Tongue and Lip Tie: Comprehensive assessment, treatment and care strategies

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Dedication

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This presentation is dedicated to the many families coping with oral restrictions that I have worked with so far. They have taught me what dedication and perseverance mean.

Objectives

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After this presentation, learners will be able to:

- Identify and assess restrictions of the lingual and maxillary labial frenulum in babies
- Understand the incidence rate, available evidence and current thoughts around ankyloglossia
- Implement targeted care strategies for dyads pre and post frenotomy
- Understand the collaboration and team work involved when dealing with oral restrictions

A frenulum vs. a tie

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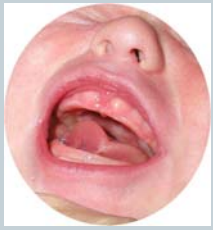
- Everyone has multiple frenula throughout the body
- Frenula are not the problem. The problem is when they restrict mobility and functionality.
- Visible assessment of the oral frenula is not enough. Assessing function is the most important piece.



Burning questions....

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- Is tongue tie real?
- Is diagnosis and/or treatment a fad?
- What is the difference between an anterior and posterior tie?
- Is frenotomy evidence based?
- Why does ankyloglossia matter? What are consequences of an untreated tie?
- What is the incidence rate of ankyloglossia and is it increasing?
- How can tongue and lip tie be properly assessed for?
- What pre and post frenotomy care strategies are useful?

Is tongue tie real? Why does it occur?

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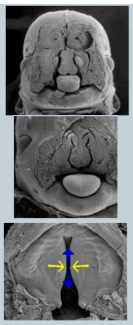
- Yep, it's real (just like clefts and other congenital issues)! Ankyloglossia (tongue tie), and other tethered frenula, occur when improper apoptosis during embryological development occurs.
- The tongue develops appox wk 4, by wk 6 the maxillary labial frenum and primary palate are developing
- Wk 8-9, the tongue helps shape the palate as it is closing. As the development continues, apoptosis causes the lingual frenulum to retract away from the tip of the tongue. A 'tie' occurs when there is a disturbance during this stage of programmed cell death.



"Basic Embryology of Head and Neck". Chicago Medical Center. 2009-08-14. Retrieved from http://emedicine.medscape.com/article/1289057-overview#aw2aab6b2 on 2015-01-14

Embryo Images – Drs Kathleen K Sulik and Peter R Bream Jr

What messes up apoptosis anyway?

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- "Certain viruses (HPV, adenoviruses, herpes simplex, etc) can inhibit apoptosis ... also drugs and chemical or physical injuries during embryogenesis may interfere with the balanced programmed cell death and thus induce malformations"

(Haanen, & Vermes,1996)

- Genetic or epigenetic triggers seem to cause mutations in the gene encoding transcription (often TBX22), that seems to factor into improper apoptosis of the lingual frenulum, are closely linked to other orofacial deformities like clefts.
- Methylation/Sumoylation is involved in apoptosis/TBX22 function. It is extremely sensitive to environmental stressors and may be a regulating factor in normal facial development

(Acevedo et al., 2010; Kantaputra et al., 2011; Andreou et al., 2007; Abbot, 1995)

Why does ankyloglossia matter?
What are consequences of an untreated tie?

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- Why does ankyloglossia matter?
  - The evidence available has shown a direct correlation to tongue tie and breastfeeding issues, poor infant weight gain, maternal pain, and other health issues through the lifespan, etc (Agency for Healthcare Research and Quality (AHRQ), 2015).
- What are consequences of an untreated tie?
  - Cessation of breastfeeding, poor infant growth, dental/orthodontic issues, potential airway and orofacial issues, speech concerns, eating/swallowing issues, social/emotional concerns, etc (AHRQ, 2015; Dollberg et al, 2011; Fernando, 1998; Defabianis, 2000; Walls et al, 2014; Meenakshi & Jagannathan, 2014)

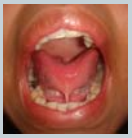

Photo courtesy of Lisa Marasco

Why does ankyloglossia matter?
What are consequences of an untreated tie?

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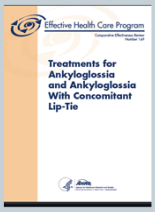
- "In infants with anterior or posterior ankyloglossia, there is a reported 25- to 80-percent incidence of breastfeeding difficulties, including failure to thrive, maternal nipple damage, maternal breast pain, poor milk supply, maternal breast engorgement, and refusing the breast. Ineffective latch is hypothesized to underlie these problems..."
- "Mechanistically, infants with restrictive ankyloglossia cannot extend their tongues over the lower gumline to form a proper seal and therefore use their jaws to keep the breast in the mouth for breastfeeding. Adequate tongue mobility is required for breastfeeding, and infants with ankyloglossia often cannot overcome their deficiency with conservative measures such as positioning and latching techniques, thereby requiring surgical correction"...

(Agency for Healthcare Research and Quality (AHRQ), 2015).



Frenulotomy for breastfeeding infants with ankyloglossia: effect on milk removal and sucking mechanism as imaged by ultrasound

(Geddes et al., 2008)

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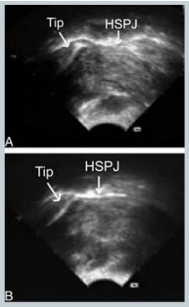
- **RESULTS:** For all of the infants, milk intake, milk-transfer rate, LATCH score, and maternal pain scores improved significantly postfrenulotomy. Two groups of infants were identified on ultrasound. One group compressed the tip of the nipple, and the other compressed the base of the nipple with the tongue. These features either resolved or lessened in all except 1 infant after frenulotomy.
- **CONCLUSIONS: Infants with ankyloglossia experiencing persistent breastfeeding difficulties showed less compression of the nipple by the tongue postfrenulotomy, which was associated with improved breastfeeding defined as better attachment, increased milk transfer, and less maternal pain. In the assessment of breastfeeding difficulties, ankyloglossia should be considered as a potential cause.**
- **Photos:** Panel A shows a tongue-tied baby compressing the nipple tip. Panel B shows less compression following a frenotomy. (HSPJ = hard/soft palate junction) (Geddes, 2008).



Ultrasound of how babies extract milk

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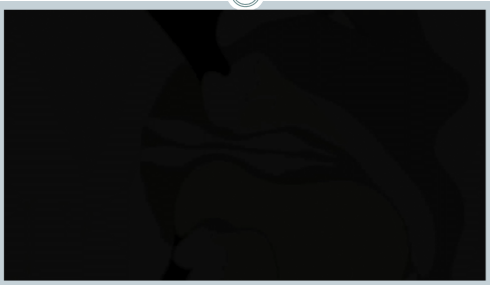

Is diagnosis and/or treatment a fad?

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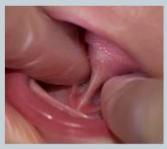
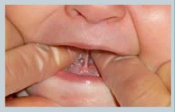
- It is not a fad. Ankyloglossia is a real condition. As breastfeeding rates increase, causes for Bf failure must be explored. Maternal pain has been shown to be a real cause of premature weaning (Stuebe et al, 2014). Ankyloglossia has been shown to be a cause of Bf pain (AHRQ, 2015).
- On the flip side not every Bf issues is due to a tie. Proper assessment techniques and differential diagnosis are key so that over diagnosis and under diagnosis don't occur.





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What moms report...

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- "The women in this study described a somewhat harrowing journey, which was at odds with the natural experience they had anticipated. They encountered health professionals who were found to have limited knowledge of tongue-tie and its potential effect on breastfeeding and were unable to provide appropriate advice concerning their breastfeeding difficulties. However, following treatment with frenotomy, their breastfeeding experience improved dramatically. The reported incidence of tongue-tie is significant, and early identification and prompt and effective management would contribute to improved breastfeeding."

- Edmunds, J. E., Fulbrook, P., & Miles, S. (2013). Understanding the experiences of mothers who are breastfeeding an infant with tongue-tie: a phenomenological study. *Journal of human lactation : official journal of International Lactation Consultant Association, 29(2), 190-195. doi: 10.1177/0890334413479174*

What is the difference between an anterior and posterior tie?

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- "Anterior ankyloglossia is defined as tongue ties with a prominent lingual frenulum and/or restricted tongue protrusion with tongue tip tethering..."
- The diagnosis of posterior ankyloglossia is considered when the lingual frenulum was not very prominent on inspection but is thought to be tight on manual palpation or is found to be abnormally prominent, short, thick, or fibrous cord-like..."
- "Although treatment is similar in anterior and posterior cases, posterior ankyloglossia is more subtle in presentation. Usually, clinicians recognize the anterior frenulum as the cause of ankyloglossia....In essence, posterior ankyloglossia is under-recognized compared to the anterior variant..."

(Agency for Healthcare Research and Quality (AHRQ), 2015)

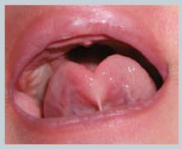

Photo courtesy of Catherine Watson Genna

Incidence of ankyloglossia

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Incidence rates as show in the literature

- A comprehensive lit review found a prevalence of ankyloglossia of between 4% and 10% (Segal et al., 2007)
- There is a reported 25- to 80-percent incidence of breastfeeding difficulties in babies with ankyloglossia (AHRQ, 2015)
- Ankyloglossia seems to be slightly more common in males compared to females (Griffiths, 2004)

Are incidence rates of tongue tie increasing?

- At present this is unstudied and unknown. Some researchers feel that epigenetic changes are occurring at a higher incidence rate potentially increasing congenital anomalies. This is certainly something to invest more time and resources in studying.

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Is frenotomy evidence based?

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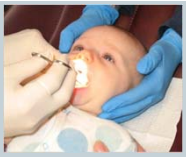
- Yes, frenotomy is evidence based. The current evidence all points to frenotomies being a beneficial and very low-risk procedure.
- Some limitations exist around the quantity and quality of research as well as the logistics of creating an ethical study design regarding this intervention. Also, diagnostic criteria for defining or classifying ankyloglossia is not uniform (AHRQ, 2015; Segal et al., 2007)
- "Studies assessing the effectiveness of frenotomy for improving nipple pain, sucking, latch, and continuation of breastfeeding all suggested frenotomy was beneficial. No serious adverse events were reported" (Segal et al., 2007



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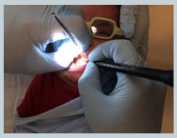

What the research shows...

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- Overall, division of the tongue-tie babies resulted in improved feeding in 54/57 (95%) babies...This randomized, controlled trial has clearly shown that tongue-ties can affect feeding and that division is safe, successful and improved feeding for mother and baby significantly better than the intensive skilled support of a lactation consultant.
- Hogan, M., Westcott, C., & Griffiths, M. (2005). Randomized, controlled trial of division of tongue-tie in infants with feeding problems. [Clinical Trial Comparative Study Randomized Controlled Trial]. *Journal of paediatrics and child health, 41(5-6), 246-250. doi: 10.1111/j.1440-1754.2005.00604.x*

- **"**Maternal self-efficacy, nipple pain, infant reflux symptoms, and the rate of milk transfer all significantly improves with lingual frenotomy with or without maxillary labial frenectomy...significant average improvement in maternal and infant breastfeeding outcomes.... No complications were reported following any procedure"
- Ghaheri, B. A., Cole, M., Fausel, S. C., Chuop, M., & Mace, J. C. (2016). Breastfeeding improvement following tongue-tie and lip-tie release: A prospective cohort study. *The Laryngoscope*. doi: 10.1002/lary.26306

What the research shows...

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- "The frenotomy group improved significantly more than the sham group ($P < .001$). Breastfeeding scores significantly improved in the frenotomy group ($P = .029$) without a significant change in the control group....This should provide convincing evidence for those seeking a frenotomy for infants with significant ankyloglossia."
- Buryk, M., Bloom, D., & Shope, T. (2011). Efficacy of neonatal release of ankyloglossia: a randomized trial. *Pediatrics, 128(2), 280-288. doi: 10.1542/peds.2011-0077*

- There was a significant decrease in pain score after frenotomy than after sham ($P = .001$). There was also a nearly significant improvement in latch after the frenotomy in these mothers ($P = .06$)...Frenotomy appears to alleviate nipple pain immediately after frenotomy. We speculate that ankyloglossia plays a significant role in early breast-feeding difficulties, and that frenotomy is an effective therapy for these difficulties.
- Dollberg, S., Botzer, E., Grunis, E., & Mimouni, F. B. (2006). Immediate nipple pain relief after frenotomy in breast-fed infants with ankyloglossia: a randomized, prospective study. [Randomized Controlled Trial]. *Journal of pediatric surgery, 41(9), 1598-1600. doi: 10.1016/j.jpedsurg.2006.05.024*

What the research shows...

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- All frenuloplasties were performed without incident. Latch improved in all cases, and maternal pain levels fell significantly after the procedure....Ankyloglossia is a relatively common finding in the newborn population ...Careful assessment of the lingual function, followed by frenuloplasty when indicated, seems to be a successful approach to the facilitation of breastfeeding in the presence of significant ankyloglossia.
  - Ballard, J. L., Auer, C. E., & Khoury, J. C. (2002). Ankyloglossia: assessment, incidence, and effect of frenuloplasty on the breastfeeding dyad. [Comparative Study Research Support, Non-U.S. Gov't]. *Pediatrics, 110(5), e63.*
- This review of research literature ...regarding tongue-tie... concludes that, for most infants, frenotomy offers the best chance of improved and continued breastfeeding. Furthermore, studies have demonstrated that the procedure does not lead to complications for the infant or mother.
  - Edmunds, J., Miles, S. C., & Fulbrook, P. (2011). Tongue-tie and breastfeeding: a review of the literature. [Review]. *Breastfeeding review : professional publication of the Nursing Mothers' Association of Australia, 19(1), 19-26.*

How can tongue and lip tie be properly assessed for?

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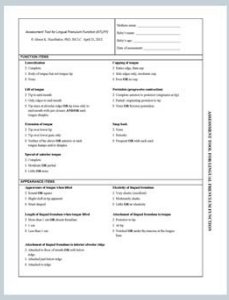
- There are several assessment techniques. One commonly used, validated tool is the ©Hazelbaker Tool for Lingual Frenulum Function
- Other tools are also in the process of being created and validated



How might restrictions of the lingual frenulum present?

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- Ankyloglossia compromises tongue functionality and may make the tongue:
  - Appeared bunched, retracted, pulled down in center
  - Create posterior tongue humping
  - Create poor-moderate elevation, extension, lateralization, cupping
  - Remain flat or low when infant is crying or gaping widely
  - Not reach the palate, creating a heightened gag reflex and poor tongue cleaning
  - Snap back after extension, peristalsis issues
  - Have a indent/cleft at tip...or not...

Assessment video #1

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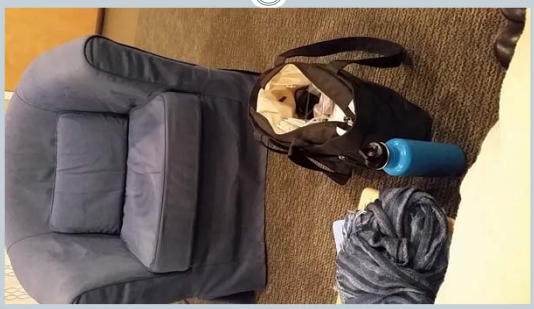

Tongue Tie Classification

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- There are several classification systems regarding tongue tie. One very common one is the Coryllos, Genna, Salloum typing system:
- Type 1: attachment of frenulum to tongue tip
- Type 2: 2-4 mm behind tongue tip
- Type 3: attachment of frenulum to mid tongue
- Type 4: attachment at the base of the tongue

(AAP newsletter, 2004)

- Remember, a classification system is not an assessment technique – just a charting/communication tool.

Photo courtesy of Catherine Watson Genna

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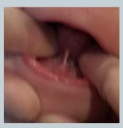

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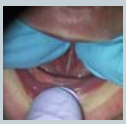

Photos courtesy of Dr. Lawrence Kotlow

Lingual frenulum presentations

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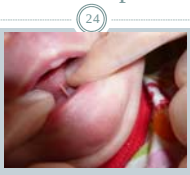

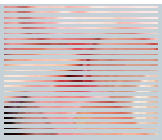

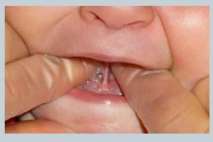

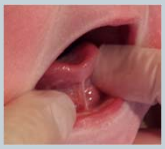

Lingual frenulum presentations

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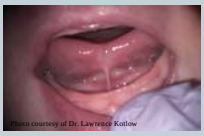

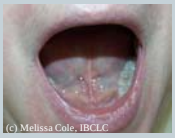

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Are they or aren't they?

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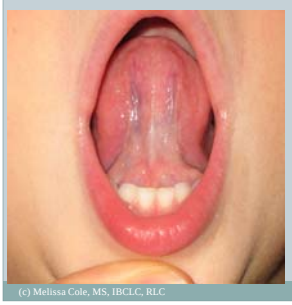
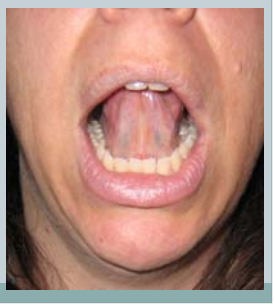

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Are they or aren't they?

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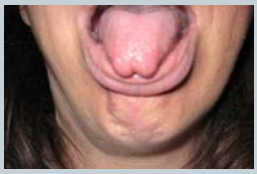
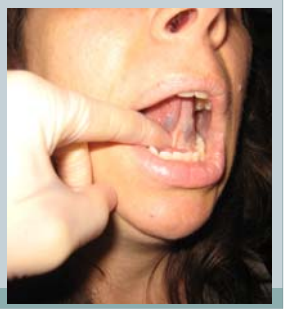

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Maxillary Labial Frenulum Presentations

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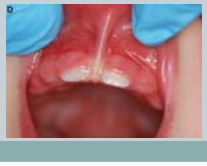
Kotlow diagnostic classifications of maxillary frenum attachments
(photos used with permission of Dr. Lawrence Kotlow)



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Superior Maxillary Labial Frenulum Presentations

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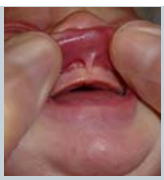
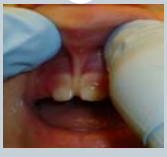
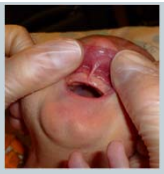
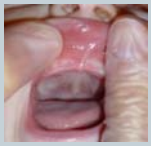
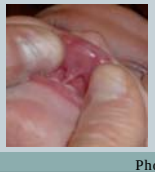
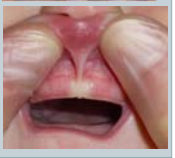

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Common signs and symptoms of tongue/lip tie

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Infant Issues to Consider	Maternal Issues to Consider
• Latch is poor, hard to maintain, slips off, chews/gums • Prolonged feeds, sleepy at breast • Short feeds, infant fatigues • Nursing marathons "uses me like a pacifier" • Infant always hungry • Weight gain concerns • Poor seal, clicking, gag reflex • Colic, reflux, gas, yeast • Unable to hold pacifier/bottle feed • Not every baby will present with the same issues	• Nipple pain, compression • Incomplete breast drainage • Recurrent yeast, mastitis • Nipple blebs, plugged ducts • Low milk supply • Familial Hx of ankyloglossia • Has been working on "the latch" but nothing ever improves much • Seems like oversupply but regular management doesn't help • Feeling of infant gumming, flicking • Not every mom will have the same issues

(c) Melissa Cole, MS, IBCLC, RLC

Slide 25

B6 show better pics, show my own pics

Melissa Cole, 12/20/2014

Maternal nipple damage and breast concerns

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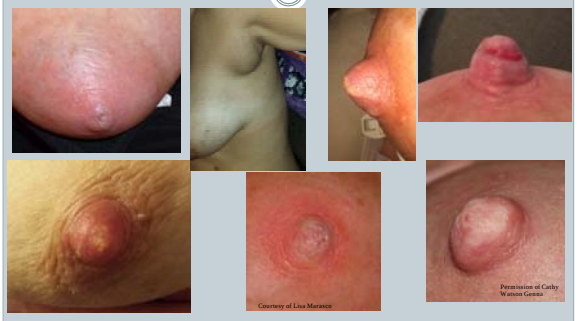
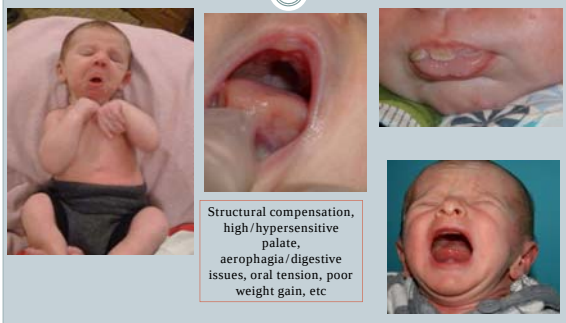


Infant issues from oral restrictions

32



Structural compensation, high/hypersensitive palate, aerophagia/digestive issues, oral tension, poor weight gain, etc

Ties impact on function

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- When oral restrictions present, signs and symptoms can vary for each dyad:
  - Some mother have severe pain, some have none
  - Some babies can't transfer well, others can
  - Some babies struggle with a bottle, others don't
  - Some older individuals struggle with speech, TMJ, etc, others don't
- Prioritize assessment of appearance, function, signs/symptoms and a comprehensive overview of all issues at hand plus consider future ramifications

What pre and post frenotomy care strategies are useful?

34

- Pre-frenotomy game plan:
  - Proper assessment, anticipatory guidance for the family, collaboration with IBCLC and other HCPs, pre-frenotomy feeding care plan and support, consider bodywork

- Post-frenotomy game plan:
  - Anticipatory guidance around pain relief and wound healing, aftercare strategies, collaboration with IBCLC and other HCPs, and post frenotomy feeding care plan and support, consider bodywork

Anticipatory Guidance

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- Tongue/Lip tie related feeding issues can be a physical and emotional roller coaster ride for families.
- Providing anticipatory guidance on the following is vital:
  - **What tongue and lip ties are**
  - **Choices regarding treatment vs,no treatment**
  - **What the procedure will be like and what to expect after**
  - **Potential consequences of untreated ties**
  - **Expected time frame for recovery/potential reaction of infant**
  - **What post-care will look like**
  - **Acknowledgement of feelings/concerns**

Pre-frenotomy: Create a Targeted Care Plan

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- Collaborate with the family's IBCLC or refer them to one. Specialized feeding support is critical for tongue tied babies!
- As in the wise words of Linda Smith...
- Rule #1 – Feed the baby
  - Is baby effective? Are tools needed/appropriate? Is mom in pain? What are baby's strengths/weaknesses? Compensatory habits?
- Rule #2 – Protect maternal milk supply
  - How's supply? Is milk being removed? Underlying factors?
- Rule #3 – Keep working on direct breastfeeding
  - Feeding a tongue/lip tied baby is often a winding road, keep long term goals in sight. Provide emotional support. What supportive therapies do baby/mom need?

Pre-frenotomy care plan must be sustainable and realistic. Help optimize intake, supply and comfort while keeping long-term goals in mind.

What other issues can act like or go along with oral restrictions?

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- If an infant presents with a tongue or lip tie, there may be other co-factors causing issues that must be addressed simultaneously.
- A parent can't be led to think a quick 'snip' will fix all their issues. Realistic, comprehensive support is essential. The following issues may also impact feedings and need to be dealt with along with the tie(s):
  - **Structural**
  - **Oral motor**
  - **Sensory**
  - **Digestive**
  - **Maternal milk supply**
  - **Respiratory, etc**
- Mindful assessment and 'differential diagnosis' are vital - it is easy to think all issues are related to the tongue/lip tie and then cease to look further. Comprehensive support must always be our goal.

It takes a village!

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- Care for the dyad coping with restrictions takes a village.
- Some key players in the process are:
  - The family
  - IBCLC board certified lactation consultant
  - Body worker(s), manual therapists
  - Treating provider (DDS, ENT, MD, ND, etc)

Frenotomy care: Bodywork

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Whether or not infants have other structural concerns, bodywork pre and post frenotomy can play a vital role. It helps:

- **Unwind neuromuscular impingements**
- **Release compensatory behaviors/patterns**
- **Gets baby use to safe touch/intraoral work**
- **Provides healthy sensory input**
- **Sets oral tissues up for optimal release**

Bodywork Options

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- Who to refer to? Depends on who is available in your area! Some types of providers include:
  - **Chiropractors, Craniosacral Therapists, Bowen Therapists, Massage Therapist, Physical/Occupational Therapists, Osteopaths, etc**
- Points to keep in mind:
  - **Do they have pediatric experience? (babies are NOT little adults!)**
  - **Do they do any intraoral work?**
  - **Are they open to collaborating/learning more?**
  - **Experience it yourself before referring, work as a team!**
- Some online articles on gentle, pediatric bodywork: http://kellymom.com/bf/concerns/child/cst/
- Ask me for a bodywork-related bibliography if desired

Collaboration for treatment

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- Know who you are referring to.
  - **What is their level of knowledge/experience with ties?**
  - **What is their Tx style?**
  - **How well do they collaborate?**
  - **Are families getting mixed messages?**
- Don't have a treating provider in town?
  - **Network, seek out like minded providers**
  - **Minor surgery in their scope?**
  - **Are they willing to be trained?**
  - **Can you spend time with them to optimize outcomes?**

Treatment of Ankyloglossia

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- **Where are frenotomies performed?**
  - Doctors (MD, ND, DDS, ENTs) perform the procedure in-office. However, not all providers recognize all the variations of ankyloglossia or do a complete release. Make sure you know who you are referring to.
- **When is the procedure done?**
  - As soon as possible! There is usually no benefit to delaying treatment unless other co-factors need to be address first.
- **How is the procedure done?**
  - The baby is swaddled/held down briefly, the head immobilized and the frenum is numbed then incised /excised with a pair of sterile scissors or laser. Baby can nurse/feed immediately before and afterwards.
- **Speakin' the lingo...the procedure is called various things but here's the lo-down:**
  - Frenotomy – Incision of the frenum
  - Frenectomy/frenulectomy – Excision of frenum tissue
  - Frenuplasty/Z-Plasty – A type of surgery for severe tongue tie where more advanced techniques are employed ("Z"angle of the incision helps with functionality/scar healing)

Tongue-Tie Treatment

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Anticipatory guidance: Being able to tell families exactly what to expect during the treatment is useful. Become familiar with the entire process so that you can best support the dyads you are working with.

Newborn Scissors Tx Video

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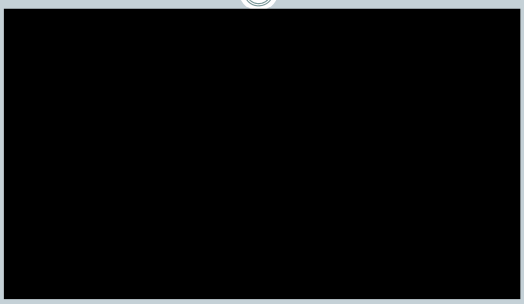

Older baby – Scissor Tx

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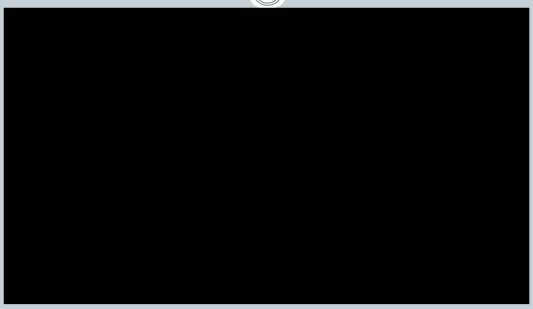

Newborn - Laser Tx video

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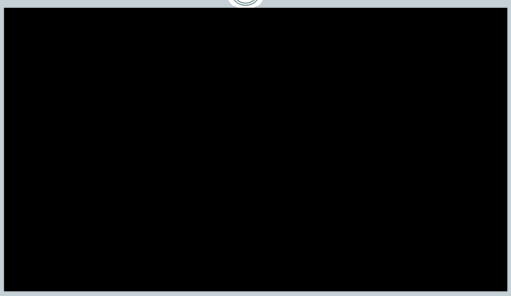

Pain Relief for the Neonate

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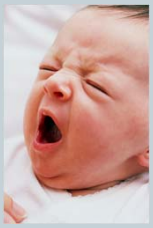
Ask your local treating providers what they use for pain relief during and after frenotomy.

If they don't believe infants need it then ask more questions...

"Clinicians have an ethical responsibility to minimize pain exposure ...along with other evidence-based strategies including NNS, kangaroo care, and breastfeeding when feasible...
(Harrison et al., 2010 & 2012)

"The neonate has a functional nociceptive system...infants may be more vulnerable to the negative effects of pain than older children and adults.... Despite convincing evidence from recent research, the neonate is still subjected to painful procedures, even surgery, without adequate treatment" (Larsson, 2001)



Post frenotomy pain relief: pharmacological and non-pharmacological ideas

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"Inadequate pain management ... in early infancy has negative effects on neurodevelopmental outcomes... Neonatal pain management is still in search for the Holy Grail. At best, effective pain management is based on prevention, assessment, and treatment followed by a reassessment of the pain to determine if additional treatment is still necessary"
(Allegaert & van den Anker, 2016)

Non-pharmacological pain relief ideas:
- **Swaddling, skin to skin, breastfeeding, NNS, environmental interventions (light, noise, temp)**

Pharmacological pain relief options (often not needed, controversial):
- **Acetaminophen**
- **Ibuprofen**
- **Oral sucrose**

Conventional Pain Relief Options

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Conventional options:

- Acetaminophen
  - Dosing based on weight, hard on liver (depletes glutathione), new evidence points to Tylenol being no more effective than placebo in the under 2 group for pain relief and having serious risks from over dosage
- Ice
  - numbing/vasoconstrictive, no major risk, infant may dislike cold
- Oral Sucrose
  - Sucrose/water solution, used to be thought of as significantly reducing discomfort, new evidence shows that only infant facial features change, not actual cortical response (Harrison et al., 2010 & 2012)

NOTE* Benzocaine oral jels NOT recommended due to risk of methemoglobinemia (a potentially fatal disorder in which the amount of oxygen carried through the blood stream is greatly reduced. Risk worse for 2 and under. 29 reports since 2006, 15 of them in ages under 2 yrs.)

Holistic Pain Relief Options

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- Consider collaborating with a CAM provider familiar with pediatric care and dosing when families are interested in holistic options
- **Soothing Options**
  - co-bathing, skin to skin, music therapy, breastfeeding/breastmilk, low lights, warmth, humming/'shushing', babywearing, NS/NNS
- **Homeopathics**
  - Some commonly used for this are: aconitum, bellis perennis, bryonia alba, calendula, hypernicum, arnica (Iannitti , 2014), staphysagria, etc – some are in gels, pellets, liquids, etc.
- **Alcohol-free Rescue Remedy**
- **Herbal Options for older babies**
  - chamomile, st.john's wort, skullcap, lemon balm

Post frenotomy healing

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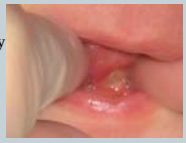
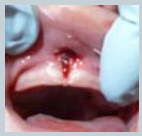


- Oral wounds heal quickly.
- Many of us that work with babies post frenotomy find that some type of aftercare is needed to prevent re-attachment.
- Wound healing happens in stages:
  - **Hemostasis/blood clot formation**
  - **Inflammation**
  - **Re-epithelialization**
  - **Granulation tissue formation**
  - Remodeling of the connective tissue



- Oral motor work can be combined with the wound care to optimize healing and functionality. Every feed (4-6x/day min for 4+ wks)
- Goal is one better feed per day

Post frenotomy healing

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- **Hemostasis/blood clot formation**
  - Happens quickly in most cases, serious bleeding is rare but should be prepared for.
- **Inflammation**
  - Reduced inflammation/scarring of oral wounds compared to dermal wounds, 'superior healing phenotype' in oral cavity (Wong, 2009)
  - When inflammation is increased more scarring and collagen deposition occurs (Frantz et al., 1993).
- **Re-epithelialization and granulation tissue formation**
  - Within 24 hrs, epithelial cells at wound margins begin to migrate, by 48 hrs more cells seeded and proliferating into wound site. Cells migrate from each side of the wound until they contact the front leading edge of the cells coming from the other side
  - After wound contraction occurs, granulation tissue remodeling happens, due to rapid oral healing, "the end result is often the formation of connective tissue scar with reduced tensile strength, disoriented collagen fibers and other molecular alterations" (Larjava, 2012)
- **Remodeling of the connective tissue**
  - Remodeling occurs when the contracting wounds has assembled collagen fibrils into thicker bundles, aligned with the perpendicular wound edges
  - Remodeling is rapid but full strength of wound may only be 20% after 21 days (Larjava, 2012)
- **Other key points**
  - Mucosal wound healing is impacted by stress (Marucha et al., 1998) and nutritional factors/deficiencies (zinc, vit C, L-Arginine, selenium, etc, etc)
  - A balanced approach to after care in respect to the wound site, the baby's/family's emotions is warranted

What parents should expect

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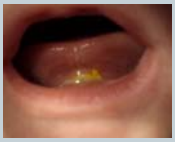
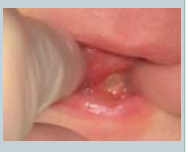
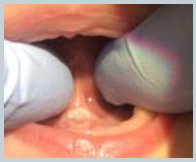


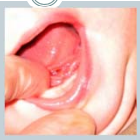
- Immediately post-op babies may or may not want to feed actively. Provide guidance and strategies.
- My expectation for feeding progress is one better feed per day post-frenotomy.
  - Helping parents identify signs of progress can be empowering when they feel 'it will never get better'
  - Make sure their feeding care plan continues to evolve and meet their changing needs
  - Have parents call with any 'red flags' (prolonged oozing, inflammation, fever, inconsolable baby, etc)
- Normal oral wound healing appearance and stages
  - Incision sites (healing eschar)may be different colors (yellow, green, white, etc) at different stages – all are normal and are NOT infection.

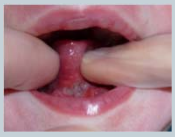


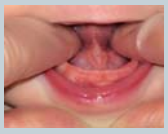
Post frenotomy healing appearance

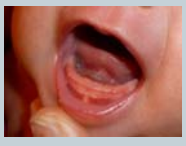
54

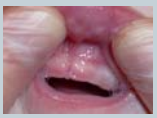












Goals for post frenotomy consult

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- Post frenotomy assessment
  - Extension, elevation, lateralization, cupping, overall tone – can use same assessment tools you used pre-frenotomy to compare progress, check incisions sites, pain
- After care stretches/exercises
  - Positions for holding baby, hands-on work, playful, bodywork, return demo by parents
- Facilitate physical and emotional healing
  - Decrease oral aversion/increase oral acceptance, foster parent/infant connection, enhance parental self-efficacy

After care stretches and exercises

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- You'll see me repeat the same set of exercises in the videos. This does not mean oral work should be a cookie-cutter approach.
- These are safe, effective starting point exercises that most babies post-op can benefit from. They are easy for parents to learn and for you to teach. Individualized oral motor work should always be taught/done by experienced providers
- Babies love repetition so providing a 'set' of exercises that the dyad enjoys helps continue fostering connection
- Make it a habit so parents don't forget (every feed, when switching between breasts, every diaper change, etc). Aim for min 4-6+ times per day for 4-6wks. Use reminders if needed (cell phone alarm, post-it note near changing table, etc).
- Do the 'fun' stuff first and then do the incision massages/stretches at end of session. Quiet/alert state is preferred. It's okay to get in and out quickly when needed and linger when baby is enjoying the work.

After care stretches and exercises: Hands-on work

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Sample care routine:

- 'Beep bop boop bip' (chin nose, philtrum, chin tug)
- Jaw massage + chin tug (loosens tight mandible)
- Gum rub for lateralization
- Wipers on the palate (desensitizes heightened gag reflex)
- Tug-o-war (cupping, extension)
- Lift lip/tongue up and massage over incisions site – use gentle but firm pressure – visualize the diamond shape
- Can add in gentle side of tongue pushes or cheek pulses if needed (lingual/buccal strengthening)

**Note-Inspiration for many of these activities has come from: Cathy Watson Genna and various bodywork/oral motor trainings, etc*

After care stretches and exercises: Wesley's Video

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Ongoing feeding and emotional support

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"My baby had a frenotomy and still has issues..."

- Give parents realistic expectations for feeding progress (pre and post frenotomy). Progress is often measured in weeks not days.
- Make sure their care plan works for them. There are many ways to love and feed a baby while we keep long term goals in sight.
- Refer out for complementary therapies as needed. IBCLC involvement is crucial.
- Suggest mother-to-mother targeted support
- Provide community resources for postpartum mood professionals

Conclusion

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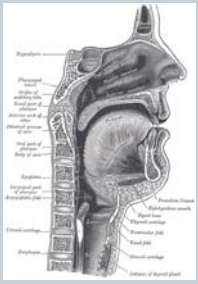
Thank you for participating today!

Your attendance means that you are invested in supporting mothers and babies with the highest level of care!

Assessment and care strategies for oral restrictions are still in their infancy.

I look forward to learning alongside all of my colleagues in the field as new evidence and information emerges.



Conclusion

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Thank you!

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