Management of Ankyloglossia with Laser and Scalpel

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Corresponding Author:
Dr. Vijayalakshmi Bolla,
Associate Professor, SVS institute of Dental Sciences - India

Submitting Author:
Dr. Pradeep Koppolu,
Asst Professor, ALFARABI - Saudi Arabia

Other Authors:
Dr. Krishnajaneeya reddy Pathakota,
Professor, Sri Sai College of Dental Surgery - India
Dr. Chittineni Nirosha,
Post Graduate Student, Sri Sai College of Dental Surgery - India
Dr. Neeli Vasavi,
Post Graduate Student, Sri Sai College of Dental Surgery - India
Dr. Surendra Reddy Munnangi,
Associate Professor, SVS institute of Dental Sciences - India

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Author(s): Boila V, Koppolu P, Pathakota, Nirosha C, Vasavi N, Munnangi S

Abstract

Tongue is the vital oral structure in the oral cavity that is responsible for speech articulation, deglutition and positioning of teeth. Ankyloglossia or tongue tie is the result of unusually short, tight, lingual frenum causing difficulty in breast feeding among neonates, malocclusion and gingival recession. This article reports two cases of ankyloglossia which was treated one case surgically and other case with diode laser, with uneventful healing and excellent patient satisfaction.

Introduction

Etymologically the term ankyloglossia developed from a Greek word ankylos- “crooked”, glossa - “tongue”. This term is used first in medical literature in 1960s. Wallace defined tongue as a “condition in which the tip of tongue can not be protruded ahead of the lower incisor teeth because of a short frenulum linguae, often containing scar tissue.”

1 It can be categorized in to two types- Total ankyloglossia , which is a rare condition and Partial ankyloglossia. The ankyloglossia classification based on Kotlow’s assessment as

1. Clinically acceptable, 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

Surgical correction for ankyloglossia can be 3 types depending on severity of problem, frenotomy, frenectomy and frenuloplasty.

Case 1

A 27-year-old male was reported to the department of Periodontics, with difficulty in speech, diastema in the lower central incisors and class I gingival recession in relation to 31 and 41. The general physical examination was normal. On intraoral examination, the individual found to have short lingual frenum with restricted tongue movements, Class III ankyloglossia by utilizing Kotlow’s assessment.( Figure 1, 2) Surgical frenectomy of the lingual frenum was planned. The patient was informed about the treatment procedure and informed consent was obtained.

Treatment:

The lingual frenectomy was undertaken under local anesthesia with 2% lignocaine and l: 80000 adrenaline. After anesthesia was found to be effective, a suture was used at the tip of the tongue to stabilize it. A curved hemostat was inserted to the bottom of the lingual frenum at the depth of the vestibule and clamped in position. With the help of No 15 blade incisions made in the superior and inferior aspect of the hemostat and the frenum was removed.

The wound edges were approximated with (4-0) black braided silk sutures for the tissues to heal by primary intention thereby minimizing the scar tissue formation (Figure 3).

CASE 2

A 24 year old male patient reported in the Department of Periodontics, with a complaint of difficulty in speech. On intraoral examination, it was found that the individual had partial ankyloglossia and was classified as class III according to Kotlow’s assessment and was able to protrude the tongue up to the lower lip. Lingual frenectomy with DIODE laser (PICASO 810 nm) was planned and patient was informed about the procedure (Figure 4).

Treatment

After application of topical anesthesia, few drops of lignocaine were injected in the frenum. After stripping the fiber optic wire tip, the tip was initiated by firing it into a piece of cork at 1.5 Watt in a continuous mode. (Figure 5) The diode laser was applied in a contact mode with focused beam for excision of the tissue. 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. No suturing was done.

Results

The conventional blade surgical patient was prescribed antibiotic Cap. Amoxicillin (500 mg) thrice a
day for 3 days and non-steroidal anti-inflammatory drug Tab. Ketorolac DT (10 mg) thrice a day for 3 days was prescribed to prevent post-operative infection and pain. The post-operative period was uneventful with no delayed hemorrhage. Sutures were removed after 1 week. The laser surgical patient was prescribed only analgesics and mouth rinse. One week postoperative showed good healing in both cases. (Figure 6)

Both the patients were given post-surgical instructions. The following exercises were advised: 1) Extend the tongue up towards the nose, then down towards the chin 2) Open the mouth widely and touch the front teeth with the tongue when the mouth is still wide open, 3) Close the mouth and poke the tongue into the left and right cheek to make a lump: for 3 to 5 minute bursts, once or twice daily for 3 or 4 weeks post-operatively.4

Discussion

In many individuals, ankyloglossia is asymptomatic; the condition may resolve spontaneous, but in some individuals, it may require surgical intervention frenotomy, frenectomy or frenuloplasty for their tongue-tie. The prevalence of ankyloglossia reported in the literature varies from 0.02% to 4.8%.5 The etiology of ankyloglossia is unknown, can be part of some unusual syndromes such as X-linked cleft palate syndrome and van der Woude syndrome.3

Speech problems can arise when there is restricted mobility of the tongue due to ankyloglossia. The difficulties in articulation are evident for consonants and sounds like “s, t, d, z, j, zh, ch, th” and it is especially difficult to roll an “r”.6

The problems during blade surgical procedures are close proximity to the ducts of the submandibular glands, coupled with a richly vascular floor of mouth and hypermobility of the tongue.7

Diode lasers are compact and portable in design, with efficient and reliable benefits for use in soft tissue oralsurgical procedure. Treatment of ankyloglossia using diode laser is more efficient, innovative, gentle, less traumatic, as well as precision.8 The thermal effect of laser seals the capillaries and lymphatics, which also reduce the post operative bleeding and edema. In addition, sterilization of wound by laser reduces the need for post operative care and antibiotics. The advantages of lasersurgery over scalpel is the dry surgical field and bettervisualization, tissue surface sterilization and reduction in bacteremia, lesser immediate post operative complications like decreased swelling, edema, decreased pain, faster healing response, and increased patient acceptance.9

Conclusion

Treatment of ankyloglossia is safe procedure and it provides benefit to patient in terms of speech and tongue movements. Laser is always safe and better option for treating ankyloglossia when compare to surgical treatment

References

Illustrations

Illustration 1

Illustration 1: Preoperative photograph showing ankyloglossia

Illustration 2

Illustration 2: Pre-operative view showing extension of tongue
Illustration 3

Illustration 3: Operative view

Illustration 4

Illustration 4: Laser settings
Illustration 5

Illustration 5 : Excision of tongue tie using laser

Illustration 6

Illustration 6 : Post-operative view 6 months showing adequate extension of tongue