Measuring the depth of periodontal pockets
DEFINITION of periodontal probe

A calibrated probe used to measure the depth and determine the configuration of a periodontal pocket
Periodontal probe and its use was first described by F.V. Simoton of the University Of California, San Francisco in 1925.

History

- Miller suggested probing of all pockets and recording their depth and putting this information on diagnostic chart.
- Simonton proposed flat probes 1 mm wide, 10 mm long, and notched every 2 mm. Box used special gold or silver probes that had different angulations.
The classification system included three generations of probes: first, second and third generations.

In 2000, Watts extended the classification system to include a fourth and fifth generation of probes.
FIRST GENERATION

- First-generation probes -> manual, handheld instruments, also called conventional probes
- 1. Conventional probes
- 2. MICHIGAN “O” PROBE
- 3. NABER’S PROBE
- 4. GOLDMAN-FOX PROBE
- 5. WHO PROBE
In 1936, Charles H. M. Williams. The Williams’ probe, 13 millimeters in length and one millimeter in diameter, with demarcation lines at 1, 2, 3, 5, 7, 8, 9 and 10 millimeters.

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MICHIGAN “O” PROBE

- Markings are at 3, 6, and 8mm

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NABER’S PROBE

- Determine the extent of furcation involvement on a multi rooted teeth
- Curved working end for accessing the furcation area
- The depth of insertion of the probe into the furcation area determines the degree of furcation involvement
GOLDMAN-FOX PROBE

- Rectangular in cross section and has millimeter markings (mm) markings at 1-2-3-5-7-8-9-10
WHO PROBE

- The probe was designed for two purposes:
  - Measurement of pocket depth.
  - Detection of sub gingival calculus
- Weight = 5 gm

Used in the assessment of CPITN

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WHO (1978) – CPITN probe

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SECOND GENERATION PROBES

- Constant Pressure probes designed to provide for standardization of controlled probing pressure.
- 20 grams of force
- The TPS (True Pressure Sensitive) probe

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The TPS (True Pressure Sensitive) probe
Third-generation probes refer to automated probing systems.

Software integrates with existing computer systems to provide computerized periodontal charting.
The Florida Probe, first available in 1987, devised by Gibbs, is one such automated probing system that efficiently allows for hands free charting and generates a detailed, computerized periodontal chart.

The Florida Probe has a constant pressure of 15 grams and a precision of 0.2 millimeters.
Florida Probe
Foot switch

Computer interface/personal computer. Probe tip has a diameter of 0.45 mm,

Sleeve has a diameter of 0.97 mm. Constant probing pressure of 15 gm is provided by coil springs inside the handpiece.
INTER PROBE

- A flexible probe tip, which curves with the tooth as the probes enter the pocket area.
FOURTH GENERATION PROBES

- Refer specifically to 3D technology,
- With the goal of obtaining a precise and continuous reading of the base of the sulcus or pocket.
FIFTH-GENERATION PROBES

- Designed to utilize ultrasound, in addition to 3D.
- Aim to accurately measure attachment levels without penetrating the Junctional epithelium.
- For a more comfortable examination and a precise mapping.
The US probe, ultrasoundographic
Ultra sonographic probe
The Diamond Probe

- Detects periodontal disease during routine dental examinations by measuring relative sulfide concentrations as an indicator of gram-negative bacterial activity.
- Single-use disposable probe tip with microsensors connected to a main control unit
DIAMOND PROBE
The Periotemp® Probe (Abiodent Inc, Danvers, MA) temperature-sensitive probe, detects early inflammatory changes in the gingival tissues by measuring temperature variations in these tissues.

- Detects pocket temperature differences of 0.1°C from a referenced subgingival temperature.
Factors Affecting Probing

- Design of the probe,
- Probing force,
- Probe position,
- Probing direction
- Pocket depth,
- Tissue inflammation
Design

1. Millimeter Markings
2. Color Coding. Color-coded probes are marked in bands (often black in color)
FUNCTION

- Determine the health of the periodontal tissues
- To measure pocket depths,
- To measure clinical attachment levels,
- To determine the width of attached gingiva, to assess for the presence of bleeding and/or purulent exudate (pus), and to measure the size of oral lesions
Working End

- Working-End
  - Blunt
  - Rod-shaped

- Cross-section
  - Round
  - Rectangular

Types
- Calibrated
- Non Calibrated
PRINCIPLES, ADAPTATION

- The side of the probe tip should be kept in contact with the tooth surface. The probe tip is defined as 1 to 2 mm of the side of the probe.
PARALLELISM

- The probe is positioned as parallel as possible to the tooth surface.
TECHNIQUE

- Probing is the act of walking the tip of a probe along the junctional epithelium within the sulcus.

THE WALKING STROKE

- The walking stroke is the movement of a calibrated probe around the perimeter of the base of a sulcus or pocket.
- Walking strokes are used to cover the entire circumference of the sulcus or pocket base.
- It is essential to evaluate the entire “length” of the pocket base because the junctional epithelium is not necessarily at a uniform level around the tooth.
PRODUCTION OF THE WALKING STROKE
1. Walking strokes are a series of bobbing strokes that are made within the sulcus or pocket.

2. The probe is inserted until the tip encounters the resistance of the junctional epithelium that forms the base of the sulcus.

3. Create the walking stroke by moving the probe up and down in short bobbing strokes and forward in 1-mm increments. With each down stroke, the probe returns to touch the junctional epithelium.

4. The probe is not removed from the sulcus with each upward stroke.

5. The pressure exerted with the probe tip against the junctional epithelium should be between 10 and 20 grams.
WALKING THE PROBE

Gingival margin
Probing depth
PROBING (ANTERIOR TOOTH)

1. Begin on the distofacial or distolingual line
2. Begin by inserting the probe at the distofacial line angle
3. Walk toward the distal surface.
4. Assess beneath the contact area. Tilt the probe and extend the tip beneath the contact area. Press down gently to touch the junctional epithelium
5. Assess the facial surface. Make a series of walking strokes across the facial surface.
6. Walk toward the mesial surface. Walk across the mesial surface until the probe touches the contact area.
7. Assess beneath the contact area. On adjacent anterior teeth, only a slight tilt is needed to probe the col area.
Probing (Posterior Tooth)

1. Assess beneath the contact area. Tilt the probe so that the tip reaches beneath the contact area (the upper portion of the probe touches the contact area). Gently press downward to touch the junctional epithelium.

2. Reinsert at the distofacial line angle. Remove the probe from the sulcus and reinsert it at the distofacial line angle.

3. Probe Site Make a series of tiny walking strokes across in a forward direction toward the mesial surface.

4. Walk the probe across the mesial surface until it touches the contact area.

5. Assess beneath the contact area. Tilt the probe and extend the tip beneath the contact area.

6. Press down gently to touch the junctional epithelium.
POSITIONING AND SEQUENCE FOR PROBING
Measurement Of CAL, RAL
TRANSGINGIVAL PROBING
PROBING HEALTHY VERSUS DISEASED TISSUE

1. Clinically Normal Sulcus
   a. In health, the tooth is surrounded by a sulcus. The junctional epithelium (JE) forms the base of the sulcus by attaching to the enamel of the crown near the cemento-enamel junction (CEJ).
   b. The depth of a clinically normal gingival sulcus is from 1 to 3 mm, as measured by a periodontal probe.
2. Periodontal Pocket

- a. A periodontal pocket is a gingival sulcus that has been deepened by disease.

- In a periodontal pocket, the JE forms the base of the pocket by attaching to the root surface somewhere apical to the CEJ.

- A periodontal pocket results from destruction of alveolar bone and the periodontal ligament fibers that surround the tooth.
PROBING

**Position of Probe in a Healthy Sulcus.** In health, the probe tip touches the junctional epithelium located above the cemento-enamel junction.

**Position of Probe in a Periodontal Pocket.** In a periodontal pocket, the probe tip touches the (JE) located on the root below the cemento-enamel junction.
PERI IMPLANT PROBING

- The results obtained with peri implant probing cannot be interpreted same as the natural teeth because:
  - Differences in the surrounding tissues that support implanted teeth.
  - Probe inserts and penetrates differently.
  - Around natural teeth, the periodontal probe is resisted by the insertion of supra-crestal connective tissue fibers into the cementum of root surface. There is no equivalent fiber attachment around implants.
Advantages:

- Can measure the level of mucosal margin relative to a fixed position on the implant.
- Measure the depth of tissue around the implant.
- Periimplant probing depth is often a measure of the thickness of surrounding connective tissue and correlates most consistently with the level of surrounding bone.
- The probing depth around implants presumed to be “healthy” has been about 3mm around all surfaces.

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