CASE REPORT

LASER ANKYLOGLOSSIA- A NEW AND MODERN APPROACH

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ABSTRACT

A frenum is a soft tissue present in the mouth connecting lips with the gums, and tongue with the oral floor. It varies in length and thickness for each person. Its abnormal positions lead to many oral conditions such as midline diastema, ankyloglossia, etc. Ankyloglossia is a condition where the lingual frenum bounds the movement of the tongue. It often leads to poor oral hygiene and affects speech and eating. This paper presents with a classic case of Ankyloglossia or tongue-tie, treated surgically with a laser. Lingual Frenectomy (complete removal of lingual frenum) was performed.

Keywords: *Frenum, Ankyloglossia, Lingual frenectomy, Laser*

Laser Used: *Biolase Soft Tissue Diode Laser, Wavelength - 980 nm, Mode - Continuous Mode*

INTRODUCTION

Frenum or Frenulum is a thin line of the soft tissue running between the lips and gums. It is present at the top and bottom of the mouth. Its primary function is to provide stability of the upper and lower lip and the tongue.[1] There are two types of Frenum; Lingual and Labial Frenum. Lingual Frenum connects the tongue with the oral floor. Whereas, the labial frenum is present in the front of the mouth connecting both upper and lower gums with respective lips. The frenum can vary in thickness and length among different people.[2] By visualizing the movement of the papillary tip and blanching on the application of pressure on frenum, any unusual or aberrant frenum can be detected.[3]

Ankyloglossia (tongue-tie) is one of the congenital anomalies with an abnormally short lingual frenulum. In the extreme situation, the tongue cannot pass the lower incisor teeth.[4] Tongue-tie may cause problems, which may exist since birth such as breastfeeding and swallowing to problems, which may persist through life such as dysarthria, mechanical problems, and social issues.[5] Its diagnosis is difficult and depends on the movements permitted by genioglossus muscles. Thus, it cannot be diagnosed just by looking under the tongue. Passive elevation of the tongue tip with a tongue depressor in infants and movement of the tongue to its maximum approach in young adults are some of the approaches for its diagnosis. In addition, palpation of genioglossus on the underside of the tongue will aid in confirming the diagnosis.[6]

There exist many treatment options for Ankyloglossia. Horton et al. believed that people with ankyloglossia can compensate in their speech for limited tongue range of motion, so they proposed compensatory strategies as a way to counteract the adverse effects of ankyloglossia and did not promote surgery.[6] Orofacial mycology specialists perform non-surgical treatments such as exercises to strengthen and improve the function of the facial muscles. This promotes the proper functioning of face, mouth, and tongue.[7] Surgery in the form of frenectomy or frenuloplasty is also an intervention for ankyloglossia. It can be done using one hemostat, two hemostats, a groove director or laser. The choice depends on various factors such as the age of the patient, length of the frenum, and availability of instruments and equipments.[8] Wait-and-See approach was considered a viable alternative to surgery for children with ankyloglossia by Lalakea and Messner. They also believed that surgery can be considered for patients of any age with a tight frenulum, as well as a history of speech, feeding, or mechanical/social difficulties.[9] This case report presents with an Ankyloglossia intervened with a diode laser.

Benefits of Diode Lasers: Painless procedures, Bloodless field, Healing of surgical site is at a faster rate.

CASE PRESENTATION

The 7-year-old male child came to the Clove's Tilak Nagar clinic with a complaint of difficulty in eating and speaking. He had this difficulty since birth. The patient's overall health was not good, as he was not eating properly. Extra-oral examination revealed a symmetric face with no abnormally grown or deficit jaw. Intra-oral examination revealed that dental health was quite well. He was in the ugly-duckling stage of the dentition.

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All four permanent central incisors and first molars had erupted. Lower primary lateral incisors were missing. The overall mucosa was normal. There was no dental treatment taken prior to this visit. He came to the dentist for the first time, so dental contra-indications were unknown.

Clinical examination revealed an abnormal attachment of lingual frenum with the floor of the mouth (Fig1). He was unable to lift up and move forward his tongue due to its aberrant attachment on the oral floor. It was diagnosed to be the classic case of Ankyloglossia. Parents were informed about the problem and their consent was attained before treatment.

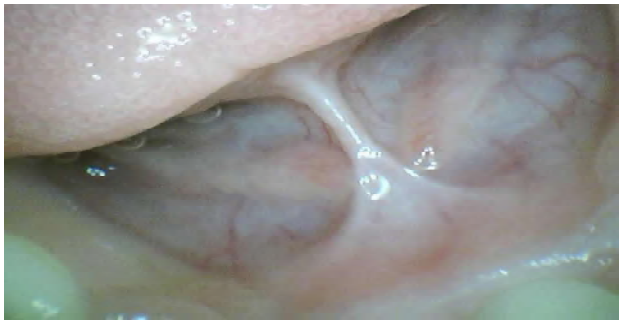

Fig. 1: Pre-treatment image showing Ankyloglossia or Tongue-tie due to aberrantly attached lingual frenum

The main aim was to detach the frenum from tongue and oral floor for the proper functioning of the tongue. We opted for laser assisted ankyloglossia because the patient was uncooperative for the lengthy and invasive procedure and was even afraid of a large number of local anesthetics needed for other surgical procedures. The procedure was carried out using diode, fibre 980 nm, at a wavelength of 1Watt - 1.2Watt in Continuous mode. The whole lingual frenum was removed (Frenectomy) with the laser (Fig 2).

The procedure was carried out under topical anaesthesia which was applied to the patient.

Fig. 2: Post-treatment image- after the complete removal of lingual frenum (Lingual Frenectomy)

The patient reported for follow up a week after the treatment (Fig3). The wound healed completely without any surgical complications such as infection, swelling, and discomfort. The patient showed improvement in his speech and mastication after a week of intervention.

Fig. 3: Follow up (1 week after treatment) image showed a completely healed wound without any post-operative complications

DISCUSSION

A frenum is one of the most fascinating and yet misunderstood parts of the oral cavity. It is a mucosal attachment of a loose part to a more rigid part. Normally many frena are present in the oral cavity, like mandibular and maxillary labial and lingual frenum.[3] When it attaches the tongue to the floor of the mouth, it is known as lingual frenum. The tongue is an important oral structure, which intervenes in speech, the position of the teeth, swallowing and certain social activities.[10] For the proper functioning and movement of the tongue, the frenal attachments must be adequate.

A condition where there is an aberrant attachment of frenum to the tongue, it is referred to as Ankyloglossia. It is also known as tongue-tie i.e. a tongue is bound to frenum in such a manner, that it is restricting its movement. This leads to difficulty in speaking, eating, poor oral hygiene, and low self-esteem in some cases. It requires a proper diagnosis for complete and adequate treatment. There is continuing controversy over the diagnostic criteria and treatment of ankyloglossia.[11] Kotlow classified ankyloglossia under four classes Class I, II, III, and IV. Class III and IV restrict the tongue movement to a great extent and therefore should be given special consideration.[12] It is suspected by certain authors (but not substantiated) that tongue-tie may often resolve spontaneously by late childhood.[9] Due to the disputed belief of many authors against the causal relationship of speech defect and ankyloglossia, it is recommended to perform frenulectomy only as part of the management of speech problems when speech is significantly and noticeably affected and consistent with tongue-tie.[13]

As the patient was having difficulty in speaking, surgical intervention was chosen. Frenectomy corresponding to the complete removal of frenum was performed on the child. This procedure is more invasive and difficult to be performed in young children, although the results are more predictable, decreasing the recurrence rate.[14,15] Laser frenectomy was performed due to its non-invasive nature. It is as an alternative to the conventional techniques, because of its many advantages such as shorter operative working time, tissue cauterization and sterilization, hemostasis, less local anesthesia requirement, and fewer postoperative complications (pain, swelling, and infection).[16] A laser also improves the access and visibility due to the lack of interposed instruments and bleeding at the operating site. Further, it eliminates the need for suture and results in the clean surgical site with uniform depth, which reduces any unnecessary damage to the tongue muscle.[16–18] Healing using a diode laser is carried out by secondary intention, and is at a faster rate. For all these reasons, laser technology was preferred over conventional frenectomy methods.

One follow- up was done on the next day after the surgery. And the other follow up was done after 1 week of surgery. Post that patient did not turn up for the follow-ups.

CONCLUSION

We showed laser frenectomy as a treatment choice for Ankyloglossia. It is a conservative approach generally preferred by patients because lasers are less invasive, less time consuming, require less local anesthesia, are less painful, and reduces post-operative complications. Thus, children are more comfortable with lasers than other conventional methods. It is a preferable choice of practitioners as it reduces chairside time, gives clean surgical site, bloodless procedure, and proper visualization of the operating field due to less programmed machinery. It requires the trained practitioner along with the co-operation of the patient.

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