

Laser Dentistry

Frenectomies With the AMD Picasso Lite Diode Laser

By Dr. Glenn van As

Introduction:

Last month I discussed how the simple gingivectomy could be completed with the diode laser. The removal of small amounts of tissue with the laser can make restorative dentistry easier and can improve the treatment outcomes of restorative and cosmetic dentistry by creating a symmetrical and harmonious soft tissue framework to the final dental restorations.

Another soft tissue surgical application where lasers can be of tremendous benefit to dentistry is in the release, reduction or removal of aberrant frenums in either dental arch. A frenum is a fold of mucous membrane attaching the cheeks and lips to the mandibular and maxillary mucosa and limiting the motions of the lips, cheeks and tongue. In the authors practice about 10% of patients will have a "high" or deviant septal pull that will see the frenum attaching to the attached tissue in position that can cause recession, diastemas, or asymmetry in gingival architecture to occur.

The frenectomy which many of us learned in dental school was called the "Z-Plasty" and involved a blade incision down to the periosteum which was Z shaped which was followed by sutures to close the wound. This was a procedure that many would not attempt in practice and one that many patients found difficult due to the perception of it being "surgical" and the fact that the sutures used to obtain primary closure were irritating to the patients when talking and eating as they rubbed against the lip. Although, laser frenectomies do not typically attain primary closure, and this can lead to the formation of a small residual scar where the treatment was done, it has been the authors experience that the simplicity of the laser frenectomy for both the patient and dentist make this a "must learn" procedure for any dentist that purchases a diode laser.

The benefits of a laser frenectomy as compared to traditional techniques have been shown in the literature (1) The benefits of laser treatment included "reduced bleeding during surgery with consequent reduced operating time and rapid postoperative hemostasis, thus eliminating the need for sutures. The lack of need for anesthetics and sutures, as well as improved postoperative comfort and healing, make this technique particularly useful for very young patients." (2-3)

When considering using the diode laser for frenectomies, the clinician must consider several factors. Diode lasers are attracted to pigment, and frenums are typically thicker fibrous tissue and have very little pigment to them. The lack of pigment and more fibrous nature of the tissue means that higher energies, and some patience are required to ablate this tissue. Other wavelengths such as Er:YAG lasers may ablate frenums faster, and can be used in non contact mode, but the drawback compared to diode lasers is an increased risk of bleeding. Er:YAG (hard tissue) lasers are not well absorbed in hemoglobin as the soft tissue diode lasers are, so hemostasis can be an issue with these wavelengths.

Diode lasers have several advantages when compared to monopolar electrosurgery units for frenectomies. As cited in my previous clinical technique articles, the diodes cause less lateral thermal damage, which may result in faster healing with less postoperative pain. In fact many of the patients find these surgical laser frenectomies to require little to no postoperative medications. In addition, there is the opportunity to use strong topicals such as Cetacaine, TAC 20, Tricaine Blue for these procedures and minimize the need for injections.(3)

As mentioned in the previous clinical techniques articles, careful evaluation of the laser-tissue interaction with enhanced visual acuity (magnification and illumination) can help reduce the settings and time needed to complete a frenectomy with the laser. Smokers, and diabetic patients may need more observation post-operatively than the standard patient. Adherence to the principle of using the lowest energy necessary to complete the task at hand will also allow the clinician to complete more frenectomies with only the use of topical anesthetics, but this does require greater patience on the clinicians part to complete the task as compared to using a blade or electrosurge unit with injections.

When considering the clinical technique for doing a maxillary frenectomy the goal is to release the attachment from its location near to or between the central incisors. The clinician should suspect that if a diastema exists and the attachment for the frenum attaches close to the gingival sulcus that the fibers of the frenum may in fact run from the labial to the palatal in a bony groove that may be visible radiographically. Pulling on the upper lip outwards, the clinician may notice blanching of the tissue in the vicinity of the nasopalatine foramen. If this case exists then the fibers can be released by making a small horizontal incision down to the periosteum on the palatal aspect as well.

The release of the frenum should be done at 0.8-1.4 watts Continuous Wave (CW) with an initiated disposable tip. The lip is stretched outwards distending the frenum and the laser incision is started right at the attachment to the gingival tissue. Small horizontal movements laterally will begin to release the frenum and a diamond shaped "wound" will appear. Careful analysis of this diamond with sequential ablation at "first" and "third" base followed by deeper ablation towards the periosteum, will cut all the fibers which run vertically and look like "small guitar strings". The diode laser will not cut the periosteum and should the clinician wish to, they can "score" the periosteum with a scalpel blade to prevent reattachment. This is not easy to do without injections and will result in bleeding. The author has found this more necessary in cases where the frenum is very



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thick. If the clinician pulls the lip gently laterally and observes where the wound "moves" they can get a reasonable idea of where the final new attachment will heal to. A suggestion would be to be more aggressive in the first few cases to prevent reattachment, and lingual tongue tie releases are more prone to relapse in the authors experience than those that are buccal. If the frenum is thick or the patient is anxious, a few drops of anesthetic placed into either side of the frenum will allow for a comfort level for both patient and clinician. Only a small amount (0.2ml) of anesthetic is needed, otherwise "ballooning" of the tissue can obscure landmarks.

Table 1 - Clinical Procedure for Frenectomy

Step	Procedure
1	Properly strip, cleave and initiate well the disposable fiber tip.
2	Place topical (small) or a few drops of anesthetic (large) on either side of the frenum attachment.
3	Use 0.8 - 1.4 watts Continuous wave (Less energy without anesthetic).
4	Start ablation at the attachment and pull the lip outwards "releasing" attachment resulting in a "diamond" shaped wound.
5	Continue until all vertical fibers are removed and you are at the periosteum.
6	If necessary "score" the periosteum horizontally with a scalpel blade or periosteal elevator.
7	Hydrogen Peroxide or wet cotton pellet to remove tissue tags.

Upon completion of the frenectomy which should only take 2-5 minutes depending on the type of anesthetic used (topical vs injection), the following postoperative instructions can be given and the patient reappointed at 7-10 days to evaluate healing of the area. Finally, there is some concern in the literature on when a frenectomy should be done. If the frenectomy is to be done on a teenager and to help with closing a diastema, then it may be wise to complete the procedure after orthodontics to close a diastema is complete or just before the orthodontic appliances have been removed. There is considerable variation in the literature to this notion though, and some prefer to provide the treatment before appliances are placed. (4)

Postoperative instructions for Laser Frenectomies.

Step	Procedure
1	Avoid spicy (salsa), acidic (citrus fluids, wine) or sharp foods (nachos) or liquids for the first 72 hours.
2	Use of mild anti-inflammatories (Ibuprofen) may be needed initially.
3	Secondary intention healing means that a "white soft scab" will appear for first 7-10 days, it is not infection and is covering the soft tissue forming.
4	Lasers are antibacterial so infection is very unlikely but Chlorhexidine rinse (0.12%) can be used or dabbed onto area.
5	Cold fluids, ice, "freezies", "popsicles" can be used for first 24 hours to minimize swelling.
6	Soft tooth brush carefully around the wound.
7	Patient should return in 7-10 days to evaluate healing.

Clinical Case of Diode Laser for Frenectomy



Fig. 1 View preoperatively of thick maxillary frenum with diastema of central incisors on a 8-year-old requiring revision.



Fig. 2 Frenectomy completed with diode at 1.4W CW with anesthetic (injectable).



Fig. 3 Healing at 7 days not fully complete.



Fig. 4 Frenectomy healing at 14 days.

References

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