**Frenectomy by 980nm Diode Laser a Case Report**

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**Abstract**

Frenectomy is one of the common oral surgical procedures performed. This case report presents the management of a maxillary high labial frenum attachment in a child patient using 980nm Diode laser.

**Keywords:** Diode Lasers; Frenectomy; Frenum; Frenulum; Laser; Surgery

**Introduction**

Labial frenectomy is a common surgical procedure in the field of oral surgery. The use of diode laser frenectomy without infiltrated anaesthesia is currently under investigation. The diode laser has high absorbance by pimeted tissues with hemoglobin, melanin, and collagen chromophores. Advantages of laser treatment over conventional methods include minimal cellular destruction and tissue swelling, hemostasis, increased visualization of surgical sites and reduced post-operative pain. Additionally, it is possible to perform many procedures without needing anesthesia. This case report presents the management of a maxillary high labial frenum attachment in a child patient using 980nm Diode laser.

**Case Report**

A 11 year-old boy was accompanied by his parent referred to our clinic with for a high frenum by his orthodontist for assessment of the maxillary labial frenum. The medical history was non-contributory. Intraoral examination revealed the presence of a high frenum attachment extending to incisive papilla. This leads to the diastema formation between the maxillary permanent incisors (Figure 1). Labial frenectomy with laser without infiltration anesthesia was planned and informed consent was taken from the parent.

The labial frenum was anesthetized with lidocaine spray. The 980nm diode laser applied on the labial area (Figure 2). The laser beam was applied both vertically and laterally to the frenum to disrupt the mucosal continuity, which enables the deeper horizontal cut of the frenum. A rhomboidal frenectomy was performed by passing the diode between the central incisors, from the buccal to palatal area. The procedure took ten minutes without any pain and optimum hemostasis achieved immediately.

The patient tolerated the procedure without any pain during intra and postoperatively and postoperative healing was uneventful. Within ten days the new mucosa was healed with a new frenum attachment of 6mm higher than preoperative attachment( Figure 3). The child reported little soreness and irritation within tolerable limit.

**Discussion**

Frenum is a fold of tissue or muscle connecting the lips, cheek, or tongue to the jawbone. It is also known as frenulum, frenula, frenums, or frena. Laser-assisted lingual frenectomy is easy to perform with excellent precision, less discomfort, and short healing time compared to the conventional technique. Since the first demonstration of a laser in 1960, numerous applications of this unique form of energy have been developed for the manufacturing, electronic, consumer and medical industries.

Lasers emit a precise beam of concentrated light energy. This light is unique in that it is comprised of a single wavelength, expressed in nanometers. The wavelength generated is based on the active medium present in the laser device and can be a solid (diode) or gas (CO2 or Argon). The diode laser is a solid, with a semiconductor chip embedded with crystals, making the device smaller and lighter. The active medium determines the wavelength, varying by the makeup of the crystals. The diode wavelengths are in the near infrared spectrum, typically from 800 nm to 980 nm.

The safety and efficacy of laser systems and especially the diode laser is already evaluated for the treatment of oral surgery for example upper and lower frenulectomy, fibroma and excision of epulis fissuratum and gingivae hyperplasia.

The advantages of lasers include a relatively bloodless surgical and post-surgical course, minimal swelling and scarring, coagulation and cutting minimal or no suturing, reduction in surgical time when infiltrated anesthesia is used much less post-surgical pain. Furthermore, another benefit of the removal of frenal attachment with a diode laser is the possible avoidance of needle-infiltrated anesthesia which is desired by many patients i.e., pediatric patients. On the other hand, main disadvantage of the laser surgery of such a case is the time required in comparison to blade incision, which always requires anaesthesia.

The clinician has to decide which technique is medically superior for his patients. In the case described above, the use of diode laser was preferred in order to avoid any painful needle injection even if the clinician needs more time to complete the surgery procedure.
Conclusion

In conclusion, this minimally invasive laser-assisted frenectomy was accomplished with minimal anesthesia, minimal discomfort, no sutures, no antibiotics, no postop visit, and great patient satisfaction.

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References

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