Tongue Tie and The Impact on Breastfeeding

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Disclosure of Commercial Support

• This program has received NO COMMERCIAL financial support
• This program has received NO COMMERCIAL in-kind support

Evolutionary Angle

• Breastfeeding is one of the most basic instincts
• Difficulty with breastfeeding is common. That does NOT mean it is normal
• Breastfeeding is an essential component of normal infant life and its absence means something is fundamentally wrong with the infant’s world

Breastfeeding Problems

• Poor quality latch
• Falls asleep prematurely while nursing
• Slides off breast
• Colic symptoms
• Reflux symptoms
• Gumming/chewing
• Pacifier problems
• Low milk supply
• Nipple damage (creased, cracked, bleeding)
• Severe pain
• Poor/incomplete breast drainage
• Mastitis/thrush
• Vasospasm
• Infected nipples
• Poor weight gain
Approach to These Symptoms

- What explains these symptoms?
- We must look for an anatomic reason for this difficulty if conventional interventions are unsuccessful
- Waiting is not an option
  - Weaning
  - Baby’s health can be jeopardized
  - Mom’s health can be jeopardized

CAUTION!
Paradigm Shift Ahead. Prepare Your Brains.

Financial Burden

- March, 2012
- If 90% of infants breastfed exclusively for the first 6 months, the US would save $13 billion annually
Mechanism of Breastfeeding

- Should be an active process, even in instances when mom has OALD or high flow
  - some babies will just drink, rather than nurse
- Contrary to popular belief, the baby does not “milk” the breast in a stripping motion
- Understanding the mechanism of breastfeeding is crucial in understanding why intervention may become necessary
Examination Technique

• This is absolutely key to diagnosing a potential anatomical problem that affects BFing
• It’s ok to make a baby cry during examination
• Use a headlamp
• Proper positioning is the most important part of the examination
Normal Lingual Frenulum

Frenulum vs Tie
- The location of attachment of the frenulum does not mean it’s a tie
- Many people will see a labial frenulum that comes down low on the gumline and assume it’s pathologic
- The examination is key to determining tension
- Evaluation by IBCLC is key to determining abnormal function

Breastfeeding - Transfer
- **NORMAL**
  - Rhythmic/fluid motion (grading)
  - Can visualize traveling through facial muscles and movement of cranial bones
  - Brow relaxed
  - Body slowly relaxes
  - Hands open

- **RESTRICTION**
  - Nibbles only, no long pauses
  - Falling asleep or frequent rests
  - Collapsing chokes (AKA “dimples”)
  - Snapping, chewing - phasic bite reflex
  - Hands in fists near face
  - Only drinks with letdown - passive
  - Leaks milk out of mouth/ nose
  - Clicking, choking, gasping - aerophagia
  - Long feedings

Patterns of Symptoms
- **Strong baby**
  - Chomping
  - Determined nurser
  - Flattened nipples, vasospasm, nipple damage
  - Pain
  - Often no weight gain issues

- **Weak baby**
  - Pops on/off
  - Slides off breast
  - Falls asleep nursing
  - Leaks out of side of mouth
  - Poor weight gain
  - Overall poor oral muscle tone
What is Tongue Tie?
- Frenulums/frenums – remnant of embryologic tissue
  - Usually recedes around end of 1st trimester
  - Normal
- Ankyloglossia or anchored tongue
  - Too far forward on the tongue or too short
- Ties
  - Restriction impedes normal function
  - Abnormal anatomy

Anterior TT vs Posterior TT
- Anterior TT is the classic webbing that is at or near the tip of the tongue
  - Heart shaped tongue
  - Speech implications
  - Relatively obvious
- Revising these alone (no bleeding, minimal crying) rarely leads to improvement

Anterior TT vs Posterior TT
- Posterior TT is a bad name
  - Submucosal
  - Hidden
  - Invisible
- Tend to be thicker - significant restriction
- Must use your fingers to feel this type of restriction
- Think of a sailboat

- Anterior TT vs Posterior TT
Types of Tongue Tie

Classification System

- Type I – total tip involvement
- Type II – midline area under tongue
- Type III – distal to the midline
- Type IV – posterior area/submucosal
  (Kotlow, 2011)

- Type I and II AKA “classic.” Are the most obvious.
  - Posterior component behind them
- Type III to IV - much harder to ID
  - Very frequently associated with an upper lip tie

• Types of Lip Tie

  Classification System

  - Class I – Minimal visible attachment
  - Class II – Attachment primarily to gingival tissue
  - Class III – Inserts just in front of anterior papilla
  - Class IV – Attachment into hard palate or papilla area
  (Kotlow, 2011)

  “There are no studies to show that in infants class 3 or 4 frena will stretch or migrate upward to correct the abnormal attachment as the infant’s growth occurs.”
  Dr. Lawrence Kotlow
Flinck et al (1994)

- "Oral Findings in a Group of Newborn Swedish Children" - Int’l J. of Paediatric Dentistry
- Examinations on 1021 newborns
- Ankyloglossia in 2.5% (4:1 M:F)
- 6.7% had class 1 or 2 lips
- 76.7% had class 3 lips
- 16.7% had class 4 lips

Incidence

- Research - 1-12% of babies with tongue tie (only anterior TT)
  - Incidence is increasing (genetic, epigenetic)
  - 83,000 births in Indiana in 2013 (if you assume 4% incidence, that’s 3320 babies)
- “The presence of tongue tie triples the risk of weaning in the first week of life” (Riche et al., 2005)

Midline defect constellation - May occur with other midline defects
- Lip tie
- Lip/tongue adhesion
- Infertility
- Heart defects
- Vertical rectus sheath defect
- Congenital heart disease
- Labial adhesions
- Spina bifida
- Hypospadias
- Cleft lip/palate
- Umbilical hernia
- Gastroschisis
- Hydrops
- VEDS
- Sacral dimple
- Tight frenulums on penis
- Spina bifida
- Hypospadias
- Heart defects
- Abdominal hernia
- Labial adhesions

Genetic Predisposition

- Genetic (Han, et al 2012)
  - 1-8% babies with TT revision
  - Used pedigree analysis
  - Results:
    - 67% boys, 33% girls
    - Seems to follow an X-linked pattern
- Kkerev 2009 - Autosomal Dominant with Variable Penetrance

Take home message
- If your dyad has a family history of TT or ULT, that should be a strong consideration if problems arise

Moms are often told...

- "It’s normal to have pain, bleeding, cracking.
- "You need time for your nipples to toughen up”
- "Baby is just getting used, baby is a lazy eater”
- "You’re not making enough milk”
- "She just has a small tongue”
- "Tongue tie doesn’t cause problems with breastfeeding”
- "Your nipples are too big” or “baby’s mouth is too small”
- "Your baby can’t be tongue tied b/c they can stick out their tongue”
- "Your baby is gaining weight, so there’s nothing more to worry about”
- "The frenulum will stretch over time”
- "One day, your child will fall and rip the upper lip tie and it’ll take care of itself”
“Here’s a nipple shield”

- Decreased stimulation = decreased supply
- Inconvenient
- Risk of latch refusal once mom tries to get off the shield
- If a patient needed oxygen, but we never found out why, would it be ok to just say “keep using oxygen”?
- Best use: Getting a mom to “hang on” until a real treatment is available

“Just Pump - Your Milk Still Gets In”

- Rarely sustainable
  - Remember, the goal is to nurse as long as possible
- Decreased milk supply
- Horribly inconvenient
  - can add hours to each day for just pumping
- Loss of emotional experience
- Facial developmental changes

Sucking Evaluation

- May vary before, during and after feeds
- Must put your finger in baby’s mouth

- NORMAL
  - Motion should be fluid
  - Sides of tongue should “hug” finger

- RESTRICTION
  - Abnormal rocking
  - Snagging often
  - Can feel lower alveolar ridge constantly or often
  - Premature backing (finger in vac
  - Tongue thrusting
  - Poor vacuum strength/desire - baby lets go easily when trying to take away finger or when slowly pressing down on chin (may feel tongue jolt back posteriorly)
Is There Evidence?

- The desire to practice EBM vs the desire (and need) to treat a dyad where time is of the essence
- Safety
- Avoidance of panacea
- Every study published shows an improvement in breastfeeding following frenotomy

Efficacy

- What are the outcomes we’re most interested in?
  - maternal pain
  - weight gain
  - breastfeeding quality
  - speech (older children)
  - dental development/health


- 24 mother-baby dyads
- Milk transfer, pain, and LATCH scores pre- and post-procedure
- Ultrasound pre- and post-procedure
- All but 1 improved in all arenas
- Ultrasound shows nipple compression before and improvement after

A: Pre-frenotomy, showing nipple compression
B: Post-frenotomy, showing less nipple compression

O'Callahan et al (2013)

- 311 babies - 299 underwent lingual frenotomy
- Only 16% had a classic anterior TT
- 37% had a labial tie
- 92% of dyads exclusively breastfed
  - mean duration 14 months
- Improvement in latch quality and nipple pain
  - limitation is subjective grading by moms - bias

Ito (2014)

- “Does Frenotomy Improve Breastfeeding Difficulties in Infants with Ankyloglossia?”
- Pediatrics International: 2014 June 30
- Meta-analysis looking at available literature
- “The literature review supported an overall moderate quality of evidence for the effectiveness of a frenotomy for the treatment of breastfeeding difficulties in infants with ankyloglossia. No major complications from a frenotomy were reported.”
Treatment

- Finding a knowledgeable provider
  - Will fully release LT/TT/PTT
  - Decreases chance of revision later
  - Supportive/knowledgeable of breastfeeding – receptive to IBCLCs
    - Some prefer eval with IBCLC before referring to them
  - No general anesthesia on babies

- Procedure risks
  - May require further revision
  - Reattachment
  - Damage to salivary gland ducts or tongue muscles
  - Bleeding
  - Infection (very, very rare)
  - Painful

- Can breastfeed immediately after – may or may not notice improvement
  - Provides compression to help stop bleeding
  - Breastmilk is antibacterial

- 3-5 hours after – very sore
  - Tylenol
  - Arnica – inflammation has been shown to help reduce
  - Hyland’s Teething Gel – soothing lubricant for sores

- 24-48 hours – latch may worsen, baby may refuse
  - Keep feedings the same as before – avoid too many changes
  - Skin-to-skin
  - Moving while feeding
  - Feeding in a bath

Personal Experience

- Between April 2012 and April 2013, 203 babies underwent TT and ULT revision using scissors
- 203 babies experienced bleeding
- Directly to breast afterwards – all bleeding stopped. None needed cautery
- No general anesthesia - just local (ULT) or topical EMLA (TT)
Scissor Revision

- What do you need?
  - Swaddle
  - Assistant
  - Grooved Director
  - Tenotomy Scissors
  - Topical numbing agent (I use EMLA)
    - Benzocaine contraindicated under age 2
    - Lidocaine with Epinephrine
    - Gauze
Scissor Revision

- Technique
  - Baby swaddled (or arms secured by parents)
  - Swab topical numbing on upper lip tie
  - After 30 seconds, can inject the lip tie with a small amount of 1% lido with 1:100000 epi. Try to inject the bulk of the tie and supraperiosteal
  - Wait 10 minutes for epi to vasoconstrict
  - Swab topical numbing on tongue tie
How to Manage Bleeding

- Once procedure is complete, immediately to the breast (or bottle if not breastfeeding). The compression helps with hemostasis
- Have a glass of ice cold water (with salt) with gauze soaking - use if necessary
- Afrin-soaked gauze can help
- I have never needed to use cautery or stitches

Scissor Revision

- Disadvantages
  - Bleeding can limit your visualization and force you to undercorrect
  - “More frenulum can come forward”
  - Because scissors have an inherent thickness to them, some tissue is always left down on the gums when revising an ULT

Laser Revision

- These lasers are typically dental lasers
  - Xlase
  - Biolase iLase
  - Waterlase
  - CO2
- More than just a tool
  - Must prepare for laser safety with training and specific precautions
Laser Revision

- Differences from scissor revision
  - No parents in the room (laser safety, liability)
  - Little to no bleeding
  - No need to inject epi-containing local anesthetic
  - Much more precise - lack of blood allows for gradual division of fibers with tissue preservation
  - Complete removal of desired tissue
  - Slightly slower process

Laser Revision

- What do you need?
  - Swaddle
  - Assistant
  - Grooved Director
  - Topical numbing agent (I use EMLA)
    - Benzocaine contraindicated under age 2
  - Gauze
  - Laser goggles
Aftercare

Appropriate Wound Healing

The wounds always look infected
Mimics a tonsillectomy wound

Conclusions

• TT and ULT are real phenomena. This is not a fad.
• If all other interventions fail to improve breastfeeding quality, TT/ULT is a potential cause
• TT and ULT revision is safe and extremely effective