Antihypertensives: Ca-channel blockers
- Immunosupressant: Cyclosporine
- Antiepileptics: Hydantoin
- Bisphosphonate therapy
- Antibiotics
- etc.

**Allergy**
**Oral hygiene habits**
**Smoking** (exposure time and amount)
**Gender, age, hormonal factors (pregnancy, menopause)**
**Other risk factors**
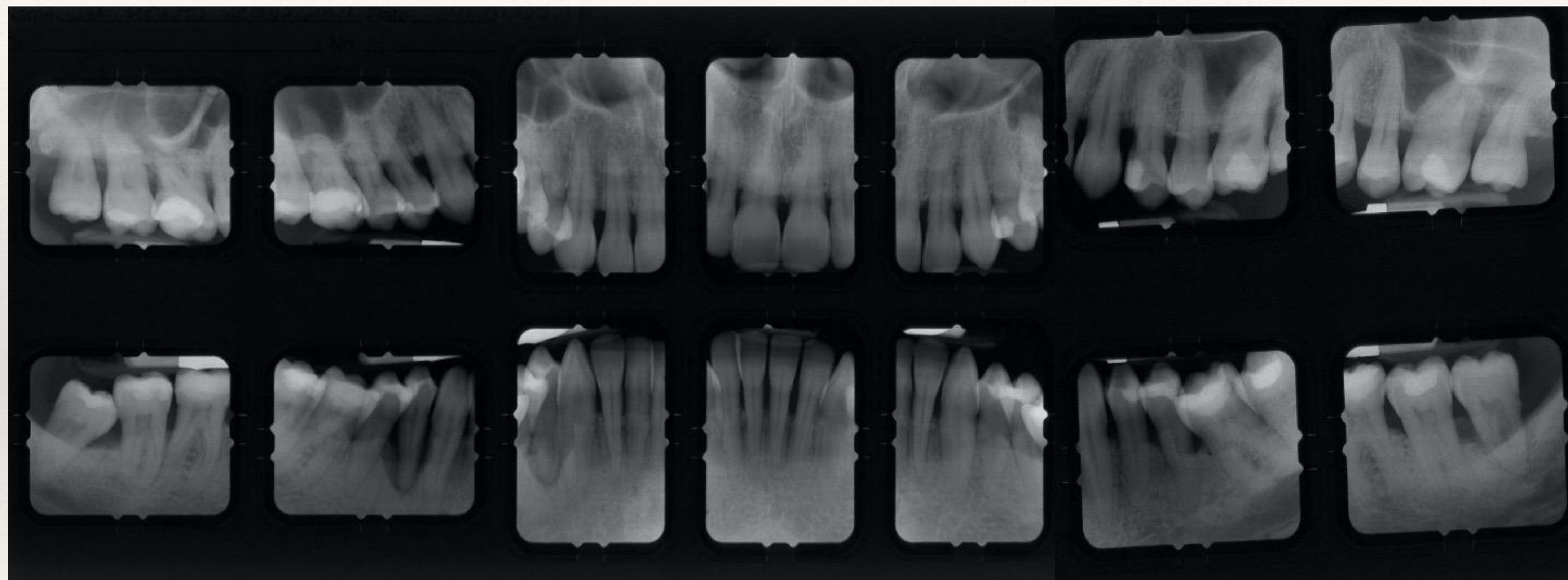- Alcohol consumption (daily)
- Bruxism
- Mouth breathing

**Eating habits**
- Unhealthy diet (carbohydrate excess, vitamin deficiency)

**Family history, genetic background**
**Socio-economic factors**

# Periodontal status x-rays



Long cone periapical recordings, made with parallel technique

# Clinical examination

| | |
|---|---|
| **Inspection** | Deposit – supragingival plaque, calculus<br>Gingiva – discoloration, changed contour of the gums (hyperplasia, recession) size changes (swelling, necrosis)<br>Occlusal abnormailty |
| **Probing** | Pocket depth<br>Bleeding on probing<br>Subgingival calculus<br>Furcation involvement |
| **Palpation** | Tooth mobility |

# Clinical examination - inspection

SEMMELWEIS
EGYETEM
1769

SEMMELWEIS
EGYETEM
1769

Clinical picture of a
59-year old patient with
advanced, generalised,
chronic, periodontitis



Gingivitis, gingival recession, open interdental spaces, poor oral
hygiene, calculus, plaque, discolouration, plaque retentive/
uncleanable crowns and fillings

Clinical Periodontology and
Implant Dentistry 6th ed.-Lindhe

# Inspection

1. **Gingivitis:**

**Surface –** no orange peel feature, flat, shiny

**Colour -** red, purple, grayish white

**Tissue consistency -** oedematous, fibrotic

**Contour -** irregular

**Localisation –** apical / coronal from the cemento-enamel junction

# Inspection

## 2. Healthy gingiva:

**Surface –** orange peel feature

**Tissue consistency-** compact

**Colour -** pink



**Inflammation-free gums, preserved periodontium**

Triangular interdental papilla
Knife-edged contour
Recession free



**Inflammation-free gums, reduced periodontium**

# Periodontal probing

# Technique of the periodontal probing

- Gentle walking motion, parallel with the axis of the teeth

- Measuring at 6 surfaces
  - O: M-Mid-D
  - V: M-Mid-D

- Power of probing. 0,25N

- Influencing factors
  - Thickness of the probe
  - Power and direction of the probe insertion
  - Tissue consistency
  - Shape of the teeth,
  - Calculus, plaque retentive factors
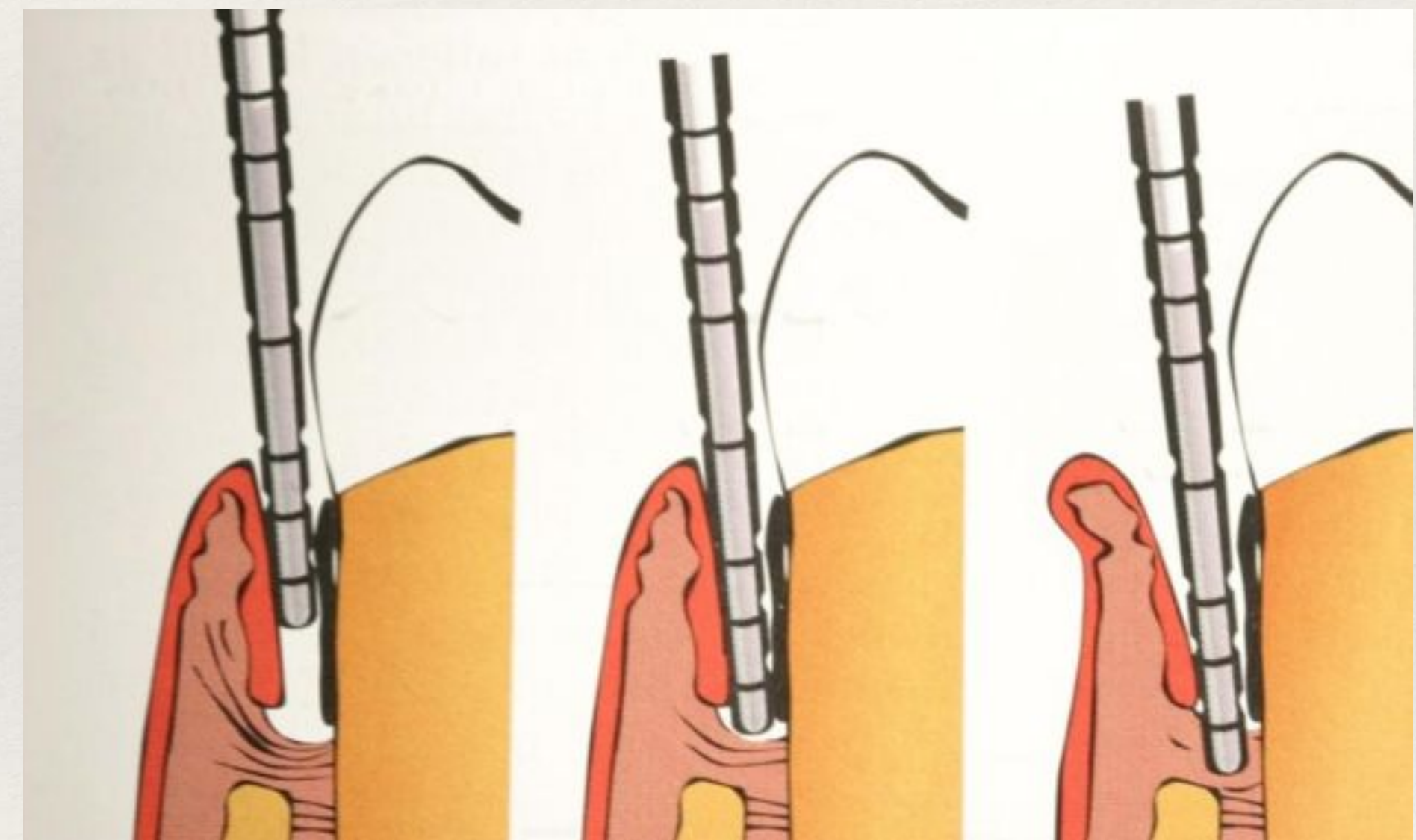


Improper probing (high force) - probe penetrates the periodontal tissues – causes inaccurate measurement, discomfort for the patient

# Diagnostic tools
## Periodontal probes

**WHO probe**
- 0,5 mm ball
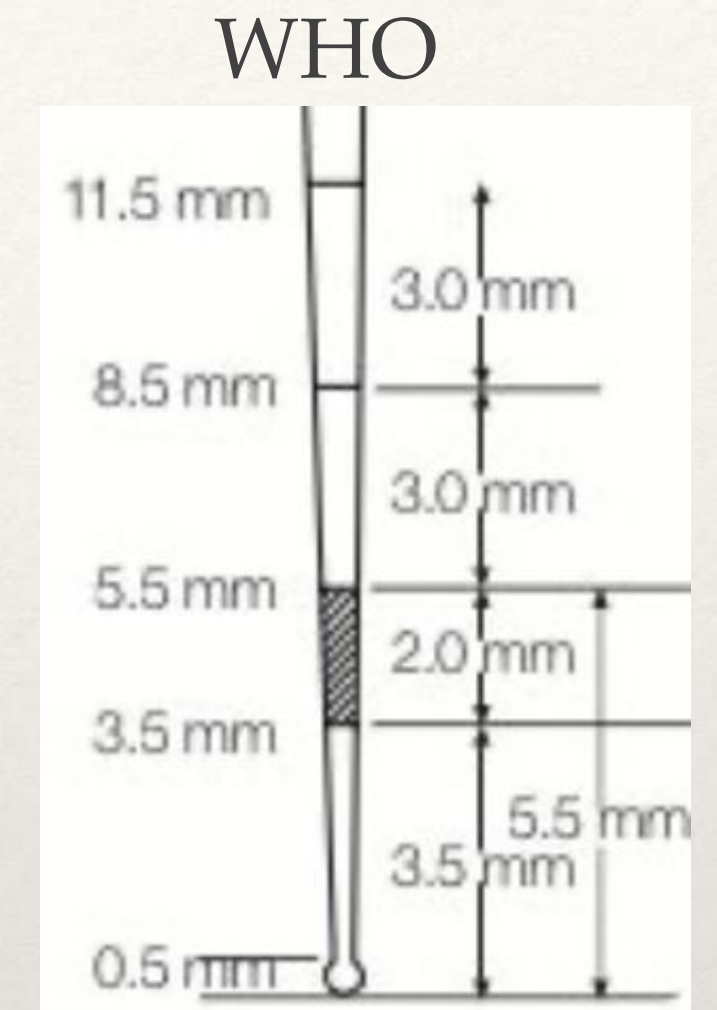- 3,5-5,5 mm black stripe
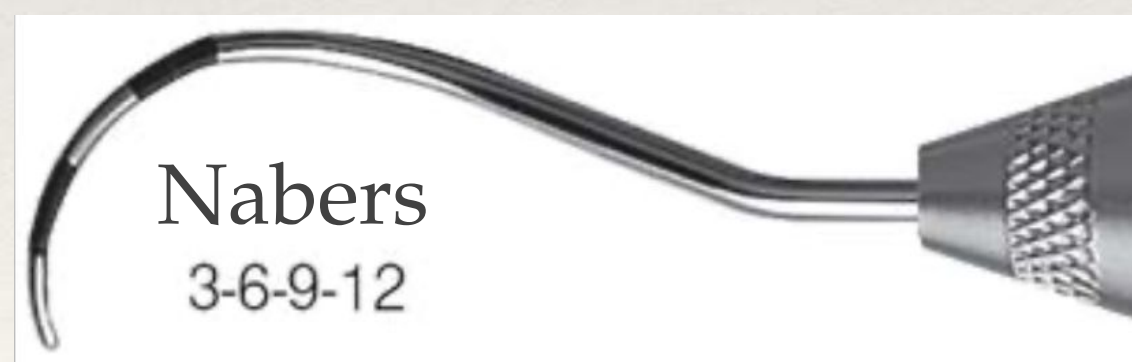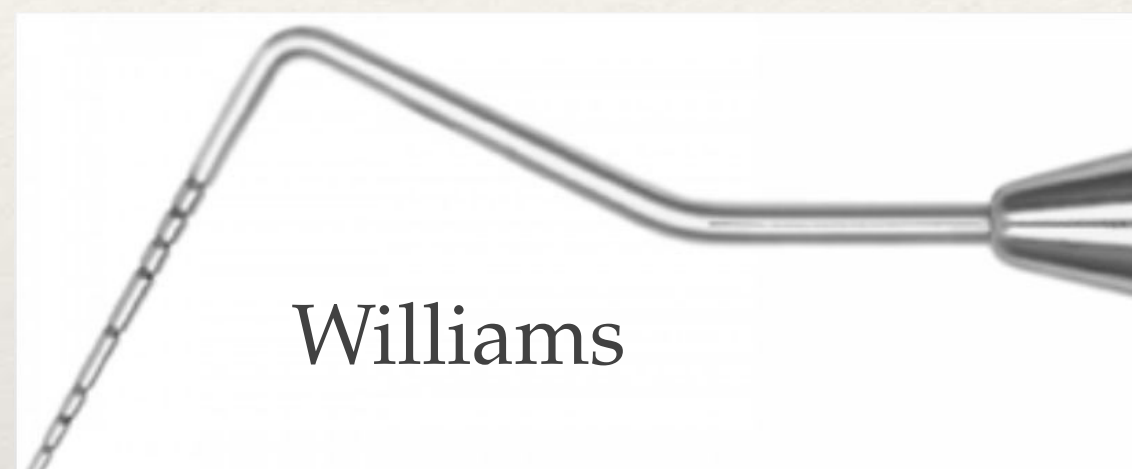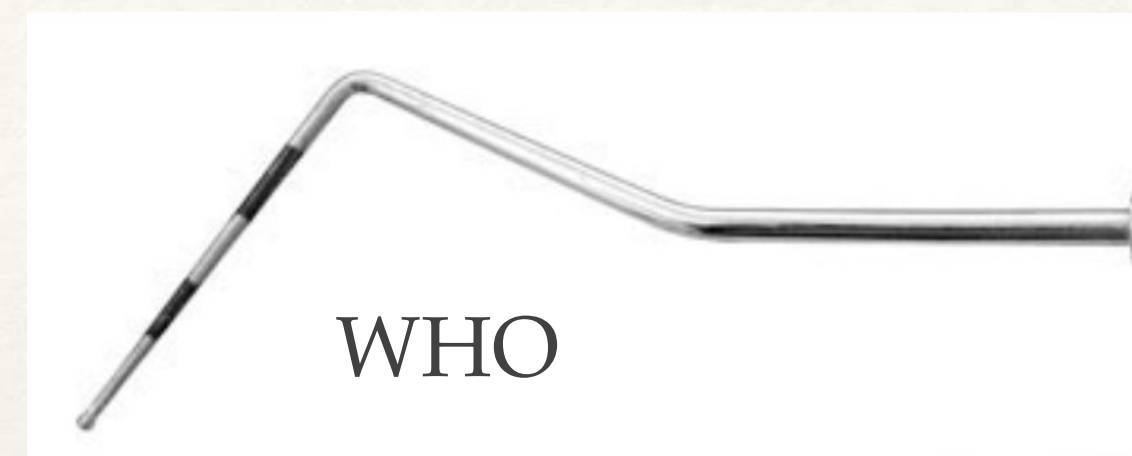
**Williams probe**
- 1-2-3—–5—–7-8-9-10

**UNC-15 probe**
Markings in mm
- 4-5, 9-10, 14-15 mm black stripes

**Nabers probe**
- Furcation involvement

**Pressure sensitive probes**



WHO

Williams

UNC-15

Nabers
3-6-9-12



WHO

11.5 mm
8.5 mm    3.0 mm
5.5 mm    3.0 mm
3.5 mm    2.0 mm
0.5 mm    3.5 mm   5.5 mm



Nabers

# Clinical parameters

- **PPD (Probing Pocket Depth)**

- **GR (Gingival Recession)**

- **CAL (Clinical attachment Loss = PPD + GR)**

- Furcation involvement

- Tooth mobility

- **Bleeding on Probing - BOP**

- Presence of plaque, calculus

- Local plaque retentive factors

# Periodontal chart



**PERIODONTAL CHART**

Date 2022.10.10

Patient Last Name Example First Name Patient Date Of Birth 1987.09.10
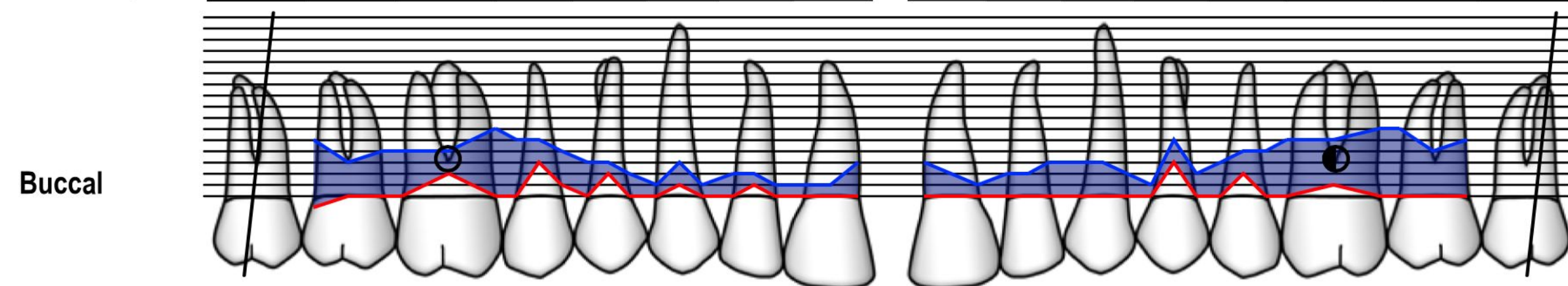
☑ Initial Exam ☐ Reevaluation Clinician

|  | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobility | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Implant | | | | | | | | | | | | | | | | | |
| Furcation | | | ○ | | | | | | | | | | | | ◑ | | |
| Bleeding on Probing | | | | | | | | | | | | | | | | | |
| Plaque | | | | | | | | | | | | | | | | | |
| Gingival Margin | | 1 0 0 | 0 -2 0 | 0 -3 -1 | 0 -2 0 | 0 -1 0 | 0 -1 0 | 0 0 0 | | 0 0 0 | 0 0 0 | 0 0 0 | 0 -3 0 | 0 -2 0 | 0 -1 0 | 0 0 0 | |
| Probing Depth | | 6 3 4 | 4 2 6 | 5 2 3 | 3 1 2 | 1 2 1 | 2 1 1 | 1 1 3 | | 3 2 1 | 2 2 3 | 3 3 2 | 1 2 2 | 3 2 4 | 5 4 6 | 6 4 5 | |

**Buccal**

- **Missing teeth**
- **Localisation of the marginal gingiva**
- **Probing pocket depth**
- **Clinical attachment loss**
- **Bleeding on probing**
- **Plaque**
- **Furcation involvement**
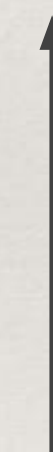- **Mobile teeth**

# Clinical parameters
## PPD - Probing Pocket Depth



PPD: 4mm

3 oral surfaces (D-Mid-M)
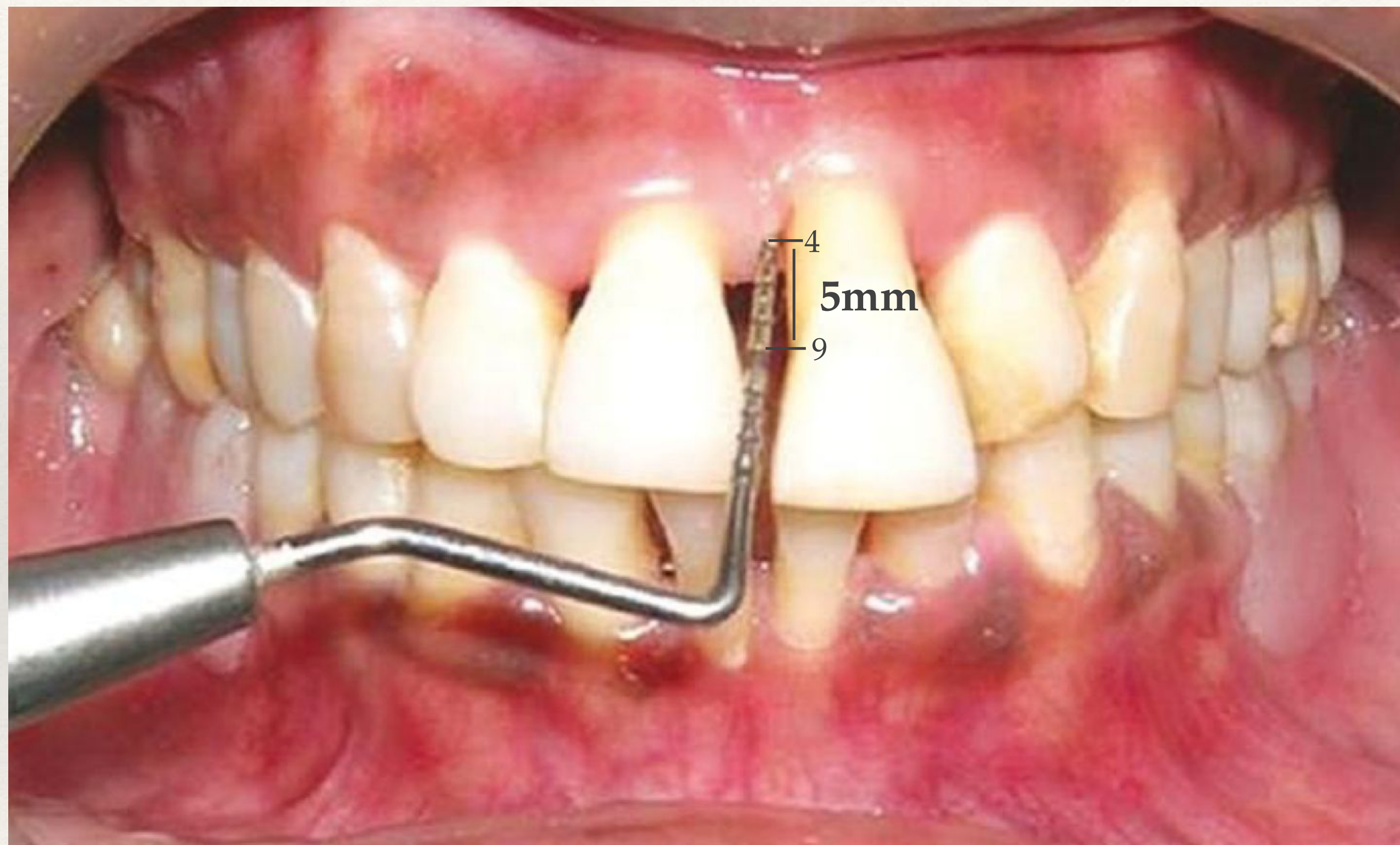
In total: 6 surfaces

3 vestibular surfaces (D-Mid-M)

| | | | | | | |
|---|---|---|---|---|---|---|
| Note | | | | | | |
| Furcation | | ● | | | | |
| Bleeding on Probing | | | | | | |
| Plaque | | | | | | |
| Gingival Margin | 1 | -2 | 0 | 0 | 0 | 0 |
| Probing Depth | 5 | 3 | 8 | 7 | 2 | 6 |

**Lingual**

**Buccal**

| | | | | | | |
|---|---|---|---|---|---|---|
| Gingival Margin | 1 | -2 | 0 | 0 | -1 | 0 |
| Probing Depth | 5 | 2 | 8 | 8 | 4 | 7 |
| Plaque | | | | | | |
| Bleeding on Probing | | | | | | |
| Furcation | | ● | | | ○ | |
| Implant | | | | | | |
| Mobility | | 2 | | | 0 | |
| | | 48 | | | 47 | |

# Clinical parameters
## GR - Gingival Recession



GR: 5mm

3 oral surfaces (D-Mid-M)

In total: 6 surfaces

3 vestibular surfaces (D-Mid-M)

| | | | | | | |
|---|---|---|---|---|---|---|
| Note | | | | | | |
| Furcation | ● | | | | | |
| Bleeding on Probing | ■ ■ ■ | | | ■ □ ■ | | |
| Plaque | ■ □ ■ | | | ■ □ ■ | | |
| Gingival Margin | 1 | -2 | 0 | 0 | 0 | 0 |
| Probing Depth | 5 | 3 | 8 | 7 | 2 | 6 |

**Lingual**

**Buccal**

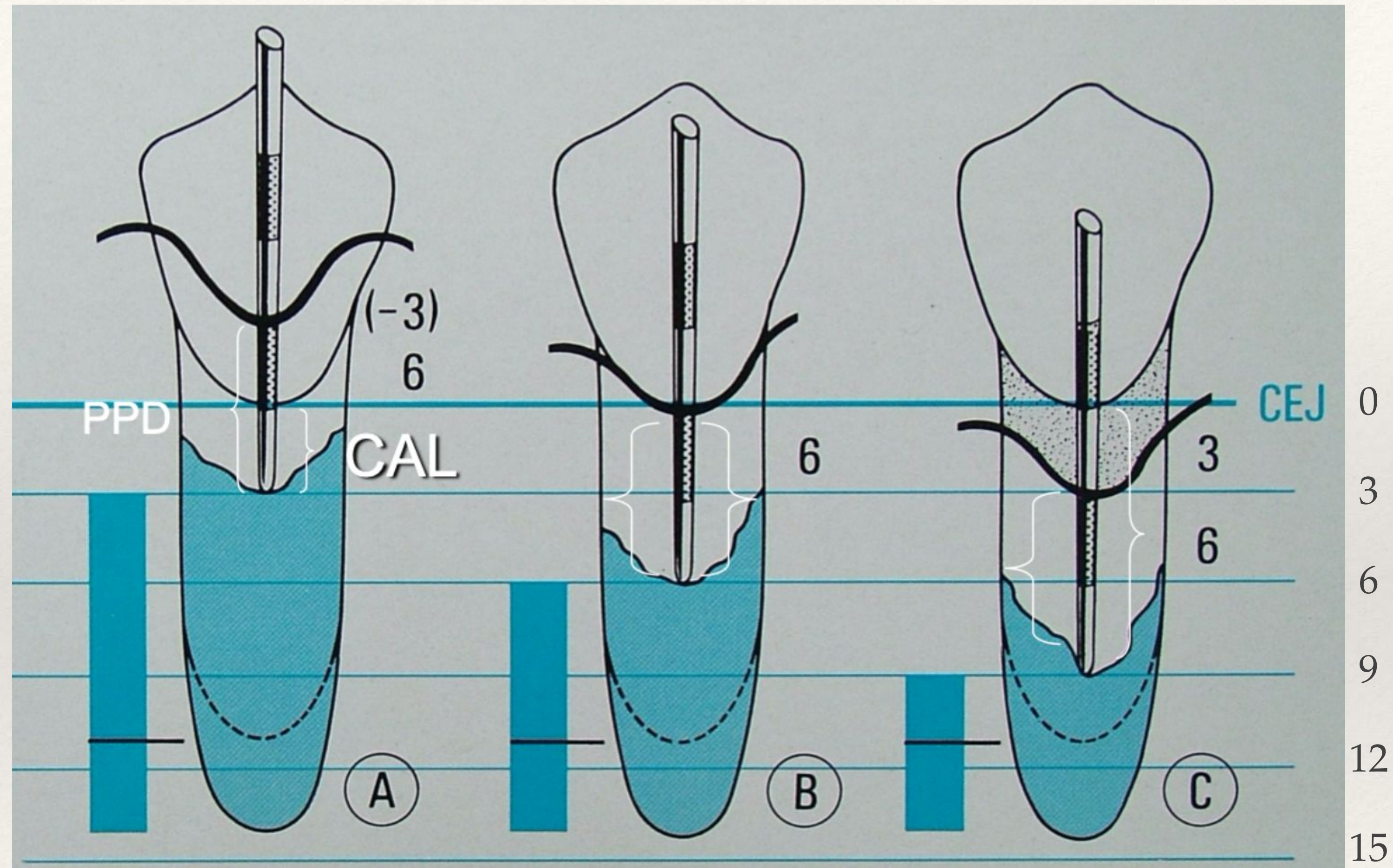| | | | | | | |
|---|---|---|---|---|---|---|
| Gingival Margin | 1 | -2 | 0 | 0 | -1 | 0 |
| Probing Depth | 5 | 2 | 8 | 8 | 4 | 7 |
| Plaque | ■ □ ■ | | | ■ □ ■ | | |
| Bleeding on Probing | ■ □ ■ | | | ■ □ ■ | | |
| Furcation | ● | | | ○ | | |
| Implant | | | | | | |
| Mobility | 2 | | | 0 | | |
| | **48** | | | **47** | | |

# Clinical parameters
## CAL - Clinical Attachment Loss



PPD + GR = CAL

Picture from:Prof.Dr.Gera István
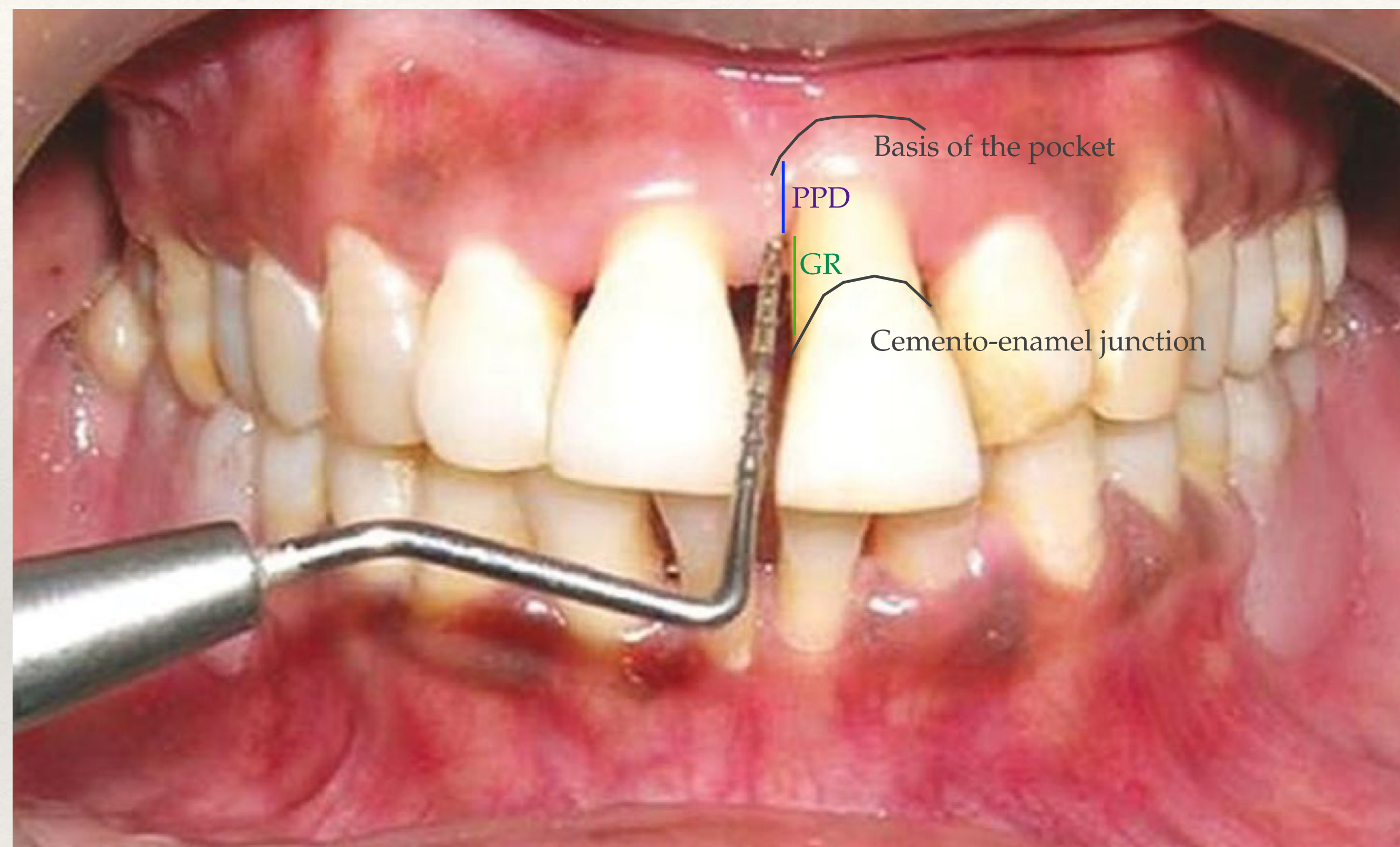
# The relationship between probing depth, gingival recession and clinical attachment loss



Between the cemento-enamel junction and marginal gingiva: -3mm : 3mm hyperplasia
Probing pocket depth = 6mm
Clinical attachment loss = 3mm

CEJ - GM = 0mm
PPD = 6mm
CAL = 6mm

CEJ - GM = 3mm
PPD = 6mm
CAL = 9mm

# Gingival recession – Miller classification

- **Class I:** Marginal tissue recession which does not extend to the mucogingival junction (MGJ) and is not associated with alveolar bone loss in the interdental area.
- **Class II:** Marginal tissue recession which extends to or beyond the MGJ and is not associated with alveolar bone loss in the interdental area.
- **Class III:** Marginal tissue recession extends to or beyond the mucogingival junction. Loss of interdental bone or soft tissue is apical to the CEJ, but coronal to the apical extent of the marginal tissue recession.
- **Class IV**: Marginal tissue recession extends beyond the mucogingival junction. Loss of interdental bone extends to a level apical to the extent of the marginal tissue recession.
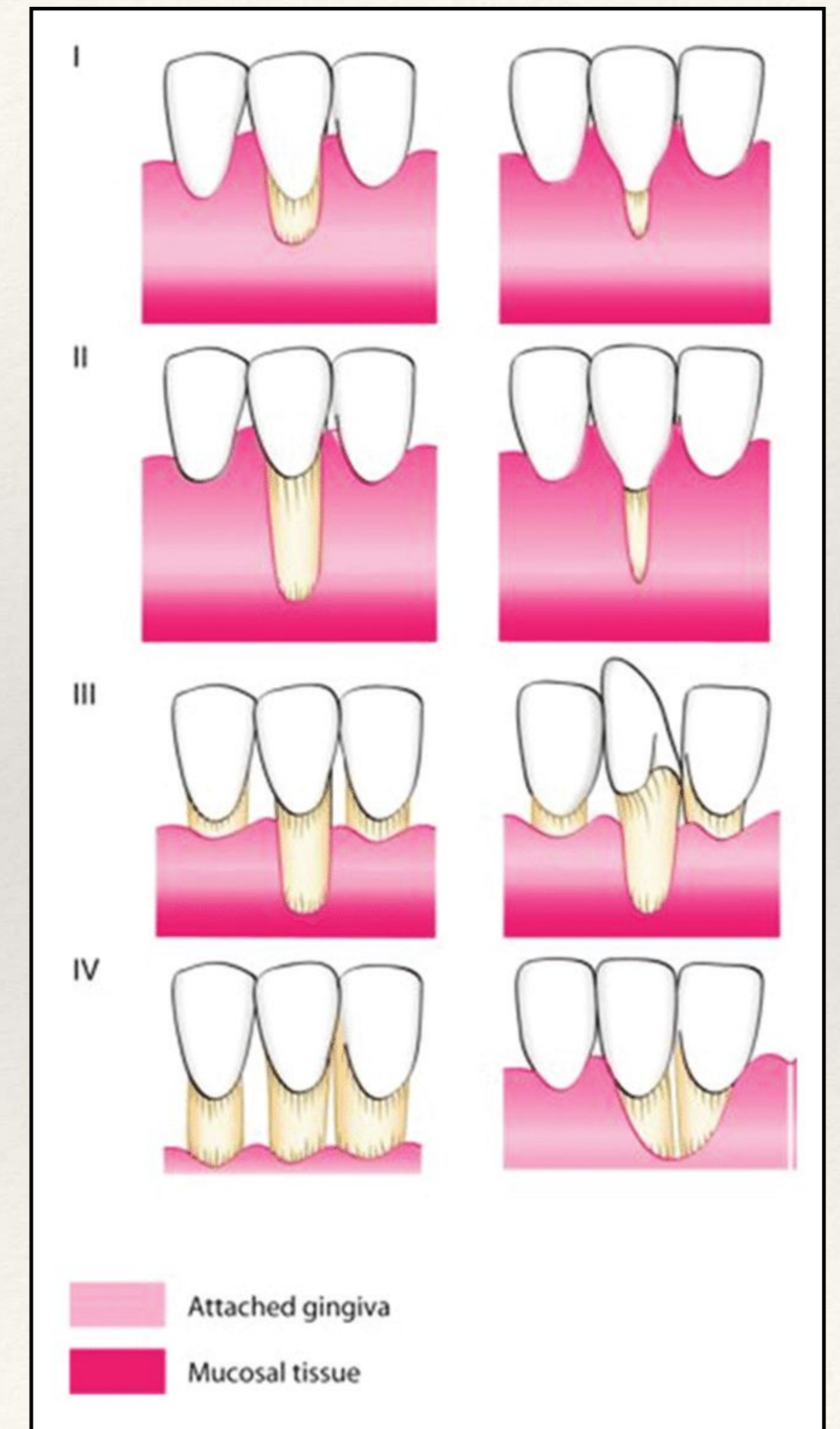
# Gingival recession - RT classification

- **RT1 ("recession type 1")** – gingival recession with no loss on interproximal attachment. Interproximal CEJ is clinically not detectable at both mesial and distal aspects of the tooth.

- **RT2 ("recession type 2")** – Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss is less than or equal to the buccal attachment loss.

- **RT3 ("recession type 3")** Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss is greater than the buccal attachment loss.

# Gingival recession - clinical parameters

- Recession depth

- Recession width at the CEJ

- Width of the keratinized gingiva

- Thickness of the keratinized gingiva

- Distance between the papilla and the contact point

- Width of the basis of the papilla
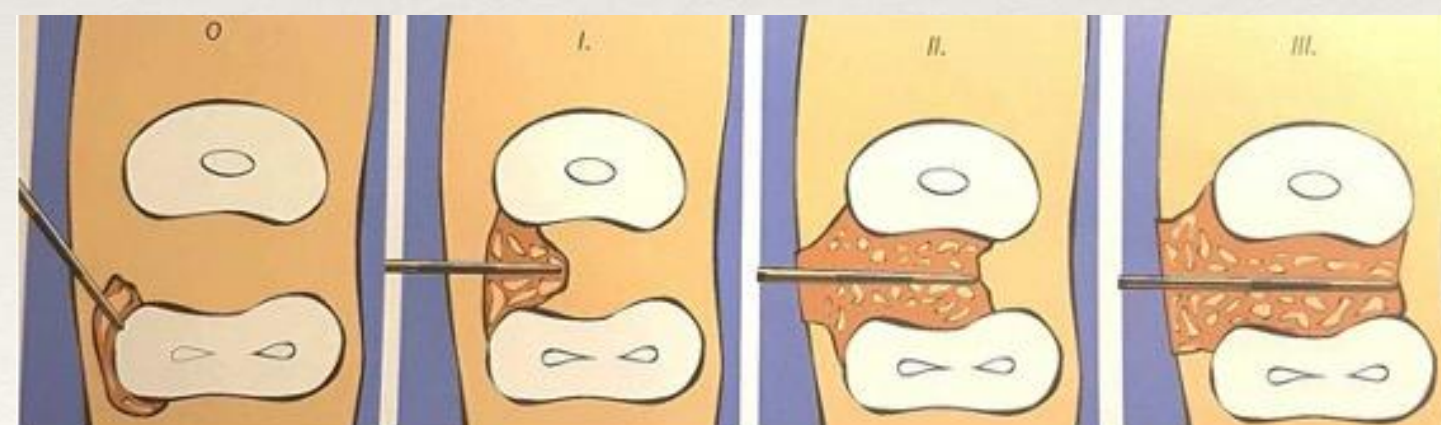
- PPD

- FMPS

- FMBS
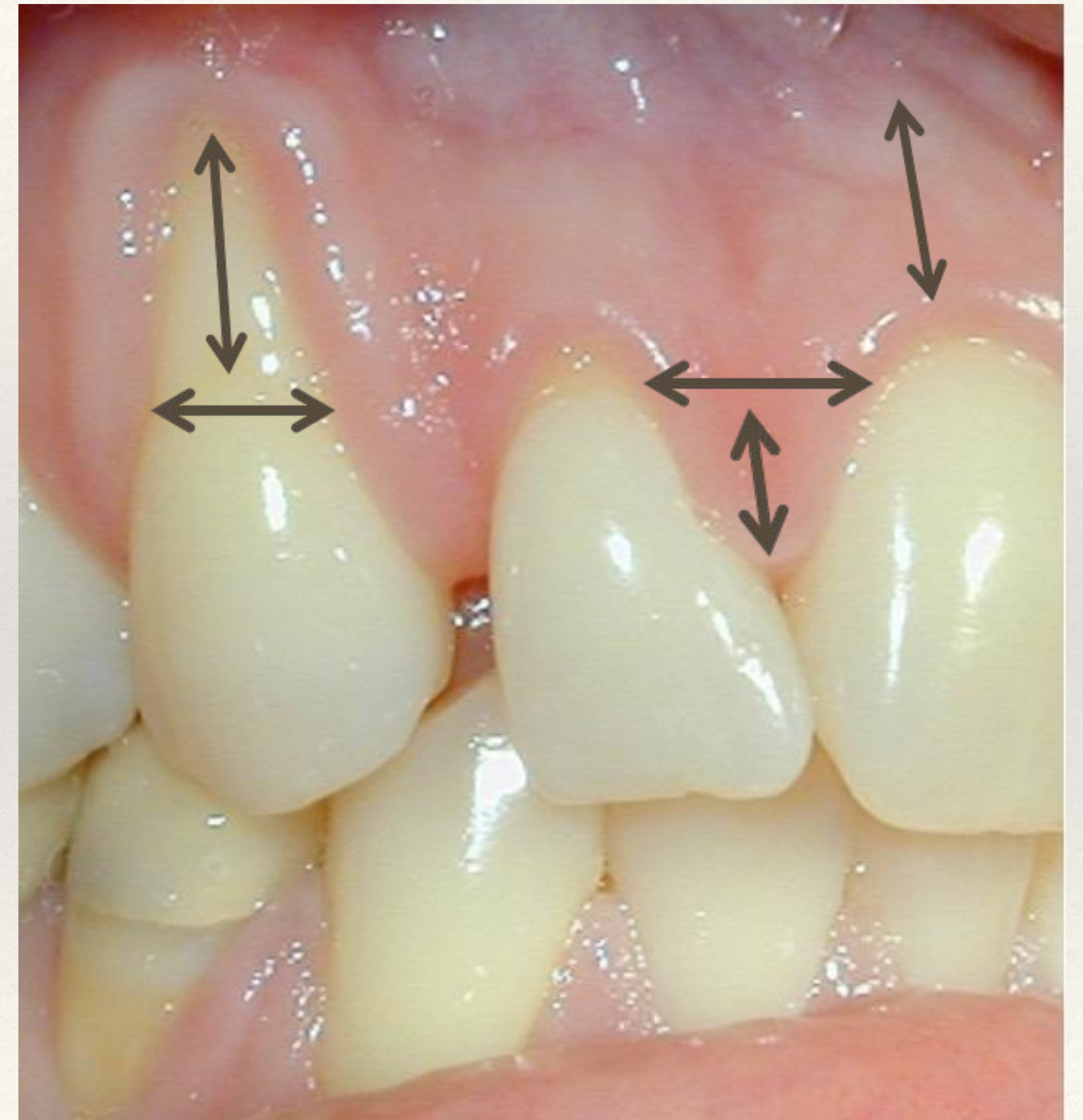
# Clinical parameters
## Furcation involvement

**Degree I:** horizontal loss of periodontal support not exceeding one third of the width of the tooth.

**Degree II:** horizontal loss of periodontal support exceeding one third of the width of the tooth, but not encompassing the total width of the furcation area.

**Degree III:** horizontal "through-and-through" destruction of the periodontal tissues in the furcation area.

| | | | | | | |
|---|---|---|---|---|---|---|
| Note | | | | | | |
| Furcation | | ● | | | | |
| Bleeding on Probing | | | | | | |
| Plaque | | | | | | |
| Gingival Margin | 1 | -2 | 0 | 0 | 0 | 0 |
| Probing Depth | 5 | 3 | 8 | 7 | 2 | 6 |

**Lingual**

**Buccal**

| | | | | | | |
|---|---|---|---|---|---|---|
| Gingival Margin | 1 | -2 | 0 | 0 | -1 | 0 |
| Probing Depth | 5 | 2 | 8 | 8 | 4 | 7 |
| Plaque | | | | | | |
| Bleeding on Probing | | | | | | |
| Furcation | | ● | | | ○ | |
| Implant | | | | | | |
| Mobility | | 2 | | | 0 | |
| | | 48 | | | 47 | |

# Clinical parameters

## mobility

**Grade I:** 0,2-1mm horizontally

**Grade II:** ≥ 1mm horizontally

**Grade III:** vertical mobility



Picture from: Prof.Dr.Gera István

# Clinical parameters

## FMBS - Full Mouth Bleeding Score

- „Walking" periodontal probing
- Write down:
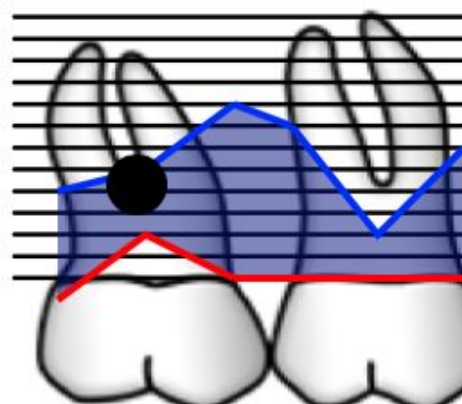  - + presence of bleeding
  - - absence of bleeding
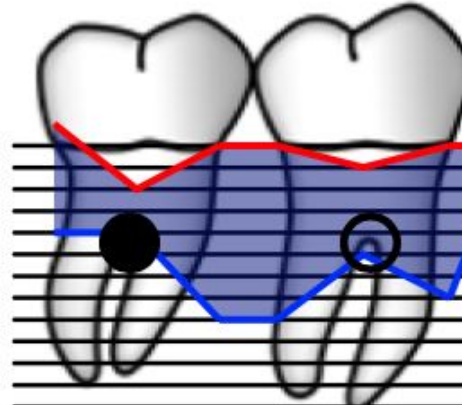
Calculating of FMBS : $\dfrac{\text{All surfaces x 100}}{\text{Number of teeth x 6}}$ = ..........%

3 oral surfaces (D-Mid-M)

In total: 6 surfaces

3 vestibular surfaces (D-Mid-M)

Optimal range: 15-20% FMBS and FMPS !

| | | | | | | |
|---|---|---|---|---|---|---|
| Note | | | | | | |
| Furcation | ● | | | | | |
| Bleeding on Probing | 🟥 | 🟥 | 🟥 | 🟥 | | 🟥 |
| Plaque | 🟦 | | 🟦 | 🟦 | | 🟦 |
| Gingival Margin | 1 | -2 | 0 | 0 | 0 | 0 |
| Probing Depth | 5 | 3 | 8 | 7 | 2 | 6 |

**Lingual**

**Buccal**

| | | | | | | |
|---|---|---|---|---|---|---|
| Gingival Margin | 1 | -2 | 0 | 0 | -1 | 0 |
| Probing Depth | 5 | 2 | 8 | 8 | 4 | 7 |
| Plaque | 🟦 | | | 🟦 | | 🟦 |
| Bleeding on Probing | 🟥 | | 🟥 | 🟥 | | 🟥 |
| Furcation | ● | | | ○ | | |
| Implant | | | | | | |
| Mobility | 2 | | | 0 | | |
| | **48** | | | **47** | | |

# Clinical parameters
## FMPS - Full Mouth Plaque Score

- „Walking" periodontal probing

- Write down:

  - + presence of plaque

  - - absence of plaque

Calculating FMPS : $\dfrac{\text{All surfaces x 100}}{\text{Number of teeth x 6}}$ = ..........%

3 oral surfaces (D-Mid-M)

In total: 6 surfaces

3 vestibular surfaces (D-Mid-M)

| | Note | | | | | | |
|---|---|---|---|---|---|---|---|
| | Furcation | ● | | | | | |
| | Bleeding on Probing | | | | | | |
| | Plaque | | | | | | |
| | Gingival Margin | 1 | -2 | 0 | 0 | 0 | 0 |
| | Probing Depth | 5 | 3 | 8 | 7 | 2 | 6 |

**Lingual**

**Buccal**

| | Gingival Margin | 1 | -2 | 0 | 0 | -1 | 0 |
|---|---|---|---|---|---|---|---|
| | Probing Depth | 5 | 2 | 8 | 8 | 4 | 7 |
| | Plaque | | | | | | |
| | Bleeding on Probing | | | | | | |
| | Furcation | ● | | | ○ | | |
| | Implant | | | | | | |
| | Mobility | 2 | | | 0 | | |
| | | 48 | | | 47 | | |

Optimal range: 15-20% FMBS and FMPS !

# Assesment of periodontal treatment needs

- **BPE** - Basic Periodontal Examination

- **PSR** - Periodontal screening and Recording

- **CPITN** - Community Periodontal Index of Treatment Needs

# Basic Periodontal Examination - BPE

**The BPE is a simple and rapid screening tool that is used to indicate the level of further examination needed and provide basic guidance on treatment needs. BPE does not provide a complex clinical diagnosis.**

**When should we record the BPE?**

• All new patients should have the BPE recorded

• For patients with codes 0, 1 or 2, the BPE should be recorded at every routine examination

• For patients with BPE codes of 3 or 4, more detailed periodontal charting is required

• BPE cannot be used to monitor the response to periodontal therapy because it does not provide information about how sites within a sextant change after treatment.

• For patients who have undergone initial therapy for periodontitis, and who are now in the maintenance phase of care, then full probing depths throughout the entire dentition should be recorded at least annually

| Code | | Guidance on interpretation of BPE scores |
|---|---|---|
| 0 | • Pockets under 3,5 mm (black band entirely visible)<br>• No calculus/ overhangs, no bleeding on probing | • No need for periodontal treatment |
| 1 | • Pockets under 3,5 mm (black band entirely visible)<br>• No calculus / overhangs<br>• Bleeding on probing | • Oral hygienic instructions (OHI) |
| 2 | • Pockets under 3,5 mm (black band entirely visible)<br>• Supra or subgingival calculus/ overhangs | • Oral hygienic instructions (OHI)<br>• Supra/ subgingival depuration and polishing, eliminating plaque retentive factors |
| 3 | • Probing depth 3,5-5,5 (black band partially visible) | • Oral hygienic instructions (OHI)<br>• Supra/ subgingival depuration and polishing, eliminating plaque retentive factors<br>• RSD |
| 4 | • Probing depth higher than 5,5 mm (black band disappears) | • Oral hygienic instructions (OHI)<br>• Supra/ subgingival depuration and polishing, eliminating plaque retentive factors<br>• RSD<br>• Assess the need for more complex treatment, referral to a specialist may be indicated |
| * | • Furcation involvement | • Treat according to BPE scores, assess the need for more complex treatment, referral to a specialist may be indicated |

An example BPE score grid might look like this:

| | | |
|---|---|---|
| 4 | 3 | 4* |
| x | 2 | 2 |

- The number and the * is recorded, if the furcation is involved.

- All teeth in each sextant are examined (with the exception of 3rd molars unless 1st and/ or 2nd molars are missing.)

- For a sextant to qualify for recording, it must contain at least 2 teeth.

- WHO (World Health Organisation) probe is used to register the BPE.

- The probe should be „walked around" the teeth in each sextant. The highest score in the sextant is recorded.