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Laser Assisted New Attachment Procedure

By David Kimmel, DMD

ABSTRACT

This article presents a general over view of what the Laser Assisted New Attachment Procedure (LANAP) is and the benefits of its use to patients and the restorative dentist.

RÉSUMÉ

Cet article donne un aperçu de LANAP et des avantages de son utilisation chez les patients et pour le dentiste.

LANAP: What Is It?

As a restorative dentist, periodontal disease not only complicates treatments, but, can be a stumbling block in obtaining patient acceptance of treatment. It is often the case that the foundation in which the restorative dentistry is needed is not stable enough to restore, or once the periodontal disease is stabilized, the patient is left with compromised esthetics. Equally important, the teeth, no matter how they are restored, are going to be difficult for the patient to maintain over time. Patients, once being informed of the need for periodontal therapy and subsequent referral to a periodontist, often decline treatment.

Unfortunately, in many cases, once the patient is referred to the specialist they don't keep their appointment, nor do they return back to the referring dentist for further care. They tend to avoid dental treatment all together. Often, this is the result of experiences friends and family members have had after undergoing periodontal surgery. In some cases, patients will start therapy and stop after only one quadrant of surgery.

Unfortunately, for restorative dentists in the United States, one in three patients have some form of periodontal disease.[1] Patients often seek treatment from us for a cosmetic concern. In many of these cases, we cannot address their initial concern until the periodontal disease has been addressed.

For some time, different treatment options have been tried in order to meet these patients' needs. In the late 1980s, the first step toward accomplishing this goal was brought to the market. American Dental Technologies developed the first laser for use in dentistry.[2] Since then, numerous clinicians and researchers have tried to develop laser techniques that would be

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effective against periodontal disease. Two such restorative dentist and laser pioneers are Dr. Delwin McCarthy and Dr. Robert Gregg. In 1998, they first published their findings on periodontal bone regeneration.[3] Later, in 2007, histological proof of not only osseous generation but new cementum mediated attachment was published by Dr. Raymond Yukna.[4] The protocol that was developed by Dr. Gregg and Dr. McCarthy has been termed, LANAP, an acronym for Laser Assisted New Attachment Procedure.

LANAP is a rather simple but elegant protocol. It tips the scales in favour of the periodontal regeneration. A key component of the protocol is the Nd:YAG laser; specifically the Periolase MVP 7 by Millennium Dental. The wavelength of this laser is 1064 nm. It can be utilized to achieve peak powers in the 1,000's of joules and has the ability to vary the pulse duration (length of time of each laser pulse). This wavelength of laser light, 1,064 nm, is selectively absorbed in pigmented tissue. This absorption of the laser energy allows for the selective removal of diseased epithelium and the destruction of the pigmented bacteria associated with periodontal disease (Figure 1). The high peak powers that can be achieved with this laser give a depth of penetration into the tissue that further allows this laser to effect periodontal disease. The variable pulse durations of the Periolase is a feature of this laser that allows this laser to selectively remove diseased epithelium and to form a thermogenic clot that acts as a barrier membrane (Figure 2). LANAP, however, is not just about the laser. It is a protocol that deals with inflammation, the infectious process, occlusion, tooth mobility, and an osseous component.

A Quick Overview

There is no initial periodontal therapy started prior to LANAP. The LANAP procedure (Figure 3 and Figure 4a and 4b) is generally completed in two visits, although, it can be done in one. On average, each of the two visits are two hours long. The patients are seen at a one week post op for an evaluation and then at 30 days post op to have a supragingival prophylaxis. Thereafter, prophylaxes are done every three months. The patients are closely monitored during this time. At one year, a postoperative evaluation is done which includes full periodontal probing and full mouth radiography. At that time, phase 2 dentistry can be initiated once it has been confirmed that the periodontal condition is stable.

Figure 1. Selective removal of diseased epithelium and decontamination of pocket utilizing the high peak powers of the Periolase MVP7 Nd: YAG laser.

Figure 2. Formation of a thermogenic clot by use of long pulse durations of the Periolase MVP7.

In general, during this year, no restorative work that requires disturbing the periodontal tissue is done. Subgingival cleaning and probing are discouraged. As many of the patients that are indicated for LANAP have avoided dentistry for years, they often require some restorative dentistry prior to LANAP as they would not be able to wait a year before undertaking the needed restorative treatment. In this case, direct restorations are placed as needed and when indirect restorations are indicated, temporaries are placed with the understanding that the final restorations will be place at a later date.

One of the remarkable aspects of LANAP is patient acceptance. Even patients that have traditionally avoided dental treatment or have experienced traditional surgery in the past, accept LANAP. They are looking for an alternative to traditional surgery and are familiar and comfortable with the use of lasers for LASIK treatment for their eyes. They consider laser treatment for periodontal disease a viable alternative. Clinically, what immediately becomes apparent is that post operatively there is none to minimal discomfort.

After the procedure, the patient can see that the tissues feel and look healthier. Since LANAP is not a resective procedure, the recession associated with traditional surgery is not present. Consequently, the patients do not have the root sensitivity or longer appearing teeth. All of this reinforces to the patient that they have made a good decision on their treatment choices.

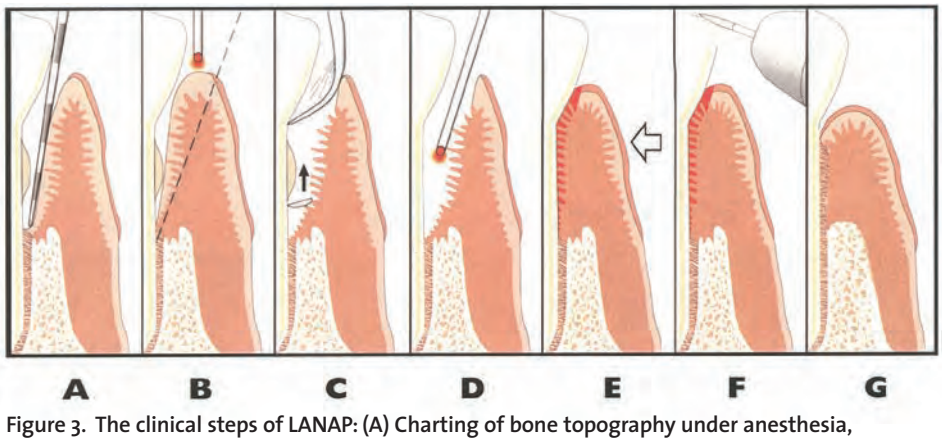

Figure 3. The clinical steps of LANAP: (A) Charting of bone topography under anesthesia, (B) optic fibre is oriented parallel to the root surface and (C) removal of calcified plaque and calculus by use of Pezio ultrasonic scaler (D) A second pass with 650 us "long pulse" laser finishes debriding the pocket and achieving hemostasis with a thermal fibrin clot. (E) Gingival tissue is compressed against the root surface to close and aid in the stabilization of the fibrin clot. (F) The wound is stabilized, the teeth splinted if necessary, and occlusal trauma is minimized by occlusal adjustment to promote healing. Oral hygiene is stressed and continued periodontal maintenance is scheduled. (G) No probing is performed for at least 9 to 12 months.

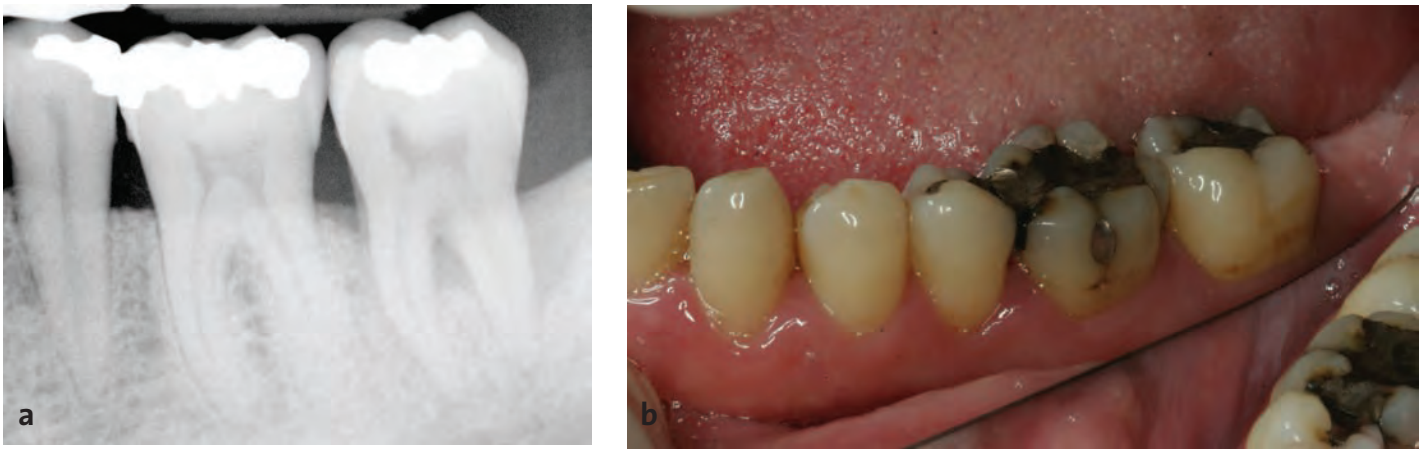

Figure 4. Preoperative clinical radiograph (a) and photo (b) of typical LANAP case.

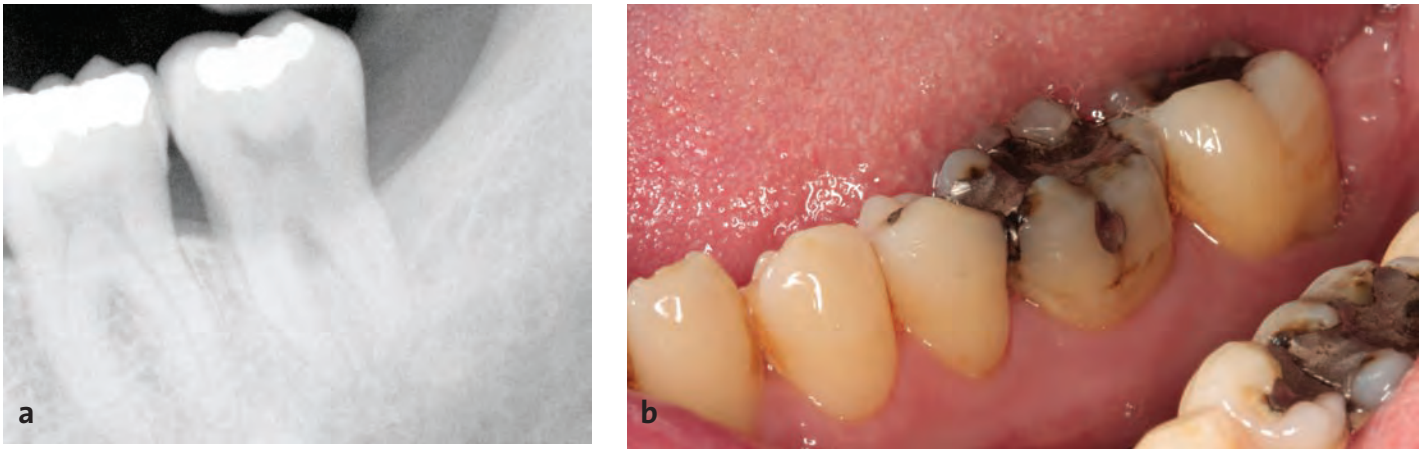

Figure 5. Twelve months post LANAP with only minor recession and resolution of a 9 mm pocket.

As a restorative dentist, LANAP allows a more ideal crown to root ratio and naturally appearing gingival contours. This in turn makes periodontal maintenance for the patient far more manageable. It all leads to the long term success of periodontal patients after being treated with LANAP. What I find rewarding, is LANAP allows patients that are fearful of dentistry to not only seek out treatment, but to continue their dental care. After LANAP treatment, patients realize how much dentistry has changed and they continue their care.

Disclosure

The author is a clinical instructor for the Institute for Advanced Laser Dentistry. The IALD is a division of Millennium Dental, which manufactures and sells the Periolase laser.

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