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CASE REPORT

MANAGEMENT OF ANKYLOGLOSSIA USING DIODE LASER – A CASE REPORT

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ABSTRACT

Frenum also known as frenulum or frena is a fold of tissue or 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, which restricts mobility of the tongue tip. Though the ankyloglossia or tongue tie is not a serious manifestation, it may lead to a host of problems including infant feeding difficulties, speech disorders, and various mechanical and social issues related to the inability of the tongue to protrude. Lingual frenectomy is advised for the management of ankyloglossia. The present paper discusses one such case of successful management of ankyloglossia using diode laser.

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INTRODUCTION

Ankyloglossia is a Greek term originating from two Greek words skolios (curved) and glossa (tongue). Ankyloglossia or tongue-tie is a congenital condition, which occurs as a result of fusion between the tongue and floor of the mouth (Chaubal, 2011). Wallace in 1960 defined tongue-tie as a condition in which tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short frenulum. Tongue-tie can vary from a thin elastic membrane to a thickened, white non-elastic tissue. In many individuals, ankyloglossia is asymptomatic; the condition may resolve spontaneously or affected individuals may learn to compensate adequately for their decreased lingual mobility. Some individuals, however, benefit from surgical intervention frenotomy, frenectomy and frenuloplasty for their tongue-tie. Patients should be educated about the possible long-term effects of tongue-tie so that they may make an informed choice regarding possible therapy. Ankyloglossia was also found associated in cases with some rare syndromes such as X-linked cleft palate syndrome, Kindler syndrome, Van der Woude syndrome and Opitz syndrome. Nevertheless, most ankyloglossias are observed in persons without any other congenital anomalies or diseases. Speech problems can occur when there is limited mobility of the tongue due to ankyloglossia. The difficulties in articulation are evident for consonants and sounds like "s, z, t, d, l, j, zh, ch, th, d" and it is especially difficult to roll an "r" (Nagate Raghavendra Reddy, 2014). Free tongue is defined as the length of the tongue from the insertion of lingual frenum into base of the tongue to the tip of the tongue. Clinically acceptable normal range of free tongue is greater than 16 mm.

The ankyloglossia can be classified into four classes based on Kotlow's assessment as follows (Kotlow, 1999)

- **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 (<3 mm).

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Kotlow recommends revising the frenum in case of Class IV and Class III ankyloglossia; Class II and Class I ankyloglossia are the most difficult to evaluate and functional criteria of normal range of motion of the tongue can be utilised for surgical indication. Hence, upon completion of the diagnosis, a clinical-functional evaluation for possible surgical indication has been suggested by Olivi et al. [2011] (Table 1). It should be stated that a short frenum is not always inelastic or fibrotic and, despite the reduced length, it may allow a normal lingual mobility thus not necessitating a reduction intervention; also, the elasticity of the floor of the mouth can mitigate the effects of the ankyloglossia and help the lingual mobility (Kotlow, 1999).

Table 1. Criteria for Surgical Indication (Genovese and Olivi, 2011)

Breast feeding difficulty
Speech impediment
Atypical swallowing
Impossibility to sweep upper and /or lower lips
Limitation of the tongue to reach the palatal retroincisal spot when the mouth is wide open.
Shape of the tongue distorted and/or Invagination at the tongue tip during the protrusion outside the mouth

Case Report

An 18-year-old female patient reported to the OPD of Dept. of Periodontics, A.J Institute of Dental Sciences Mangalore, with a chief complaint of difficulty in speech since birth. A detailed case history was taken. On intraoral examination, it was found that the individual had partial ankyloglossia and was classified as class III according to Kotlow's assessment.

Figure 1. Pre-operative view

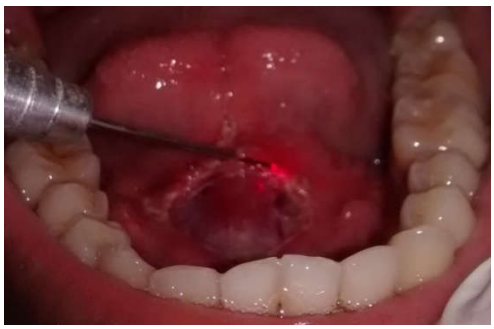

Figure 2. Operative View

The patient was able to protrude the tongue tip till the lower lip. Medical history non- contributory. Lingual frenectomy by soft tissue laser was planned for the patient after informed consent. Complete extraoral disinfection was carried out with 2% betadine. After application of topical anaesthesia, the area was anaesthetized with a local infiltration by using 2% lignocaine with 1:80000 adrenaline.

Figure 3. Lingual frenum Excised

Figure 4. 3 days Post-operative view

Figure 5. 6 days Post-operative view

Frenectomy was done with diode laser of 810nm with 3.5W in continuous mode. 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 takes care of the charred tissue and prevents excessive thermal damage to the underlying soft tissue. Protrusive tongue movement was checked. No suturing was done, and the patient was prescribed analgesicsand reviewed after 3 and 6 days. There was increase in tongue mobility following surgery and healing was satisfactory (collagen band was formed). The patient was recalled after 1 month but was unable to report as she left to study abroad.

DISCUSSION

Early diagnosis and intervention in ankyloglossia are fundamental for the subsequent morpho-functional

development of the child and of the adolescent (Olivi, 2012). The correction of ankyloglossia at an early age reduces the risk of latent complications. Therefore, surgery should be considered at any age depending on the patient's history of speech, feeding, or mechanical/social difficulties (Nagate Raghavendra Reddy, 2014). In this case, Diode Laser was opted over the conventional scalpel technique as the patient was apprehensive with the use of Scalpel. Diode lasers are compact and portable in design, with efficient and reliable benefits for use in soft tissue surgical procedure.

Laser light is monochromatic, coherent, and collimated; therefore, it delivers a precise burst of energy to the targeted area. When viewed histologically, laser wounds contain significantly lower number of myofibroblasts, which results in less wound contraction and scarring, and ultimately improved healing. Laser□assisted frenectomy provides better postoperative perception of pain and function than with the scalpel technique (Zeinoun, 2001 and Haytac, 2006). Moreover the laser is also seen by the patient as a less invasive and magical instrument and, for this reason, better tolerated and accepted. Although the conventional surgical frenectomies produce good result, they have their own disadvantages compared to laser-assisted frenectomy. Suturing on the ventral surface of tongue at times can cause blockage of Wharton's duct. Surgical manipulations on the ventral part of tongue may also damage the lingual nerve and cause numbness of the tongue tip (Snophia Suresh, 2012).

Advantages of Laser-assisted lingual frenectomy are

- Easy to perform with excellent precision,
- Less discomfort,
- Reduces post-operative bleeding and oedema
- Sterilization of wound reduces the need for post-operative antibiotics
- Short healing time compared to the conventional technique.

Conclusion

Ankyloglossia or tongue tie is a relatively harmless condition, which can deliver pleasing results if managed optimally. In this case lingual frenectomy was done using a diode laser which showed good results, with minimal post-operative pain and oedema, both of which are the primary concern of the patient. Hence if used correctly, LASER is a safe, effective, acceptable alternative over the conventional scalpel technique.

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