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Ankyloglossia in pediatric dentistry: A case report and literature review

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Abstract
Introduction: Ankyloglossia is a condition in which tongue movement is restricted due to a lingual frenulum that is too short or too tight.
Case report: A 7-year-old male patient presents limitations in tongue movements and difficulties in pronunciation.
Diagnosis: The Hazelbaker test was used, leading to the diagnosis of ankyloglossia.
Treatment: A lingual frenectomy was performed under local anesthesia in the dental chair. Postoperative instructions were given in which speech therapy was indicated.
Results: A notable improvement in tongue mobility and a decrease in previously reported difficulties were observed, with a favorable evolution of the clinical case.
Conclusions: The lingual frenectomy performed in-chair under local anesthesia allowed for a significant release of the lingual frenulum, improving the patient's tongue mobility. In this case, the importance of a multidisciplinary approach is confirmed, ensuring not only structural correction but also effective functional rehabilitation that supports the patient's adaptation to their phonetic and feeding needs.

Keywords: Ankyloglossia, lingual frenectomy, craniofacial growth, psychology

1. Introduction
Ankyloglossia is a condition in which tongue movement is restricted due to an excessively short or tight lingual frenulum [1]. This alteration can interfere with fundamental oral functions such as phonation, swallowing and oral hygiene [2].
The present clinical case describes a 7-year-old male patient, with mixed dentition and no relevant pathological history, who attended the Pediatric Dentistry postgraduate course at the UANL, referred by his speech therapist due to limitations in tongue movements and difficulties in the pronunciation of certain phonemes. During the clinical evaluation a low and short insertion of the lingual frenulum was identified, with restriction in the elevation and protrusion of the tongue, which affected verbal articulation and confirmed the indication for a lingual frenectomy. The length of the frenulum was measured from its insertion to the tip of the tongue, obtaining a value of 5 mm. According to the Kotlow classification, this measurement corresponds to a class III (severe) ankyloglossia, characterized by a significant restriction of tongue mobility. Based on these findings, it was determined that a surgical procedure was necessary to release the anatomical restriction and favor a greater range of motion, which would directly contribute to improve the patient's pronunciation, verbal articulation and quality of life.

2. Literature Review
2.1 Ankyloglossia
Ankyloglossia, also known as short lingual frenulum, is a congenital anomaly in which the lingual frenulum is anchored to the sublingual space [3] and may be abnormally anterior, thick, taut or short, limiting tongue movement [4]. Its worldwide frequency ranges from 0.1% to 10.7% [5].

It is more common in newborns and can be diagnosed during the first days of life, especially if the infant has difficulty sucking or feeding properly [6]. It can lead to various complications, such as difficulties in swallowing solid foods, choking episodes, gagging and frustration when eating, as well as problems with feeding and swallowing. It can generate various complications, such as difficulties in swallowing solid foods, choking episodes, nausea and frustration when eating, in addition to problems related to tongue protrusion and speech [7]. In older children and adults, it can affect speech, especially sounds that involve raising or moving the tongue forward, such as r, s, t, l and d [8].

2.2 Anatomical features

The lingual frenulum is a structure formed by the dynamic elevation of a fold in the midline fascia of the floor of the mouth [9] that is formed by a process of correct apoptosis, which allows the separation of the tongue and the primitive pharynx during embryonic development [4].

In ankyloglossia, the frenulum has a high insertion and reduced length, which limits the ability to protrude and elevate the tongue [10]. When raised, the tongue takes on a heart-shaped appearance or a slight indentation at its tip [1].

2.3 Pronunciation

Ankyloglossia usually causes problems to articulate properly certain sounds and consonants, such as z, s, t, d, l, sh, ch, th, dg and, particularly, the sound r [11] due to the limitation in the movement of the tip of the tongue, and these are letters that require a greater degree of tongue elevation [12].

2.4 Treatment

The use of diode laser as a method of treatment has multiple benefits compared to the use of a conventional scalpel [11]. Among its benefits are a reduction in the use of local anesthesia and postoperative complications such as bleeding, pain, swelling and infection, and the absence of sutures [13].

2.4.1 Frenotomy

Frenotomy should be suggested with caution in newborns and, in general, should not be considered as an option in cases of speech disorders, unless indicated by a speech therapist [14]. This procedure helps us to reduce breastfeeding difficulties, maternal pain [15], the presence of nipple lesions and latch-on problems [16].

2.4.2 Frenectomy

Frenectomy is a surgical technique that consists of the removal of the tissue that joins the tongue to the floor of the mouth [17]. It is the procedure most frequently used to free the lingual frenulum in newborns and children, demonstrating effectiveness in the improvement of symptoms associated with ankyloglossia [7].

2.4.3 Frenuloplasty.

Frenuloplasty is the complete removal of the frenulum [13], it can be performed in a Z-shape, horizontal to vertical and VY type, with horizontal being the most commonly used technique [18].

2.4.4 Speech therapy

Patients should be provided with myofunctional rehabilitation to optimize tongue mobility, both prior to surgery and during the postoperative stage [11].

2.4.5 Kotlow classification

The 1999 Kotlow classification is based on anatomical criteria and measures the length of the tongue, from the insertion of the lingual frenulum on the underside of the tongue to its tip [19]. It presents 4 different categories: Class I as mild ankyloglossia when the distance measures 12 to 16 mm, class II as moderate ankyloglossia measures 8 to 11 mm, class III as severe ankyloglossia measures 3 to 7 mm and class IV as complete ankyloglossia when its measurement is less than 3 mm [20].

3. Case Report

A 7-year-old male patient referred by his speech therapist to the pediatric dentistry graduate program at the UANL for consultation due to limitations in tongue movements and difficulties in the pronunciation of words. During the clinical and phonetic evaluation, it was identified that the patient had difficulty articulating phonemes that require adequate tongue mobility, such as the sounds /r/, /rr/, /s/, /l/ and /t/, which affects his verbal fluency and speech intelligibility. Also, a compensation in the orofacial musculature was observed when trying to pronounce these phonemes, which may be contributing to a functional dyslalia (Figure 1). Additionally, a low and short insertion of the lingual frenulum was observed, with restriction in tongue elevation and protrusion, confirming the indication for lingual frenectomy. During the intraoral exploration, the length of the lingual frenulum was measured from its insertion to the tip of the tongue, obtaining a value of 5 mm (Figure 2). According to the Kotlow classification, this measurement corresponds to Class III (severe) ankyloglossia, characterized by a significant restriction of tongue movements (Figure 3).

The importance of this procedure to improve tongue mobility and its benefits in phonation, swallowing and quality of life of the patient was explained to the parents. Subsequently, the surgical intervention was scheduled with follow-up by the multidisciplinary team, including myofunctional therapy for post-surgical rehabilitation and optimization of tongue function.

The intraoral clinical examination revealed the presence of carious lesions in erupting primary and permanent teeth, as well as hypoplasia in some molars, justifying the need for comprehensive dental treatment. Restorative treatment with resins, placement of pit and fissure sealants in first permanent molars to prevent carious lesions, and adaptation of steel-chromium crowns in primary molars with advanced coronary destruction to preserve masticatory function and occlusal stability were performed. After a comprehensive evaluation of the case, it is determined that the best treatment option is a lingual frenectomy.

The procedure consisted of infiltrative anesthesia with 36 mg of 2% mepivacaine by means of a short needle on each side of the lingual frenulum, blocking the lingual nerve bilaterally. An unknotted suture was placed at the end of the tongue to exert traction and thus facilitate surgical maneuvers. A horizontal incision was then made in the middle portion of the frenulum using a No. 15 scalpel blade with a No. 3 handle. Subsequently, the frenulum was sectioned from superior to inferior, taking special care to preserve the anatomy of the region, including the sublingual caruncles corresponding to the ducts of Wharton and Rivinus. Complete excision of the frenulum was performed with the support of straight Iris scissors and the same scalpel blade, also removing all associated residual fibrous tissue (Figure 4). Subsequently, a genioplasty was performed using Mosco forceps and blunt

dissection, in order to adequately free the insertion of the frenulum up to the lingual side of the lower incisors. Finally, simple sutures were placed using 3-0 Vicryl material. The procedure is performed successfully and without complications, ensuring that the patient is comfortable and cooperative throughout the treatment (Figure 5). Subsequently, the necessary postoperative indications are given to facilitate recovery, and a series of subsequent controls are scheduled to monitor the healing process and evaluate functional improvements in tongue movements.

Fig 1: Orofacial compensation during phoneme articulation

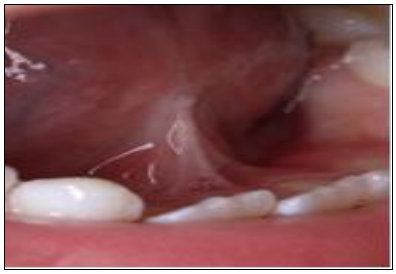

Fig 2: Lingual frenulum length measurement (5 mm)

Fig 3: Class III ankyloglossia (Kotlow classification)

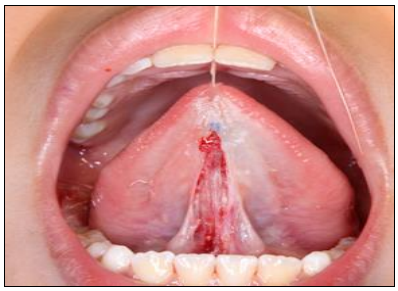

Fig 4: Complete frenulum excision with fibrous tissue removal

Figure 5: Postoperative view after genioplasty and suturing

4. Results

In the subsequent controls, a remarkable improvement in the mobility and function of the tongue is observed with a favorable evolution. This has allowed a greater fluency in the articulation of previously affected phonemes, such as /r/, /rr/, /s/, /l/ and /t/, contributing to a clearer and more understandable pronunciation in daily communication. In addition, a reduction in the compensatory efforts that the patient previously made when attempting to vocalize these consonants has been documented, suggesting improved neuromuscular coordination of the tongue.

The patient's mother has expressed her satisfaction with her son's evolution, expressing that he now communicates with greater clarity and confidence. “Before, when he tried to say words with the letter ‘r’, he would get very frustrated and end up avoiding speaking in certain situations.” “Now I notice that he tries to say them without fear and with less effort,” she commented. She also mentioned that her son has shown a more enthusiastic attitude in school, especially in activities that require public speaking or reading aloud, which used to cause him insecurity.

From the functional point of view, a notable improvement in swallowing has been noted, with a reduction in episodes of difficulty swallowing solid foods and liquids. The mother has pointed out that "before she would get stuck with certain foods and avoided some foods because she felt she could not swallow them well. Now he eats without a problem and has even wanted to try new things." She has also noticed that he has stopped performing compensatory maneuvers, such as pushing food with his lips or tilting his head to facilitate the passage of food, which indicates better coordination in the swallowing process.

Likewise, the child has shown a better adaptation to his oral hygiene routine, achieving a more effective cleaning of the dental and lingual surfaces, which contributes to the prevention of oral diseases in the long term. The mother pointed out that "before he could not brush well because he said it hurt to move his tongue and that he got tired". Now he does it on his own and without complaining". She also noted that he has improved his independence in taking care of his oral health, which has reduced the need for constant supervision during brushing.

In the phonological follow-up carried out together with his speech therapist, a better articulation and production of the affected phonemes has been noted, with a reduction in pronunciation errors and an increase in the patient's confidence in expressing himself. The mother has expressed her joy at noticing these changes: "I see him more confident when he talks to his friends and family. He no longer hides or asks me to speak for him." It has been recommended to continue with myofunctional rehabilitation therapy to strengthen the perioral musculature and consolidate the advances obtained, promoting a sustained improvement in his speech and communication development.

In addition, periodic dental check-ups have verified the adequate condition of the restorations, with no signs of marginal leakage or maladaptation, which indicates a favorable long-term prognosis. The mother has expressed her peace of mind regarding her son's oral health, mentioning that "before he had many cavities and I was worried that he would lose his teeth very soon. Now I know that his mouth is healthy and that he will be able to have a better smile when he grows up." Constant monitoring of the case will continue in order to evaluate the progress in each of the intervened areas and guarantee the patient's complete recovery, integrating a multidisciplinary approach that includes pediatric dentistry, therapeutic and speech therapy supervision.

5. Discussion

After performing an armchair lingual frenectomy under local anesthesia, significant release of the lingual frenulum was observed, resulting in improved tongue mobility. The challenge with ankyloglossia in older children or adults is that the symptoms and clinical manifestations tend to be more complex, primarily involving speech difficulties, making traditional diagnostic methods, such as Hazelbaker's, less applicable or useful. In these cases, assessment by Hazelbaker helps to identify restrictions in tongue mobility, although this method focuses primarily on tongue function during infancy, not speech articulation.

We relied on the treatment described by Carminatti [21], who performed frenectomy on children aged 6 to 12 years with ankyloglossia, accompanied by myofunctional therapy. The results were positive, as the intervention allowed a significant improvement in tongue mobility, achieving maximum mouth opening and the ability of the tongue tip to touch the incisive papilla. This suggests a restoration of tongue functionality in terms of mobility and reach.

This case supports the existing literature by Baxter [22] suggesting that the combination of surgery and myofunctional exercises is essential to maximize the benefits of treatment.

The Kotlow classification was used as a diagnostic method, as ankyloglossia is diagnosed from age 3 years to adulthood in the presence of difficulties in phonation [23] and in the ability to project the tip of the tongue outside the oral cavity. This approach is supported by Cobo [24].

The study by Ferrés [25] supports that the combination of surgery with myofunctional therapy significantly improves oral function in children with ankyloglossia. This protocol, involving the participation of the pediatric dentist, speech therapist and maxillofacial surgeon, achieved a 96% functional correction rate. The pediatric dentist identifies and refers cases in a timely manner, preparing the patient for effective intervention. The speech therapist, through pre- and postoperative myofunctional therapy, facilitates muscle re-education and prevents compensations. Finally, the maxillofacial surgeon performs the surgical procedure with anatomical precision, reducing risks and improving results.

6. Conclusions

While surgery corrects anatomical restrictions in ankyloglossia, functional success relies heavily on myofunctional therapy to reeducate oral motor patterns. Combining frenectomy with therapy enhances tongue function, improving speech, mechanics, and quality of life. A multidisciplinary team including dentists, surgeons, and speech therapists ensures holistic rehabilitation, addressing structural, phonetic, and developmental needs. Beyond technical outcomes, treatment transforms the child's life, boosting speech, self-esteem, and emotional well-being, fostering happier development and stronger family bonds.

Conflict of Interest

Not available

Financial Support

Not available

7. References

1. Tomara E, Dagla M, Antoniou E, Iatrakis G. Ankyloglossia as a barrier to breastfeeding: A literature review. Children (Basel). 2023 Dec 8;10(12):1902.
2. Cordray H, Mahendran GN, Tey CS, Nemeth J, Raol N. The impact of ankyloglossia beyond breastfeeding: A scoping review of potential symptoms. Am J Speech Lang Pathol. 2023 Nov 6;32(6):3048-3063.
3. Dodal AA, Shelke AU, Subhadarsanee C, Gaikwad SP, Patil KS, Bajaj P. Postoperative tongue exercises for ankyloglossia following lingual frenectomy: A case report. Cureus. 2024 Sep 20;16(9):e69806.
4. Kelly Z, Yang CJ. Ankyloglossia. Pediatr Rev. 2022 Aug 1;43(8):473-475.
5. Becker S, Brizuela M, Mendez MD. Ankyloglossia (tongue-tie) [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan.
6. Salt H, Claessen M, Johnston T, Smart S. Speech production in young children with tongue-tie. Int J Pediatr Otorhinolaryngol. 2020 Jul;134:110035.
7. Garrido GMDP, Munoz GC, Huguet RM, Vega MFJ, Medina GG, Gil VMJ. Effectiveness of myofunctional therapy in ankyloglossia: A systematic review. Int J Environ Res Public Health. 2022 Sep 28;19(19):12347.
8. Cruz PV, Oliveira SAC, Notaro SQ, Alexandre OIGP, Maia RM, De Luca Canto G, *et al*. Prevalence of ankyloglossia according to different assessment tools: A meta-analysis. J Am Dent Assoc. 2022 Nov;153(11):1026-40.e31.
9. Akbari D, Bogaardt H, Docking K. Ankyloglossia in Australia: experiences and perspectives of parents and caregivers. Int J Pediatr Otorhinolaryngol. 2024 Aug;183:112046.
10. Kummer AW. Ankyloglossia: typical characteristics, effects on function, and clinical implications. Semin Speech Lang. 2023 Aug;44(4):217-229.
11. Frezza A, Ezeddine F, Zuccon A, Gracco A, Bruno G, De Stefani A. Treatment of ankyloglossia: A review. Children (Basel). 2023 Nov 14;10(11):1808.
12. Messner AH, Walsh J, Rosenfeld RM, Schwartz SR, Ishman SL, Baldassari C, *et al*. Clinical consensus statement: ankyloglossia in children. Otolaryngol Head Neck Surg. 2020 May;162(5):597-611.
13. Costa-Romero M, Docio EB, Talayero PJM, Gómez DNM. Ankyloglossia in breastfeeding infants: An update. Arch Argent Pediatr. 2021 Dec;119(6):e600-6009.
14. Bruney TL, Scime NV, Madubueze A, Chaput KH. Systematic review of the evidence for resolution of common breastfeeding problems ankyloglossia (tongue tie). Acta Paediatr. 2022 May;111(5):940-947.
15. Pérez BPM, Colomina SM, Alyosheva DN, Fernández PM, Mallada LP. Prevalence of ankyloglossia in newborns and impact of frenotomy in a Baby-Friendly Hospital. Bol Med Hosp Infant Mex. 2021;78(5):418-23.
16. Perfetti PA, Melet GNV, Páez CJA. Frenectomía lingual con láser ND:YAG: reporte de caso Lingual frenectomy with ND:YAG laser: case report. Rev Cient Odontol (Lima). 2023 Jun 29;11(2):e158.
17. Rajain T, Tsomu K, Saini N, Namdev R. Lingual frenuloplasty for ankyloglossia in children: A case series. Contemp Clin Dent. 2021 Oct-Dec;12(4):447-50.
18. Brzęcka D, Garbacz M, Micał M, Zych B, Lewandowski B. Diagnosis, classification and management of ankyloglossia including its influence on breastfeeding. Dev Period Med. 2019;23(1):79-87.
19. Borowitz SM. What is tongue-tie and does it interfere with breast-feeding? A brief review. Front Pediatr. 2023 Apr 25;11:1086942.
20. Carminatti M, Nicoloso GF, Miranda PP, Gomes E, de

Araujo FB. The effectiveness of lingual frenectomy and myofunctional therapy for children: A randomized controlled clinical trial. J Dent Child (Chic). 2022 Jan 15;89(1):3-10.
21. Baxter R, Walsh MR, Baxter BS, Lashley A, Rendell NR. Functional improvements of speech, feeding, and sleep after lingual frenectomy tongue-tie release: a prospective cohort study. Clin Pediatr (Phila). 2020 Sep;59(9-10):885-92.
22. Vázquez CCM, Navarro RA, Labrador SL, Alcaide SLM, García MC. Manejo odontológico Del paciente con frenillo lingual corto: A propósito de un caso. Cient Dent. 2023;20(3):141-6.
23. Jaikaria A, Pahuja SK, Thakur S, Negi P. Treatment of partial ankyloglossia using Hazelbaker assessment tool for lingual frenulum function (HATLFF): a case report with 6-month follow-up. Natl J Maxillofac Surg. 2021 May-Aug;12(2):280-283.
24. Amat FE, Vera PT, Amat FE, Bueno MJ, Armengol PJ, Padró FE. Multidisciplinary management of ankyloglossia in childhood: Treatment of 101 cases. A protocol. Med Oral Patol Oral Cir Bucal. 2016 Jan 1;21(1):e39-47.

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