

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

The Diode Laser for Tissue Management in Restorative Dentistry.



Introduction:

The Picasso lasers have a wavelength of 810 nanometers and this is well absorbed in hemoglobin (Fig. 1). The tissue interaction when the laser is used is to provide for nice coagulation when the laser tip is both initiated and also when it is not initiated. Often in our daily practices we are forced to deal with materials that require moisture control and hemostasis, particularly when dealing with direct and indirect restorations that must be bonded into place. The diode laser can be of extreme benefit in these situations.

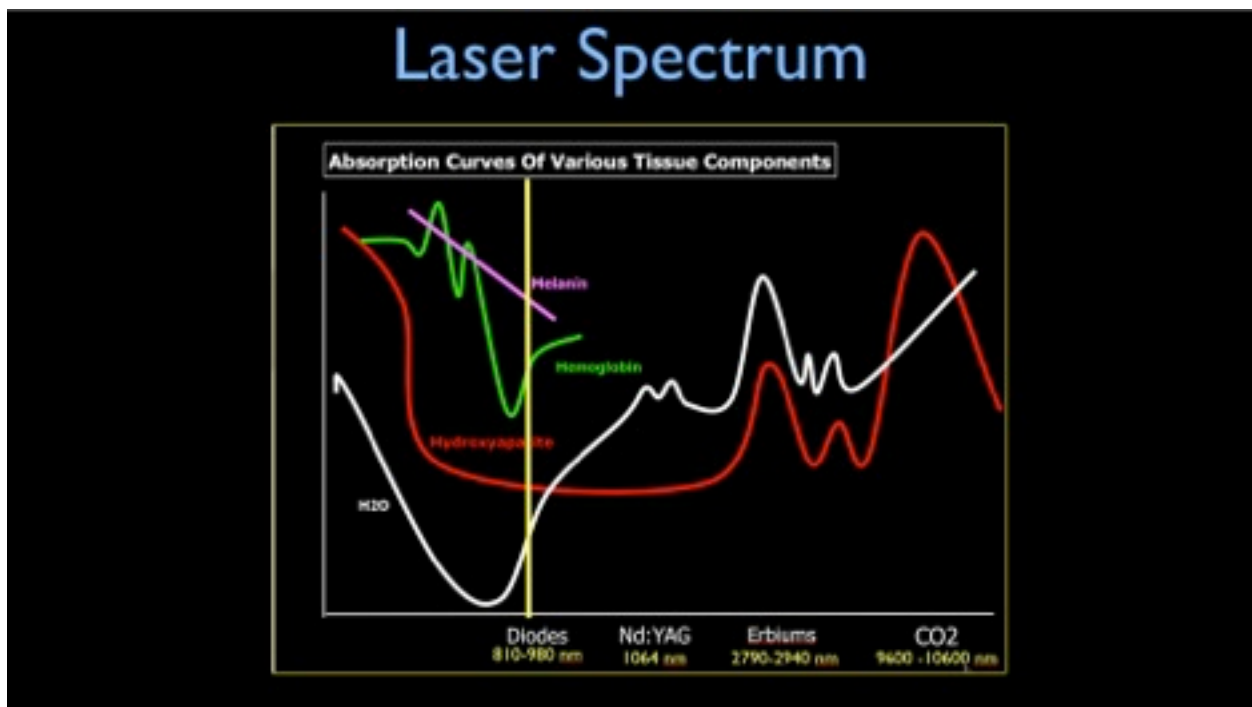


Fig. 1 Shows how the 810nm Diode Laser (yellow line) is well absorbed by Hemoglobin (Green curve).

Direct Restorations

The diode laser can be used to remove tissue in many situations where it is acting as a barrier to successful completion of restorations. The diode gingivectomy is the most common procedure a laser dentist encounters and can be completed at low settings of around 0.7 - 1.1 watts continuous wave (CW) with an initiated tip. **(See Table 1)**

The laser can be used to remove tissue even in situations where the tissue is located next to a metal matrix band without fear of arcing of the laser tip with the metal matrix. The ability of the laser to work around metals helps speed up the procedure and eliminates the need to remove the matrix band, and reposition it. Instead the clinician simply removes the tissue with the matrix band on and is able to complete the restoration. (see figs. 2-5).

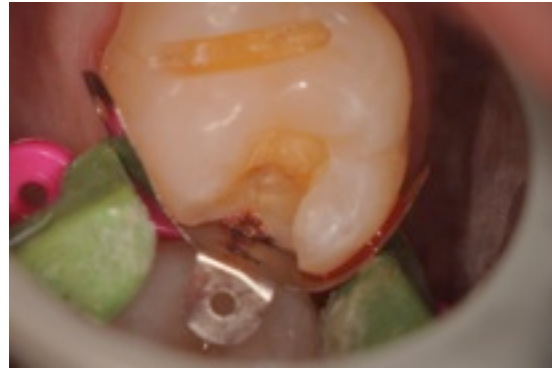


Fig.2 Mesial caries on Upper molar Fig 3. Tissue Under Matrix band



Fig. 4 After Tissue removed.

Fig. 5 Final Restoration completed.

Indirect Restorations

Over the last decade there has been a surge in growth of bonded indirect anterior and more recently in posterior restorations. Lithium Disilicate (EMax) restorations are becoming very popular with dentists who use CAD/CAM technology (CEREC, E4D etc.) and also with those who do not because of the dramatic increase in the price of gold. The popularity of EMax restorations is due to the improvement in fracture resistance compared to materials such as Procera or Lava (Zirconia).

Recommendations for cementation of EMax restorations still is for the restorations to be bonded and not cemented into place. Resin bonding, being indirect or direct requires moisture control and hemostasis in particular to be successful. Tissue management indeed can be a real concern for dentists who routinely prescribe EMax; restorations particularly in situations where interproximal restorations are subgingival or where lab

fabricated restorations necessitate a two stage approach to completion of the restorations (preparation appointment followed 10-14 days later with the cementation of the restorations). (see figs. 6-10).



Fig. 6 Lower Left restorations to replace.



Fig. 7 EMax restorations for molars.



Fig. 8 Note bleeding between molars.



Fig. 9 - After diode laser hemostasis.



Fig. 10 EMax restorations completed and bonded in place.

Table 1.

Step	Hemostasis for Restorative Dentistry
1	Pick a 400 micron- 5mm or 10mm 90 degree tip.
2	Initiate the tip with articulating paper at 0.5w CW.
3	Use settings of 0.7-1.5 w CW with anesthetic , position tip at 45 degrees for gingivectomy.
4	Use pulsed settings (blue smiley face) of 1.2 -1.8 w for topical only gingivectomies.
5	Using short back and forth brush strokes for gingivectomy. Try to estimate amount of tissue to remove prior to beginning lasing keeping in mind need to <i>preserve attached tissue and biologic width.</i>
6	Use a wet cotton pellet or hydrogen peroxide in an Ultradent syringe with a dental infusor tip to remove carbonized debris or tissue tags.

[VIDEO LINKS for hemostasis](#)

DIRECT RESTORATION TISSUE MANAGEMENT: <http://youtu.be/VcUQfBOpHxU>