

LINGUAL FRENECTOMY USING 810NM DIODE LASER- A CASE REPORT

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ABSTRACT: Ankyloglossia or tongue tie is a congenital oral anomaly characterised by a short lingual frenum limiting the movement of the tongue which may lead to impaired phonetics and other complications. The procedure that involves the removal of this extended band of tissue freeing the tongue is known as lingual frenectomy. Traditionally this procedure was carried out surgically but advances in dentistry today have made frenectomy by lasers possible. This case reports highlights the advantages of laser frenectomy over the surgical procedure using an 810 Diode laser.

KEYWORDS: Ankyloglossia, Laser, Frenectomy

INTRODUCTION

The tongue is an important oral structure that is responsible for speech, swallowing and positioning of the teeth and taste¹. Frenum is a fold of mucous membrane, usually with enclosed muscle fibers, that attaches the lips and cheeks to the alveolar mucosa and/or gingiva and underlying periosteum. It may also be termed frenulum, frenula, or frena². Tongue tie or ankyloglossia is a developmental anomaly of the tongue characterized by an abnormally short, thick lingual frenum resulting in limitation of tongue movement³. The term ankyloglossia is derived from greek word ankylos - "crooked", glossia-"tongue"⁴. Ankyloglossia may lead to a host of problems like infant feeding difficulties, speech disorders, and various mechanical and social issues related to the inability of the tongue to protrude⁵.

The normal length of free tongue is considered to be 16 mm. Based on the length of free tongue, ankyloglossia can be classified as follows:

- Class I:** mild ankyloglossia 12-16 mm
- Class II:** moderate ankyloglossia 8-11 mm
- Class III:** severe ankyloglossia 3-7 mm
- Class IV:** complete ankyloglossia: less than 3 mm

Lingual frenectomy is advised for the management of Ankyloglossia. It is a common surgical procedure performed routinely in the field of pediatric dentistry. The advent of lasers has undoubtedly made this procedure

more comfortable for the patients with less postoperative complications.

Case Report:

A 14 year-old boy reported to the department of pediatric dentistry with the chief complaint of discomfort in tongue movement leading to difficulty in speech. The medical history proved to be non-contributory in nature. Subsequently on intraoral examination a short lingual frenum was detected. After taking informed consent from the parents lingual frenectomy with 810nm diode laser under topical anesthesia was planned. Routine blood investigations were advised and found to be within normal range.

After anesthetizing the lingual frenum locally, tongue traction was done with the help of a suture material. The 810nm diode laser beam was then applied lingually both vertically and laterally to the frenum to disrupt the mucosal continuity. This enabled deeper and more effective horizontal cutting of the frenum. The total time taken was 10 minutes and optimum hemostasis was achieved almost immediately. No postoperative sutures were given.

Healing postoperatively was uneventful and relatively painless. After 4 months later the intraoral picture taken showed new frenum attachment and an increase in the tongue elevation up to 10mm.



Fig-1: Diode laser unit

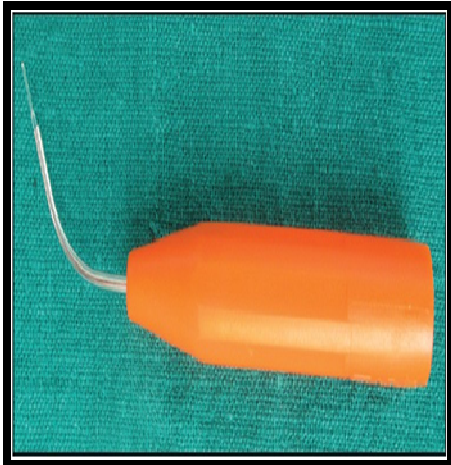


Fig-2: Diode Laser 810nm tip

Discussion

The frenectomy procedure is defined as the excision or removal of the frenum⁶. Early diagnosis and intervention in ankyloglossia are fundamental for the subsequent morpho-functional development of the child and of the adolescent⁷. The exact cause of ankyloglossia is unknown, although it is likely to be due to abnormal development of the mucosa covering the anterior two-thirds of the mobile tongue⁸. Traditionally surgery was considered to be the treatment of choice but now with lasers having made great strides in the field of medicine; laser frenectomy is definitely becoming a viable option. Lasers emit a precise beam of concentrated light energy⁹. 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 solid (diode) or gas (CO2 or Argon). The diode laser is considered solid, with a

semiconductor chip embedded with crystals, making the device smaller and lighter. The diode wavelengths are in the near infrared spectrum, typically from 800 nm to 980 nm¹⁰.

The advantages of lasers over the conventional surgical procedure includes a relatively bloodless surgical field with precise cutting and no suturing involved. There is abundant evidence confirming markedly less bleeding particularly of highly vascular oral tissues, with laser surgery¹¹. Another advantage of a laser frenectomy is the possible avoidance of needle-infiltrated anesthesia which gives rise to fear in many of the pediatric patients¹⁰ as well as the fact that the surgical time is found to be significantly reduced. Then again, the postsurgical pain, swelling and scarring associated with surgery is much less than when a laser procedure is carried out.

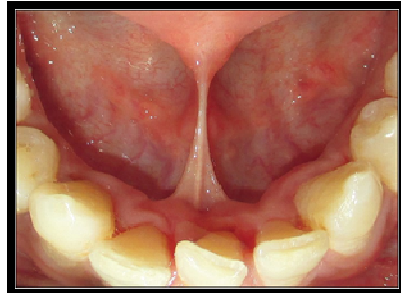


Fig-3: Intraoral picture: Preoperative

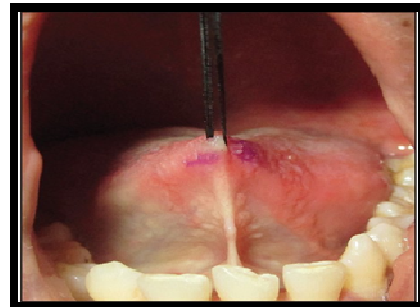


Fig-4: Suture traction of the tongue

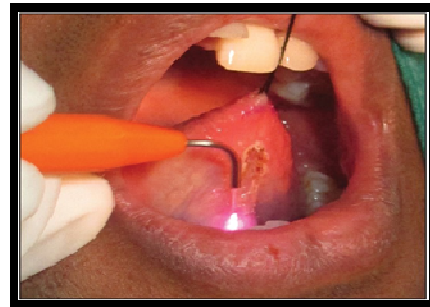


Fig-5: Intraoral picture during Laser surgery

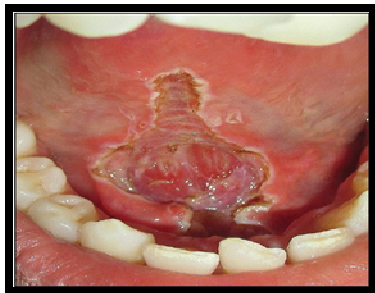


Fig-6: Immediate Postoperative picture

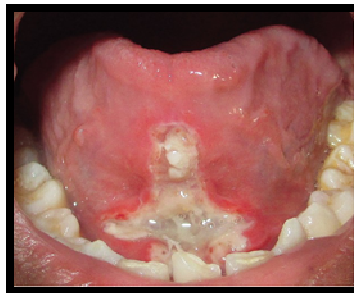


Fig-7: Intraoral picture after 1week



Fig-8: Intraoral picture after 1 month of surgery showing complete healing

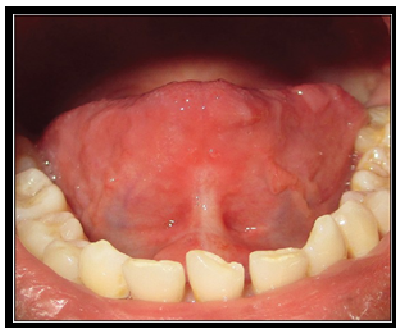


Fig-9: Intraoral picture after 2 month of surgery

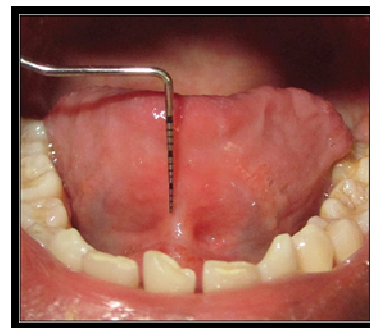


Fig-10: Intraoral picture after 4 months Showing new frenum attachment and increase in the tongue elevation up to 10 mm

CONCLUSION

Laser-assisted lingual frenectomy in a 14 year old child was accomplished with minimal anesthesia, bleeding and no postoperative sutures in a time span of 10 minutes. In addition the postoperative recovery was uneventful and painless with no antibiotics required which led to greater patient satisfaction.

References

1. Singh M et al. Management of ankyloglossia by frenectomy- A Case Report. Brit J Med & Med Res. 2016; 8(8):1-5.
2. Sanadi R, Ambulgekar J, Doshi M. Adieu to tongue tie. Int. Res. J phar 2013; 4(7):203-4.
3. Antony V.V, Khan R. Management of ankyloglossia. IOSR J of dent and Medi sci 2013; 6(4):31-3.
4. Kishore A. Shrivastava V, Mahendra A. Ankyloglossia or tongue tie- A case report, IOSR J of Den and Medi sci. July 2014;13(7): 52-4.
5. Prabhu M et al. Treatment of ankyloglossia using diode laser – A case report. Nitte University J of Heal Sci. December 2014; 4(4):110-12.
6. Kupietzky A, Botzer E. Ankyloglossia in the Infant and Young Child: Clinical Suggestions for Diagnosis and Management. Ped Den.2005; 27(1): 40-6.
7. G Olivi et al. Lingual Frenectomy: functional evaluation and new therapeutical approach. Euro J of Paed Den .2012;13(2):101-6.
8. Junqueira MA et al. Surgical techniques for the treatment of ankyloglossia in children: a case series. J Appl Ora Sci. 2014; 22 (3):241-8.
9. Walsh L. The current status of laser applications in dentistry. Aus Den J.2003; 48 (3):146-55.
10. AH Ayoub, SAM Negm. 980 nm diode laser in oral surgery: laser removal Of haemangioma. Int J of Den Clin. 2012; 4 (4):48-9.
11. Kaplan I, Raif J. The Sharplan Carbon Dioxide Laser in Clinical Surgery: 7 Years Experience. Goldman L. The Biomedical Laser. New York: Springer-Verlag.1981; 89-97.

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