

Tongue-tie –myth or reality?

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Tongue-Tie (Ankyloglossia) Current Concepts

- ‘an outdated concept –a relic of times past’

or

- ‘a recognised cause of breast feeding difficulties –and a very easily corrected one’



Tongue -Tie

- Bottom of the tongue tethered to the floor of the mouth by a membrane (frenulum) causing restriction of the tongue's range of movements
- May result in feeding, speech, swallowing and associated oral development problems



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The Lingual Frenulum -function

- During early gestation (as early as 4 weeks) the lingual frenulum serves as a guide for the forward growth of the tongue
- After birth the tip of the tongue continues to elongate, giving the impression of the frenulum retracting, though in reality this has been going on for some time before birth.



Morphological Differences between Neonatal and Adult Tongue

- The neonatal tongue has-
 - thinner mucosa over dorsal and ventral aspects
 - very little fat and subcutaneous tissue
 - larger extrinsic muscles (especially styloglossus) –involved in movement of tongue en bloc



Tongue-tie

- Reported incidence 1.7- 4.8%
- No universal tool for assessment
- No diagnostic criteria
- Diagnosis made on basis of
 - a) anatomical appearance of tongue
 - b) functional disturbance
- Much debate, disagreement

Tongue-Tie types

- Type 1 attachment of frenulum to tip in front of alveolar ridge in lower lip sulcus
- Type 2 attaches 2-4 mm behind the tongue tip and attaches on alveolar ridge
- Type 3 attaches to the mid tongue and middle of floor of mouth usually tighter and less elastic
- Type 4 attaches against base of tongue and is shiny and very inelastic



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Bottle vs Breast Feeding

- Bottle fed infants who are tongue tied can trigger the 'phasic bite reflex' =chewing.
- Breast fed infants who are tongue tied cannot initiate tongue grooving, cupping or depression.
- Tongue-tie may interfere with front to back peristalsis as well as tongue palate synchronisation in breast feeding.

Tongue –Tie

- diagnostic assessment

- Physical examination
- Rule out thrush, clefts, other defects incl. neuromuscular
 - range of motion and degree of extension of tongue beyond lower dental ridge and lip
 - elevation to palate with mouth wide open
 - transverse movement without twisting the tongue
- Observation of breast feeding
 - adequacy of latch and milk transfer
 - test weigh
 - efficiency of bolus handling
 - fatigue and irritability during/after feeding
 - document degree of nipple pain and nipple skin erosion



Digital assessment of posterior tether, colic and latch difficulties responded to frenotomy.

Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF) (Ballard et al. Paediatrics 2002;110)

- **Appearance Items**

- Appearance of tongue when lifted

- 2: Round or square

- 1: Slight cleft in tip apparent

- 0: Heart- or V-shaped

- Elasticity of frenulum

- 2: Very elastic

- 1: Moderately elastic

- 0: Little or no elasticity

- Length of lingual frenulum when tongue lifted

- 2: >1 cm

- 1: 1 cm

- 0: <1 cm

- Attachment of lingual frenulum to tongue

- 2: Posterior to tip

- 1: At tip

- 0: Notched tip

- Attachment of lingual frenulum to inferior alveolar ridge

- 2: Attached to floor of mouth or well below ridge

- 1: Attached just below ridge

- 0: Attached at ridge



Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF) (Ballard et al. Paediatrics 2002;110)

Function Items

Lateralization

- 2: Complete
- 1: Body of tongue but not tongue tip
- 0: None

Lift of tongue

- 2: Tip to mid-mouth
- 1: Only edges to mid-mouth
- 0: Tip stays at lower alveolar ridge or rises to mid-mouth only with jaw closure

Extension of tongue

- 2: Tip over lower lip
- 1: Tip over lower gum only
- 0: Neither of the above, or anterior or mid-tongue humps

Spread of anterior tongue

- 2: Complete
- 1: Moderate or partial
- 0: Little or none

Cupping

- 2: Entire edge, firm cup
- 1: Side edges only, moderate cup
- 0: Poor or no cup

Peristalsis

- 2: Complete, anterior to posterior
- 1: Partial, originating posterior to tip
- 0: None or reverse motion

Snapback

- 2: None
- 1: Periodic
- 0: Frequent or with each suck

Maternal Presentation of Tongue - Tie

- nipple pain and/or erosions
- painful breasts
- low milk supply
- plugged ducts
- mastitis
- frustration, disappointment, discouragement with breast feeding
- untimely weaning

Infant Presentation of tongue -Tie

- poor latch and suck
- clicking sound while feeding
- ineffective milk transfer
- inadequate weight gain
- irritability or colic
- fussiness and arching at breast
- fatigue within one or two minutes
- poor suction to maintain deep grasp on breast
- 'chewing of the nipple'
- **Gradual sliding off the breast**
- falling asleep before adequate volume taken





Ankyloglossia: incidence and associated feeding difficulties: Messner et al :Arch Otolaryngol Head Neck Surg. 2000 Jan;126

- Outcome measures –incidence of ankyloglossia, and breastfeeding rates and difficulties.
- 1041 babies screened in well baby nursery.
- 50 newborns identified (4.8%) with ankyloglossia and invited to participate.
- Telephone interviews monthly for 6 months.

Results : Messner

- Incidence 4.8% (n=50/1041)
- M:F =2.6:1
- 30/36 (83%) mothers intending to breastfeed followed up were still breastfeeding at 2 months vs 33/36 (92%) of matched controls (p=0.9)
- Breastfeeding difficulties experienced by 25% mothers of infants with ankyloglossia versus 1/36(3%) of controls (p<0.01)
- Conclusion. Ankyloglossia relatively common, and adversely affects breastfeeding in selected infants.



Ankyloglossia: Controversies in Management : Messner et al Int J Pediatr Otorhinol 2000 Aug 31;54(2-3):123-31

- Aim: to determine beliefs regarding ankyloglossia and its treatment
- Method : anonymous written survey
- Participants : otorhinolarygologists (n=423), paediatricians (n=425), speech pathologists (n=400), lactation consultants (n=350) randomly selected.
- Response rates approx 50%

Results : Messner and Lalakea

- 69% lactation consultants believe that tongue-tie is definitely associated with feeding problems vs minority of physicians
- 60% of ENTs and 50% of SLTs but only 23% of Paeds believe tongue tie is sometimes associated with speech difficulties
- Surgery recommended for speech, feeding, social/mechanical difficulties by approx 65% of ENTs vs approx 23% of Paeds




Frenotomy

The procedure involves holding the tongue up towards the roof of the mouth to make the frenulum taut, then cutting through the white, fascia-like tissue along a line parallel with, and fairly close to, the tongue. The cut is made in a single motion in less than a second.







Ankyloglossia: Assessment, Incidence, and Effect of Frenuloplasty on the Breastfeeding Dyad.

Ballard et al Pediatrics vol 110 no 5 November 2002 pp.e63

- Aim: define significant ankyloglossia, determine incidence in breastfeeding infants, measure effectiveness of frenuloplasty.
- Methods: 2763 breastfeeding inpatients and 273 outpatients with breastfeeding problems assessed using ATLFF (Hazelbaker)
- Latch, pain, sensation, quality of suckling were described. If lingual function impaired, frenuloplasty offered and consented

Results: Ballard

- Ankyloglossia diagnosed in 88/2763 (3.2%) inpatients and 35/273 (12.8%) outpatients
- All frenuloplasties performed without incident
- Latch improved in all cases
- Maternal pain levels fell significantly after the procedure
- Conclusions: Ankyloglossia is relatively common, contributes to a significant proportion of breastfeeding problems –poor latch and nipple pain included, and frenuloplasty when indicated by careful assessment of lingual function is a successful approach.

Randomised, controlled trial of division of tongue-tie in infants with feeding problems.
Hogan et al. J Paediatr Child Health. 2005
May-June;41(5-6):242

- Ethically approved, prospective,
- Aim: to compare current medical treatment (referral to lactation consultant) with immediate division for infants with tongue-tie
- Method: All infants with tongue ties born(5 units) over a 5 month period inspected for tongue-tie and followed for feeding problems. Mothers consented enrolled, and if feeding problems occurred, randomised to either 48 hours intensive lactation support or immediate division

Results : Hogan trial

- 201 babies identified of 1866 born (10.7%)
- 88(44%) had feeding problems (breast or bottle)
- 57 randomised (40 breastfed, 17 bottle fed)
- 28/29 controls did not improve at 48hrs were then offered division and 27/28 (96%) improved and fed normally
- 27/28 babies offered immediate division improved and fed normally ($p < 0.001$)
- Conclusions: Division of tongue-tie resulted in improved feeding in 54/57 (95%) $p < 0.001$. The procedure is safe and successful and significantly better than intensive LC support

Review of tongue tie release at a tertiary maternity hospital :

Lisa Amir et al J Paediatr Child Health. 2005
May-June;41(5-6)

- 12 month review of assessment (using ATLFF) and release of lingual frenulum and report on breastfeeding outcomes
- Telephone interview 3 months after the assessment and release (if done)
- 66 infants referred and assessed (follow-up data on 46 presented –20 had incomplete data or were lost)
- 35/46 had frenotomy, with 28/35 (83%) reporting improved breastfeeding
- High parental satisfaction and no complications

Amir :Most important Presenting Problem in infants assessed as having significant tongue-tie

• Attachment to the breast	N=12	(44%)
• Nipple Pain	6	(22%)
• Prolonged feeding	5	(19%)
• Poor weight gain	2	(7%)
• Frequent feeding	1	(4%)
• Nipple damage	1	(4%)



Frenulotomy for Breastfeeding Infants With Ankyloglossia: Effect on Milk Removal and Sucking Mechanism as Imaged on Ultrasound

Donna Geddes et al Pediatrics 2008.132

- 24 mother infant dyads experiencing breastfeeding difficulties
- Submental ultrasound scans of oral cavity before and >7 days after frenotomy
- Milk transfer, pain, LATCH scores* assessed before and after frenotomy
- All infants demonstrated significant improvement in milk intake, LATCH score and pain scores
- Sucking dynamics described-23 improved after procedure
- * latch, audible swallowing, type of nipple, comfort, and hold



Efficacy of Neonatal Release of Ankyloglossia: a Randomised Trial

Buryk et al Pediatrics 2011;128

- Randomised single blind trial
- Neonates with breast feeding difficulties
- Frenotomy (30) vs sham procedure(28)
- Pre- and post- intervention assessments using HATLFF and nipple pain score
- **Both groups showed decreased pain scores ($p < .001$)**
- Frenotomy group breastfeeding scores higher ($p < .001$)
- No demonstrable effect on length of breast feeding b/c 27/28 infants in sham group opted for subsequent frenotomies!



Tongue-tie : my conclusions

Tongue tie exists

Not all tongue-tie is problematic

There is less acceptance of failure to breastfeed successfully –the goalposts have shifted.

Health professionals should listen to the mothers (nipple pain/discomfort)

There is no reliable tool for assessment (in all hands)

Tongue-tie can safely be divided (without undue pain?) in the neonatal period

Paediatricians are the least receptive to frenotomy
- the literature reflects this