



■ PERIODONTOLOGY

The role of home care therapy in periodontal disease treatment and management

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Home care therapy is indispensable to manage periodontal disease successfully. Often, during and following initial periodontal treatment, it is unclear how much of the clinical improvement was due to patients' home care or to professional intervention, as these two therapeutic components are often amalgamated in clinical practice as well as in studies. In this case series, four patients with periodontal disease received education on using oral hygiene devices and used them competently prior to initiation of professional periodontal treatment. The changes in their clinical presentations, solely attributed to

their home care therapy, were documented. The rationale and suggested clinical guidelines are also presented. **Conclusion:** Home care therapy is an indispensable but often overlooked step in the successful management of periodontal diseases. Ideally, this step should be solidified prior to proceeding with any professional treatment. By motivating patients to participate in the treatment more actively, clinicians can significantly improve the outcome and longevity of their professional interventions. (*Quintessence Int* 2023;54:288-295; doi: 10.3290/j.qi.b3773959)

Key words: bone loss, caries, dental plaque, gingivitis, oral hygiene, periodontitis

Optimizing oral hygiene is an important component not only of phase I periodontal therapy but also of cause-related therapy.¹ Cause-related therapy is achieved by therapeutic interventions that suppresses the etiologic factors and by the constant review of home care therapy with the patient.^{1,2} The primary etiology of the two most common diseases of the oral cavity, dental caries and periodontal disease, is plaque bacteria on a susceptible host.³ In cases of periodontal disease, insufficient removal of dental plaque leads to a microbiologic shift of the predominant "red complex" bacteria triggering a pro-inflammatory cascade.⁴⁻⁶ Consequently, irreversible periodontal attachment loss occurs.⁵⁻⁷

Optimal oral hygiene is not only a necessary component in cause-related therapy, but it is also prerequisite before performing periodontal surgeries. Undergoing scaling and root planing and oral hygiene instructions leads to a reduction in periodontal pathogens and a change in the microbiome.^{8,9} This results in an improved oral environment preceding surgical intervention, leading to a more optimal healing response.^{1,8,9} Furthermore,

good oral hygiene is needed for the long-term success of periodontal treatment.^{10,11} Unfortunately, a recent study reported that the oral hygiene phase was variable in length and content, variable in the consequential result, insufficiently instructed, and invariably amalgamated with the scaling and root planing, which is the intervention or part of an intervention.¹² Thus, the aim of the present case series was to report the improvement of periodontal conditions solely from patients' home care therapy prior to initiating any active professional intervention.

Case 1

A 46-year-old man was referred to the clinic for evaluation of gingival overgrowth and persistent halitosis. His medical history revealed hypertension for which he was taking a calcium channel blocker (nifedipine). A comprehensive periodontal evaluation revealed generalized marginal gingival erythema, gingival hyperplasia, periodontal probing depth of 3 to 7 mm, and gener-



Fig 1a Initial presentation: Generalized marginal gingival erythema and gingival hyperplasia were noted, and they were more pronounced in the interproximal sites and the mandibular anterior sextant.

Fig 1b Two-week follow-up. Generalized reduction in marginal gingival erythema and gingival hyperplasia were noted at 2 weeks following home care therapy initiation.

Fig 1c 12-week follow-up: Further reduction in marginal gingival erythema and gingival hyperplasia were noted at 12 weeks. Mild gingival erythema and hyperplasia were noted on mandibular anterior sextant while a complete resolution was noted at the rest of the oral cavity.

alized bleeding on probing, with no radiographic evidence of apparent alveolar bone loss. The gingival hyperplasia appeared more pronounced in interproximal sites and the mandibular anterior sextant (Fig 1a). There were moderate deposits of supragingival and subgingival dental plaque. His halitosis appeared to be associated with the chronic presence of dental plaque in the pseudo periodontal pockets.

Periodontal diagnosis of generalized biofilm-induced gingivitis with generalized moderate drug-influenced gingival enlargements was made.^{13,14}

The patient was recommended intensive home care therapy in combination with repeated professional nonsurgical periodontal debridement, followed by reevaluation, and when appropriate, maintenance visits every 3 months. Medical consultation was conducted with his treating physician for switching his anti-hypertensive medication to another class, for which the physician agreed. He was prescribed an angiotensin II receptor antagonist (losartan), which was as effective as the calcium channel blocker in managing his hypertension. Prior to proceeding with nonsurgical periodontal debridement, an intensive home care therapy was executed. Based on the principles of cause-related therapy, the patient was specifically informed about the dental plaque as the primary etiologic factor for his periodontal disease. The modified bass technique was demonstrated. He was recommended to spend 4 seconds on each surface of the teeth (ie, buccal, lingual, and occlusal) throughout his oral cavity using an oscillating electric toothbrush twice daily. In addition to daily flossing, the patient was recommended to use a rubber tip stimulator three times

a day. He was instructed to insert a rubber tip stimulator interproximally until resistance was felt, then massage the interproximal gingiva with circular motions applying firm apical pressure until his gingiva blanched. After 12 weeks of home care therapy (Figs 1b and 1c), a significant resolution of the marginal gingival erythema and gingival overgrowth was noted. Throughout this period, the patient was fully compliant with the suggested home care therapy with minimally visible residual dental plaque. Furthermore, significant reduction in probing depth was achieved, with all sites exhibiting 3 to 5 mm with minimal to no bleeding on probing.

Case 2

A 27-year-old man was referred to the clinic for evaluation of his periodontal condition. His medical history revealed schizophrenia for which he was taking haloperidol (Hadol decanoate), lithium, and quetiapine (Seroquel). A comprehensive periodontal evaluation revealed generalized marginal gingival erythema and gingival edema, which were more pronounced in the maxillary and mandibular anterior sextants (Fig 2a). There were generalized periodontal probing depths of 3 to 6 mm, with a localized probing depth of 9 mm on the mandibular right first molar, with generalized bleeding on probing, generalized mild horizontal bone loss, and localized vertical bone loss on the mandibular right first molar. There were moderate deposits of supragingival and subgingival dental plaque. Periodontal diagnosis of localized stage III grade C periodontitis with mucogingival defects, recession type 2 (RT2), was determined for the patient.^{15,16}



Fig 2a Generalized marginal gingival erythema and gingival edema were more pronounced in the maxillary and mandibular anterior sextants.

Fig 2b Generalized reduction in marginal gingival erythema and edema were noted at 2 weeks following home care therapy.



Fig 3a Marginal gingival erythema and gingival edema around the mandibular right central incisor were noted, with bleeding on probing and moderate deposits of supra-gingival and subgingival dental plaque. Furthermore, there was mucogingival deformity with lack of attached gingiva and buccal gingival recession.

Fig 3b A significant resolution of gingival erythema and edema were noted following 2 weeks of home care therapy. There was minimally visible dental plaque, suggesting effective plaque removal by the patient.

He was recommended intensive home care therapy in combination with scaling and root planing as part of the initial periodontal therapy. After explaining the importance of removing dental plaque, which was the main etiologic factor for his periodontal disease, home care therapy techniques were reviewed in a similar manner as described in Case 1. After 2 weeks of home care therapy, a significant resolution of marginal gingival erythema and gingival overgrowth was noted in the maxillary and mandibular anterior sextants (Fig 2b). Throughout this period, the patient was compliant with the suggested home care therapy, resulting in minimally visible residual dental plaque. Thereafter, the patient's periodontal disease was controlled and maintained through scaling and root planing, followed by reevaluation and surgical periodontal treatment and maintenance therapy.

Case 3

A 19-year-old woman was referred to the clinic for evaluation of her gingival recession on the mandibular right central incisor. Her medical history was noncontributory. A comprehensive periodontal evaluation revealed localized marginal gingival erythema and gingival edema around the mandibular right central incisor with periodontal probing depth of 4 to 5 mm, bleeding

on probing, and moderate deposits of supragingival and subgingival dental plaque. Furthermore, the mandibular right central incisor exhibited 5 mm buccal gingival recession with a complete lack of attached gingiva (Fig 3a). Periodontal diagnosis of gingival health on a reduced periodontium with mucogingival deformity on the mandibular right central incisor, RT1, and lack of keratinized gingiva was made.^{13,16}

The patient was recommended an intensive home care therapy regimen to significantly resolve the severe gingival inflammation around the mandibular right central incisor prior to proceeding with mucogingival surgery.

After explaining the importance of removing dental plaque, which was the main etiologic factor for her periodontal disease, home care therapy techniques were reviewed with an emphasis on performing gingival line toothbrushing around the receded marginal gingiva with her right hand while retracting her lower lip with her left hand. This allowed her to visualize and gain better access to the receded gingiva while brushing. After 2 weeks of home care therapy, a significant resolution of marginal gingival erythema and edema were noted in the mandibular right central incisor, with minimally visible residual dental plaque (Fig 3b). Thereafter, it was determined that she was ready to proceed with her gingival graft surgery to correct the mucogingival deformity on the mandibular right central incisor.



Fig 4a Generalized marginal gingival erythema and marginal gingival edema were noted. There were heavy deposits of supragingival and subgingival dental plaque.

Fig 4b Radiographically, there was generalized moderate to severe alveolar bone loss.

Fig 4c A reduction in gingival erythema and edema was noted 2 weeks after home care therapy initiation.

Fig 4d A continuous reduction in gingival erythema and edema was noted 5 weeks after home care therapy initiation.

Fig 4e A significant resolution of gingival erythema and edema was noted 9 weeks after home care therapy initiation. Although supragingival calculus was present, there were minimal deposits of soft dental plaque, suggesting effective home care by the patient.



Case 4

A 47-year-old man was referred to the clinic for evaluation of periodontal disease. His medical history was noncontributory. A full periodontal evaluation revealed generalized marginal gingival erythema, marginal gingival edema, periodontal probing depth of 5 to 9 mm, generalized bleeding on probing, and radiographic evidence of moderate to severe alveolar bone loss (Figs 4a and 4b). There were heavy deposits of supragingival and subgingival dental plaque. A periodontal diagnosis of generalized stage III, grade B periodontitis with mucogingival defects, RT 2, was made.^{15,16}

The patient was recommended initial periodontal therapy, including intensive home care therapy in combination with scaling and root planing. Home care therapy techniques were reviewed in a similar manner as described in Case 1. The patient was recalled for home care therapy review at 2 weeks, 5 weeks, and 9 weeks (Figs 4c to 4e). Throughout this period, a continuous reduction in marginal gingival erythema and edema were noted. The patient was fully compliant with the suggested home care therapy as evident by minimally visible dental plaque in 9 weeks. Thus, it was decided that adequate home care was achieved and that he was ready for scaling and root planing followed by reevaluation.






Discussion

Successful long-term management of periodontal disease requires behavioral changes of patients to attain and sustain a high level of daily plaque removal, life long.¹⁷ Treating clinicians should educate and help their patients develop good oral hygiene habits, predominantly toothbrushing and interproximal cleaning, prior to initiating any professional intervention.¹⁸ Not only does it lead to a more optimal healing response,^{1,8,9} but it is also needed for long-term success of periodontal treatment and oral health.^{10,11,19} Patients with poor oral hygiene exhibited further attachment loss regardless of receiving surgical or nonsurgical treatment.^{20,21} Furthermore, maintaining low plaque levels may help reduce the severity and recurrence rate of gingival hyperplasia in patients with medication-induced gingival hyperplasia, such as in Case 1.²²

The literature suggests that a power-driven toothbrush was more effective than manual toothbrush, especially in reducing Plaque Index and Gingival Index.²³⁻²⁵ In addition, a recent meta-analysis suggested that an oscillating-rotating power-driven toothbrush was more effective than other electric toothbrushes as measured in whole-mouth Plaque Index, Interproximal Plaque Index, and the number of sites with bleeding.²⁶ For patients with periodontal disease, a common 2-minute brushing technique may not be long enough.¹⁷



Table 1 Oral hygiene recommended devices and the suggested techniques

Devices	Instructions	Notes and examples
Oscillating electric toothbrush	Place or park the brush head around the buccal surface of each tooth, leave it for 4 seconds, and move it to another tooth. Place the lower half of the brush head on the gingiva and the upper half in the cervical third of the tooth. When the buccal surfaces are completed, repeat the same process for the lingual surface of each tooth in the same manner. Lastly, place or park the brush head on the biting/occlusal surface of each tooth, apply apical pressure, leave the brush head for 4 seconds, move to another tooth, and repeat the same technique until completion of all occlusal surfaces.	Perform twice a day. Three time daily for severe periodontal patients or high caries risk patients. 
Floss	Once passing the interproximal contact, hug/wrap around the distal side of the anterior tooth, slide the floss apically until the floss disappears 2–3 mm subgingivally. Move the floss coronally and apically 2–3 times. Repeat the same on the mesial side of the posterior tooth. When completed, slide the floss out by pulling it buccally. Repeat the same technique for all interproximal contacts.	Perform twice a day. Suitable for patients with healthy periodontium or low caries risk as well as for patients with periodontitis, who have very high dexterity skills and motivation. 
Rubber tip stimulator	Place the pointy tip interproximally from the buccal side. Press lingually until the tip is fully engaging. Then, draw 5 circles especially with apical pressure until the gingiva blanches. Repeat the same technique for all interproximal surfaces. Once completed, repeat the same from the lingual side.	For patients with healthy periodontium or gingivitis, perform once a day. Excessive use may induce interproximal recession. For patients with periodontitis, perform 2–3 times a day. 
Interdental brush/triangular-shaped wooden toothpick	Place the brush/toothpick between the two teeth from the buccal aspect. Gently push and pull five times from the buccal to the lingual aspect. Ensure the brush/toothpick completely passes through the buccal embrasure to the lingual embrasure. For the toothpick, the apex or the tip of the triangle should be pointing occlusally while the base of the triangle should be in contact with interproximal papilla.	Perform twice a day. Suitable for patients with periodontitis, who have difficulty with effective flossing. Help patients identify the size that fits their embrasures.  

For interproximal cleaning, oral hygiene education should be tailored to the patient depending on the motivation level, dexterity, and anatomical factors such as embrasure size.²⁷ In general, for patients who are less motivated, who do not have

good manual dexterity, or who have open interproximal embrasures, an interdental brush or a triangular-shaped wooden toothpick should be used instead of floss.^{17,27} The interdental area can be further strengthened by means of gingival stimula-



Table 2 Commonly asked questions from patients and the suggested answers

Commonly asked questions	Suggested answers
“I noticed bleeding while performing my home care therapy. I stopped as I thought that I was damaging my gums making them bleed.”	Bleeding is a reliable sign, suggesting the presence of inflammation and disease around your gums. With proper home care therapy techniques, healthy gums should not bleed. Thus, instead of avoiding home care in the bleeding sites, I want you to focus more on these sites while performing home care even if it bleeds. In 7–10 days, you will notice the resolution of bleeding in these sites, suggesting the resolution of inflammation or disease.
“How much pressure should I apply while using an electric toothbrush?”	Oscillating-rotating electric toothbrush already has a set torque. Thus, there is no need to apply too much pressure. Instead, park and hold the brush against the teeth/gums and let the brush head remove the plaque. Some electric toothbrush systems come with pressure sensitive heads while brushing that notifies you when you apply too much pressure, which may be helpful as well.
“I rinse my mouth multiple times a day; however, my mouth doesn’t seem to be getting better.”	Bacteria in the oral cavity live on your tooth surfaces, and are known as biofilm. The biofilm adheres to your teeth strongly. Thus, vigorous swishing or rinsing will not be effective enough to dislodge the biofilm. Instead, the biofilm needs to be mechanically dislodged or removed using toothbrush and interproximal cleaning tools. Furthermore, the antimicrobial ingredients in your mouthwash won’t reach bacteria in biofilm effectively as the biofilm creates a wall or barrier through which the antimicrobial ingredients cannot effectively cross.
“I am afraid of brushing my gums, which can cause gum recession.”	As long as you brush gently, but thoroughly, gum line brushing would not result in gingival recession. When instructed to brush gently, patients often brush less effectively around their gums, leaving dental plaque behind. The remanent of dental plaque can initiate gum disease, which can result in a further initiation or worsening of gingival recession. Thus, please hold your toothbrush lightly and use a repeated circular motion over the gum line. This would ensure a more effective removal of the dental plaque, which will help you maintain healthier gum.
“I cannot floss well. Is there any other tool that is easier to use on my hands?”	Interdental brush or a triangular-shaped wooden toothpick can be used instead of floss. It can be as effective as floss or, in certain cases, even better in removing dental plaque between the teeth. Patients with limited dexterity may find it easier to use an interproximal brush or a triangular-shaped wooden toothpick than floss.
“Should I use an electric or manual toothbrush? If so, which kind?”	The literature suggest that an electric toothbrush is more effective than a manual toothbrush in removing dental plaque. Particularly, an oscillating-rotating electric toothbrush is more effective than other electric toothbrushes in removing dental plaque and reducing gingival bleeding.

tion using a device such as rubber tip stimulator. The gingival stimulation may help maintain adequate blood circulation and produce surface keratinization.^{28,29} Care should be taken for patients without periodontitis as a prolonged or forceful gingival stimulation can result in interproximal soft tissue recession.²⁸

Table 1 presents the recommended oral hygiene devices and the suggested techniques.

During patient education, clinicians should encourage them to participate actively. This can be achieved by demonstrating the home care techniques to patients using various aids such as a teeth model or a video, letting patients demonstrate their techniques back to the clinicians for calibration, and repeating these processes in several visits.^{1,2,30} Furthermore, instead of using the terminology “oral hygiene instruction,” clinicians are suggested to use a more active terminology such as “home care therapy.” This would help patients understand that what they perform at home is indeed therapeutic in nature and encourage them to take a more active role in the

management of their periodontal diseases.³¹ Table 2 presents commonly asked questions by patients and the suggested answers, which clinicians can utilize for establishing more effective communication with their patients.

Often, home care therapy is done simultaneously with scaling and root planing in clinical trials or clinical settings.¹² This unfortunately makes it difficult to isolate the magnitude of clinical improvement solely attributed to home care therapy.

In the present case series, all of the noted clinical improvements were strictly from patients’ home care therapy without any professional intervention.

Furthermore, completing home care therapy prior to active scaling and root planing can significantly reduce gingival erythema, edema, bleeding, and potentially periodontal pocket depths, all of which can make the professional debridement more effective, easier, and with less side effects.³²⁻³⁴ The advantage of completing home care therapy prior to scaling and root planing was particularly evident in Case 4. ■■



Conclusion

Home care therapy is an indispensable but often overlooked step in the successful management of periodontal diseases. Ideally, this step should be solidified prior to proceeding with any professional treatment. By motivating patients to participate in

the treatment more actively, clinicians can significantly improve the outcome and longevity of their professional interventions.

Disclosure

The authors declare no conflict of interest.

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First submission: 25 Dec 2022
Acceptance: 2 Jan 2023
Online publication: 9 Jan 2023