

The Unlikely Connection: Tongue Tie & Neck Pain

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Abstract

Tongue tie, a condition present at birth, occurs when the strip of skin beneath the tongue (lingual frenulum) is shorter than usual, limiting the range of motion. While traditionally associated with feeding difficulties in infants, recent studies suggest a surprising link between tongue tie and neck pain in both children and adults. This article aims at highlighting a multidisciplinary approach, where soft tissue diode lasers, offers a promising path to alleviating neck pain and improving overall well-being for those affected by this often-overlooked condition.

Keywords: Tongue tie, Ankyloglossia, Diode Laser, TMJ disorders

Introduction

Tongue tie, or ankyloglossia, can restrict the movement of the tongue, impacting various oral functions. In infants, this may lead to breast feeding challenges, affecting latch and maternal discomfort. The connection between tongue tie and neck pain becomes more apparent when considering the intricate network of muscles and fascia in the oral and cervical regions. Both dentists and orthodontists aim to ensure optimal oral health, comfort, and function for their patients. Untreated tongue tie can compromise these aspects, necessitating collaboration with other health-care professionals for comprehensive care.

Contributing Factors

1. Genetic Factors

There is evidence to suggest that tongue tie may have a genetic component. If there is a family history of ankyloglossia, an individual may be more predisposed to the condition.

2. Foetal Development

Tongue tie can develop during foetal development. Abnormalities in the formation of the lingual frenulum may occur during the early stages of pregnancy.

3. Tissue Development & Maturation

In some cases, the lingual frenulum may not fully separate from the underside of the tongue as the baby develops. This incomplete separation can result in a shorter or thicker frenulum.

4. Environmental Factors

Certain environmental factors during foetal development may influence the development of tongue tie. These factors could include exposure to specific substances or conditions that affect tissue formation.

5. Complications During Birth

Tongue tie might be associated with complications during childbirth, particularly if there is trauma or stress to the area around the mouth and tongue during delivery.

6. Association with Other Conditions

Tongue tie may be associated with other congenital conditions or syndromes. In some cases, it occurs in conjunction with conditions like Ehlers-Danlos syndrome or Stickler syndrome.

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DOI: <https://doi.org/10.5281/zenodo.10369480>

How to cite this article: Srivastava et al.: The Unlikely Connection: Tongue Tie & Neck Pain, *HTAJ OCD.2023; Nov-Dec(2):58-62*

7. Random Variation

In some instances, tongue tie may occur seemingly without any identifiable cause. Like many medical conditions, there can be a degree of randomness in the occurrence of ankyloglossia.

8. Failure of Normal Frenulum Regression

During normal foetal development, structures like the frenulum undergo a process of regression, where certain tissue connections break down. In cases of tongue tie, this regression may not occur as expected.

Challenges in Patient with a Tongue Tie

This condition can present challenges for both dentists and orthodontists due to its impact on oral function and development. Here are some problems that these professionals may encounter:

- 1. Oral Function and Speech Issues:** It includes Both dentists and orthodontists aim to ensure optimal oral health, comfort, and function for their patients. Untreated tongue tie can compromise these aspects, necessitating collaboration with other healthcare professionals for comprehensive care. Speech difficulties, articulation problems, and challenges in proper tongue movement. In cases of severe tongue tie, the restricted tongue movement can affect the positioning of teeth and the development of the oral cavity.
- 2. Feeding Challenges in Infants:** The limited mobility of the tongue can affect breastfeeding, leading to latch difficulties and maternal discomfort contributes to the feeding challenges in infants.
- 3. Orthodontic Considerations:** Orthodontists may face challenges in orthodontic treatment planning for individuals with untreated tongue tie. The restricted tongue movement can influence the positioning of the teeth and the development of the jaw. It can also affect the success of interventions like fixed orthodontics or other orthodontic appliances.
- 4. Temporomandibular Joint (TMJ) Issues:** The altered oral function and compensatory movements can affect the jaw joint, leading to pain and dysfunction contributing to temporomandibular joint (TMJ) disorders.
- 5. Speech and Language Development:** In cases where tongue tie affects speech and language development, especially in children, early intervention is crucial to prevent long-term speech issues.
- 6. Periodontal Considerations:** Restricted tongue movement can impact oral hygiene practices, potentially leading to issues such as gingivitis and periodontal disease.

Muscular Interplay and Implications for Children

The lingual frenulum is intricately connected to the muscles of the tongue and the floor of the mouth. Dr. Lawrence Kotlow, a pediatric dentist and an oral surgeon gave a classification of tongue tie based on the free tongue in millimeters(figure 1)

Tongue-Tie Assessment

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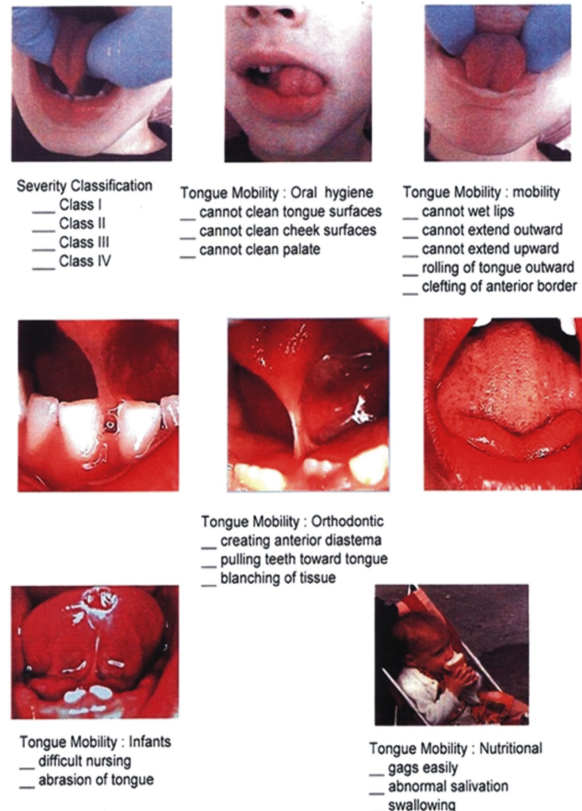


Figure 1: Classification of Tongue tie by Dr Lawrence A Kotlow

When there is limited movement due to tongue tie, compensatory mechanisms may come into play, affecting the surrounding muscles, including those in the neck. Chronic tension and altered posture may result from this muscular interplay, contributing to neck pain over time. Children with untreated tongue tie may experience neck pain, headaches, and even changes in posture. The strain caused by compensatory movements can influence the development of musculoskeletal issues. Early intervention, including a simple procedure to release the frenulum (frenotomy / frenectomy), can alleviate these concerns and prevent long-term complications.

Impact on Adults

Tongue tie is not exclusive to infants; many adults may go undiagnosed. For adults, the cumulative effects of a lifetime with untreated tongue tie can manifest as chronic neck pain, headaches, and temporomandibular joint (TMJ) disorders. Addressing tongue tie in adulthood often involves a more comprehensive approach, combining physical therapy, myofascial release, and, in some cases, surgical intervention.

Multidisciplinary Approach

Effective management of tongue tie and its associated neck pain requires collaboration between healthcare professionals. Dentists, speech therapists, and physical therapists play crucial roles in assessing and addressing the condition. Integrating therapies that focus on releasing tension in the oral and cervical muscles can significantly improve outcomes for individuals dealing with both tongue tie and neck pain.

Laser Precision: Revolutionizing Tongue Tie Treatment

Laser technology has become increasingly popular in various medical fields, and its application in the treatment of tongue tie showcases the precision and benefits it brings to this delicate procedure.

Laser-Assisted Frenectomy: Traditionally, the primary method for addressing tongue tie has been a frenectomy, a procedure involving the cutting or releasing of the frenulum. The advent of laser technology has transformed this procedure. Laser-assisted frenectomy, specifically using CO₂ or diode lasers, offers several advantages over traditional methods.

- 1. Precision and Minimally Invasive:** One of the key benefits of laser technology is its precision. Lasers can precisely target and ablate tissue, minimizing trauma to surrounding areas. In the case of tongue tie treatment, this precision is crucial for avoiding unnecessary damage to adjacent structures and reducing the risk of complications.
- 2. Reduced Bleeding and Swelling:** Laser-assisted frenectomy typically results in less bleeding compared to traditional methods. The laser's ability to simultaneously cut and coagulate blood vessels minimizes bleeding during the procedure, leading to a cleaner surgical field. Additionally, reduced trauma to the tissues results in less postoperative swelling and discomfort for the patient.
- 3. Faster Healing and Recovery:** The precise nature of laser technology contributes to faster healing and recovery times. The targeted energy of the laser promotes tissue regeneration and reduces inflammation. Patients undergoing laser-assisted

frenectomy often experience a quicker return to normal function and reduced postoperative discomfort compared to traditional methods.

- 4. Child-Friendly Approach:** Laser-assisted frenectomy is particularly advantageous for infants and young children. The quick and minimally invasive nature of the procedure can often be performed in an outpatient setting, minimizing stress for both the child and parents. This child-friendly approach contributes to a more positive overall experience.

Treatment Measures for Tongue Tie with Emphasis on Laser Technology

1. Diagnosis

Clinical Assessment: Dentists or healthcare professionals conduct a thorough clinical examination to diagnose tongue tie, considering factors such as tongue mobility, appearance of the frenulum, and associated symptoms.

Assessment of Functional Impacts: Evaluate the functional impacts of tongue tie, including its effects on feeding, speech, oral hygiene, and potential complications like neck pain.

2. Multidisciplinary Consultation

Collaboration with Specialists: Dentists often collaborate with specialists such as oral surgeons, speech therapists, and lactation consultants to assess the comprehensive needs of the patient.

3. Informed Decision-Making

Patient Education: Clearly communicate with patients (or parents, in the case of infants) about the diagnosis, potential impacts, and available treatment options, including the use of laser technology.

4. Laser-Assisted Frenectomy

Preparation: Before the procedure, ensure that patients are adequately informed and prepared. For infants, this may involve discussing feeding practices post-frenectomy.

Local Anesthesia: Administer local anesthesia to ensure the patient's comfort during the procedure.

Laser Procedure: Utilize soft tissue CO₂ or diode lasers for precise cutting and coagulation. Laser technology allows for a quick, minimally invasive procedure with reduced bleeding and trauma.

Immediate Benefits: Patients often experience immediate improvements in tongue mobility and function after laser-assisted frenectomy (Figure 2 a and b and Figure 3)



Figure 2 a : An adult patient with ankyloglossia treated on chair with diode laser (Pre and immediate after treatment photograph)



Figure 2 b : Post operative photograph (After 1 month)



Figure 3: Preoperative and Immediate Post operative Photograph

5. Postoperative Care

Minimize Discomfort:

Advise patients on postoperative care to minimize discomfort, including instructions for oral hygiene and pain management.

Follow-Up: Schedule follow-up appointments to monitor healing progress and address any concerns.

6. Rehabilitation and Therapy

Speech Therapy:

In cases where tongue tie has affected speech, collaborate with speech therapists to provide necessary rehabilitation.

Oral Myofunctional Therapy: Consider oral myofunctional therapy to retrain and optimize tongue function post-frenectomy.

7. Infant Feeding Support

Lactation Support:

Provide support for breastfeeding mothers, ensuring proper latch and feeding techniques post-frenectomy.

Monitoring Growth:

Monitor the infant's growth and weight gain to assess the effectiveness of the intervention.

8. Patient and Family Counselling

Address Expectations:

Provide counselling to address patient and family expectations regarding postoperative outcomes and the integration of improved tongue function into daily activities.

9. Long-Term Monitoring

Orthodontic Follow-Up:

Collaborate with orthodontists for long-term monitoring, especially in paediatric cases, to address any orthodontic concerns that may arise.

10. Continuous Advancements

Stay Informed:

Dentists and healthcare professionals should stay informed about advancements in laser technology and other treatment modalities for continuous improvement in patient care.

Conclusion

In conclusion, laser-assisted frenectomy represents a cutting-edge approach to treating tongue tie, offering a host of benefits including precision, reduced bleeding, minimized trauma, and quicker recovery. A comprehensive approach involving diagnosis, collaboration with specialists, patient education, and postoperative care ensures optimal outcomes for individuals undergoing this innovative treatment.

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