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Benefits of frenulotomy in infants with ankyloglossia

Neeraj Sethi *, Dominique Smith, Sahr Kortee, Victoria M.M. Ward, Susan Clarke

Pinderfields Hospital, West Yorkshire, United Kingdom

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ABSTRACT

Objectives: Ankyloglossia is a common, congenital abnormality often causing feeding difficulties in infants. This study aimed to evaluate indications and outcomes of frenulotomy performed in infants with ankyloglossia for breast-feeding difficulties.

Methods: 85 patients were prospectively identified as they underwent frenulotomy in Pinderfields Hospital ENT outpatient department between February 2008 and February 2011. 52 patients were successfully followed up with a telephone questionnaire about effects on breast-feeding and any complications.

Results: All mothers had experienced problems breast-feeding prior to frenulotomy. Following frenulotomy 40/52 (77%) of mothers reported an improvement in breast-feeding within 2 weeks of the procedure. No complications were reported.

Conclusion: This study supports the view that ankyloglossia is a common cause of breast-feeding difficulties. However the lack of universal improvement in breast-feeding following frenulotomy suggests that it is not the only cause of problems and supports the clinician approaching these situations holistically and exploring other causes.

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1. Introduction

Ankyloglossia (tongue-tie) is a congenital abnormality characterised by a short, fibrous lingual frenulum, which may restrict tongue mobility and therefore cause difficulties breast-feeding in infants. Opinion regarding the importance of ankyloglossia and the need for frenulotomy has fluctuated. Indeed some regard reference being made to this procedure in the Bible (“And the string of his tongue was loosened and he spake plain” Mark 7:35). In 1729 “The Nurses Guide” stated that a short membrane under the tongue hinders the child from sucking [1]. The first use of the term ankyloglossia dates back to the 1960s when Wallace defined the condition tongue tie as one “in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short frenulum linguae” [2].

The prevalence of ankyloglossia reported in the literature varies from 0.1% to 10.7% [3–5]. This wide range seems to be due to lack of uniformity in definition and grading. Though most ankyloglossia are reported in people without any other congenital anomalies or diseases, a positive family history has been reported in up to 21% of

infants with ankyloglossia and it is part of rare syndromes such as X-linked cleft palate [3,6]. It has also been described in three generations of a Finnish family with an autosomal dominant trait [7].

Breast-feeding decreased in popularity after World War II with many children being fed on National Dried Milk. Many infants with ankyloglossia are able to bottle feed without difficulty and so fewer breast-feeding difficulties were reported [8]. In accordance with this trend and the reduction in referral to secondary care regarding ankyloglossia popular medical opinion shifted to the view that tongue ties do not affect infant feeding [9].

A survey of North American paediatricians, otolaryngologists, speech therapists and lactation consultants in 2000 found varied views regarding the significance of ankyloglossia and its management with paediatricians being less inclined to believe it is responsible for symptoms [10].

With the widespread recognition and popularisation of the potential benefits of breast-feeding in the last two decades there has been a synchronous increase in the awareness of ankyloglossia as a potentially treatable cause of breast-feeding difficulties. Accompanied with the appointment of lactation consultants, greater knowledge and referral power of midwives and health visitors there has been an increase in referral to the ENT outpatient clinic for assessment of infant with tongue-ties. Such consultations can often be associated with high maternal anxiety and distress and as such it is imperative that specialists are able to recognise

* Corresponding author at: Department of Otolaryngology, Pinderfields Hospital, Aberford Road, Wakefield, West Yorkshire, WF1 4DG, United Kingdom.
Tel.: +44 7980281223; fax: +44 113 269 8885.

E-mail address: neerajsethi@doctors.org.uk (N. Sethi).

and deal with tongue ties appropriately and to be able to counsel parents as to whether frenulotomy is going to help them or not.

The objective of this study was to evaluate indications and outcomes of frenulotomy performed in infants with ankyloglossia for breast-feeding difficulties.

2. Methods

85 patients were prospectively identified as they underwent frenulotomy in the ENT outpatient department between February 2008 and February 2011. All 85 infants underwent frenulotomy in the outpatient clinic. 52 patients were successfully followed up at least 5 months after the procedure by telephone to enquire about any effects on breast-feeding and any complications.

This project was registered with the local Research and Development department and ethical approval was deemed not necessary.

The presence of tongue-tie was assessed by the senior authors according to the history of breastfeeding difficulties, any family history of tongue-tie and a full examination of the oral cavity. The ability to protrude the tongue was observed, along with the ability to suckle on a finger. The length and elasticity of the frenulum was assessed as was the shape of the tongue on elevation. If a problematic tongue-tie was deemed to be present it was divided.

The tongue-ties were divided by the senior authors using a standard technique: the infant's head was laid on the senior authors' lap with the parent holding the body securely. No anaesthesia was used in any case and the frenulum assessed both by inspection and palpation. Sterile iris scissors with blunt tips were used to divide the frenulum and the parent was able to attempt breast-feeding almost immediately. All parents were advised they would be contacted via telephone for questionnaire.

3. Results

Age at division ranged from 3 days to 120 days (mean = 19 days). There was a male to female ratio of 2.1:1 (35 infants were male and 17 female) consistent with published literature [11].

Referrals for these patients originated from midwives (25); lactation consultants (20); paediatricians (4); and GPs (3). All referrals were made using a proforma designed around breast-feeding difficulties (see Fig. 1).

Prior to frenulotomy all mothers had attempted breast-feeding and all had experienced problems (see Fig. 2). These included poor latch (49/52), continual feeding (18/52), poor weight gain (10/52), sore nipples (6/52) and excess wind (2/52).

At the time of presentation to clinic 28/52 mothers were breast-feeding exclusively and 22/52 were supplementing with expressed breast milk. 2 infants were exclusively formula milk bottle-fed. All mothers were keen to continue/recommence breast-feeding if possible.

Following frenulotomy 16/52 mothers reported an improvement in breast-feeding immediately. 8/52 mothers noticed an improvement within 24 h, 13/52 within 1 week and 3/52 within 2 weeks of the procedure. Interestingly 12/52 mothers reported no noticeable improvement in breast-feeding.

After the procedure (see Fig. 3) 20/52 infants were exclusively breast-fed (16 of these being exclusively breast-fed prior to the procedure with the remaining 4 being supplemented with expressed breast milk by bottle or cup). A further 19/52 mothers were supplementing breast-feeding with expressed breast milk via bottle after the procedure (prior to frenulotomy 6 of these exclusively breast fed and 13 supplemented with expressed breast milk). 13/52 infants were exclusively formula milk fed after frenulotomy (prior to the procedure 6 of these were exclusively breast-fed with 5 being supplemented with expressed breast milk).

Referral Form for Tongue Tie

Childs Details

Name of Baby:

Name of mother:

Address:

GP Name:

Surgery Address:

Breastfeeding History: (tick those that apply)

- Sore or damaged nipples
- Mastitis/breast infection
- Diminished milk supply
- Frequent feeding
- Poor latch
- Clicking when feeding
- Prolonged Physiological jaundice

Details of person making the referral:

Name:

Title:

Contact Tel No:

Fig. 1. Referral proforma.

4. Discussion

The benefits of breast-feeding are well known and the basis of much public health promotion in the UK and across the world.

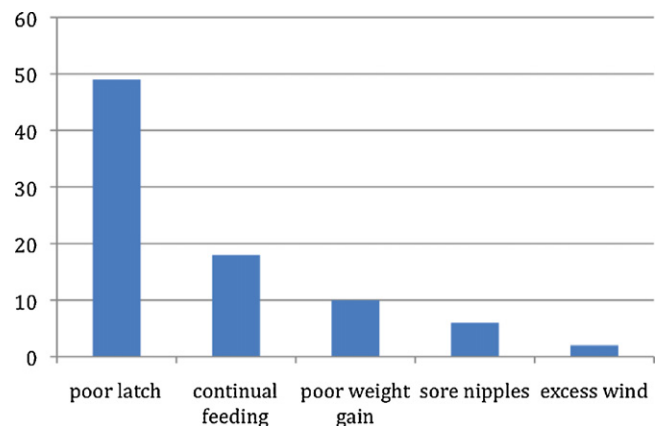


Fig. 2. Presenting symptoms.

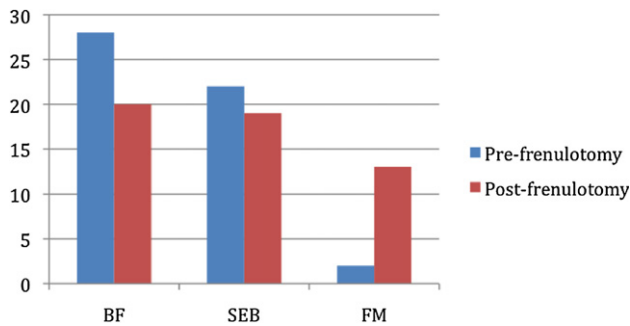


Fig. 3. Pre and post-frenulotomy feeding methods. BF = breast-fed only; SEB = supplemented with expressed breast milk; FM = formula milk only.

Lactation consultants have played an increasingly prominent role in the post natal care of mothers and infants and their awareness of the potential problems of tongue ties has helped these infants to be identified [12]. There has been a great deal of medical controversy over whether or not ankyloglossia requires surgical division and presently it is an all too easy diagnosis to blame any neonatal feeding problems on. Previously, a tendency to always intervene put infants at risk of the complications of bleeding, infection and muscle injury unnecessarily [13]. There have too often been extreme views presented stating that ankyloglossia should always or never be divided.

In this study we found that 77% (40/52) of mothers reported an improvement in breast-feeding within 2 weeks after frenulotomy. This clearly suggests the obvious fact that ankyloglossia is not the only cause of difficulties and supports the clinician approaching these situations holistically and exploring other causes some of which may resolve spontaneously or with advice from lactation consultants.

The total duration of breast-feeding ranged from less than 1 month to 18 months. An immediate improvement was reported by 16/40 mothers, of whom 12 (75%) breast-fed for at least 3 months. 24/40 reported an improvement within the next 2 weeks, of whom 19 (79%) breast-fed for at least 3 months. 12/52 mothers reported no improvement after frenulotomy, which is reflected in the fact only 2/12 breast fed for at least 3 months.

Out of those who breast-fed for less than 3 months (19/52) only 9/19 were breast-feeding exclusively prior to frenulotomy suggesting that those unable to establish breastfeeding early struggled despite intervention. The mean age at frenulotomy of these infants was 14 days (range 4–37 days). Of the 33/52 that breast-fed for more than 3 months the mean age at frenulotomy was 22 days (range 3–120 days). This again suggests that ankyloglossia as an isolated finding cannot always be blamed for difficulty breast-feeding.

This is an area where performing randomised controlled trials is challenging given the understandably high degree of potential anxiety and distress often surrounding a baby with feeding difficulties. A randomised controlled trial of 57 infants found a 95% of babies improved in breast feeding following frenulotomy compared with 5% of the control group. However, out of the control group all but one were offered division at 48 h [14]. This means that though there was telephone follow up for 4 months overall the two groups had such a high level of cross-over after 48 h that no improvement in breast feeding in the control group would have been discernible. Our study found that 16/52 mothers did not report an immediate improvement and in 3 cases it took over 1 week. One could suggest therefore that if frenulotomy is not performed it may take more than 48 h to notice an improvement in breast-feeding. There was also no blinding in this study and the authors admit that as they believe tongue-ties caused feeding problems this could have affected equipoise in recruitment.

A more recent single blinded, randomised controlled trial comparing frenulotomy to a sham procedure [15]. The first follow-up in this study was at 2 weeks and all but one patient in the sham group elected to have frenulotomy at or before the time of the 2-week follow up. Though it demonstrated a clear improvement in maternal nipple pain scores and infant breast-feeding scores there was again a great deal of cross-over from the sham group to the experimental group [15].

Numerous prospective studies have demonstrated the association between ankyloglossia and breast-feeding difficulties [4,13,16]. These have highlighted the main symptoms: nipple pain, poor latch and continual feeding, which our study also agreed with. No consistency in the literature has been found regarding the severity of the tongue-tie and the severity of breast-feeding problems.

A confounding factor may be the lack of a universally accepted and validated grading system for the assessment of ankyloglossia. This would be useful for clinicians to use to identify which babies are likely to have breast-feeding problems. Numerous attempts have been made to describe a system ranging from simple inspection, to measuring length of frenulum and distance to incisors, assessing lingual mobility and more complicated tools to try and assess function [17–21]. The Hazelbaker assessment tool for lingual frenulum function (HATLFF) has been recommended by the Academy of Breastfeeding Medicine as method of assessing ankyloglossia [18]. However the authors have found that this scoring tool fails to classify a lot of children. This concurs with the findings of a prospective case series which evaluated the HATLFF tool and found that 55% of babies failed to fall into any of the categories specified by the tool [22]. Another study found poor inter-observer reliability in four of the HATLFF items but a high overall agreement between assessors on the presence or absence of ankyloglossia suggesting that despite the scoring system clinical judgement remains consistent [23].

A case controlled study of 49 infants with ankyloglossia matched with 98 controls found that tongue-tied babies were 3 times more likely to be exclusive bottle fed at one week [24]. A positive impact on growth and weight gain has been demonstrated in a case series of 62 babies showing significant improvements in weight as measured on centile charts [25].

The limitations of this study lie in the fact that this is an uncontrolled group of patients, though the randomised trials discussed earlier demonstrate the difficulties in providing a true, long-term control for this group of patients. The interviews were also conducted via telephone at varying lengths of time after frenulotomy which could affect the recall and reliability of answers. There is also the fact that the interview questions used were not in the form of a validated questionnaire. However in the absence of consistent evidence that there is any correlation between the severity of tongue-tie and the severity of breast-feeding difficulties it does not seem unreasonable to avoid scoring systems in this study and allow the parents to report their outcomes more simply.

This study does demonstrate that having a rapid-access pathway for suspected ankyloglossia allows for patients to be seen from a variety of sources and be dealt with safely in the outpatient department. The results move away from some of the more recent trials that suggest an overwhelming improvement in breast-feeding difficulties. We show that though there is a subgroup of patients with tongue-ties that can gain improvement from frenulotomy this is not a universal improvement. This highlights the importance of recognising the many and varied reasons for a person to experience breast-feeding difficulties. These need to be explored and the ENT surgeon needs to be well versed in counselling parents on these and aiding them in finding more help such as lactation consultants. Ultimately however given

the high degree of anxiety involved in these clinical encounters and the difficulties producing a long-term control group for a randomised control trial, the only to find out if the baby will get an improvement may be to perform frenulotomy in the setting of an appropriate history and examination.

In contemporary medicine there is always pressure to provide good evidence that treatments or interventions are truly effective. In addition to randomised controlled trials patient reported outcome measures allow parents to report their views on the outcome measures (ultimately improvement in breast-feeding). This is very important to ensure, even at a local level, that our clinical judgement and practice is appropriate and beneficial for patients.

5. Conclusion

Further prospective randomised studies would be useful to try and identify an easily applicable tool that would impact on advising patients and decision-making. It is essential that there is a rapid access pathway for these infants to be assessed and treated in outpatients. This study suggests that ankyloglossia is not the only cause of breast-feeding difficulties. Conversely it also supports the fact that despite seeing an improvement not all mothers are able to continue breast-feeding, though reasons for this will vary. In light of the low risk of complications and the high potential benefit in terms of feeding, weight gain and comfort for both infant and mother we would support NICE guidelines in carefully assessing these babies and performing frenulotomy early to exclude this as the cause of any problems [26].

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