

The Fine Art of Laser Dentistry with Dr. Glenn van As

Reasons to Replace A Electrosurge Unit with a Diode Laser-Part Two

Introduction:

In last months Dentistry Today article I looked at the first part of why a dentist might want to replace their old electrosurgery unit with a diode laser. In that issue, as in other articles, (1) I broached how the prices of diode lasers such as the Picasso Lite are around a quarter of what a similar laser would cost in 2008. In addition, to the tremendous reduction in price that makes diode wavelengths so popular with many of todays clinicians, the advantages of being able to work around implants, other metallic objects, and the reduction in the need for anesthetic all serve as benefits of lasers compared to the traditional monopolar electrosurge. In this issue, I will conclude this topic by presenting **three** further advantages of the diode laser when compared to electrosurgery units in everyday clinical use.

1. Ability to do gingivectomies and crown troughing with less recession:

Gingivectomies are the most common soft tissue procedure done with diode lasers (2), and when combined with esthetic porcelain restorations the simple recontouring of tissue can take a good case and make it great.(3-7) Symmetry of the soft tissue contours in the maxillary anterior teeth can be safely and precisely completed on the same day as the preparations of the teeth. The risk of recession and exposure of margins can be far less with a diode laser than with other techniques, particularly when adequate magnification (e.g. 4.0x loupes) and cautious settings (0.6-0.9 w Continuous Wave) are used for the recontouring. When biologic width is respected, and adequate attached and keratinized tissue exists, then judicious recontouring of the gingiva on the same day as the preparations can yield stunning results (fig.1-3).



Fig.1 Preop prior to maxillary incisor veneers.

Fig.2 After recontouring of lateral incisors and troughing for impressions.

Fig.3 Immediate postoperative result for 4 Emax veneers.

The diode laser has become a popular technology as an alternative for tissue management compared to the traditional methodology of placing a single or double retraction cord in the sulcus. The diode laser can be used in almost all instances to produce gingival retraction as an alternative to cord with excellent results both in terms of gingival retraction and margin delineation for the laboratory. Unlike electrosurgical units where recession can be an issue, as can postoperative pain, diode lasers offer the clinician the ability to precisely remove overhanging, inflamed tissue while creating a gingival trough that is not likely to cause damage to bone, cementum, or pulp tissue like electrosurgical units can. In addition, there is research that suggests that the lateral thermal damage done with lasers is significantly lower than that with electrosurgery.(8) (Fig 4-6).



Fig.4 Diode recontouring and crown troughing completed.

Fig.5 Aquasil impression of veneer preparations.

Fig.6 Immediate postoperative result for 4 Emax veneers.

2. Ability to photocoagulate vascular lesions:

Vascular lesions called venous lakes or hemangiomas can occur on soft tissue areas of the mouth including the upper and lower lips, buccal mucosa and palate. These lesions can be difficult or impossible to treat with traditional methods where significant bleeding may occur. The diode wavelengths are rapidly absorbed by hemoglobin and therefore can be used to coagulate and eradicate these esthetically undesirable purplish lesions. Literature has shown that the diode can be used in almost 100% of cases to eliminate these lesions, often without anesthetic, in only single session lasting only a couple of minutes.(9-11) Figures (7-9)



Fig.7 Preoperative view of venous lake on lower lip.

Fig.8 Immediate postoperative appearance.

Fig.9 Two week healing of lesion on lip is complete.

3. Ability to reduce the bacteria levels in endodontics and periodontal cases;

All laser wavelengths have been shown to have an antibacterial nature to them. Lasers simply put - kill bugs. This feature can be used effectively in many situations where bacteria can cause issues. Two examples of this are in the inside and in the vicinity of the pulp and in periodontal pockets. Electrosurgery units do not have these same antibacterial qualities. Diode lasers therefore can be selectively used to reduce bacterial counts to a more manageable amount.(12-17) (Figures 10-11).

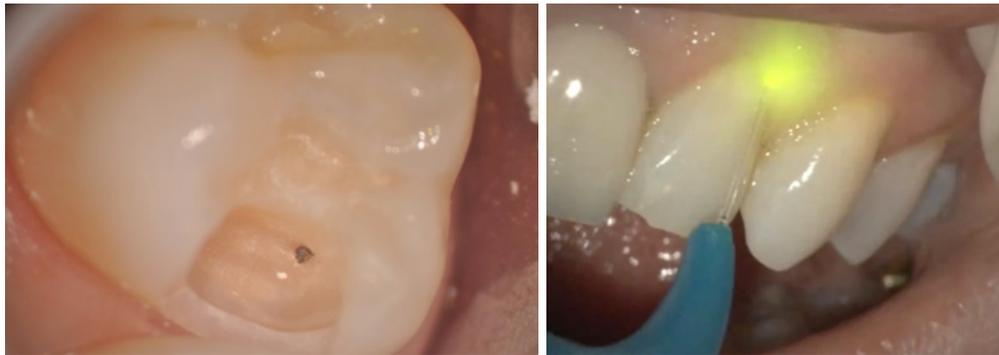


Fig. 10 Diode direct pulp cap to lower bacteria count

Fig. 11 Diode laser in gingival sulcus lowering bacteria count. (Image of diode pulse captured with video camera on operating microscope - typically the image is not visible to the human eye).

Conclusion:

The diode laser has become the “soft tissue handpiece” in many dental offices. The advantages of being able to work around metals, a reduced need for anesthetic, a reduced risk of recession postoperatively, the ability to reduce bacteria, and to use the diode to photocoagulate vascular lesions have all provided dentists with a new alternative for soft tissue surgery. Lasers have two added benefits in that they do not require a pad to be placed under the patient for grounding, and they can be used safely with pacemakers. Diode lasers have found their place in dentistry, once considered an application looking for a purpose, these small, cost effective and reliable lasers have discovered their niche as the new go to solution for many soft tissue problems. If you haven't bought one yet....what are you waiting for?

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