



Untie – The Tied Tongue

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ABSTRACT: The tongue is an important oral structure that affects speech, position of teeth, periodontal tissue, swallowing. In children, ankyloglossia or tongue tie present as a diagnostic challenge for dentists. It is a congenital anomaly characterized by an abnormally short, thick, lingual frenulum, which may be fibrous or muscular and may be complete or partial, causing a restriction in the function of tongue. The purpose of this report was to present the surgical management of a 6-year-old child having ankyloglossia associated with difficulty in speech. The treatment involved was frenectomy followed by tongue training exercise and speech therapy to functionally rehabilitate the tongue.

KEYWORDS: Ankyloglossia, Frenectomy.

I. INTRODUCTION:

Before birth, the oral frenulum is positioned in the center of the mouth by a strong cord of tissue. After birth, this lingual frenulum guides the position of erupting teeth. As the child grows, it recedes and becomes thin. In some children, the frenulum is especially tight, or it fails to recede and may cause tongue immobility¹. The term ankyloglossia originates from the Greek words Agkilos (curved) and glossa (tongue)². Wallace defined ankyloglossia as a congenital condition in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short frenulum linguae, often containing scar tissue which may restrict tongue tip mobility and can lead to various problems in children, such as difficulty in breastfeeding, speech impediments, poor oral hygiene³. Treatment includes the surgical approach, like frenotomy and frenectomy and frenuloplasty.

ETIOLOGY & EPIDEMIOLOGY:

Ankyloglossia in infants has an incidence rate from 25% to 60%, leading to difficulty in breastfeeding. Using different diagnostic criteria, various studies found a prevalence of ankyloglossia between 4 and 10%, and tongue-tie incidence varies from 0.2% to 5% depending on the population examined. It is more common in males, with a male to female ratio of 2.5 : 1.0⁴. Although there is some literature that ankyloglossia can be a genetically transmissible pathology, but the exact etiopathogenesis is unknown and also found to be associated in cases with some rare syndromes such as X-linked cleft palate autosomal dominant or recessive trait, Kindler syndrome, Vander Woude syndrome and Opitz syndrome, orofacial digital syndrome, Beckwith Weidman syndrome⁵.

CASE REPORT:

A 6-year-old child reported to the department of Pediatric and Preventive Dentistry with a chief complaint of difficulty in articulation of sounds like "s, z, t, d, l, j, zh, ch" and also difficult to roll an "r" with impaired tongue mobility since birth. The ENT and general physical examination were normal. There was no contributory medical or family history. On extraoral examination, there were no significant findings. On intraoral examination, a short lingual frenum with restricted tongue movements was observed [Figure 1]. He was unable to touch the roof of his mouth with the tip of the tongue when the mouth was open and was diagnosed with Class IV ankyloglossia according to Kotlow's classification⁶ [Figure 2] and appearance score and the functional score of 5 and 8 according to Hazelbaker assessment tool⁷ respectively. Surgical frenectomy of the lingual frenum was planned. The parent of the child was informed



about the treatment procedure, and informed consent was obtained.

CASE MANAGEMENT:

The child was advised to rinse the mouth with a chlorhexidine mouthwash before the surgical procedure. The lingual frenectomy was undertaken under local anesthesia with 2% lignocaine and 1:200,000 adrenaline using the scalpel method [Figure 3]. The tongue was ligated with a suture material at the tip and raised for clear visibility of insertion of frenum and to stabilize the tongue movements during incision. A curved hemostat was inserted to the bottom of the lingual frenum at a depth of the vestibule and clamped into position, followed by giving two incisions at the superior and inferior aspect of the hemostat. Then the intervening frenum was excised, and produced a diamond shaped wound. We released the muscle fibers with the help of the haemostat to achieve a tension-free closure of the wound edges, after which 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 4]. Analgesics and antibiotics were prescribed. The tongue training exercise was advised to the patient for 3 or 4 weeks postoperatively. Thereby, the patient was referred to the speech therapist for correction of speech defect. Other specific exercises to be done were as follows⁸:

1. Stretching of the tongue toward the nose and then downward.
2. Open the mouth widely, and try to touch the upper front teeth with the mouth still wide open.
3. Licking of the upper lip from one side to the 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.

As the patient's chief complaint was a speech problem, surgical management of the tongue-tie was done first. Full mouth rehabilitation of the patient was done after 3 months.

CLINICAL OUTCOME:

The postoperative period was uneventful, with no delayed hemorrhage. Sutures were removed after 1 week which showed no scar tissue formation [Figure 5]. There was no postoperative complication associated with the procedure such as infection, bruising on the floor of the mouth, submandibular gland swelling, lingual paraesthesia, and numbness of the tongue-tip during the next week of the surgery.

Using Kotlow's criteria⁶ and Hazelbaker's assessment tool⁷, preoperative and postoperative scores were recorded. Postoperatively, significant improvement in the prognosis of symptoms of ankyloglossia was observed. The speech also improved significantly with free movement of tongue, which increased from 3 mm to 14 mm respectively.

II. DISCUSSION:

Optimal management of ankyloglossia includes timely and appropriate surgical intervention, which reduces the risk of latent complications, followed by speech therapy depending on the patient's history of speech, feeding, or mechanical/social difficulties⁹. The subject of ankyloglossia has been controversial, having widely different views regarding its significance and management.

EFFECTS OF TONGUE TIE ON OROFACIAL STRUCTURES:

1. In ankyloglossia, there is limited movement of the tongue, which leads to difficulties in articulation for sounds and consonants "s, z, t, d, l, j, zh, ch, th, dg" and it is especially difficult to roll an "r"¹⁰.
2. The tongue is in a low position due to limited mobility and may cause forward and downward pressure favoring the development of mandibular prognathism with maxillary hypo development, which is mainly based on single observation and speculative interpretations, and there is limited literature that tongue-tie represents a co-factor in the development of malocclusions, especially Class III malocclusion¹¹.
3. If there is no feeding difficulty in the infant, it would be best to have a wait-and-see approach since the frenulum naturally recedes during the process of an individual's growth between six months and six years of age. After completion of growth and also during infancy, if the individuals have a history of speech, feeding, or mechanical/social difficulties, surgical intervention should be carried out¹².
4. Food debris that is not being removed by the tongue action of sweeping the teeth and spreading of saliva causes dental caries.
5. Malocclusion like open bite due to thrust created by being tongue-tied, spreading of lower incisors with periodontitis, and tooth mobility due to long-term tongue thrust are associated problems⁴. Surgical techniques can be classified into three procedures. Frenotomy is a simple cutting of the frenulum, and it is a conservative, simple and quick procedure that may be performed during the



initial consultation. The limitation of this technique is the possibility of recurrence and the need to perform complementary procedures. Frenectomy is defined as complete excision, i.e., removal of the whole frenulum, and is more invasive and difficult to be performed in young children, although the results are more predictable, decreasing the recurrence rate. Frenuloplasty involves various methods to release the tongue-tie and correct the anatomic situation. There is no sufficient literature concerning surgical treatment options for ankyloglossia to favor one of the three main techniques¹³. Several conservative, as well as surgical options, also exist for the management of tongue-tie which include observation, speech therapy, otolaryngotherapy, frenotomy, frenectomy, Z-plasty, and laser frenectomy¹⁴. Although, the literature suggests that surgical interventions are absolutely safe at any age, including infants, toddlers, and adults, but strictly requires post-surgical speech therapy to achieve pleasing results.

Although frenectomy is a more invasive and difficult procedure to be performed on younger children, it was the treatment of choice in our patient as it the ideal time for surgery to be performed before the development of abnormal speech and swallowing patterns. However, when performed on older individuals, referral to a speech therapist is necessary to help establish normal tongue functions¹⁵.

III. CONCLUSION:

Ankyloglossia is a serious oral problem that affects quite a large number of infants and children. It is perhaps interesting that such a seemingly simple condition can cause such controversy and diversity of opinions. However, it is important that accurate information and guidance is given to parents about the long-term effects of tongue-tie so that they may make a choice regarding possible therapy. Although some young children with ankyloglossia will have normal speech production, a significant percentage may experience feeding, speech, and/or social/mechanical difficulties related to reduced tongue mobility. Surgical release of the frenulum is a safe and efficacious procedure, typically resulting in improved tongue mobility and often speech articulation

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Figure 1: Pre operative view showing Ankyloglossia



Figure 2: Pre operative view showing Kotlow's Class IV Ankyloglossia



Figure 3: Incision using #15 Surgical blade



Figure 4: Post operative photograph



Figure 5: Post operative photograph after 1 week