

Labial ankyloglossia - a case report on fusion of frenums

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SUMMARY

Labial ankyloglossia is a rare condition where the lingual frenum is found to be continuous with the labial frenum. It is a rare condition that can have a significant impact on a patient's quality of life. Early recognition and appropriate intervention can lead to substantial improvements in speech, oral hygiene, and overall well-being. This case report underscores the importance of considering labial ankyloglossia as a differential diagnosis in patients with lip-related issues and highlights the potential benefits of surgical correction in improving lip function and aesthetics.

Key words: Ankyloglossia – Lingual frenum – Labial frenum – Oral hygiene

INTRODUCTION

A frenum, which is additionally known as a frenulum, is a slender band of connective tissue found in the human body that serves as a stabilising or anchoring agent pertaining to specific bodily structures (Gottsegen, 1954). There are several distinct kinds of frenums located throughout the

body, but a selection of the more prevalent ones includes the frenulum of the genitalia, the lingual frenum (under the tongue), and the labial frenum (within the lips). In order to preserve the normal range of motion and practicality in their respective locations, these structures are indispensable.

Clinical significance is attributed to frenum fusions in the oral cavity, which pertain to the tethering locations of the lingual or labial frenum. Variations in these frenula, including taut or loose attachments, can result in a number of functional and dental problems. The lingual frenum and lower labial frenum fused together, resulting in significant tongue hypomobility, make this case report individualistic.

CASE REPORT

The chief complaint of a 9-year-old boy who came to the outpatient facility was that he was having trouble swallowing and communicating. An intraoral examination revealed a tongue tie. The lingual frenum was positioned near the tip of the tongue and was thick and fibrous. It was connected anteriorly along the floor of the mouth

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Fig. 1.- 'V' shaped notch seen in the floor of the mouth with the fusion of labial and lingual frenum in the lower arch.

with the mandibular labial frenum. The young toddler was unable to stick out his tongue. When the tongue was raised towards the palate, it displayed a typical 'V' shaped notch (Fig. 1). The tongue was unintentionally thrust out when the lower lip was pulled outward by the pull of the labial frenum. Similarly, the lower lip pulled forward as the tongue retracted into the floor of the mouth (Fig. 2). Blanching was seen over the frenum upon forcing the lip and tongue apart forcibly. Because of the fusion of the frenums, there were missing teeth in the lower anterior region. In addition to malnourishment, the patient had bad dental hygiene.

DISCUSSION

Labial ankyloglossia is a rare type of ankyloglossia where the frenulum attaches the lower lip to the gum, limiting the mobility of the lip and tongue. This condition can cause difficulties with breastfeeding, speech, and oral hygiene. Ankylo-

glossia can be classified into four classes based on Kotlow's assessment, with Class I being mild ankyloglossia and Class IV being complete ankyloglossia. However, there is no consensus on the best classification system for ankyloglossia, and individual evaluation and treatment discussions based on each patient's circumstances are recommended (Chaubal and Dixit, 2011). Only two such cases of labial ankyloglossia have been reported to the best of our knowledge (Bahadure et al., 2016; Chandrashekar et al., 2014).

Ankyloglossia typically becomes apparent in the first trimester of pregnancy, at the very beginnings of embryonic development. Like a multitude of other structures in the body, the lingual frenum sets up through a convoluted procedure of tissue growth and differentiation. From the base of the tongue to the floor of the mouth, the lingual frenum fosters an annular band of connective tissue. It encompasses an assembly of mesenchymal and epithelial cells that self-organize and

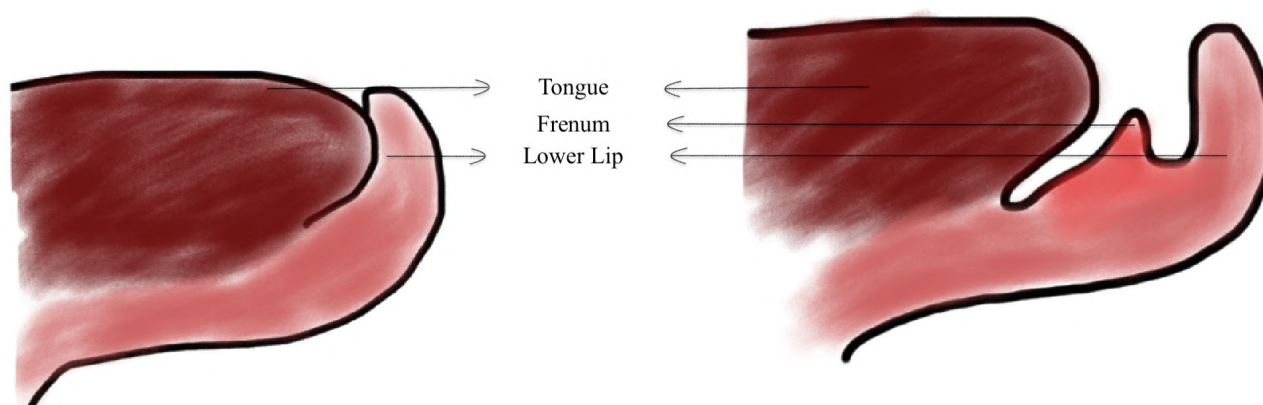


Fig. 2.- Tongue first develops fused to the floor of the mouth. Later, its anterior and inferior margin retracts, and the frenulum is the remnant of its most anterior attachment. Ankyloglossia is caused by an unusually short, thick lingual frenulum.

are proficient in forming the frenum framework (Kummer, 2023). The absence of permanent teeth and the fusion of the tongue tip to the lower lip in this instance indicate that the area where the first brachial arches fused has not developed normally. The normal development of the tongue and lip have been demonstrated in Fig. 2.

Although its precise causes are enigmatic, ankyloglossia can manifest as the consequence of both hereditary and environmental factors. An attachment characterised by being either tight or short could stem from genetic predispositions that affect the lingual frenum's structure. The moment of onset of ankyloglossia may also be susceptible to environmental variables or genetic changes (Suter and Bornstein, 2009).

Male-to-female ratios spanning from 1:1 to 3:1 continually demonstrated in multiple studies. X-linked or autosomal dominant inheritance may be postulated by the aforementioned findings. The disparities between ankyloglossia cases that strike sporadically and those that are familial impede this understanding. Unlike familial occurrences, most cases of ankyloglossia are assumed to be random and to have a greater male predisposition. There have been also reports of teratogen or environment-related causes of ankyloglossia (Klockars and Pitkäranta, 2009).

Ankyloglossia typically manifests alone in a familial pattern, but it can also surface syndromically in conditions like Ehlers-Danlos syndrome and oro-facio-digital syndrome. In certain fa-

miliar patterns, male-to-male transfer provides partial vulnerability for an autosomal dominant inheritance pattern. An X-linked pattern is observed in other genes attributed to ankyloglossia, such as TBX22 mutations, which are also linked to cleft palate. As one of the multitudes of birth malformations linked to congenital Zika syndrome, the lingual frenulum was additionally observed to be aberrant, either non-existent or positioned posteriorly (Mintz et al., 2005).

Given the child's age, the severity, and the commonality of the condition, tongue-tie in newborns and children can have a wide array of repercussions. The most scrutinised area of this is how tongue-tie hinders an infant's ability to breast-feed. A synchronised peristaltic process and the establishment of a robust seal between the mother's nipple and the baby's oral cavity are requisites for effective breastfeeding. This seal facilitates the generation of an intraoral vacuum. The vantage point of the tongue matters for each of these phases (Hogan et al., 2005).

Disputes pertaining to dental health, orthognathic development, and oral hygiene are additionally posed by the tongue's tethering caused by this very particular kind of labial ankyloglossia. For one to clean the teeth after meals and remove any remaining food particles that may contribute to caries, tongue mobility is imperative. It is believed that a tight lingual frenulum is linked to a higher risk of dental caries because it limits the tongue's capacity to effectively reach and regularly clean every tooth. Apart from dental cavities,

a few investigations have linked issues related to appropriate occlusion and craniofacial development to the lingual frenulum (Messner and Lalakea, 2000).

The mainstays of alleviating ankyloglossia are surgical procedures such as frenotomies, frenectomy, and frenuloplasty. Based on the extant literature, there is no surgical technique that is preferred above the others. The patient's age and peculiar characteristics of the ankyloglossia usually ascertain the surgical course of treatment. Additionally, with the goal of enhancing suction and preventing scar repudiation, some research indicates that myofunctional treatment may be helpful both before and after surgery. It should be mentioned that opinions regarding whether tongue ties require surgical intervention and whether they can be managed with observation are still being debated. More investigations and research are required to develop an improved line of treatment (Baker and Carr, 2015).

This case study concludes by emphasizing the need for diagnosing and treating labial ankyloglossia, a disorder that, despite being relatively uncommon, can significantly affect a patient's oral health and overall quality of life. This example highlights the value of early detection and treatment for cases of labial ankyloglossia, which will ultimately give patients a more functional and comfortable oral environment. The greatest possible outcomes for patients in the future will be ensured by ongoing research and clinical experience in this area, which will further refine our understanding and treatment options for this ailment.

REFERENCES

- BAHADURE RN, JAIN E, SINGH P, PANDEY R, CHUK R (2016) Labial ankyloglossia: A rare case report. *Contemp Clin Dentist*, 7(4): 555-557.
- BAKER AR, CARR MM (2015) Surgical treatment of ankyloglossia. *Oper Tech Otolaryngol Head Neck Surg*, 26(1): 28-32.
- CHANDRASHEKAR L, KASHINATH KR, SUHAS S (2014) Labial ankyloglossia associated with oligodontia: a case report. *J Dentist*, 11(4): 481-484.
- CHAUBAL TV, DIXIT MB (2011) Ankyloglossia and its management. *J Indian Soc Periodontol*, 15(3): 270-272.
- GOTTSEGEN R (1954) Frenum position and vestibule depth in relation to gingival health. *Oral Surg Oral Med Oral Pathol*, 7(10): 1069-1078.
- HOGAN M, WESTCOTT C, GRIFFITHS M (2005) Randomized, controlled trial of division of tongue-tie in infants with feeding problems. *J Paediat Child Health*, 41(5-6): 246-250.
- KLOCKARS T, PITKÄRANTA A (2009) Inheritance of ankyloglossia (tongue-tie). *Clin Genet*, 75(1): 98-99.
- KUMMERAW (2023) ankyloglossia: typical characteristics, effects on function, and clinical implications. *Seminars Speech Language*, 44(4): 217-229.
- MESSNER AH, LALAKEA ML (2000) Ankyloglossia: controversies in management. *Int J Pediat Otorhinolaryngol*, 54(2-3): 123-131.
- MINTZ SM, SIEGEL MA, SEIDER PJ (2005) An overview of oral frenula and their association with multiple syndromic and nonsyndromic conditions. *Oral Surg Oral Med Oral Pathol Oral Radiol Endodontics*, 99(3): 321-324.
- SUTER VGA, BORNSTEIN MM (2009) Ankyloglossia: facts and myths in diagnosis and treatment. *J Periodontol*, 80(8): 1204-1219.