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RESEARCH ARTICLE

RELEASE THE RESTRICTION: A CASE SERIES ON ANKYLOGLOSSIA

Sandeep Pimpale*, Mala Dixit, Sapna Gokul, Aparna Thakur, Rajesh Meena and Sachin Funde

Department of Periodontics, Nair Hospital Dental College, Mumbai

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ABSTRACT

Ankyloglossia or tongue-tie is a congenital anomalous condition presenting an undesirable short lingual frenum, which limits the extent of mobility of the tongue. Ankyloglossia can result in difficulty during speech and deglutition. Ankyloglossia, perhaps is not a very critical condition, but it may lead to undesirable effects such as infant feeding difficulties, speech disorders, and several social issues related to the inability of the tongue to protrude. Hence, management of ankyloglossia should be considered at any age considering the risk-benefit evaluation. Tongue being highly vascular and mobile structure, lingual frenectomy should be performed with less traumatic events to avoid undesirable post-operative complications. Here, is a case series of ankyloglossia with its management and highlighting on its outcome. This clinical study indicates that frenectomy procedures provide considerable improved tongue movements and augments the extent of its functions.

INTRODUCTION

Ankyloglossia, also known as Tongue-tie, is a congenital anomaly characterized by an abnormally short lingual frenulum, with restricted mobility of the tongue tip impairing its several functions resulting in limited ability. Wallace [(1)] was the first to use of the term Ankyloglossia in the medical literature. He defined tongue-tie as "a condition in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short lingual frenulae, often containing scar tissue." The prevalence of ankyloglossia is also higher in studies investigating neonates (1.72% to 10.7%) than in studies investigating children and adults (0.1% to 2.08%).[(2)]

Tongue-tie can vary from a thin translucent elastic membrane to a fleshy, white fibrous tissue. The severity of ankyloglossia is variable and ranges from a slight but abnormal attachment of frenum restricting little tongue movement (partial ankyloglossia) to a condition with the tongue fixed to the floor of the mouth completely (complete ankyloglossia).

Ankyloglossia is mostly asymptomatic and the state of restricted functions may resolve over time or many subjects affected with this condition may get accustomed to compensate for their decreased tongue mobility. Patients are unaware of the simple treatments available or are mostly apprehensive regarding the treatment procedure and the possible outcomes.

Patients reporting for treatment of ankyloglossia generally do not report to the clinic as long as there is no hinderance of oral functions or till they are pointed out by their colleagues, friends or relatives in any social gathering. Patients should be made aware about the possible disadvantages of ankyloglossia and the advantages of the surgical therapies like frenotomy, frenectomy and frenuloplasty so that they get benefited with the promising results of these kinds of corrective therapies.

Case Presentations

All five cases presented in this case series, reported to OPD, Department of Periodontics and implantology of the institution. Their ENT and physical examination was normal. On intraoral examination these individuals were diagnosed with class III & class II ankyloglossia by utilizing Kotlows assessment.[(3)][fig I]. The patients were under taken for frenectomy procedure under local anaesthesia.

Case 1(Figure 1A – 1F)

A 21-years old female reported to OPD with difficulty in speech and limited movement of tongue and was diagnosed with class III ankyloglossia. There was recession in relation to mandibular incisors lingually.When the patient was asked to retrude the tongue, slight blanching was seen lingual to the anterior teeth with midline diastema in lower anteriors. (Unable to protrude upto lower lip)

*Corresponding author: **Sandeep Pimpale***
Dept. of Periodontics, Nair Hospital Dental College, Mumbai

Case 2(Figure 2A – 2F)

A 24-years old female reported to OPD with difficulty inspeech and was diagnosed with class III ankyloglossia.(Able to protrude upto lower lip)

Case 4(Figure 4A – 4F)

A 30-years old male reported to OPD with difficulty in speech and was diagnosed with class II ankyloglossia.

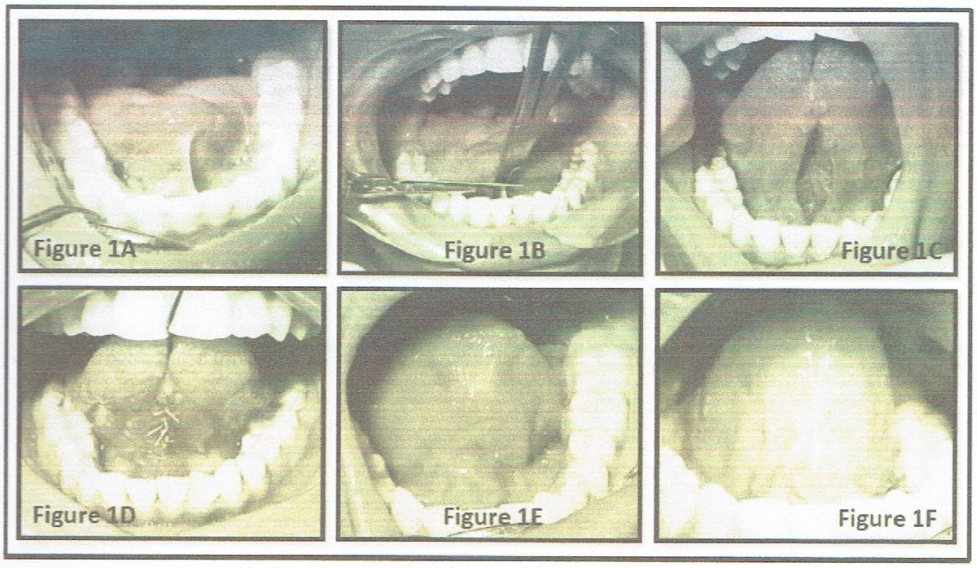

Fig 1: 1A: Class III ankyloglossia, **1B:** Incision with scalpel, **1C:** After undermining and releasing the incision, **1D:** Sutures placed, **1E:** After suture removal,**1F:** 6 months follow up

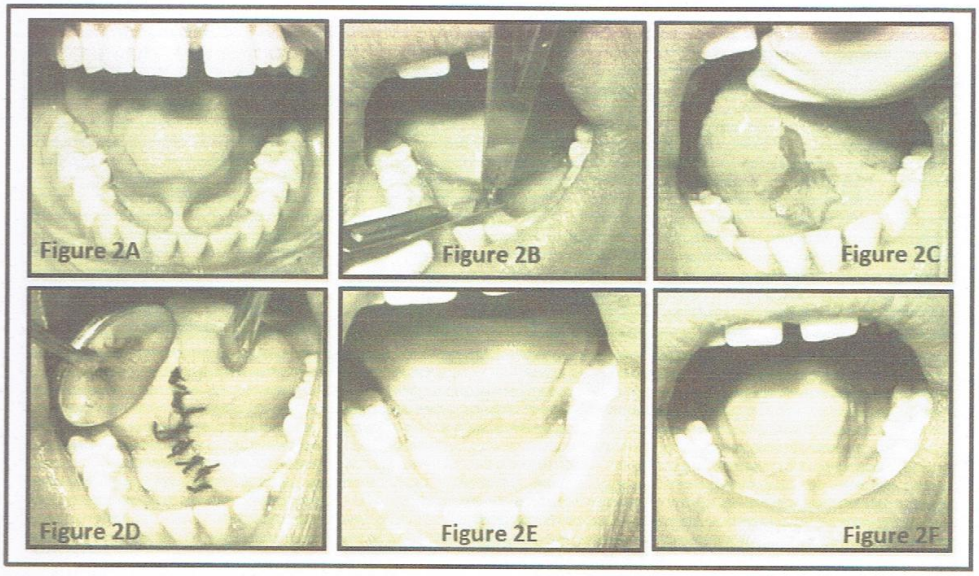

Fig 2: 2A: Class III ankyloglossia, **2B:** Incision with scalpel, **2C:** After undermining and releasing the incision, **2D:** Sutures placed, **2E:** After suture removal, **2F:** 6 months follow up

Case 3(Figure 3A – 3F)

A 22-years old male patient reported to OPD with complaint of difficulty in complete protrusion of the tongue and was diagnosed with class II ankyloglossia.

Case 5(Figure 5A -5F)

A 32-years old male reported to OPD with difficulty in speech and was diagnosed with class II ankyloglossia. (Able to protrude upto lower lip)

Treatment

Surgical procedure

The patients were informed about the treatment procedure and a written informed consent was obtained. All routine necessary blood investigations were done for the patients and were found to be within normal limits. The patients were instructed to rinse the oral cavity with 10 ml 0.2% chlorhexidine gluconate mouthwash before commencement of surgical procedure. Xylocaine with 1:80,000 adrenalines (Xylox Themis Medicare Limited; Haridwar, Uttarakhand, India) was used for local infiltration anesthesia. Approximately around 1 ml of solution was deposited bilaterally in proximity to the lingual frenum, floor of the mouth and the anterior lingual aspect of mandible

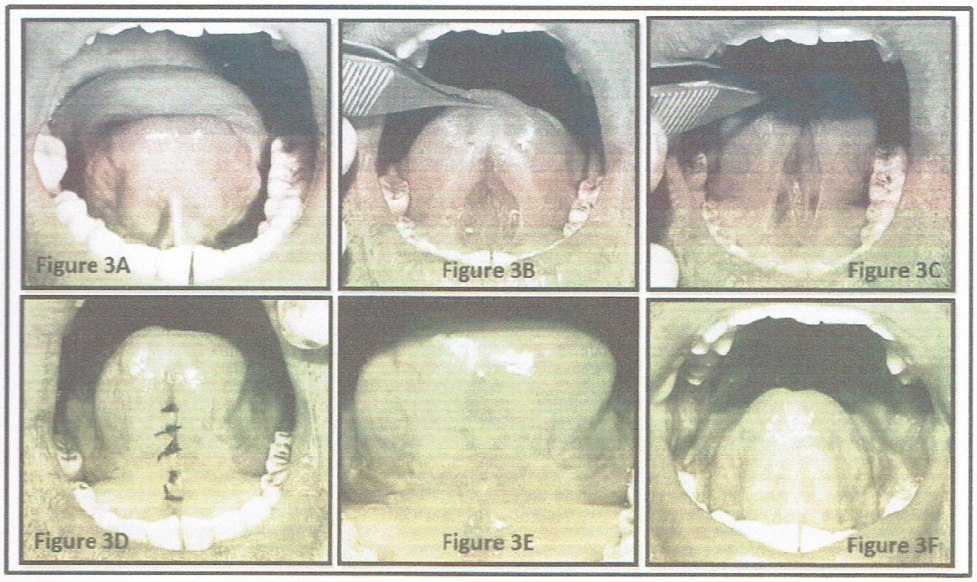

Fig 3: 3A: Class II ankyloglossia, **3B:** Incision with scalpel, **3C:** After undermining and releasing the incision, **3D:** Sutures placed,**3E:** After suture removal, **3F:** 6 months follow up

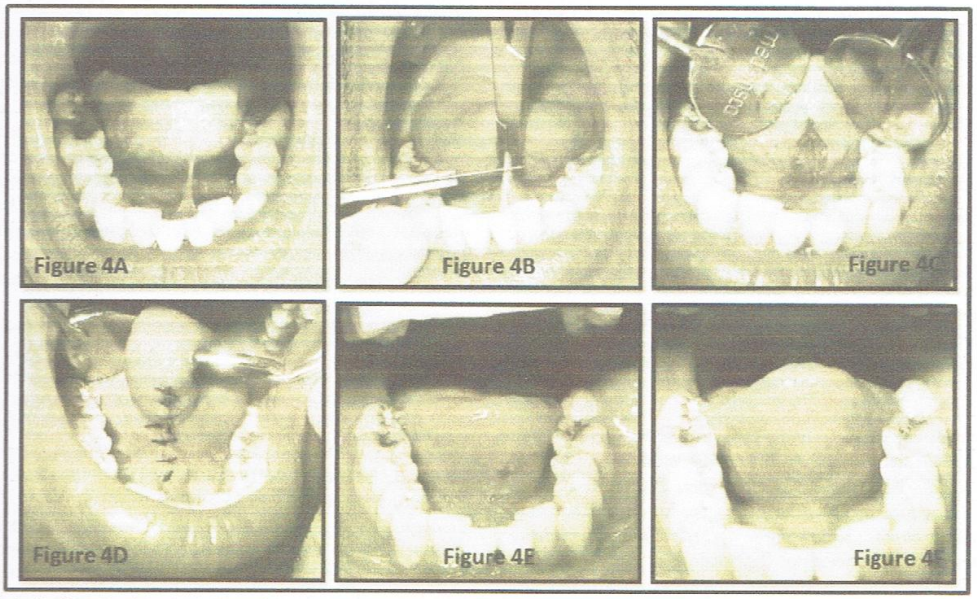

Fig 4: 4A: Class II ankyloglossia,**4B:**Incision with scalpel, **4C:** After undermining and releasing the incision, **4D:** Sutures placed, **4E:** After suture removal, **4F:** 6 months follow up

with the care of not puncturing any blood vessel. During infiltration, before injecting the anesthetic solution, the injecting site was checked for any positive aspiration to ensure that the needle has not entered a blood vessel.

Postoperative exercises following tongue-tie surgery were not intended to increase muscle-strength, but to develop new muscle movements, particularly those involving tongue-tip elevation and protrusion, inside and outside of the mouth.[4]

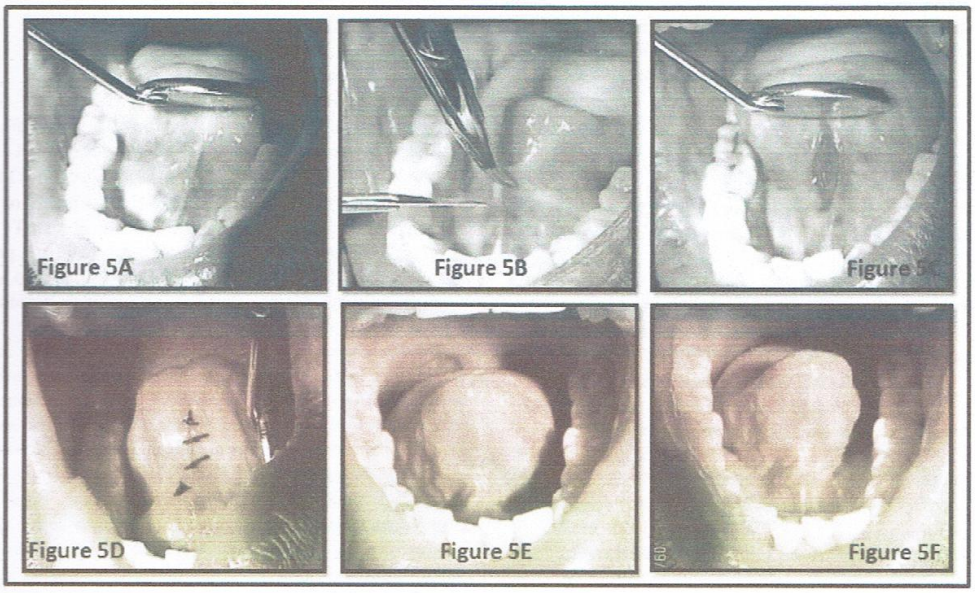

Fig 5 5A: Class I ankyloglossia, **5B:**Incision with scalpel, **5C:**After undermining and releasing the incision, **5D:**Sutures placed ,**5E:** After suture removal, **5F:** 6 months follow up

A retraction suture (3-0 silk) was placed at the tip of the tongue to facilitate retraction and visibility in the area of the operating field depending upon the patient's frenum. An incision extending from the tip of the tongue to the extent of the base of the tongue was placed using a scalpel with No. 15 blade. The important step of undermining of the incision with hemostat to release the attachments to relieve muscle tension was done. After achieving hemostasis, the diamond shaped open wound was closed with 3-0 black braided silk or 3-0 resorbable vicryl incorporating interrupted sutures. Suturing was done cautiously so as to prevent obstruction of wharton's duct or puncturing any vascular elements on the ventral surface of the tongue.

Patients were prescribed antibiotic Amoxicillin 500mg and analgesic combination (Aceclofenac 50mg + Paracetamol 325mg) 3 times a day for 3 days respectively and advised to use 0.2% chlorhexidine gluconate twice daily for 2 weeks. Postoperative instructions included sucking of ice chips during first 24 hours, performance of postoperative tongue exercises after first 24 hours, and avoidance of any hot, hard or spicy food stuff. postoperatively tongue exercises included touching of tongue to the palatine rugae while keeping mouth opened, rolling tongue side to side touching corner of the mouth, stretching of the tongue with a protrusive action. Patients were instructed to continue this exercise 3-4 times daily for 2 min until the incision healed. Sutures were removed carefully 1-week after surgery. With a follow up of 6 months the healing was uneventful without scar formation. The tongue showed good healing with protrusion several millimeters beyond lower lip. In all the cases healing was satisfactory.

To increase kinaesthetic awareness of the position and full range of movements of the tongue and lips can perform. To encourage tongue movements related to cleaning the oral cavity, including sweeping the insides of the cheeks, fronts and backs of the teeth, and licking right around both lips.

DISCUSSION

Abnormal frenal attachment signifies a multidisciplinary problem concerning different faculties in dentistry as related to surgical fields. Ankyloglossia more commonly refered as Tongue-tie is a clinical finding which despite of identification is more often neglected due to apprehensiveness of its comprehensive surgical management. It can be observed in neonates, children, or adults. Its prevalence varies from 0.1% to 10.7%,[5]with slight male predilection. The exact etiopathogenesis is unknown, but genetic role with the possible involvement of human G-protein coupled receptor gene (Lgr5)[6] have been suggested. Ankyloglossia was also found associated in cases with some rare syndromes such as X-linked cleft palate syndrome, Kindler syndrome, Van der Woude syndrome and Opitz syndrome.[7] Nevertheless, most ankyloglossias are observed in persons without any other congenital anomalies or diseases.

Based on the distance of the insertion of the lingual frenum to the tip of the tongue, Kotlow's classification[3] of ankyloglossia is as follows:

Class I, mild ankyloglossia 12-16 mm;
Class II, moderate ankyloglossia 8-11 mm;
Class III, severe ankyloglossia 3-7 mm; and
Class IV, complete ankyloglossia<3 mm.

Speech problems can occur when there is limited mobility of the tongue due to ankyloglossia. The difficulties in articulation are evident for consonants and sounds like "s, z, t, d, l, j, zh, ch, th, d" and it is especially difficult to roll an "r".[8]Surgical techniques for the therapy of tongue-ties can be classified into three procedures. Frenotomy is a simple cutting of the frenulum. Frenectomy is defined as complete excision, i.e., removal of the whole frenulum. Frenuloplasty involves various methods to release the tongue-tie and correct the anatomic situation. There is no sufficient evidence in the literature concerning surgical treatment options for ankyloglossia to favor any one of the three main techniques.[9] Complications after frenotomy, frenectomy, and frenulopasty are rare.[10]

The effect of ankyloglossia on speech has been a subject of debate. Some children with tongue-tie are able to develop normal speech without treatment, whereas others have articulation difficulties.[11]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.[12] In a tongue with normal function and range of movement, interincisal distance by maximal mouth opening, while maintaining contact of the tongue tip to the posterior surface of the upper central incisor teeth should be >30 mm.[13] A normal range of motion of the tongue is indicated by the following criteria[10]: The tip of the tongue should be able to protrude outside the mouth; without clefting, the tip of the tongue should be able to sweep the upper and lower lips easily; without straining, When the tongue is retruded, it should not blanch the tissues lingual to the anterior teeth; and the lingual frenum should not create a diastema between the mandibular central incisors. Therefore the surgery for ankyloglossia should be considered at any age depending on patient's history of speech, mechanical and social difficulty. The ankyloglossia correction at early ages reduces the risks of complications to nursing babies, and frenectomy should be performed when there is interference in deglutition and speech.[14] Parents should be explained and made aware about the upcoming treatment modalities which may serve the purpose for so many patients at an early age. A careful clinical examination by the parents would certainly help an early identification of the clinical situation and perhaps, a considerable accountable number of individuals will benefit to peform oral functions freely without restrictions.

CONCLUSION

Complete ankyloglossia is always associated with limitation in range of motion of tongue causing incomplete protusion, restricted elevation and speech articulation problems. In individuals with ankyloglossia, such limited functions can be improved by surgical intervention. It is perhaps interesting that simple corrective therapy can resolve multiple problems associated with ankyloglossia.

This case series offers guidelines which highlights the importance of early detection of tongue-tie and help clinicians significantly for diagnosis and treatment of a tongue restriction resulting from ankyloglossia.

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