Laser-assisted Periodontal Therapy

Using a soft-tissue laser for pocket decontamination and debridement offers many clinical benefits when added to conventional root planing/scaling therapy.

By Mary Martineau, RDH

Those of us who provide hygiene services are playing an increasingly important role in the oral as well as the general health of our patients. In light of recent discussion and publicity surrounding the correlation between periodontal disease and some rather extreme systemic health problems, the fight against periodontal disease has gained renewed value. And now, we have a high-tech weapon to help us—the soft-tissue laser.

You may have read about the use of lasers in dental hygiene, or perhaps you are already using a laser in your treatment. For those who have not been introduced to this technology, this article will discuss the clinical benefits of using the diode soft-tissue laser in addition to conventional scaling and root planing and will explain how to implement this technology.

The effectiveness of lasers

We know that bacteria are the enemy in our battle against periodontal disease. And we know that some of those bacteria can and do reside in the tissue—namely, Porphyromonas gingivalis, Prevotella intermedia, Bacteroides forsythus, Actinobacillus, and actinomyces comitans, to name a few. Thus, cleaning only the surface of the teeth leaves behind the opportunistic, tissue-invasive bacteria, which are free to recolonize and create new disease.

The diode laser energy is actually attracted to melanin, water, and to a small extent, hemoglobin—three components of inflamed, diseased tissue. Diode laser energy is thermal and actually vaporizes the targeted diseased tissue.

Two diode laser modes are appropriate for use in dental hygiene. The first mode decontaminates the pocket with a pulsed beam of energy. We call this laser decontamination. The second mode removes the diseased epithelial wall of the pocket with a continuous beam of energy. This we call laser therapy.

In our office, the decontamination of gingival pockets is performed prior to any “routine” prophylaxis treatment on “healthy” patients. Because bacteremia is quite common whenever bleeding occurs in the oral cavity, we perform the laser decontamination procedure before doing anything—including probing—that may cause bacteremia. Drastic reduction of the bacteria level, beyond even the oral antimicrobial rinse, benefits the clinician (by eliminating bacteria in the aerosol of an ultrasonic instrument) and the patient as well (by avoiding bacteremia).

We use the second laser mode only on periodontally compromised patients, which we call laser-assisted periodontal therapy (L.A.P.T.).

The bactericidal effects of the diode laser are well established. Studies also show that laser-supported therapy results in a delayed recolonization period, thereby allowing valuable time for good home care and office maintenance to bring about a healthy sulcus.

Using the diode soft-tissue laser in periodontal therapy offers two distinct advantages over using traditional hand instrumentation. First, the extreme precision of the laser allows removal of only the diseased tissue. Second, the laser provides simultane-
ous coagulation of blood vessels, providing an optimal environment for speedy healing.

The soft-tissue laser is well suited for other dental procedures as well. Many dentists use lasers to replace the scalpel and the electrosurgery unit during cosmetic procedures such as tissue recontouring and crown lengthening, with immediate and predictable results. The laser also effectively sterilizes root canals and safely exposes implants. A special attachment for the laser that I employ uses laser energy to whiten teeth in approximately 15 minutes of laser exposure time.

Treating periodontal disease

Dentists and hygienists typically treat gingivitis and mild-to-moderate periodontal disease within the scope of the general practice setting, referring the more advanced cases to the periodontist.

The conventional treatment for Class 2 and Class 3 periodontal cases is quadrant scaling and root planing. Research, however, shows that bacteria levels return to pre-treatment levels within 21 to 60 days when periodontal therapy involves only scaling and root planing.*

The soft-tissue laser, when used in conjunction with conventional treatment, is documented to be far more effective over the long term than scaling and root planing alone.** Laser-assisted periodontal therapy also has an added benefit of minimal, if any, postoperative discomfort reported by patients.***

Implementing the laser

For a new patient, whose periodontal condition is unknown, a typical scenario begins with initial perio therapy - IPT (or full-mouth debride, ADA code 04355). An existing patient is typically scheduled for a “routine prophyl.” In either case, as stated above, laser decontamination is the first treatment performed on each patient prior to any procedure that may cause bleeding. Virtually all of the patients who I have treated thus far are well aware of the dangers of oral bacteria and are quite grateful and enthusiastic about the laser decontamination procedure.

Once I have performed laser decontamination, I take and record full-mouth probe readings, noting bleeding points and tissue condition. If the patient is healthy, I continue with a routine cleaning (ADA code 01110) and polish.

If I suspect periodontal disease to be present, the doctor is notified, the patient evaluated, and a definitive diagnosis given. I then explain laser-assisted periodontal therapy to the patient.

Laser therapy is included in every periodontal therapy treatment performed in our office. I find the technology offers a wonderful way to encourage acceptance of periodontal therapy among both new patients and patients of record who have been avoiding treatment due to fear of pain.

The following paragraph is a sample patient explanation of laser-assisted periodontal therapy. Please keep in mind that each patient is an individual and that these words are appropriate for some and not for others. I strongly believe that studying different personality profiles is imperative to successful patient communication.

“Mr. Jones, you have periodontal disease. You may have heard about recent studies that positively connect periodontal disease to stroke, heart disease, and diabetes. We are recommending a procedure called periodontal therapy to treat your disease. We...

Laser-assisted periodontal therapy: What to charge

IF YOU ARE NOT FAMILIAR with using lasers in periodontal therapy, you may be wondering what to charge and whether your practice can obtain insurance reimbursement for laser-assisted procedures.

Of course your practice’s overhead requirements will determine the fees that will be charged for these services. But as a reference point, we charge $200 per quad for the periodontal therapy (ADA code 04341) and $300 per quad for the laser therapy.

Insurance companies do not acknowledge laser therapy yet, and they do not pay for any portion of it (surprise, surprise!). The patient is responsible for the laser-therapy fee and the balance of the perio therapy that the insurance company does not cover. In our practice, we have found that patients are more than willing to pay the L.A.P.T. fee, and we have about a 98% case acceptance for periodontal therapy.

—MM
Laser-assisted perio therapy: decontamination and debridement

The laser handpiece is held with a pen-like grasp. After the laser fiber is placed into the pocket, it is aimed toward the tissue and moved in a light, painting motion.

The sulcus of each tooth is lased completely for debridement. It takes between 5 and 10 seconds to cover the entire circumference of a tooth, depending on pocket depth.

will use a laser to eliminate the diseased tissue and an ultrasonic instrument to clean your teeth below the gum line. You can expect very little, if any, discomfort during or after this therapy. It is a conservative approach to periodontal disease and it is quite successful."

Initial Perio Therapy

Once treatment is accepted and a consent form is signed, this appointment is no longer a prophylaxis for the existing patient of record. It becomes the initial perio therapy appointment. A full-mouth ultrasonic cleaning is performed supragingivally with an antimicrobial solution in the water supply. (In our office, we use an essential oil product called "Under the Gum").

I then perform a full mouth “wash” with a prophylaxis jet. Studies have shown for years that the sodium bicarbonate solution is very effective against the bacteria. And finally, recommendations for home care improvement and nutrition are discussed at the end of the IPT appointment.

To maximize the benefits of the IPT, the first L.A.P.T. appointment should be ideally scheduled within two weeks.

L.A.P.T. — the protocol

We always make patients aware that speed of response to the therapy varies depending on the individual and that the number of L.A.P.T. appointments will be determined by their healing time. Smoking and other existing systemic health problems inhibit healing time.

We work in quadrants and estimate the fee for at least four appointments, leaving the treatment open-ended, just in case more visits are necessary. (We find that leaving the treatment open-ended motivates patients to improve their home care in an effort to avoid a fifth or sixth appointment.)

We begin every L.A.P.T. appointment with four important steps, performed in the order listed:

1. Patient pre-rinse with antimicrobial solution.
2. Full-mouth laser decontamination.
3. Full-mouth ultrasonic treatment with antimicrobial solution.
4. Full-mouth prophylaxis jet cleaning.

Next, we anesthetize the area of greatest need, and a thorough, concentrated cleaning with ultrasonics and hand instruments is performed on this area.

Then, with the laser set on de-epithelialization mode, we perform debridement of

Where you can get laser training

LASER USAGE BY DENTAL HYGIENISTS comes under the umbrella of the licensed duty of subgingival sulcular debridement. Currently, the states in which dental hygienists are permitted to practice with soft tissue lasers are: Arizona, Colorado, Nevada, Florida, Maine, Tennessee, Washington, New Mexico, Virginia, Oregon, Hawaii, and California.

So, where do hygienists learn to operate this equipment?

Many times training is included with the purchase of a laser, but throughout the country, you'll also find there are individuals with ample training and experience that have teaching facilities to accommodate laser education. Some of these educators will travel to individual practices to teach laser therapy.

In addition, the Academy of Laser Dentistry (ALD) has annual meetings at which laser training can be attained. (For more information call 954-346-3776 or visit www.laserdentistry.org.) The ALD has stepped the training into levels.

Standard proficiency requires hands-on training, a clinical proficiency simulation test, and a written exam. The written exam covers the history, science, and safety of lasers.

Advanced proficiency requires submitting and presenting five documented clinical laser therapy cases that have been tracked for a minimum of three months, a written exam, and the clinical simulation exam.

Educator level trains those with advanced proficiency status to teach standard and advanced programs.

The ALD is an international organization, making it a great way to network with other professionals who work with lasers.

Of course, not every dentist has a laser, and hygienists are not legally able to purchase a laser. But, I believe that lasers will become an integral part of dental hygiene in the near future much like the intraoral camera has become standard in dental offices. Many hygienists, who don't yet work for a dentist with a laser, are already advancing their knowledge and their careers by getting hands on experience with soft tissue lasers to put on their resume for future opportunities.

—MM
the diseased wall of tissue in the pockets of this quadrant. We always follow laser therapy with ultrasonic scaling to wash out the pocket.

Finally, home care instructions are given. They are very similar to conventional therapy home care instructions. They include instructions on irrigating the treated area with an antimicrobial rinse with no brushing until the day after therapy. Superior nutrition and good rest also are advised. The patient is then dismissed.

Each L.A.P.T. appointment is performed in the same manner as the first, with one additional step: the area treated last is revisited and any trouble spots are re-lased.

Technique: the basics

While the lasing time is different, the laser motion used for both the decontamination procedure and laser therapy is exactly the same. And, we penetrate to the depth of the pocket for both procedures.

For the decontamination procedure, the goal is to reduce the number of bacteria in the pocket around every tooth in the mouth to avoid bacteremia during the cleaning phase. So, I lase the sulcus of each tooth entirely with the laser fiber. It takes me approximately five to eight minutes to decontaminate the pocket space of 28 teeth, depending on pocket depth. I do not use any sort of anesthetic and the patient is quite comfortable.

For the perio therapy treatment phase, of course, the goal is to eliminate the diseased tissue in the sulcus of all of the teeth in the quadrant being treated. I spend approximately 30 to 60 seconds per tooth, again depending on the depth of the pocket and the severity of the inflammation present. This procedure adds about five to seven minutes to the periodontal therapy appointment. I prefer my patients anesthetized with local anesthesia for perio therapy, but when the anesthesia wears off there is rarely any discomfort.

This article is by no means a substitute for formal training. “Hands-on” training accompanied by a background of the science, safety, and history of lasers is required. This additional knowledge is important for using the laser properly and safely. Also, patients regularly ask me questions like “What is the wavelength of this laser?” (The sidebar below, “Where you can get laser training,” discusses resources for laser education.)

Using the laser

- The clinician or hygienist and the patient must always wear wavelength-specific safety glasses during lasing.
- Hold the laser handpiece with a pen-like grasp.
- Keep high-speed suction next to the fiber while the laser power is on.
- Start with the lowest power setting for the procedure that you are performing.
- Place the laser fiber into the gingival pocket.
- Aim the fiber toward the tissue.
- Begin a quick, light, painting motion covering the wall of tissue.
- Adjust the power setting to the degree of inflammation as you work. (Less power for less inflammation; more power as needed).
- Use 2x2 gauze to clean the fiber tip each time you come out of the pocket.
- Laser sulcular debridement takes approximately five to 10 seconds per tooth to cover the entire circumference of the tooth, depending on the depth of the pocket. So the procedure will add a minimum of about five minutes to the perio therapy appointment.
- I have a full hour for L.A.P.T. appointments, and that works very well for me.

Using a laser to debride the tissue is much like using an ultrasonic scaler to clean the tooth surface. The laser beam is delivered via a glass fiber in a plastic casing. The handpiece is lightweight, autoclavable aluminum allowing for increased tactile sensitivity, compared to the ultrasonic.

This high-tech approach to periodontal therapy comes with an additional cost to patients (see “What to charge” sidebar on page 23), but we have found tremendous enthusiasm and acceptance for this equipment among our patients. In fact, I have had patients come in asking about laser therapy based on information they found on the Web. Laser therapy is painless and bloodless; patients are impressed by it and they will tell their friends and family.

A final note

The more we know about the danger of the tissue-invasive bacteria responsible for periodontal disease, the more important it is for our profession to seek out and embrace new weapons of bacterial destruction. On a personal note, the use of the laser in my career has enormously energized my passion for my work. It feels good to be successfully treating gingivitis, as well as early to moderate periodontal disease, in a rather painless, high-tech manner.

References