

New Technology for Periodontal Treatment

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From the Editor

Few novel therapies for the treatment of oral infections have been developed over the past decade. The current standard of care is to provide scaling and root planing, with or without antibiotics delivered either locally or systemically. The introduction of photodisinfection to Canada and Europe in 2006 represented a milestone in new and innovative approaches to the treatment of oral infections.

Photodisinfection is based on a well-known reaction that happens when a photosensitizer compound is combined with a color-matched, non-thermal light source. This reaction creates a consequent reaction whereby the light-activated photosensitizer is able to transfer energy to surrounding oxygen, creating a flux of oxygen-derived free radicals. These radicals, in turn, are able to physically destroy the bacterial cell membrane and, thus, the bacterial cell, significantly reducing the numbers of gram negative bacteria, inactivating the virulence factors associated with periodontal diseases, and enhancing the healing process.

A clear advantage of the photodisinfection approach is that there is no known path to bacterial resistance, a concern surrounding the use of antibiotics with which we are all too familiar. *Photodisinfection was developed as a safer and more effective alternative to antibiotics when used in conjunction with or without scaling and root planing.*

While there has been extensive laboratory research documenting the safety and efficacy of photodisinfection for more than ten years, we are now seeing the successful completion of many clinical cases by practitioners who have made it a part of their normal routine in the treatment of periodontal disease. This is the first in a series of case studies utilizing the Periowave™ system. As we see more and more of these documented cases, the realization that there is indeed an alternative to traditional antibiotic therapy that will provide increased benefit to the patient and to the dental profession in general will become apparent.

We welcome your comments on this series and your questions about Periowave™.

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In-Office Application of the Periowave™ Photodynamic Disinfection Technology – Four Unique Clinical Cases

The following Periowave™ clinical cases were submitted by our Guest Clinician **Claude G. Ibbott, DMD, FRCD**. Dr Ibbott is a periodontist in Regina, Saskatchewan, Canada. His RDH, Leanne Carlson-Mann, submitted these in conjunction with him.



Case # 1

Generalized Severe Bleeding

Case Report

The patient was a 30-year-old Caucasian woman who complained of bleeding gums over the previous 12 months. She described severe bleeding with eating or brushing (Figure 1.1).



Figure 1.1 – Severe gingival bleeding

Her medical history revealed no significant findings. She had recently undergone a complete medical examination with extensive laboratory testing with no significant findings. She had tried seeing a naturopathic physician and had tried a non-yeast diet for the control of her gingival bleeding with no improvement. She was on no medications.

The dental examination revealed generalized severe bleeding on probing. Pocket probing depths were in the 4 mm range, except for a 7 mm pocket distofacial #13, and a 5 mm pocket mesiofacial #23. Minimal plaque deposits were found and her home care was good. This patient had a history of regular 6-month scaling and there was minimal calculus. Her last scaling was within one month with no improvement. There was little to no clinical inflammation. Occlusion, tooth position, and mobility patterns were normal. No restorative problems were noted.

Treatment and Results

Scaling and root planing were done in two sessions for the entire mouth utilizing ultrasonics and hand scaling. A local anesthetic was used for sites 13, 12, 22, and 23. The patient was instructed in the use of a manual soft-bristle toothbrush and the use of waxed dental floss.



Figure 1.2 – Pre-treatment 7 mm pocket

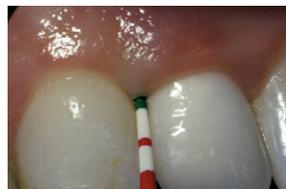


Figure 1.3 – Post-treatment 7 mm pocket reduced to 3 mm



Figure 1.4 – Pre-treatment 5 mm pocket



Figure 1.5 – Post-treatment 5 mm pocket reduced to 3 mm

The patient was monitored weekly over a period of six weeks. At the end of six weeks, there was a reduction of approximately 1 mm in both deep pocket probing sites. A single clinician did all the probing with a plastic probe. Little or no improvement in the bleeding was noted, however. The patient then agreed to treatment with the Periowave system.

All teeth were again scaled and root planed, and the entire mouth was treated with Periowave in two sessions, one day apart.

Within 1 week, all bleeding on probing ceased. The patient was monitored weekly for another six weeks with no recurrence of bleeding. Probing depths at sites 13, 12, 22 and 23 were reduced to 3 mm at 6 weeks (Figures 1.2 - 1.5).

Case # 2

Gingival Inflammation and Tooth Loss

Case Report

This is the case of a 55-year-old Hispanic woman who presented with a complaint of sore gums and tooth loss. The patient was in otherwise good health with no serious medical problems noted or observed.

The dental examination showed the upper arch to consist of teeth 13, 11, 21, and 23. The patient had a poorly fitting maxillary acrylic appliance. The lower arch was intact with no restorative problems. The lower arch had moderate calculus formation, but few signs of clinical inflammation; probing pocket depths were generally 3-4 mm. Radiographs showed normal bone levels. The maxillary teeth exhibited severe inflammation with engorgement and bleeding (Figure 2.1).

Treatment and Results

The lower arch responded to routine scaling and root planing. However, because of the severe maxillary inflammation, the Periowave system was used for one session immediately after scaling. The acrylic partial appliance was relined with a soft liner as a temporary measure.



Figure 2.1 – Pre-treatment gingival inflammation



Figure 2.2 – Post-treatment resolution of gingival inflammation

Within 14 days, the upper teeth responded to SRP and adjunctive Periowave treatment, with a complete resolution of inflammation (Figure 2.2).

Case # 3

Unsuccessful Prior Periodontal Therapy

Case Report

This is the case of a 52-year-old East Indian female who was on regular four-month maintenance following previous periodontal therapy. The patient had been treated three years prior for generalized severe periodontitis. The treatment at that time consisted of scaling and root planing, home care instructions, occlusal equilibration, and osseous surgery.

The patient was in generally good health apart from high blood pressure, which was stable on lisinopril (Prinivil®) once a day.

The dental examination showed a 6 mm inflamed bleeding pocket that was evident between 43 and 42 (Figure 3.1); the rest of the mouth was healthy.

Treatment and Results

Scaling and root planing with local anesthesia was used to treat 43 and 42, with adjunctive treatment with Periowave following the scaling.



Figure 3.1 – Pre-treatment gingival inflammation near the pocket



Figure 3.2 – Post-treatment resolution of gingival inflammation

The patient was out of the country after treatment for several months, but did return for a 12-week follow-up visit, at which time the pocket probing depth was reduced to 3 mm with no signs of inflammation (Figure 3.2).

Case # 4

Gingival Inflammation and Pain Due to Oral Lichen Planus

Case Report

This is the case of a 72-year-old Caucasian woman who presented with a complaint of gingival pain on 11 and 21 during eating and brushing. She had no significant medical history (Figure 4.1).

She described discomfort from 11, 21 for the previous six months. Incisional biopsies were performed, and immunofluorescence suggested oral lichen planus. Since there is no cure for OLP, attempts were made to treat the symptoms with Lidex® and later tacrolimus, though these measures provided no relief.

Treatment and Results

The patient underwent one treatment session with Periowave.



Figure 4.1 – Pre-treatment gingival inflammation due to OLP



Figure 4.2 – Post-treatment resolution of gingival inflammation

Within one week following Periowave therapy, the gingival inflammation had resolved (Figure 4.2) and the patient experienced complete relief from the presenting complaint of pain.

Summary & Conclusions from the Guest Clinician

These cases demonstrate some of the applications of the Periowave system in our dental office. Of particular utility was the rapid treatment times and non-invasiveness of the procedure itself. Patients were very accepting of this new modality and were appreciative of having the opportunity to use new technology, especially when traditional therapies had failed to achieve complete resolution of their symptoms. While Periowave may not apply to every patient, it certainly provides one more tool for the clinician to offer patients prior to more invasive, and less appealing therapies.

Dr. Claude Ibbott