



## Review Article

# The Effect of Lingual Frenectomy on Pain Relief during Breastfeeding

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## Abstract

Difficulty in breastfeeding is a very frequent complaint in mothers to breastfeed. One of the difficulties is the presence of pain, and the presence of the short lingual brake (ankyloglossia) in the baby may lead to the change of suction during breastfeeding, making it difficult to “catch” the breast and therefore nipple pain. Frenectomy is considered the surgical method of choice for the resolution of ankyloglossia.

The objective of this Rapid Review is to evaluate the effect of lingual Frenectomy on pain relief in breastfeeding.

The research was conducted in a scientific database at Pubmed, EBSCO, Medline and Cochrane. The PICO research strategy and descriptors were used Lingual frenectomy AND Pain AND Breastfeeding AND (Ankyloglossia OR Tongue-tie) AND Infant. As inclusion criteria: babies up to 12 months, Frenectomy with laser or scissors, mother with pain, short lingual brake and full text. The exclusion criteria were defined all those who did not meet the inclusion criteria. The structuring of the protocol followed the PRISMA standards and for the methodological validity the standardized instruments of critical evaluation of the Joanna Briggs Institute.

We identified 110 articles, which after reading and applying the inclusion criteria, remained 7 revealing publications. All articles are consensual, refer to ankyloglossia a disorder with reflex in breastfeeding to lead to pain, well-being and self-esteem of the mother. Frenectomy is pointed out as the effective response to relieve and/or minimize symptoms such as nipple pain and provide mothers' adherence to breastfeeding.

**Keywords:** Lingual frenectomy; Pain; Breastfeeding; Ankyloglossia; Tongue-tie; Infant.

## Introduction

In the first months of life, there are numerous benefits of

breastfeeding that are well established for the newborn. However, this may have difficulties in breastfeeding due to various reasons, such as the prematurity of the baby or loss of reflex suction. In other situations, there is interference caused by pacifiers or even bad position during breastfeeding, making suction difficult [1].

The limitation of tongue movements in newborns is another reason that can compromise suction at the areola level and effective latching of the breast during breastfeeding, leading to a maternal nipple pain that can cause trauma [1]. Ankyloglossia is also known as “stuck tongue”, it is a congenital brake anomaly of the tongue, observed in newborns and children, characterized by a lingual brake abnormally short [2]. The tongue brake is responsible for tongue mobility, but when the tongue apoptosis does not occur correctly in the embryonic period, the tissue that did not suffer this apoptosis is limited some of the degrees of movement, leading to a short lingual brake [3- 13]. This translates into an abnormal insertion of the lingual brake consisting of a thin membrane, in the remains of embryonic tissue produced in the early stages of the oral cavity and upper fibers of the muscle genioglossus, where there was an incorrect division with the muscle hyoglossus [1].

This condition is observed in 0.02% and 10.7% of newborns and is more prevalent in males [6]. This movement restriction is responsible for the modification of the suction mechanism in the infant, causing difficulties in breastfeeding, which often results in interruption precocious of the same [9]. Difficulty in breastfeeding is a frequent complaint of mothers, regardless of the presence or absence of ankyloglossia and, therefore, the evaluation and diagnosis of possible causes should be carried out as soon as

possible, so there is also a selection most appropriate therapeutic plan [2,4].

The most commonly used method to correct ankyloglossia, indicating an approach surgical, is known as frenotomy or Frenectomy which is also considered the procedure to release the tongue and provide a better oral function. A surgical incision with a scalpel/ scissors, electrocautery or lasers are the instruments more common for the procedure of lingual Frenectomy [3]. After the horizontal incision in the brake, the opening of the three-dimensional pyramid, forming a diamond consisting of two isosceles triangles [4]. Thus, the main objective of this study is to evaluate the effect of lingual Frenectomy on pain relief in breastfeeding. Thus, it was defined as a research question “What is the influence of lingual Frenectomy on pain relief in breastfeeding?”.

### Research Question

Before starting the systematic review of the literature, the research question was taking into account the format PICO - Participants, Interventions, Comparisons, Results/Outcomes: “What is the influence of lingual Frenectomy on the relief of pain in breastfeeding?”. Summarized the research protocol, based on this method (Table 1)

<b>PI</b>	Participants	Who was studied?	Mothers breastfeeding with pain
	Interventions	What was done?	Lingual frenectomy
<b>C</b>	Comparisons	May or may not exist	Effect of the intervention on pain
<b>O</b>	Outcomes	What results, effects or consequences?	Pain relief during breastfeeding

**Table 1:** PICO strategy for constructing the research question.

### Data Collection Methodology

To respond to the problem, a research protocol was designed, in which defined a set of exclusion and inclusion criteria, taking into account the issue of research created: “What is the influence of performing lingual Frenectomy on pain relief in breastfeeding?”.

### Eligibility Criteria

For the identification of studies relevant to the theme, inclusion criteria and exclusion. The inclusion criteria were: babies up to 12 months; Frenectomy with laser or with scissors; mother with pain; short lingual brake and text available in full. On the other hand, the exclusion criteria were all those that did not inclusiveness.

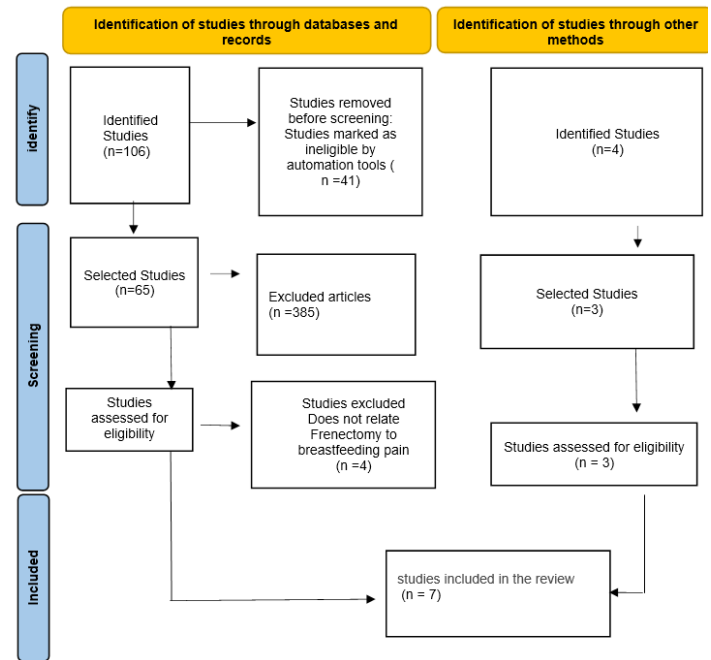
### Research strategy

A survey was conducted in Pubmed, EBSCO, Medline and Cochrane, using the following descriptors: Lingual frenectomy AND Pain AND Breastfeeding AND (Ankyloglossia OR Tongue-tie) AND Infant, taking into account the criteria defined above. After this initial reading of the titles of the articles and then the abstract. Staying only with articles whose content was relevant to the theme, i.e., studied the effect of lingual Frenectomy on pain relief in breastfeeding. To evaluate the reliability, relevance and results of public and inserted articles In this study we applied the tool of critical evaluation of Joanna Briggs Institute.

### Results

This process resulted in a total of 110 articles. After the placement of “full text” in automated filters, resulted in 68 articles. In a second phase, after reading the title reduced to 11 and after summary and elimination of duplicates, the research reduced to 7 articles. The main reason why the remaining articles were eliminated was the lack of Frenectomy with pain in breastfeeding.

Later in the last stage, the full reading of all the articles, subject to the criteria already stipulated in the protocol defined, as well as was quality of each (figure 1).



**Figure 1:** PRISMA Flowchart.

### Data extraction

The final sample of this review consisted of seven scientific articles, selected by previously established inclusion criteria. To extract information from each article, guidelines of the JBI, where 5 variables were identified: authors, year of publication, methodology and results with contribution to research. (Table 2) represents the specifications of each article.

Title/ year	Authors	Objective of the article	Methodology	Results with contribution to research
Revision Lingual Frenotomy Improves Patient-Reported Breastfeeding Outcomes: A Prospective Cohort Study / 2018	Ghaheri, Bobak A Cole, Melissa Mace, Jess C.	Determine how incomplete release of the short lingual brake can result in difficulties that are persistent in breastfeeding	Prospective, observational cohort study of a group of mothers-babies (0 to 9 months of age) after Frenectomy	After Frenectomy showed improvement in nipple pain.
Mothers' experiences of breastfeeding a child with tongue-tie / 2019	Waterman, Jillian Lee, Tiffany Etchegary, Holly Drover, Anne Twells, Laurie	Explore the experiences of mothers who breastfeed children with "stuck tongue".	Qualitative descriptive study through reports of mothers who breastfed a child with ankyloglossia.	Breastfeeding of a child with ankyloglossia has a significant impact on the well-being of the mother. A child with this anomaly can induce significant pain when breastfeeding and even lead to trauma to the nipple, leading to injuries, being necessary to perform the Frenectomy. There is a lack of support for mothers who have a baby with a "stuck tongue", leading to a decrease in confidence in the mother.
Frenotomy for tongue-tie in newborn infants / 2018	Campbell, Jill	To determine whether Frenectomy is safe and effective for improving breast feeding in babies under three months of age who have ankyloglossia.	Randomized or quasi-experimental studies comparing Frenectomy vs non-Frenectomy in three-month- old infants diagnosed with tongue attached, whosmother presents nipple pain, were included.	A short-term reduction of maternal nipple pain was observed in nursing mothers.
The outcomes of a frenotomy on breastfeeding infants followed up for 3 months at Thammasat University Hospital / 2016	Wakhanrittee, Junsujee Khorana, Jiraporn Kiatipunsods, Siriphut	To study the effects of Frenectomy on nipple pain, grip effectiveness and breastfeeding success.	Prospective cross-sectional study of 328 mothers and their babies with ankyloglossia and difficulties in breastfeeding	Frenectomy can reduce maternal nipple pain. The study also found that gravity short brake and nipple sensation during sucking the baby were the factors that could be modified by Frenectomy.
Lingual Frenotomy for Breastfeeding Difficulties: A Prospective Follow-Up Study / 2014	Dollberg, Shaul Marom, Ronella Botzer, Eyal	Gather follow- up data from mothers and their babies, and find predictors of breastfeeding success after Frenectomy.	Prospective experimental study. We used a convenience sample, which included 264 mother-infant dyads for lingual Frenectomy.	There are long- term positive effects related to Frenectomy in breastfeeding, relieving symptoms such as nipple pain. This procedure should be considered effective to assist in long-term breastfeeding.
Immediate nipple pain relief after frenotomy in breast-fed infants with ankyloglossia: a randomized, prospective study / 2006	Dollberg, Shaul Botzer, Eyal Grunis, Esther Minouni, Francis	To evaluate the hypothesis that Frenectomy in cases of Ankyloglossia relieves the difficulties experienced in breastfeeding.	A randomized, prospective study. Twenty- five mothers of healthy babies with ankyloglossia were selected for the presence of nipple pain, and were divided into two groups with interventions of different sequences..	Frenectomy seems to relieve nipple pain immediately after surgery. It was concluded that ankyloglossia plays a significant role in the initial difficulties of breastfeeding, proving to be an effective procedure.

The effects of frenotomy on breastfeeding / 2014	Martinelli, Roberta Marchesan, Irene Gusmão, Reinaldo Honório, Heitor Berretin-Feliz, Giédre	To evaluate the changes in the pattern of breastfeeding after lingual Frenectomy, regarding the number of suckings, duration of breaks between suckings and maternal complaints.	Prospective experimental study. A sample of 109 babies was used to evaluate the lingual brake, and 14 were submitted to surgery. The control group consisted of 95 babies. A questionnaire was applied to both groups to assess symptoms before and after surgery.	All symptoms reported by the mothers of babies with short brake improved after surgical intervention, namely the duration and frequency of feedings, including pain. The control group maintained the same patterns of breastfeeding and pain
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**Table 2:** Characterisation and results of the articles.

## Discussion

According to WHO/UNICEF, breast milk is a complete, live and natural food, suitable to give newborns the ideal conditions. The benefits of breastfeeding are multiples both in the short and long term, even if they do not yet know all their constituents, there is a consensus that their exclusive practice until 6 months of the baby is important [5]. Breastfeeding is also a learning period of interaction between the mother and baby, of several factors, namely the anatomy of the baby’s oral cavity, the demand, sucking and swallowing [5,9,10]. When the brake, which is responsible for the mobility of the tongue, suffers an anomaly called as ankyloglossia, movement restrictions occur, and any kind of restriction in the lingual movement can result in a functional disturbance, having reported as a problematic factor in breastfeeding [8].

The presence of a functional limitation causes some babies cannot fit the mouth correctly in the areola, compromising suction, which triggers maternal complaints of pain and discomfort [8,9,10]. A presence of a small interval of time between meals and a smaller total number of suction made by each meal points to the presence of ankyloglossia. It is noted that the difficulty in holding the mother’s breast thus compromising the handle and suction takes also to a tiredness on the part of the newborn. In these cases, it is often suggested Frenectomy to release the tongue [12].

The recent descriptive study [6], evaluated the experience of mothers who breastfed a child with ankyloglossia, where concluded that the breastfeeding affects the physical and emotional well-being of the mother, pain being one of the impacts tongue. Restricted movements of the baby’s tongue may lead to sore and injured nipples. Notes that during the first three weeks of breastfeeding the maternal pain experienced daily leads to a risk of 10% to 26% of early interruption of breastfeeding.

This risk is easily explained due to the feeling of guilt and anguish that the nipple pain felt can bring, not getting the mother consequently establish the relationship of breastfeeding you desire, leading to feelings of failure and high levels of suffering emotional. On the other hand, these authors demonstrate that the

health system does not guarantee support for these mothers in breastfeeding, also leading to early weaning. In addition, claim that the diagnosis of ankyloglossia is performed, mostly, after discharge hospital.

Also prior to this evidence, another prospective cohort study [7]. conducted concluded that in cases where ankyloglossia leads to greater difficulties in breastfeeding, including persistent nipple pain, Frenectomy is the most common to be used. For the success of breastfeeding one of the main necessary factors is the absence of nipples pain, although this is one of the most common symptoms at an early stage of breastfeeding. Persistent pain is considered abnormal, and nipple pain with symptoms of an ineffective handle is among the most common indications for Frenectomy lingual, so the improvement in the quality of the handle should improve the duration of breastfeeding long-term [7].

Consistent with these results, several scientific studies [9,11,12] state that Frenectomy can relieve ankyloglossia and improve lingual mobility by improving subsequently grip, sealing and pain in the mother’s nipple. In addition to pain, Frenectomy improves breastfeeding efficiency and low self- confidence. Similarly, the study 8 states that the reduction of pain in the short term is one of the advantages of Frenectomy among breastfeeding mothers, however, their study did not a sufficient sample to ensure a long-term result. Breast milk is the best source of nutrition for all babies, contributing to health children, so it is important that health professionals promote it at least up to six months after birth. The type of nipple is an anatomical factor that cannot be changed or improved by the surgical procedure, but which also influences breastfeeding [9,10].

On a suction effective, the baby’s tongue reaches the areola and projects the breast tissue to form a beak in mouth and achieve milk transfer. A baby with a tongue stuck has greater difficulty in performing the correct movement of suction and can show disinterest in picking up the breast (having this an anatomy that facilitates better movement or not) causing pain. In this study, most nipple pain was classified as a “moderate pain” before intervention. On the other hand, mothers with babies with



ankyloglossia and problems in breastfeeding after one week of surgical intervention, continued to breastfeed their children with a significant improvement in pain [9].

To support these results, the study [10]. reports that there is an improvement in pain nipple and ineffective grip in 75% of mothers with breastfeeding difficulties who submitted their babies to surgery. In addition, lingual Frenectomy is not considered traumatic, has no noticeable complications and bleeding or pain are not significant.

In the previous study its results also show a relief immediate and significant pain in the nipple after Frenectomy, due to the optimization of the handle breast, even if the healing of the nipple with trauma may take more than two weeks [11].

The benefit of breastfeeding outweighs the surgical intervention itself, since it turns out that after the implementation of Frenectomy, babies show changes in sucking patterns and breastfeeding, which leads to a reduction in nipple pain, corroborating with authors described in this review [12].

## Conclusion

Exclusive breastfeeding during the first six months of life is recommended by the WHO. Breast milk is considered safe, with nutrients and antibodies that protect the baby avoiding many common childhood diseases. In addition during the process of breastfeeding mothers have the opportunity to create a quality interaction with their baby through physical and visual contact [5].

Since the benefits of breastfeeding are well established, it is necessary that the problems are correctly addressed so that they can be corrected with the appropriate interventions as soon as possible. Ankyloglossia is relatively common in newborns, leading to occurrences such as restrictions of language movement, which in turn leads to an inability on the part of the baby to properly hold and stimulate the maternal nipple. The presence of limitations functional brings difficulties in performing an effective handle and suction during the resulting in a mother's nipple pain and subsequent trauma.

Pain is one of the most significant impacts of the short brake, with consequences for physical and emotional well-being of the mother, since it leads to anguish, anxiety, frustration and ends the feeling of guilt and failure because there is no success in the process of breastfeeding. This is a cause that often leads to early interruption of breastfeeding. Based on the current evidence, before cases of ankyloglossia that interfere with the is often used the lingual Frenectomy, a procedure that revealed to be safe and with low risk of complications. There are still improvements in efficiency of breastfeeding and relief of nipple pain, and this is one

of the main determinants for the success of breastfeeding. It is also emphasized that when the pain is related to the poor adaptation of the baby to the breast, surgical procedure will not have the expected results, since there are maternal factors that cannot be altered or improved by surgical procedure [9].

Still, it is considered that the studies that relate breast pain to the procedure surgical, lingual Frenectomy, are few, highlighting the importance of the study of this pain relief. Thus, as a future perspective may be evaluated other advantages of Frenectomy in breastfeeding success, including relief of pain.

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