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A Colorimetric Interdental Probe as a Standard Method to Evaluate measurement of Interdental Embrasure

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Abstract:-

- ***Introduction***

Eliminating interproximal biofilm is considered important for gingival health care, periodontal disease prevention and caries.

- ***Aim and Objectives***

To compare colorimetric probe with UNC 15 periodontal probe in recording time and accuracy of measurement of gingival embrasure.

- ***Material and Methods***

All the subject's interproximal embrasure, were evaluated by using the colorimetric probe, then after a time lapse of at one hour, UNC 15 periodontal probe by the same examiner except those between the 2nd and 3rd molars. Comparison was made on following parameters: ease of use, time taken for recording of interproximal embrasure and accuracy of measurements. The collected data was tabulated and analyzed.

- ***Results***

Compared to the UNC 15 probe the new colorimetric probe was found to be equally accurate. But in contrast it was easy to use and required less time for charting interproximal embrasure.

- ***Conclusion***

The new colorimetric probe can be considered as good replacement for the conventional UNC-15 probe and it can be used for routine dental examinations in clinical and epidemiological settings.

Keywords:- *Interdental Brush, Colorimetric Interdental Brush.*

I. INTRODUCTION

Oral hygiene is essential for maintaining oral health, which involves removing the microbial plaque and preventing tooth decay. Moderate resources are important as they can remove cavities between teeth that can become plaque and count within 48 hours. These review articles focus on internal cleaning aids as a supplement to tooth brushing techniques to maintain internal hygiene that promotes healthy tissue and provides protection against bacterial infections and other oral diseases.[i]

The median anatomy is the space of the medial space and the physical space that exists between the two adjacent teeth, and their shape and volume is determined by the morphology of the teeth. The rotating papilla represents the gingival tissue that fills this space and is composed of a thick layer of tissue covered by the oral epithelium and can be influenced by the height of the alveolar bone, the distance between the teeth and the internal contact area.

Three types of gingival embrasure are visible:
a) Type I: completely occupied by a healthy internal papilla.
b) Type II: Approximately 75% of the seizures remain gingiva.
c) Type III: About 50% of constipation is occupied by gingival.[ii]

Regular brushing of teeth alone does not succeed in removing biofilm from intermediate gaps. Oral hygiene practices from dental professionals focus on daily brushing and dental hygiene techniques as standards for achieving and maintaining good oral hygiene..[iii] Dental floss is recommended for those with closed contact, and interproximal brushes are recommended for patients who have periodic pain or those who have open flaps. Interdental brushes (IDBs) currently represent the most effective and most effective method of interproximal cleansing compared to brushing alone or combined use of toothbrushing and dental floss.[iv] IDBs are specifically designed to clean between teeth depending on the width of the embrasure. An optional medium cleaning where the brush allows to choose the largest size that penetrates the interior and fills the space completely without causing any discomfort.[vvi]

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A colorimetric calibrating probe is a conical shaped device with a circular finger. The active part has colored bands from area to base corresponding to the IDB with increasing width. The largest part of each color band corresponds to the width of the correct brush.

The procedure consists of introducing a horizontal colorimetric in the center of the vestibular open, fully inserting it, and then focusing on the color from the area of the vestibular side. This color corresponds to the IDB color code that is best suited for spatial scaling.

➢ *Scoring Method*

Classification of Access Diameter for Interdental Space.

- Color code related to brush size;
- The access range, defined by the CURAL wire core gauge as "1 -Blue, 2 -Red, 3 -Pink, 4-Yellow and 5-Green," is used to harden the IDB (fig-1); and
- An active cleaning layer defined by the length of synthetic bristles that covers the working portion of the appliance.

Color code	Blue(B)	Red(R)	Pink (P)	Yellow(Y)	Green(G)
Access diameter (mm)	0.6	0.7	0.8	0.9	1.1
Effective cleaning diameter (mm)	2.2	2.5	3.2	4.0	5.0

Table1:- Characteristics of the IDBs in relationship to the classification of the access diameter for the interdental space

Fig 1:- Colorimetric calibrating probe

UNC 15 probe is a **15** mm long periodontal probe with millimeter markings at each millimeter and color coding at interval 5 mm. Aim of this study is to compare colorimetric probe with UNC 15 periodontal probe in recording time and accuracy of measurement of gingival embrasure.

II. MATERIAL AND METHODS

Recruitment and examination of the subjects was performed at MGVM K.B.H dental college and hospital. The study population consisted of 30 periodontically healthy patients, both males and females.

Subjects were included if they were healthy for 1) 18-25 years; 2) there are at least 20 natural teeth, including 3 molars; 3) there are no significant dental anomalies or interproximal caries; 4) Announces at least two times toothbrushing per day and 5) There is no health condition that requires antibiotic prophylaxis before interoperative examination.

Excluded items excluded from the study if they had 1) antibiotic treatment at any time during the past 3 months; 2) significant oral orthodontic care or specialized prophylaxis for the past 4 weeks; 3) evidence of any other systemic disorders associated with, or diseases affecting the immune system; 4) medications such as anti-platelet or anticoagulant agents and 5) history of periodontal care.

All the subject's interproximal embrasure, were evaluated by using the colorimetric probe, then after a time lapse of at one hour, UNC 15 periodontal probe by the same examiner except those between the 2nd and 3rd molars. Comparison was made on following parameters: ease of use, time taken for recording of interproximal embrasure and accuracy of measurements. The collected data was tabulated and analyzed.

Fig 2:- Interproximal embrasure, were evaluated by using the colorimetric probe and UNC 15 periodontal probe

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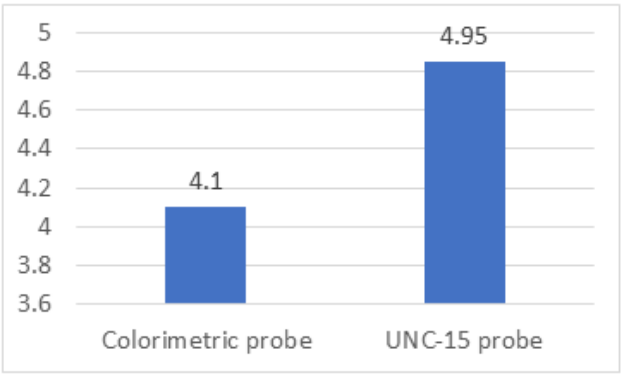
The pressure applied by a horizontal probe in the interdental area should be stable and constant until reaching maximum compression with minimal discomfort to the patient. A Visual Analogue Scale (VAS Ranging 0 -10) was used to estimate the patient's discomfort perception correlated to interproximal pressure.

III. STATISTICAL ANALYSIS

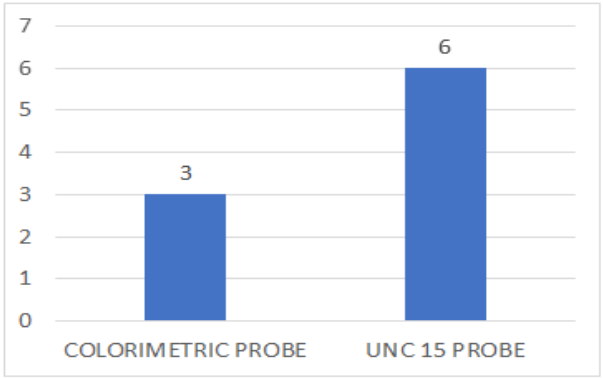
SPSS Windows 20.0 was used for descriptive statistics (SD values and percentages) and for statistical analyzes (P-value calculation) in that analysis where the patient was the unit of analysis.

IV. RESULTS

The sample consisted of 30 subjects (12 females and 18 males) with a mean age of 22 ± 2.7 years. From 900 (30 subjects x 30 sites/subjects) potentially eligible sites, 820 sites remained after the exclusion of an absence of teeth (362). Mean Time required for charting Full mouth embrasure for colorimetric probe was 4.1+2.85 and for UNC 15 probe was 4.95 + 2.20 Statistically significant (p-0.014) difference was found between the groups in accordance to Mean Time required for charting Full mouth embrasure (in min.) 80% of subjects assigned a VAS score ≤ 3 to their discomfort when using colorimetric probe. Statistically significant (p-0.012) difference was found between the groups in accordance to VAS score.



Graph 1-Mean Time required for charting Full mouth embrasure for colorimetric probe



Graph 2-Mean Time required for charting Full mouth embrasure (in min.)

V. DISCUSSION

To the best of our knowledge, the present study is the first cross-sectional study to compare colorimetric probe with UNC 15 periodontal probe in recording time and accuracy of measurement of gingival embrasure in adults in a healthy periodontal condition.

It is difficult to distinguish the spaces between each other as usual, under one or more general ones on the basis of one parameter. In addition, the difference in the number of vacancies in different locations can be quite significant. Few studies have been conducted to determine the factors that lead to complete or partial formation of a permanent space between the natural and permanent teeth.

Our results could reduce demand overhead. More serious diseases, such as the concept of diabetes mellitus, meaning that a person has multiple diseases or treatment conditions, and their adverse health effects are excluded. However, we tested a highly educated sample where oral hygiene was considered good until they found that they brushed their teeth at least twice a day.

Most procedures rely on specific invasive methods for measuring the median thickness, which can cause discomfort to the patient and possibly damage the proximal gingival unit. The choice of brush size that is appropriate for oral morphology is powerful, with the risk of being over-emphasized by the impact of efficiency and over-use on the impact of acceptability, efficiency and damage.[vii]

New multi-colored probe is easy to use. Markings easily determines embrasure measurement. Less time required for charting embrasure measurement. 80% of subjects assigned a VAS score ≤ 3 to their discomfort when using colorimetric probe where 72% of subjects assigned a VAS score <7 using UNC 15 probe.

Due to the "exterior appearance" of the space, the translation of the effective range of cleaning is much easier in the background of the mouth. However, our research did not highlight the relevant differences between different spatial categories. When comparing the proportions of the two methods, our results showed considerable agreement between the two methods. These results indicate a similarity in the diagnosis. In the current study, CIP was set as "standard gold" because of the validated relationship between its codes and life expectancy of IDBs. No studies have shown the good birth and accuracy of technological tools for diagnosing the interdental embrasure acceptance of permanent teeth especially in cases where subjects are periodontically healthy. This may make it appropriate to use the criteria, e.g. The CIP method, for accessing the ruling parameters that can be made more effective, is more satisfactory and less disturbing than the subjective method used in current applications with intermediate brushes.

The effectiveness of IDBs in reducing gum injury is considered, but the importance of their use in healthy patients is considered. It is necessary to consider both

approaches. Chances of IDB are considered psychologically healthy. Our research indicates that a 0.6 mm diameter with 50N / cm2 can penetrate all sites without difficulty, so it is considered a preventative factor interruption of acquired pellicle. However, the biggest problem in all cleaning is with diseases. Patience and ability to motivate. Intermittent cleaning is not permitted as part of daily oral hygiene. Therefore, CIP can be considered as a newly established method that facilitates central cleansing and improves patient mobility.

IDB space probes with CIPs should be clinically useful and come at a cost-effective rate in addition to other acceptable interventions in oral health care. No studies have looked at the impact of ID admission costs on asymptomatic patients. Colorimetric interdiction probe screen is more efficient and cost effective than standard practice of increasing the average concentration of daily oral health activities. People with periodontal health may have widespread use in prevention and management**.**

VI. CONCLUSION

Daily interdental cleaning is essential for gingival health care, preventing periodontal disease and reducing caries. The new colorimetric probe can be considered as good replacement for the conventional UNC-15 probe and it can be used for routine dental examinations in clinical and epidemiological settings.

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