

## Tie Tongue and Frenotomy: An Article Review

Michele Callea<sup>1</sup>, Dian Agustin Wahjuningrum<sup>2\*</sup>, Francisco Cammarata Scalisi<sup>3</sup>, Fery Setiawan<sup>4,5</sup>, Radixtio Auzan Fepiosandi<sup>2</sup>, Daniyal Lazuardi Ramadhan<sup>2</sup>, Antonino Morabito<sup>6,7</sup>

1. Pediatric Dentistry and Special Dental Care Unit, Meyer Children's Hospital, Florence, Italy.

2. Department of Conservative Dentistry, Faculty of Dental Medicine, Universitas Airlangga, Indonesia.

3. Regional Hospital of Antofagasta, Antofagasta, Chile.

4. Faculty of Medicine, Universitas Airlangga, Indonesia.

5. Department of Pathology Oral Maxillofacial, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia.

6. Department of Pediatric Surgery, Meyer Children's Hospital, Florence, Italy.

7. Department of Neurosciences, Psychology, Drug Research and Child Health (NEUROFARBA), University of Florence, Florence, Italy.

### Abstract

Tongue-tie, or ankyloglossia, is a congenital condition characterized by a short, thickened, or tight lingual frenulum, restricting the normal movement of the tongue. This restriction can significantly impact various oral functions, including speech articulation, feeding, and oral hygiene. Frenectomy, the surgical release of the lingual frenulum, is a commonly performed procedure aimed at improving tongue mobility and function. This review provides a comprehensive evaluation of frenectomy in tongue-tie, focusing on the underlying causes, diagnostic criteria, surgical techniques, and associated outcomes. Current literature and studies related to tongue-tie and frenectomy were analyzed to offer a well-rounded understanding of this topic.

The primary etiology of tongue-tie is believed to be a failure of the lingual frenulum to undergo complete embryonic regression during fetal development. Various classification systems have been proposed to categorize the severity of tongue-tie, aiding in diagnosis and treatment planning. Diagnostic assessments involve evaluating tongue mobility, oral function, and the impact on quality of life.

Frenectomy, the gold standard treatment for tongue-tie, involves the surgical release or modification of the restrictive frenulum. Common surgical techniques include the traditional scissors or scalpel method, as well as newer approaches such as laser frenectomy. Each technique has its advantages and considerations, including bleeding, pain, and healing time.

Numerous studies have demonstrated the positive impact of frenectomy on improving tongue mobility, speech articulation, breastfeeding, and oral hygiene. However, controversies regarding the indications for surgery and the long-term outcomes of frenectomy continue to persist, necessitating further research and evidence-based guidelines.

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### Introduction

Tongue-tie, also known as ankyloglossia, is a common condition that affects the mobility of the tongue.<sup>1,2</sup> It is characterized by a shortened, thickened, or tight lingual frenulum, the tissue under the tongue that connects it to the floor of the mouth. This can restrict the movement of the

tongue, causing functional problems such as difficulty breastfeeding, difficulty with speech and articulation, and difficulty with eating and swallowing.<sup>3</sup>

The exact cause of tongue-tie is not fully understood, but it is thought to be a combination of genetic and environmental factors. Some research suggests that there may be a genetic component to the development of tongue-tie, as it tends to run in families. Tongue-tie can occur in both males and females and can be present at birth or develop later in life. There are several different grades of tongue-tie, ranging from mild to severe, based on the degree of restriction in tongue movement.<sup>4</sup> Tongue-tie is relatively common, with a prevalence of 4-10% in the

#### \*Corresponding author:

Dian Agustin Wahjuningrum,  
Department of Conservative Dentistry  
Faculty of Dental Medicine, Universitas Airlangga, Indonesia  
St. Mayjend. Prof. Dr. Moestopo No. 47, Surabaya, Indonesia  
E-mail: dian-agustin-w@fkg.unair.ac.id

general population. It can cause a variety of symptoms, depending on the severity of the condition and the age of the individual. In infants and young children, tongue-tie can cause difficulties with breastfeeding, as the baby may have trouble latching onto the breast or bottle due to limited tongue movement. This can lead to poor weight gain, poor milk intake, and frustration for both the baby and the caregiver. Tongue-tie can also cause difficulty with bottle-feeding, as the baby may have trouble sucking and swallowing the formula.<sup>5</sup>

In older children and adults, tongue-tie can cause difficulties with speech, as certain sounds may be difficult to produce due to limited tongue movement. It can also cause difficulty with eating and swallowing, as the tongue may not be able to move food around the mouth effectively. Symptoms of tongue-tie may include:<sup>6</sup>

- Difficulty sticking out the tongue past the lower front teeth
- Difficulty moving the tongue from side to side or up and down
- Difficulty making certain speech sounds, such as "l," "r," and "t"
- Difficulty latching onto the breast or bottle during breastfeeding
- Excessive drooling
- Gagging or choking when eating
- Difficulty swallowing

Tongue-tie can be diagnosed through a physical examination by a healthcare provider. The provider will assess the mobility of the tongue and the presence of a shortened or tight lingual frenulum. In some cases, additional diagnostic testing, such as a feeding evaluation or speech assessment, may be necessary to determine the extent of the tongue-tie and its impact on function.<sup>7</sup>

Treatment for tongue-tie typically involves a simple surgical procedure called a frenotomy, in which the lingual frenulum is cut or released to allow for greater movement of the tongue. The procedure is usually quick and painless and can be performed in a doctor's office or clinic. After the procedure, it is important to perform tongue exercises to help improve tongue movement and function.<sup>8</sup>

If you or your child is experiencing symptoms of tongue-tie, it is important to speak with a healthcare provider for proper diagnosis and treatment. Early treatment can help prevent long-term difficulties with eating, speaking, and

other functions of the tongue.<sup>7,8</sup>

There are some classifications of frenal attachments, such as: classification of frenal attachments by Sewerin and by Mirko. The former classification consists of: normal frenum, simple frenum with a nodule, simple frenum with appendix, simple frenum with nichum, bifid frenum, persistand tectolabial frenum, double frenum, and wider frenum. The latter classification consists of: mucosal, gingival, papillary, and papilla penetrating. The mucosal is called when the frenal fibres are attached up to the mucogingival junction. The gingival is called when the fibres are inserted within the attached gingiva. The papillary is called when the fibres are extending into the interdental papilla. The papilla penetrating is called when the frenal fibres cross the alveolar process and extend up to the palatine papilla. The frenum is classified as a pathogenic frenum when meet some events, such as: 1. Clinically both papillary and papilla penetrating frena was associated with loss of papilla, recession, diastema, difficulty in brushing, malalignment of teeth so that it may also prejudice the denture fit or retention leading to psychological disturbances, 2. The frenum can become a significant problem if tension from lip movement pulls the gingival margin away from the tooth or if the tissue inhibits the closure of diastema during orthodontic treatment, 3. Frenal attachment that encroach on the marginal gingiva that distends the gingival sulcus can increase the plaque accumulation and increase the progression of periodontal disease, 4. An aberrant frenal attachment is present that can cause a midline diastema.<sup>8</sup>

### Indications For Frenotomy

Frenotomy is a surgical procedure in which the lingual frenulum, the tissue under the tongue that connects it to the floor of the mouth, is cut or released to allow for greater movement of the tongue. Frenotomy is often performed to treat tongue-tie, a condition in which the lingual frenulum is shortened, thickened, or tight, restricting the movement of the tongue.<sup>9-11</sup>

There are several indications for frenotomy in infants and young children, including:<sup>9,12</sup>

- Difficulty breastfeeding: Tongue-tie can cause difficulty with breastfeeding, as the baby may have trouble latching onto the breast or bottle due to limited tongue movement. This can lead to

poor weight gain, poor milk intake, and frustration for both the baby and the caregiver. In severe cases, tongue-tie may require intervention in order to ensure the baby is receiving adequate nutrition.

- **Bottle-feeding difficulties:** Tongue-tie can also cause difficulty with bottle-feeding, as the baby may have trouble sucking and swallowing the formula. This can lead to slow weight gain and frustration for both the baby and the caregiver.
- **Speech difficulties:** In older children, tongue-tie can cause difficulties with speech, as certain sounds may be difficult to produce due to limited tongue movement. This can affect the child's ability to communicate effectively and may require intervention to improve speech development.
- **Eating difficulties:** Tongue-tie can cause difficulty with eating and swallowing, as the tongue may not be able to move food around the mouth effectively. This can lead to poor nutrition and may require intervention to improve the child's ability to eat and swallow properly.
- **Orthodontic concerns:** In some cases, tongue-tie can cause alignment issues with the teeth or jaws, which may require frenotomy to correct. This may be necessary to ensure proper dental development and prevent long-term problems with the teeth and jaws.

Frenotomy may also be indicated in adults who have developed tongue-tie later in life or who have experienced worsening of their tongue-tie over time. In these cases, frenotomy may be necessary to improve speech, eating, and swallowing function, and to prevent long-term difficulties with these activities. If you or your child is experiencing symptoms of tongue-tie, it is important to speak with a healthcare provider for proper diagnosis and treatment. The provider will assess the mobility of the tongue and the presence of a shortened or tight lingual frenulum, and determine if frenotomy is an appropriate treatment option.<sup>13</sup>

### Outcomes Of Frenotomy

Frenotomy is a surgical procedure in which the lingual frenulum, the tissue under the tongue that connects it to the floor of the mouth, is cut or released to allow for greater movement of the tongue. Frenotomy is often performed to treat tongue-tie, a condition in which the lingual frenulum is shortened, thickened, or tight,

restricting the movement of the tongue.<sup>14</sup>

Overall, frenotomy is a safe and effective treatment for tongue-tie, with a high success rate. The procedure is usually quick and painless and can be performed in a doctor's office or clinic. Most people experience significant improvement in tongue function and symptom resolution after frenotomy. In infants and young children, frenotomy can help improve breastfeeding and bottle-feeding, leading to better weight gain and nutrition. It can also help improve speech development and prevent orthodontic problems.<sup>15</sup>

In adults, frenotomy can help improve speech, eating, and swallowing, as well as reduce the risk of dental problems and other complications associated with tongue-tie. It is important to note that frenotomy is not a cure-all for tongue-tie. Some people may still experience lingering symptoms or functional problems after the procedure. In these cases, additional treatment, such as tongue exercises or speech therapy, may be necessary to further improve tongue function and resolve symptoms. If you or your child is considering frenotomy for tongue-tie, it is important to speak with a healthcare provider for a proper evaluation and treatment recommendation.<sup>15</sup>

### Frenotomy in The Scientific Literature

Frenotomy, a surgical procedure in which the lingual frenulum is cut or released to allow for greater movement of the tongue, has been widely studied in the scientific literature for its effectiveness in treating tongue-tie (ankyloglossia).<sup>16-19</sup> Several studies have shown that frenotomy can improve breastfeeding and bottle-feeding in infants and young children with tongue-tie. For example, a systematic review of 15 studies found that frenotomy significantly improved breastfeeding outcomes in infants with tongue-tie, including increased milk intake and weight gain. Another systematic review of 23 studies found that frenotomy improved the success rate of breastfeeding and bottle-feeding in infants and young children with tongue-tie.<sup>13</sup>

Frenotomy has also been shown to improve speech development in children with tongue-tie. A randomized controlled trial of children with tongue-tie found that frenotomy improved speech intelligibility and decreased the number of speech errors in children with moderate to severe tongue-tie. Another study

found that frenotomy improved speech clarity in children with tongue-tie, particularly for certain speech sounds such as "s" and "z."20-22 In adults, frenotomy has been shown to improve speech, eating, and swallowing in people with tongue-tie. A systematic review of 12 studies found that frenotomy significantly improved speech outcomes in adults with tongue-tie, including increased tongue mobility and improved articulation. Another study found that frenotomy improved swallowing and eating in adults with tongue-tie, leading to improved quality of life.23

Overall, the scientific literature suggests that frenotomy is a safe and effective treatment for tongue-tie, with a high success rate and significant improvements in breastfeeding, bottle-feeding, speech, eating, and swallowing in infants, children, and adults with tongue-tie. If you or your child is considering frenotomy for tongue-tie, it is important to speak with a healthcare provider for a proper evaluation and treatment recommendation.24,25

## Conclusions

Frenotomy, from the scientific literature suggests that it is a safe and effective treatment for tongue-tie because its success rate is high and it has significant improvements in breastfeeding, bottle-feeding, speech, eating, and swallowing among infants, children, and adults with tongue-tie.

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## Declaration of Interest

The authors declare that there is no conflict of interests.

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