



Post Frenotomy Massage for Ankyloglossia in Infants—Does It Improve Breastfeeding and Reduce Recurrence?

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Abstract

Objectives Frenotomy is performed in breast fed infants who experience difficulty in latching after failed conservative management for ankyloglossia or tongue-tie. Though parents sometimes enquire about massage after frenotomy, neither published evidence nor clinical consensus supports this. The aim of our study was to assess if there was significant difference in breast feeding or recurrence rate between those infants who had post frenotomy massage and those who did not.

Methods A retrospective study was conducted in a tertiary Children’s hospital from January 2018 to December 2018. The tongue-tie service consisted of five pediatric surgical consultants, three of whom routinely advice post frenotomy massage. As a result, we had two groups to compare -massage and non-massage group. Total sample size (n = 599) consisted of those who were advised massage (n = 282) and those who were not advised massage (n = 317).

Results Overall recurrence rate was 4/599 (0.66%) and this did not achieve statistical significance between the two groups. Breast feeding rates were also similar in both the groups. However, it is interesting to note that only 43.5% of those advised massage adhered to the massage regimen.

Conclusions Improvement in breast feeding and recurrence after frenotomy were similar between massage and non-massage groups. This confirms the lack of any additional benefit of post frenotomy massage. This study assists clinicians with decision making not to advise massage as it is unlikely to benefit infants with tongue-tie.

Keywords Breast feeding · Tongue-tie · Ankyloglossia · Frenotomy · Massage

Abbreviations

TT Tongue-tie
MG Massage Group
NMG Non-massage Group

Significance Statement

What is already known on this subject? Tongue-tie causes significant problems during breast feeding, hampering its many beneficial effects. Besides, it is also a source of parental anxiety. Anecdotal reports of healthcare professionals advising post frenotomy procedures like massage and tongue

stretching exist, but there is no published literature on this subject.

What this study adds? Improvements in breast feeding and recurrence rates were noted to be similar between massage and non-massage groups. This study therefore confirms the lack of any additional benefit from post frenotomy massage thereby assisting with clinical decision making not to advise massage.

Introduction

Ankyloglossia or tongue-tie (TT) is a common problem in neonates with an overall estimated incidence ranging between 4 and 16% (Berry et al., 2012; Ingram et al., 2015; Ricke et al., 2005). It is a condition where a congenital shortened, and thickened frenulum limits movements of the tongue. TT has been recognized as a significant cause of difficulty in establishing breast feeding and causing distress to both infant and mother (Ingram et al., 2015; Ricke et al., 2005). Breast feeding rates are much lower in the UK

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compared to Mainland Europe. In Europe, breast feeding rate is 80% at 6 months of age (Callen et al., 2004) whereas by comparison in the UK, it is much lower with an estimated 17% of infants being exclusively breast fed at 3 months of age (Lancet, 2016).

Frenotomy has been indicated in breast feeding infants with TT to improve latching and breast feeding (Berry et al., 2012; Billington et al., 2018; Ricke et al., 2005). Many studies have confirmed the efficacy of frenotomy and have shown an improvement in breast feeding rates (Braccio et al., 2016; Callen et al., 2004; NICE guidelines). Frenotomy is also an important adjunct to conventional measures in infants with TT and confers many advantages of breast feeding to both child and mother (Berry et al., 2012). The National Institute of Clinical Excellence recommends frenotomy as a safe and appropriate procedure for TT (NICE). A systematic review of five studies, which included 302 patients, concluded that frenotomy reduced nipple pain but did not show consistent improvement in breast feeding. No serious complications were reported, and the authors concluded that further randomized trials were necessary (O’Shea et al., 2017). A study from New Zealand has shown that a combination of multidisciplinary assessment and supportive education program reduced the need for frenotomy for TT (Dixon et al., 2018). Systematic reviews have failed to show any convincing evidence supporting improvement in speech after frenotomy (Webb et al., 2013; Chinnadurai et al., 2015).

Recurrence is known after frenotomy; recurrence rate necessitating repeat frenotomy ranges from 2.6% to 13% (Argiris et al. 2011; Klockars and Pitkaranta, 2009, Steehler et al., 2012). To reduce recurrence, thereby avoiding need for a repeat frenotomy, there are anecdotal reports of clinicians recommending post frenotomy procedures such as tongue massage, tongue stretching and tongue exercises. A question regarding the potential benefit of these procedures arises. To date, neither published evidence nor consensus amongst clinicians support the utilization of these procedures. We noted a difference in our own clinical practice of advising massage in our TT service. Some colleagues routinely advised post frenotomy massage. Others did not. We utilized this lack of consensus and dichotomy in our clinical practice which is reflected in our service and decided to conduct this study. The objectives of our study were two-fold: to assess any subjective improvement in breast feeding, and to assess symptomatic recurrence requiring a repeat frenotomy.

Materials and Methods

This was a retrospective study. Data was collected from case notes and electronic patient record system from January 2018 to December 2018. A database was prospectively maintained by the TT service. Approval for the study was

taken from our Institutional Review Board. The study was carried out in a tertiary Children’s hospital with adequate support from breast feeding and lactation team. TT service in our pediatric surgical department consists of five pediatric surgical consultants and a breast feeding midwife. A referral for frenotomy was accepted only after confirming that the infant had previously been examined by a lactation consultant and conservative measures to promote latching and breast feeding had failed. Frenotomy was performed in the clinic with aseptic precautions without anesthesia. The procedure involved clipping of the frenulum and dividing it sharply, resulting in a diamond shaped incision. This was a standard practice in our department and was performed by all the consultants involved in TT service. Breast feeding was started immediately after frenotomy and the infant was discharged home after a period of observation in the clinic (usually 1 h). Three out of five consultants routinely advised post frenotomy massage which was a personal preference reflecting our departmental practice. Massage was advised to start 24 h after frenotomy and to be continued twice a day for 7 days. Massage essentially involved rubbing across the raw under surface of the tongue to break down newly formed adhesions. Parents were advised not to stretch the tongue in any way.

Target population in this study included all infants less than 60 days corrected gestational age that were referred to our TT service. Infants above 60 days corrected gestational age were excluded. Post frenotomy, breast feeding midwife contacted parents telephonically and maintained a prospective database. Follow up was maintained at 3 monthly intervals up to one year post frenotomy. Enquires were made as to any persisting issues with breast feeding, any suspected recurrence and satisfaction from the service provided. Community breast feeding team routinely followed these infants and contacted our team for additional advice. In case of suspected recurrence, the infant was reviewed in TT clinic by the surgical consultant. A repeat frenotomy was performed in case of recurrence.

To ascertain whether massage was carried out as advised, data were collected by two independent observers who were not part of the TT service. This was done to avoid bias and was performed for the study purposes only. A standard questionnaire was utilized which included persistent symptoms of breast and nipple pain, nature of feeding (exclusive breast feeding, combined breast and bottle feeding or exclusive bottle feeding), ongoing feeding difficulties, bleeding, or suspected recurrence. To assess the outcome measures detailed above, parents of both groups were contacted via telephone. Attempt was made at least on two separate occasions to contact parents from both the groups at a minimum of 2 months after the procedure. This was done to get a better estimate of recurrence and assess improvement in breast feeding. We defined recurrence as relapse of clinical symptoms after

initial improvement in breast feeding. We concentrated on symptomatic recurrence only as this reflected the impact on breast feeding rather than merely concentrating on band regrowth. Infants with suspected recurrence were reassessed by surgical consultant in the clinic. Those with a confirmed recurrence underwent a repeat frenotomy. We defined subjective improvement in breast feeding as successful latching and exclusive breast feeding along with maternal satisfaction. The outcome measures were compared between the two groups and Fisher exact test was employed ($p < 0.05$ was considered significant).

Results

During this period, 632 infants were referred to our TT service. Of these, 33 were excluded as they did not have TT and frenotomy was not performed. They were referred to lactation consultant for advice and follow up. Therefore, the participants included a total of 599 infants who had frenotomy. There were no intraoperative complications. 282 were advised post frenotomy massage and were placed in the massage group (MG). The rest ($n = 317$) were not advised massage and were placed in the non-massage group (NMG).

Main results—Median age at the time of frenotomy was 14 days (range 7 to 58 days). Parents of both groups were contacted at an average period of six months after frenotomy (range 2–10 months). In MG, 92 responded. Of these, parents of 40 infants (43.5%) adhered to the massage regimen as advised. Parents of remaining 52 infants (56.5%) did not perform post frenotomy massage. 89(96.7%) reported an improvement in breast feeding and were exclusively breast fed at the time of contact (Fig. 1). The remainder ($n = 3$) used a combination of breast and bottle feeds. In NMG, 102 of 317 could be contacted. 94 (92.1%) noted an improvement in latching and were exclusively breast fed at the time of contact. Parents of remaining 8 infants used a combination of breast and bottle feeds ($n = 6$) or exclusive bottle feeding ($n = 2$).

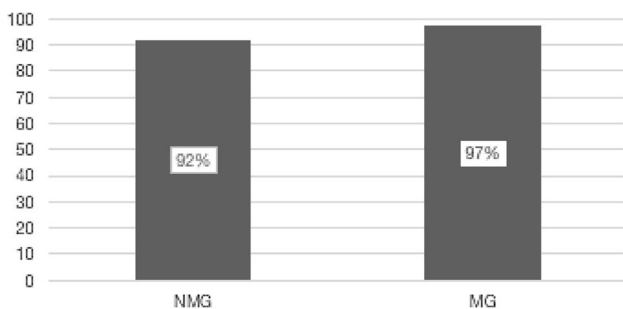


Fig. 1 Showing the exclusive breast-feeding rates (%) in the Massage group (MG) and Non message group (NMG) at follow up

Overall improvement in breast feeding was noted in 94.3%. The difference in improvement in breast feeding did not achieve statistical significance between the two groups ($p = 0.837$) (Table 1). Overall, four infants out of 599 had a recurrence needing a repeat frenotomy (0.66%). Looking at the data, we could see that all recurrences were in NMG. There were no recurrences in MG. Interestingly; there were no recurrences even in the noncompliant subset of MG. This difference in recurrence did not achieve statistical significance between the two groups ($p = 0.126$) (Table 2). The reasons for noncompliance were further discussed with parents in MG. Multiple reasons were cited which included parental anxiety, difficulty in performing massage and conflicting advice given by other healthcare professionals involved in the care of these infants. They also pointed to a lack of any convincing information on the internet and on the social media.

Discussion

With an overall incidence ranging from 4 to 16%, TT is an important cause for parental anxiety over infant feeding. We have noted that parents often enquire regarding massage or tongue stretching after frenotomy. These would have been advised by other health care professionals. However, there were no patient leaflets given by these professionals. Some parents have acquired this information through the internet or social media, though it is not always possible to have rigorous scrutiny over this information. The benefits quoted by those advocating massage is the prevention of formation of adhesions potentially leading to lower recurrence. However, we could not find any evidence base for this.

Table 1 Showing breast feeding rates in massage and non-massage groups

Improvement in Breast feeding	Massage group (MG)	Non-massage group (NMG)	Total	p
Yes	89	94	183	0.837
Total	N = 92	N = 102	194	–

Table 2 Showing intraoperative complications and recurrences in massage and non-massage groups

Complications	Massage group (n = 282)	Non-massage group (n = 317)	p
Intraoperative complications	0	0	–
Recurrence	0	4	0.126

Key Results

In our institution, there was a difference in practice among our consultant colleagues advising massage after frenotomy. Hence, we could easily compare the outcome in terms of recurrence between the two groups. In this series, only 43.5% of respondents in the MG adhered to this advice. Main reasons cited for non-compliance included anxiety and difficulty in performing massage on an operated site. Parents were apprehensive as to whether any harm could be caused by the massage itself. They also cited conflicting advice by other health care professionals and pointed to the lack of convincing information regarding benefit of massage on the internet or on the social media. Theoretically, post frenotomy massage could be associated with bleeding and pain. Interestingly, when enquired, none of the parents who performed massage reported it. Our study echoes the results of previous studies and confirms the overall low recurrence after frenotomy and the significant improvement in breast feeding after frenotomy.

However, evidence for massage after frenotomy is clearly lacking. This is strengthened by the fact that similar breast feeding rates and recurrence were observed between the massage and non-massage groups in this study. It is also worth noting that half of those advised massage failed to adhere to this advice. After this study, post frenotomy massage has been discontinued in our service.

Strengths and Limitations

We could not find any studies quoting post frenotomy massage for TT. To our knowledge, this is the first study in English literature comparing the benefits and problems associated with post frenotomy massage. Strengths of this study include stringent follow up by dedicated breast feeding Midwife and the TT team, data collection by two independent observers minimizing bias and availability of a contemporaneous non-massage group for comparison. Obvious limitation is that the study is retrospective. The lack of statistical significance between the two groups could possibly be explained by the relatively small numbers of parents who could be contacted. However, we feel that results would not have been any different had a larger proportion of both groups could be contacted as the original sample appeared to be adequately represented. As we defined recurrence as relapse of clinical symptoms after initial improvement in breast feeding, we cannot comment on anatomical recurrence without symptoms. We concentrated on symptomatic recurrence only as this reflected the impact on breast feeding rather than merely concentrating

on band regrowth. As we defined symptomatic recurrence to reflect the impact on feeding rather than merely recording band regrowth, our recurrence rates may be lower. An element of recall bias may exist, as parents may have had difficulty in recalling events (median follow up was 6 months).

Conclusions for Practice

This study confirms the overall low recurrence and significant improvement in breast feeding after frenotomy. Evidence of benefit of massage after frenotomy for tongue-tie is clearly lacking. This study assists with clinical decision making and we would recommend clinicians and families not to proceed with post frenotomy massage until more prospective studies demonstrate a significant advantage.

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Declarations

Conflict of interest The authors have no competing interests to declare.

Ethical Approval The study received approval from the institutional review board.

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