



## Laser-assisted periodontal pocket therapy using Biolase's Waterlase and LaserSmile lasers

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In general, the treatment of periodontal disease is a race: the body healing and regaining attachment vs. bacteria re-establishing in the pocket. Therefore, treatment should speed up the healing process, and/or interfere with the re-colonization of the bacteria. Today we have a number of tools to help us do this. One such tool is a laser. The selective removal of the diseased lining of the periodontal pocket combined with the antimicrobial effects of the laser make it an ideal tool for the treatment of periodontal disease. Lasers are known for their ability to selectively remove tissue and to destroy microbes. A laser incision heals faster than one made by mechanical methods. Two lasers I have found to be quite effective in my practice are the LaserSmile and the Waterlase YSGG.

### Perio protocol

Treatment should be preceded by a thorough diagnosis, which includes, but is not limited to, a full mouth probing (six sites per tooth), radiographs and complete medical history. Initially a patient undergoes thorough root planing and scaling. After three months, the patient is brought back for a periodontal maintenance visit, at which time they will be re-probed, six sites per tooth. I then perform laser pocket therapy (LPT) on areas that are 5 mm or greater. After three months, the treated areas are evaluated and retreated with the laser if the pockets have remained greater than five millimeters. This process is repeated every three months until pockets are less than 5 mm or improvement no longer continues.

### Laser pocket therapy

It is important to know the pocket depth of each of the sites you will be treating. Fig.1 is a pre-op photo of a periodontally involved mandibular canine. It is helpful to have the periodontal probe readings close by as a point of reference (Fig. 2). The procedure itself involves introducing laser energy into the diseased pocket. How this is accomplished will vary based upon the type of laser used, the accessibility of the site, and the comfort level of the operator.



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**Fig. 1 Pre-operative view of a periodontally involved mandibular canine.**

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**Fig. 2 Use a periodontal probe to measure the pocket depth.**

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**Diode laser**

The LaserSmile uses a thin (400 micron) flexible fiber. This diode laser has several distinct clinical advantages. It has an affinity for pigmentation and hemoglobin. The microbes in periodontal disease happen to be pigmented. This allows the diode a greater ability to seek them out. The affinity for hemoglobin results in excellent hemostasis and selectivity for vascular structures. The vascular nature of granulation tissue allows it to be ablated with less effect on underlying tissues.



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**Fig. 3 Laser handpiece with a 14-mm 400 micron perio tip.**

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Mechanically, the LaserSmile has a fiber that can leech energy from the sides. Because of this, treatment with the diode is done using a sweeping motion. The fiber is inserted to the depth of the pocket, and is swept across the entire pocket. The fiber will need to be wiped from time to time because of accumulated debris. There is almost no bleeding with this procedure. Local anesthesia is routinely required with the use of a diode, and there is on occasion some postoperative discomfort.

## **YSGG laser**

When using the Waterlase YSGG laser, there are some important differences to keep in mind. First of all, the wavelength of the Waterlase has an affinity for water. Ablation is accomplished by means of HydroKinetic energy. The water molecules become energized and propelled by laser light. Because microbes are predominantly water, they are instantly destroyed when laser energy is introduced. In fact, they are destroyed beyond the zone of ablation. The Waterlase has a different delivery system than the LaserSmile. Various fiber tips are attached to a handpiece in much the same way a bur is inserted into a high speed. For this particular periodontal procedure I like to use a 14-mm 400 micron perio tip (Fig.3). It is flexible, durable, and fits easily into the pocket. Recently

introduced are the new Z-tips. Primarily used in endodontic procedures, Z-tips come in a variety of lengths and thicknesses, and are very flexible, making them excellent for pocket therapy. At this time, the fiber tips for the Waterlase leech energy from the end of the tip, and not from the side. Because of this, the way you introduce laser energy to the pocket differs from that of the diode.

The technique used with the Waterlase is similar to probing. With the laser on, pump the fiber up and down from the crest of the gingiva, to the bottom of the pocket (Fig. 4). As this is done, the tip is moved along the length of the pocket with overlapping strokes as if step probing. With this particular wavelength, you will see less hemostasis than with the diode, however, with the Waterlase, anesthesia is not typically required. This not only increases patient comfort and acceptance, but allows you to do the entire mouth in one sitting. Post-operative discomfort is also minimized. Fig. 5 shows immediate post-op following the use of the Waterlase. Fig. 6 shows a 30-day post-op of the same site. nDPR



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**Fig. 4 Pump the fiber up and down from the crest to the gingival to the bottom of the pocket.**

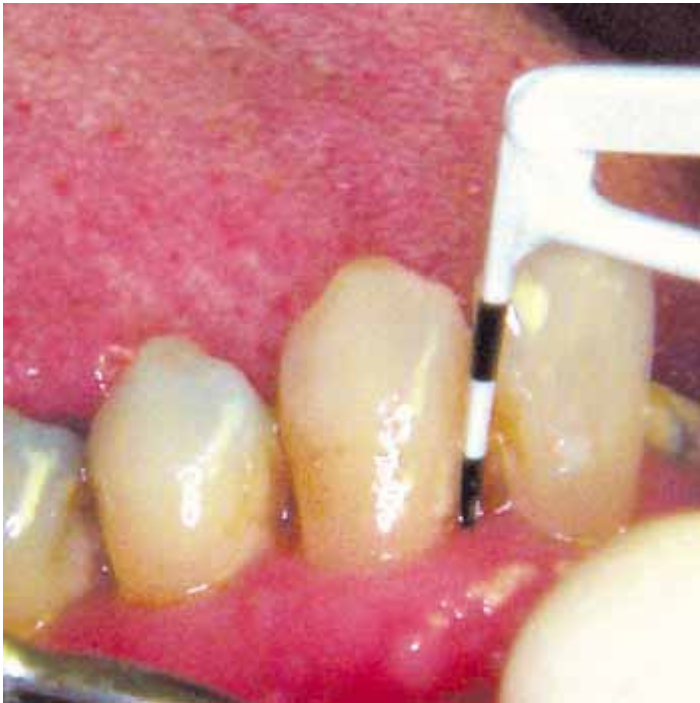
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**Fig. 5 Immediate postoperative following use of the Waterlase.**

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**Fig. 6 A 30-day post-op view of the same site.**

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Related Links: [Waterlase™ YSGG™ and LaserSmile™](#) .

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