



Periodontal maintenance: a review

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Introduction

The goal of periodontal therapy is the maintenance of the dentition, and/or implant replacements, in a state of health, comfort, function, and esthetics for the duration of a patient's life. Periodontitis is a chronic inflammatory disease which requires lifelong management. Long-term studies on the success of periodontal therapy demonstrate that a well planned and executed periodontal treatment plan is effective in controlling disease progression and preserving the dentition in the majority of patients.^{1, 2, 3} Without tightly controlled life-long periodontal maintenance (PM), benefits of therapy are often lost, allowing the recurrence of disease activity, further loss of periodontal tissues and tooth mortality.^{1,2,4,5} Recently, increased emphasis has been placed on the control of periodontal inflammation, with the discovery of its role as a risk factor for several chronic systemic diseases.⁶

Goals of periodontal maintenance

The primary etiology of periodontal diseases is pathogenic bacterial plaque in a susceptible host. PM is aimed at minimizing bacterial plaque in order to limit the likelihood of further disease activity resulting in continued periodontal attachment loss. PM allows for close monitoring, so that if periodontal disease recurrence or other oral health problems should occur, early intervention can be provided.

The goals of PM are:⁷

1. To minimize the recurrence and progression of periodontal disease in patients who have been previously treated for gingivitis and periodontitis.
2. To reduce the incidence of tooth loss by monitoring the dentition and any prosthetic replacements of the natural teeth.
3. To increase the probability of locating and treating, in a timely manner, other diseases or conditions found within the oral cavity.

Types of periodontal maintenance

PM programs may be prescribed for several different scenarios. Patients may enter PM to reduce the risk of disease, after completion of non-surgical therapy, after completion of surgical therapy, or to reduce disease progression when definitive treatment cannot be rendered.

For this reason, PM has been divided into 4 types.⁸

- 1. Preventive PM** – intended to prevent inception of disease in those who do not currently have periodontal pathology.
- 2. Trial PM** – intended to maintain borderline periodontal conditions and to assess over time any progression of disease and the need for further treatment. (Example: Borderline pocket depths or furcation defects, inadequate gingiva, or gingival architectural defects.)
- 3. Compromise PM** – intended to slow disease progression in a patient who would benefit from corrective treatment, but is not a surgical candidate due to health, economics, inadequate oral hygiene, or other considerations. This may also

include situations where periodontal defects persist after attempts at corrective therapy. (Example: A moderate chronic periodontitis patient who is deploying in one month to a remote location without periodontal specialty support.)

4. Post-treatment PM - designed to prevent recurrence of disease after successful corrective therapy. This type of PM is the most commonly prescribed. (Example: A localized aggressive periodontitis patient successfully treated with scaling and root planing, antibiotic therapy and regenerative surgical therapy.)

Frequency of periodontal maintenance

Soon after the bacterial oral biofilm is disturbed by plaque removal, it begins to reform. Over time the plaque becomes increasingly complex and gingival inflammation emerges.⁹ Bacterial repopulation after scaling and root planing in chronic periodontitis patients has been studied. While this bacterial reorganization is variable between patients, it may be seen as early as 42 days.¹⁰ However, in most patients the return to near-baseline bacterial levels occurs by 3-6 months.¹¹ Based on these studies the often used PM interval of "every 3 months" for susceptible patients is selected. While a 3 month interval is appropriate for many patients, PM needs to be tailored to each patient's level of disease activity and their ability and willingness to perform adequate oral hygiene. Patients who demonstrate persistent gingival inflammation, increasing probing depths, calculus formation and poor plaque control may require more frequent PM visits. Conversely, for patients who demonstrate excellent plaque control, healthy gingiva and stable probing depths, lengthening of the PM interval may be appropriate. Bleeding on probing has been proposed as one method for determining the PM interval. One study followed treated chronic periodontitis patients on PM over 4 years.¹² It was found that bleeding on probing at more than 16% of sites was associated with increased attachment loss, while bleeding on probing at less than 10% of sites was not. Based on these findings, it was suggested that the PM interval can be shortened or lengthened, depending on the percentage of bleeding sites found at each PM visit. This allows an evidence-based approach to determining recall intervals for PM patients.

Maintenance visits

PM visits should include an update of the medical and dental histories, thorough extraoral and intraoral exams to include oral cancer screening, periodontal and implant re-evaluation, radiographic review, removal of supra and sub-gingival bacterial plaque and calculus, selective root planing, implant debridement, if indicated, polishing, if necessary, and a review of the patient's oral hygiene efficacy.⁸ A typical appointment should take no longer than 60 minutes, with at least 25% of the time devoted to mechanical debridement. If signs of persistent disease activity are evident at the PM visit, such as persistent gingival inflammation, bleeding on probing, and/or increasing probing depths, steps should be taken to address these findings in order to maintain health. The use of adjunctive treatments, such as locally delivered antibiotics, host modulation therapy (low-dose doxycycline), subgingival irriga-

tion, or prescription mouth rinses may assist in controlling signs of persistent disease. A follow-up reevaluation should always be completed to evaluate the success of interventions. If unsuccessful, providers should retreat the patient within their clinical competency and experience level, or refer the patient to a periodontist as outlined by the American Academy of Periodontology Guidelines for the Management of Patients with Periodontal Diseases.¹³

Compliance with periodontal maintenance

Compliance with prescribed PM is often a challenge. A survey of compliance rates in a private practice setting found that only 16% of patients were totally compliant with PM, 32% of patients never returned for PM, and the remaining 52% were erratic with compliance.¹⁴ This same author later found that compliance could be improved two-fold by several methods, including sending out reminder cards and allowing patients to schedule far in advance.¹⁵ Since compliance with PM is so critical to the long-term success of periodontal therapy, the importance of PM must be emphasized to the patient at the onset of treatment by all dental providers.

Maintenance and dental implants

While dental implants have been shown to be successful in patients with severe periodontitis, several researchers have demonstrated that the bacterial profile around implants is similar to the patient's natural teeth.^{16,17} Peri-implantitis, as defined by inflammation and bone loss around dental implants, can result in patients with poor oral hygiene who are susceptible to periodontal diseases. Careful evaluation of dental implants at each PM visit should be performed. Dental implants demonstrating deep pocket depths, inflammation, loose restorations and/or abutments, or bleeding on probing should receive further evaluation, mechanical debridement, and possibly local delivery of antimicrobials and/or surgical therapy.¹⁸ Probing and mechanical therapy around dental implants requires the use of special instruments to avoid damaging the implant surface. Every clinic should have available a set of plastic, graphite, or titanium probes and scalers so that proper instrumentation can be performed.

Maintenance and periodontal medicine

Recent studies support the relationship between periodontal diseases and several systemic diseases and conditions through chronic inflammatory mediators.¹⁹ These conditions include cardiovascular disease, stroke, chronic obstructive pulmonary disease, pre-term low birth weight babies and control of blood glucose in diabetic patients. Many of these systemic diseases are chronic and develop as a result of constant circulation of low-grade inflammatory cytokines and acute phase proteins, such as IL-1B, TNF-a and C-reactive protein, which have been shown to be increased by periodontal inflammation.⁶ The role of lifelong PM is important not only in achieving periodontal health, but also in minimizing these risk factors for systemic diseases.

Summary

Periodontal treatment success, including both non-surgical and surgical therapy, is dependent on appropriate periodontal maintenance therapy. This maintenance also applies to dental implants, as they have been shown to be susceptible to peri-implant disease. In addition, long-term control of periodontal inflammation may reduce the risk of several systemic diseases and conditions. Performing proper PM in a military setting

can be very challenging. The frequent worldwide movement of our patients makes close control of a PM regimen difficult, and discontinuity of care a reality. It is the responsibility of military dental providers to evaluate each patient's dental history and prescribe appropriate periodontal maintenance care, reminding the patient of the importance of maintenance in preventing periodontal disease progression.

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