Tongue-Tie and Breastfeeding Challenges: Importance of Appropriate Diagnosis, Treatment and Referral

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1

Definition

- Ankyloglossia or Tongue-Tie is defined as the presence of a sublingual frenulum that changes the appearance and function of the infant's tongue because of its decreased length, lack of elasticity, or attachment too distal beneath the tongue or too close to or onto the gingival ridge.

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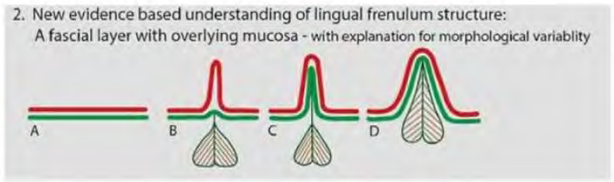
Anatomy of a Frenulum



Mills N, Pransky SM, Geddes DT, Mirjalili SA. What is a tongue tie? Defining the anatomy of the in-situ-lingual frenulum. Clinical Anatomy 2019; 32: 749-761

3

History

- Documented as early as 3rd century BC
- Associated with breastfeeding problems for more than 500 years in various contexts
- Much folk lore about midwives using finger-nails after delivery
- Frenotomy tools frequently with circumcision trays

4

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Prevalence

- The exact prevalence of tongue-tie is unknown. According to the most recent evidence, prevalence rates range from 0.1% to 10%, clustering around 3.5%–5%, depending on the criteria used to evaluate the lingual frenum in a particular study.

5

Tongue tie and breastfeeding

- In babies with breastfeeding problems, there is a 12.8% incidence
- The condition has been associated with an increased incidence of breastfeeding difficulties: 25% in affected versus 3 % in babies with normal anatomy

6

Slide 5

LW0 A greater emphasis on exclusive breastfeeding in recent years has re-ignited the historical debate over the role of ankyloglossia (tongue-tie) in infants with breastfeeding difficulties. (i) whether ankyloglossia is associated with breastfeeding difficulties and (ii) whether frenotomy helps mother–baby dyad in such setting?
Laura Wilwerding, 2023-07-27T18:19:10.631

Is Prevalence Increasing?

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- Waxing and waning breastfeeding support seem related
- Socioeconomic factors
- Social Media
- Lack of Consistent diagnosis/definition especially "posterior" tongue ties

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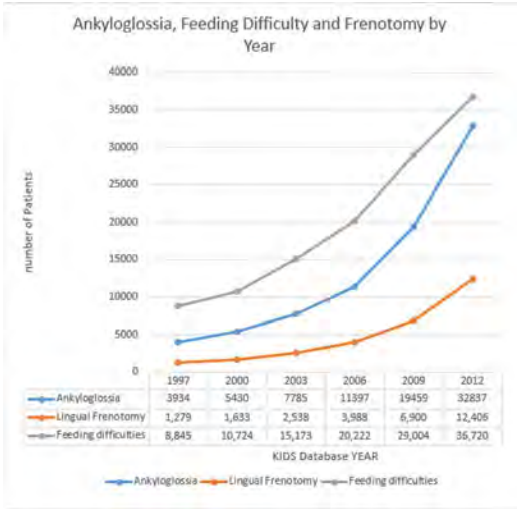

Walsh J, Links A, Boss E, Tunkel D. Ankyloglossia and Lingual Frenotomy: National Trends in Inpatient Diagnosis and Management in the United States, 1997-2012. Otolaryngol Head Neck Surg. 2017 Apr;156(4):735-740.

8

Slide 7

LW0 From 2012 to 2016, there was an 110.4% increase in reported diagnosis of ankyloglossia in the inpatient setting with similar increases in lingual frenotomy procedures. As seen previously, sex, type of insurance, median income ZIP code, and geographic region were associated with diagnosis of ankyloglossia. The observed trends from prior to 2012 have continued to increase, while unanswered questions about diagnostic criteria and about which infants should undergo frenotomy remain.

Laura Wilwerding, 2023-06-29T19:02:46.510

Slide 8

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Laura Wilwerding, 2023-06-29T18:59:56.214

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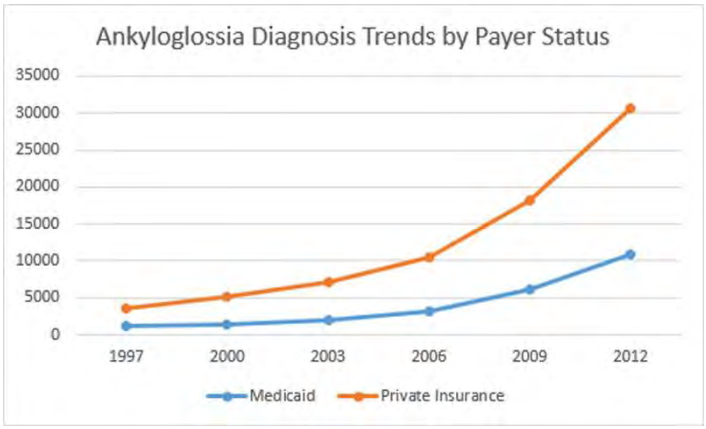

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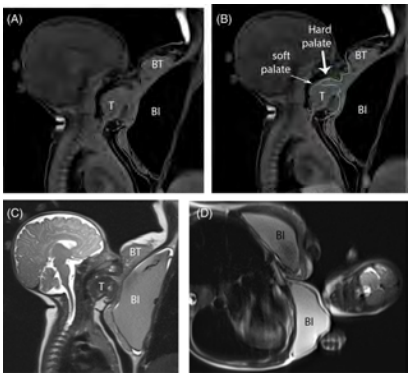
9

MRI Imaging of Milk Removal



Laryngoscope Investig Oto, Volume: 5, Issue: 3, Pages: 572-579, First published: 20 May 2020, DOI: (10.1002/lio2.397)

10

Slide 9

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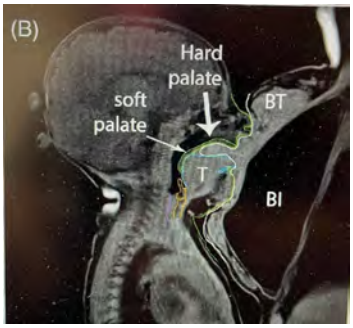
Laura Wilwerding, 2023-07-27T18:23:45.983

Physiology of milk removal



Vacuum is maintained throughout

Elevation of tongue to place nipple at hard palate, seals laterally as well

Pharyngeal phase, soft palate closes down, peristaltic laryngeal constriction, laryngeal elevation with swallow

11

Role of upper lip in breastfeeding

- Shah S, Allen P, Walker R, Rosen-Carole C, McKenna Benoit MK. Upper Lip Tie: Anatomy, Effect on Breastfeeding, and Correlation With Ankyloglossia. Laryngoscope. 2021 May;131(5):E1701-E1706.

LW1

- One series of MRI images showed upper lip is neutral in 8/10 infants, not flanged out

12

Slide 12

LW0 There was no correlation between maxillary frenulum grade and comfort with breastfeeding, pain scores, or latch. There was also no relationship between tip to frenulum length (tongue tie) and visualized lip anatomy, suggesting that tongue tie and lip tie may not cluster together in infants. Observational study
Laura Wilwerding, 2023-06-30T16:19:32.062

LW1 we found the upper lip position during thelatch was neutral (not everted) in eight infants, everted in two and inone we were unable to accurately determine lip position.
Laura Wilwerding, 2023-06-30T16:25:26.843

LW0

Tongue tie causes what??

- Many conditions/problems "associated" or "caused" by tongue tie according to science and evidence
- More often social media and peer groups
- Lead to unnecessary procedures and risk to babies

13

Endless posts and "information"

14

Slide 13

LW0

Nipple pain/damage or no pain
Infrequent swallows after initial letdown
Slides off the breast or falls asleep while feeding
Crying, fussing, reflux, posseting, gagging, hiccoughs ,choking, poor weight gain, colic, green stools, squirmy
Chewing nipple, inability to hold pacifier, dribbling milk,
Short sleeps "catnaps
Mouth breathing, snoring(stertor?), noisy breathing (stridor?)nasal congestion
Milk coming out nose, "frustration" at breast or bottle
Feeds > 20 minutes after 6 weeks, feeding > than q2-3 h

Laura Wilwerding, 2023-07-28T15:40:32.463

Tongue-tie: Potential Impact on breastfeeding

- Difficulty in latching and maintaining latch
- Inability to effectively empty breast
- Decrease in milk supply due to poor emptying
- Maternal Pain and nipple trauma
- Inability to "let-down" due to pain
- Plugged ducts and Breast infections

15

Evidence for negative impacts on breastfeeding

- **Conclusion:** Neonates with tongue-tie are at increased risk for breastfeeding difficulties. An early recognition of this association by primary care provider and prompt referral to a lactation consultant is important. In cases with clearly documented breastfeeding difficulties, frenotomy often results in rapid improvement in symptoms.

Kumar M, Kalke E. Tongue-tie, breastfeeding difficulties and the role of Frenotomy. Acta Paediatr. 2012 Jul;101(7):687-9. doi: 10.1111/j.1651-2227.2012.02661.x. Epub 2012 Apr 5. PMID: 22404175.

16

Speech Issues and Tongue tie

- No evidence that frenotomy improves outcomes more than speech therapy alone
- 4 systemic reviews from 2013-2021
- Most likely an issue in severe forms of ankyloglossia

17

GERD caused by tongue tie?

- Theoretical risk posed with swallowing air due to losing seal that leads to distention and more spitting up
- Few studies of poor quality
- Anecdotal

18

Airway and orthodontic issues

- Theory is that tongue doesn't rest on palate, therefore palate doesn't spread causing smaller airway, dental crowing and potential bite issues
- ?prenatal sequence of events that cannot be altered
- No studies to substantiate

19

Approach to the breastfeeding dyad

- Interview mom regarding the breastfeeding experience including:
  - Pain/including severity-may use pain scale
  - Perceived inadequate latch or lack of sustained latch
  - Length of feeding and frequency
  - Nipple trauma-including thorough examination for creases, bruises, blisters, cracks or bleeding

20

Approach to the breastfeeding dyad

- Close observation of a feeding
  - Unusual sounds (clicking)
  - Frequent interruption of latch
  - Abnormal head movements
  - Poor milk transfer (pre and post weights)
  - Observe feed in different positions

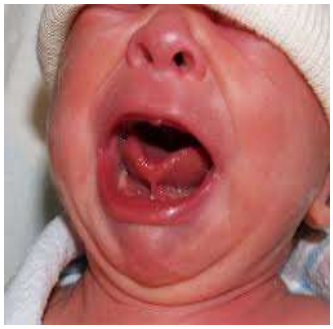
21

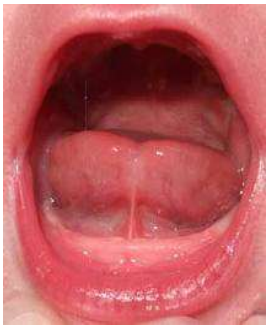
Conditions leading to mistaken tongue tie diagnosis

- Simply shallow latch, positioning, approach to latch
- Neurological issues, low tone, discoordinate suck
- Prematurity, need for more stimulation on palate (only evidence-based use of shield)
- Undiagnosed cardiac disease
- Anatomical abnormalities/airway issues

22

Common Presentations





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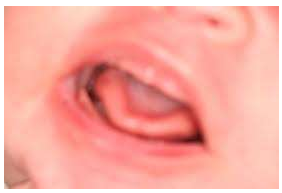
Cupping



24

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Clinical Tools and Classification

- No Gold Standard
- Simple visual vs complex
- Descriptive vs Functional
- Does not mean intervention needed
- Who is using the tool?

25

Clinical Tools and Classification

TABBY Tongue Assessment Tool

	0	1	2	SCORE
What does the tongue-tip look like?				
Where it is fixed to the gum?				
How high can it lift (wide open mouth)?				
How far can it stick out?				

26

Slide 25

LW0 The concept of mild, moderate, and severe tongue-ties based on visual appearance is false. The condition must be assessed on the severity of interference with normal breastfeeding. Some questions include the following: Is mom's milk production increasing to the level needed to meet the caloric needs of the infant(s)? Is a nursing session less than 40 minutes in duration and satisfies the infant(s) for at least 2–3 hours? Is the latch comfortable for mom and not damaging to mom's breast tissues? Is the infant(s) able to transfer milk efficiently and gaining weight as expected? As we consider all of these factors, and not just the appearance of the tongue and mouth floor, we likely are including more infants in the category of clinically significant tongue-tie, and thus, the "incidence" of tongue-tie is likely enlarging in parallel with our understanding of what constitutes a tongue-tie.
Laura Wilwerding, 2023-07-24T22:23:08.659

Hazelbaker Assessment Tool for lingual frenulum function

- Semi-quantitative, complex scoring system
- Scores consistent with significant ankyloglossia have been shown to be highly correlated with difficulty with latch and maternal sore nipples.
- Significant ankyloglossia is defined as appearance scores of 8 or less and function scores of 11 or less

27

More practical ways to evaluate/grade tongue tie

- Same underlying principles as Hazelbaker but less detailed
- Appearance:
  - Superior Insertion (Grades I-IV from tip of tongue to base of tongue)
  - Inferior Insertion (floor of mouth to alveolar ridge)
  - Presence of cupping
- Function:
  - Anterior, Superior, and Lateral movement

28

Evidence for frenotomy in anterior tongue tie

- Cochrane Review in 2015: short team decrease in maternal pain
- 5 RCT from 2005-2013

29

Study	Design	Outcome	Comments
Hogan et al 2005	RCT n= 57	27 improved in frenotomy group: 1 in control	Control group all tx at 48h not blinded no objective measure of BF
Dollberg et al 2006	Db blind X over RCT n= 25	↓ pain scores improved LATCH after treatment : sham procedure	F/U immediate only no measure of feeding quality or experience small n
Buryk et al 2011	Single blind RCT n= 58	Sig greater ↓ pain scores ↑BF scores immediately after Tx	All but 1 infant released TT in 2 weeks in control preventing long term analysis
Berry et al 2012	RCT n= 60	Tried to mask Tx 78% Tx group improved feeding vs 47% control	Control group had Tx after the 1st feed preventing long-term F/U
Emond et al 2013	RCT n=107	LATCH score at 5 days same Self reported ↑ efficacy bfdg	Excluded "severe' TT and > 2 weeks of age; most controls Tx by 5d, LATCH scores not sensitive Ingram et al 2015

30

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Posterior tongue tie

- No agreed upon definition, no consensus among ENT and dental colleagues or breastfeeding medicine providers
- No specific, valid studies to address indication for or improvement with frenotomy
- Deliberately not mentioned in the ABM tongue tie recommendations

31

ABM Guidance

- If frenulum is identified as being restrictive in tongue function needed for effective breastfeeding, frenotomy should be offered within a shared decision- making model

32

Slide 31

LW0 Could it be that the diagnosis of ‘‘posterior’’ tongue-tie leads families to hope that their distressing breastfeeding difficulty has a simple ‘‘quick fix,’’ resulting in unnecessary, even repeated frenotomies?”
“After a deep frenotomy … could the healed connective tissue prove to be less flexible than the pre-incision frenulum?”
Could it be that habituated or defensive muscular tension has the potential to affect the apparent elasticity of connective tissue and the tongue’s function during oral examination and during breastfeeding?
“In my view we need to be extremely cautious given the absence of reliable evidence or historical precedence to support the efficacy of frenotomy other than for ‘‘anterior’’ tongue-tie
Laura Wilwerding, 2023-07-27T18:55:20.817

Recommendations for referral for frenotomy

- Conservative management may be all that is needed, changing positions to optimize latch etc.
- If problems are severe, or persist beyond the first 2 weeks of life, referral is prudent
- Ideally referral is to clinician who is experienced not only in frenotomy, but is also able to assist mom with breastfeeding

33

Relative Contraindications to Frenotomy

- Anatomical variations with significant recessed chin
- Low tone
- Significant existing oral aversion

34

Frenotomy: Informed consent

- Parents should be counseled about risks, benefits, and alternatives to procedure. Informed consent obtained.
- Include chance that breastfeeding problems may not improve with frenotomy

35

Risk of Frenotomy

- Bleeding
- Infection
- Nerve damage
- Salivary gland damage
- Oral aversion
- Won't help

36

Surgical Techniques

- Laser
  - Somewhat less bleeding
  - More thermal collateral damage
  - Preliminary studies suggest increased risk of oral aversion
- Steel/scissors
  - Potentially more bleeding
  - More precise, less surrounding tissue damage

37

Increased Oral Aversion with Laser?

- Statistically significant increased risk $p<0.001$
  - Laser 38/86 44%
  - Scissors 17/104 16%
- Related to type of procedure or lack of breastfeeding support?

O'Connor, M.E., Gilliland, A.M. & LeFort, Y. Complications and misdiagnoses associated with infant frenotomy: results of a healthcare professional survey. Int Breastfeed J 17, 39 (2022).

38

To Anesthetize or not…..

- The frenulum is almost devoid of nerve tissue. Under 4 months babies usually tolerate the procedure well without anesthesia.
- Topical anesthetic may be used, but then there is undesirable numbing of the mouth that may affect baby's ability to breastfeed immediately following the procedure.

39

Frenotomy Scissors Procedure

- Instruments: Iris Scissors and Grooved Tongue elevator
- Supplies: Clean Gloves and Gauze

40

Frenotomy:Infant Positioning

- Supine on table of mother's lap
- Slight extension of the infant's neck
- Loosely swaddle infant to control arms and have assistant stabilize the head
- Assistant may need to use index finger to maintain opening of jaw

41

Frenotomy Procedure

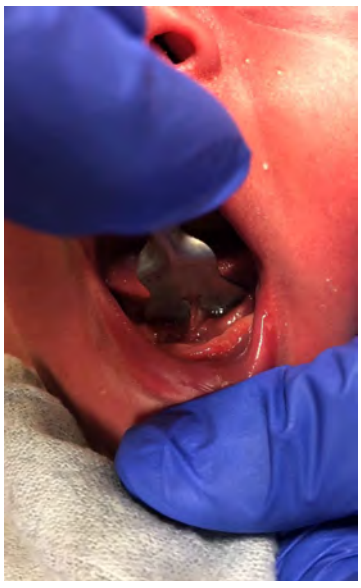
- Using the grooved tongue elevator, the provider lifts the tongue and exposes the frenulum, protecting the base of the tongue
- Incision is made in the thinnest portion of the frenulum, close to the retractor and parallel to the tongue. Extension should continue into the sulcus between the tongue and the genioglossus muscle.

42

Frenotomy Procedure (cont)

- Area is blotted with gauze
- Baby is placed immediately at breast to tamponade any further bleeding
- Reassess area after nursing to ensure all bleeding is stopped
- No specific aftercare is required except breastfeeding
- A white or yellowish patch may occur for 1-2 weeks after procedure

43



Scissor Technique

Grooved tongue elevator elevates and creates counter-pressure

No evidence for injected or topical anesthetic.

Sucrose or breastmilk, immediate post procedure breastfeeding and support

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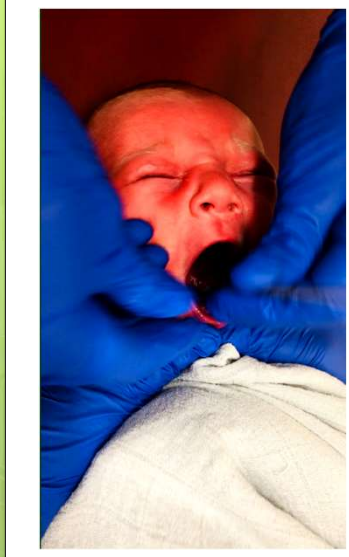

Scissor Frenotomy

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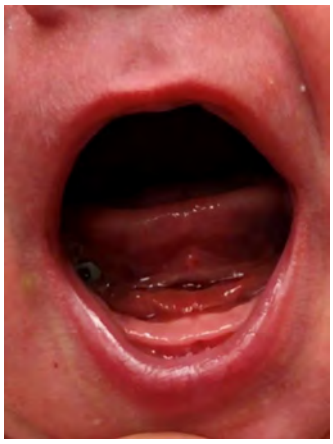

Immediately after nursing post-procedure

46

Post-care?

- Often parents instructed to perform various manipulations regarding the incision – rub, stretch, massage at varying frequencies and for varying lengths of time (max 8 weeks)
- Wake the infant when necessary and continue despite protestations/ crying etc to prevent "reattachment" and a repeat procedure.

47

Wound Healing Myths

- Stretching reduces scar tissue and reattachment
  - Reattachment is just scar tissue and manipulating the wound increases scarring
- Rubbing the wound improves healing
  - Actually, this is called dehiscence and there are not other wounds we do this to

48

Risks of aggressive after care

- Breast refusal
- Crying, maybe traumatized baby and parents
- Oral aversion
- Wound dehiscence
- Infection
- Excessive scar tissue formation
- "Reattachment"

49

No Evidence to support "Active" wound healing

- No evidence it prevents second procedure
- No difference in improved breastfeeding or EBF rates
- 43.5% did not perform recommended massage due to anxiety, reluctance to touch operative site, fears of harming infant, bleeding or pain had occurred and awareness of conflicting advice.

Bhandarkar et al Maternal and Child Health Journal (2022) 26:1727–1731
https://doi.org/10.1007/s10995-022-03454-

50

Evidence for lip tie intervention

- Remember the role of upper lip in breastfeeding is simply to make a seal
- Systematic Review in Journal Breastfeeding, 2019
  - No RCTs
  - 4 cohort studies
  - Flawed/biased
  - No evidence

51

Management of Maternal Complications

- If nipple damage or infection is present- treat! Avoid creams with steroids, anti-fungals and even anti-bacterials unless clearly indicated
- Address issues of supply and ensure baby is growing well
- Follow up in 3-4 days after frenotomy

52

Summing it up

- Tongue-tie is quite common, and all infants should have tongue appearance and function evaluated if breastfeeding problems exist.
- Recent literature supports frenotomy as a useful tool in treating breastfeeding problems related to tongue-tie.
- Existence of sublingual frenulum/tongue-tie does not necessarily require procedure

53

Other take-home messages

- There is no indication or evidence to support labial frenotomy or release of other "ties"
- Laser is not necessary nor are stretches
- Frenotomy alone is not always effective so ongoing breastfeeding support is vital
- Referral to PT/myofunctional therapy can be helpful in treating the whole patient if problems persist despite frenotomy

54