



'THE POWER OF PROBING'- PERIODONTAL PROBING AND ITS SIGNIFICANCE A QUESTIONNAIRE SURVEY AND REVIEW

Dental Science

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ABSTRACT

AIM: To evaluate the awareness of the significance of probing amongst practicing dentists, practicing interns and subject experts

METHOD: An online questionnaire survey was conducted with the survey participants belonging to the age group of 21-60 years. A total of 120 responses were obtained. 23 questions were asked with 21 closed ended and 2 open ended questions.

RESULTS: On an average, only 6.8% of the responses were found to be accurate. About 76% of the general dentists agreed that they skipped the crucial step of periodontal probing as it was time consuming.

CONCLUSION: Periodontal disease is insidious in nature. Periodontal probing is one of the easiest, valuable diagnostic tools that help identifying disease at its earliest. Unfortunately, probing is often overlooked by the dentists resulting in under estimation of disease. The paper discusses the significance of probing and the common errors while probing.

KEYWORDS

Periodontal Probing, Periodontitis, Periodontal Probes

INTRODUCTION:

Dental biofilm induced periodontal diseases can be classified into two broad categories –one associated with the gingiva, i.e., gingivitis, and the other associated with the periodontium, i.e., periodontitis. According to the Glossary of Periodontal terms (4th edition), Gingivitis is defined as 'inflammation of the gingiva' whereas Periodontitis is 'inflammation of the supporting tissues of the teeth. It is usually a progressively destructive change leading to loss of bone and periodontal ligament; an extension of inflammation from gingiva into the adjacent bone and ligament'.^[1] Apical shift of the dentogingival unit is considered as the hallmark of periodontal disease. Clinically, a pathologically deepened gingival sulcus called the periodontal pocket is one of the most important features of periodontal disease^[2].

The depth, type, number and extent of periodontal pockets constitute a crucial record of disease history. The correct identification, accurate estimation and timely enumeration of periodontal pockets is therefore of fundamental importance for the diagnosis and treatment planning. In addition, identification of changes in periodontal pockets helps evaluate the severity of disease, its progression, need for any adjunctive therapy or an alteration in therapeutic efforts. Not only is pocket measurement important for a subject expert (i.e., Periodontist), it is also of equal importance to the clinician in daily practice^[3].

An important diagnostic tool to identify these pathologic changes in the periodontium is a periodontal probe. The measurements recorded by the probe have generally been considered to represent a reasonably accurate estimate of the sulcus or a periodontal pocket.^[4] However, in spite of the lack of complexities in the procedure, periodontal probing-a crucial step in diagnosis is often skipped by many dental professionals. The following paper is an eye-opener survey that discusses the common fallacies while periodontal probing and remedies for the same.

AIM AND OBJECTIVES:

To evaluate the awareness of the significance of probing amongst practicing dentists, interns and subject experts.

METHODOLOGY:

An online survey was undertaken for practicing dentists, inclusive of interns and subject experts (MDS), except Periodontists. Dental students were excluded. Survey questionnaire with a total of 23 questions-21 closed ended and 2 open ended was generated using Google forms and circulated by means of a mobile application (Whatsapp). A total of 120 responses were obtained with the participants belonging to the age group of 21-60 years.

RESULTS AND CONCLUSION:

The data from 120 questionnaires comprised of 71.4% females and 28.6% males volunteers, mean age of 28.4 years old, ranging between 21 and 60 years. 29.9% were interns, 36.4% were post graduate students, 29.9% were practicing dentists and 3.9% were dental specialists. 59.7% of the dentists had an excellent patient inflow whereas 29.9% had a good inflow. On an average, 6.8% of correct responses were noted. The table given below summarizes the details of the percentage of responders for all questions and the correct responses for the same.

QS NO	QUESTIONS	Correct response n(%)	Incorrect response n(%)
1	Age		
2	Gender a. Male b. Female		
3	Year of study a. Internship b. Postgraduate student c. BDS, practicing dentists d. MDS		
4	Place of study a. Private set up b. Hospital c. Charitable trust d. Others, specify		
5	Patient inflow a. Fair b. Good c. Excellent		
6	No of working hours a. <3 hours b. 3-6 hours c. >6 hours		
7	Do you probe the gingival sulcus of every patient? a. Yes b. No c. Most of the times d. Sometimes	19.5	80.5
8	How do you decide when to probe?		

9	Does the color of the gingiva determine gingival health? a. Yes b. No	7.8	92.2
10	How many areas of a tooth do you probe? a. Interdental only b. Facial and palatal/lingual c. All surfaces d. 6 line angles	74.1	25.9
11	Which probe do you use for probing? a. Graduated , non-standardized b. Graduated- standardized c. Plain	26	74.1
12	Do you record the probing depth in numbers? a. Yes b. No	48.1	51.9
13	Do you re-assess the probing depth post-treatment? a. Yes b. No	74	26
14	What is the angle used for probing facial/lingual surface? a. 0 degrees b. 15 degrees c. 45 degrees	37.7	62.4
15	How do you assess furcation areas? a. Naber's probe b. Straight probe c. Others, specify	83.1	16.9
16	What is the angle used for probing furcation, if using straight probe? a. 0 degrees b. 15 degrees c. 45 degrees d. Straight probe cannot be used	35.1	64.9

17	Do you know about an optimum pressure used for probing? a. Yes b. No	72.7	27.3
18	How do you measure pressure during probing? a. Using pressure sensitive probe b. Probe until resistance is achieved c. No specific method d. Others, specify	41.6	58.4
19	What do you check while probing a. Pocket depth b. Margin of the restoration c. Bleeding on probing d. All of the above	89.6	10.4
20	How long do you wait to check bleeding on probing? a. 10 seconds b. 30 seconds c. 1 minute or more	35.1	64.9
21	How many different probes do you know for periodontal probing? Name them.		
22	When do you refer a patient to a periodontist? a. Pocket depth upto 2mm b. Pocket depth 2mm-4mm c. Pocket depth of 4mm or greater	72.7	27.3
23	Can biologic width be assessed using a probe? a. Yes b. No	55.8	44.2

DISCUSSION:

The periodontal pocket is the most common parameter to be assessed by dental clinicians in case of periodontitis. One of the easiest, reliable and convenient methods for detecting, assessing and quantitatively measuring periodontal disease is through the use of a simplest diagnostic tool –a graduated periodontal probe. Periodontal probing permits dental surgeons to identify sites with a history of periodontal disease and also those who are at a risk of developing one.^[5] Periodic monitoring also helps in ascertaining the progression of the disease and halting its course at the earliest.

The word *probe* is derived from the Latin word '*probo*', which means "to test".^[5] It was in 1882 when John W Riggs described a probe. Between 1915 and 1958, a number of studies conducted supported the use of periodontal probe to determine the disease status of gingival tissues.^[6] Periodontal probe and its use was first described by F.V. Simonton of the University of California, San Francisco in 1925^[7] He proposed use of flat probes 1mm wide, 10mm long and notched every 2mm. Glickman stated that "the probe is an instrument with a tapered rod-like blade which has a blunt and rounded tip."^[8] Box used special gold or silver probes that had different angulations.^[6]

Miller advocated probing of all pockets and recording the depth on a tabulated diagnostic chart.^[9] Orban (1958) described the periodontal probe as "the eye of the operator beneath the gingival margin."^[10] Goldman et al stated that "Clinical probing with suitable periodontal instruments such as the Williams calibrated probe is a prime necessity in delineating the depth, topography and character of the periodontal pocket"^[11]

A probe consists of three parts, including handle, shank and tip. The tip is the working end and is usually calibrated with millimeter markings. Probe tip and shank are positioned relative to each other in a defined angle of usually greater than 90°. Most periodontal probes are made of stainless steel, but more recently titanium and plastic have been used as well. The probes used earlier were too thick to probe narrow clinical pockets and hence the use of probes with a tip diameter of 0.4mm was advocated. The probes commonly used now-a-days were developed by Ramfjord in 1959.^[12]

For the consistency of use and academic purposes, in 1992, Pihlstrom et al^[13] classified probes into three generations. In 2000, Watts^[14] extended this classification by adding fourth and fifth generation probes. These generations, along with their advantages and disadvantages, are presented as follows.^[5]

GENERATION	TYPE	EXAMPLE	ADVANTAGES	DISADVANTAGES
FIRST GENERATION	Manual, handheld (conventional probes)	William's probe, UNC-15 probe, Michigan 'O' probe, Naber's probe, Goldman-Fox probe, WHO probe, CPITN probe	-Easily available and inexpensive -tactile sensitivity is preserved -rounded tip prevents trauma	-heavy -probing force not controlled -Manual errors possible while probing and recording
SECOND GENERATION PROBES	Pressure sensitive probes	True pressure sensitive probes	-Constant probing pressure of 20g -comfortable to the patient	-probe tip may penetrate the junctional epithelium at inflamed sites -reading is manual, errors possible
THIRD GENERATION PROBES	Automated probing system	Florida probe Toronto Automated probes, Interprobe	-Constant pressure of 15g and a precision of 0.2mm - manual errors eliminated -printout data available	-tactile sensitivity reduced
FOURTH GENERATION PROBES	3D technology		-three dimensional probe -sequential probe positions are measured	-under development -invasive probe

FIFTH GENERATION PROBES	Uses Ultrasound + 3D technology	US probe	-Precise mapping -comfortable -data can be stored	-expensive -requires learning curve
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Probing is affected by a number of factors namely – the design of probe, probing force, probe position, the direction of probing, pocket depth and the degree of tissue inflammation^[15] To facilitate ease in pocket depth measurement, the working end of the probe is marked at millimeter intervals. Probe, when used accurately helps determine the health of the periodontal tissues, measures pocket depth, clinical attachment loss, sub-gingival calculus and sub-gingival restoration margins/overhangs/caries.^[16]

The clinical sign of periodontitis are not always present; hence periodontal probing becomes a necessity in every routine dental visit. Certain cases of generalized aggressive periodontitis demonstrate pink, inflammation-free gingiva, with some amount of stippling. Only periodontal probing helps differentiate such cases from the disease-free ones.^[2] Probing should be performed on all the surfaces by 'walking the probe' gently along the deepened sulcus with a standardized graduated probe. Care should be taken to hold the probe parallel to the long axis of the tooth. However, a tilt of 15 degrees becomes necessary when probing facial and lingual areas with cervical contours.^[16] These values should be recorded for every patient and reassessed at every follow-up visit. This will not just serve as an important treatment planning guideline for the dentist, but also a valuable patient education tool. The average of the pocket depth can be assigned as an individual's 'Periodontal score'. Addressing the patient by his periodontal score helps in patient motivation and better reinforcement of instructions.

Although a smaller sample size, the results of the survey revealed a significant disparity in application of what is known. 92% of the participants assumed gingival health merely by appearance; only 19.5% probed the gingival sulcus of every patient whereas 74.1% of the participants did not use a graduated periodontal probe for probing. All the 3 figures are a clear indication for changing our perception towards the periodontium, as it's us- the clinicians who can identify periodontitis at the earliest just by probing.

In a survey conducted in general practices in North Carolina, McFall et al. (1988) found that only 14.5% of the audited records included probing information. Another study reported that in only 62% of the surveyed practices were complete periodontal recordings performed routinely on new patients (Heins et al., 1989).^[3] The results of this survey also proved the negligence on the part of the dental surgeons which was in accordance with the earlier surveys. Decades apart, the results still remain unjustified. The need of the hour is to stop assuming periodontal health and start probing gingival sulcus of every patient using a graduated periodontal probe.

CONCLUSION:

Early screening for periodontal disease is gaining importance because of the association with systemic diseases. Newer developments in the field of periodontal probes to provide an error-free and painless determination of pocket depth are still under research. As the quest for the best automated probe continues, one still cannot oversee the miraculous qualities of a simple graduated periodontal probe! Time has come that we benefit ourselves and our patients with the century old method of manual probing.

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