Maxillary frenectomy with a diode laser

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There are many opinions, both in favour of and against, regarding utilisation of lasers in periodontal therapy. There are also many reports of the different surgical techniques utilising sharp metallic instruments for exacting predictable and desired results. The use of a laser to achieve these results does not mean that there are no other efficient, “classical” procedures that would accomplish the goal. Yet, a laser might be a more direct and efficacious path to achieve the same goal, with easier healing and less side effects.

This case presentation allows me to demonstrate the utilisation of a diode laser to allow ease of technique, avoid unnecessary bleeding, avoid the use of sutures (and their removal), and provide a comfortable transition for the patient without swelling or need for a periodontal dressing after the surgery.

Case report

In this presentation, a young female patient presented in my office complaining about her frenum in the maxillary anteriors. She related that it hurt whenever she bit into a firm substance, such as corn on the cob. Her tongue constantly reached to this uncomfortable area, affecting her speech, and she felt pain in her lip when she tried to smile. A few years prior, she had a lot of dentistry done in her maxillary anteriors for aesthetic purposes. She had been aware of and bothered by a natural, large diastema between her maxillary centrals. The previous dentist had closed the diastemal space between the crowns by overbonding the area, leaving overhanging margins on the mesial of both centrals (Fig. 1). The area now appeared clinically closed, but the constant irritation and bleeding in the area, especially due to the frenum pull, made this teenage patient feel very uncomfortable.

X-rays taken by my office revealed an obvious space, seen as a large radiolucent dark area between both central incisor roots, covered with tissue (Fig. 2). In this case, I made a decision to use a laser to do the frenectomy because of the possibility that a classical approach might result in leaving a large void between the centrals. Moreover, use of a laser allows complete control in this technique to avoid what might otherwise be a devastating disaster. If the natural, large void between the centrals submarginally was to have been exposed, it would have left a vast undesirable, unaesthetic, dark-appearing hole.

Treatment with diode laser

Because this was a surgery that involved only soft-tissue, our choice of lasers is the CO₂, Nd:YAG and diode lasers. Other lasers may be used for both soft- and hard-tissue. I chose to utilise just a tissue laser, and chose a diode laser. This diode laser also allowed the use of a disposable tip containing a thin fibre that would transmit the therapeutic treatment. The tip, being disposable, will aid in the consistency of maintenance and hygienic cleansing in and during our treatment.

A standard frenectomy, where we might remove the frenum with a sharp stainless steel instrument, might lead to further complications by exposing the large void pointed out in Figure 2 that is covered by tissue. If the frenum is just incised and removed, the area will have an obvious, huge, dark-appearing void. Yet, the frenum should be removed. The obvious restorative necessities and options were discussed first. This young patient wished to do a little at a time, starting with the frenum removal.
After local anaesthesia with xylocaine, the frenum was infiltrated, incised from the attachment of the tissue and lip-side of tissue first, rather than incising in the centre of the frenum or separating and detaching the tissue from the side attached to the alveolus. Using the diode laser, the tissue was incised, keeping the field of vision intact and accessible. Continuing movement of the laser tip toward the alveolar-covered tissue allows the trough to be made wider until the desired length is acquired. All of this is accomplished painlessly, without a pool of blood blocking the view.

This laser automatically enhances a clot, allowing not only a view but also a comfortable working environment for the operator as well as a painless one for the patient. The assistant retracts the lip, with the laser allowing complete vision and aiding in curtailing the bleeding. After the tissue is dissected to the desired level, the remaining loose tissue of the frenum is removed using the diode laser, as well. These results leave a slight charring when we wish to control bleeding (Figs. 4 & 5).

Post-surgery

Healing proceeds uneventfully until it is completed and is maintainable (Fig. 6). Once the frenum is removed and healed, the patient is no longer uncomfortable when eating nor is her lip restricted when she desires to smile. The healed area allows the patient to keep the area clean. She is able to reach and floss the mesial aspects, which she couldn’t do previously. After completion, she is reminded of the need to correct the restorations of her maxillary anterior teeth and get rid of the obvious overhanging margins.

Conclusion

This particular patient desired a little correction at a time, but, in the meantime, the positive results of the laser treatment made her positive about correcting and improving the aesthetics of her anterior maxillary teeth in the near future. With the use of this diode laser, we are able to remove the frenum attachment from the lip side initially, allowing a predictable approach that helps avoid exposing a large hole in the very front and centre of her smile. This laser treatment and its positive results for her, allowed her to consider future restorative corrections with a positive attitude. In this case, use of the diode laser allowed her smile to be corrected, and changed her discomfort into a comfortable glow.

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