

DIODE LASER VS SURGICAL BLADE IN THE MANAGEMENT OF ANKYLOGLOSSIA***¹Dr. Md. Zeeshan Arif and ²Dr. Saket Kashyap**¹MDS, FFPS Oral and Maxillofacial Surgery, M. S. Ramaiah University of Applied Sciences.²MDS Periodontology Sanjay Usha Dental and Maxillofacial Clinic.

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Corresponding Author*Dr. Md. Zeeshan Arif**MDS, FFPS Oral and
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Ramaiah University of
Applied Sciences.**ABSTRACT**

Ankyloglossia or tongue tie is a condition when the inferior lingual frenulum is attached to the tip of the tongue. Different surgical approaches has been used for the treatment of the same. This article focuses on the two techniques commonly used – surgery and lasers; and discusses both the techniques in brief.

KEYWORDS: Tongue Tie, Ankyloglossia, Laser, Frenulum Release, Diode Laser.**INTRODUCTION**

Ankyloglossia, commonly known as tongue tie, is a congenital oral anomaly which may decrease mobility of the tongue tip and is caused by an unusually short, thick lingual frenulum, a membrane connecting the underside of the tongue to the floor of the mouth. Ankyloglossia varies in degree of severity from mild cases characterized by mucous membrane bands to complete ankyloglossia whereby the tongue is tethered to the floor of the mouth. It can be observed in neonates, children, or adults. Many affected children or adults do not complain about their anatomic particularity, although anatomic or functional problems can be associated with tongue tie in different stages of life.

Frenum is a membranous fold which joins two parts and restricts the individual movement of each part. An abnormally tight lingual frenulum often makes the tongue tied down to the floor of the mouth restricting the functions of tongue. Tongue-tie may cause problems which may exist since birth such as breastfeeding and swallowing to problems which may persist through lifetime such as dysarthria, mechanical problems, and social issues.^[1]

An abnormally low position of the tongue may cause mandibular prognathism with maxillary hypo development due to an exaggerated anterior thrust leading to Class III malocclusion.^[2] Whereas, somewhat higher position of tongue in the mouth may lead to tongue thrust causing posterior or anterior open bite. Moreover, excessive forces while retrusion of tongue by patient may cause blanching of tissues, gingival

recession, and midline diastema in lower central incisors. Ankyloglossia, or tongue-tie, can be observed in neonates, children, or adults. The prevalence of ankyloglossia is well established in newborn and is seen in approximately 4%–5% in the newborn population with a 3:1 male-to-female ratio.^[3] As most of the studies have focused on infants and young children regarding ankyloglossia, there is a scarcity of literature in reflecting incidence of ankyloglossia in adolescent and adult. Nevertheless, it is believed by some to be rare in the older age group.^[4,5] In addition to functional limitations of tongue, older children and adults often face social embarrassment due to impaired tongue mobility which demands surgical intervention and correction of the condition.^[6]

Ankyloglossia has also been associated with midline diastema,^[7] oral motor function,^[8] gingival recession,^[9] and anterior open bite.^[10] Some ankyloglossia cases might cause forward and upward displacement of the larynx and the epiglottis resulting in dyspnoea.^[11]

Table 1: Classification of ankyloglossia – Kotlow.

Type	Description
Clinically acceptable	Normal, greater than 16 mm
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: less than 3 mm

Case 1, Surgical Frenectomy

A 28-year-old male consulted us with a chief complaint of difficulty in speaking, swallowing and mastication. After a thorough physical examination, tongue tie was detected and the patient could not perform free movements of the tongue due to the frenal attachment of his tongue. (Figure 1)

A written informed consent was obtained from the patient and a lingual frenectomy was planned. Xylocaine with 1:200,000 adrenaline was used for local infiltration. A sling suture was passed through the tip of the tongue to facilitate tongue retraction. After anesthesia was found to be effective, a suture was used at the tip of the tongue to stabilize it. As the frenum became prominent, a hemostat was used to clamp it, and the frenum was surgically released along the sides of the hemostat (Figure 2). After release of the lingual frenum. Analgesics and antibiotics were prescribed and sutures were removed after 1 week. Healing was uneventful.

CASE 2, LASER FRENECTOMY

A young male patient aged about 21 years reported with a difficulty in protruding his tongue completely. Medical history was noncontributory. On oral examination, the patient was found to have short lingual frenum with restricted tongue movements. It was observed that when the mouth was open, it was impossible for the patient to touch the roof of his mouth with the tip of the tongue. (Figure 3). It was decided to excise the frenum using a diode laser. A few drops of xylocaine were injected into the frenum. The tongue was retracted and after achieving adequate anaesthesia, a tip of 300 μ m was used at a 2.75-W pulse interval, 1.0 ms and pulse length 1.0 ms, with an average power of 1.37 W in a pulsed mode. The tip was moved from the apex of frenum to the base in a brushing stroke, cutting the frenum. After excision tongue movement was checked by protrusion to assess complete elimination of the frenum. No suturing was done; the patient was pre- scribed analgesics and was recalled after 1 week. (Figure 4)

**Figure 1.****Figure 2.****Figure 3.**



Figure 4.

DISCUSSION

Ankyloglossia is a congenital anomaly characterized by an abnormally short lingual frenulum. This anomaly is characterized by the attachment of the tongue to the floor of the mouth. The condition is the result of a failure in cellular degeneration leading to a much longer anchor between the floor of the mouth and the tongue.^[12] Ankyloglossia can be a part of certain rare syndromes such as X-linked cleft palate,^[13] and van der Woude syndrome.^[14] Most often ankyloglossia is seen as an isolated finding in an otherwise normal patient. Maternal cocaine use is reported to increase the risk of ankyloglossia to more than threefold.^[15] The incidence of ankyloglossia in various reports ranges from 0.02% to as high as 4.8% of new-borns.

While performing the surgical procedure the suturing on the ventral surface can at times lead to blockage of Wharton's duct, causing sub-mandibular swelling. Surgical manipulations in the ventral tongue region may also damage the lingual nerve and result in numbness of the tongue tip.^[16] Suturing can also cause contamination by a "wicking effect", causing secondary infection.^[17] Postoperative antibiotics are regularly prescribed for patients undergoing the conventional surgical procedure.

On the other hand, Laser-assisted lingual frenectomy is comparatively easy to perform. The patient is mostly comfortable during the procedure and there is minimal bleeding in the areas of interest providing a clear field of view. This is due to a combination of sealing of small vessels through tissue protein denaturation and stimulation of factor VII production in clotting. The heat buildup also allows for the sealing of small lymphatic and blood vessels, which results in reduced postoperative bleeding and oedema.^[18] Sutures are avoided post-operatively in these cases as complete haemostasis is achieved. In addition, the laser's sterilization of the surgical wound reduces the need for postoperative care and antibiotics. Both patients were advised to undergo speech therapy for correction and improvement of their speech.

CONCLUSION

It can be concluded that diode laser has an advantage over conventional surgical methods of ankyloglossia

release surgery. This helps prevent bleeding and swelling and is associated with minimal or no postoperative pain.

REFERENCES

1. Suter VG, Bornstein MM. Ankyloglossia: Facts and myths in diagnosis and treatment. *J Periodontol*, 2009; 80: 1204-19.
2. Messner AH, Lalakea ML. Ankyloglossia: Controversies in management. *Int J Pediatr Otorhinolaryngol*, 2000; 54: 123-31.
3. Ricke LA, Baker NJ, Madlon-Kay DJ, DeFor TA. Newborn tongue-tie: Prevalence and effect on breast-feeding. *J Am Board Fam Pract*, 2005; 18: 1-7.
4. Catlin FI, De Haan V. Tongue-tie. *Arch Otolaryngol*, 1971; 94: 548-57.
5. Paradise JL. Evaluation and treatment for ankyloglossia. *J Am Med Assoc*, 1990; 263: 2371.
6. Lalakea ML, Messner AH. Ankyloglossia: The adolescent and adult perspective. *Otolaryngol Head Neck Surg.*, 2003; 128: 746-52
7. Kotlow L. Ankyloglossia (tongue-tie): A diagnostic and treatment quandary. *Quintessence Int.*, 1999; 30: 259-262.
8. Hasan N. Tongue ties as a cause of deformity of lower central incisor. *J Pediatr Surg.*, 1973; 8: 985.
9. Williams WN, Waldron CM. Assessment of lingual function when ankyloglossia (tongue-tie) is suspected. *J Am Dent Assoc*, 1985; 110: 353-356.
10. Ewart NP. A lingual mucogingival problem associated with ankyloglossia: a case report. *N Z Dent J*, 1990; 86: 16-17.
11. Mukai S, Mukai C, Asaoka K. Ankyloglossia with deviation of the epiglottis and larynx. *Ann Otol Rhinol Laryngol Suppl*, 1991; 153: 3-20.
12. Morowati S, Yasini M, Ranjbar R, Peivandi A A, and Ghadami M. Familial Ankyloglossia (Tongue-tie): A Case Report. *Acta Medica Iranica*, 2010; 48: 123-124.
13. Moore GE, Ivens A, Chambers J, Farrall M, Williamson R, Page DC, et al. Linkage of an X-chromosome cleft palate gene. *Nature*, 1987; 326: 91-92.
14. Burdick AB, Ma LA, Dai ZH, Gao NN. Van Der Woude syndrome in two families in China. *J Craniofac Genet Dev Biol.*, 1987; 7: 413-418.
15. Harris EF, Friend GW, Tolley EA. Enhanced prevalence of ankyloglossia with maternal cocaine use. *Cleft Palate Craniofac J*, 1992; 29: 72-76.
16. Yang, Hun-Mu. Woo, Yong-Je. Won, Sung-Yoon. Kim, Da-Hye. Hu, Kyung-Seok. Kim, Hee-Jin. *J Craniofac Surg.*, 2009; 20: 1359-1363.
17. Takei H, Carranza F. The periodontal flap. In: Newman M, Takei H, Klokkevold P (eds). *Carranza's Clinical Periodontology*, ed 10. Philadelphia: Saunders, 2009; 926-936.
18. Pirnat S. Versatility of an 810 nm diode laser in dentistry: an overview. *J Laser Health Acad*, 2007; 4: 1-9.