



# ANKYLOGLOSSIA AND BREAST FEEDING DIFFICULTIES : A REVIEW

## Details of authors:

Dr. Renuka Nagarale, Professor and Head, Department of Public Health Dentistry, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.

Dr. Neetu Kadu, Associate Professor, Department of Public Health Dentistry, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.

Aqsa Sameen, Undergraduate Student, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.

Neha Shaikh, Undergraduate Student, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.

Aakifa Mirza, Undergraduate Student, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.

Shahista Shaikh, Undergraduate Student, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.

## Corresponding Authors:

Neha Shaikh,

Undergraduate Student, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.

## **ABSTRACT:**

A very frequent congenital condition known as ankyloglossia (sometimes known as "tongue-tie") is characterized by an excessively small lingual frenulum, which may limit tongue tip mobility. Breastfeeding plays an important role in development of baby and also benefits mother. Some infants with ankyloglossia may experience major nursing challenges. There is a wide range of practice regarding its diagnosis, clinical importance, and management. A skilled clinician should conduct the frenotomy when a clear link between significant tongue-tie and serious breastfeeding issues has been established and surgical intervention is judged. This review article brings a perspective on importance of assessing ankyloglossia and breastfeeding difficulties,

reinforces the benefits of exclusive breastfeeding and need for breastfeeding instructions as well as need to evaluate breastfeeding before making a decision regarding frenectomy.

**KEYWORDS:** Ankyloglossia, breastfeeding ,frenectomy,frenotomy, tongue-tie, newborn, Oral health.

## **INTRODUCTION:**

Ankyloglossia is a congenital anomaly commonly known as tongue-tie in which a small portion of tongue tissue that should have undergone apoptosis during embryonic development remains attached to sublingual surface inserted in anterior portion near the tip of the tongue, restricting its movement<sup>1,2</sup>. In the early stages of development, the tongue is united to the floor of the mouth. The tongue is released through cell death and resorption, leaving just the frenulum as a trace of the original attachment leading to ankyloglossia. Ankyloglossia could have a genetic propensity. Usually, this congenital abnormality manifests alone. When the alveolar ridge heightens and the teeth start to emerge, the lingual frenulum normally recedes as a normal step of the child's growth and development...Historically, feeding practices for a full-term infant immediately after birth includes the feeding bottle, wet nursing and formula use in which the term wet nursing refers to a woman who breastfeeds another's child. Breastfeeding has a major influence on the promotion of comprehensive health in mother-baby dyad<sup>3</sup>. Breastfeeding is a process that involves intimate connection between mother and child, which plays in fundamental role in baby's nutritional development, it also encourages the immunological, cognitive, physiological, emotional development and also promotes in mothers mental and physical health<sup>3</sup>. Simultaneous coordination of oral reflexes, protruding tongue movements, lip sealing is required for extracting breast milk while the child is breastfeeding. Hence if there is any restriction in this process it can lead to early weaning. An infant must use the upper gum ridge, buccal fatty pads, and tongue to latch on to the areola in order to successfully nurse<sup>3</sup>. The jaw and tongue move forward to start the suckling process. The front edge of the tongue becomes thinner and cupped upward as it starts to ripple back toward the throat<sup>4</sup>. The lower jaw also extracts milk from the ductules at the same time. It is obvious that a severe restriction of tongue mobility could obstruct chewing and swallowing. Tongue-tie is typically managed conservatively, with only parental education, lactation assistance, and reassurance needed. The most frequent technique used to treat partial ankyloglossia is a frenotomy, which is a straightforward incision or "snipping" of a tongue-tie. There is some evidence that frenotomy can enhance feeding in situations where there is ankyloglossia and major nursing challenges. Frenotomy by laser ablation is now carried out in specialized private clinics. The aim of the study is to create an awareness amongst the professional and to educate the parents about the accurate diagnosis and treatment plan for the ankyloglossia .This review is to diagnose the ankyloglossia based the level of the frenum attachment and to give treatment plan according to the degree of severity.

## **PROBLEM ASSOCIATED WITH ANKYLOGLOSSIA :**

A baby's oral development, as well as how he or she eats, speaks, and swallows, might be impacted by tongue-tie<sup>1</sup>. For instance, tongue-tie can result in: Issues with breast-feeding. The infant might chew instead of sucking on the breast if they are unable to move their tongue or keep it in the proper position. This may result in severe nipple soreness and hinder a baby's ability to latch on. In the end, inadequate breastfeeding might result in malnutrition and failure to thrive.<sup>5</sup> Speech problems. The ability to pronounce particular consonants, including "t," "d," "z," "s," "th," "r," and "l," can be hampered by tongue-tie<sup>34</sup>. Bad dental hygiene. A tongue tie can make it challenging for an older kid or adult to remove food particles from their teeth. Tooth decay (gingivitis) is highly prevalent in such cases. A space or gap can develop between the two bottom front teeth as a result of tongue-tie<sup>27</sup>. Difficulties with other oral tasks. Tongue tie can make it difficult to do tasks like playing a wind instrument, licking one's lips, or licking an ice cream cone<sup>10</sup>.

## **AVAILABLE METHODS OF TREATMENT:**

Prior to breastfeeding, it is advised to adjust nursing position and activate the sucking and rooting reflexes<sup>20</sup>. When ankyloglossia is diagnosed, a frenotomy is required to prevent nursing interference. Before and after the procedure, suckling stimulation is advised<sup>29</sup>.

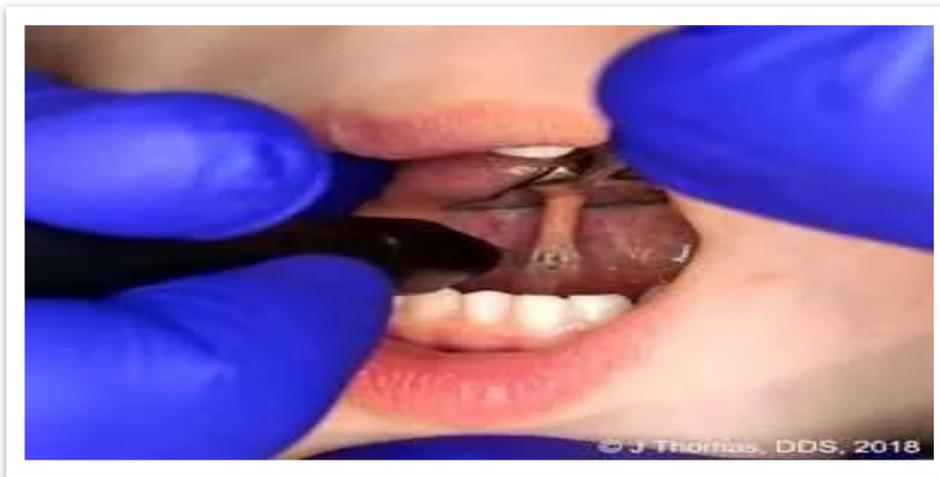
1. Myofunctional therapy: In order to improve latching on to the breast and correct nursing position, the treatment started with breastfeeding sessions<sup>28,27</sup>. The stimulation of the sucking and rooting reflexes as well as the execution of intraoral and extra oral activities were done concurrently while working with a specialist in orofacial rehabilitation. The purpose of the extra oral stimulation exercises is to strengthen the newborn's rooting reflex<sup>9</sup>. They involve pressing on the masseter muscle with the thumb and index finger in a circular motion, stimulating the rooting reflex in the perioral region by moving the thumb and index finger forward on the upper and inferior lips alternately, and moving the fingers around and on the lips<sup>18</sup>. The family was advised to perform the exercises at least three times a day, repeating them six times each time. It is always ideal to do this before feedings because the infant will be more cooperative and have a bigger appetite<sup>15</sup>. Over the course of a month, myofunctional therapy sessions lasting 20 minutes each will be held twice a week, followed by nursing sessions.
2. Frenotomy: The most recommended treatment for infants with ankyloglossia is frenotomy, which involves clipping the lingual frenulum. It is a minimally invasive, rapid, and easy surgery that can be completed in the dentist office setting during the initial appointment. Since the lingual frenulum is small and has few blood vessels, there is very little bleeding following the treatment, and babies have very minor discomfort and can milk right away. The technique's drawbacks include the potential for recurrence and the requirement for additional treatments in order to successfully release the tongue. To ascertain if frenotomy is safe and efficient in enhancing oral feeding capacity in infants with tongue-tie less than three months old. The degree to which the tongue was tied prior to frenotomy, as determined by a reliable tool (e.g., Hazelbaker Assessment Tool for Lingual Frenulum Function (ATLFF) scores below 11); (Hazelbaker 1993)<sup>34</sup>.

- Method of feeding (breast or bottle)
- Age at frenotomy (less than 10 days; between 10 days and three months).

It is procedure in which frenulum was cut with Goldman Fox scissors, in a single motion, by holding the tongue up towards the palate and cutting along the line parallel with the tongue through the white, fascia-like tissue<sup>29</sup>.

No suture was

needed.



lingual frenotomy static-02.hindawi.com/articles/cripe/volume-2016/3010594/figures/3010594.fig.002.jpg

3. Surgical frenectomy : A tiny, curved hemostat is used to hold the frenulum. The upper and bottom portions of the frenulum are sliced through by two incisions that are done after the hemostats. The frenulum is then removed, producing a wound that resembles a diamond<sup>3,8</sup>. They are stitched.

lingual frenectomy static-02.hindawi.com/articles/cripe/volume-2016/3010594/figures/3010594.fig.002

4. laser frenectomy: A lingual frenectomy, also known as a light-scalpel CO2 laser lingual frenectomy, is the laser ablation of the lingual frenum, a band of tissue that connects the tongue's bottom to the mouth's floor. A laser tongue-tie (or ankyloglossia) release is another name for this procedure. An excision of a frenulum, a little fold of tissue that restricts a part of the tongue from moving too far, using a laser is called a laser frenectomy (also known as a laser frenulectomy, laser frenotomy, or laser lip- or tongue-tie release). You can do a laser frenectomy with a soft-tissue laser such a CO2, Diode (hot tip), Nd:YAG, or Er:YAG<sup>33</sup>. During a frenectomy, the CO2 laser is the best laser for both cutting and coagulating soft tissue. In this treatment, the frenulum was cut with a diode laser operating in non-contact mode at an 800 nm wavelength<sup>25</sup>. The laser was continually delivered to the frenulum's core region from the tip to the base of the tongue. Except for the vapour created by the diode laser during the cutting, aspiration was not required<sup>25</sup>. There was no suture used, and recovery went smoothly.



lightscalpel.com/blog/laser-frenectomy/By:Baxter,Richard|Published:September 2022 in Florida Academy of General dentistry

6.Frenuloplasty : For most patients who are older than two years old, frenuloplasty is the preferable operation since it may enable a more thorough release of the tongue-tie and may theoretically lessen the risk of scarring and recurrence<sup>22</sup>. The horizontal-to-vertical plasty is the most used frenuloplasty method. In this, the frenulum is exposed by superior tongue retraction. At the point where the frenulum meets the tongue, it is abruptly separated horizontally<sup>20</sup>. Frenuloplasty is a surgical treatment carried out with surgical instruments under general anesthesia. Following the release of the frenulum, the wound is stitched up with sutures that dissolve naturally as the tongue recovers. Similar to frenotomies, frenuloplasty complications are uncommon and include bleeding, infection, damage to the tongue, and harm to the salivary glands.

### **RECOMMENDATIONS:**

1. In order to improve eating, ankyloglossia must be clearly identified, along with the traits of infants who might benefit from a frenotomy.
2. Identifying the unique features of ankyloglossia that may help the practitioner decide which infants may benefit more from frenotomy.
3. A newborn should have a thorough examination to rule out any other developmental anomalies that can make it difficult to nurse. When a baby intraoral examination is to be performed, along with a check of the tongue's function, if any eating difficulties are evident.
4. Questions about the nursing process (latch, nipple soreness, discomfort) and feeding should be directed to the mother. If there is a problem, the patient should be referred to a doctor.

5. If a frenotomy can't be done because the lingual frenulum is too thick. It is possible to advise frenuloplasty, a more involved procedure.

### **LIMITATION :**

1. This study has potential limitation. The effect estimates .in the model are based on the prospective observational study.
2. The strength of the evidence is poor to insufficient due to the tiny, short-term studies and uneven methods.
3. Due to less evidence of the ankyloglossia there is reduced sample size, which bring about need for more clinical study to conduct.
4. This review article is based on the data available on the different current research article .

### **CONCLUSION:**

. In the neonatal population, ankyloglossia is a rather frequent condition. Ankyloglossia is typically an anatomical feature with minimal effects on the development of affected infants. The majority of newborns with this problem is nevertheless able to successfully nurse. For all newborns with ankyloglossia, frenotomy is not advised based on the evidence currently available. There is no direct link between ankyloglossia and problems nursing. Severe tongue-tie and serious breastfeeding issues is found and surgical intervention is determined to be essential.

### **REFERENCES:**

1. Brazil, Ministério da Saúde. Child health. Infant nutrition: breastfeeding and complementary feeding, 1st ed. Brasília: Ministério da Saúde do Brasil; 2009. pp. 11–18.
2. Haham A, Marom R, Mangel L, et al. Prevalence of breastfeeding difficulties in newborns with a lingual frenulum: a prospective cohort series. *Breastfeed Med* 2014;9(9):438–441. DOI:10.1089/bfm.2014.0040.
3. Messner AH, Lalakea ML, Aby J, et al. Ankyloglossia: incidence and associated feeding difficulties. *Arch Otolaryngol Head Neck Surg* 2000;126(1):36–39. DOI: 10.1001/archotol.126.1.36.
4. Dollberg S, Botzer E, Grunis E, et al. Immediate nipple pain relief after frenotomy in breast-fed infants with ankyloglossia: a randomized, prospective study. *J Pediatr Surg* 2006;41(9):1598–1600. DOI: 10.1016/j.jpedsurg.2006.05.024.
5. Dollberg S, Marom R, Botzer E. Lingual frenotomy for breastfeeding difficulties: a prospective follow-up study. *Breastfeed Med* 2014;9(6):286–289. DOI: 10.1089/bfm.2014.0010.
6. Ghaheri BA, Cole M, Fausel SC, et al. Breastfeeding improvement following tongue-tie and lip-tie release: a prospective cohort study. *Laryngoscope* 2017;127(5):1217–1223. DOI: 10.1002/lary.26306.

7. Campanha SMA, Martinelli RL, Palhares DB. Association between ankyloglossia and breastfeeding. *CoDAS* 2019;31(1):e20170264. DOI: 10.1590/2317-1782/20182018264.
8. Wallace AF. Tongue tie. *Lancet* 1963;2(7304):377–378. DOI: 10.1016/s0140-6736(63)93057-5.
9. Rowan-Legg A. Ankyloglossia and breastfeeding. *Paediatr Child Health* 2015;20(4):209–218. DOI: 10.1093/pch/20.4.209.
10. Suter VG, Bornstein MM. Ankyloglossia: facts and myths in diagnosis and treatment. *J Periodontol* 2009;80(8):1204–1219. DOI: 10.1902/jop.2009.090086.
11. Ngerncham S, Laohapensang M, Wongvisutdhi T, et al. Lingual frenulum and effect on breastfeeding in Thai newborn infants. *Paediatr Int Child Health* 2013;33(2):86–90. DOI: 10.1179/2046905512Y.0000000023.
12. Ingram J, Johnson D, Copeland M, et al. The development of a tongue assessment tool to assist with tongue-tie identification. *Arch Dis Child Fetal Neonatal Ed* 2015;100(4):344–348. DOI: 10.1136/archdischild-2014-307503.
13. Billington J, Yardley I, Upadhyaya M. Long-term efficacy of a tongue tie service in improving breast feeding rates: a prospective study. *J Pediatr Surg* 2018;53(2):286–288. DOI: 10.1016/j.jpedsurg.2017.11.014.
14. Sanches MTC. Clinical management of oral disorders in breastfeeding. *J Pediatr* 2004;80(5):155–162. DOI: 10.2223/1249.
15. Khoo AK, Dabbas N, Sudhakaran N, et al. Nipple pain at presentation predicts success of tongue-tie division for breastfeeding problems. *Eur J Pediatr Surg* 2009;19(6):370–373. DOI: 10.1055/s-0029-1234041.
16. Amir LH. Managing common breastfeeding problems in the community. *BMJ* 2014;348:g2954. DOI: 10.1136/bmj.g2954.
17. Walker RD, Messing S, Rosen-Carole C, et al. Defining tip-frenulum length for ankyloglossia and its impact on breastfeeding: a prospective cohort study. *Breastfeed Med* 2018;13(3):204–210. DOI: 10.1089/bfm.2017.0116.
18. Hong P, Lago D, Seargeant J, et al. Defining ankyloglossia: a case series of anterior and posterior tongue ties. *Int J Pediatr Otorhinolaryngol* 2010;74(9):1003–1006. DOI: 10.1016/j.ijporl.2010.05.025.
19. Webb AN, Hao W, Hong P. The effect of tongue-tie division on breastfeeding and speech articulation: systematic review. *Int J Pediatr Otorhinolaryngol* 2013;77(5):635–646. DOI: 10.1016/j.ijporl.2013.03.008.
20. Campbell J. Frenotomy for Tongue Tie in Newborn Infants. *Int J Nurs Stud* 2019;91:146-7.
21. Walsh J, Tunkel D. Diagnosis and Treatment of Ankyloglossia in Newborns and Infants: A Review. *JAMA Otolaryngol Head Neck Surg* 2017;143:1032-9.
22. Haham A, Marom R, Mangel L, Botzer E, Dollberg S. Prevalence of Breastfeeding Difficulties in Newborns with a Lingual Frenulum: A Prospective Cohort Series.: *Breastfeed Med* 2014;9:438-41.
23. Segal LM, Stephenson R, Dawes M, Feldman P. Prevalence, Diagnosis, and Treatment of Ankyloglossia: Methodologic Review. *Can Fam Physician* 2007;53:1027-33.
24. Jillani Z, Scott VC, Thorpe AM, Taylor YJ. Depiction of Breastfeeding in Newspapers in the United States: 2007-2016. *Breastfeed Med* 2020;15:739-46.

25. Wong K, Patel P, Cohen MB, Levi JR. Breastfeeding Infants with Ankyloglossia: Insight into Mothers' Experiences. *Breastfeed Med* 2017;12:86-90.
26. Power R, Murphy J. Tongue-tie and Frenotomy in Infants with Breastfeeding Difficulties: Achieving a Balance. *Arch Dis Childhood* 2015;100:489-94. Changes in the incidence and surgical treatment of ankyloglossia in Canada.
27. Lisonek M, Liu S, Dzakpasu S, Moore AM, Joseph KS; Canadian Perinatal Surveillance System (Public Health Agency of Canada). *Paediatr Child Health*. 2017 Oct;22(7):382-386. doi: 10.1093/pch/pxx112. Epub 2017 Sep 25. PMID: 29479253 Free PMC article.
28. Effect of frenotomy on breastfeeding variables in infants with ankyloglossia (tongue-tie): a prospective before and after cohort study.
29. Muldoon K, Gallagher L, McGuinness D, Smith V. *BMC Pregnancy Childbirth*. 2017 Nov 13;17(1):373. doi: 10.1186/s12884-017-1561-8. PMID: 29132414 Free PMC article.
30. Frenectomy for the Correction of Ankyloglossia: A Review of Clinical Effectiveness and Guidelines [Internet].
31. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2016 Jun 15. PMID: 27403491 Free Books & Documents. Review.
32. Trends of ankyloglossia and lingual frenotomy in hospital settings among children in Denmark. Ellehaug E, Jensen JS, Grønhøj C, Hjuler T. *Dan Med J*. 2020 May 1;67(5):A01200051. PMID: 3235119
33. [lightscalpel.com/blog/laser-frenectomy/](https://lightscalpel.com/blog/laser-frenectomy/) By: Baxter, Richard | Published: September 2022 in Florida Academy of General Dentistry
34. Tongue tie: the evidence for frenotomy. Brookes A, Bowley DM. *Early Hum Dev*. 2014 Nov;90(11):765-8. doi: 10.1016/j.earlhumdev.2014.08.021. Epub 2014 Sep 23. PMID: 25258296 Review.
35. Frenotomy for tongue-tie in newborn infants JE O'Shea, JP Foster, CPF O'Donnell... - Cochrane Database ..., 2017 - [cochranelibrary.com](https://cochranelibrary.com)

