To floss or to brush—that is the (interdental) question

By Marc Chalupsky, DTI

LEIPZIG, Germany: Should dental floss still be used as a tool to combat plaque, caries and periodontal disease? After almost 40 years, the US Department of Health and Human Services and Department of Agriculture have removed their recommendation to use dental floss from their latest Dietary Guidelines for Americans. And the dental world discussed a recent report which made worldwide headlines and concluded that no scientific evidence has proven the effectiveness of flossing. So: What are the alternatives for dental professionals?

Dental Tribune Online posed these questions to three dental hygienists.

For a long time, dental professionals have recommended daily flossing as a necessary part of health care. However, the Associated Press reviewed 25 prominent studies that compared the combination of toothbrushes and floss and their effectiveness in plaque removal. As Dental Tribune Online reported earlier, the investigation found only weak and unreliable evidence. According to the article, some studies were not valid since they included very few participants and had a short duration of only a couple of weeks. When asked for a statement, dental floss manufacturers were not able to provide scientific evidence even though many of the previously mentioned studies were funded by this industry. Meanwhile, manufacturers have already announced new funding for comprehensive research to determine the effects of flossing on oral health. As periodontal disease and caries develop over months and years, recent research will have to focus on a larger study population over a longer period in order to measure periodontal health effectively. In the meantime, how should dental professionals deal with this issue? Do they have an alternative to dental floss?

Are interdental brushes another solution?

According to Swiss oral health care provider Curaden, not cleaning interdentally would be going too far. Choosing a suitable interdental cleaner and using the proper technique are always important. Floss is appropriate for anterior teeth, where long, flat approximal surfaces and narrow spaces make access with an interdental brush difficult. Ideally, one should use dental floss for the narrow interdental spaces between the anterior teeth and interdental brushes for the posterior teeth. According to the Swiss company, interdental brushes are very effective and extremely easy to use compared to dental floss, but must be used gently in order not to injure the gums. Interdental brushes help prevent build-up of plaque between teeth and that causes bleeding gums, gingivitis and periodontitis and caries. In addition to interdental brushes, the company produces toothbrushes and toothpastes under its CURAPROX brand and supports educational prophylaxis training called CITOP for all dental professionals.

CEO and owner of Curaden Ueli Breitschmid said: "Since 1972, our company has been the pacesetter for interdental brushes, which remove both plaque and bacteria between the teeth and—more importantly—dental plaque. Since they do not damage tissue, our interdental brushes are not only recommended by the dental professionals globally, but are also prescribed to their patients and their use taught to each patient individually." According to Curaden, the advantages of interdental brushes over flossing have been demonstrated in numerous studies. For example, in a study titled "Comparison of different approaches of interdental oral hygiene: Interdental brushes versus dental floss", patients with periodontitis used dental floss and interdental brushes to reduce plaque over a six-week period. Interdental brushes were found to remove significantly more plaque than dental floss did. Furthermore, patient acceptance and willingness to be higher with interdental brushes.

Everyone knows dental floss, but only few like to do it—because they do not know how," according to Edith Maurer, a Swiss-based dental hygienist with 40 years of experience. "A very short thread should be kept between the fingers, moving up and down the sides of the teeth. But most of the time, it slips away, cuts into the gums and is quite dangerous if you do not use it correctly. Imagine cutting a pudding. Interdental brushes should be used if something is stuck between your teeth but not for cleaning below your gums. After all, it has been a razor-sharp tool for over 200 years and is quite dangerous if you do not use it correctly. Imagine cutting a pudding with floss. It will work perfectly, nothing will be attached to the floss. But if you use a fine interdental brush, it will take away more of the plaque. Interdental brushes should be the preferred tool if you want to clean your gums at least in the posterior region.

Individually trained oral prophylaxis is the key

According to dental hygienist Catharine Schubert, the space below the contact area should be the focus. "We need to carefully differentiate between gum disease and dental caries. Interdental brushes are more effective for the prevention of gum disease owing to their space-filling properties. However, a thin shaft and long, flat bristles are necessary to reach below the interdental contact point where caries mostly develops. Interdental brushes can prevent interdental caries if applied correctly, which is below the interdental contact point. Of course, floss also cleans below the contact point. However, using floss just because it is normal, without thinking about the right technique, will not lead to the prevention of caries. At the same time, using an interdental brush without proper instruction will not lead to the prevention of gum disease. After all, it is not a government or institution that should decide about one’s oral hygiene, but the dental professional needs to choose which cleaning technique is most efficient for each of his patients. Individually trained oral prophylaxis has always been the key to one’s health."

Elizabeth van der Ham, a South African dental hygienist, agrees that one has to choose carefully between flossing and interdental brushing. "Dental floss throughout the years has been a saving grace for many patients overcoming oral health issues. Clinical observations over many years of floss usage in patients is strong evidence that floss indeed does have a place in the oral hygiene regime. Discarding the use of it totally would be impossible to say the least. In 1965, Prof. Harold Loe and others did the famous ‘Experiments on gingivitis in man’ study. The outcome was that gingivitis disappears within two weeks if the tooth structure is sufficiently cleaned. Therefore, there are three criteria we as dental professionals need to adhere to when selecting a treatment option for our patients: the regime needs to be acceptable to the patient, it has to beatraumatic to the soft and hard tissue of the oral cavity, and it should be effective in removing biofilm and plaque to establish a healthy status quo in the oral cavity."

However, no matter what interdental cleaner one chooses, almost every tooth has to be treated uniquely. "Flossing is more acceptable in the anterior and difficult crowded areas of the mouth. The interdental brush has easier access in the posterior regions that are more difficult to reach. Flossing is not as effective in the molar regions because of the concave-shape of the root structures. Flossing is also more technique-sensitive and greater dexterity needs to be applied when doing it effectively and without damage. Interdental brushes need to be selected with careful consideration of the tooth and interdental shape and size," stated Van der Ham. "Most importantly, patients need to be constantly educated and their oral hygiene regime adjusted to their individual needs and preferences."
Subgingival air polishing: A new method

The latest supra- and especially subgingival air polishing techniques, with innovative powders offer new prospects in periodontal treatment and implant maintenance

By Dr François Simon and Dr Jérôme Liberman, France

Teaching our patients correct oral hygiene techniques is an obvious and essential part of our treatment of periodontal disease. Controlling the bacteria is essential and the aim of the etiological treatment phase of periodontitis is to remove all the elements that contribute to maintaining or developing inflammation. These include traumatic occlusion, calculus and supra-and subgingival biofilm.

Increasingly less aggressive instrumentation has been developed to remove biofilm from the root surface. Root planning that causes irreversible removal of cementum has evolved toward a concept of decontamination of the root and the periodontal pocket. Non-abrasive powders can be substituted by ultrasonic micro-inserts. More recently, the new supra- and especially subgingival air polishing techniques, with innovative powders, appear to offer new prospects in periodontal treatment.

Non-abrasive powder

The same applies for implant maintenance. Peri-implant cleaning is very difficult to achieve. Indeed, it is difficult to find effective biofilm removal instrumentation that doesn’t cause deterioration of the implant surface. Ultrasounds as well as conventional mechanical instrumentation has been shown to damage titanium (Kawashima, 2007).1

Air polishing seems to be the most suitable technique, provided that a non-abrasive powder is used for the implant surface. However, only limited clinical success has been achieved with early generations of air polishing devices due to limited access to the subgingival area.

The “Air-Flow” (EMS) method now allows the spraying of a glycine-based powder (“Air-Flow Petro”) of fine grain size (25 μm) or a new extra fine powder: “Air-Flow Plus” (14 μm), containing erythritol and 0.3% chlorhexidine subgingivally. The latter powder is particularly interesting because it offers superior effectiveness in the elimination of bacterial biofilm compared to powders of larger grain sizes (Drago et al., 2014).2

The very small particle size has the advantage of striking the tooth surface (dentine or cementum) as well as the implant surface with minimal impact per particle. The effectiveness against biofilm is due to the large number of sprayed particles as well as the combined action of the erythritol and the chlorhexidine.

Recently, a Japanese study has shown that this powder inhibits biofilm formation, notably with an action on Porphyromonas gingivalis. This gives the powder, if retained, a possible effect on the treated periodontal pockets and a preventive action against periodontal disease (Fushan et al., 2013).1

This powder can be used supra-gingivally or subgingivally thanks to the handpiece (“Perio-Flow”) combined with the disposable tips. These provide delivery of powder to the bottom of the periodontal pockets with a duration of action of only five seconds per site (Figure 3).

Case No 1

A 25-year-old patient presented with generalised aggressive periodontitis (Figures 2a-c). Periodontal treatment was performed with ultrasonic debridement and pividone-iodine irrigation. Air polishing using powder containing glycine was performed in each session (Figure 2d-f).

Throughout the orthodontic phase, the patient undergone maintenance cleanings with supra- and subgingival air polishing via the use of a glycerine-based powder (“Air-Flow Plus”) was carried out supra-gingivally. All pockets deeper than 4 mm were treated with the handpiece (“Perio-Flow”) and specific tips.

At four months, a decrease in pocket depth of 3.4 mm and an absence of bleeding on probing was found. A maintenance phase was established with supra- and subgingival air polishing every four months. More than a year after initial treatment, the situation is stable (Figure 3g to 3i).

Case No 2

A 30-year-old patient was referred for periodontal assessment. Bacterial plaque was found in the area of the crown and interdentally. Clinical examination revealed periodontal pockets of 6-8 mm in the cuspid area and in the palatal area from the incisor-canine block to the maxilla. It also revealed a purulent exudate in the vestibule of 12 and 22 (Figures 4a-c). There was a II-3 class on the occlusal plane with retro palatal bite. In accordance with parafunction, atypical swallowing was found. Swallowing re-education sessions were conducted by a speech therapist.

After initial periodontal preparation, three non-surgical cleaning sessions were conducted in the maxilla under LA. The removal of hard subgingival deposits was carried out with ultrasonic micro-inserts and pividone-iodine irrigation. Following this, air polishing via the use of a glycine-based powder (“Air-Flow Plus”) was carried out supra-gingivally. All pockets deeper than 4 mm were treated with the handpiece (“Perio-Flow”) and specific tips.

Case No 3

A patient presented with a periodontal abscess in the 16-17 sector in April 2013 (Figures 4a-d). From the occlusal aspect, an important class II was found with only posterior contacts. Evidence of bruxism was also dis-covered and associated with atypical swallowing. Initial therapy involved the construction of a nocturnal splint as well as occlusal equalisation conducted at the same time. Following this, the patient underwent two sessions of periodontal debridement including the use of ultrasonic scalers and subgingival air polishing (Figures 4c-f).

Case No 4

The patient presented with a chronic...
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† Containing 5% potassium nitrate and 1450 ppm fluoride as sodium fluoride.
‡ Containing 1450 ppm fluoride as MFP.

References:

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PLACEHOLDER
Hygiene is important and desirable because it protects us and others against infection and promotes health,” explained Jeffrey T. Slovin, CEO of Dentsply Sirona. “It affects all aspects of our lives and requires our constant attention – everywhere in the world.” Because this issue is so prominent in the dental industry, the latest edition of VISION, the customer magazine from Dentsply Sirona, focuses on and emphasizes the significance of dental hygiene.

Hygiene is of central importance when it comes to health. A prime example here is water, which is used for cleaning, personal hygiene and drinking water. Water was long considered to be harmful, it was not until the 19th century that scientific studies highlighted the cleansing effect of water, which, in turn, had a fundamental impact on society’s approach to hygiene: VISION traces this history and takes a look at the activities in clinics, which were initially a pretty “dirty business,” as infection protection based on hygiene and disinfection did not emerge until the middle of the 19th century. Hygiene, what was treated back then as an innovation, is now standard practice and its working conditions are now the norm, especially in dental practices.

Practice hygiene: High-quality standards do not mean higher expenses. This starts with the treatment center. The transmission instruments must be kept germ-free, and the hygiene history and takes a look at the activities in clinics, which were initially a pretty “dirty business,” as infection protection based on hygiene and disinfection did not emerge until the middle of the 19th century. Hygiene, what was treated back then as an innovation, is now standard practice and its working conditions are now the norm, especially in dental practices.

By Dentsply Sirona

The merger of DENTSPLY and Sirona at the beginning of the year created the largest manufacturer of technologies, equipment and consumables in the dental sector. The company is now working together as one combined force to develop solutions for the current challenges in dentistry, including products for enhanced hygiene safety in practices. The recently published edition of the customer magazine VISION also focuses on this topic, where international experts take a closer look at the various facets of hygiene. The in-depth discussions clearly show that the scope of this issue extends far beyond germ-free dental practices.

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Dr Franck Simon and Dr Siéline Liberman are dental surgeons and former assistants at the Nancy Faculty of Dental Surgery. They are both trained in surgical and prosthetic implants (Paris VII) and pre-implant and peri-implant surgery (Paris X) and work in private practice limited to implantology, gastrology and periodontics.

Cleanliness is Key: How hygiene improves our quality of life
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from Dentsply Sirona support this goal. Intelligent, automated rinsing programs satisfy the stringent hygiene requirements for instrument and suction tubes as well as for water hygiene, making everyday working life easier. VISION offers a historical overview of how treatment centers have changed through the years.

Hygienic instrument reprocessing has also undergone major developments. In Panama, the state health authorities are prescribing the use of Dentsply Sirona’s DAC Universal, the combined autoclave for mechanical instrument processing, in all clinics, a measure that is unique in the world.

Hygiene in all spheres of life
Hygiene is not just a term that is associated with germs and infection protection. A key element of practice life is radiation hygiene; X-rays must not endanger the patient’s health unnecessarily. In this edition of VISION, Marco Ahonen, a dentist based in Helsinki, explains how to combine a safe, reliable diagnosis with radiation protection. According to Ahonen, the secret lies in embracing technical advances and applying them to practice workflows.

We are also faced with hygiene-related issues in other spheres of life too – this is often not apparent at first glance; take company and process hygiene for example. A report in this edition of VISION looks at how Mr. and Mrs. Ritter (he is an OMS surgeon and she is an orthodontist) took over a joint practice in a clearly structured manner and transformed it into a specialist center.

Not just clean, but also safe and quick
CEREC Zirconia, the new way to produce full zirconia restorations in a single visit, is characterized by its safe, quick workflow. In this edition of VISION, power-user Dr. Michael Skramstad shows how the process can be implemented in the practice and the patient-friendly results that can be achieved.

In addition to user reports, the international customer magazine VISION offers the dentists, practice teams and dental technicians in its reader-ship numerous suggestions and tips for day-to-day practice life, while offering an entertaining read. VISION is published in German and English, and can be requested free of charge from http://www.sirona.com/topics/vision/en/ as a print or e-paper edition.
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