

Tongue-tie division to treat breastfeeding difficulties: our experience

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Abstract

Objectives: To assess the benefits of frenotomy on breastfeeding in infants, and determine the influence of age.

Methods: A telephone questionnaire of all patients diagnosed with tongue-tie over 12 months was conducted pre-intervention and 1-month post-intervention. The Infant Breastfeeding Assessment Tool was used to assess breastfeeding.

Results: Of 54 infants diagnosed with tongue-tie, 78 per cent of mothers participated in the survey. Eighty-six per cent of patients underwent frenotomy, with no surgical complications. In the frenotomy group, 81 per cent of mothers reported improvement in breastfeeding, versus 17 per cent in the non-surgical group ($p = 0.0074$). In the frenotomy group, the mean (\pm standard deviation) Infant Breastfeeding Assessment Tool score was 3.33 ± 1.51 pre-intervention, versus 9.19 ± 2.44 post-intervention ($p = 0.0001$). In the non-surgical intervention group, the mean score (\pm standard deviation) was 4.17 ± 0.75 pre-intervention, versus 6.00 ± 1.73 post-intervention ($p = 0.16$). For infants who underwent frenotomy, there was a reported improvement in 94 per cent of those aged less than 30 days, versus 68 per cent in infants aged over 30 days ($p = 0.092$).

Conclusion: Frenotomy is a safe, short procedure that improves breastfeeding outcomes, and is best performed at an early age.

Key words: Ankyloglossia; Breast Feeding; Tongue Tie

Introduction

Tongue-tie or ankyloglossia is a congenital condition characterised by a short and/or anterior lingual frenulum, which limits tongue movements. This results in problems with breastfeeding and with speech articulation.¹ There is controversy over whether tongue-ties should be divided, but the literature indicates that tongue-ties can lead to sore nipples, mastitis, poor infant weight gain and early weaning from breastfeeding.^{2,3} With the recent resurgence of breastfeeding, the benefits of tongue-tie release (frenotomy) have become more relevant.⁴

The quoted incidence of tongue-tie in the literature ranges from 1.8 to 16 per cent in neonates, with a higher proportion of males affected (ratio of 2.6:1).^{5,6} In the past decade, there have been several high-quality studies, including four randomised, controlled trials, that have reinforced the benefits of tongue-tie division (frenotomy) on breastfeeding.^{7–10}

The National Institute for Health and Care Excellence issued guidance in December 2005, stating that 'current evidence suggests that there are no major safety concerns about division of ankyloglossia (tongue-tie) and limited evidence suggests that this

procedure can improve breastfeeding'.¹¹ The procedure, when performed on infants, usually does not require any anaesthetic and involves minimal, if any, blood loss.

This study aimed to examine the benefits of frenotomy on breastfeeding in infants using a validated breastfeeding assessment tool, and determine the influence of age.

Materials and methods

This study was approved by the Barts Health audit and clinical governance department. The medical records of all neonates and infants who were diagnosed with tongue-tie during the period June 2013 to July 2014 were reviewed. Patient demographic data were obtained, including age, gender, breastfeeding history, and whether or not frenotomy was performed. Those patients who did not undergo frenotomy received continued support from the infant feeding co-ordinator.

Mothers were asked to score their ability to breastfeed using the Infant Breastfeeding Assessment Tool, pre-intervention and one month post-intervention, via a telephone questionnaire. The Infant Breastfeeding Assessment Tool is a validated assessment tool for

breastfeeding.¹² It has 4 domains scored out of 3 (readiness to feed, rooting, fixing (latching on) and sucking pattern), to give a maximum score of 12 and minimum score of 0. We also asked all the mothers whether they felt that breastfeeding had improved after one month.

Statistical analysis and comparisons were carried out using the Fisher's exact test and paired student's *t*-test, and significance was set at $p < 0.05$ (GraphPad Software, La Jolla, California, USA).¹³

Surgical technique

Frenotomy was performed after obtaining informed consent. The infant was held upright by the parent in a blanket, securing the head to prevent any movement. The surgeon held the tongue upwards to expose the lingual frenulum. Sterile iris scissors were then used to release the lingual frenulum. Care was taken to avoid damage to the submandibular and sublingual openings in the floor of mouth by cutting close to the ventral surface of the tongue.

Results

A total of 54 infants were diagnosed with tongue-tie during the study period. Of those, 42 (78 per cent) mothers participated in the telephone survey, and were therefore included in the study. Of these 42 patients, 36 (86 per cent) underwent frenotomy and 6 (14 per cent) received no surgical intervention. There were 23 males (55 per cent) and 19 females (45 per cent). Median patient age was 38 days (range, 15–178 days). The primary complaints of the mothers were poor latch (28 out of 42, 67 per cent) and maternal nipple pain (20 out of 42, 48 per cent). There were no surgical complications within the group of patients that underwent frenotomy.

In the group that underwent frenotomy, 29 out of 36 mothers (81 per cent) reported an improvement in breastfeeding. In the group that received no surgical intervention, one out of six mothers (17 per cent) reported an improvement in breastfeeding ($p = 0.0074$).

In the group that underwent frenotomy, the mean (\pm standard deviation (SD)) Infant Breastfeeding Assessment Tool score was 3.33 ± 1.51 pre-intervention, versus 9.19 ± 2.44 post-intervention ($p = 0.0001$) (Figure 1). In the group that underwent no surgical intervention, the mean (\pm SD) Infant Breastfeeding Assessment Tool score was 4.17 ± 0.75 pre-intervention, versus 6.00 ± 1.73 post-intervention ($p = 0.16$) (Figure 2).

In the group that underwent frenotomy, 16 out of 17 mothers (94 per cent) of infants aged less than 30 days reported an improvement in breastfeeding, whilst 13 out of 19 mothers (68 per cent) of infants aged more than 30 days reported an improvement in breastfeeding ($p = 0.092$).

Discussion

We have demonstrated that frenotomy is a safe, quick procedure, with minimal morbidity. In our study, 81 per cent of mothers reported an improvement in

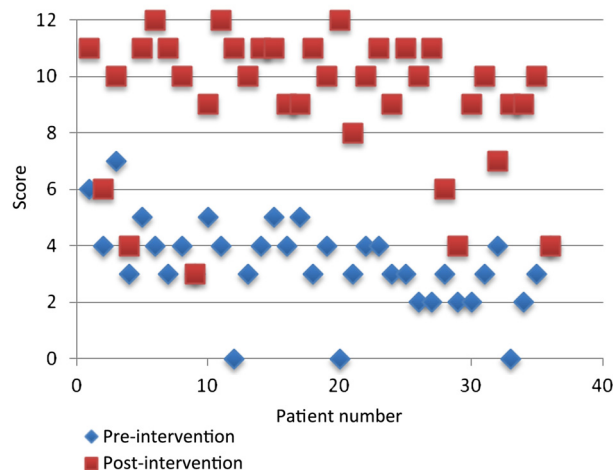


FIG. 1

Pre- and post-intervention Infant Breastfeeding Assessment Tool scores in infants who underwent frenotomy.

breastfeeding following frenotomy. This is comparable to other similar studies, such as that by Steehler *et al.* These authors conducted a retrospective study of 367 patients, in which 80.4 per cent of mothers reported an improvement in breastfeeding.³

There is plenty of evidence for the benefits of breastfeeding in infants. In the past decade, this has been highlighted through public health campaigns.¹⁴ Indeed, the World Health Organization recommends six months of exclusive breastfeeding, followed by supplemental breastfeeding for two years and beyond.¹⁵ Frenotomy offers effective treatment for breastfeeding difficulties by decreasing compression of the nipple from the tongue, thus allowing better attachment, increased milk transfer and a reduction in nipple pain.¹⁶

There are numerous studies that advocate the use of frenotomy for breastfeeding difficulties, including four randomised, controlled trials.^{7–10} Hogan *et al.*

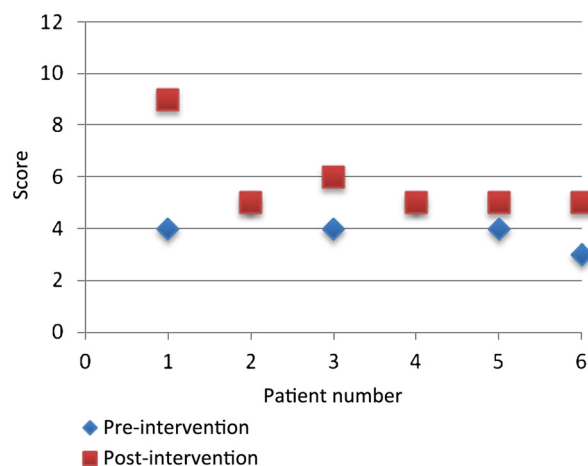


FIG. 2

Pre- and post-intervention Infant Breastfeeding Assessment Tool scores in infants who did not undergo surgery.

compared infants who underwent tongue-tie division and 48 hours of intensive support from a lactation consultant with infants who received breastfeeding support only, with no surgical intervention.⁷ Ninety-five per cent of mothers in the tongue-tie division group reported an improvement in breastfeeding, compared with only 5 per cent in the group that received no surgical intervention ($p < 0.001$). However, there was no blinding in that study; hence, there may be an element of bias. Dollberg *et al.* also demonstrated a significantly greater decrease in nipple pain scores after tongue-tie division compared with no surgery ($p = 0.001$), but this was a small group of only 25 patients.⁸ In a larger group of 137 patients, by Ballard *et al.*, 88.6 per cent of mothers reported an improvement in breastfeeding after frenotomy.¹⁷ More recently, Argiris *et al.* performed a prospective study of 46 patients, in which 87 per cent of mothers reported a major improvement in breastfeeding.¹⁵ Multiple review articles published more recently reinforce the benefits of frenotomy in treating breastfeeding difficulties.^{1,4,14}

To the authors' knowledge, no previous studies have used the Infant Breastfeeding Assessment Tool for evaluating improvement in breastfeeding following tongue-tie division. This validated scoring system was employed in the current study to assess breastfeeding improvement following frenotomy. The study included a control group (i.e. those patients with tongue-tie who declined frenotomy) to further improve the validity of the results.

Although there is anecdotal evidence for frenotomy being more effective when performed at a younger age, except for one study by Steehler *et al.*,³ no previous studies have directly investigated this. Steehler *et al.* demonstrated a significantly higher proportion of patients with improvement in breastfeeding when frenotomy was carried out before 7 days of age ($p < 0.003$).³ Our study indicates a higher probability of improvement in breastfeeding if frenotomy is performed in infants below the age of 30 days than in those infants aged 30 days or over. There is also the added benefit that performing frenotomy on very young children is possible without the need for general anaesthetic. Older children will typically require general anaesthetic, which significantly increases the time taken for the procedure and carries added risks.

With our technique, we do not advocate the use of local anaesthetic, as the procedure is quick and relatively painless. There are some studies that advocate using local anaesthetic gel on the tip of the iris scissors, but the majority of papers describe no need for any local anaesthetic.¹⁵

In our study, we did not examine the time spent breastfeeding after frenotomy. Steehler *et al.* did attempt to investigate this, but there were problems in obtaining data for the group that had received no intervention and therefore no meaningful conclusions could be made.³ However, evidence from a recent systematic

review suggests that those patients who undergo frenotomy tend to breastfeed for a longer time.¹⁸

- **Tongue-tie is a relatively common problem amongst neonates, with significant consequences**
- **Tongue-tie division (frenotomy) is a safe, short procedure, with low morbidity**
- **This study confirms that frenotomy improves breastfeeding outcomes**
- **Frenotomy performed at an earlier age results in better breastfeeding outcomes**
- **With the recent resurgence in breastfeeding, the importance of frenotomy has become more relevant**

This study was limited by the small numbers of patients included, particularly in the no surgery group, and the nature of a telephone survey, which introduces selection bias. Nevertheless, the findings are in keeping with previous literature. Additional large-scale, prospective studies, with a blinded, controlled trial would further elucidate the benefits of frenotomy for breastfeeding.

Conclusion

Tongue-tie is a relatively common problem amongst neonates that has significant consequences. Tongue-tie division (frenotomy) is a safe, short procedure, with low morbidity. Our study confirms that frenotomy improves breastfeeding outcomes. Furthermore, frenotomy performed at an earlier age results in better outcomes in terms of breastfeeding. With the recent resurgence in breastfeeding, the importance of frenotomy has become more relevant.

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