Tongue Tie and Frenotomy in the Neonate

Purpose and Goal: CNEP # 2093

- Understand the effects of tongue tie in the neonate.
- Learn about the use of frenotomy for treatment of tongue tie.

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Requirements for successful completion:

- Successfully complete the post-test
- Complete the evaluation form
Learning Objectives

- Describe the clinical features of tongue tie in the neonate.
- Describe breastfeeding complications associated with tongue tie.
- Identify 2 approaches for the treatment of tongue tie in the neonate.

Introduction

- Tongue tie is a congenital anomaly
- It results in restricted tongue function
- It can interfere with successful breastfeeding
- Treatment of tongue tie is controversial
- A frenotomy is a one treatment option

History of Tongue Tie

- Tongue tie is also known as ankyloglossia
- It is considered a mild congenital anomaly
  - It is not associated with other anomalies
  - It is not associated with a genetic syndrome
- It occurs due to a persistent lingual frenulum
  - That restricts tongue movements
  - That interferes with tongue function
- Tongue tie is mentioned in the bible
  - As well as other written documents
  - Documents precede modern literature
- Tongue tie was thought to interfere with breastfeeding
- Frenotomies were performed until the mid-20th century
• By both physicians and midwives
• Until breastfeeding rates declined
• Until bottle feeding rates increased
• Then it disappeared from the literature
• Tongue tie rarely interferes with bottle feeding
• Tongue tie and frenotomies resurfaced in the 1990s
• It is considered a confirmed, common, treatable condition
  • It occurs in 2–10% of the population
  • It occurs more frequently in males
  • It is mostly a sporadic condition
    • But can be a genetic mutation
      • Via X-linked inheritance
    • This occurrence is uncommon

Etiology of Tongue Tie

• During embryological development
  • During weeks 4 to 7
  • Smooth oral cavity → complex development
• Complex oral anatomy includes:
  • Mobile, muscular tongue
  • The mobile tongue protrudes freely
    • It develops from tissue buds
    • Buds fuse anteriorly to posteriorly
    • Buds are separate from the mouth
• Oral cavity development proceeds from:
  • Tissue growth
  • Program cell death
    • Also known as apoptosis
  • Failed apoptosis → persistent frenulum
  • Persistent frenulum → ankyloglossia

Clinical Features of Tongue Tie

• Tongue tie is an anatomical variation
- It involves the lingual frenulum
  - It appears as a web of tissue under the tongue
  - It has the potential to limit tongue movement
- The clinical features of tongue tie include:
  - Abnormally short frenulum
  - Frenulum insertion near tip of tongue
  - Difficulty lifting tongue to upper gums
  - Inability to protrude tongue
    - More than 1-2 mm past lower gums
  - Impaired side to side movement of tongue
  - Notched or “heart shaped” tongue when protruded
- Tongue tie may present with several different variations
  - It commonly appears as anterior or posterior
  - Anterior tongue tie
    - Most common variation
    - Easily visualized on exam
    - Frenulum tethered to tip of tongue
  - Posterior tongue tie
    - Not as common
    - More difficult to visualize
    - May require manual inspection
    - Frenulum is subtle and hidden
      - Thickened and fibrous
      - Anchored to floor of mouth
- Tongue tie may vary in severity
  - From severely decreased, restricted mobility
  - To more flexible, less restricted mobility

**Tongue Tie and Breastfeeding**

- Breastfeeding requires complex tongue movements
- Each mother and infant have unique anatomy
  - Each infant must adapt accordingly
  - This requires changes in sucking behavior
- For successful transfer of milk from the breast:
  - The tongue must:
• Protrude over the gum line
  • To inhibit the bite reflex
  • To create an airtight seal
  • To produce an intraoral vacuum
• Manipulate the nipple and areola
  • To position the nipple
  • To position the areola
  • To create a relationship between:
    • The hard palate
    • The soft palate
• Produce an intraoral vacuum
  • To create compression
  • To create suction
  • To assist with milk transfer
• Restriction of the tongue’s movement in any way:
  • Leads to suboptimal breastfeeding mechanics
• Tongue tie interferes with breastfeeding in two ways:
  • Ineffective breast emptying
  • Interferes with milk production
  • The development of nipple trauma
• Any infant who has difficulty breastfeeding:
  • Should be examined for tongue tie
  • Should be evaluated by a lactation specialist
• Breastfeeding difficulties may be seen:
  • In 12-50% of infants with tongue tie
  • In 3% of infants without tongue tie

Clinical Features in the Breastfeeding Infant

• Infant signs and symptoms include:
  • Poor latch
  • “Chewing”
  • Clicking sounds
  • Sliding off breast
  • Ineffective milk transfer
  • Poor weight gain or weight loss
• Hypernatremic dehydration
• Fussiness or arching away from breast
• Falling asleep at the breast
• Maternal signs and symptoms include:
  • Nipple trauma
    • Pain
    • Blisters
    • Cracking
    • Bleeding
    • Scabbing
  • Painful breasts
  • Low milk supply
  • Plugged ducts
  • Mastitis
  • Frustration
  • Disappointment
  • Discouragement
  • Untimely weaning

Potential Complications of Tongue Tie

• Impaired tongue mobility → several complications
• Several short and long problems may be seen
• Tongue tie may be associated with:
  • Breastfeeding difficulties
    • Poor latch
    • Sore nipples
    • Failure to Thrive
  • Speech difficulties
    • Poor articulation is common
      • Does not prevent vocalization
      • Does not delay onset of speech
      • Interferes with speech sounds
        • Sibilants and lingual sounds
        • t, d, z, s, th, n, and l sounds
  • Mechanical problems
    • Inability to lick lips
• Inability to sweep food off teeth
  • Increased periodontal disease
• Social embarrassment

Management and Treatment of Tongue Tie

• There is a lack of consensus about treatment
  • Type of treatment
  • Timing of treatment
• Conservative treatment includes:
  • Lactation support
  • Otolaryngology support
  • Speech therapy support
• Definitive treatment includes surgery
  • Frenotomy
    • Most common approach
    • Does not require anesthesia
  • Frenuloplasty
    • Frenotomy with plastic repair
    • Requires general anesthesia
    • Reserved for tongue tie
      • Not improved with frenotomy
      • Very thick frenulum tissue
      • Revisions of previous surgery
• Indications for surgical intervention
  • Breastfeeding difficulty
  • Poor weight gain
  • Parental concern
• Goals for surgical intervention
  • Increased tongue mobility
  • NOT improved tongue shape

Frenotomy and Tongue Tie

• Frenotomy is a safe, effective treatment
• Frenotomy is also called frenulotomy
• It is the simple surgical release of the frenulum
  • It frees the tongue
  • Also known as “clipping”
  • It requires specialized training
  • It may or may not require local anesthesia
    • Not generally needed in newborn period
    • A local anesthetic may be used
      • Use of local anesthesia is painful
      • Requires invasive techniques
    • Oral sucrose is an effective alternative
• Prior to frenotomy it is important to:
  • Assess the infant’s clotting ability
  • Did the infant receive Vitamin K?
• Frenotomy is performed under direct visualization
  • The infant is NPO for one hour
  • The infant is swaddled/restrained
  • The infant is given oral sucrose
    • 2 minutes before the procedure
  • The area is illuminated with light
  • The tongue is then elevated
    • With fingers
    • With forceps
  • The frenulum is “clipped”
    • With sterile scissors
  • Pressure is held with gauze
    • For a few seconds
    • Up to a few minutes
• The infant may breastfeed immediately afterwards
  • Breastfeeding provides comfort
  • Breastfeeding provides pain control
  • Breastfeeding minimizes re-adhesion
    • Provides tongue range of motion
    • Prevents recurrence of tongue tie
• Studies have shown frenotomy is well tolerated
  • Especially in the newborn period
  • It takes 30 seconds to minutes to perform
• Post frenotomy care is simple
  • Assessment of pain
• Assessment of bleeding
• Complications from frenotomy are rare
  • Potential complications include:
    • Pain
    • Edema
    • Bleeding
    • Infection
    • Ulceration
    • Tongue damage
    • Salivary duct damage
• Lactation support should continue post frenotomy
  • To support the development of correct latch
  • To support effective transfer of breastmilk
• Studies have shown good outcomes with frenotomy
  • Improved tongue mobility
  • Improved latch
  • Improved milk transfer
  • Decreased nipple pain
• New technologies are emerging
  • The use of lasers for frenotomy
  • Laser treatment should minimize:
    • Pain
    • Edema
    • Bleeding
    • Scarring

Summary
• Tongue tie is a relatively common finding
• It can interfere with successful breastfeeding
• Early diagnosis improves neonatal outcomes
• Treatment with a simple frenotomy
  • Can decrease complications
  • Can improve breastfeeding success

References
