

Periodontal Probes – A Review

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Abstract

A periodontal probe till today remains the most important diagnostic tool in periodontal diseases. A probe is used to make initial assessment, followed by detailed evaluation to determine the extent and degree of severity of disease and tissue destruction for specific treatment planning. During treatment the probe is applied to assess the progress. After treatment, use of the probe helps to determine the completion of professional services as recognized by the health status of the tissue. This article provides the reader with the review of periodontal probes which throws light on clinical presentation, diagnosis, prevention and management.

KEY WORDS : periodontal probes, pocket depth, junctional epithelium, periodontitis

Introduction

Periodontal probes are the most widely accepted instruments for evaluating the gingival status and periodontal health of dental patients. The most commonly used probes are hand- held instruments with markings arranged in variety of gradations.⁴ The measurements recorded with the probe have generally been considered to represent a reasonably accurate estimate of sulcus or pocket depth. Increased probing depth and clinical loss of attachment is pathognomic for periodontitis. Therefore pocket probing is a crucial and mandatory procedure in diagnosing periodontitis. Periodontal probing procedure extremely technique sensitive²⁷. More accurate and reproducible probing measurements provide more reliable diagnostic information. Advancement in probes is ultrasonic perio probe. It is a painless way to monitor periodontal disease¹⁸

CLASSIFICATION –

B.L.PHILSTROM 1992. has described 3 generation of probes.

1. First generation or conventional or manual probes
2. Second generation or probes with controlled force application.
3. 3rd generation probes or automated probes.
4. 4th generation – recording sequential probe positions along gingival sulcus.
5. 5th generation – Ultrasonographic perio probe.

1ST GENERATION PROBES -Charles H.M. Williams, 1963

- a. Willams periodontal probe.
- b. University of Michigan 'o' probe
- c. Goldman – fox probe
- d. Glickman's probe
- e. Meritt A & B probe
- f. University of north Carolina probe (UNC 15 probe)
- g. Furcation probes
- h. Marquis colour coded probe
- i. Steven s. detsh probe.
- j. CPITN probe – CPITN E & CPITN C.

k. Perio wise probe – Friendly probes

l. L -20 probe

m. Thermal probe

2ND GENERATION PROBES –Hunter in 1994

- GABUTHULER & HASSELL - First pressure sensitive probe.⁵
- VAN DER VELDEN & DEVRIES - Pressure sensitive periodontal probe.²⁶
- VITEK et al – Leaf spring force controlled periodontal probe.
- TROMPET et al – New periodontal probe to increase the reproducibility of pocket depth measurements.
- VINE VALLEY PROBE – Electronic pressure sensitive probe – polson et al.
- VIVA – CARE TPS probe – HUNTER F.

3RD GENERATION PROBES –Jeffcoat et al in 1986,

These probes combine controlled force application, automated measurements and computerized data capture.²³

- JEFFCOAT et al – Foster miller probe
- BIREK et al – Automated periodontal probes
- Goodson JM and kondran N – Inter probe
- Toronto automated periodontal probe – Karim N et al
- Perio probe
- Florida probe⁸ – Gibbs et al

4TH GENERATION PROBES – Watts TLP. in 2000

This is under development. It is an attempt to extend linear probing in a serial manner to take account of continuous & 5 dimensional pockets.

5th GENERATION PROBES –Hinders M, 2001

ULTRASONIC PERIODONTAL PROBE – DR. mark hinder. - It detects, images & maps the upper boundary of periodontal ligament and its variation over the time as an indicator of the presence of periodontal disease.

COMPARISON OF PROBES –^{6,14,15,22}

Probe type	Advantages	Disadvantages
Manual probes(1st generation)	1.Examiner experience	1.Low resolution (<1 mm)
	2.Tactile sense	2.Visually read
	3.Low cost	3. No examiner blinding
		4.Data must be transcribed
		5.Probing pressure not controlled

Electronic probes	Advantages	Disadvantages
	1. Electronic data collection	1.High cost
	2. Examiner blinding	2.Examiner training and calibration
	3. Higher resolution (up to 0.1 mm)	3. Lack of tactile sensitivity
	4. Controlled probing pressure	

USES –¹⁶

1. Measurement of pocket depth
2. Quantification of attachment level
3. Quantification of bacterial plaque and gingival inflammation.
4. Measurement of gingival recession.
5. Location of calculus.
6. Identification of tooth irregularities.
7. Identification of tissue characteristics.
8. Determination of bleeding tendency.

FACTORS AFFECTING PERIODONTAL PROBING –^{1,2,10,11}

1. Force – 20 gms
2. Tip diameter – 0.6mm
3. Probe location
4. Connective tissue inflammation.

PROBING TECHNIQUE –

The periodontal probe is inserted with gentle pressure between the free gingival margin and the too surface directed apically to the junctional epithelium. The bottom of the pocket gives a soft and resilient touch with the probe tip.²¹

PROBE INSERTION –

The probe tip is placed under the gingival margin³ and gently directed apically to the junctional epithelium with pressure firm enough to ensure accurate readings but yet not damage the epithelium and connective tissues.²⁴

PROBE MOTION (WALKING) –

The movement of the periodontal probe is called “walking the probe.”¹¹The probe remains in the pocket or sulcus, kept parallel to the tooth surface, and is moved in small steps around the entire circumference of the tooth.⁷

ADAPTATION –

As periodontal probe is walked around the tooth surface, adaptation is achieved by keeping the probe working end parallel to the surface being measured.

TRANSGINGIVAL PROBING (SOUNDING) –

Transgingival probing, a procedure carried out under local anesthesia is used to confirm the extent and configuration of the intrabony component of the pocket or of the furcation defects.⁹

CLINICAL SIGNIFICANCE²⁰

Interpretation of probing depth measurements during the initial examination of a patient with periodontal disease, the role of probing in treatment planning and its value in monitoring the effect of various modes of therapy.¹⁶ It is now clear that the measurements recorded with a periodontal probe can no longer be used synonymously with "sulcus depth" or "pocket depth", since probing seldom records accurately the depth of these anatomic entities.²⁵ Major errors leading to an underestimation of pocket depth could result from inadequate positioning of the probe in relation to the periodontal lesion particularly with respect to angulation. Zeigler & Allen¹⁷ calculated that angulating a probe 25 degrees from the long axis of a tooth resulted in a discrepancy of only 0.5mm from measurements taken in the direction of the long axis of the tooth, where un-restored contact areas made such measurements possible. Probing depth measurements obtained following initial therapy are likely to give the clinician a more accurate estimate of the true location of the anatomic sulcus or pocket bottom than the preoperative measurements.¹⁹

RECENT ADVANCES –

1. COLORVUE probe
2. GO probe
3. ULTRASONOGRAPHIC perio probe

1. COLORVUE PROBE –

Colorvue probes have a vivid yellow tip and black markings that provide superior contrast to intraoral structures for enhanced visibility.

- PCV11
- PTPCV12
- PTPCVWPT
- PCVUNC12PT



Available as an expro with 3 explorer designs :

- XP17/PH 6
- XP23/PH6
- XPTU17/PH6

Colorvue probes enhance visibility resulting in less eye strain. Patients will experience greater comfort with colorvue's flexibility and rounded tip. Large ergonomic handle provides a comfortable grasp. It is safe to use around implants

2. GO PROBE



GO probe eliminates the breakdowns and frustrations clinicians face while attempting to maintain the standard of care in their practices. GO probe is an icon driven data input device that allows the clinician the ability to probe and chart without the assistance of the another person. This solves one of the biggest road blocks to compliance with the standard of care requirement.⁸

3. ULTRASONOGRAPHIC PERIO PROBE –

A painless way to monitor periodontal disease. Probe tip is placed at gum line with thin ultrasound beam projecting into tissues. Better balance and feel with contra-angling for easier use. Foot pedal starts flow of coupling water, records & archives data,

increments. Slight flow of water is used to ensure coupling of ultrasound in and out of tissues. Probe tip placed at gum line.



CONCLUSION

The periodontal probe has been and continues to be used as an important diagnostic instrument by the dental profession. The measurements recorded with the probe have generally been considered to represent a reasonably accurate estimate of sulcus or pocket depth. After treatment, use of the probe helps to determine the completion of professional services as recognized by the health status of the tissues.

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