Up to 80 percent of dental implant patients experience complications due to inflammation,¹ making the longevity of dental implants dependent on maintaining the healthy tissues around them.² Several recent studies have found laser therapy a promising treatment of periodontal disease and now peri-implantitis.

Specifically, a pulsed Nd:YAG laser has been investigated and its efficacy determined for achieving bacterial ablation without damaging the surface properties of titanium implants.³ Another study found that the use of an Nd:YAG laser was able to totally reduce contamination on irradiated implants.⁴ Combined, this research suggests that the use of Nd:YAG lasers could be beneficial in treating patients with peri-implantitis.

The PerioLase® MVP-7, a pulsed Nd:YAG laser, is at the heart of the Laser Assisted Peri-Implantitis Procedure (LAPIP®) protocol that is based on the successful LANAP® protocol. LANAP surgery is an FDA-approved protocol that provides cementum-mediated new periodontal ligament attachment to root surfaces in the absence of long junctional epithelium.

It treats the periodontal pocket walls to remove diseased epithelium, then seals them with a laser-generated blood clot. The therapy results in greater
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probing depth reduction and clinical probing attachment level gains, as well as inducing periodontal regeneration.5,6

The LAPIP technique is an implant-specific modification to the LANAP procedure. Both utilize an ablation step to remove inflamed sulcular tissue and decontaminate the root/implant surface, followed by a scaling step using an EMS piezo scaler. A laser-induced hemostasis step further decontaminates the tissue and causes the blood to clot, creating a closed system. This seals the area, preventing the downgrowth of the gingival epithelium and allowing the area to heal from the base of the defect coronally.

_Case study_

A 37-year-old female patient presented in June 2012 with an implant at the #3 site that had been placed three years ago. It had become infected two weeks earlier. The patient had seen another periodontist who recommended a surgical treatment approach with grafting.

Upon examination, suppuration was noted on palpation on the buccal aspect. Additionally, the tissue was very inflamed and the crown margin was subgingival. The implant was non-mobile. Vertical bone loss was noted at on the distal of #3 but was deeper on the mesial. The MP on #3 was > 13 mm. Probing depths on the buccal were, from mesial to distal: 6 mm, 10 mm, 7 mm; and from the palatal: 13 mm, 6 mm, 5 mm.

The LAPIP procedure was recommended because of the amount of inflammation and suppuration surrounding the implant. LAPIP was performed utilizing the PerioLase MVP-7 Nd:YAG laser at 75J increments, with cooling in between to prevent overheating of the implant. The energy density was 14.5 J/mm. Additionally, the patient was placed on Amoxicillin (500) 4 stat, then 1 tab q 8 h until finished; Motrin (800) 1 tab q 8 h for three days, then prn pain; and chlorhexidine rinse: two times per day for 30 seconds.

The patient was checked at one week, three weeks, three months, seven and a half months, and 10 months postoperative, with occlusion checked at each appointment. Bone regeneration was noted on both the mesial and distal aspects. Probing depths taken at three months showed a significant decrease in pocket depths, with no suppuration or tissue loss.

_CoConclusion_

The LAPIP procedure was chosen as a first line treatment in these cases based on the proven success of the LANAP protocol, which has been shown to decrease inflammation, the main priority when treating peri-implantitis. Because the therapy is non-invasive, it is a tissue sparing procedure and can regenerate bone, all with minimal tissue loss and trauma to the patient.

The results demonstrated a complete decrease in inflammation and regeneration of the bone, which should continue until an intact lamina dura is developed. If, however, the results were not what was anticipated, the LAPIP therapy allows for retreatment, the use of traditional surgical peri-implantitis treatments or, in severe bone loss cases, implant removal. As a first line treatment, LAPIP gives practitioners more options for any retreatment in the long run than other surgical interventions.

_References_


_about the author_

Allen S. Honigman, DDS, MS, received his dental training at the University of Texas Health Science Center at San Antonio in 1991. He previously graduated with a bachelor of science degree in biochemistry from the University of Ottawa, an honorary diploma in genetics from the University of Western Ontario, as well as a master’s degree in microbiology and immunology from Idaho State University. Honigman completed his periodontics residency through UCLA and served as the pre-doctoral periodontal director at CWRU from 1999-2001. He is an active member of AAP and a certified instructor with the Institute for Advanced Laser Dentistry since 2009.