



Management of Ankyloglossia by Frenectomy- A Case Report

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Authors' contributions

This surgery was carried out by authors MS and AS. Author PKS wrote the first draft of the manuscript. Authors CT and SV managed the literature searches. Author TT managed the final draft. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Background: The tongue is an important oral structure that is responsible for speech, swallowing, positioning of the teeth, and taste. Ankyloglossia or "tongue-tie" is due to an abnormally thick and shortened lingual frenum causing difficulty in speech articulation and breast-feeding because of limited tongue movement. Management of this condition has been controversial with different

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specialties having opposing views regarding its clinical significance and management.

Surgical Procedure: A 17 year-old-male with ankyloglossia and a chief complaint of difficulty with underwent frenectomy under local anaesthesia using a standard surgical technique that was followed with speech therapy.

Results: One month follow up showed marked improvement in tongue movements with no signs of recurrence.

Conclusion: Early diagnosis and prompt surgical intervention generally helps the patient to avoid long-term effects of these problems. (The patient was 17 years old so there was no early diagnosis and surgical intervention as he needed speech therapy.) A better conclusion might be that early childhood treatment might avoid difficulty with speech and the need for therapy later in life.

Keywords: Ankyloglossia; frenectomy; frenotomy; frenuloplasty; tongue-tie.

1. INTRODUCTION

The term 'ankyloglossia' originates from two Greek words 'agkilos' (curved) and 'glossa' (tongue). Ankyloglossia "tongue tie" 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 a short *frenulum linguae*. This can vary from a thin elastic membrane to a thickened, white non-elastic tissue [2].

In most patients it is asymptomatic, may spontaneously resolve, or affected individuals may learn to compensate for reduced lingual mobility. On the other hand, a number of patients can benefit from the surgical release of a tight frenulum. Therefore, patient education regarding the long-term effects of ankyloglossia is of utmost importance so that they can make a choice for the best possible therapy [3]. Prevalence of ankyloglossia varies from 0.1% to 10.7%. Literature reports the prevalence in neonates (1.72% to 10.7%) to be higher than in children, adolescents, or adults (0.1% to 2.08%) [4].

1.1 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 [5] observation, ankyloglossia can be of four types depending on clinically available free tongue (protrusion of tongue):

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.

2. CASE REPORT

A 17-year-old male reported in the Department of Periodontics and Implantology, Babu Banarasi Das College of Dental Sciences, Lucknow, India with a difficulty in speech since birth. Intraoral examination revealed Class II ankyloglossia. He was not able to protrude the tongue up to lower lip (Fig. 1). No malocclusion or recession was present lingual to mandibular incisors. Ethical clearance was taken from the Institutional Ethics Committee, according to the Helsinki Declaration of the 1975, as revised in 1983. It was decided to perform lingual frenectomy under local anaesthesia. After informed consent was obtained from the patient, 2% lignocaine HCL with 1:80,000 adrenaline was administered a curved hemostat was engaged to the bottom of the frenulum and clamped at the depth of vestibule. Using a #15 scapel blade incisions at the superior and inferior aspects of the hemostat were made and joined at the tip of the hemostat. Then the intervening frenum was removed and a diamond shaped wound was obtained. Persisting muscle fibers were removed with the help of a hemostat to achieve a good tension free primary closure of the wound and minimize scar tissue formation. Wound edges were approximated with 4-0 silk suture (Mersilk, Ethicon, Johnsons and Johnson, Baddi, H.P., India) (Fig. 2). Amoxicillin (500 mg) thrice daily for 5 days and non-steroidal anti-inflammatory drug Ketorolac DT (10 mg) thrice a day for 5 days was prescribed. Pain and swelling was present for first three post-operative days but eventually subsided thereafter with the continuation of medications. A normal slough over the surgical site was present one week

post-operatively (Fig. 3). Tongue exercises were begun after one week. Complete healing was noted at one month post-operatively (Fig. 4).

To achieve significant speech improvement, oral kinesthesia (ability to feel the part and how they are moving) and Diadochokinesis (DDK) (the ability to perform rapid, alternatively movements) was started without which no significant improvement of speech can be achieved [3].

Other specific exercises to be done are:

1. Stretching of the tongue toward the nose and then downwards.
2. Open the mouth widely, and try to touch the upper front teeth with mouth still wide open.
3. Licking of the upper lip from one side to other, and vice versa.
4. Repeat the same on your lower lip.
5. Close the mouth and poke both the cheeks as far as you can.



Fig. 1. Patient not able to protrude the tongue upto lower lip



Fig. 2. The wound edges were approximated with 4-0 black silk suture

3. DISCUSSION

Ankyloglossia is an uncommon congenital oral anomaly, possibly genetically transmissible although it is unknown which genetic component regulates the phenotype and penetrates in the affected patient. Ankyloglossia is associated a few rare syndromes are Kindler syndrome [6], Van der Woude syndrome [7], X-linked cleft palate syndrome [8], and Opitz syndrome [9], however, the majority of the affected individuals do not suffer from any of these congenital anomalies. Speech problems are evident because of limited tongue mobility, especially in the articulation of consonants like t, z, s, d, l, ch, j, zh, th, d [10]. In normal range of motion, an individual should be able to protrude the tongue outside the mouth without clefting, can sweep the upper and lower lips easily without streaming. On retrusion, there should be no blanching of the tissues lingual to the lower anterior teeth, or should there be any diastema created between the lower incisors. The normal range of clinically acceptable free tongue is greater than 16 mm. Because of the hypomobility associated with ankyloglossia, the tongue rests in a lower position resulting in a forward and downward pressure favoring the development of a prognathic mandible and a hypo-developed maxilla. This hypothesis, however, is mainly based on a single observation and speculative interpretations. There is limited evidence that tongue tie represents a co-factor in the development of malocclusion, especially class III [11]. More multicenter controlled trials are required to establish a clear correlation between ankyloglossia and malocclusion.



Fig. 3. One week postoperative

Appropriate management of ankyloglossia with timely surgical therapy, followed by speech

therapy as indicated, delivers good results, in a shorter time span than usually expected. With the increasing acceptability of surgical intervention by various disciplines any individual diagnosed with tongue-tie, be it infant, child, or adult can be treated early and not have to undergo a “wait and watch” period [12].



Fig. 4. One month postoperative

Timely surgical intervention to correct ankyloglossia at early age reduces long-term complications. Various surgical approaches are used. Frenotomy involves relocation of the lingual frenulum. Frenectomy is complete excision of the frenum. Frenuloplasty, on the other hand, involves any of the various methods used to free the tongue and correct the anatomic situation. However the literature lacks sufficient information to favour any of these three main techniques [12].

A frenectomy, as performed in this patient, is a more invasive and difficult procedure to be performed on younger children, although the results are more predictable and there is a lower recurrence rate. Literature lacks conclusive parameters in regards to the timing of a frenectomy. However, ideal time for surgery to be performed is prior to the development of abnormal speech and swallowing patterns. When performed on older individuals, referral to a speech therapist is necessary to help establish normal tongue functions. Frenectomy can be performed using one or two hemostats. In cases where there is a short frenulum, limited space restricts the use of two hemostats; therefore, only one hemostat, clamped at the superior aspect of the frenulum will guide the incision at the ventral aspect of the tongue. When making the second incision at the inferior aspect of the tongue, care

should be taken to avoid injury to the sublingual glands and submandibular ducts.

Local anesthesia is often used when you have a cooperative patient (as in this case report). However, sedation or general anaesthesia may be necessary when treating an infant or young child.

Other therapies used to correct ankyloglossia are use of LASERS and Orofacial myofunctional therapy [13].

4. CONCLUSION

If severe/complete ankyloglossia is present, there is usually a limitation of tongue protrusion, elevation, and problems with speech. Early diagnosis and prompt surgical intervention generally helps the patient to avoid long-term effects of these problems.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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