Case Report

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Laser assisted therapeutical approach for the treatment of Ankyloglossia.

Abstract:
Ankyloglossia also known as tongue-tie limits the tongue's motion due to short, thick lingual frenum. In this article, we have reported two cases, a 35-year-old female referred for tongue-tie removal and a 34-year-old male patient with tongue-tie who complained of difficulty in speech following which both of them underwentlaser assisted frenectomy procedure under local anaesthesia. Postoperative period was uneventful.

Key words: Ankyloglossia, Frenectomy,Diode laser.

Introduction:

Ankyloglossia additionally called Tongue-Tie is a congenital oral anomaly with abnormallingual frenum which results in restricted movement of the tongue. Definitions of ankyloglossia vary from anindistinctrepresentation of a tongue that functions with a less-than-normal range of activity with an elucidation of the frenulum as short, dense, muscular, or fibrotic. This situation normally influences speech, eating as well as restrained tongue movements.[1]

The lingual frenum is a mucosal fold that connects the lowest of the frame of the tongue to the floor of the mouth and to the mandibular bone. When the frenum is thick and really tight and/or its region of insertion limits the mobility of the tongue, it leads to ankyloglossia. This term originated from the Greek word "ankylos" meaning tied and "glossa" relates to tongue.[2] Ankyloglossia is an embryological anatomical malformation that more commonly influences men. With an incidence of 5% it is seen in new-borns and is also related with syndromes.[3]

Kotlow in 1999 classified Tongue-Tie into different classes:[1]

1. Acceptable clinically with normal range of free tongue: Greater than 16 mm
2. Class I: Mild ankyloglossia: 12 to 16 mm
3. Class II: Moderate ankyloglossia: 8 to 11 mm
4. Class III: Severe ankyloglossia: 3 to 7 mm
5. Class IV: Complete ankyloglossia: less than 3 mm

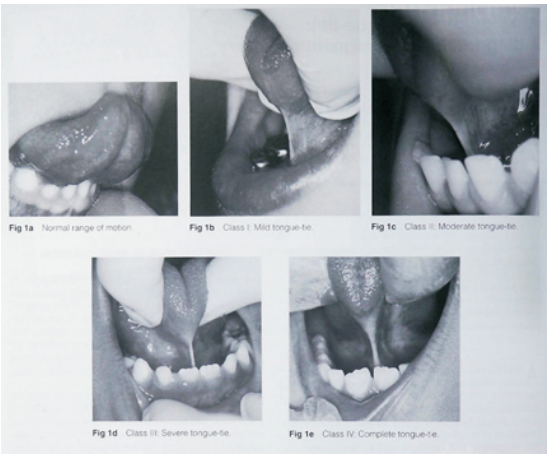

Figure 1-Kotlow's classification of Tongue tie

[1]C.S. BAIJU , [2]MEENU TANEJA BHASIN , [3]GUNJAN GUPTA , [4]N. D. GUPTA, [5]RINU REJU
[1,2,3,5] Department of Periodontics and Oral Implantology, Sudha Rustagi College of Dental Sciences, Faridabad, Haryana
[4]Department. of Periodontics
Dr. Ziauddin Ahmad Dental College,
Aligarh Muslim University, Aligarh

Address for Correspondence: Dr. Gunjan Gupta
P-40, Sector-12, Smile by Design- Dental Clinic, Noida
E-mail: drgunjangupta22@gmail.com

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Case Description:

This article highlights two case reports where soft tissue lasers were used to treat ankyloglossia. Both the patients were referred for Speech therapy for further rehabilitation after laser therapy.

Case 1:

A 35-year-old female patient was referred from the Department of Orthodontics and Dentofacial Orthopaedics to the Department of Periodontics and Oral Implantology for Tongue tie removal for the aid of correction of anterior cross bite in fixed orthodontic treatment. On clinical examination the lingual frenum was short, restricting the movement of tongue. Complete oral prophylaxis and treatment protocols were discussed with the patient. Patient reported with no relevant medical history. The patient was explained about two options for removing the frenum: using a scalpel or using lasers. The patient felt more comfortable having the frenum removed with a laser.

Treatment:

The patient was advised for all her blood investigations, prior to the surgical intervention. Thereafter, the completion of Phase I therapy, patient was recalled after 1 week for Frenum removal. On the day of Surgery, patient was administered local anaesthesia with 2% lignocaine and 1:80,000 adrenaline. The lingual frenum was held with a grooved director. The lingual frenulum was incised using soft tissue 976 nm diode laser (Woodpecker) and with peak power 3.0 watts, frequency Continuous wave Hz, valid power 3.00 W, energy 60 J in contact mode was applied continuously to the central area of the frenulum from the tip to the base of the tongue. Sutures were not performed. A number of safety precautions were taken into consideration, such as wearing protective eyewear by the dental surgeon, the dental assistant and the patient. Saline irrigation was given simultaneously.

Patient was advised post-operative instructions and postoperative period was uneventful. She was advised tongue exercises to extend the range of tongue motion.

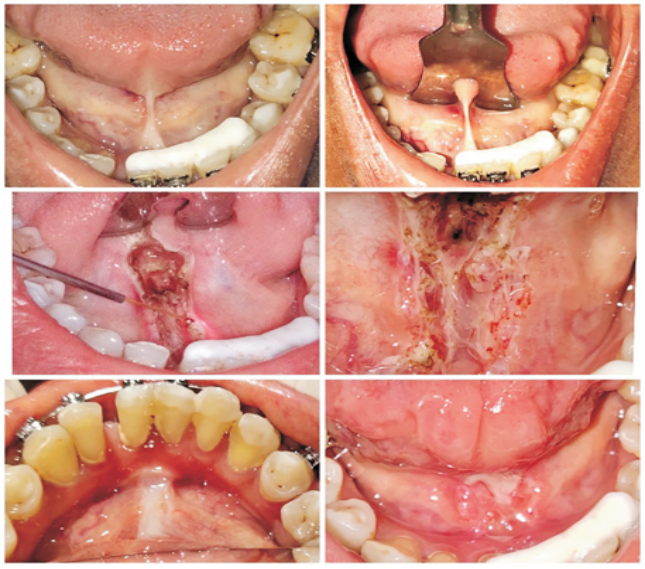

Figure 2 –A,B: Pre-operative view of Lingual frenum showing restricted tongue movement; C: Diode laser used to perform Frenectomy; D: Immediate post-operative view; E: Post-operative view after 1week; F: Post-operative view after 2 weeks.

Case 2:

A 34-year-old male patient was presented to the Department of Periodontology and Oral Implantology with the chief complaint of difficulty in speech. Patient also reported difficulty in performing tongue movements.On clinical examination, it was revealed that the patient had short lingual frenum which restricted the tongue movement with blurred speech.

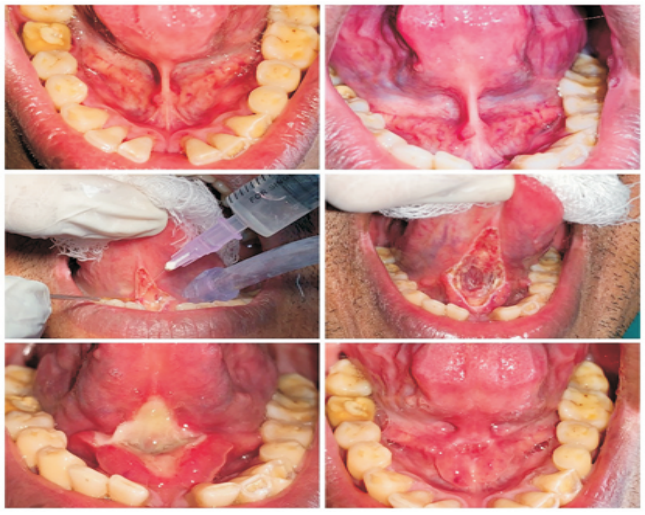

Figure 3 – A,B: Pre-operative view of Lingual frenum

showing restricted tongue movement; C: Diode laser used to perform Frenectomy; D: Immediate post-operative view; E: Post-operative view after 1week; F: Post-operative view after 2 weeks.

Treatment:

Patient was advised to get his routine complete blood investigation followed by Completion of Phase 1 Non-surgical therapy. Laser assisted Lingual frenectomy was performed with 2% lignocaine and 1: 80,000 adrenaline. A 976 nm diode laser with Peak Power 3.0 Watts, Frequency Continuous wave Hz, Valid Power 3.00 W, Energy 60 J in contact mode was used to remove lingual frenum. All the safety precautions were followed. Irrigation with saline was done in conjunction with the laser procedure. Sutures were not necessary. The post-operative period was uneventful and the patient was comfortable.

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Discussion:

The tongue is a vital organ in the body that greatly impacts speech, function of the teeth, nutrition, and also swallowing.4 Before birth, tissue directs the position of oral frenulum that is located within the centre of the mouth. After birth, this lingual frenulum pursues to lead the location of erupting teeth. During the process of growth, it recedes and becomes thin. In a few children, the frenulum is especially tight, or it fails to recede and can restrict tongue.[5]

Anatomical definition of ankyloglossia includes descriptions in addition to absolute measurements. Descriptions encompass the attachment of the frenulum to the tongue, the attachment of the frenulum to the inferior alveolar ridge, the pliability of the lingual frenulum, and the advent of the tongue when lifted. Absolute measurements encompass the length of the lingual frenulum while the tongue is lifted in addition to the free tongue length.[6]

Major trouble related to the tongue-tie consists of speech trouble. The problem any patient faces is trouble in pronunciation of consonants which consists of "s, z, t, d, j, zh, ch,th ". On clinical examination it was observed thatboth the patients had trouble in saying those phrases due to constrained tongue-movement.[7]

After fulfilment of complete development and additionally in the course of infancy, if people have speech, feeding, or mechanical/social problems, surgical intervention has to be carried out.8 Therefore, surgical treatment has to be taken into consideration at any age relying on the patient's records of problems. Surgical strategies for the remedy of tongue-ties may be categorised into three procedures. Frenotomy is straightforward reduction of the frenulum. Frenectomy is described as entire excision, i.e., elimination of the complete frenulum. Frenuloplasty entails numerous techniques to let go the tongue-tie and amend the anatomic situation.[9]

Various treatment modalities are present to treat Lingual frenum: assisted with Scalpel, Laser and Electrocautery. Among all the modalities Laser has better patient acceptance and is considered better compared to the traditional methods because scalpel assisted surgeries must be used very cautiously as it could traumatize the adjacent vital structures including the Lingual nerve, vein and sublingual duct.

In a study by Vidyaa et al it was reported that lasers are better than conventional method because of better surgical site visibility during the procedure which ultimately leads to better accuracy.[10] Pietro Paolo Mezzapesaet al in his study stated that, previously, traditional surgical procedureswere quite invasive and related with intraoperative bleeding and postoperative swelling. Diode laser completely changed the

approach towards the treatment, due to laser's abilities of contextual coagulation, unnecessary sutures and rapid healing.[11]

Laser treatment, hence proved to be extremely effective for both the patients as it was simple and rapid to perform, safe and minimally invasive for the patient with better patient acceptance. Both the patients were completely fine after the procedure and the post-operative period was extremely comfortable.

Conclusion:

Due to restricted tongue movements and difficulty in communication, tongue ties pose great difficulties for the patient. Thus, early diagnosis and intervention is important for the patient. Laser therapy has always been widely accepted as an effective method for treating tongue ties.

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