

WHAT DO PATIENTS REALLY NEED TO KNOW ABOUT TOOTHBRUSHES AND DENTAL FLOSS?

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كثيراً ما يتكرر السؤال المعتاد من قبل مرضى الأسنان ما نوع فرشاة الأسنان والخيط السني الواجب استعماله. قمنا بمراجعة شاملة ومبسطة للمقالات الحالية حول فراشي الأسنان والخيط السني وأسلوب استعمالها. وقد تم التأكيد على أن هذه المواد وطريقة استعمالها من العوامل الأساسية للحصول على صحة جيدة للقم. وأن من أهم الفوائد للمريض هي الاستعمال الصحيح والمستمر للطريقة المختارة والمعتادة من قبل المريض.

A very common question usually asked by dental patients is what type of toothbrush and dental floss they should use. A simplified and comprehensive review of current literature on tooth-brushes and dental floss as well as techniques of brushing and flossing is presented. It is also emphasized that materials and methods are only two factors of achieving good oral hygiene. The most important factor is for the patients to apply routine practice of the technique chosen.¹

Introduction

The most important thing that the patient has to know is to use toothbrushes and dental floss effectively and regularly. There is no doubt that thoroughness of tooth-cleaning with daily brushing and flossing is the best way to ensure the health of the patient's teeth and gums. Optimal oral health is within everyone's capability if they think enough of themselves and invest a few minutes each day in proper dental care. Patients should not wait until their teeth or gums hurt and then seek dentists' help. Dentists and their technology alone cannot save patients' teeth and gums from their own disregard of basic health rules.

Toothbrushes

Design Characteristics

Toothbrushes are either manual or electrically powered devices.¹ A manual tooth-brush is made up of bristles, a head, and a handle. Bristles are the

most important part of the toothbrush and are either artificial or natural in origin. A brush that is soft, round-ended, or polished with artificial nylon bristles is recommended.² Examples of this type of toothbrushes are GUM, ORAL B, and REACH [Fig. 1]. The homogeneity of the material, uniformity of size, elasticity, resistance to fracture, and the ability to repel water and food debris give the artificial bristles many advantages over the natural bristles. However, natural bristles are seldom used in tooth-brushes nowadays.²⁻³

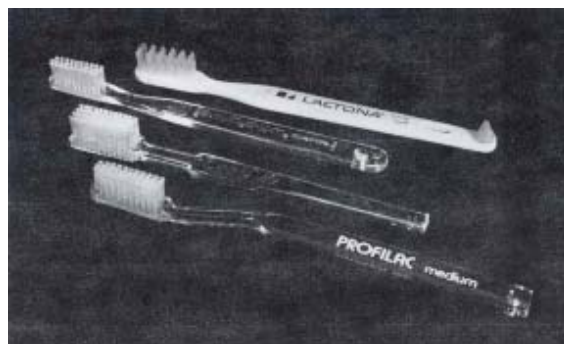


Figure 1. Some commercially available dental brushes.

A soft-bristled brush is more effective in removing plaque with less harm to soft and hard tissues than a brush with hard bristles because soft bristles

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are more flexible and thus can reach subgingival and proximal areas. A hard-bristled brush may cause 3-6 times more abrasion than soft brushes.^{2,4}

Round-ended bristles are recommended because they have been shown to cause 30% to 50% less soft tissue trauma than course-cut bristles. The tips of course-cut bristles have sharp corners that reduce their cleaning efficiency and increases damage to the oral tissue.^{1,2}

The size and shape of a toothbrush head is one of the most important parts of a toothbrush. A small head is recommended because it allows the patient to reach into places in the mouth that would be inaccessible to a large head toothbrush. The head of the electric toothbrush is usually smaller than the manual and is removable.¹ Wasserman⁵ reported that the ability of deep-grooved design toothbrush to reduce plaque accumulation is superior to conventional flat-surface toothbrush. However this superiority was limited to lower molar area.

The toothbrush handle should be firm, resilient, and resistant to fracture. It is very common that small brushes are recommended for children. It should be considered that neuromuscular coordination in young children is not yet fully developed. Therefore, brushes with large handles are more suitable for them. Special patients with limited arm or finger movement require modification of the handles such as enlarging or extending them [Fig. 2].⁶



Figure 2. A modified toothbrush handle.

Effectiveness

Toothbrushing removes plaque from the outer, inner, and biting surfaces of the teeth. Hand and powered toothbrushes are not considered effective for interdental plaque removal. No one specific type of toothbrush has been found to be consistently more effective than another. That is because

differences in oral hygiene conditions and the manual ability among individuals may lead to varying requirements for toothbrushes.^{1,2,5-6}

Manual vs. Electric Toothbrushing

The powered toothbrushes appear to be helpful in improving the oral health of physically or mentally handicapped individuals because these devices require minimal hand motion and coordination skills.¹ Some models are designed with each bristle rotating individually and are effective plaque removers.⁹ Also, children may find electrical toothbrushes more appealing and thus use them more often than manual toothbrushes.³ However, there are limitations on the efficacy of powered toothbrushes. The presence of crowding, tipping, or overlapping of teeth and in patients with hyperactive tongue and small mouths may decrease the ability of the electric brush to remove plaque.⁷⁻⁸

Safety

Toothbrushes should be replaced when they are worn or frayed regardless of how long the brush has been in use [Fig. 3]. A worn toothbrush can be a hazard because it cannot remove plaque, thus it is not doing its job, and because bent bristles can injure the gums.¹⁰ Toothbrushes with hard and/or coarse-cut bristles can cause damage to dental tissues. Fraleigh¹¹, and Manhold et al¹², found no significant differences between powered and manual brushes in their potential for stimulating gingival keratinization or for abrading mucosa and teeth.



Figure 3. Examples of frayed toothbrush.

Clinical assessment of patient toothbrushing is a good preventive measure. Assessment should also include inspection of the patient's toothbrush. This will help the clinician to detect any sign of abrasion

or gingival recession that may have resulted from improper brushing method. The proper method then can be reinforced, thus maximizing the safety of toothbrushing.¹

The patient should look for the ADA's or other recognized dental associations seal of approval before buying an electric toothbrush. The label approval statement is as follows: "Acceptable as an effective cleaning device for use as part of a program for good oral hygiene to supplement the regular professional care required for oral health".

This approval shows that the product has met the ADA or other associations requirements for electric safety, dental safety, and that there is clinical evidence of cleaning efficiency.¹

Toothbrushing Technique

Greene¹³ (1966) grouped toothbrushing technique into the following categories based on the direction of the brushing stroke: (1) vertical; (2) horizontal; (3) roll technique; (4) vibrating technique; (5) circular technique; (6) physiological technique; (7) scrub brush technique. Comparative studies of these different methods have yielded conflicting results and each technique has its own protagonists.¹³

The ideal tooth brushing technique is the one that removes plaque, food debris and stain, and stimulates the gingival tissues with the least time and effort, and does not damage oral tissues. Since these criteria cannot be met with any specific tooth brushing technique, it is necessary to evaluate each individual condition in order to select the proper brushing method. It appears that a short stroke of vibrating scrub technique, with the bristles aimed at a 45° angle toward tooth apex, is the recommended method for the general public.¹⁴ With this method, the toothbrush can clean only one or two teeth at a time, and it will probably take about three minutes of brushing to clean all the teeth adequately. Patients finish the procedure by brushing their tongue to help remove bacteria and freshen their breath.³

The chosen method should be demonstrated for the patient and the patient has to practice it in the office until he or she develops a reasonable efficiency in using it. Repeated supervised training sessions are necessary for success. Furthermore, the ability of the patient to accomplish effective tooth

brushing should be evaluated as a part of the total oral hygiene program.

The frequency of brushing depends on the effectiveness of the patient in removing plaque. Generally, the patients need two thorough brushings a day. However, the thoroughness of tooth cleaning is more important than the specific method of tooth brushing and the frequency.

Dental Floss

Dental floss is available in various styles and sizes [Fig. 4]. Generally, they consist of very small continuous multifilament threads or tapes of either unwaxed or waxed synthetic fibers, usually nylon.¹⁵



Figure 4. Examples of some dental flosses and dental floss threaders.

Interproximal contact areas are different among individuals because of variations in morphology and position of teeth, and presence of dental restorations. Therefore, each individual's condition should be evaluated before a specific type of dental floss is recommended.¹

Patients with tight contact areas need thin unwaxed floss that can be slipped easily between the contact areas, whereas in patients with crowded teeth, heavy calculus deposits, or defective and overhanging restorations, a bonded unwaxed floss or waxed floss is the dental floss of choice because they do not fray as easily as unwaxed floss. Dental tape is recommended when there is considerable interdental space resulting from gingival recession and bone loss. Therefore, the patient has to know his specific condition and why that certain type of dental floss was chosen for him/her.^{1,3}

Effectiveness

Dental floss has been shown to be effective in removing plaque and food debris from interproximal areas, and in polishing these areas as well. The effectiveness of flossing in maintaining oral hygiene was studied by Mohammed and Monserrate.¹⁶ They stated that flossing is effective in removing plaque in embrasure areas commonly missed by brushing. It also massages the interdental papilla and aids in identifying the presence of calculus deposits, overhanging restorations and/or carious lesions in the interproximal area.¹⁸ Patients have to know that decay and periodontal diseases often start between teeth where a toothbrush cannot reach.

With respect to the effectiveness of waxed or unwaxed dental floss, no significant difference has been demonstrated.^{18,19} However, during flossing, unwaxed dental floss can flatten out and cover more area than waxed floss. Furthermore, unwaxed floss seems to remove more plaque due to the spreading of fine filaments which trap and absorb plaque.¹⁵⁻¹⁶

Safety

Proper flossing is considered a safe procedure. However, incorrect flossing which includes poor adaptation, improper floss activation, or lack of a rest to prevent undue pressure may traumatize both hard and soft tissues, and may also result in inadequate plaque removal. Laceration of inter-dental papilla and cervical wear on proximal root surfaces are signs of improper flossing.¹⁷

When using the spool flossing method, attention should be made to leave spaces between wraps to avoid cutting off blood circulation to the fingers. Clinicians should evaluate patients flossing technique so that improper flossing can be corrected to maximize the safety.⁷

Technique of Flossing

There are two main flossing methods; the spool method and the circle or loop method. The spool method is recommended for patients who have acquired the required level of neuromuscular coordination.¹

In this method, a piece of dental floss approximately 18-inch long is utilized. The patient should tightly wind most of the length of floss around the middle finger whereas, the rest of floss is similarly

wound around the same finger of the opposite hand. The latter finger will take up the floss as it is used. Then, the floss is held tightly between thumbs and forefingers leaving about one inch of floss between them, using a gentle and sawing motion, the floss is guided between the teeth. When the floss reaches the gumline, it is then curved into a C-shape against one tooth and is gently slid between the gum and tooth until resistance is felt. While holding the floss tightly against the tooth, the side of the tooth is scraped gently six times. Without removing the floss, the proximal side of the other tooth is scraped too. This procedure is repeated on the remaining teeth.^{1,3}

However, patients with limited ability to manage the spool method may find the loop method helpful. The ends of a 12-inch piece of floss is tied to form a loop or a circle. All fingers except the thumbs are placed within the loop, so that fingers or thumbs tips used to place floss between teeth will be 1 inch apart. The flossing procedure is the same as with the spool method. It should be considered that in young patients with poor finger flossing, it may be necessary that flossing is performed by the parents.^{1,3}

There are certain conditions that may require modification of either the type of dental floss or the method of flossing. Superfloss is suitable for cleaning around fixed prostheses, and orthodontic appliances. Superfloss has one end that is relatively rigid which can be inserted under bridges or other dental appliances. However, a variety of needle-like dental floss threaders are available to insert dental floss under such appliances.²⁰

There are dental floss holding devices made primarily to aid patients with mental or physical disabilities and nursing personnel assisting handicapped and hospitalized patients in cleaning their teeth [Fig.5].¹



Figure 5. Dental floss holders.

Conclusion

What type of toothbrush and dental floss should I use? This is a very common question always asked by dental patients. In this paper, a simplified and comprehensive review of current toothbrushes and dental floss as well as techniques of brushing and flossing is presented. It should be emphasized that materials and methods are only some factors of achieving good oral hygiene. The most important factor is for the patients to apply routine practice of the technique chosen.

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