Journal of Dental Sciences and Education

DOI: 10.51271/JDSE-0051

Case Report

Lingual frenulum surgery in the treatment of ankyloglossia: case series

Müzeyyen Kandemir, Bedriye İbiş, Ebru Ece Sarıbaş
Department of Periodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkiye

Cite this article as: Kandemir M, İbiş B, Sarıbaş EE. Lingual frenulum surgery in the treatment of ankyloglossia: case series. *J Dent Sci Educ.* 2025;3(1):27-30.

Received: 05.02.2025 • **Accepted**: 25.02.2025 • **Published**: 28.02.2025

ABSTRACT

The aim of this case series is to evaluate the clinical outcomes of lingual frenectomy in two young adult female patients with ankyloglossia and to emphasise the impact of surgical intervention on speech ability, tongue mobility and overall oral function. Two women, aged 22 and 19 years, presented with speech difficulties, restricted tongue movement and high lingual frenulum attachment. Clinical examination revealed associated conditions such as midline diastema, infantile swallowing patterns and labial displacement of the mandibular anterior teeth. After informed consent, both patients underwent lingual frenectomy under local anaesthesia using a #15 scalpel and blunt dissection technique. Sutures were placed with a continuous suture technique, and postoperative care included antibiotics, analgesics, and chlorhexidine mouthwash. Patients were followed up for six months. Both patients experienced significant improvements in tongue mobility and articulation after the procedure. No complications such as excessive haemorrhage or nerve damage were observed. At the six-month follow-up, the healing process was uneventful. They were then referred to the orthodontic clinic for further treatment of midline diastema, labial displacement and swallowing dysfunction. Ankyloglossia can cause functional and psychological problems by affecting speech, swallowing and tooth alignment. Early diagnosis and timely surgical intervention, such as lingual frenectomy, can contribute to significant improvements in tongue mobility and speech function. Long-term follow-up and interdisciplinary treatment are essential to achieve optimal patient outcomes.

Keywords: Abnormal frenulum, ankyloglossia, lingual frenectomy

INTRODUCTION

Ankyloglossia, also known as tongue tie, is a congenital condition of the lingual frenulum that is characterized by the restriction of the tongue's functions.[1] The lingual frenulum is a small fibro-mucosal plica that runs along the midline of the underside of the tongue and connects it to the floor of the mouth's mucosa, playing an important role in stabilizing and limiting the movement of the tongue.[2] In some individuals, the frenulum's strands adhere to the tip of the tongue, restricting its physiological movements. People with tongue-tie are unable to protrude their tongue past the incisal edge of the mandibular anterior teeth or touch the roof of the mouth.[3] The most significant clinical symptoms of this condition is the limited movement of the tongue. Other associated symptoms include feeding difficulties, weak sucking in infants, orthodontic problems, periodontal issues related to tooth bracing, speech, swallowing, and breathing difficulties.[4,5] The prevalence of tongue-tie is reported to be between 2% and 4.8% in a study by Lalakea and Messner.[6] Tongue tie is more common in males than females and does not show a racial predisposition.

Treatment options for ankyloglossia include partial removal of the frenum, known as "frenotomy," repositioning of the frenum, referred to as "frenuloplasty," and complete removal of the frenum, known as "frenectomy".[7] However, there is insufficient evidence in the literature to support any particular technique for the surgical treatment of ankyloglossia.[8] Lingual frenectomy is typically performed using a scalpel, electrocautery, or soft tissue laser. Although the procedure may appear simple, the anatomical location of the lingual frenulum, which is rich in nerves and blood vessels, makes it prone to complications.[9] This case report presents two successful cases of lingual frenectomy in patients with ankyloglossia.

CASE 1

A 22-year-old female patient admitted to the Department of Periodontology at the Faculty of Dentistry, Dicle University, due to difficulty in pronouncing certain words and letters, and limited tongue movement. A thorough medical history check revealed no underlying systemic disease.

During the intraoral examination, it was observed that the patient had a high lingual frenulum attachment, which prevented her from placing her tongue behind of the mandibular incisors and from protruding her tongue outside

Corresponding Author: Müzeyyen Kandemir, muzeyyenozyavuz@gmail.com

the mouth. Clinical examination revealed that this condition led to midline diastema and an infantile swallowing pattern (**Figure 1**).

Figure 1. Intraoral view of the high lingual frenulum attachment, ankyloglossia and midline diastema

After a general examination, an informed consent form was obtained, and a lingual frenectomy indication was established. Before the procedure, bilateral lingual block and local infiltrative anesthesia were administered. The frenulum was fixed with a hemostat and excised by making 2 incisions on the upper and lower sides of the hemostat with a #15 scalpel, paying attention to the lingual nerve and its branches (**Figure 2**). Then, blunt dissection was performed and the wound edges were closed without tension. The incisions were then sutured using a 3-0 suture with continuous suturing technique (**Figure 3**). Since the tongue has a strong muscular structure and is a mobile tissue, silk suture with high mechanical resistance and knot security was preferred. Postoperatively, the patient was prescribed 0.2% chlorhexidine digluconate mouthwash, antibiotics (Amoxicillin+clavulanic acid 625 mg film tablet) and analgesics (Etodolac 400 mg tablet) twice a day for a week. The reason for prescribing antibiotics in our cases is to provide a better recovery by preventing surgical site infections, which can be a source of concern in oral surgery due to the high bacterial load in the mouth.

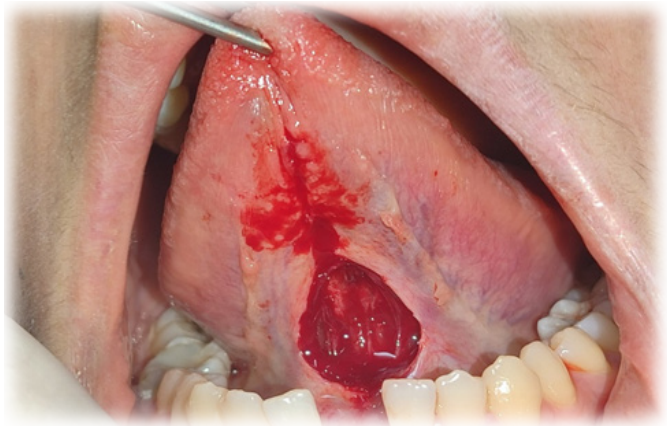

Figure 2. View of the frenulum removed through two incisions on the upper and lower sides of the hemostat

No complications such as numbness or bleeding were observed during the postoperative period. The sutures were removed 10 days after the surgery. The patient stated that she could move her tongue more comfortably and she stated that he could pronounce letters such as 't', 'd', 'r', 'n', 'l', 'r' better (**Figure 4**). No complications were reported during the postoperative and the 6th month follow-up visits, and a successful healing process was observed. The patient was referred to the orthodontic clinic for the treatment of midline diastema, labial displacement, and infantile swallowing pattern.

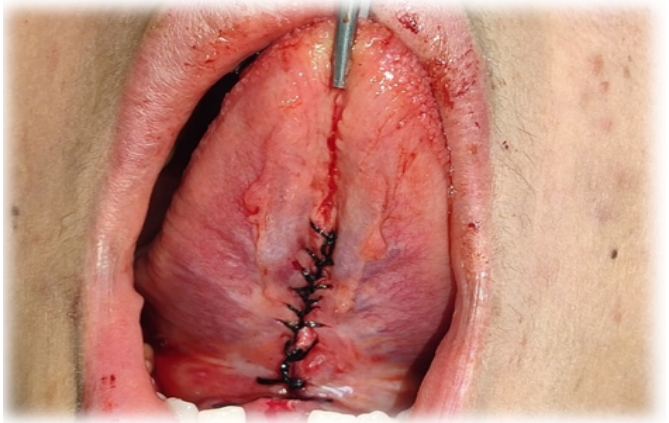

Figure 3. After blunt dissection, suturing the wound with continuous suture technique

Figure 4. Postoperative image of the lingual frenectomy case at the 6-month follow-up

CASE 2

A 19-year-old female patient with difficulty moving her tongue comfortably due to a high frenulum attachment, difficulty pronouncing certain letters, stuttering, and complaining about this condition admitted to the Department of Periodontology at the Faculty of Dentistry, Dicle University. A detailed medical history check revealed no underlying systemic disease.

Clinical examination revealed that this condition led to midline diastema in the mandibular teeth and infantile swallowing pattern, which in turn caused labial displacement of the mandibular anterior teeth (**Figure 5**).

Figure 5. Intraoral view of the high lingual frenulum attachment, ankyloglossia

After a general examination, an informed consent form was obtained, and a lingual frenectomy indication was established. Before the procedure, bilateral lingual block and local infiltrative anesthesia were administered. The frenulum was compressed with a hemostat, and a triangular incision was made using a #15 scalpel. The wound edges were then freed with a blunt dissection, and the wound was sutured using 3/0 sutures with continuous and simple suturing techniques (**Figure 6**). Since the tongue has a strong muscular structure and is a mobile tissue, silk suture with high mechanical resistance and knot security was preferred. During the surgical procedure, attention was paid to the blood vessels, lingual nerve branches, and sub-mandibular salivary gland ducts in the area.

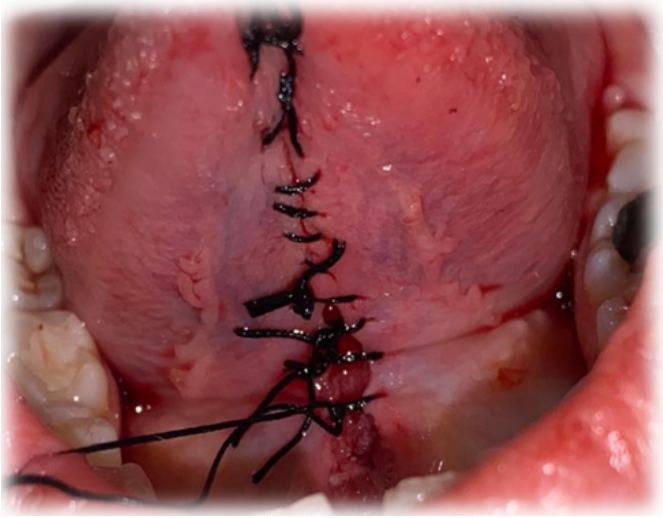

Figure 6. Intraoral view of the high lingual frenulum attachment, ankyloglossia

After the operation, it was recommended to protect the surgical area and avoid activities that may cause bleeding. The patient was prescribed analgesics, anti-inflammatories, and antibiotics postoperatively (Etodolac 400 mg tablet and Amoxicillin/Clavulanic acid 625 mg film tablet for 1 week, and 0.12% chlorhexidine gluconate mouthwash for 2 weeks). The reason for prescribing antibiotics in our cases is to provide a better recovery by preventing surgical site infections, which can be a source of concern in oral surgery due to the high bacterial load in the mouth. The patient's sutures were removed 10 days after the surgery at the follow-up.

No numbness or bleeding complications were observed during the postoperative period. The patient reported that she could move her tongue more comfortably and she stated that he could pronounce letters such as 't', 'd', 'r', 'n', 'l', 'r' better (**Figure 7**). No complications were reported during the postoperative and the 6th month follow-up visits, and a successful healing process was observed. The patient was referred to the orthodontic clinic for the treatment of midline diastema, labial displacement, and infantile swallowing pattern.

DISCUSSION

Ankyloglossia is a congenital anomaly that can cause difficulty in swallowing and speaking.[10] Some studies suggest that ankyloglossia may be a hereditary pathology, but the phenotype and penetrance of genetic components in these patients are not yet understood. Further research is needed to fully understand the etiopathogenesis of ankyloglossia.[11,12]

Figure 7. Postoperative image of the lingual frenectomy case at the 6-month follow-up

It is a common belief that ankyloglossia can affect speech by limiting tongue movement.[13] Messner et al.[14] reported that 71% of children with ankyloglossia had speech difficulties associated with limited oral movement. A recent case report by Verma et al.[15] reported that ankyloglossia causes difficulty in speech and restricted tongue movements. Similarly a study in Taiwan found that 48% of 27 children with ankyloglossia and sleep-disordered breathing had speech difficulties.[16] In our two cases, as in the literature, speech difficulties and challenges in articulating certain sounds were also detected. In addition, in our cases, it was observed that the patient could move his tongue more easily and speak more easily after frenectomy. The effectiveness of frenectomy in improving tongue mobility and alleviating speech and feeding symptoms associated with ankyloglossia has been documented in many studies.[17,18] Saglam et al.[19] successfully treated a 14-year-old boy with speech difficulties using frenectomy followed by speech therap.

Although the lingual frenectomy procedure is simple, but the anatomical structure of the lingual frenum, its proximity to nerves and blood vessels, makes it vulnerable to various intraoperative and postoperative complications. In a review conducted by Varadan et al.,[20] the complications of lingual frenectomy were listed as hemorrhage, retention cyst, ranula formation, sublingual hematoma, infection of sublingual and submandibular spaces, and numbness or paresthesia in the tongue and surrounding tissues. In our two cases, no complications were observed.

Ankyloglossia is a multidisciplinary problem that involves different areas of expertise in dentistry, from periodontology to oral surgery. The normal movement of the tongue is effective in maintaining oral hygiene by cleaning itself. However, in ankyloglossia, the tongue's ability to sweep away food particles is restricted, and adequate mechanical cleaning cannot be achieved. Additionally, it has been reported in the literature that ankyloglossia can cause gingival recession in the lingual direction of the lower anterior teeth, considering these reasons, ankyloglossia is also important for periodontists.[21,22]

CONCLUSION

Ankyloglossia can cause various problems such as speech disorders, feeding difficulties, sleep apnea, psychological and social issues. Therefore, early diagnosis and appropriate surgical intervention can help resolve these problems and contribute to the overall well-being of the patient.

ETHICAL DECLARATIONS

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Hatami A, Dreyer C, Meade M, Kaur S. Effectiveness of tongue-tie assessment tools in diagnosing and fulfilling lingual frenectomy criteria: a systematic review. *Aust Dent J*. 2022;67(3):212-219. doi:10.1111/adj.12921
2. Tancredi S, De Angelis P, Marra M, et al. Clinical comparison of diode laser assisted "V-shape frenectomy" and conventional surgical method as treatment of ankyloglossia. *Healthcare*. 2022;10(1):89. doi:10.3390/healthcare10010089
3. Avvaru K, Yalamanchili P, Appam S, Seva R, Sri G, Bondili M. Laser assisted tongue tie release: a case report. *Bullet Stomatol Maxillofac Surg*. 2024:118-122. doi:10.58240/1829006X-2024.3-118
4. Buryk M, Bloom D, Shope T. Efficacy of neonatal release of ankyloglossia: a randomized trial. *Pediatrics*. 2011;128(2):280-288. doi:10.1542/peds.2011-0077
5. Azzolino D, Passarelli PC, De Angelis P, Piccirillo GB, D'Addona A, Cesari M. Poor oral health as a determinant of malnutrition and sarcopenia. *Nutrients*. 2019;11(12):2898. doi:10.3390/nu11122898
6. Tuli A, Singh A. Monopolar diathermy used for correction of ankyloglossia. *J Indian Soc Pedod Prevent Dent*. 2010;28(2):130. doi:10.4103/0970-4388.66757
7. Suter VGA, Bornstein MM. Ankyloglossia: facts and myths in diagnosis and treatment. *J Periodontol*. 2009;80(8):1204-1219. doi:10.1902/jop.2009.090086
8. Junqueira MA, Cunha NNO, Costa e Silva LL, et al. Surgical techniques for the treatment of ankyloglossia in children: a case series. *J Appl Oral Sci*. 2014;22(3):241-248. doi:10.1590/1678-775720130629
9. Varadan M, Chopra A, Sanghavi AD, Sivaraman K, Gupta K. Etiology and clinical recommendations to manage the complications following lingual frenectomy: a critical review. *J Stomatol Oral Maxillofac Surg*. 2019;120(6):549-553. doi:10.1016/j.jormas.2019.06.003
10. Junqueira MA, Cunha NNO, Costa E, Silva LL, et al. Surgical techniques for the treatment of ankyloglossia in children: a case series. *J Appl Oral Sci*. 2014;22(3):241-248. doi:10.1590/1678-775720130629
11. Brooks JK, Leonard CO, Coccaro PJ. Opitz (BBB/G) syndrome: oral manifestations. *Am J Med Genet*. 1992;43(3):595-601. doi:10.1002/ajmg.1320430318
12. Babu HM. Surgical management of ankyloglossia-a case report. *J Contempor Dent*. 2010:1(2):58-61.
13. Ito Y, Shimizu T, Nakamura T, Takatama C. Effectiveness of tongue-tie division for speech disorder in children. *Pediatr Int*. 2015;57(2):222-226. doi:10.1111/ped.12474
14. Messner AH, Lalakea ML. The Effect of Ankyloglossia on Speech in Children. *Otolaryngol Head Neck Surg*. 2002;127(6):539-545. doi:10.1067/mhn.2002.129731
15. Verma M, Khan MA, Haque AU, Fiza Mustaqueem S. Diode laser frenectomy: a torch of freedom for ankyloglossia. *Cureus*. 2024;16(4):e58319. doi:10.7759/cureus.58319
16. Huang YS, Quo S, Berkowski JA, Guilleminault C. Short lingual frenulum and obstructive sleep apnea in children. *Int J Pediatr Res*. 2015;1:003. doi:10.23937/2469-5769/1510003
17. Carnino JM, Rodriguez Lara F, Chan WP, Kennedy DG, Levi JR. Speech outcomes of frenectomy for tongue-tie release: a systematic review and meta-analysis. *Ann Otol Rhinol Laryngol*. 2024;133(6):566-574. doi:10.1177/00034894241236234
18. Arnov ST, Anwar R. Terapi bedah frenektomi pada ankyloglossia: laporan kasus. *J Kedokter Gigi*. 2023;20(2):136. doi:10.19184/stoma.v20i2.44013
19. Sağlam E, Saruhan N, Emrem Doğan G. The treatment of ankyloglossia with frenectomy: case report. *Atatürk Üni Diş Hek Fak Derg*. 2016;25(2):233-237. doi:10.17567/dfd.30083
20. Varadan M, Chopra A, Sanghavi AD, Sivaraman K, Gupta K. Etiology and clinical recommendations to manage the complications following lingual frenectomy: a critical review. *J Stomatol Oral Maxillofac Surg*. 2019;120(6):549-553. doi:10.1016/j.jormas.2019.06.003
21. Suter VGA, Bornstein MM. Ankyloglossia: facts and myths in diagnosis and treatment. *J Periodontol*. 2009;80(8):1204-1219. doi:10.1902/jop.2009.090086
22. Jaikumar S, Srinivasan L, Kennedy Babu SPK, Gandhimadhi D, Margabandhu M. Laser-assisted frenectomy followed by post-operative tongue exercises in ankyloglossia: a report of two cases. *Cureus*. 2022;14(3):e23274. doi:10.7759/cureus.23274