FEATURE

Periodontal Disease: The Three Pillars of Prevention

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In order to treat periodontal disease successfully, we must consider the three pillars of prevention: risk assessment followed by risk management; bacterial reduction; and the host-mediated response. To ignore one of the foundational principles would be to disregard scientific evidence in our clinical practice, which may have far-reaching effects systemically.

FACT: Inflammation is at the very core of today's complex, prevalent, and deadly systemic diseases.

We have many reasons to treat periodontal disease based on science. Chronic, longstanding inflammation is the bane of good health and at the root of most of today's most prevalent and potentially deadly health issues influenced by an overactive inflammatory response. Inflammation is often referred to as the "silent killer" because it may go unnoticed until the onset of a potentially catastrophic event.

Chronic periodontitis is one of the most common, chronic inflammatory conditions known to humankind. In fact, periodontal pathogens and their products, as well as inflammatory mediators produced in periodontal tissues, have the potential to enter the bloodstream, causing systemic effects and contributing to systemic diseases. On the basis of this mechanism, chronic periodontitis has been suggested as a risk factor for cardiovascular diseases associated with atherosclerosis, bacterial endocarditis, diabetes mellitus, respiratory disease, preterm delivery, rheumatoid arthritis, and, recently, osteoporosis, pancreatic cancer, metabolic syndrome, renal diseases, and neurodegenerative diseases such as Alzheimer's disease.[1]

The Canadian Dental Hygienists Association (CDHA) has recently released an evidence-based fact sheet entitled, "Talking Points: Whole Body Health Requires Oral Health." The document examines the connection between oral inflammation and the respiratory system, the endocrine system (namely diabetes), the cardiovascular system, the reproductive system, growth and development, and the side effects of certain therapies such as radiation and chemotherapy. The fact sheet may be given to clients, providing elevated understanding of the many reasons why oral health is a strong contributor to overall health.[2]

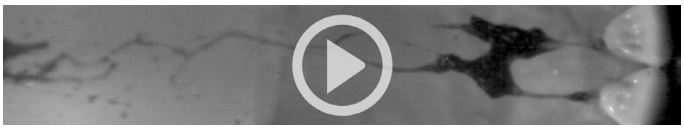
Figure 1

FACT: Risk assessment and subsequent risk management is critical to the success of treatment outcomes.

Treating periodontal disease has the potential to improve a client's risk profile for development and continuation of a number of health concerns. Identifying modifiable risk factors provides an opportunity to empower our clients to take responsibility and exert greater control over treatment outcomes.

A web-based client risk assessment questionnaire has been developed by industry experts in the area of caries, periodontal disease, and oral pathology. This risk calculator, named CARE (Customized Assessment and Risk Evaluator),[3] provides the dental hygienist with a meaningful starting point for client conversations regarding risk. Based on the evaluation, client responses, and the clinical data provided, the CARE tool generates an assessment and makes evidence-based recommendations identifying the client's risk as low, moderate, high or extremely high. If chairside Internet access is not available, the interview form may be printed in advance of the appointment.

Bacterial reduction is the next pillar to be addressed. The therapeutic interventions that we are able to provide are enhanced or hindered by our client's ability to manage plaque accumulation on a daily basis. Interdental self-care is important for disrupting the oral biofilm and maintaining oral health.[4]



▲ *Click to watch the video*

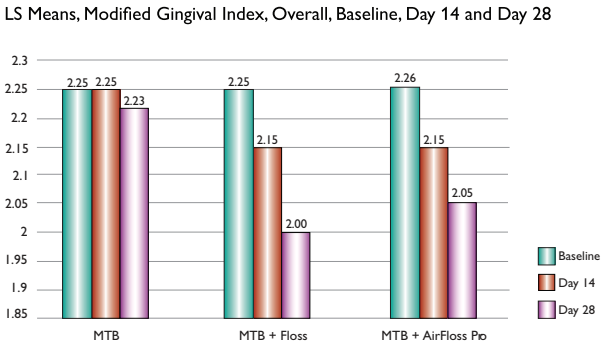


Figure 2

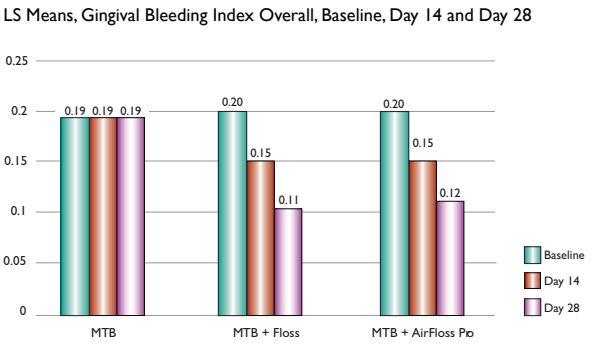


Figure 3

Source: Amini P, Gallob J, Olson M et al (2014)[6]

FACT: We need to consider alternatives to our traditional bias of floss recommendation.

As dental hygienists, we again find ourselves on the front lines with a great responsibility as well as an opportunity to educate our clients on controlling oral inflammation. We need to be aware of our traditional bias towards the recommendation of dental floss to control gingival inflammation effectively. There are many innovative products that have been developed to assist our clients in successfully managing a healthy rather than a "pathogenic" biofilm.

The manual dexterity required to remove interproximal plaque with floss is absent in the majority of the population. A systematic review conducted by Imai et al.[4] found that the interdental brush is an effective alternative to dental floss for reducing interproximal bleeding and plaque in clients with filled or open embrasures. This evidence provides the dental hygienist with reason enough to explore alternatives to flossing.

Innovations in product design by industry leaders have presented today's dental hygienist with diverse options for interproximal disruption of plaque. For example, Philips' Sonicare AirFloss Pro (*Figure 1*) uses compressed air to accelerate micro-droplets of water (or antimicrobial mouthrinse) at a high velocity between teeth, which physically disrupts and pushes the plaque out from between the teeth in just 60 seconds (see video). The AirFloss Pro has been clinically proven to remove up to 99.9% of plaque from treated areas.[5]

An in vivo study by Amini et al. [6] was conducted on 287 non-smokers, ages 18 to 65 years, who were routine manual toothbrush users and self-reported as irregular—at best—in performing interdental cleaning. All study subjects were provided with either an ADA (American Dental Association) reference manual toothbrush to be used twice daily, or an ADA reference manual toothbrush in addition to once-daily use of floss or Sonicare AirFloss Pro, with Philips' Sonicare BreathRx or Listerine® Cool Mint dispensed to the interproximal space via the device. Subjects returned to clinic at an interim time point of 14 days and finally at 28 days for efficacy and safety evaluations following the 2- to 6-hour plaque accumulation period. Among the adjunct interproximal cleaning regimens, Sonicare AirFloss Pro used with mouth rinse was shown to be as effective as string floss in improving gum health and removing interdental plaque for all efficacy measures of MGI, GBI, MPI (gingival inflammation, gingival bleeding, and surface plaque respectively) (*Figures 2, 3, and 4*).

Continued...

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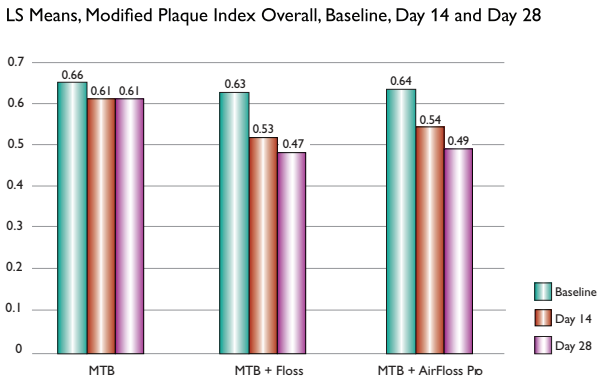

Figure 4

Ninety-six percent of irregular flossers reported use of Sonicare AirFloss Pro four or more days per week.[7] We understand as dental hygienists that the combination of efficacy and compliance is what ultimately leads to results and an adherence to a healthy habit.

FACT: It is imperative to address the host response when treating the inflammatory, destructive component of periodontal disease.

The third pillar refers to the host-mediated response. The American Association of Periodontology has defined periodontitis as an inflammatory disease with far-reaching destructive effects on systemic health. "Research has shown that periodontal disease is associated with several other diseases. For a long time it was thought that bacteria was the factor that linked periodontal disease to other disease in the body; however, more recent research demonstrates that inflammation may be responsible for the association. Therefore, treating inflammation may not only help manage periodontal diseases but may also help with the management of other chronic inflammatory conditions."[8]

This statement is further supported by the recently published evidence-based clinical practice guideline on the nonsurgical treatment of chronic periodontitis.[9] The authors of the guideline strongly recommend systemic subantimicrobial-dose doxycycline, prescribed under the trade name of Periostat®, as an adjunctive therapy to scaling and root planing due to the magnitude of derived benefits. Periostat® has the ability to reduce the effects of known inflammatory mediators such as collagenase which are involved in periodontal destruction and subsequent heightening of systemic inflammatory response.

In conclusion, we need to reconsider our approach to treating periodontal disease and remember the three pillars of prevention in our therapeutic model. It is also prudent to ensure that the impact of oral disease does not continue to threaten overall health. If the re-evaluation of our therapeutic interventions results in a diminishing of the inflammatory response, we have in fact been successful. If the periodontal probing depth remains the same yet the "bleeding on probing" is significantly reduced or eliminated, we have been successful in minimizing active disease and the systemic inflammatory response. The three pillars of prevention provide us with the foundation to offer comprehensive care for our dental hygiene clients with periodontal disease within our scope of practice.

References

1. *Pizzo G, Guiglia R, Lo Russo L, Campisi G. Dentistry and internal medicine: from the focal infection theory to the periodontal medicine concept. Eur J Intern Med. 2010 Dec;21(6):496–502.*
2. *Canadian Dental Hygienists Association. Talking points: Whole body health requires oral health. Ottawa: CDHA; 2015 [accessed Oct 2015]. Available from: www.cdha.ca/pdfs/profession/resources/FactSheet_WholeBody_C.pdf*
3. *Customized assessment and risk evaluator [Internet] [accessed Oct 2015]. Available from: www.philipsoralhealthcare.com/en_ca/care/*
4. *Imai PH, Yu X, MacDonald D. Comparison of interdental brush to dental floss for reduction of clinical parameters of periodontal disease: a systematic review. Can J Dent Hyg. 2012;46(1):63–78.*
5. *Gottenbos B, Williams QOW. In vitro study measuring the removal of plaque biofilm by Philips Sonicare AirFloss Ultra B. Amsterdam: Koninklijke Philips N.V.; 2014.*
6. *Amini P, Gallob J, Olson M, Defenbaugh J, Souza S, Mwatha T, Jenkins W, Ward M. A study to assess the effects of Philips Sonicare AirFloss Pro, when used with antimicrobial rinse, on gum health and plaque removal. Amsterdam: Koninklijke Philips N.V.; 2014. Abstract*
7. *Krell S, Kaler A, Wei J. In-home use test to assess compliance of Philips Sonicare AirFloss. Amsterdam: Koninklijke Philips N.V.; 2010.*
8. *American Association of Periodontology. Periodontal disease and systemic health [website]. Chicago: AAP [accessed Oct 2015]. Available from: www.perio.org/consumer/other-diseases.*
9. *Smiley CJ, Tracy SL, Abt E, et al. Evidence-based clinical practice guideline on the nonsurgical treatment of chronic periodontitis by means of scaling and root planing with or without adjuncts. JADA. 2015;146(7):525–35.*

Author Disclosure

Jo-Anne Jones serves as a Key Opinion Leader for Philips Oral Healthcare.