

# Periowave Photodisinfection Eliminates Advanced Peri-Implantitis: A Case Report

By Joseph Andary, DDS

## Introduction

Periowave is a locally delivered antimicrobial that utilizes the technology of photodisinfection. Photodisinfection is a simple two-step clinical procedure, which causes cell destruction of targeted gram-negative anaerobic micro-organisms in a selected periodontal defect within 60 seconds.

The first step involves irrigation of the affected periodontal site with a photosensitizing solution, which selectively binds to the periodontal pathogens. The second step is illumination of this site with the light diffusing tip from a non-thermal diode laser of a specific wave length (670 nm) for a period of 60 seconds.

Periowave has been shown to be effective against a wide range of putative periodontal pathogens, including *Porphyromonas gingivalis*, *Prevotella intermedia*, *Tannerella forsythia*, *Fusobacterium nucleatum*, and *Aggregatibacter actinomycetemcomitans*. Virulence factors associated with gram-negative bacteria, including lipopolysaccharides and proteolytic enzymes, are also inactivated.<sup>1</sup>

## Case Report

A 58-year old, non-smoking female patient was referred to my dental office and examined for the first time on July 17, 2007. The patient's medical history was non-contributory to her condition and she had no major complaints about her oral health. Clinical evaluation consisted of a full periodontal and radiographic examination that revealed generalized chronic moderate periodontitis in addition to peri-implantitis around implant #22, which had been placed approximately four years ago in the United States.

Probe readings were taken around the implant and surrounding teeth and the following pocket depths were recorded starting with #21 MB - 5, 6, 11; #22 implant - 14, 9, 7; tooth #23 - 6, 5, 4; #21 ML - 5, 5, 9; #22 implant - 9, 6, 8; #23 ML - 6, 5, 4.

Additionally, there was extensive suppuration and bleeding in the areas around the teeth and implants (Fig 1). There was no mobility of the implant, but an extensive overhang on the prosthetic crown was noted and radiographic examination revealed a large degree of bone loss between the implant and the central incisor (Fig 2).

The following treatment options were discussed with the patient. OPTION 1:



Fig: 1

Remove the implant immediately and then follow up with one or possibly two bone grafting procedures with implant placement in six to eight months.

OPTION 2: Remove the implant and then place a bridge, depending on the prognosis of tooth #21. OPTION 3:

Treat the infected area with Periowave photodisinfection in order to eliminate the peri-implantitis infection and then perform a bone grafting procedure, thereby circumventing the need for implant removal.

The patient was very motivated to try the third option because she wanted to try and save the implant. She was also interested in the Periowave treatment's non-antibiotic approach as she did not wish to take antibiotics for infection control.



Fig: 3



Fig: 4



Fig: 5



Fig: 6



Fig. 2

Three consecutive Periowave applications were conducted on the patient two weeks apart and successfully eliminated the infection around the implant (Fig 3 & Fig 4). On October 24, six weeks after the initial treatment, bone-grafting surgery was performed on the implant using Gem 21S grafting material by Osteohealth. The surgical procedure involved an open flap debridement SRP and disinfection with Periowave prior to graft placement (Fig 5 & 6). A post-operative radiograph taken October 31 (Fig 7) shows the graft in place with no radiographic signs of graft rejection. The post-operative photograph shows an excellent soft tissue response one week later (Fig 8).



Fig. 7



Fig: 8

## Discussion

Periowave photodisinfection treatment effectively eliminated an advanced case of peri-implantitis without the use of antibiotics and enabled a successful bone grafting procedure, thereby allowing the implant to be saved. Periowave was also useful in disinfecting the open flap surgical area prior to bone grafting, thus establishing a clean environment and eliminating any bacteria that could interfere with the healing and integration process.

## About the Clinician

Dr. Joseph Andary, DDS, graduated in 1985 from the University of Toronto. He completed his residency at Mount Sinai Hospital, where he had the opportunity to work with special needs patients, and to provide dental services to First Nations in Moose Factory. Since 1986, Dr. Andary has been in private practice in Oakville, where he focuses on all aspects of general dentistry with emphasis on oral surgery, implantology and periodontal management.

## References

1. Wilson M., *Lethal Photosensitisation of Oral Bacteria and its Potential Application in the Photodynamic Therapy of Oral Infections*. *Photochem. Biol. Sci.*, 2004, 3, 412-418.