

Management of Periodontitis for HIV-AIDS Patients

Case Study



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According to the World Health Organization report of 2003, more than 85% of citizens in the United States suffer from periodontal disease.¹ In studying oral manifestation of the immunodeficiency virus, Arendorf, et al found oral lesions indicative of HIV-AIDS manifestation in 60.4% of the study patients, and 26.7% of the patients required treatment.² McKraig, et al reported that HIV-AIDS patients will experience at least the incidence of periodontal disease, and the majority will exhibit severe and extensive adult periodontitis.³ Patton, et al reported the decreased incidence of oral lesions for HIV-AIDS patients when the opportunistic pathogens are managed,⁴ thus maintenance is essential for patients with HIV-AIDS.

This article presents a case report in which a patient with HIV-AIDS and periodontal disease was treated using a trademarked and patented method with an FDA-cleared and patented medical device.

opening, and conventional treatments were not effective in managing the disease; 4-mm to 5-mm periodontal pockets and profuse bleeding upon probing were discovered.

Compounding the patient's oral care problems was the use of a diagnostic orthotic that was fabricated to help alleviate her joint dysfunction. The orthotic made the periodontal problems worse, as the pathogens were not easily managed with conventional brushing and flossing, and the TMJ treatment appliance exacerbated her periodontal problem (Figure 1).

The Perio Protect Method was advocated to help manage the pathogens causing the periodontal disease, but the appliance also had to be fabricated to maintain her functional joint (mandibular/maxillary) association and allow the muscles of mastication to function optimally. Maintenance of the mandibular/maxillary relationship was essential, as the patient found she was able to function



Figure 1. The patient wore a mandibular disc recapturing appliance to maintain a mandibular/maxillary association where the condyle-disc-fossa assembly was able to function normally and the primary and secondary muscles of mastication functioned optimally. The appliance allowed food and bacterial accumulation to occur and increased the patient's periodontal problems. There is some slight edema and inflammation, but generally the disease is not readily observable to the untrained eye.

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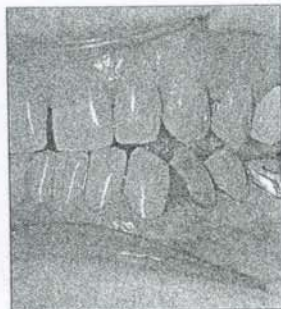


Figure 3. Significant bleeding upon probing was discovered.



Figure 4. Maxillary and mandibular Perio Trays were fabricated at the patient's functional bite association. The seal is readily observed around the maxillary appliance. This seal is consistent around all of the teeth and directs the medications of choice interproximally and subgingivally into the sulcus or periodontal pocket. The dentist determines the frequency and duration of usage in accordance with the scope and magnitude of the patient's disease. In this case the patient wore the trays 4 times a day for 15- to 20-minute intervals.



Figure 5. The patient wore the trays for just a matter of weeks. The re-evaluation probing discovered there was no longer any bleeding, and the pockets returned to normal dimensions (< 3 mm) during the course of the treatments.



Figure 6. Post-probing re-evaluation after a 20-month treatment and maintenance phase discovered one bleeding site of grade 1 gingivitis. All other sites were normal, and no periodontal pocket depths exceeded 3 mm.

tered laboratory (Space Maintainers Midwest and California, Great Lakes Orthodontics, Inman Orthodontics). The Perio Tray directs medications of the dentist's choice into the gingival crevice (sulcus) or periodontal pocket. The Perio Protect Method maintains an inhibitory level of the medications in the infected region long enough to combat the pathogens. Research has demonstrated that the medications are delivered to the apex of the gingival sulcus or periodontal pocket and maintained there for a sufficient period of time to modify the osteoclasts (inactivate) while enabling the osteoblasts to fabricate new bone, whereby tetracycline becomes incorporated into the bone.⁶ The scope and magnitude of the patient's disease determines the frequency and duration of the medications' timed-release usage. Treatments are modified as the pathogens are managed and healing occurs.

The FDA-cleared laboratory slightly modified these trays to also maintain a functional joint position that was discovered by the intraoral orthotic. The stone models were mounted on an articulator using the intraoral orthotic, and the Perio Trays were fabricated to maintain this association. The patient found the appliances easy, simple, and comfortable; she was able to maintain her TMJ functional posture as she directed the prescribed medication subgingivally and interproximally (Figure 4).

The medications advocated in the Perio Protect Method modify the biofilm with a resultant decrease in the plaque and gingival index⁷ by altering the amino acid alignment and cleaving the hyaluronic acid of the biofilm protein chains.⁸ Modifying the protein of the biofilm clinically appears to modify the calculus and tarter, making it easier to remove these accretions.

The hydrogen peroxide gel generates oxygen radicals, which may be injurious to the tissues.⁹ One way to overcome this oxygen radical is through the use of antioxidants.¹⁰ Numerous antioxidants have been eval-

uated, and tetracycline and doxycycline were discovered to be the best ones tested.¹¹ Tetracycline and doxycycline have an adjunctive effect on matrix metalloproteinases¹² that helps decrease the collagen breakdown. They inhibit osteoclasts, thus stopping bone removal, but enable osteoblasts to continue making new bone.⁶ Progenitor cells are abrogated from forming osteoclasts after 20 days of continuous tetracycline exposure.¹³ Timed delivery of medicaments that stop osteoclastic formation helps reduce bone loss. Maintenance of the medicaments helped manage the cellular activity so that osteoblast-like cells (rather than macrophages) eliminate the residual organic materials and deposit new collagen fibrils and calcify the newly formed matrix, resulting in new mineralized bone.¹⁴

RESULTS

The patient wore the Perio Tray for specific frequencies and for timed-release durations in accordance with the severity of the periodontal disease. The Perio Protect Method overcomes the crevicular flow with the Perio Tray, with a seal that applies a sufficient positive pressure environment to direct the antimicrobial medications interproximally and subgingivally into the gingival sulcus or periodontal pocket. The patient's conditions and healing that occurs determine the specified timed-release uses of the method. The periodontal pockets were found to resolve, and the Papilla Bleeding Index was found to return to normal. The frequency and duration of usage were modified as healing occurred, thus being customized to the patient's condition, and were eventually decreased to once a day. Regular re-evaluations were completed to monitor the patient's health and to ensure that the patient was able to manage her periodontal problems adequately as she continued to undergo treatment for HIV-AIDS.

During the course of her treatment it was discovered that the patient began to decrease use of her Perio

Protect Method treatments. A gradual increase in the Papilla Bleeding Index occurred. The patient was instructed to increase usage of the Perio Trays to twice a day to overcome again the pathogens and host response, and the gingival bleeding stopped. The patient was then again placed on once-a-day usage and was consistent in her home care, and the disease remained managed (Figures 5 and 6).

DISCUSSION

HIV-AIDS patients have multiple problems, including problems with their periodontal tissue. Pathogens in the gingival sulcus or periodontal pocket are not adequately managed with conventional scaling, root planing, and prophylaxis. Brushing, flossing, and topically placed mouthrinses are unable to overcome the crevicular flow as the pathogens continue to flourish, thus causing the host responses.

The Perio Protect Method overcomes these problems with a patented method using a patented apparatus (an FDA-cleared medical device) that is capable of delivering solutions of the doctor's choice into the gingival sulcus or periodontal pocket. This method overcomes the crevicular flow by utilizing a timed-release system to direct medications interproximally and subgingivally, and maintains the medications in the gingival sulcus long enough to be effective.

The oxidative medication controls the pathogens and modifies the biofilm by cleaving the amino acids and hyaluronic acids from the protein chains. The modified biofilm results in clinical changes in the structure of calculus and tarter, making these easier to remove. The method becomes the new home care regimen, enabling the patient to manage the disease for the long term. The medications can modify the osteoclastic activity to inhibit bone loss, while fostering osteoblastic activity to promote bone repair.

The Perio Protect Method is an easy-to-use, simple, and comfortable system that enabled an HIV-AIDS patient to manage her peri-

Brushing, flossing, and topically placed mouthrinses are unable to overcome the crevicular flow as the pathogens continue to flourish, thus causing the host responses.

odontal disease and maintain health long term. The method is extremely effective, as antimicrobial agents are directed to the source of the infection, and the system can be adapted to changing patient conditions as healing occurs. The patient-delivered medications and host response are managed by the dentist through re-evaluation appointments, and adjustments of timed-release medications are managed by modifying the frequency and duration of usage.

CONCLUSION

The Perio Protect Method was successful in helping a patient suffering with HIV-AIDS when conventional scaling, root planing, and prophylaxis were not successful. Custom-made Perio Trays were fabricated by laboratories registered with the FDA to maintain the patient's functional mandibular/maxillary association, and these trays were able to direct the prescribed medications interproximally and subgingivally. The patented trays and circumferential seals are able to overcome the crevicular flow and maintain a concentration of the medication in the sulcus/periodontal pocket to combat the pathogens. The concentrations of the timed-released medications have been clinically demonstrated to be of adequate sufficiency to abrogate osteoclastic activity while fostering osteoblastic activity, thus resulting in a net bone gain.

The patient initially utilized this painless, easy, and simple method in a timed-release manner in accordance with the scope and magnitude of her disease, but treat-

ments were reduced as healing occurred. Eventually the patient was able to use the method once a day, but as the patient decreased usage beyond the recommended maintenance schedule, gingival inflammation was found to recur.

The disease was controlled by increasing usage of the Perio Trays to twice a day to combat the infection, and once again the disease was found to be managed. Once the disease was controlled, the frequency and duration of usage was again decreased to once a day. The patient has faithfully maintained this regimen and has remained disease free with this new home care program. ♦

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Disclosure: Dr. Keller is owner and President of Perio Protect Company and has a vested financial interest in the company.

Dr. Keller is a general dentist practicing in St. Louis, Mo. He holds numerous patents on the Perio Protect Method and Perio Tray, and multiple other patents involving patient examination, and periodontic and TMJ-orthodontic treatments. He is the author of more than 30 professional articles. He can be reached at (314) 256-0772 or drdkeller@perioprotect.com. For more information, visit perioprotect.com.