



ADDRESSING TONGUE-TIE IN ADOLESCENCE: A CASE REPORT ON SPEECH RESTORATION BY DIODE LASER

Periodontology

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ABSTRACT

A lingual frenum that is excessively short and thick limits the tongue's normal motion and function, resulting in ankyloglossia or tongue-tie. It can be either muscular or fibrous, and the knot can be either full or partial. The surgical treatment of a 15-year-old male patient with ankyloglossia- a condition that causes decreased tongue movement and speech difficulties is discussed in this article. The course of treatment involved frenectomy with a soft tissue diode laser followed by tongue exercises. After a month of uncomplicated recuperation, the patient displayed greater tongue functions.

KEYWORDS

Ankyloglossia, diode laser, frenectomy, gingival recession, tongue tie.

INTRODUCTION

The term "ankyloglossia" refers to a curved tongue (also known as "agkilos")("glossa"). It is a congenital condition marked by an unusually small lingual frenulum and restricted tongue movement due to the tongue being fused to the floor of the mouth.[1] Between 0.2% and 5% of children have tongue tie, with a masculine predisposition and a male-to-female ratio of 2.5: 1.0.[2] In addition to difficulties with breastfeeding during infancy, ankyloglossia can cause problems with ingestion, speech, and consonant pronunciation, poor oral hygiene, gingival recession of the mandibular anterior teeth, malocclusion, salivary profusion, and instability of the mandibular prosthesis.[3] When these obstacles build up over time, they frequently have a detrimental influence on confidence and self-worth as well as emotional or behavioral issues throughout childhood, adolescence, and even adulthood. This article presents a case report of diagnosis and management of ankyloglossia using soft tissue diode laser in an adolescent.

Case Presentation

The primary complaint of a 15-year-old boy who presented to the Department of Periodontics and Implantology at Sri Venkateshwara Dental College and Hospital in Chennai was speech problems caused by restricted tongue actions, which resulted in poor maintenance of oral hygiene.

Upon intraoral inspection, a thick lingual frenum from the tongue tip was seen, accompanied with generalized chronic marginal gingivitis. Inability to touch the palate with the tip of the tongue and limited tongue movements, such as protrusion and lateral movements, were seen. A tongue tip that resembled a bifid or heart was observed on the protrusion (Figure 1). According to Kotlow's method, he was classified as having Class II "Moderate ankyloglossia," which is defined as tongue movement between 8 and 11 mm. A frenectomy was advised based on the cosmetic score of 2 (less than 8) and the functional score of 5 (less than 11) determined by Hazelbaker's evaluation technique.

Following informed agreement, lingual frenectomy-which was planned employing a soft tissue diode laser-was performed after non-surgical periodontal treatment. Following a regular hematological evaluation that revealed observations within the normal range for the hemoglobin %, bleeding time, clotting time, random blood sugar, and total leukocyte count, and differential count, surgery was performed.

A local anesthetic injection (0.5 ml of 0.2% lignocaine hydrochloride

in 1:80,000 adrenaline) was administered bilaterally in the lingual frenum following the administration of Topical Anaesthetic Spray (Nummit). Using a silk 3-0 traction suture, the tongue was securely retracted at the tip (Figure 2). A 1.5W continuous wave mode soft tissue diode laser operating at 970 nm was used to accomplish lingual frenectomy. Brushstrokes were used to alleviate the lingual frenum on either side (Figure 3). In order to remove the ignited tissues and avoid causing undue heat damage to the soft tissues underneath, saline-dipped gauze was employed to remove the ablated tissues. There was no visible bleeding at the location. The patient showed signs of healing and no scarring after a week (Figure 4) and with a follow up of one month (Figure 5).



Figure 1: Pre operative showing thick lingual frenum

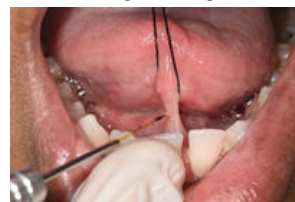


Figure 2: Traction suture placed to perform frenectomy using diode laser.



Figure 3: Immediate post operative reveals free movements of the tongue



Figure 4: Post operative healing after 1 week



Figure 5: Healing after 1 month post operatively

DISCUSSION

Before birth, the oral frenulum-which is situated in the center of the mouth develops under the direction of a strong tissue cord. After birth, this lingual muscle tissue still guides the position of the teeth that emerge. It thins and recedes as the child grows older. Occasionally, the frenulum is very tight or fails to recede, which might cause hindrance in the function of tongue.[4] Thus, an excessively small lingual frenulum and tongue adherence to the floor of the oral cavity are the hallmarks of ankyloglossia, a developmental abnormality. It is uncertain what triggers ankyloglossia. According to Kotlow's assessment (1999)[9] ankyloglossia can be classified into 4 classes, 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. The "free tongue" is the section of the tongue that extends from the base, where the lingual frenum enters, to the tip. More than 16 mm is the normal range of motion for the tongue to be regarded as typical free tongue range. The lingual frenum should not be cleft, the tongue tip should be able to emerge outside the mouth easily, and the mandibular central incisors should not be separated when the tongue retracts. It should also not blanch the tissues lingual to the anterior teeth without effort.[5]

Ankyloglossia varies from 0.1 to 10.7%.[6] The tongue, as we all know, is an auxiliary organ that facilitates speaking, mastication, and deglutition. Patients with tongue-tie have difficulty saying words like s, n, t, d, j, Zh, ch, th, dg, and l that come from the tip of the tongue.[7] Additionally, because the tongue cannot move freely, it pushes harder against the anterior jaw and results in mandibular prognathism. Lingual surfaces have also been seen to exhibit gingival recession.[8]

A number of rare conditions, including Smith-Lemli-Opitz syndrome, orofacial digital syndrome, Beckwith Weidman syndrome, Kindler syndrome, Simpson-Golabi-Beckwith syndrome, and X-linked cleft palate with an autosomal dominant or recessive characteristic, can also present with ankyloglossia. However, most cases of ankyloglossia occur in individuals who do not have any additional illnesses or birth defects. The lingual frenal function was evaluated using Hazelbaker's method.[10] Corylloss tongue tie classification (2009)[10] includes Type I: A thin and elastic frenulum; attaches the tip of the tongue to the alveolar ridge, and the tongue forms a heart shape, Type II: Thin and elastic frenulum; 2–4 mm behind the tongue tip, attaches by the alveolar ridge, Type III: Thick, fibrous, and non-elastic frenulum; attaches mid-tongue to the floor of the mouth, Type IV: The frenulum is not seen, but felt, with a fibrous or submucosal thick and shiny attachment from the base of the tongue to the floor of the mouth.

It is believed that surgeries such as frenotomy, frenectomy, or frenuloplasty can aid with tongue-tie. In order for patients to research potential treatments, they should be aware of tongue tie and its lingering implications.[11] In this case report, ankyloglossia was treated with a surgical frenectomy using a diode laser. Compared to a typical scalpel, which may also be used for the treatment. The diode laser is a terrific instrument that provides better visibility with less bleeding.[12] On the other hand, heavy bleeding could make the working area hard to view. A quicker operating time, tissue thermal ablation and disinfection, blood coagulation, less need for local

anesthetic, and less postoperative problems (pain, edema, and infection) are some of the additional benefits that laser technology has over conventional techniques.[13] Furthermore, the laser does not require the need for post-operative sutures unlike the scalpel method.

CONCLUSION

Effective treatment of tongue tie, which includes prompt and suitable surgery and speech therapy, when necessary, can provide positive outcomes, frequently faster than anticipated. When the frenum is recognized and diagnosed as abnormal, early intervention is the best course of treatment, and disciplines related to infants, children, and adults with tongue tie are increasingly accepting that "wait and see" policies are no longer appropriate. Early treatment of ankyloglossia lowers the chance of hidden problems.

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