

# Laser Dentistry

## Gingivectomies with the AMD Picasso Lite Diode Laser



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### Introduction:

In August's clinical technique article, I dealt with the role of the diode laser in the tissue management portion of the fabrication of anterior indirect restorations. I wanted to demonstrate that judicious use of the diode laser at proper settings can be used as an alternative to retraction cord for tissue management in the provision of anterior indirect restoration.



In this month's technique article, the focus will be on the use of the diode laser for the removal of small to moderate amounts of gingival tissue (gingivectomy). The most frequent soft tissue procedures completed by lasers according to White and Swift (1) are gingivectomies and gingivoplasties which are performed by 90% of practitioners who own lasers. The simple excision of soft tissue can be beneficial in many areas including: creating symmetry in anterior smile design cases, to expose subgingival caries in Class 5 lesions, when treating gingival hyperplasia that occurs during orthodontic treatment, or from certain medications (Dilantin). In addition, the ablation of gingival tissue with the diode laser can help in the exposure of soft tissue impacted teeth in orthodontics or for exposing implants during 2nd stage recoveries. The ability to use the laser for the removal of small amounts of tissue around metal and often with only topical anesthetic allows diode lasers to be the "soft tissue handpiece" in the operatory. (2-6)

### Technique:

When considering using the diode laser for gingivectomies care must be taken to consider several factors. When you are excising any keratinized gingival tissue, caution must always be taken to make sure that sufficient attached tissue remains in the area afterwards. In addition, probing of the periodontal pocket and sounding to bone should provide adequate information on the amount of biologic width that exists between the gingival sulcus and the underlying bone. Diode lasers are only able to ablate soft tissue and leaving restorative margins subgingivally that infringe upon the bone will result in chronically inflamed tissue.

Diode lasers are safer when compared to electrosurgery units. The diodes can be used with less concern over damage to bone, pulp, and around metals such as gold, amalgam, implants, orthodontic brackets or dental prosthesis. (7-9) (figures 1-3). Finally there are suggestions that diodes lasers used at low energy settings can improve the early healing of tissues when used in combination with gingivectomies and incisions. (10-11)

As mentioned in the previous two clinical techniques articles, careful evaluation of the laser-tissue interaction with enhanced visual acuity (magnification and illumination) can help reduce the risk of tissue recession or other iatrogenic damage to the gingival tissue complex. Adherence to the principle of using the lowest energy necessary to complete the task at hand will also allow the clinician to complete more gingivectomies with only the use of topical anesthetics.

When considering the clinical technique for doing a gingivectomy there are two possible sequences (tables one and two). The removal of tissue in an external bevel is done in situations where the tissue is thin, the amount of tissue is small and in situations where topical anesthetic and not injections is preferred (ie exposure of partially erupted teeth requiring placement of orthodontic brackets). (figs 4-6). The properly initiated tip is angled at an external bevel of 45 degrees and at energy settings of 0.6-1.2 watts. Small brush like strokes back and forth and gradual progression deeper along the same initial laser incision will remove the tissue. Tissue tags can be removed with a wet cotton pellet or hydrogen peroxide.

**Table 1 - Clinical Procedure for Gingivectomy of small amount of tissue.**

Step	Procedure
1	Properly strip, cleave and initiate the diode fiber.
2	Position tip at 45 degree angle to long axis of tissue.(External bevel).
3	Use 0.6 - 1.2 watts Continuous wave ( Less energy without anesthetic).
4	Gentle back and forth brush strokes gradually going deeper in planes.
5	Hydrogen Peroxide or wet cotton pellet to remove tissue tags.

In the second technique taught to me by laser aficionados Drs. Don Coluzzi and Wesley Haddix, the laser is used to penetrate the soft tissue towards tooth structure in successive "stabbing" motions. Since the laser is primarily cutting only with the very tip (end cutting), one can quickly penetrate tissue as opposed to dragging the tip repeatedly through tissue. The dentist progressively "stiches" these punctures until the tissue can be separated through traction and removed with either a curette, spoon or the laser tip itself. This technique helps with thick fibrous tissue which is not as easy to cut (less pigment), and requires more power. The higher power necessitate anesthetic be injected and water on the tissue be added to act as a heat sink and absorb the heat produced by the diode laser.

**Table 2 - Clinical Procedure for Gingivectomy of moderate amounts of tissue.**

Step	Procedure
1	Properly strip, cleave and initiate the diode fiber.
2	Position tip at 90 degree angle to long axis of tissue.(External bevel) and outline the area to be cut at low power (ie 0.5 watts).
3	Use 1.5- 2.5 watts Continuous wave (with anesthetic) on WET tissue.
4	Penetrate to contact in one "puncture" vertically at <b>start</b> of incision.
5	Penetrate to contact in one "puncture" vertically at <b>end</b> of incision.
6	Penetrate to contact in one "puncture" vertically at <b>middle</b> of incision.
7	Continue to "split" the dots half way until there is a continuous line of dots.
8	Apply tension or traction to tissue and remove with a curette, spoon or the laser. Cut will not be as smooth as in technique 1.
9	Hydrogen Peroxide or wet cotton pellet to remove tissue tags.

In using the laser routinely for gingival tissue ablation when needed, the Picasso Diode laser from AMD lasers can make dealing with soft tissue simpler, more predictable, and provide a win-win situation for both the clinician and the patient.

### Clinical Case of Diode Laser for Gingivectomy



Fig.1 View of buccal amalgam on 2nd molar with recurrent decay.

Fig.2 Gingivectomy completed with diode at 0.8w CW and amalgam removed.



Fig. 3 High magnification view showing completed restoration immediately postoperatively on the 2nd molar.



Fig. 4 Soft tissue coverage on maxillary canine requiring orthodontic bracket.

Fig. 5 Gingivectomy completed at 0.8 watts with only topical Cetycaine anesthetic.



Fig. 6 Brackets in place on both canines immediately postoperatively.

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