

**Surgical Excision of Tongue Tie: A Case Report**

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**Type of Publication:** Case Report

**Conflicts of Interest:** Nil

**Abstract**

The tongue is an important oral structure that affects speech, position of teeth, periodontal tissue, nutrition, swallowing, nursing, and certain social activities. Ankyloglossia (tongue tie) is congenital anomaly characterized by an abnormally short, thick, lingual frenum which affects movement of tongue. This study is about a case series of ankyloglossia subjected to surgical correction by frenectomy with various procedures. Two cases were treated with electrocautery, one case with conventional scalpel technique. 1 week and 1 month post-operative follow-ups were done. Manipulation of tissues was better in electrocautery techniques when compared with scalpel. Post-operative complication of swelling and pain was seen in scalpel technique whereas it was largely uneventful in other technique. Electrocautery offer a safe, effective, acceptable and impressive alternative for frenectomy operations.

**Keyword :** Ankyloglossia, frenectomy, conventional scalpel technique, electrocautery

**Introduction**

The tongue is an important organ that affects speech, position of the teeth, periodontal tissue, nutrition, and swallowing [1]. Most of us think of tongue tie as a situation we find ourselves in when we are too excited to

speak. Tongue tie is the nonmedical term for a relatively common physical condition that limits the use of the tongue, which is actually called as ankyloglossia [2].

Before birth, a strong cord of tissue guides the development of oral frenulum which is positioned in the centre of the mouth. After birth, this lingual frenulum continues to guide the position of erupting teeth. As the child grows, it recedes and becomes thin. This frenulum is visible when we look at the mirror under the tongue. In some children, the frenulum is especially tight, or it fails to recede and may cause tongue immobility [2]. Hence ankyloglossia is defined as a developmental anomaly of the tongue characterized by an abnormally short, thick lingual frenum resulting in limitation of tongue movement[3], or in simple terms, tongue tie is present when the lingual frenulum is attached close to the tongue tip, resulting in reduced tongue movement.

Various studies using different diagnostic criteria found a prevalence of ankyloglossia between 4 and 10%[4,5], and the incidence of tongue tie varies from 0.2% to 5% depending on the population examined<sup>3</sup>. It is more common in males, with male to female ratio of 2.5 : 1.0[5]. Ankyloglossia in infants has an incidence rate from 25% to 60%, and its presence can lead to difficulty

in breastfeeding ranging from failure to thrive to even refusing the breast[4,6-8].

Ankyloglossia can also be a part of certain rare syndromes like Smith-Lemli-Opitz syndrome, orofacial digital syndrome, Beckwith Weidman syndrome, Simpson-Golabi-Behmel syndrome, and X-linked cleft palate with autosomal dominant or recessive trait[5,9-10].

#### **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. 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 clinically available free tongue (protrusion of tongue).

- 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).

#### **Physiological functions and limitations**

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 is an inability to touch the palate with the dorsum of the tongue. Most persons with ankyloglossia, though aware of the condition, are able to 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 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," "l," and "n"

- In the edentulous mouth even a well-compensated ankyloglossia may require surgical correction prior to the construction of full dentures

- Inability to raise the tongue to the roof of the mouth may prevent development of an adult swallow and encourage 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

- Mandibular prognathism and maxillary hypo development due to the low position and the forward and downward pressure applied.

#### **Case Report**

##### **Frenectomy using scalpel**

One case of frenectomy was performed with scalpel using blade no. 15. The procedure was carried under local anesthesia with 2% lignocaine hydrochloride. 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 aspect of the hemostat. This way the intervening frenum was removed. Muscle fibers were then removed with the help of hemostat. The wound edges were then approximated with 3-0 black silk sutures. Analgesics and antibiotics were prescribed. Swelling and pain was present on the 1st postoperative day, which subsided with the continuation of medication. One week post-operative image showed the formation of slough over the operated site (extending along base of the tongue and floor of the mouth) indicating the process of healing. Patient was advised tongue exercises after 1 week. One month post-operative image shows complete healing.



Figure 1 : Pre-operative view showing ankyloglossia



Figure 2: Completion of frenectomy with scalpel



Figure 3: Post-operative view 1 week



Figure 4: Post-operative view 1 month

### Frenectomy using electrocautery

Two cases of lingual frenectomy were performed using electrocautery. Frenum was held with hemostat at the depth of the vestibule and two incisions were placed using

needle electrode. Muscle fibers were then separated using loop electrode. Coagulation was achieved by using ball electrode. Immediate post-operative views showed arrest of bleeding and no requisite for sutures. Antibiotics and analgesics were prescribed. One week post-operative view showed presence of slough in the operated site indicating healing process. One month post-operative view showed complete healing of tissues.

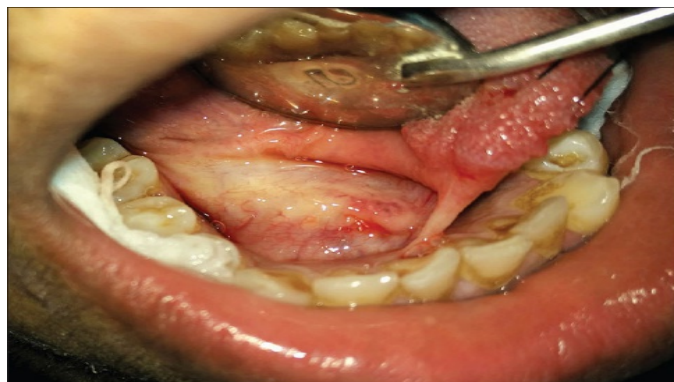


Figure 5: Pre-operative view showing ankyloglossia

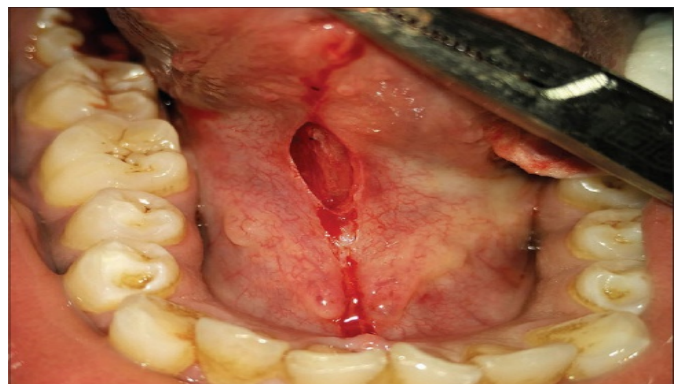


Figure 6: Completion of frenectomy with electrocautery

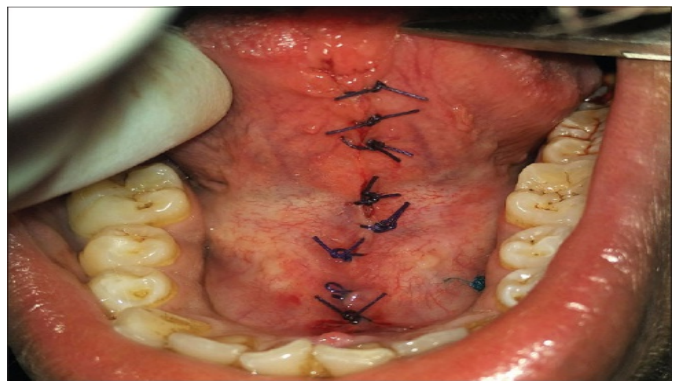


Figure 7: Post-operative view 1 week

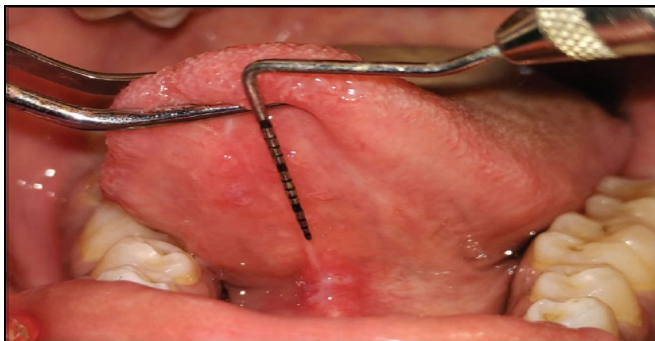


Figure 8: Post-operative view 1 month

### Discussion

Attachment of tongue to the floor of the mouth often leads to speech problems due to limited mobility of the tongue. However, it should be recognized that a slight difference in pronunciation cannot always be diagnosed as a speech problem. There are various controversial beliefs regarding the causal relationship between ankyloglossia and speech defect. Many authors have disputed against the belief that tongue-tie affects speech. Certainly, children with ankyloglossia are often found to have no speech problems. It is therefore recommended that frenulectomy is only considered as part of the management of speech problems when speech is significantly and noticeably affected and consistent with tongue-tie.

The difficulties in articulation are evident for consonants and sounds such as “s, z, t, d, n, l, j, zh, ch, th, dg,” but most difficulty is found in production of lingual-alveolar sounds (particularly/l/) and interdental sounds (voiced and voiceless/th/) because the tongue tip needs to be maximally elevated (up to the alveolar ridge) for the production of /l/ and maximally protruded (up to the lingual surface of the maxillary incisors) for production of /th/. Tongue-tie could be considered a contributing factor if one cannot produce these sounds in the presence of all other speech sounds being produced normally. Therefore, in evaluating the effect of ankyloglossia on speech, it is important to focus on lingual-alveolar sounds. In this case report, a series of three cases of ankyloglossia

were subjected to surgical correction by frenectomy procedure. For two cases, surgical excision of lingual frenum was performed with electrocautery. The remaining one cases underwent surgical excision. As it is evident from the literature, the manipulation of tissues was better in procedure with electrocautery. Bleeding was less pronounced when compared to conventional scalpel method. First post-operative day showed swelling and pain in the conventional case whereas it was uneventful in electrocautery . Thus, though the approaches to the problem of not using the traditional scalpel have merits but further improvements can still be made considering the healing aspect. Healing was complete by first post-operative month. Speech therapy must include exercise for tongue such as oral kinesthesia (ability to feel the part and how they are moving) and DDK (diadochokinesis-ability to perform rapid, alternating movements) without which no significant improvement in speech will be achieved.

### Conclusion

This clinical study indicates electrocautery treatment used for frenectomy operations provides better patient perception in terms of postoperative pain and function than that obtained by the scalpel technique. Considering the above advantages, when used correctly, electrocautery offer a safe, effective, acceptable and impressive alternative for frenectomy operations.

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