

## CASE REPORT

### Tongue Tie: Successful Management Using Diode Laser

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#### Abstract

*The frenum is a fold of muscle connecting the lips, cheek, or tongue to the jawbone. Ankyloglossia, commonly known as tongue tie, is a congenital anomaly characterized by an abnormally short/tight lingual frenulum leading to a restricted tongue movement. Ankyloglossia has been reported to cause feeding difficulties, speech problem, dyspnea and other social issues. Conventional lingual frenectomy techniques include the use of a scalpel, which requires suturing and therefore leads to post-operative pain and discomfort. This article reports a safe and effective way for the management of tongue-tie. The treatment involved a diode laser for removal of the lingual frenum, which healed uneventfully. Unlike the conventional method; it was associated with reduced bleeding and less postoperative pain. Hence, diode laser can be used for successful management of tongue-tie.*

**Keywords:** Ankyloglossia, diode laser, lingual frenectomy, tongue tie

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Received on: 16/09/2017 Revised: 23/09/2017 Accepted: 25/09/2017

#### Introduction

Lingual frenulum is a fold of mucous membrane which attaches the tongue to the floor of the mouth. Tongue-tie, also known as ankyloglossia is a congenital abnormality and manifests as a short lingual frenum. The term ankyloglossia originates from the Greek words "agkilos" (curved) and "glossa"(tongue). Its severity can range from a clinically insignificant abnormality to a tongue which is completely fixed to the floor of the mouth. Prevalence rate of ankyloglossia is 4.8% and it affects more males than females<sup>1</sup>. An abnormally short lingual frenum may result in restricted movement of the tongue tip as well as difficulty in protruding the tongue. It may also lead to speech problem, difficulty in maintain oral hygiene and may also lead to development of gingival recession on the lingual side of the lower anteriors.<sup>2</sup>

The best-recommended treatment for tongue tie is lingual frenectomy. Conventionally, it was treated using scalpel and cautery. With the advancement in science and technology, lasers have been used due to their advantages like a bloodless operating field, no post-operative

infection or pain and no use of sutures<sup>3</sup>. This case report discusses one such case of successful management of tongue tie using diode laser (810nm).

#### Case Report

An 18 year old female patient reported to the Department of Periodontics, AB Shetty Memorial Institute of Dental sciences. The patient had a complaint of difficulty in protruding her tongue. The patient complained of this since birth and gave no relevant medical or dental history. Intraoral examination revealed a short and fibrotic lingual frenum. It was also observed that the patient was unable to raise her tongue to touch the palate. (Figure 1 and 2) A diagnosis of class II ankyloglossia (Kotlow classification 1999) was made. There was no malocclusion and recession present lingual to the mandibular incisors. Treatment plan included a lingual frenectomy using a diode laser. Verbal and written consent was taken from the patient. After administration of local anesthesia, the tongue was kept in a retruded position to make the lingual frenum more prominent. The laser was then used at 810nm in

a pulsed contact mode at a power of 2W. It was used in a brushing stroke and a rhomboidal shaped defect was seen after excision of the frenum (Figure 3). The patient was then asked to perform protrusive tongue movement in order to ensure the complete excision of frenum. No bleeding was observed and suturing was not required. The patient was prescribed analgesics

and was re-evaluated after 10 days. Healing was uneventful (Figure 4). The patient also reported increased tongue mobility following surgery. The patient complained of no pain during the healing period and also showed an improvement in the ability to touch the palate (Figure 5).

Fig.1- Pre-operative lingual frenum



Fig.2- Pre-operative protrusion of tongue



Fig.3- Excision of the lingual frenum (diode laser)



Fig.4- Healing after 10 days



Fig.5- Increased protrusion after 10 days



## Discussion

The term ankyloglossia was used first by Wallace in 1960s where he defined tongue tie 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". Tongue tie usually results due to a failure in cellular degeneration leading to a much longer connection between the floor of the mouth and the tongue<sup>4</sup>. Several diagnostic criteria have been used for classification of tongue tie. The most accepted classification is based on the distance of the insertion of the lingual frenum to the tip of the tongue<sup>5</sup>:

Clinically acceptable: normal > 16mm

Class I: Mild ankyloglossia 12 to 16 mm

Class II: Moderate ankyloglossia 8 to 11 mm

Class III: Severe ankyloglossia 3 to 7 mm

Class IV: Complete ankyloglossia: < 3mm

Normal movement of the tongue is indicated by the following criteria: the tip of the tongue should be able to protrude outside the mouth without clefting, the tip of the tongue should be able to touch the upper and lower lips without straining, the tongue when retracted should not blanch the tissues lingual to the anterior teeth and the lingual frenum should not create a diastema between the mandibular central incisors.<sup>6</sup>

Several treatment modalities have been employed for the treatment of tongue

using a diode laser. Since the floor of the mouth is extremely vascular, excision using a laser was preferred over a scalpel. Lasers provide excellent hemostasis due to their ability to coagulate blood vessels. This also helps in maintaining a clean surgical field. They also seal capillaries and lymphatic vessels leading to reduced postoperative edema and swelling. Reduction in the number of myofibroblasts by laser leads to decreased wound contraction and scarring. In this case report, laser was used in pulsed mode so as to give time for the tissue to cool and hence prevent collateral tissue damage.<sup>7</sup>

Hence, laser-assisted frenectomy shows excellent precision and less discomfort compared to the conventional technique of using the scalpel. Also, the high level of sterilization maintained during laser treatment reduces the need for post-operative care and antibiotics.

## Conclusion

Tongue-tie is in most cases is a relatively harmless condition and hence the treatment provided should be simple and safe. A lingual frenectomy is more challenging than labial frenectomy due to the hypermobility of the tongue; and the proximity to the submandibular ducts and the richly vascular floor of the mouth. Therefore lasers provide an added benefit in such cases.

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**Conflict of Interest:** None declared

**Source of Support:** Nil

**Ethical Permission:** Obtained

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### Declaration

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