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What Method is best for Removal of Oral Biofilm. A Commentary

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Louis ZG Touyz*

McGIll University School of Dental Medicine and Related Sciences, Canada

***Corresponding Author:** Louis ZG Touyz, McGIll University School of Dental Medicine and Related Sciences, Canada.

Abstract

Introduction: Care of the full dentition involves Oral Hygiene practices which include brushing use of floss and irrigation. ***Aim: Discussion:*** The various methods available are reviewed and endorses the level of success by reaffirmation of the thoroughness of implementation by the subject. ***Conclusion:*** Thers is no best method for Plaque removal, but success depends on the proficiency used rather than the method.

Keywords: Brushing; biofilm; flossing; irrigation; oral-hygiene; plaque

Abbreviations

OH=Oral Hygiene: OHI = Oral Hygiene Instruction. OB =Oral biofilm. DHCW =Dental health Care worker. MHCW = Medical Health Care Worker. TP = Tooth-paste.

Provenance and Introduction

Over a century has passed since Miller enunciated his Chemo-parasitic Theory on tooth caries formation. The essential gist remains that loci of tooth decalcification starts and subsequent microbial invasion initiates progressive decay, leading to the destruction and loss of the tooth affected. Oral microbiota exists in planktonic and sessile forms, the latter being called Oral Biofilm (OB). Microbiota form into plaques, and for this reason OB is often referred to a dental Plaque. The microbial ecosystem system in OB changes when undisturbed and allowed to stagnate. Stagnated OB undergoes progressive microbial changes that cause tooth-decay and gum disease. Stagnating OB acts as a dynamic, ionic exchange gradient, which at an acidic pH at or below PH 5.5, initiates decalcification. Not only may decalcification cause area loss of surface tooth material that results in erosion, but also decalcified micro-cavitation, which if not stopped progresses to caries and initiates early gum disease. Consequently, it is important to remove OB regularly to disrupt OB microbial activity, to prevent the putative oral morbidity [1, 2]. A wide variety of methods and paraphernalia exist to remove OB, among which items are primitive roots or twigs, tooth brushes, dental floss and irrigators [3-7]. A question most frequently asked by patients is: "Which is the best instrument for OB removal, brushing, flossing, irrigation or toothpicks?"

Aim

This commentary redirects the answer to pragmatic levels of success by the patient. The meticulous thoroughness of OB removal is best, not the kind of apparatus used for removal.

Discussion

Control of OB is sustained by regular visits t for professional assessment, (advice, motivation and prophylaxis procedures), and competent regular home care. Sessile OB is virtually colorless on teeth in the mouth. Without exposure OB cannot easily be identified, recognized everywhere and removed. To identify sessile OB, the bacteria can be stained with an innocuous dye, which is absorbed and concentrated in the microbes, but is far less absorbed by the tooth.

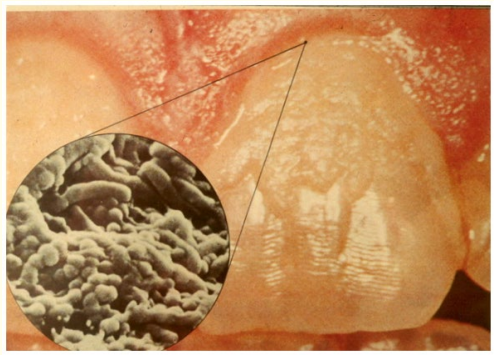

Figure 1: This shows invisible Oral biofilm constituted by microflora. Iodine, methylene blue, and basic Fuchsin are examples of such dyes [3].

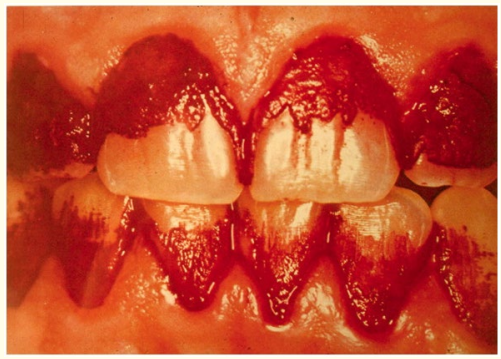

Figure 2: The OB is clearly visible after staining with red dye.

This creates a stark visual contrast which easily allows all Dental and Medical Health Care Workers (DHCW, MHCW), to identify the bacterial plaques. Ubiquitously Oral Biofilm has come to be called " Dental Plaque" Regular annual visits to DHCWs uses staining for regular monitoring and prophylaxis of dental procedures (exam, scaling, polishing, topical application of fluoride, and pit-&-fissure sealing).

Figure 3: The teeth have no OB adhering to the surface.

Tooth staining can easily be done with home-care oral hygiene by staining the OB using a disclosing-dye tablet or even a drop of any approved food dye.

Figure 4: A full dentition, after disclosing dye application. showing Red OB on the cervical and interproximal area.

Figure 5: Teeth after use of disclosing dye, using floss to remove interproximal OB.

Figure 6: A dentiton stained after less than thorough brushing; note not all the OB has been removed alongthe cervical and interdental margins.

Figure 7: A full dentition, after brushing without any OB.

Any method used will render some success, and the complete daily removal of OB will ensure no occurrence of decay of gum disease. DHCW's remove all the OB during clinical prophylaxis treatment (Scaling and Polishing). Although patients are often advised to brush -and-floss for at least 3 minutes morning and evening, this is rarely complied with clock-time. Most patients brush their teeth for less than thirty seconds, often until they detect the taste of the tooth-paste and floss irregularly. Brushing over a basin with running water, in front of a well-lighted mirror facilitates the thoroughness of oral hygiene procedures. Many patients use a timer (Like a 3-minute egg-timer) to assist in ensuring cleaning time is sustained. Home care wafers of staining material are commercially available (likeExpose-tablets).

Use of dentifrice has supplementary benefits with removal of OB. Toothpaste may stop decalcification by increasing local pH above pH5.5, strengthening enamel by causing fluoride to bond with Calcium-ions to form stable Calcium-Fluoride, may have local antibacterial properties, and also counter oral malodor.

Concluding remarks

Direct visual assessment of OB and thorough application of the cleaning method used until no stained OB is visible, is the best way to maximize and optimize the benefit from Oral Hygiene devices. Patients' attention to detail, reliable care and dextrous execution is the key for a lifetime of sustained oral health.

Conclusion

Irrespective of which oral hygiene device is used for home care, due diligence to scrupulous oral hygiene home-care cleaning ensures long-term success.

Conflict of Interest

The author declares no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Data Availability Statement

Not applicable.

Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to academic regulations and consequently is exempt.

Informed Consent Statement

Informed consent was taken for this study.

Authors' Contributions

The author is the sole writer and accepts full responsibility for the content.

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