

Review of tongue-tie release at a tertiary maternity hospital

Lisa Helen Amir,^{1,2} Jennifer Patricia James¹ and Joanne Beatty¹

¹Breastfeeding Education and Support Services, Royal Women's Hospital and ²Key Centre for Women's Health in Society, University of Melbourne, Carlton, Victoria, Australia

Objective: To review the first 12 months of assessment and release of lingual frenulum (frenotomy) at a breast-feeding clinic in a tertiary maternity hospital (August 2002 to end of July 2003) and to report on the breast-feeding outcomes and parental satisfaction.

Methods: A structured telephone interview was conducted with the mother at least 3 months after the assessment. Data were collected about the presenting problem and the effect of release of the tongue-tie (if performed). Parents were also asked about their satisfaction with the procedure and of problems following the release.

Results: Sixty-six babies were assessed in 12 months. If infants were assessed as: (i) having impaired lingual function (using the Hazelbaker assessment tool for lingual frenulum function); (ii) the frenulum visualized to be a thin membrane; and (iii) the parent(s) gave informed consent, the frenulum was released. Initial and follow-up data are available on 46 infants. Infants had a mean age of 18 days (range 3–98), 63% were male infants and most had difficulties with attachment to the breast. Frenotomy was performed on 35 infants and breast-feeding improved in 83%. Parents reported high levels of satisfaction with the frenotomy procedure and no complications were reported.

Conclusion: Frenotomy is a safe and easy procedure. Infants with a significant tongue-tie that is interfering with breast-feeding have shown an improvement with breast-feeding following frenotomy.

Key words: ankyloglossia; breast-feeding; frenotomy; lingual frenulum; tongue-tie.

Tongue-tie, or ankyloglossia, is a congenital oral anomaly in which the lingual frenulum is abnormally short and may therefore restrict mobility of the tongue tip.¹ Tongue-tie is a controversial issue among paediatricians,^{2–5} however, lactation specialists identify tongue-tie as a potential cause of breast-feeding problems.⁶ Many case studies and case series of infants experiencing problems, such as ineffective latch, painful attachment, poor weight gain have been published in the breast-feeding literature.^{7–9} A survey of North American paediatricians, otolaryngologists, speech pathologists and lactation consultants concluded that there was little consensus regarding the significance of ankyloglossia or its management.¹⁰ Paediatricians were less likely to believe that tongue-tie causes symptoms than their colleagues.¹⁰

As there is no generally agreed definition of what constitutes a problematic tongue-tie, a quantitative instrument has been developed, the Hazelbaker assessment tool for lingual frenulum function (HATLFF), to assess the likeliness of tongue-tie to impact negatively on breast-feeding (Table 1).¹¹ The HATLFF includes five appearance items, such as length of lingual frenulum (>1 cm, 1 cm, <1 cm) and seven function items, such as extension of the tongue (tip over the lower lip, tip over lower gum only, neither). Ballard and colleagues have explained how to score each item.¹² Significant ankyloglossia is diagnosed when appearance score total is eight or less and/or function score total is 11 or less.¹²

The reported prevalence of tongue-tie varies widely, ranging from 0.02 to 4.8%.¹ There is a lack of information about the natural history of this condition.¹ Ballard and colleagues examined 2763 breast-feeding inpatient infants on the first or second days of life, using the HATLFF,¹¹ and diagnosed 88 infants as having ankyloglossia, a prevalence of 3.2%.¹² Of the infants presenting with breast-feeding problems to an outpatient clinic, 35 of

273 infants (12.8%) of the outpatients were diagnosed as having ankyloglossia.¹²

A randomized controlled trial in Southampton, UK, in 2002, identified infants with a tongue-tie who were experiencing breast-feeding problems.¹³ Fifty-seven infants were randomly assigned to have immediate frenotomy by the lactation consultant/infant feeding specialist or to receive help with positioning and attachment by the lactation consultant and review in 48 h. They found that releasing the tongue-tie improved feeding in 27 out of 28 infants, compared to one out of 29 who improved without release.¹³

Frenotomy can easily be performed on infants younger than 3 months without any anaesthesia. The infant is placed on an examination table with good lighting, and restrained by an assistant holding the infant's flexed elbows close to the face. Some operators use a grooved retractor,¹² but our practice is to use the index finger and thumb of the non-dominant hand to stabilize and enable visualization of the lingual frenulum.¹ The frenulum is divided by 2–3 mm with small sterile scissors, adjacent to the tongue taking care to avoid any vascular tissue. There is usually no blood loss or minimal ooze. The infant often cries while being restrained but usually ceases as soon as they are comforted after the procedure. They are encouraged to breast-feed immediately.¹

An English paediatric surgeon reviewed frenotomies undertaken in his clinic without anaesthetic (1999–2001); of 144 infants, there was no bleeding in 64, 'a few drops' in 70 and 10 lost 'a small amount of blood'.¹⁴ He concluded that 'Division is easy, virtually pain-free, safe and usually successful'.^{14,p.22} The recent review by Lalakea and Messner concludes that frenotomy is indicated when an infant is having breast-feeding difficulties, and that it is a minor procedure that can be performed quickly on infants up to

Table 1 Hazelbaker assessment tool for lingual frenulum function¹¹

Appearance items	Function items
Appearance of tongue when lifted 2: Round or square 1: Slight cleft in tip apparent 0: Heart or V-shaped	Lateralization 2: Complete 1: Body of tongue but not tongue tip 0: None
Elasticity of frenulum 2: Very elastic 1: Moderately elastic 0: Little or no elasticity	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
Length of lingual frenulum when tongue lifted 2: >1 cm or embedded in tongue 1: 1 cm 0: <1 cm	Extension of tongue 2: Tip over lower lip 1: Tip over lower gum only 0: Neither of above, or anterior or mid-tongue humps
Attachment of lingual frenulum to tongue 2: Posterior to tip 1: At tip 0: Notched tip	Spread of anterior tongue 2: Complete 1: Moderate or partial 0: Little or none
Attachment of lingual frenulum to inferior alveolar ridge 2: Attached to floor of mouth or just below ridge 1: Attached just below ridge 0: Attached at ridge	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

Frenotomy necessary if Appearance item score is <8. If Function <11 function is impaired and frenotomy should be considered if management fails. If Function = 11, acceptable if appearance = 10.

'several months of age' in an outpatient clinic without general anaesthesia.¹

The aim of this study was to review the first 12 months of release of lingual frenulum at a breast-feeding clinic located at a tertiary maternity hospital and to report breast-feeding outcome and parental satisfaction.

METHODS

In August 2002, a medical practitioner (LHA) was appointed to Breastfeeding Education and Support Services (BESS) at the Royal Women's Hospital, Melbourne. From that time, all infants presenting to the breast-feeding service with a possible tongue-tie were assessed using the HATLFF. If infants were: (i) assessed as having impaired lingual function; (ii) the frenulum was visualized to be a thin membrane; and (iii) the parent(s) gave informed consent, the frenulum was released as described above. The infant would immediately be offered the breast, or a bottle if appropriate.

A structured interview was conducted with the mother by telephone at least 3 months after the tongue-tie assessment by one of the clinic lactation consultants. Data were collected about the presenting problem and the effect of release of tongue-tie

(if performed). Parents were also asked about their satisfaction with the procedure and about any problems following the release. It was considered that this review was a quality assurance undertaking and approval from the hospital research and ethics committees were not necessary.¹⁵

RESULTS

Sixty-six infants were assessed between August 2002 and the end of July 2003. Telephone interviews were conducted from 27 June 2003 to 4 December 2003. The mean length of time between assessment of tongue-tie and interview was 26 weeks (range 12–46, median 24). Initial data collection was incomplete for 11 infants and nine infants were lost to follow-up. Follow-up data were collected on 46 infants and these results are presented here.

Infants were most commonly referred by one of the Royal Women's Hospital lactation consultants (19/40) (data missing in six). Others were referred by maternal and child health nurses in the community ($n = 7$), other hospitals (three), midwives in the hospital (three) and the community (three). Three were self-referred, one was referred by a paediatrician and one by the Australian Breastfeeding Association. At the time of assessment the babies were on average 18 days old (range 3–98 days, median 12.5).

Most of the mothers of babies assessed for tongue-tie reported difficulties with breast-feeding their infants (three reported no problem). Twenty-one had difficulty attaching the baby to the breast, 13 had nipple pain, four had nipple damage, seven reported frequent feeding, two prolonged feeding, eight poor weight gain (mothers could report more than one problem, five were not breast-feeding or data missing). Of the women who reported problems, the most important problem was reported to be attachment to the breast (see Table 2).

After assessment of the lingual frenulum with the Hazelbaker tool, release was recommended and performed in 35 (35/46, 76%). The frenulum was released in the hospital ward (four) or the breast-feeding clinic immediately (28), or at a later visit (three). For the 35 infants undergoing frenotomy, the mean function score was 10.9 (SD 0.57) and the mean appearance score 5.9 (SD 1.5). The other 11 infants received a score that did not recommend release of the frenulum.

More male infants were assessed than female (29/46, 63%) or a ratio of 1.7:1 (males to females). Frenotomy was performed in approximately three-quarters of infants assessed (22/29, 76% of boys; 13/17, 77% of girls). Parents were asked if they were aware of any family history of tongue-tie: seven were aware of a family history (this was a sibling in one case), 36 reported no family history (three missing). All infants with a known family history were found to have a significant tongue-tie on assessment.

After the tongue-tie release ($n = 35$), six mothers reported no difference with breast-feeding (17%), 18 reported 'better

Table 2 Most important presenting problem

Most important problem	Infants assessed as having significant tongue-tie	
	Frequency ($n = 27$)	Proportion (%)
Attachment to the breast	12	44
Nipple pain	6	22
Prolonged feeding	5	19
Poor weight gain	2	7
Frequent feeding	1	4
Nipple damage	1	4

attachment' to the breast (51%), 20 'improved sucking' (57%), nine reported less pain (26%), six 'weight improved' (17%), two 'other difference', three were not breast-feeding at the time (parents could give more than one response).

At the follow-up interview, the mother was asked if she felt that she had been given enough information about the condition and the procedure. The options were 'Yes enough information' (31/35, 89%), 'Yes, but would have liked more' (4/35, 11%), 'No' (zero), 'Not sure' (zero). If mothers responded that they would have liked more information, they were asked how they would like this information (verbal, written, video); all four said written information.

Seventy-four per cent of mothers were 'very satisfied' with the procedure (26/35), and nine were 'satisfied' with the procedure (9/35, 26%). Parents were also asked how they felt about the decision to release the tongue-tie at the time of the follow-up interview, 34 reported that they were 'pleased the tongue-tie was released', one was 'neither pleased nor displeased' and none reported that they were 'displeased'. All mothers were asked about any problems after the tongue-tie release; no problems were reported.

The participants were invited to make a comment about their experience. A sample of comments is listed below:

- Happy it was done; feeding settled down over next couple of days (Baby 4-days-old)
- Very pleased with assessment. I understood all the explanations (Baby 56-days-old)
- Couldn't believe how quick and easy it was (Baby 7-days-old)
- I was lucky it was released as early as it was. Would be bottle-fed early if not released (Baby 3-days-old)

DISCUSSION

Satisfaction levels were high in this study, and as reported by Masaitis and colleagues, parents would choose the procedure again if needed.¹⁶ Although the majority of parents felt that breast-feeding had improved following the frenotomy (83%), the breast-feeding problems were not resolved by the procedure alone in some cases. As this was an observational study, we have no control group with which to compare satisfaction outcomes.

No complications were reported in this study, nor in the 36 infants followed up at 3 months by Masaitis and Kaempf¹⁶ or in 123 infants reported by Ballard *et al.*¹² or the randomised controlled trial in Southampton.¹³

Further testing of the Hazelbaker assessment should be conducted, including interrater reliability.¹² Despite the limitations of this tool, it does provide a more objective measure of the severity of tongue-tie than the more limited descriptive terms: mild, moderate or severe. Parents in this study appreciated the careful examination of their infant's mouth and the explanations they were given by the clinician.

Other authors have reported that tongue-tie was more common in boys than girls.^{3,12,13,17} When the numbers of infants in these four studies are combined with our study, the proportion of male infants with tongue-tie is 65.4% (458/700),

with a 95% confidence interval of 61.8–69.0 (binomial exact, Stata 8.0).

In conclusion, although some clinicians believe there is 'no place for "snipping" or "clipping" the lingual frenulum without anaesthesia',^{3,p.278} others have found that if the presence of a significant tongue-tie is interfering with successful breast-feeding, it is safe and easy to correct this problem.^{1,12,13,16,18,19} In particular, bleeding is minimal or non-existent.¹ This quality assurance project found high parental satisfaction, no complications and that approximately 80% of mothers reported an improvement with breast-feeding following frenotomy.

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