# Management of Tongue tie using Diode Laser: A Case Report


## Abstract

**Background:**Tongue tie, also known as ankyloglossia, is a congenital disorder that occurs when the inferior lingual frenulum is too short and shows attachment to the tip of the tongue, preventing normal tongue motions.Ankyloglossia canlead to a range of problems such asspeech impediments, difficulties in breast feeding, malocclusion, poor oralhygiene, inability in deglutition, thus being an undesired problem in normal life activity. Various techniques like scalpel, laser and electro-surgery have been performed in treating tongue tie. Though each technique has its ownadvantages and disadvantages, aim of all the treatment procedures is to relieve the high muscle attachment to improve the movement of the tongue.

**Case presentation:**A male patient aged ten came with a chief complaint of difficulty in speech to the department of periodontology. On examination presence of tongue tie was observed. For which complete blood profile got investigated, followed by treatment protocol which included oral hygiene instructions, oral prophylaxis and surgical relieving of the aberrant lingual frenum using laser.

**Result:**Uneventful healing was observed with minimal pain experienced by the participating subject. Free movement of the tongue upto the normal range was observed after suture removal.

**Conclusion:**Speech difficulty and limitation of tongue movementmakes it difficult for the patient's having tongue tie.So, in order to remedy the condition, therapy should be administered on time and can be enhanced by surgical operations.



**Keywords:***Lingual Frenulum, Frenectomy,Ankyloglossia, Tongue Tie, Laser.*


## Introduction

The term ankyloglossia is derived from the Greek words skolios (curved) and glossa (tongue).The tongue is a muscle organ that influences speech, tooth position, periodontal tissue, nutrition, and swallowing.Tongue tie is a non-medical word for the same disorder that restricts the function of the tongue. Ankyloglossia, often known as tongue-tie, is a congenital disorder caused by an improper contact between the tongue and the floor of the mouth, resulting in an unusually short tongue. [1,2] There is a distinctively short and thick lingual frenum that restricts tongue mobility.This defect can sometimes self-correct; as a kid grows older, the frenum recedes to a lower position, enhancing tongue movement. [3] The prevalence of ankyloglossia in the general population ranges between 4.2 and 10.7 percent. It is more prevalent in men, with a male to female ratio of 2.5:1.0.Ankyloglossia can manifest as a single entity or as a component of other rare syndromes such as I Smith-Lemli-Opitz syndrome, ii) Orofacial digital syndrome, iii) Beckwith Weidman syndrome, iv) Simpson-golabi-behmel syndrome, v) X-linked cleft palate syndrome, vi) Kindler syndrome, and vii) Van der Woude syndrome. Opitz syndrome, Ehlers Danlos syndrome, Beckwith Wiedemann syndrome, Simosa syndrome, and so on. It is also common in children whose mothers take drug cocaine. [5]

## Case Report

A 10-year-old child presented to the periodontology department with the major complaint of difficulty in speaking due to an inability to move his tongue freely. The patient was aware and cooperative, walking normally and vital parameters were within the limits.Extraoral examination revealed no notable results, however intraoral examination indicated that the frenum extended from the ventral side of the tongue to the lingual gingiva of the anterior part of lower jaw.During the examination, the patient was unable to lift his tongue to touch his palate.There was no malocclusion in this instance, although there was recession lingual to the mandibular incisors.Tongue mobility was restricted due to the fusion of the lingual frenulum to the tongue, with only a 3-7mm protrusion.It was determined that the patient had severe ankyloglossia (Figure1&2: Class II Kotlow's categorization).[1]

## TREATMENT PROCEDURE

After ensuringproper antisepsis, L.A., lignocaine (1:80000) was given forbetterDuring the process, pain is managed.While executing the surgery, the tongue was stabilised. Indelible pencil was employed to outline future regions of cut incisions. Measures were attempted to safeguard and prevent unnecessary injury and surgical difficulties to critical anatomical landmarks such as the submandibular and sublingual ducts and lingual arteries.Dissection was performed through the submucosa and muscle layer; afterwards tongue mobility was evaluated for amount of tongue releasing (figure 4). In non-contact mode, a diode laser with a wavelength of 870 nm and a power of 2 W was employed. Suturing on many layerswith 4-0 silk sutures involving muscles and submucosa was contemplated.The sutures were removed one week following surgery, indicating satisfactory healing, and the tongue motions were re-evaluated (Figure 3-7)andbefore freeing the patient, the patient's haemostasis was assessed. The patient was given antibiotics and painkillers, as well as oral hygiene instructions and many tongue exercises.

The patient was recalled 15 days and 1 month following surgery. The mobility of the tongue has improved (figure 6). Speech treatment also resulted in syllable improvement.

## DISCUSSION

Ankyloglossia(developmental abnormality) characterised by a small lingual frenulum and tongue adhesion to the floor of the mouth.This is due to cellular degeneration failure, which results in a considerably longer anchor between the floor of the mouth and the tongue. 6 This anomaly's pathogenesis is unclear. Ankyloglossia is associated with a number of uncommon diseases, including X-linked cleft palate (OMIM 303400)7 and van der Woude syndrome (OMIM 119300).[8] Opitz syndrome[9] and Kindler syndrome are two examples. [10] It is frequently encountered as an isolated discovery in a normally developing youngster. The reported incidence rates varied from 0.02 percent to 4.8 percent of new - borns.[11]Several categorization have been proposed, but none has gained widespread acceptance. Kotlow's classification may be used to classify [12] Tongue Ties (Table I). [13] Management is determined by prompt and adequate surgery, followed by speech therapy, which produces satisfactory outcomes in less time than predicted. There are three types of surgical methods for ankyloglossia: I Frenotomy is a simple cutting of the frenulum; (ii) frenectomy is a complete excision of the frenulum; and (iii) frenuloplasty involves numerous procedures to relieve the ankyloglossia and fix the anatomic position.[14]Traditional scalpel surgery, electrocautery[15], and laser surgery are all options for treating ankyloglossia. There will be no discernible improvement in speech without post-operative tongue training. It enhances sense of tongue regions (kinaesthesia) and rapid alternating tongue motions (dia-do-chokinesis).[16]In our situation, a laser frenectomy was planned since surgical removal of the muscle fibres, thereby releasing the frenulum, was straightforward, simpler, and less time consuming. The most

advantageous aspect of using laser over other procedures was the ability to completely liberate the lingual frenulum muscle fibres. However, extreme caution should be exercised when employing laser to avoid harm to nearby important tissues. In this example, the frenectomy resulted in satisfactory healing with no post-operative problems.

## CONCLUSION

Tongue tie inhibits an individual's functioning abilities and promotes social shame owing to a communication difficulty. For which correction, such as combined surgical surgery and speech therapy, should be preferred.

| Kotlow's Classification (1999) | | |
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| **Clinically acceptable** | Normal Range Of Free Tongue Movement | > than 16 mm |
| **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 | < than 3mm |

Table I. Kotlow's classification to distinguish severity of ankyloglossia

Fig 1- Presence of tongue tie

Fig 2- Presence of tongue tie

Fig 3- Excision of tongue tie with LASER

Fig 4- Removal of lingual frenum

Fig 5- Placement of 4-0 suture

Fig 6- 15 days postoperatively

Fig 7- 1 month post-operative view

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