Unleash the Speech-Tongue Untied: A Case Report

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Abstract A congenital condition known as ankyloglossia, often known as tongue-tie, is characterized by an excessively small lingual frenum that limits the tongue's range of motion. It can cause a range of concerns, such as difficulty with newborn feeding, speech challenges, and many mechanical and social problems since the tongue cannot protrude. Regardless of age, ankyloglossia should be managed while taking into account the risk-benefit analysis. In this article, the surgical treatment of a 20-year-old patient with ankyloglossia, limited tongue mobility, and speech problems is described. Surgery to remove the lingual frenum is followed by speech therapy and tongue-training exercises to effectively restore the tongue. Six months after surgery, the patient experienced uncomplicated recovery and expressed satisfaction with the treatment.

Keywords: Tongue-tie, Ankyloglossia, Adolescent, Rehabilitation, Speech

INTRODUCTION

Ankyloglossia comes from a Greek term that means skalios (curved) and glossa (tongue)1,10. It's a congenital condition, which occurs as a result of fusion between the tongue and the floor of the mouth. At the time of birth, the tongue is attached to the frenum extending to the tip. Gradually, the tongue grows longer and thinner, and therefore the frenum attachment often recedes to a lower position. The term ankyloglossia was first employed by Wallace in the 1960s to define tongue-tie as "A condition in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short frenulum lingua, often containing scar tissue''2.

Partial ankyloglossia refers to congenital shortness of the lingual frenum or frenal attachment extending to the tip of the tongue, binding the tongue to the bottom of the tongue and preventing its extension3. In ankyloglossia, there's a restriction of tongue movement and eversion of lateral borders. Problems related to ankyloglossia are difficulties in breastfeeding among neonates, malocclusion, gingival recession, improper oral hygiene, and speech difficulties in pronunciation of consonants like t, d, n, l, and r. Many methods are proposed to treat ankyloglossia. Traditional frenectomy, Z-plasty, electrocautery, and laser usage are a number of these methods.

This article is aimed to present a case report on ankyloglossia, its surgical treatment followed by tongue training exercise and speech therapy in a 20-year-old male patient and review the available literature.

CASE REPORT

A 20 -year-old male patient reported to the Department of Periodontology & Oral Implantology, RUHS College of Dental Sciences, Jaipur with the chief complaint of difficulty in speech since childhood. His medical and family history was insignificant & belonged to the middle socioeconomic strata. Intraoral examination revealed class II ankyloglossia according to Kotlow's classification (Fig1). Routine Hematological laboratory investigations were found to be normal.

Fig 1 Preoperative

A lingual frenectomy was planned with a scalpel and blade and informed written consent was taken from the patient. The area was anesthetized by the application of 2% topical anesthesia, and bilateral local infiltration in the lingual mucosa adjacent to the lingual frenum and into the tip of the tongue. A traction suture was placed at the tip of the tongue, with which the tongue was firmly retracted(Fig 2). First, a hemostat was inserted at the depth of the vestibule and clamped into position followed by giving two incisions at the superior and inferior aspects of the hemostat. This way the intervening frenum was removed. Muscle fibers were then removed with the help of a hemostat (Fig 3). The wound edges were then approximated with 4-0 black silk sutures (Fig 4).

Fig 2 Traction suture placed

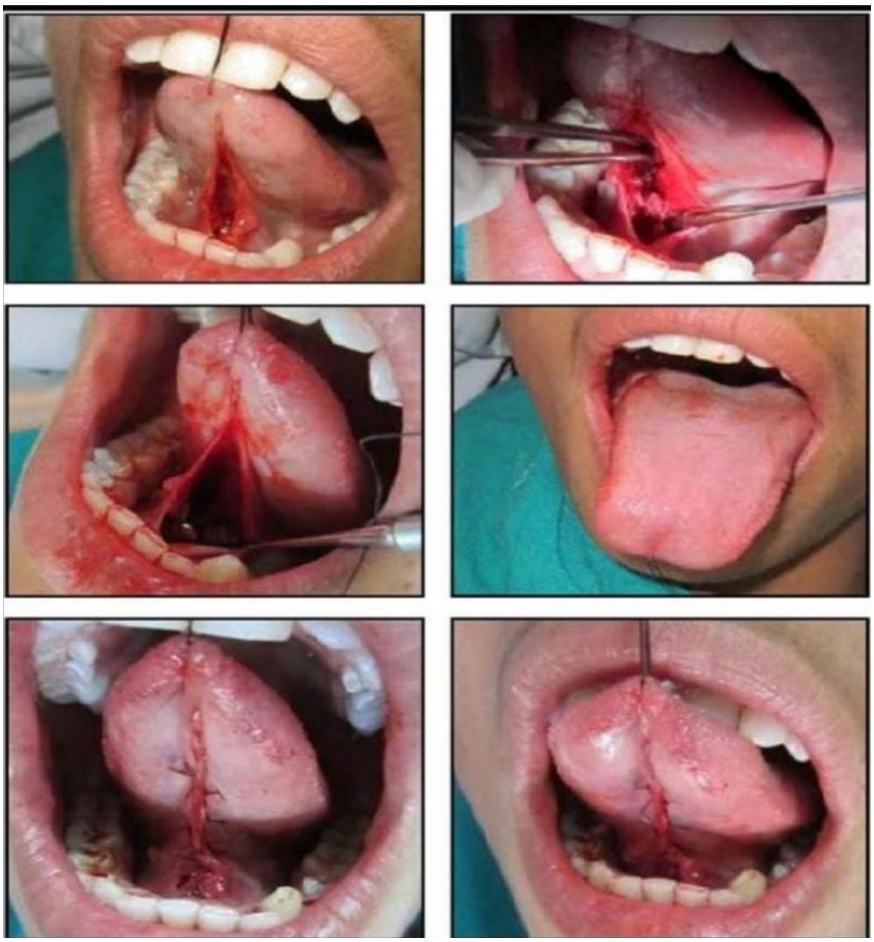

Fig 3 Intraoperative

Fig 4 Depicting Surgical removal of frenum with suture placed

To prevent post-operative discomfort Diclofenac 50mg with 325mg of Paracetamol was prescribed three times a day for 3 days. To prevent infection Amoxicillin with Clavulanic acid 625 mg bd for 5 days was prescribed. The patient was instructed to rinse with 0.2% Chlorhexidine gluconate solution twice daily for 14 days to aid in plaque control. Sutures were removed after 7 days. Swelling and pain were present on the 1st postoperative day, which subsided with the continuation of medication and. The patient was advised tongue exercises to improve tongue mobility and speech of the patient after 1 week One-month follow-up showed uneventful healing at the surgical site (Fig 5).

Fig 5 Healing with no scar formation after 1 month

There was complete healing along with increased tongue movement after 3- and 6-weeks follow-up. Speech difficulties were improved following speech therapy.

DISCUSSION

Ankyloglossia is a congenital condition with having 5% prevalence[10]. A male preponderance is noted with a 2:1 ratio. Diagnosis is an important step before any kind of surgical intervention. Ankyloglossia can cause difficulty in speech, deglutition & mastication & loss of confidence in individuals. Such patients can have trouble with letters that require help from the tongue tip like s, n, t, d, j, sh, ch, th, and dg. Also, forceful tongue thrust against the anterior mandible produces mandibular prognathism due to a lack of free movement of the tongue. Gingival recession can occur on the lingual aspect of lower anterior teeth.

A frequently used classification of ankyloglossia was given by Kotlow. Free tongue is defined as the length of the tongue from the insertion of the lingual frenum into the base of the tongue to the tip of the tongue. The clinically acceptable normal range of free tongue is greater than 16 mm. According to Kotlow's observation, ankyloglossia can be of four types depending on the clinically available free tongue (protrusion of tongue)[4,8].

- 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 anatomy & development of the lingual frenum should also be addressed. The root of the tongue is derived largely from hyoid arch material. Additions to the root are made from the third and perhaps the fourth branchial arches. As these processes of development continue, the body portion of the tongue gradually becomes free from the sides and the floor of the oral cavity. A median mucosal fold, which may vary in length, is left extending from the floor of the oral cavity to the undersurface of the tongue, not far from the tip. This inferior surface of the tongue is covered by smooth, thin mucosa which is reflected to the lingual or the oral side of the gingival and the floor of the mouth. When the tongue is raised and elevated, a fold of this mucosa, the lingual frenulum, can be noted in the midline. On either side of the midline, a ridge of fimbriated mucosa extends forward and medially toward the tip of the tongue. Between these ridges and embedded in the undersurface of the tongue are lingual nerves, glands, and vessels. Sometimes this attachment of the lingual frenum with the tip of the tongue restricts the movements of the tongue giving rise to the condition referred to as tongue tie. In such conditions, the aberrant lingual frenum consists of genioglossal muscle fibers.

The lingual frenulum is important in various physiologic functions of the tongue. Its length and place of attachment affect the movement of the tip in speech and mastication. Speech is affected when extension or elevation of the tip is limited or when there's an inability to touch the palate with the dorsum of the tongue. Most persons with ankyloglossia, though aware of the condition, can compensate adequately and can pronounce many

sounds properly or nearly so. There are some, however, who are unable to effect this compensation. The most common difficulty is in the production of the "s" sound off the incisal edge of the lower incisor instead of behind the incisive papilla. Other sounds that cause trouble are “t,” ‘d,” “1,” and “n”.

In the edentulous mouth, even a well-compensated ankyloglossia may require surgical correction before the construction of full dentures. The inability to raise the tongue to the roof of the mouth may prevent the development of an adult swallow and encourage the continuation of the infantile swallow, which may lead to an open bite. The lack of a free upward and backward movement of the tongue may result, in an exaggerated thrusting of the tongue against the anterior body of the mandible and produce a mandibular prognathism. Gingival recession on the lingual surfaces may occur. Mandibular prognathism and maxillary hypo development due to the low position and the forward and downward pressure applied.

It is suspected by certain authors (but not substantiated) that tongue-tie may often resolve spontaneously by late childhood[9], but in our case, the patient was 20-year-old male and tongue-tie was found to be persistent since birth. However, patient did not seek treatment until he started having social concerns regarding the condition. The patient was unable to articulate/l/,/th/,/d/and/s/,/n/and found difficulty to roll “r”.

The training exercise were started 1 week after surgery. The following exercises were advised: (1) stretch the tongue up toward the nose, then down toward the chin and repeat, (2) open the mouth widely and touch the big front teeth with the tongue with mouth still open, and (3) close the mouth and poke the tongue into the left and right cheek to make a lump: for 3–5 min bursts, once or twice daily for 3 or 4 weeks postoperatively.[5,9] Post-operative exercises following tongue-tie surgery were intended to develop new muscle movements which were restricted before surgery and encourage tongue movements related to cleaning of the oral cavity.[6]

CONCLUSION

It may take until late infancy for mechanical (not speech-related) symptoms and social issues resulting from restricted tongue motion to surface. However, for the best and most pleasant results, surgical surgery in adolescents should be followed with tongue training and speech therapy due to the functional limitation of the tongue and social shame caused by tongue-tie.

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