

Correction Of Tongue-Tie With A Diode Laser: A Case Report

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Abstract

Tongue is an important structure of oral cavity that is responsible for speech, swallowing, taste and positioning of teeth. A frenum is fold of mucous membrane, with enclosed muscle fibers that attaches lips and cheeks to alveolar and /or alveolar mucosa and underlying periosteum. Ankyloglossia or tongue-tie is a clinical condition characterized by decreased mobility of tongue tip due to usually short, thick lingual frenum resulting in limitation of tongue movements. Lingual frenectomy is the procedure that involves removal of tissue band, the lingual frenum, that connects tongue to the floor of the mouth. Laser frenectomy results in lower risk of relapse, such as adhesion and hence the prognosis is superior to those treated by traditional methods. In this article we report a case of a male patient, 34 year with tongue-tie, complaining of difficulty in speech which was treated with laser with an uneventful healing and good patient satisfaction.

Introduction

The term 'ankyloglossia' originates from two Greek words 'agkilos' (curved) and 'glossa' (tongue). Tongue tie is congenital anomaly characterized by short lingual frenum. It occurs when a common minor embryologic tissue remnant, the frenum that usually undergoes apoptosis persists resulting in restriction of normal tongue movement.¹

In 1963, Wallace defined ankyloglossia as a condition in which the tip of the tongue cannot be protracted beyond the lower incisor teeth because of short frenulum linguae. This can vary from a thin elastic membrane to a thickened, white non-elastic tissue² and may be due to congenital shortness of the lingual frenum or a frenal attachment extending to the tip of the tongue, binding the tongue to the floor of mouth and restricting its extension. Ankyloglossia is prevalent in 3.2% of pediatric patients and occurs in 2 to 3 of every 10,000 adults. It is more common in males than females.^{3,4}

Kotlow's Classification of Ankyloglossia:

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. According to Kotlow's observation, ankyloglossia can be of four types depending on clinically available free tongue (protrusion of tongue):⁵

Class I: Mild Ankyloglossia: 12-16mm

Class II: Moderate Ankyloglossia: 8-11mm

Class III: Severe Ankyloglossia: 3-7mm

Class IV: Complete Ankyloglossia: less than 3 mm.

Pioneers in the field of Periodontology and maxillofacial surgery have suggested many techniques to manage patients with ankyloglossia. Techniques include the use of surgical blade, bipolar diathermy, and lasers. In recent years, lasers have gained much importance due to certain advantages associated with it such as excellent wound healing along with hemostasis and reduced postoperative pain.^{6,7}

Case report

A 34 year old male reported to the department of periodontics with the chief complaint of difficulty in speech and complete protrusion of tongue. On general examination of patient was normal. Medical history was non-contributory. On oral examination, the individual was diagnosed with ankyloglossia and was classified as class- II ankyloglossia by utilizing Kotlow's assessment. During the clinical examination, patient was asked to perform protrusion and lateral movements of his tongue and restrictions on its functions and movements were noted. The base and tip of the tongue insertion made the adequate protrusion difficult and occasioned a "V" fold on it (Figure 1).

Procedure

Patient was advised for complete blood investigations. Initial scaling and root planing was performed. Informed consent was obtained from patient. 980nm diode laser was used for lingual frenectomy. The procedure was performed under local anesthesia with 2% lignocaine hydrochloride and 1:80,000 adrenaline. All laser safety precautions were taken including wearing protective glasses and high vacuum suction. The laser parameters used was 1 W continuous wave. Activated laser tip was placed in contact mode for ablation of lingual frenum (Figure 2). Post-operative instructions were given to patients to have soft diet. To avoid post-operative pain and discomfort, antibiotics were prescribed for three days. Analgesics were given as need. Patient was asked to perform tongue exercises for four to six weeks under the guidance of speech therapist to enhance the tongue movements and to reduce the potential for scarring. Postoperativemeasurement was taken to record and measure the improvement in results (Figure 5).

Figure 1. Preoperative view



Figure 2. Activation of diode laser





Figure 3. Immediate postoperative



Figure 4. 1 month postoperative view



Figure 5. 6 month postoperative view

Discussion

Tongue-tie is uncommon condition that affects speech, chewing and social well-being of patient. The exact cause of ankyloglossia is unknown, although it is likely to be due to abnormal development of mucosa covering the anterior two third of tongue. Ankyloglossia was also found associated with certain rare syndromes like Van der Woude syndrome⁸, X-linked cleft palate syndrome, Opitz syndrome⁹, Kindler syndrome¹⁰ and Floating-Harbor syndrome.¹¹ However, the majority of ankyloglossia cases occur individually without any systemic manifestations.

Early diagnosis and prompt intervention has given satisfactory results. There are several techniques which can be considered for lingual frenectomy like conventional (surgical), electrocautery and lasers. Laser therapy is emerging as boon for soft tissue surgical procedures because of its advantages like:¹²

1. Treatment can be with minimal or no anesthesia.
2. Soft tissue cutting is faster and efficient giving bloodless and clear operating field.
3. No need of suture or periodontal pack.
4. No need of analgesics and antibiotics as lasers are bactericidal in nature.

5. Wound contraction or scarring is decreased or eliminated.

In the present case report, 980 nm diode laser was used for lingual frenectomy. Chromophore of diode laser is haemoglobin and hence laser beam is quickly absorbed by tissues leading to ablation and subsequently better hemostasis, visibility and precision in work.¹³ The length of the free tongue improved significantly from 10 mm preoperatively, to 18 mm post-operatively. Laser frenectomy resulted in minimal intraoperative and postoperative discomfort and also faster, uneventful wound healing.

Conclusion

Frenectomy is a reliable and effective procedure which improves tongue posture and mobility effectively leading to better aid in speech and mastication. Amongst all the possible procedures, laser is simple and safe method as it requires minimal or no anesthesia, prevents bleeding and swelling and is associated with minimal postoperative pain with greater patient compliance.

Conflicts of interest

The author declares no conflict of interest.

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