Do Tongue Ties Affect Breastfeeding?

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Abstract

This study assessed indications for and safety and outcome of simple division of tongue tie without an anesthetic. There were 215 infants younger than 3 months (mean 0-19 days) who had major problems breastfeeding, despite professional support. Symptoms, tongue tie details, safety of division, and complications were recorded. Feeding was assessed by the mothers immediately, at 24 hours, and 3 months after division. Prior to division, 88% had difficulty latching, 77% of mothers experienced nipple trauma, and 72% had a continuous feeding cycle. During division, 18% slept throughout; 60% cried more after division (mean 0-15 seconds). There were no significant complications. Within 24 hours, 80% were feeding better. Overall, 64% breastfed for at least 3 months (UK national average is 30%). Initial assessment, diagnosis, and help, followed by division and subsequent support by a qualified lactation consultant, might ensure that even more mothers and infants benefit from breastfeeding. *J Hum Lact*. 20(4): 409-414.

Keywords: infant, tongue tie, ankyloglossia, frenulum, frenotomy, pediatric surgery, lactation consultant, breastfeeding

Historically, tongue ties were thought to affect breastfeeding and were thus divided.[1-4] Today, many current textbooks and articles state that tongue ties rarely, if ever, impede feeding or speech, but this assertion is not evidence based.[5-12] There is, however, a group of more recent, mostly anecdotal articles that once again suggest that tongue ties may affect breastfeeding in some infants.[13-23] A global campaign, the Baby-Friendly Hospital Initiative,[24,25] has produced renewed interest in this question, as tongue ties might be a readily treatable cause of failure to breastfeed.

Before the turn of the century, frenotomies were routinely performed whenever it was found that tongue tie hindered breastfeeding:

> A child's being tongue-tied will impede and hinder his sucking freely. . . . He may be observed to lose his hold very often. . . . The mouth must be examined and the tongue set at liberty by cutting a ligament or string which will be found to confine the tongue down to the lower part of the mouth and which is done by the surgeon with little or no pain to the child who will commonly take to the breast immediately after the operation without any inconvenience to him and there never is any danger to be apprehended from bleeding or any other consequence of the operation.[4]

When it became apparent that these infants could usually bottle-feed successfully, division for feeding problems became unnecessary and was not medically recommended. After World War II, most UK children were bottle-fed on National Dried Milk, so fewer had problems breastfeeding; thus, most of the medical and nursing literature stated that tongue ties did not impede breastfeeding.[26-28] With the realization that breastfeeding confers many advantages,[29-31] there is an increased expectation that mothers will breastfeed. Although many infants with tongue ties can breastfeed satisfactorily, those who cannot breastfeed are not referred for division, as most health care providers in the United Kingdom currently believe that tongue ties do not cause

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problems feeding. Consequently, these mothers and infants must stop breastfeeding and bottle-feed instead.

Only 2 prospective studies (n = 36 and n = 137, respectively) specifically assessed the issue of whether failure to breastfeed in an infant with a tongue tie can be helped by simple division.[18,22] Both articles advocated division in symptomatic infants. The authors of the larger study[22] divided the tongue tie at 2 to 3 days of age (at a time when specialist lactation consultant input might have been enough) and followed the infants for only 3 days.

To randomize children with symptoms that are not generally thought to be because of the tongue tie is difficult. Therefore, the author decided to perform a nonrandomized, prospective study to assess the indications for, and safety and outcome of, tongue tie division at one center.

Methods

This study assessed the indications for, and safety and outcome of, simple division of tongue tie without an anesthetic. All infants whose tongue ties were divided between December 1999 and December 2001 (N = 519) were screened for inclusion in the study. Mothers of eligible infants were recontacted at 24 hours and at 3 months after division. Eligibility criteria were infant younger than 3 months with a tongue tie and mother wanting to breastfeed but experiencing difficulty doing so despite professional support.

Definitions

The thickness of the tie was gauged by eye as diaphanous (transparent), medium (nontransparent), or thick (chunky). The term *heart shaped* was used (often spontaneously by parents) to describe the shape of the tongue when the infant attempted protrusion because the edges of the tongue curled up. A flat anterior edge of the tongue was referred to as *dimpled*. The percentage of tongue tie was also gauged by eye, ranging from 25% (ie, extending 25% of the distance along the underside of the tongue) to 100% (ie, to the tip).

Outpatient Division

The infants' tongue ties were divided via standard outpatient surgery performed by the author.[18,21] The infant was separated from the parents and wrapped securely in a towel. The infant's shoulders were firmly held by the palms of an assistant's hands whose wrists fixed the infant's head. Most older infants disliked being restrained and began to fret. The author put the tongue tie on the stretch with his left index finger while holding the lower lip clear with his left thumb. The tie was divided completely with sharp, blunt-ended, sterile scissors, and the floor of the mouth was compressed with a paper towel or gauze square. The infant was promptly unwrapped, cuddled, and immediately taken to the mother to be fed, either on the breast or by bottle if the nipples were too sore. (Lactation consultant input was not usually available but could be helpful at this point.) The paper towel could then be used as a bib, if necessary. No anesthetic or analgesic was used. The assistant, not the author, measured the length of any crying. Any bleeding was assessed. The mother and baby fed for as long as they wanted and went home.

The author phoned the study mothers at 24 hours and at 3 months after division to inquire about breastfeeding status and any complications. The mother herself was the only arbiter of whether breastfeeding had improved, as she is the only person who is able to assess the efficiency of the latch, the pain of chomping on her nipple, or any improvement in the feeding and sleeping cycle. All of the study procedures were standard clinical practice, thus the study was deemed exempt from requiring additional consent.

Results

Of the 519 screened infants, 364 were younger than 3 months at the time of the procedure. Of those, 59 breastfed well prior to division, 57 gave up breastfeeding prior to division, and 33 never breastfed. Thus, the study group comprised 215 infants younger than 3 months who experienced difficulty breastfeeding but whose mothers said they still wanted to breastfeed if possible. All 215 mother-infant pairs had been given support by a midwife, health visitor, infant feeding advisor, or lactation consultant but, despite such professional support, continued to experience problems with latching, sore nipples, and continuous feeding. Of the 215 infants, the mean age was 19 days, and the male-female ratio was 2:1. Forty-four percent had a family history of tongue tie. Overall, 111 had tried bottle-feeding—either expressed breast milk (n = 104) or formula (n = 7)—of whom 85 (76%) had found it easy.

Predivision Tongue Tie Parameters

There was no correlation between predivision frenulum thickness, shape, or percentage tie with the percentage breastfeeding at 3 months after division. All

Table 1. Tongue Tie Parameters (N = 215)

	No. (%)	*Breastfed for More Than 3 Months: No. (%)**
Thickness		
Diaphanous	138 (64)	88 (64)
Medium	59 (27)	37 (63)
Thick	20 (9)	14 (70)
Shape		
Dimple	112 (52)	69 (62)
Heart	88 (41)	60 (68)
Pointed	17 (7)	10 (64)
Percentage of tongue anchored by tissue		
100	124 (57)	79 (64)
75	54 (25)	37 (68)
50	26 (12)	17 (65)
25	11 (5)	5 (45)
Overall	215 (100)	138 (64)

*The data in this column indicate number of mothers in the first column who breastfed for more than 3 months.

11 infants with tongue ties of 25% had major symptoms suggestive of a symptomatic tongue tie (8/11 had all 3 symptoms), and 5 of 11 (45%) subsequently breastfed for 3 months (Table 1).

Indications for Division

Prior to division, 192 of the 215 infants (88%) had difficulty in latching on to the breast; 167 of their mothers (77%) had painful, sore, or bleeding nipples; and 156 (72%) had a "continuous" feeding cycle (ie, the infant fed inefficiently, became tired and fell asleep, but was still hungry, so slept only for a short time before waking to feed inefficiently again). Overall, 112 mother-infant pairs (52%) experienced all 3 symptoms; 104 mothers (48%) were expressing and cup- or bottle-feeding, as breastfeeding was too painful and inefficient, although they were keen to restart breastfeeding. Ninety-five (44%) had tried a nipple shield with professional guidance, and this had helped in 39 (41%) of the cases (18% overall).

Safety and Complications

During the procedure, 39 infants (18%) remained asleep. A further 48 (22%) did not cry or their predivision cry persisted unchanged. Furthermore, 128 (60%) had an increased cry after division; of these, 56 (44%) cried for 5 seconds or less. Overall, 183 infants (85%) cried for 20 seconds or less (overall mean, 15 seconds; median, 10 seconds). Two infants (1%) cried for more than 1 minute.

There were 84 infants (38%) who experienced no bleeding at all, 113 (52%) produced only a few drops of blood, and 18 (9%) had a "small amount" (enough blood to stain the paper towel over an area of 6.25 cm^2 [1 in^2]). None required as much as 1 minute of pressure, and there was no delayed primary or secondary hemorrhage. Simple compression of the floor of the mouth while cuddling the infant during the transfer back to the mother was usually more than enough to stop the bleeding.

Four infants had an "ulcer" under the tongue for more than 48 hours; all 4 healed spontaneously, and 2 breastfed for 3 months. There were no infections, bleeding problems, feeding problems, or serious complications such as damage to the tongue or submandibular ducts. Overall, 6 infants (3%) had a mild complication (ie, 4 ulcers lasting more than 48 hours, 1 "sore" for more than 24 hours, and 1 brown posset due to swallowed blood).

Feeding Postdivision

In all, 123 mothers (57%) noticed a difference immediately, of whom 83 (70%) breastfed for 3 months, and 92 (43%) felt no immediate difference; however, this included the 39 infants who remained asleep throughout. Of the remaining 53 mothers of awake infants, 32 (60%) breastfed for 3 months. There were 173 infants (80%) who were feeding better by maternal assessment at 24 hours. For 40 (19%), the feeds were unchanged. Two had increased difficulty feeding.

Three Months Postdivision (Infants Aged 3 to 6 Months)

Of 215, 138 (64%) breastfed for at least 3 months after division. Eleven (5%) breastfed for 6 to 12 weeks after division, whereas 68 (32%) fed for less than 6 weeks. Seventy-two (37%) had not started solids yet, as they were too young. Two children (1%) were described as "awful feeders" on breast, bottle, and with solids. None of the others experienced feeding problems with bottles or solids when relevant.

Tongue Extension

Overall, 204 infants (95%) could poke out their tongues at 3 months. Four could not, of whom 2 breastfed for 3 months. (Data on this outcome were missing for 7 infants.)

Discussion

This prospective study of infants with tongue ties and breastfeeding problems has revealed no significant complications with pain, bleeding, or wound healing and has demonstrated that 64% breastfed for at least 3 months after division.

At presentation, 3 common symptoms were associated with breastfeeding problems caused by a tongue tie: latching on, nipple trauma, and continuous feeding. During breastfeeding, the nipple becomes elongated, up to 3 times its normal size, and stretches back to the junction of the hard and soft palate. The lactiferous sinuses are massaged by the tongue and lower alveolar ridge.[32] If the tongue is tethered, the nipple is squeezed by the upper and lower gums (chomp). This is inefficient, is traumatic, can be very painful, and does not allow normal breastfeeding to occur. Both mother and baby become increasingly frustrated, and formula feeding often results. Some mothers try expressing and cup- and bottle-feeding or use a nipple shield. Careful repositioning with lactation consultant input allows some mothers to breastfeed adequately. Sometimes, the new position is very unusual (eg, holding the infant vertically upright).

Despite a willingness in this unit to divide the tongue tie as early as possible to allow breastfeeding to continue, the mean age of division was 19 days. On one hand, this age reflects late referral and difficulty in scheduling a timely appointment during the week, as most mother-infant pairs experienced symptoms from much earlier. On the other hand, later referral allowed the mother and baby to have time with a health care professional to try many alternatives to division, to allow them to breastfeed if at all possible. Division at delivery, for example, would include many infants who breastfeed perfectly satisfactorily and should not be advocated.

Half of the mother-infant pairs experienced all 3 symptoms. Some mothers were in such pain that they were willing their babies not to wake up for the next feed, as they dreaded feeding so much, and subsequently felt very guilty. Overall, 104 (48%) expressed milk so that their babies could still have the benefits of breast milk, as breastfeeding itself was impossible. Forty-one percent of those who tried a nipple shield found it useful because feeding (although initially tricky) was pain free. Two mothers continued with the shield for several months after division, as the infants preferred it.

The thickness, shape, and percentage length of the tongue tie were not predictors of success or failure. It would be expected that infants with 100% ties would be more likely to be successful after division than those with 25% ties, but this was not found. In addition, 25% to 75% tongue ties caused problems, as did the 100% tongue ties. This suggested that the function of the tongue (ie, the symptoms themselves) produced by a combination of the tongue, mouth, and tongue tie, is more important than simply the appearance of the tie.

Common sense suggests that tongue tie division might be painful and cause bleeding. None of these infants had any analgesia (Paracetamol elixir or sucrose) or local anesthetic. Despite this, 39 (18%) slept throughout. Of the rest, 22% never cried, and although 60% did cry more after division, 85% overall had stopped within 20 seconds of division. This requires briskly unwrapping the infant, cuddling him or her in the crook of one's arm, holding the paper towel on the floor of the mouth, and promptly returning the infant to the mother and transferring the infant to the breast or bottle for an immediate feed.[21] Only 2 infants cried for more than 1 minute. From this, we can surmise that if division is uncomfortable, the discomfort lasts only for a few seconds. To put this "pain" or "discomfort" in context, many parents of older infants spontaneously commented that division was much less painful and traumatic than immunization, and several junior doctors and nurses noticed that division was far less traumatic than intravenous cannula insertion.

Experience using local anesthetic suggests that infants bleed more from injected local anesthetic than from the division itself. In addition, safely and accurately injecting the small volumes of local anesthetic required into the correct place carries a significant risk of intravenous injection. These factors have to be weighed against an objective, measured mean length of crying of 15 seconds.

Of the 131 infants (61%) who experienced any bleeding at all, 113 (52%) produced no more than a few drops of blood, and the remaining 18 (9%) produced only a "small amount" requiring pressure from the finger on which the infant was sucking.

Regardless of the way the infant was feeding immediately or at 24 hours after division, 64% breastfed for at least 3 months after division; this is more than the national average for England and Wales of 30%.[33] Breastfeeding for 3 months could not be predicted from the initial feeding pattern after division, as some infants who experienced "miracle cures" were started on bottle-feeding at 6 weeks for maternal convenience, and some mothers who had preexisting cracked nipples and were still struggling at 24 hours healed and breastfed for 3 months. When the infants could latch properly and feed efficiently and painlessly, the mothers and infants were delighted.

There were no significant complications. The literature has suggested hemorrhage and damage to the tongue or submandibular gland orifices as possible major complications, but these were not seen.[27] Following division, a white patch under the tongue is normal for 48 hours. In 4 infants, this took longer to heal but did not affect long-term outcome. Although failure to poke out your tongue is not a medically serious symptom, the parents were delighted that almost all the infants (95%) were able to do this, often within 24 hours.

This is the largest prospective study yet reported and has demonstrated that there is a group of infants younger than 3 months who not only have tongue tie but have an identifiable group of symptoms (poor latch, nipple trauma, and continuous feeding) that prevented them from breastfeeding. The infants and mothers were all given help and support by their midwives, health visitors, infant feeding advisors, or lactation consultants but were still unable to breastfeed. Following division of the tongue tie as an outpatient without an anesthetic, with minimal distress, and with no significant complications, 64% were able to breastfeed for at least 3 months.

If these tongue ties were to be divided by a trained, accredited, suitably qualified lactation consultant, there would be less delay, as well as skilled immediate and long-term support for the mother and child. This would ensure that an even higher percentage of infants breastfeed, with all the advantages this confers. This practice has been successfully instituted in our hospital but raises legal and ethical issues about the scope of lactation consultant practice, which differs between the United Kingdom and the United States.

Now that this symptomatic subgroup of infants with tongue ties has been identified, a randomized, controlled trial of division of tongue tie in infants who are having difficulty breastfeeding is in progress. Objective measurements of any change in feeding pattern (eg, a linear analog scale of maternal pain and a "relaxed baby feeding score") need to be developed.

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Resumen

¿Es que el frenillo afecta la lactancia materna?

Este estudio evalúa las indicaciones, seguridad y resultado de una simple resección del frenillo sin anestesia. Doscientos cincuenta bebes de menos de 3 meses (0=19 días) tenían problemas de lactancia, a pesar del apoyo profesional. Se registraron síntomas de frenillo, seguridad de la resección y complicaciones. Las madres evaluaron la mamada inmediatamente a las 24 horas y a los 3 meses de la resección. Antes de la resección, 88% tenían dificultad para agarrar el pecho, 77% de las madres experimentaron trauma del pezón y 72% observaron ciclos continuos de alimentación. Durante la resección, 18% se quedaron dormidos; 60% lloraron más después de la resección (0=15 segundos). No se vieron complicaciones significativas. En las primeras 24 horas, 80% estaban lactando mejor. En general, 64% amamantaron al menos 3 meses (el promedio nacional en el Reino Unido es de 30%). Una evaluación inicial, diagnostico y ayuda, seguida por una resección y apoyo por una consultora de lactancia calificada puede asegurar a que las madres y sus bebes se beneficien de la lactancia materna.