Antimicrobial Treatment for Advanced Periodontal Disease

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DISCLOSURES

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Editor's Note: This author's case report is based on the work of Jorgen Slots, DDS, DMD, PhD, MBA. See Anti-Infective Agents in Periodontal Treatment on Medscape for an overview.

Case Presentation

A 42-year-old healthy black man was referred from his general dentist. Following a period of 20 years with no dental care, the patient presented with a chief complaint of "bad breath." He reported a history of a very unpleasant dental experience as a youth, which resulted in avoiding dental visits since that time. Now, the patient reports that he is willing to undergo dental therapy.

Medical History and Dental Examination

History. The patient's medical history was unremarkable, with no history of smoking. He is a former college athlete who exercises regularly and is in good physical shape other than his lack of dental care.

Dental examination. Clinical examination reveals excessive calculus, deep periodontal pockets, and generalized suppurative discharge. His existing dental restorations are unremarkable, with both occlusion and mobility of teeth within normal limits (Figure 1).
Diagnosis
This patient had advanced periodontitis, with significant pocketing of 5-10 mm, complicated by potential compliance issues and fear from previous dental experiences.

Treatment Plan
The conventional approach to managing periodontal disease includes debridement followed by instructions for plaque removal at home. Because of the length of time since the patient's last dental treatment, and his active oral infection, antimicrobial disinfection was selected as the best method to reduce the number of periodontal pathogens. Initial debridement alone would have allowed for some repair, slowing down not just the disease but the repair potential as well. This case illustrates how adding chemotherapeutic agents, targeting the specific periodontal microbiota, will facilitate maximum repair and successful management of even very advanced cases such as this one. By aggressively and accurately targeting pathogens, results will be improved over traditional scaling and surgical methods.\cite{1,2} These
traditional combined methods may not kill all bacteria at diseased sites. Antimicrobial cleansing is an innovative method that combines in-office procedures with specific antimicrobial procedures to be performed at home, providing optimal healing. These processes have yielded predictable clinical results for cases that did not respond to initial treatment as well as for advanced cases treated for the first time.[1,2] By attacking infection while it is active, the bacteria are eliminated aggressively and completely.

This case was treated in the following manner:
1. Bacterial culture of pathogens. Cultures were obtained with a paper point inserted into the pockets. Culture results showed high levels of *Peptostreptococcus micros* and very high levels of beta-hemolytic *Streptococcus*. Because periodontal disease is an infection, identifying the specific bacteria, such as *Porphyromonas gingivalis*, *Prevotella intermedia*, and others, allows for accurate selection of antibiotics that have sensitivity and specificity for those bacteria.
2. Complete debridement with ultrasonic and hand instruments of all subgingival calculus by means of a minimal flap for access to root surfaces (Figures 3 and 4).

Figure 3. Soft tissue flap of teeth #28-#31, showing subgingival calculus and granulation tissue in pocketed areas.
3. Systemic antibiotic therapy as determined by culture. In this case, a large number of many different bacteria required use of amoxicillin and metronidazole, 250 mg each, 3 times daily for 8 days. The sensitivity report indicated that 2 antibiotics were recommended because no single agent has action against every identified bacterium.

4. Local application of povidone-iodine for 5 minutes and a brief rinse with very dilute bleach solution at the time of treatment (Figure 5).
Figure 5. Povidone-iodine application, with appropriate viscosity to cover all surfaces.

5. Home care regimen, including:
   - Use of dilute bleach solution (1:10 dilution of sodium hypochlorite) twice weekly, applied with a Water-Pik® with a small Pik Pocket Tip® (Water Pik, Inc, Fort Collins, Colorado).
   - Use of topical fluoride (0.4% stannous gel) for application in custom trays.

Results

On follow-up, the patient showed marked improvement and reported satisfaction with his treatment. He reported that postoperative pain was nearly nonexistent as a result of the minimal flap and no osseous reduction surgery. Clinically, the pockets were resolved, the bone showed radiographic evidence of repair, and the patient reported feeling better immediately. In keeping with his college athletic career, the patient jogged regularly and reported the effort required to do his usual workout has lessened. He stated that he felt stronger and faster. No postoperative culturing was done. Periodontal measurements continued to show stability (Figures 6, 7a, and 7b).
Figure 6. Postoperative view at 6 months. Note appearance of tissues demonstrating the shrinkage and adaptation of soft tissues and improved color appearance.

Figure 7. Final restoration 3 years postoperatively. Note new porcelain-fused-to-metal crowns on teeth #29-#31, with radiographs demonstrating tissue and bone repair. Neither osseous reduction nor bone augmentation was performed. Only debridement plus systemic and local antimicrobial agents were used to treat this case.