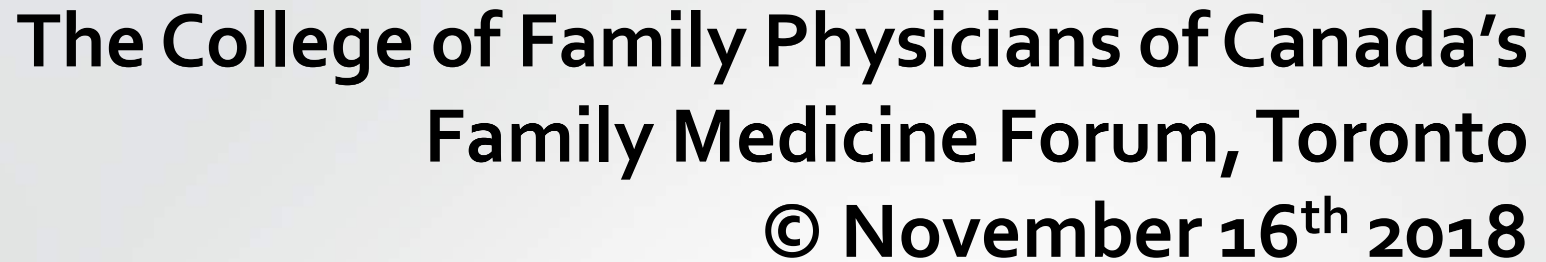

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Tongue-ties Demystified

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Conflict of Interest Disclosure

- Dr. Anjana Srinivasan and Dr. Howard Mitnick have no conflicts of interest to disclose.
- The speakers and this program have received no financial support and no in-kind support. We have no relationship with financial sponsors
- No potential conflicts of interest have been identified by the speakers.

Herzl-Goldfarb Breastfeeding Clinic

- Founded in 2002 by two IBCLCs and one family physician
- Situated in a tertiary care hospital in Montreal, attached to a family medicine department
- Privately funded at first, then publicly funded a few years later
- Family physicians trained in breastfeeding medicine and lactation consultant – IBCLCs manage complex breastfeeding issues in mother-infant dyads referred by other health professionals

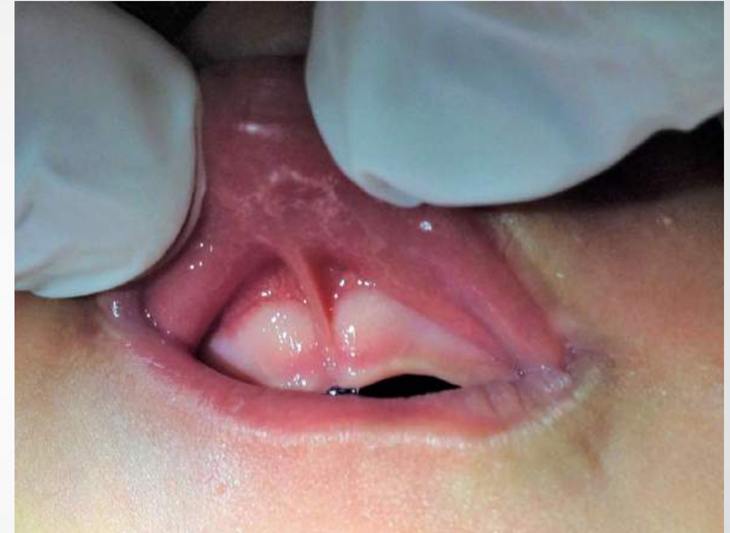
Outline

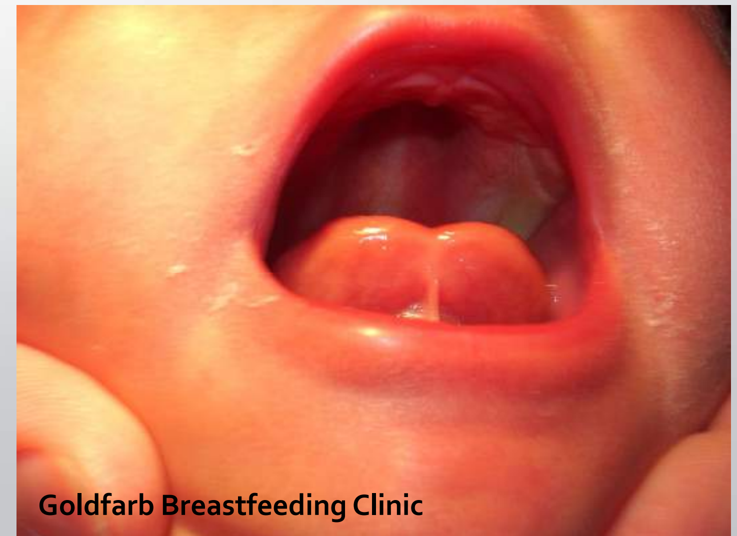
Approach to tongue-ties and labial ties

Frenotomy

Case studies

Research





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Approach to Tongue-ties & Labial Ties

Definitions

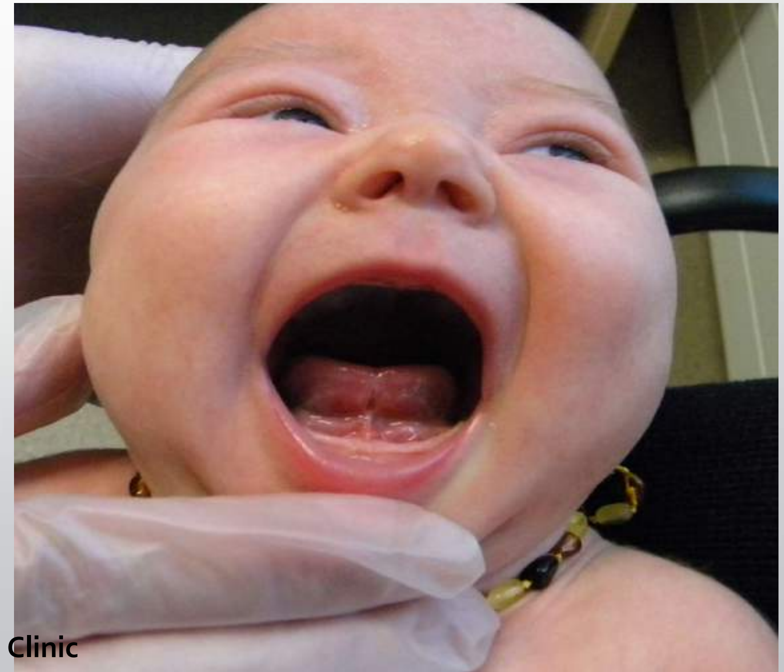
- "Ankyloglossia or tongue-tie is a condition where the sublingual frenulum is short, inelastic, thickened, or attached too close to the tongue tip, thus changing the appearance or function of the infant's tongue." (*Lawrence et al., 2016*)
- "Failure of apoptosis of embryological tissue in the midline between the undersurface of the tongue and the floor of the mouth that restricts normal tongue movement."
- 4 types described by Dr. E. Coryllos in 2004 (*Coryllos E et al. 2004*)

Anterior tongue-tie (types 1 and 2)

- Classic type, easy to see, closer to or at tongue tip; difficulty with extension and lifting of tongue.

Posterior tongue-tie (types 3 and 4)

- Further back from the tongue-tip, nearer the base of the tongue or under the mucosa; not as easy to see; difficulty with tongue elevation



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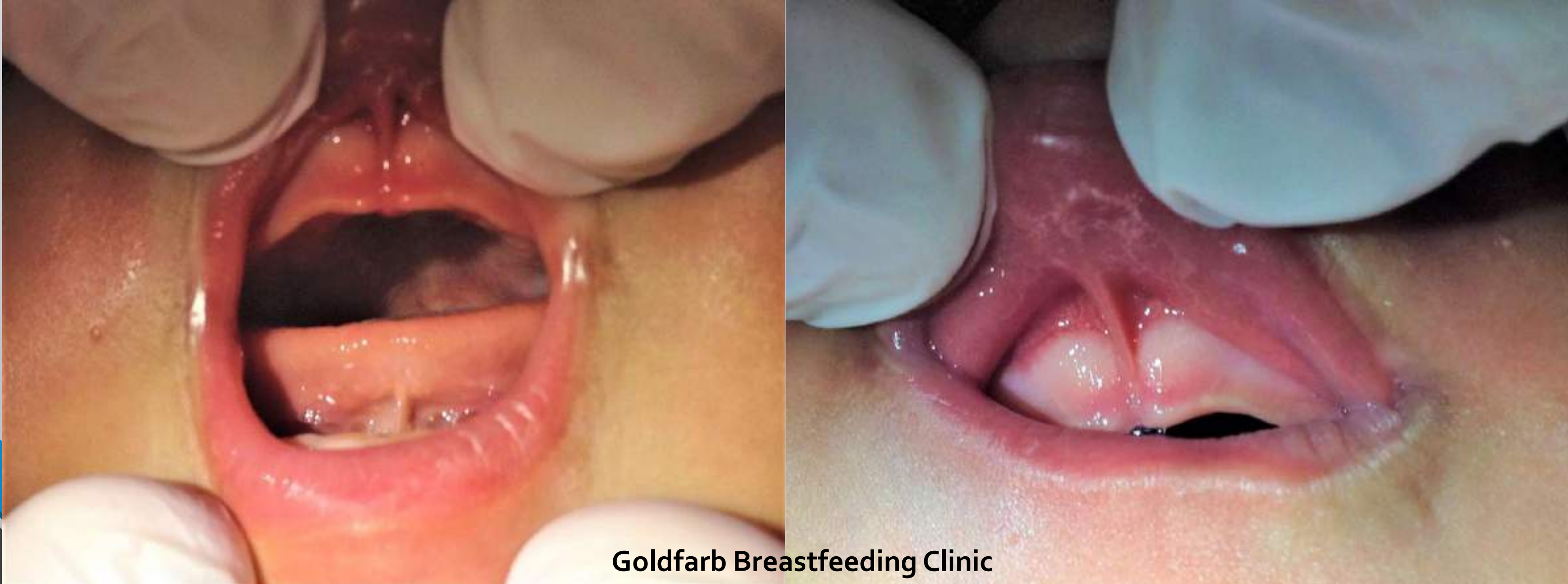
Upper labial ties

- Defined as the upper lip attachment to the maxillary gingival tissue.
- May lead to inability to flange lips and maintain good seal/latch.
- Labial frenotomy is safe and effective *(Kotlow 2013)*
- Being performed at Herzl-Goldfarb BFC since 2013



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Incidence

- Varies from 1%-10%, may be closer to 10%
- Condition often runs in families
- 25% of ankyloglossic babies may have breastfeeding difficulties (Academy of Breastfeeding Medicine).
- Ankyloglossia represents 12.8% of all breastfeeding difficulties.
- Agreement about the criteria for identification is needed before incidence can be accurately estimated.

How does mother present?

- Nipple and/or breast pain
- Gumming/chewing feeling while feeding
- Nipple trauma/wounds
- Nipple vasospasm
- Decreased milk supply
- Blocked ducts and mastitis
- Untimely weaning

How does infant present?

- Latch difficulties:
- Long/frequent feeds, dissatisfaction after feeds
- Poor weight gain
- Tongue restriction:
  - heart-shaped
  - limited extension
  - cupping/central depression

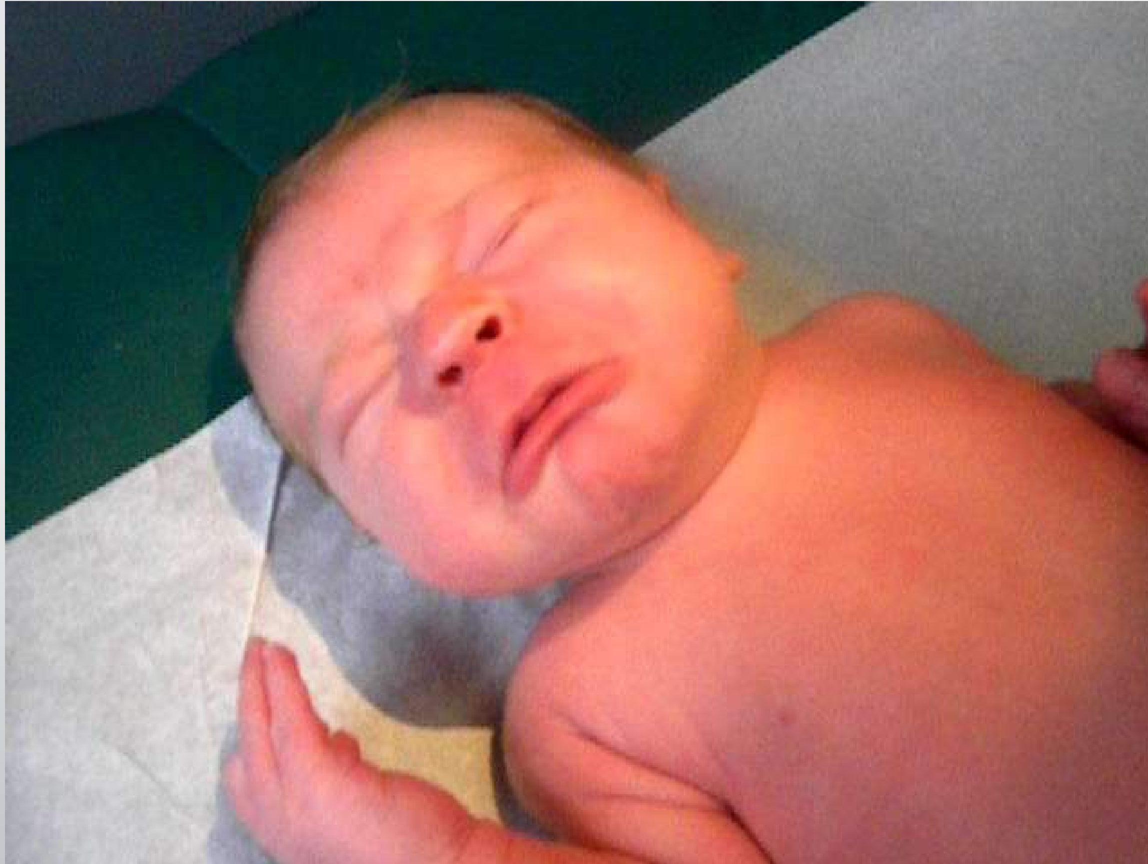
- White coating on tongue
- Noisy feeds (clicking)
- Lip blisters and/or two-toned lips
- Peri-oral blanching post-feeds
- Prominent naso-labial folds

Evaluation of tongue mobility

1) Presence of "speed bump" when performing tongue-sweep under tongue
2) Tongue elevation:
   - heart-shaped or bunched/bowl shape vs drawbridge
3) Tongue lateralization
4) Tongue extension:
   - not always restricted in posterior tongue-ties
5) Sucking assessment

Tongue Tie and Labial Tie anatomy is necessary but not sufficient for functional difficulties.

Evaluation of posterior tongue-tie



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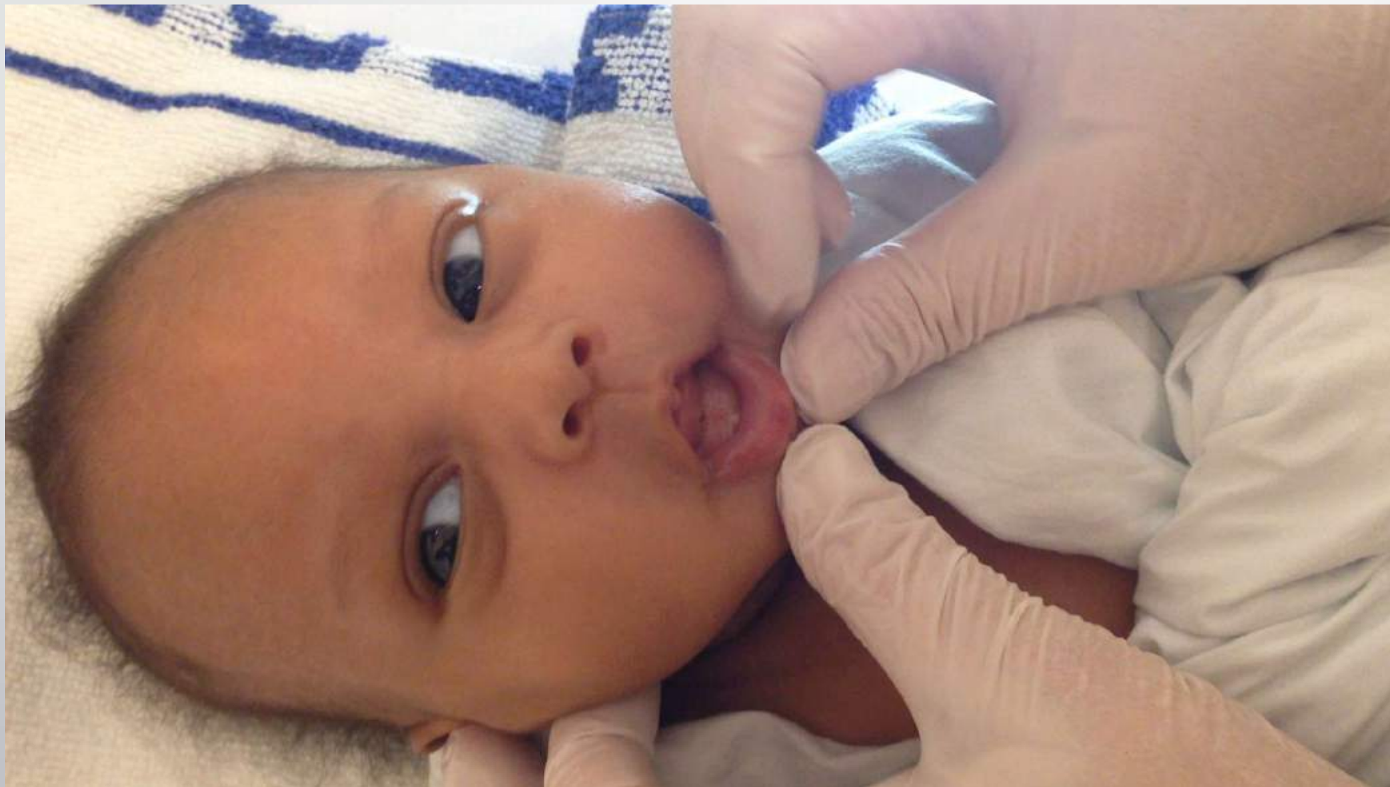
Another evaluation of tongue-tie and upper labial tie



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Frenotomy Decision Tool for Breastfeeding Dyads

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Date:		**Evaluator:**		
Baby:	**Age:**	**Parent:**		
PART 1 (Yes = 1 No = 0) choose all that apply			**1**	**0**
1. Mother with nipple pain/trauma while breastfeeding				
2. Infant with inability to latch or maintain latch				
3. Endless feeds described by mother				
4. Poor milk transfer observed				
5. Infant (>5 days) with weight gain < 20g/d without supplementation				
			Total =	**/5**
PART 2 (Yes = 1 / No = 0) choose all that apply			**1**	**0**
An infant with a visible or palpable membrane anterior to or at the base of tongue restricting tongue movement and leading to any of the following:				
1. Inability to elevate tongue at least mid-way with wide open mouth				
2. Inability for tongue to cup/maintain suction on breast or examining finger				
3. Inability to protrude tongue past gum line or central dimpling (bowl shape) of tongue on extension				
4. Diminished lateral movement of tongue				
5. White tongue with absence of white patches elsewhere (pseudoleukoplakia)				
			Total =	**/5**
PART 3 (Yes = 1 / No = 0) choose all that apply			**1**	**0**
An infant with a visible or palpable labial membrane at the center of the upper lip between the lips and the gums leading to any of the following:				
1. Upper lip folds in, puckering or pursed lips				
2. Perioral blanching and/or naso-labial folds				
3. Two tone lips (lighter interior of inner aspect of lips)				
4. Persistent lip blisters				
			Total =	**/4**

SCORING: ***There needs to be positive scores in two parts (1 & 2 or 1 & 3)***

Part 1 /5 + Part 2 /5 = /10	≥ 2 possible need for lingual frenotomy	☐ Yes ☐ No
Part 1 /5 + Part 3 /4 = /9	≥ 2 possible need labial frenotomy	☐ Yes ☐ No

Lingual frenotomy performed	☐ Yes ☐ No
Labial frenotomy performed	☐ Yes ☐ No

____
Evaluator's name

____
Signature

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Assessment tools in the literature

- Hazelbaker tool (*Amir et al., 2006*)
- Neonatal Tongue Screening Test (*Martinelli et al., 2016*)
- Bristol Tongue Assessment Tool (BTAT) (*Ingram et al., 2015*)

A summary of our approach to tongue-ties and labial-ties

History

- Maternal
- Infant
- Breastfeeding

Anatomy

- Tongue-tie, labial tie causing restriction in tongue movement
- Musculoskeletal evaluation
- Maternal breast anatomy

Function

- Breastfeeding evaluation and management of issues

Frenotomy

Initial considerations

- Frenotomy not needed in all cases
- Always work on LATCH first
- Evaluate need for management of other problems:
  - Bodyworkfor infant musculoskeletal issues (torticollis, tight jaw)
  - Maternal vasospasm treatment
  - Management of poor milk supply and poor weight gain

When is frenotomy indicated?

- Tongue-tie/labial tie present, with restriction in tongue movement

and

- Persisting breastfeeding problems despite lactation support and intervention:
  - Nipple pain, low milk supply, poor infant weight gain, poor latch, poor milk transfer, possible GERD

- Frenotomy Decision Tool for Breastfeeding Dyads (FDTBD)

What influences frenotomy success (and decision to perform frenotomy)?

Maternal factors

- Goals, expectations, motivation
- Previous breastfeeding experience
- Breastfeeding support and knowledge
- Evolution of breastfeeding so far

Infant factors

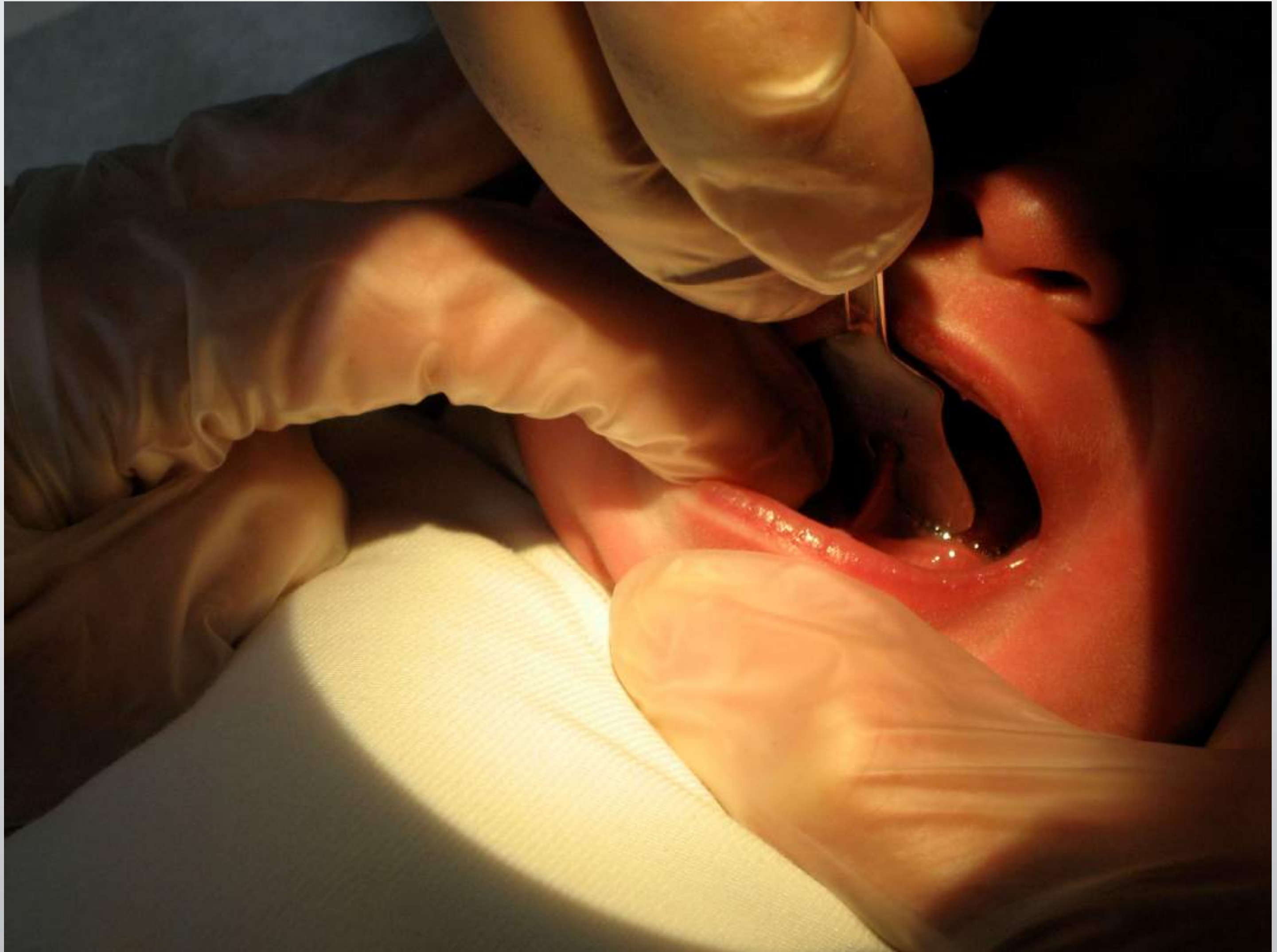
- Age
- Weight gain
- Musculoskeletal issues
- Medical issues

Frenotomy procedure

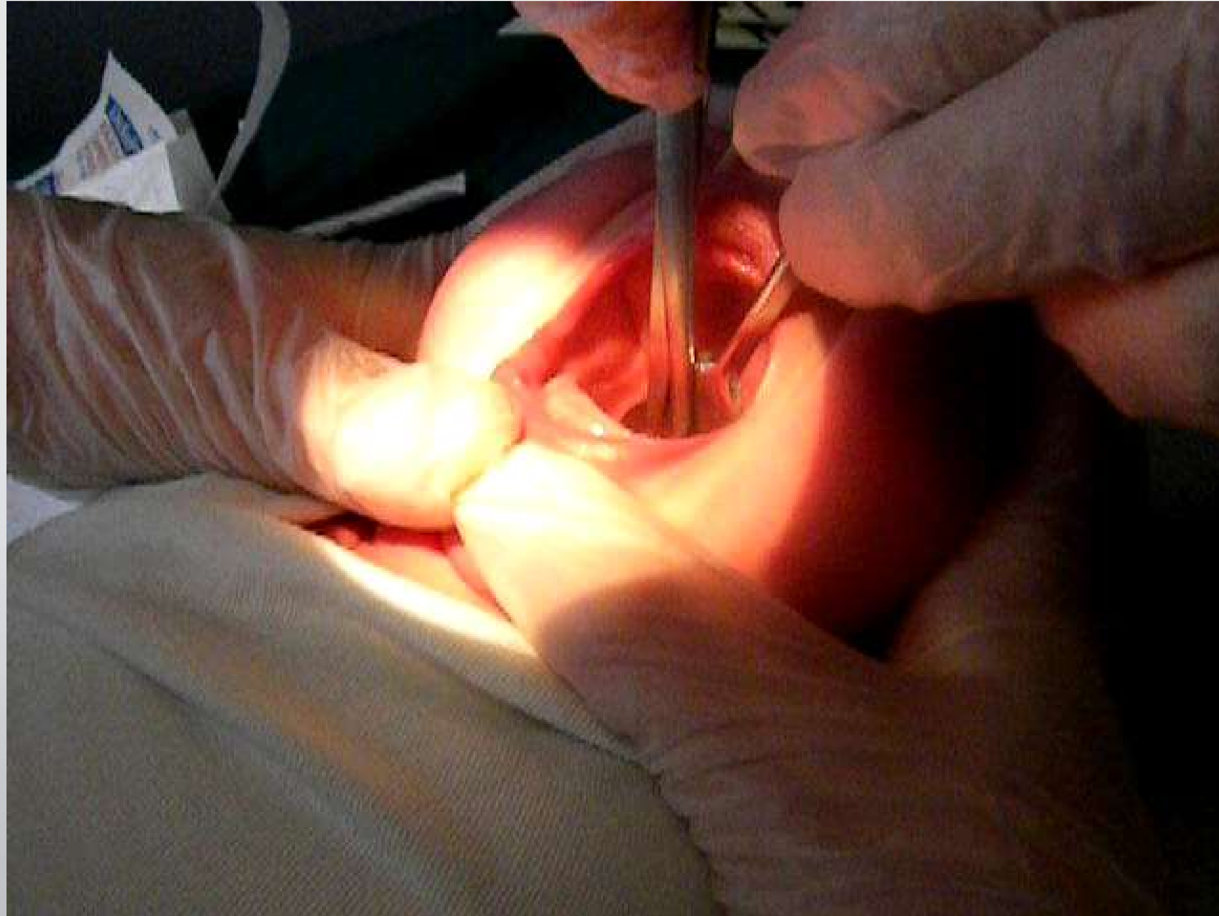
Tongue retractor

a) Acetaminophen/breastmilk
b) Immobilization of infant with swaddling and assistant holding head in extension
c) Isolation of frenulum with tongue retractor
d) 2-8 mm incision of lingual frenulum
e) Compression prn if bleeding
f) Incision of labial frenulum along gingiva, using fingers to lift upper lip
g) Immediate latch and feed at breast OR drops of expressed breastmilk in mouth

Blunt-end tenotomy scissors



Video of posterior frenotomy and upper labial frenotomy



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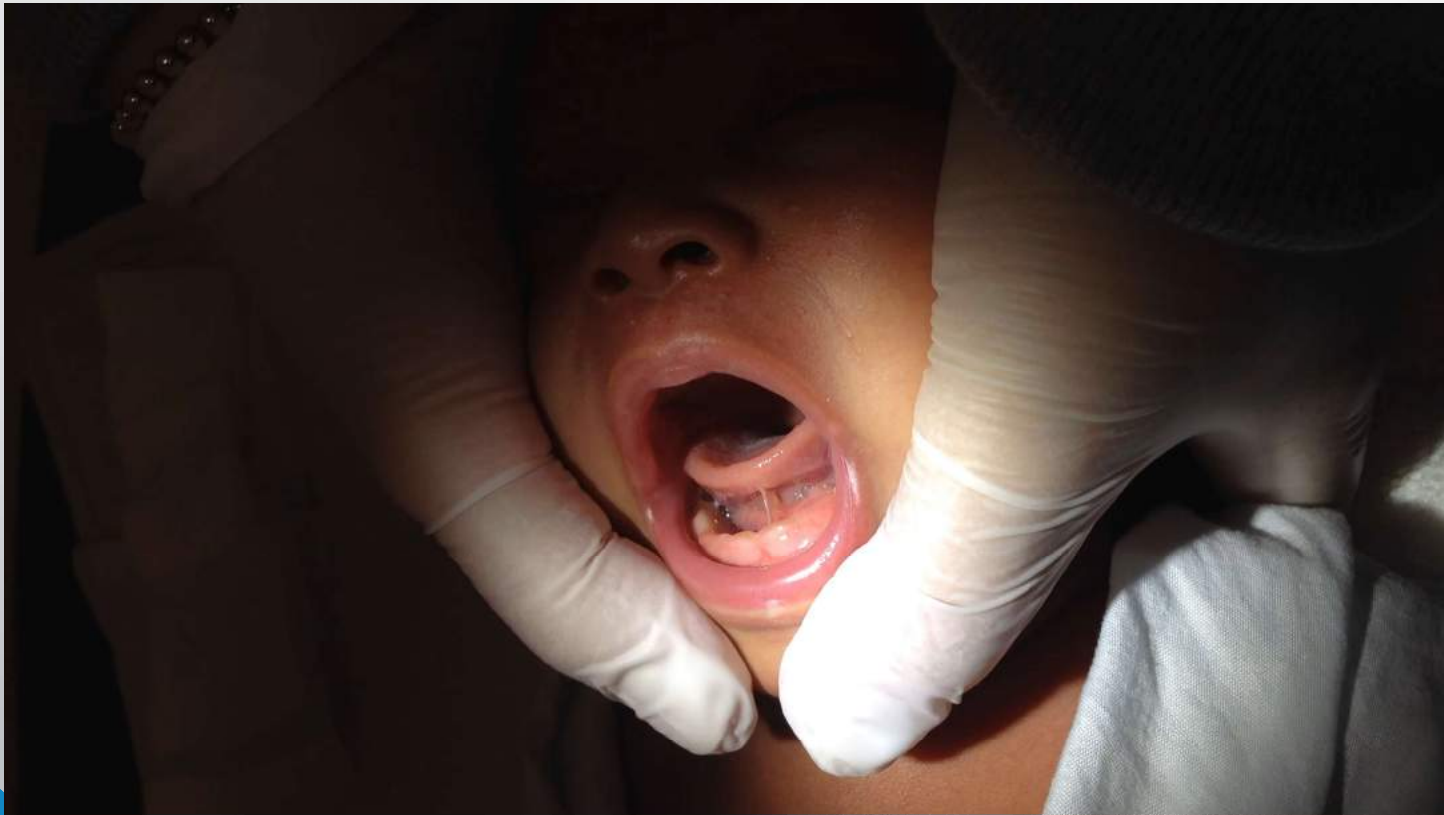
Video of anteroposterior frenotomy and upper labial frenotomy



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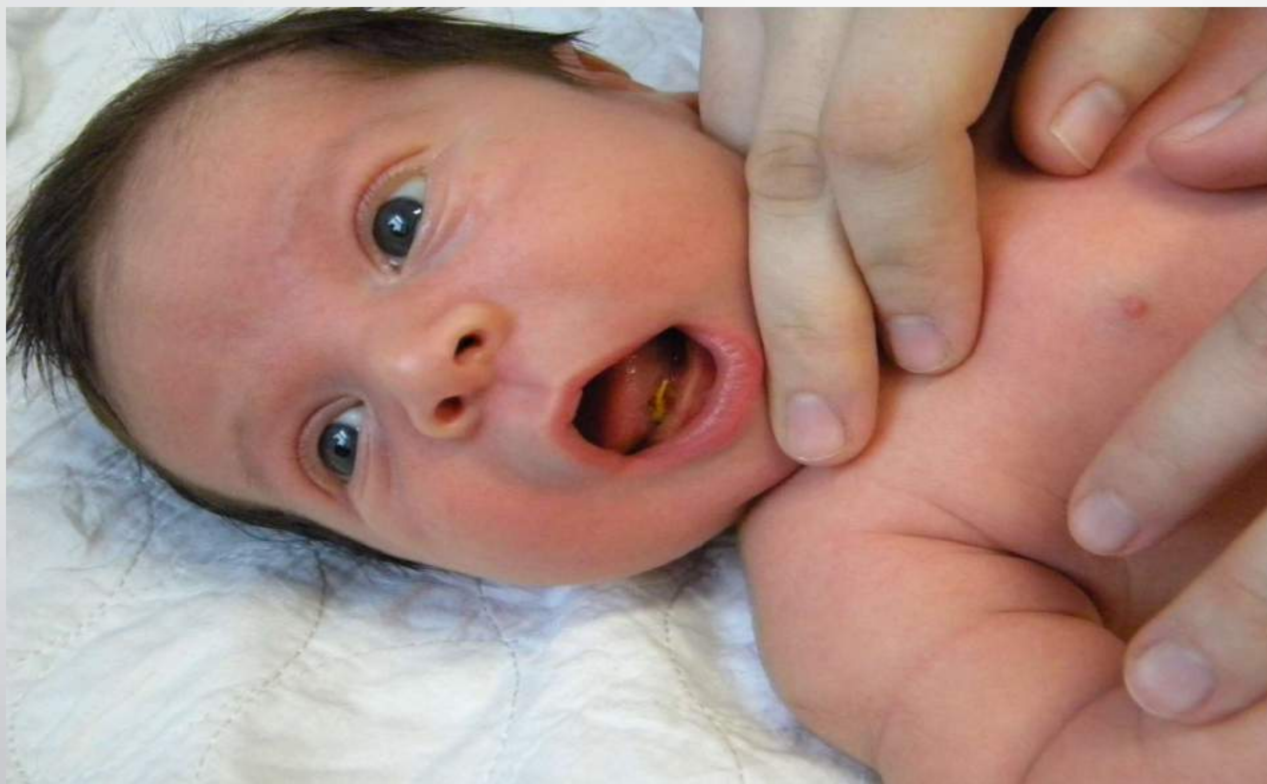
Frenotomy risks

- Safe procedure according to the literature
- The theoretical:
  - Significant bleed: less with anterior frenotomy
  - Infection: rare, never seen in our clinic
  - Salivary gland injury: rare, never seen in our clinic
- The Actual:
  - Pain
  - No or slow improvement
  - Transitionary period of adaptation
  - Irritability/refusal to feed in following days
  - Reattachment

The healing process



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Stretching exercises

- What do we do about all of the posterior frenotomy dyads who improve and then plateau or regress?
- Stretching exercises:
  - Backwards and upwards lift done with fingers on either side of frenotomy incision site (diamond-shaped);
  - Done in clinic 2 days later and 1 week later.
  - Done by parents 3 times a day at home x 1-2 weeks

Case studies

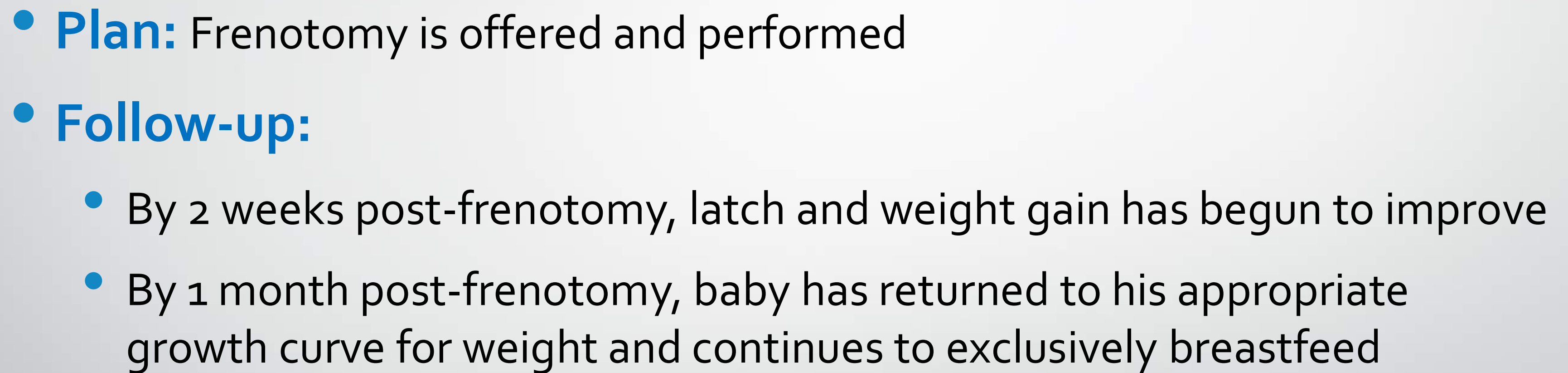
2 week-old with antero-posterior tongue-tie

- **History:**
  - Feeds have been painful since day 1, especially with initial latch
  - Mom is exclusively breastfeeding
- **Exam:**
  - Baby has surpassed birth weight
  - Posterior tongue-tie
  - Jaw tensions

- **Breastfeeding:**
  - Mom is very tense and anxious
  - Holds the baby too high and allows baby to suck on the tip of the nipple
  - Baby has a strong suck
- **Plan:**
  - Mom is shown the biological nurturing hold and is helped to relax and lean back while breastfeeding
  - Baby is referred for bodywork
  - Tongue-tie to be reevaluated at next visit

- **Follow-up:**
  - Mom and baby return to the clinic weekly for a few weeks
  - By 4 weeks of age, baby has had a few sessions with a bodyworker, and is able to open his mouth wider and latch on better; mom is more relaxed with feeds; pain has completely resolved, and there is excellent infant weight gain
  - Frenotomy is not done at this time
  - Mom and baby are discharged from the clinic and told to return if any other breastfeeding problems arise

- **3 months later**
  - Baby continues to be exclusively breastfed
  - Mom continues to have no nipple pain
  - But baby is now falling off growth curve for weight
  - Baby refuses supplementation with bottle, cup or tube
- **Exam:**
  - Inadequate weight gain
  - Posterior tongue-tie remains present
- **Breastfeeding:** Poor latch and milk transfer, mom has no pain


Plan: Frenotomy is offered and performed
Follow-up:
By 2 weeks post-frenotomy, latch and weight gain has begun to improve
By 1 month post-frenotomy, baby has returned to his appropriate growth curve for weight and continues to exclusively breastfeed

1 month-old with torticollis

- **History:**
  - Breastfeeding and supplementing with 200 ml of infant formula in 24 hrs
  - Mom complains of nipple pain, worse on the right side (6/10), better on the left side (2/10)
- **Exam:**
  - Appropriate weight gain
  - Torticollis
  - Posterior tongue-tie and upper labial tie
- **Breastfeeding:** Baby has more difficulty latching onto right breast

- **Plan:**
  - Mom shown various latch techniques
  - Baby referred for bodywork
  - Decision made to reevaluate the tongue-tie at next visit
- **Follow-up:**
  - 2 weeks later, mom has worked on latch techniques and seen a bodyworker for her baby 2 times
  - Mom has much less nipple pain and has more ease breastfeeding on right breast
  - 2 more weeks later, mom has no more nipple pain and has reduced supplementation to 50-100 ml in 24 hrs
  - She is discharged from the clinic and no frenotomy is done

Upper labial tie and vasospasm

- **History:**
  - 2 month old exclusively breastfeeding baby girl
  - Mom has painful nipple vasospasm, only partially improved with nifedipine 20 mg XL
  - Baby had a frenotomy done at 2 weeks of age which helped nipple pain during latch, but vasospasm pain persists
- **Exam:**
  - Adequate weight gain
  - Upper labial tie cleaving the gum line

- **Breastfeeding:**
  - Unable to evert upper lip when latched on
  - Mom has mild nipple discomfort during the feed and painful nipple blanching afterwards
- **Plan:** Labial frenotomy offered and performed
- **Follow-up:**
  - 2 weeks later, mom has less nipple vasospasm and is continuing nifedipine
  - 1 more week later, mom has stopped nifedipine and has no more discomfort during feeds or painful vasospasm after feeds

Premature infant with tongue-tie

- **History:**
  - Baby born at 32 weeks
  - In neonatal intensive care unit until 38 weeks corrected
  - Comes to breastfeeding clinic at 39 weeks corrected
  - Breastfeeding and supplementing with 400 ml of expressed breastmilk per 24 hrs
- **Exam:**
  - Adequate weight gain
  - Posterior tongue-tie
  - Poor/weak suck

- **Breastfeeding:**
  - Wide mouth opening but poor milk transfer
  - No pain for mom
- **Plan:**
  - Latch technique
  - Nipple shield offered
  - Possibility of frenotomy discussed, to reevaluate at next visit

- 2 weeks later, still supplementing same amount as last time
- No improvement in latch and milk transfer
- Frenotomy offered and performed
- 1 week post-frenotomy, only mild improvement in milk transfer, still requiring supplementation but less than before (350 ml/24 hrs)
- Suck is still weak
- Referral made for ergotherapy/occupational therapy for suck training
- 3 weeks post-frenotomy, suck as improved with suck training and baby is now only needing to be supplemented 100 ml/24 hrs of EBM

Research studies

The controversy…

- Not enough definitive literature to recommend routinely
- Short-term benefits for breastfeeding seen in studies, but no long-term benefits yet…
- Lack of "experts" knowledgeable enough to assess and manage appropriately
- Lack of a validated tool to identify significant tongue-ties

Canadian Pediatrics Society Recommendations (2014)

- “Based on current evidence, frenotomy cannot be recommended…if association between significant tongue-tie and major breastfeeding problems is clearly identified…frenotomy should be performed by a clinician experienced with the procedure”

Research and controversies

- 2000 → "ankyloglossia rarely causes feeding problems" according to 90% of pediatricians and 70% of otolyryngologists *(Messner and Lalakea 2000).*
- 2002 → improved latch and decreased maternal nipple pain in 123 ankyloglossic infants after frenotomy *(Ballard 2000).*
- 2004 → development of Academy of Breastfeeding Medicine protocol on ankyloglossia and frenotomy *(Ballard 2004).*
- 2005 → 1st RCT showing effectiveness of frenotomy *(Hogan et al 2005).*

More research

- 2010 → frenotomy useful if there are breastfeeding difficulties not helped by lactation support *(Cho et al 2010)*
- 2010 → review demonstrates safety and effectiveness of anterior and posterior frenotomy for breastfeeding problems *(Knox 2010)*
- 2011 → RCT demonstrates effectiveness of frenotomy *(Buryk 2011).*
- 2011 → literature review demonstrates safety and efficacy of frenotomy *(Edmunds et al 2011)*
- 2013 → anterior and posterior frenotomy improves latch and decreases nipple pain *(O'Callahan 2013)*

Recent studies

- 2013 → description of upper labial ties *(Kotlow 2013).*
- 2014 → systematic review finds overall moderate quality of evidence for the effectiveness of frenotomy for ankyloglossic infants with breastfeeding difficulties *(Ito 2014).*
- 2016 → frenotomy is safe and effective for overcoming short-term breastfeeding difficulties according to critical appraisal *(Canadian Agency for Drugs and Technologies in Health 2016).*
- 2017 → Cochrane review concludes that frenotomy can reduce short-term nipple pain, but has no consistent positive effect on breastfeeding *(O'Shea et al 2017).*
- 2017 → anterior, posterior and labial frenotomy with laser is effective in improving breastfeeding *(Ghaheri 2017).*

Clinic's study on anterior frenotomies, 2005

- Prospective study of 27 mother-infant dyads with anterior tongue-tie who underwent frenotomy for breastfeeding problems
- No complications with frenotomy
- All infants had equal or higher LATCH score post-frenotomy, with a mean improvement of 2.5
- Maternal nipple pain score decreased significantly post-frenotomy
- 88% felt the frenotomy had helped them.
- Srinivasan A, Dobrich C, Mitnick H and Feldman P. Breastfeed Med 2006; 1 (4): 216-224

Clinic's study on posterior frenotomies, 2013

- Prospective study of 36 mother-infant dyads with posterior tongue-tie who underwent frenotomy for breastfeeding problems
- No complications with frenotomy
- Significant improvement in LATCH score immediately post-frenotomy
- Significant decrease in median pain score immediately post-frenotomy
- Subjective improvement in breastfeeding reported in 88.9% of mothers immediately post-frenotomy and 72.2% of mothers at day 14 post-frenotomy
- Submitted for publication

Clinic’s study on stretching exercises, 2012

- Retrospective chart review of 398 cases of frenotomy
- Approximately half from 2010 (no post-frenotomy stretching exercises were taught) and half from 2012 (post-frenotomy stretching exercises were taught)
- Lower percentage of repeat frenotomies done in 2012 compared to 2010
- Presented as a poster for ILCA conference, 2013.

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Questions?

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