

Laser Frenectomy - A Case Report

Dr. Neha Dubey¹, Dr. Priyam Chaturvedi², Pallavi Pandey³

P.G. Student^{1,2}, Reader³, Department of Paedodontics & Preventive Dentistry, Babu Banarasi Das Dental College, Lucknow

Abstract

Fold of tissue or muscle linking lips, cheek, or tongue to the jawbone is termed as frenum. Frenum can also be called frenulum, frenula, frenums. Ankyloglossia or tongue tie, is a congenital abnormality that can be typified by unusually small or tight lingual frenulum that limits the movement of the tongue tip. Although ankyloglossia is not a grave aberration, it can be foundation behind numerous complications such as infant feeding difficulties, speech disorders, and countless social and mechanical issues associated with incompetence of the tongue to protrude. Lingual frenectomy is counseled as a treatment of ankyloglossia. The following paper considers one case of efficacious management of ankyloglossia or tongue tie with the aid of diode laser.

Key words: Ankyloglossia, Diode laser, Frenectomy.

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Introduction

The tongue is a vital organ that abets in deglutition, mastication, and speech. It also wields effects on dental occlusion, growth and facial form. Tongue tie or ankyloglossia is malformation of the lingual frenum. Wallace first described ankyloglossia aka. Tongue tie in 1960 as "a condition in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short frenulum linguae, often containing scar tissue." [1] Partial ankyloglossia indicates congenitally diminutive lingual frenum or frenal attachment continuing till tip of the tongue, which leads fusing of the tongue to the floor of mouth and inhibiting its extension. [2] Based on Kotlow's assessment ankyloglossia can be defined into four categories as follows: Class I, mild ankyloglossia 12-16 mm; class II, moderate ankyloglossia 8-11 mm; class III, severe ankyloglossia 3-7 mm; and class IV, complete ankyloglossia <3 mm. [3] In tongue tie condition patients may possibly encounter complications in speech especially while pronouncing of consonants like t, d, n, and l, and it is difficult to roll a "r" due to constrained tongue movements.

Ankyloglossia has also been related to difficulties in breast feeding among neonates, along with malocclusion, and gingival recession. [4] compared to traditional surgeries diode lasers have numerous benefits. The current case report illustrates the diode laser-assisted lingual frenectomy procedure.

Case Report

A 6 years old male patient was reported in the Department of Paedodontics and Preventive Dentistry, Babu Banarasi Das Dental College, Lucknow. He came with a complaint of difficulty in speech since birth. During intraoral examination it was realized that the child has partial ankyloglossia [Figure 1a] and was classified as class III according to Kotlow's assessment and was unable to protrude the tongue up to the lower lip. Ankyloglossia and its presence in the child were explained to the

parents and informed consent was taken. Lingual frenectomy by soft tissue laser was planned. After application of topical anesthesia, few drops of lignocaine were injected in the frenum. Diode laser (830 nm) was used for the frenectomy procedure. After stripping the fiber-optic wire tip, the tip was initiated by firing it into a piece of cork at 1.4 W in a continuous mode. An initiated tip of 300 µm was used with an average power of 1.37 W in a pulsed mode. The diode laser was applied in a contact mode with focused beam for excision of the tissue. The tip of the laser was moved from the apex of the frenum to the base in a brushing stroke cutting the frenum. The ablated tissue was continuously mopped using wet gauze piece. This took care of the charred tissue and prevented excessive thermal damage to the underlying soft tissue. The attachment of frenum to the alveolar ridge was also excised to prevent tension on the gingiva. Vitamin E solution was applied to the wound site. Protrusive tongue movement was checked. No suturing was done, and the patient was prescribed analgesics and reviewed after 1 week and healing was satisfactory. He reported increase in tongue mobility following surgery and healing was satisfactory. The speech articulation was improved following speech therapy.

Discussion

Being compact and portable in design Diode lasers are effectual and dependable for service in soft tissue oral surgical procedures. For the administration of defined burst of energy to the particular area, laser's light is monochromatic, coherent and collimated.

Factually, laser wounds consist of notably lower number of myofibroblasts [5] which in turn brings about less wound contraction and scarring, and eventually superior healing. Better postoperative insight of pain and function are some advantages of Laser-assisted frenectomy over scaple technique. [6]

Even though conventional surgeries give sound result, they have their own set of drawbacks when compared to laser-assisted

frenectomy. Wharton's duct can get blocked during suturing on the ventral surface of tongue. Furthermore surgical alterations on the ventral part of tongue can impair the lingual nerve and lead to numbness of the tongue tip.

Compared to the traditional technique laser-assisted lingual frenectomy is uncomplicated with exceptional accuracy, less pain and decreased healing time. Patient was relaxed and during the procedure there was absolutely no bleeding. We used pulsed mode which provides time for the tissue to cool and prevents collateral tissue damage. [7] The frenum was completely eradicated and patient could protrude the tongue up to 15 mm. Due to cauterization of capillaries by protein denaturation and stimulation of clotting factor VII production laser wound results in negligible or no bleeding. The thermal effect of laser seals the lymphatics, which also diminishes postoperative edema. [8] Moreover, sterilization of wound by laser lessens the need for postoperative care and antibiotics.

Conclusion

Ankyloglossia is a reasonably innocuous condition. Its treatment is straightforward and harmless. In this case report, lingual frenectomy was executed with the help of diode laser which gave practical benefits like diminished bleeding, postoperative pain, and swelling. Laser-assisted surgeries can be a benediction for patients in future.

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