ACADEMY
WATERLASE

PEDIATRIC

FRENECTOMY PROTOCOL GUIDE

BIOLASE
LEADER IN DENTAL LASERS™

INTRODUCTION
WHY IS IT NEEDED?

WHAT IS A FRENUM?

A Frenum is a piece of soft tissue consisting of superficial elastic mucosa and facial connective tissue. There are seven common oral frenum:

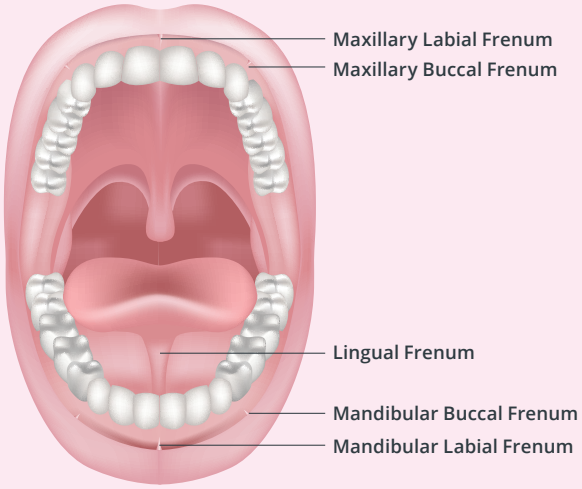
- Lingual Frenum
- Maxillary Labial Frenum (Superior)
- Mandibular Labial Frenum (Inferior)
- Right and Left Maxillary Buccal Frenum (2)
- Right and Left Mandibular Buccal Frenum (2)

WHAT IS A TOT?

"TOT" is an acronym for **Tethered Oral Tissues**, a typically congenital condition where an oral frenum(s) is too restrictive, preventing optimal oral function.

There are three types of TOTs:

- ***Tongue Tie*** (Ankyloglossia) – Restricted Lingual Frenum
- ***Lip Tie*** – Restricted Maxillary Labial Frenum or Mandibular Labial Frenum (Inferior)
- ***Cheek Tie*** – Restricted Buccal Mucosa



WHAT ARE THE EFFECTS?

Feeding:

- Infant Breast Feeding
- Baby/Toddler
  - > Struggle with texture
  - > Picky eater
  - > Choking
- Child
  - > Can't lick an ice cream cone
  - > Unable to get food out of their vestibules

Speech:

- Tongue scratches over lower incisors
- Gets tired when talking
- Pronunciation and articulation issues

Breathing:

- Mouth Breathing
- OSA

Dental Issues:

- Oral Cleaning – Using fingers to pick food out of teeth and mouth
- Can increase risk for caries
- High Palate

Social:

- Oral Cleaning – Using fingers to pick food out of teeth and mouth
- Can increase risk for caries

COLLABORATIVE CARE
A TEAM APPROACH

Comprehensively identifying, addressing, and treating TOTs, by involving multiple specialists in the patient's care, provides excellent benefits.

- ***Lactation Specialist*** – You want to be working with a lactation therapist when helping patients with breast feeding issues.
- ***Speech Therapist*** – Partner with a speech therapist when seeing patients with speech issues due to Tethered Oral Tissues.
- ***Myofunctional Therapist*** – These clinicians are very helpful with proper tongue position, function, and nasal breathing.
- ***Chiropractor*** – Your lifeline to fussy infants, hard deliveries, digestive issues, and ear infection issues. They are also your go-to for head and neck tension, headaches, and shoulder/upper back pain
- ***Ear, Nose, Throat*** – Help with any esophageal and breathing considerations.
- ***Primary Care Physician*** – Consult established medical clinician to understand holistic care requirements and other health context.

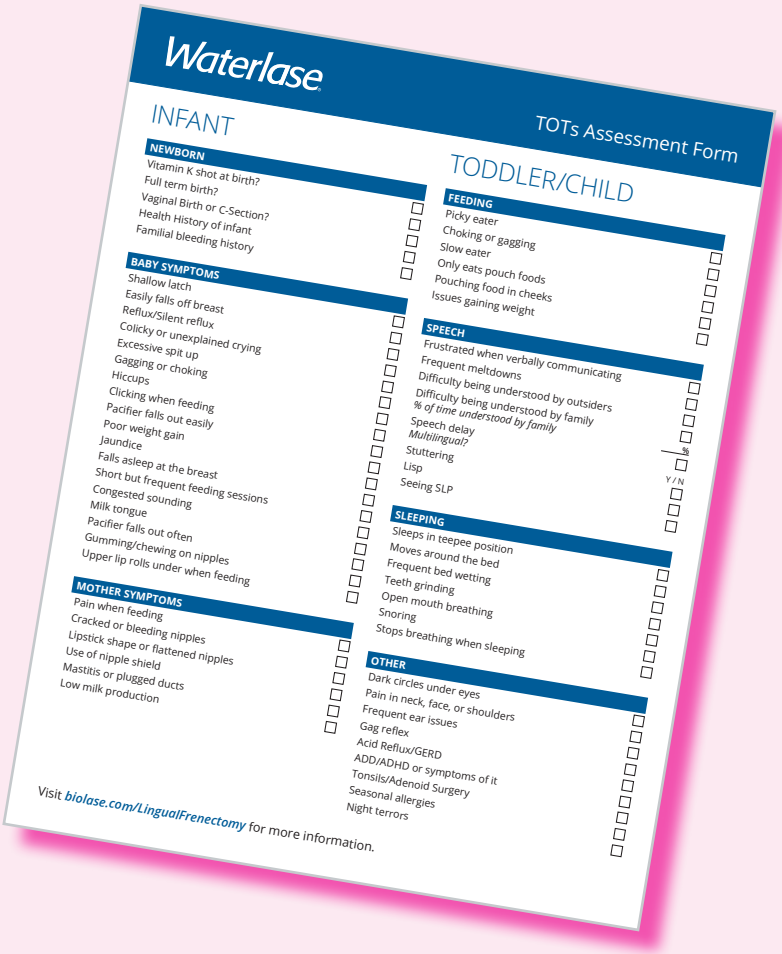
DOCUMENTATION
GET IT ALL DOWN IN WRITING

As you know, good documentation is an essential step in your treatment plan.

INITIAL ASSESSMENT

- Have parents complete an assessment form.
- Allowing them to see how many boxes they mark is a valuable tool for realizing the extent of the ties their child has.
- Often parents are not even aware the symptoms the child is exhibiting are not "normal".

Download the Assessment Form at
biolase.com/TOTs-Assessment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TOTs Assessment Form

INFANT

NEWBORN
- Vitamin K shot at birth?
- Full term birth?
- Vaginal Birth or C-Section?
- Health History of infant
- Familial bleeding history

BABY SYMPTOMS
- Shallow latch
- Easily falls off breast
- Reflux/Silent reflux
- Colicky or unexplained crying
- Excessive spit up
- Gagging or choking
- Hiccups
- Clicking when feeding
- Pacifier falls out easily
- Poor weight gain
- Jaundice
- Falls asleep at the breast
- Short but frequent feeding sessions
- Congested sounding
- Milk tongue
- Pacifier falls out often
- Gumming/chewing on nipples
- Upper lip rolls under when feeding

MOTHER SYMPTOMS
- Pain when feeding
- Cracked or bleeding nipples
- Lipstick shape or flattened nipples
- Use of nipple shield
- Mastitis or plugged ducts
- Low milk production

TODDLER/CHILD

FEEDING
- Picky eater
- Choking or gagging
- Slow eater
- Only eats pouch foods
- Pouching food in cheeks
- Issues gaining weight

SPEECH
- Frustrated when verbally communicating
- Frequent meltdowns
- Difficulty being understood by outsiders
- Difficulty being understood by family
- *% of time understood by family*
- Speech delay
- *Multilingual?*
- Stuttering
- Lisp
- Seeing SLP

% Y/N

SLEEPING
- Sleeps in teepee position
- Moves around the bed
- Frequent bed wetting
- Teeth grinding
- Open mouth breathing
- Snoring
- Stops breathing when sleeping

OTHER
- Dark circles under eyes
- Pain in neck, face, or shoulders
- Frequent ear issues
- Gag reflex
- Acid Reflux/GERD
- ADD/ADHD or symptoms of it
- Tonsils/Adenoid Surgery
- Seasonal allergies
- Night terrors

Visit *biolase.com/LingualFrenectomy* for more information.

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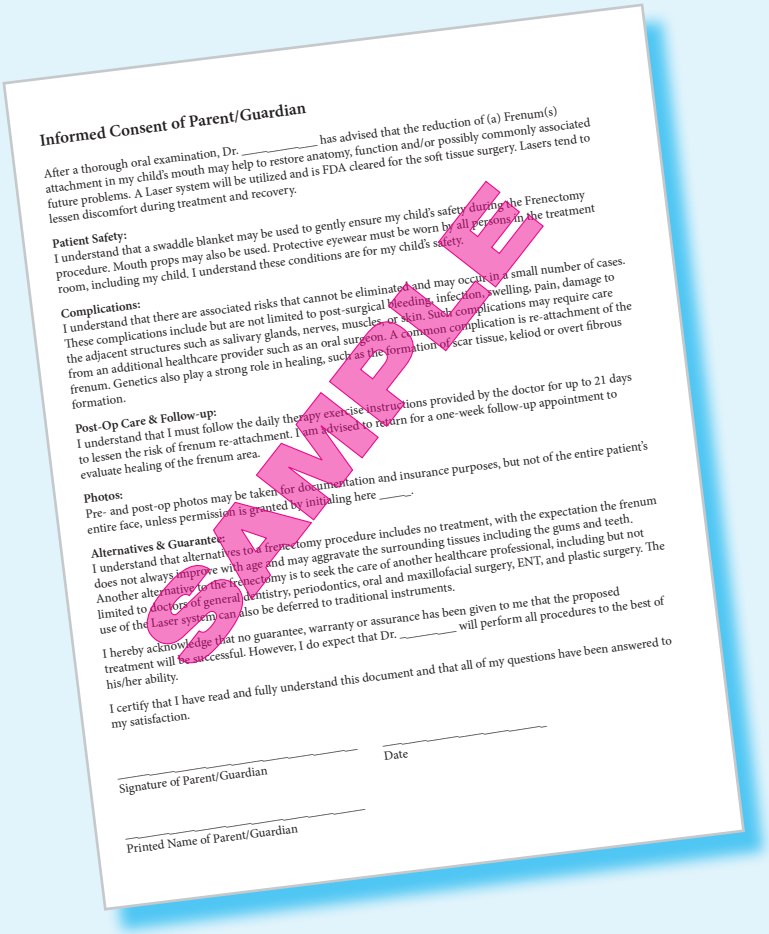


Informed Consent of Parent/Guardian

After a thorough oral examination, Dr. _____ has advised that the reduction of (a) Frenum(s) attachment in my child's mouth may help to restore anatomy, function and/or possibly commonly associated future problems. A Laser system will be utilized and is FDA cleared for the soft tissue surgery. Lasers tend to lessen discomfort during treatment and recovery.

Patient Safety:
I understand that a swaddle blanket may be used to gently ensure my child's safety during the Frenectomy procedure. Mouth props may also be used. Protective eyewear must be worn by all persons in the treatment room, including my child. I understand these conditions are for my child's safety.

Complications:
I understand that there are associated risks that cannot be eliminated and may occur in a small number of cases. These complications include but are not limited to post-surgical bleeding, infection, swelling, pain, damage to the adjacent structures such as salivary glands, nerves, muscles, or skin. Such complications may require care from an additional healthcare provider such as an oral surgeon. A common complication is re-attachment of the frenum. Genetics also play a strong role in healing, such as the formation of scar tissue, keliod or overt fibrous formation.

Post-Op Care & Follow-up:
I understand that I must follow the daily therapy exercise instructions provided by the doctor for up to 21 days to lessen the risk of frenum re-attachment. I am advised to return for a one-week follow-up appointment to evaluate healing of the frenum area.

Photos:
Pre- and post-op photos may be taken for documentation and insurance purposes, but not of the entire patient's entire face, unless permission is granted by initialing here _____.

Alternatives & Guarantee:
I understand that alternatives to a frenectomy procedure includes no treatment, with the expectation the frenum does not always improve with age and may aggravate the surrounding tissues including the gums and teeth. Another alternative to the frenectomy is to seek the care of another healthcare professional, including but not limited to doctors of general dentistry, periodontics, oral and maxillofacial surgery, ENT, and plastic surgery. The use of the Laser system can also be deferred to traditional instruments.

I hereby acknowledge that no guarantee, warranty or assurance has been given to me that the proposed treatment will be successful. However, I do expect that Dr. _____ will perform all procedures to the best of his/her ability.

I certify that I have read and fully understand this document and that all of my questions have been answered to my satisfaction.

_____ _____
Signature of Parent/Guardian Date

_____
Printed Name of Parent/Guardian

INFORMED CONSENT

Risks, Benefits and Alternatives

- Typically the biggest risk is bleeding — which is reduced significantly by using Waterlase® (cuts hundreds of cell layers less than scissors or scalpel)
- All questions asked and answered
- No guarantees about procedure
- Emphasize importance of stretches and post-op coordinated care (SLP, OMT, IBCLC)

Sample Only
This is not legal advice. Consult your legal counsel for legal document support and adherence to the laws of your State.

CLINICAL NOTE DOCUMENTATION

Medical History

- Chief Complaint & Symptoms
- Oral evaluation
- Diagnosis
- Recommendations
- Procedure – Intra-oral photos (pre- and post-procedure)
- Follow-up Instruction

EVALUATION
MULTIPLE METHODS OF DIAGNOSIS

POSITIONING

- It is important to evaluate in a **Knee-to-Knee** position — ensure you are able to see clearly, elevate tongue properly, and allows the parent to see what you see
- Use a **light source** and **loupes**, if possible
- Lift the tongue using 2 fingers and **elevate the tongue towards the palate** (up and back)
- Demonstrate to parents — You can also demonstrate **post-operative exercises** as you are doing the evaluation

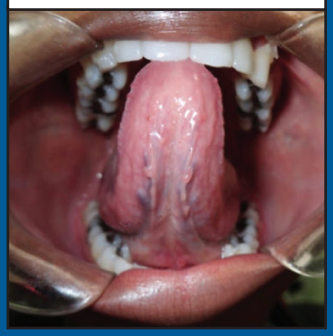
DIFFERENT SCALES OF EVALUATION VIA ANATOMICAL LANDMARKS

Tongue Range of Motion Ratio (TRMR)

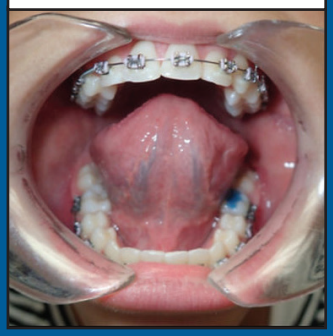
- ***TRMR-TIP*** – Assessment of anterior tongue mobility; Tongue to Incisive Papilla (TIP)
- ***TRMR-LPS*** – Assessment of posterior tongue mobility; Lingual Palatal Suction (LPS).

TRMR-TIP

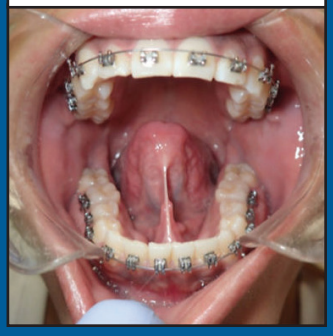
GRADE 1: TRMR-TIP >80%
Significantly Above Average



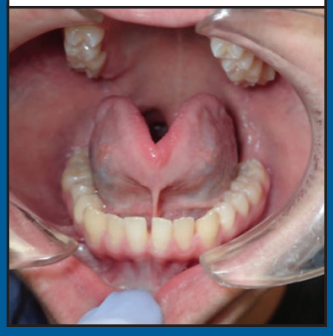
GRADE 2: TRMR-TIP 50–80%
Average



GRADE 3: TRMR-TIP <50%
Below Average

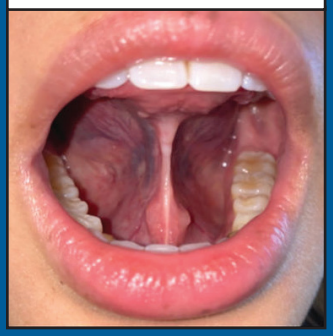


GRADE 4: TRMR-TIP <25%
Significantly Below Average

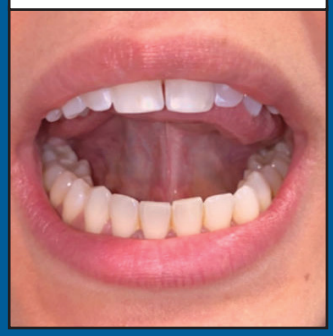


TRMR-LPS

GRADE 1: TRMR-LPS >60%
Significantly Above Average

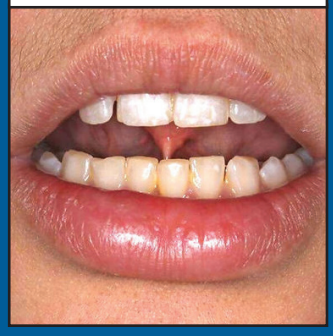


GRADE 2: TRMR-LPS 30–60%
Average



GRADE 3: TRMR-LPS <30%
Below Average

GRADE 4: TRMR-LPS <5%
Significantly Below Average



HAZEL-BAKER ASSESSMENT TOOL FOR LINGUAL FRENULUM FUNCTION (HATLFF)

APPEARANCE ITEMS	SCORE
Appearance of Tongue When Lifted	
Round or Square?	2
Slight cleft in tip apparent	1
Heart-shaped	0
Elasticity of Frenulum	
Very Elastic (excellent)	2
Moderately Elastic	1
Little or no Elasticity	0
Length of Lingual Frenulum When Tongue Lifted	
More than 1cm or embedded in tongue	2
1 cm	1
Less than 1 cm	0
Attachment of Lingual Frenulum to Tongue	
Posterior to Tip	2
At Tip	1
Notched Tip	0
Attachment of Lingual Frenulum to Inferior Alveolar Ridge	
Attached to floor of mouth or well below ridge	2
Attached just below ridge	1
Attached at ridge	0
TOTAL APPEARANCE SCORE	

APPEARANCE ITEMS SCORE:

10: Perfect Score

<8: Frenotomy necessary

FUNCTION ITEMS SCORE:

14: Perfect Score (regardless of Appearance item score)

11: Acceptable, if Appearance item score is 10

<11: Function Impaired — Frenotomy should be considered if management fails.

FUNCTION ITEMS	SCORE
Lateralization	
Complete	2
Body of Tongue but Not Tongue Tip	1
None	0
Lift of Tongue	
Tip to Mid-Mouth	2
Only edges to mid-mouth	1
Tip stays at alveolar ridge or rises to mid-mouth only with jaw closure	0
Extension of Tongue	
Tip over lower lip	2
Tip over lower gum only	1
Neither of above, or anterior or mid-tongue humps	0
Spread of Anterior Tongue	
Complete	2
Moderate or Partial	1
Little or None	0
Cupping	
Entire edge, firm cup	2
Side edges only, moderate cup	1
Poor or no cup	0
Peristalsis	
Complete anterior to posterior (originates at tip)	2
Partial: Originating posterior to tip	1
None or reverse	0
Snapback	
None	2
Periodic	1
Frequent or with each suck	0
TOTAL FUNCTION SCORE	

Kotlow – Measurement of free tongue length

- **Class I** (Mild)
  - Base of tongue halfway to salivary duct
  - Length is 12–16mm
- **Class II** (Moderate)
  - Between back of salivary duct halfway to base of tongue
  - Length 8–12mm
- **Class III** (Severe)
  - Salivary duct halfway to tip of tongue
  - Length is 4–8mm
- **Class IV**
  - Extending halfway between salivary duct and tip of tongue
  - Length 0–4mm

Coryllos

- **Type I** – The frenulum is thin and elastic, and anchors the tip of the tongue to the ridge behind the lower teeth.
- **Type II** – The frenulum is fine and elastic, and the tongue is anchored 2 – 4 millimeters from the tip to the floor of the mouth close to the ridge behind the lower teeth.
- **Type III** – The frenulum is thick and stiffened, and anchors the tongue from the middle of the underside to the floor of the mouth.
- **Type IV** – The frenulum is posterior or not visible, but when touching the area with the fingertips, the examiner can feel tight fibers anchoring the tongue, with or without a thickened, shiny surface on the floor of the mouth.

INFANT ASSESSMENT

The objective of the infant assessment is to discover if a frenum is contributing to any symptoms which would be considered a tethered tie.

TONGUE

Evaluate Dyad (Mom-Baby Breastfeeding)

- Observe (if you and parent are comfortable)
- Discuss latch and check latch (if you and parent are comfortable)

Evaluate Baby Symptoms

- Spluttering and Choking
- Clicking Noise
- Poor Weight Gain
- Constantly Want to Feed
- Unsatisfied Sleeping

Evaluate Mommy Symptoms

- Pain
- Cracked nipples
- Bleeding nipples
- Squished nipples
- Flat or lipstick nipple shape

Evaluate Health

- Failure to thrive
- Reflux
- Gas belly
- Excessive spit up

Evaluate Clinically

- Classification of tie
- Suckling reflex - Evaluate latch and tongue motion by having infant demonstrate suck reflex
- Extension upward and outward
- Notching of tongue or gingiva

LIP

- Lip rolls under when breast feeding (unable to flare/ flange outward)
- Speech issues
- Breastfeeding issues
- Hard to clean
- Esthetics

TODDLER ASSESSMENT

The objective of toddler assessment is to discover symptoms that are resulting from a tethered oral tie. More likely than not, there has been some degree of compensation up to this point, so the tie will be more symptom based.

Treatment indications more through SYMPTOMS

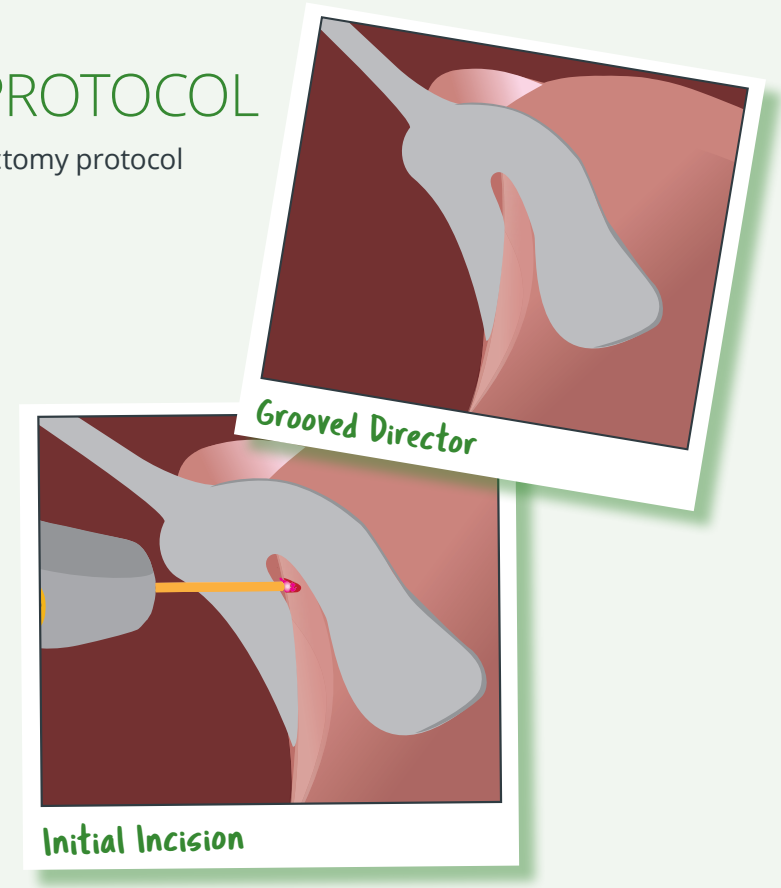
- Speech Issues or Delay
- Patient unhappy with tongue control or extension limits
- Apnea or airway issues
  - Snoring
  - Grinding
  - Night Terrors
- Diastemas

Cooperation is VERY Difficult at This Age

- Discuss PROS and CONS of treatment now versus monitoring until cooperation improves.
- Discussed in-office treatment vs referring for GA surgery (if urgent treatment is needed and clinician is unable to manage in-office.)

WATERLASE FRENECTOMY PROTOCOL

The following is a step-by-step YSGG laser, lingual frenectomy protocol



1. LASER SAFETY
- Provide eye protection for patient and all persons in the room

2. ISOLATION
- Bite block, foam bite stick, molt
- Suction; both high and slow
- Gauze; if needed

3. ANESTHETIC IF DESIRED.
- Considerations: age and medication interactions
- Topical and/or local anesthetic

4. GROOVED DIRECTOR
- Use a grooved director, from your surgical supply company, to lift the tongue and bring the frenum tissue into a clear surgical field

5. FIRST INCISION
- Clearly identify the base of the tongue, floor of mouth, salivary glands, and major blood vessels prior to making your incision
- Initiate the incision where the lingual frenum inserts into the tongue, inferior to the base of the tongue and superior to the salivary glands and floor of the mouth

6. STOP
- Elevate your incision location
- Identify key anatomical landmarks: the base of the tongue and the salivary glands
- Want to always maintain a clear visible surgical field
- If happy with surgical field location continue the incision. If not, adjust location and start again

7. CONTINUE THE RELEASE

- Release the lingual frenum tissue in a posterior direction creating a diamond-shaped hole
- Can release the tissue in a sweeping lateral incision from on left side of the mucosa, across the fascia, to the right side of the mucosa, and back again
- You will be releasing both oral mucosa and the underlying fascia (which is spiderweb like connective tissue)

8. NO NEED TO RUSH

- This is not a race. A crying baby is an alive baby. It is more important to do it correctly than it is to do it fast
- Frequently stop to reassess the tongue movements, key anatomic landmarks, and the surgical field. Make adjustments, if necessary

9. FINISHING THE RELEASE

- Verify full frenum release
- Use your finger to sweep the floor of mouth feeling for any residual lingual frenum restrictions
- Use your fingers to move the tongue around laterally and elevating it to the palate
- Have patient lateralize, elevate, and extend, if possible
- Have patient raise tongue to the palate and open as wide as they can to verify elevation and release, if possible
- Have patient provide feedback, if possible
- If restrictions still present, reassess the surgical field and continue the release

10. TAKE POST-SURGICAL PHOTOS

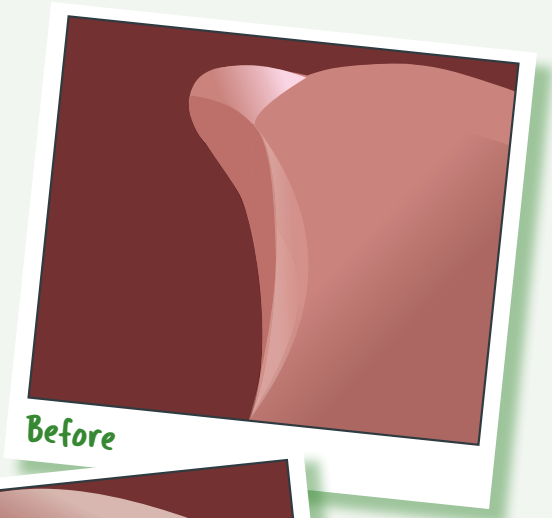
- Intra oral photos are helpful to show the release location and compare to the healed attachment

11. REVIEW POST-OP EXERCISES AND INSTRUCTIONS

- Exercises consist of elevation, extension, and lateralization movements
- Exercises are normally recommended for 2-4 weeks post release

12. FOLLOW UP EXAM

- A 1-2 week follow up exam helps to verify improved tongue movements and function, no adhesions or scarring, and adequate healing
- Take photos of healing
- Re-release the surgical site if scarring or adhesions occur



POST-SURGICAL CARE
YOU DID YOUR JOB — PARENTS' TURN

The objective of post-surgical care is to minimize discomfort (mostly caused by inflammation) and to maximize the efficiency of the release. This is done through pain management, follow-up, and exercises. Stretches/exercises allow the site to close through secondary intention in a more optimal position. Follow-up care allows the patient to relearn behaviors and habits to allow optimal release outcomes.

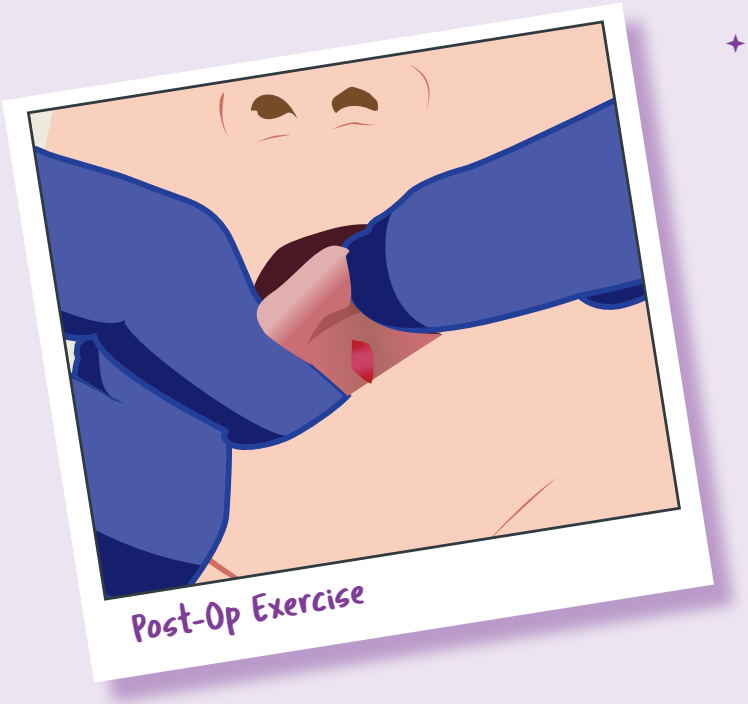
PAIN MANAGEMENT

Immediate (in-office)

- Arnica Gel – Decreases inflammation
- Sterile Sucrose – Spikes endorphins
- Cold Breast milk aka "LIQUID GOLD" – 5 ccs or pumped breast milk in a monoject syringe
  - Place in refrigerator — Cold helps with inflammation
  - Apply 2-3 drops per release site prior to stretches

At Home

- Acetaminophen (typically needed 2-3 days)
- If available, any of these would be beneficial:
  - Camelia Oil
  - Coconut Oil
  - Vitamin E Oil



POST-OP EXERCISES

Newborn/Infant

- **Lingual** – Each exercise in repetitions of 3, 4x a day for 2-4 weeks (at least 2)
  - Lift tongue with two fingers fully until the diamond is fully visible, then release.
  - Lightly massage around diamond border or sweep finger through underneath.
  - Have baby suck on index finger (pointed towards roof of mouth) and pull back, allowing child to suck finger back in.
- **Labial** – Each exercise in repetitions of 3, 4x a day for 2-4 weeks (at least 2)
  - Lift lip with two fingers fully until the diamond is fully visible, then release.
  - Sweep finger under lip to check for reattachment (will feel a bump, string, or finger will get caught on it.

Toddler/Child

- **Lingual** – Each exercise in repetitions of 3, 4x a day for 2-4 weeks (at least 2)
  - Lift tongue with two fingers fully until the diamond is fully visible, then release
  - Have the child lift tongue and sweep along maxillary vestibule ("finding the treasure")
  - Fill shot glass with small amount of something yummy (chocolate syrup, honey, peanut butter) and have child extend their tongue into glass to lick the tasty substance
  - Hold stick or sugar-free lollipop near tip of child's nose and have them try to reach it
  - Small adhesive tongue spot, mini M&M Candy, or ortho elastic in incisal papilla (as long as not a choking risk), have them push tongue on it, open wide, and hold for 10 seconds, release and repeat
  - Have the child push a button on string

- **Labial** – Each exercise in repetitions of 3, 4x a day for 2-4 weeks (at least 2)
  - Lift lip with two fingers fully until the diamond is fully visible, then release
  - Sweep finger under lip to check for reattachment (will feel a bump, string, or finger will get caught on it)

FOLLOW-UP

- *With Appropriate Team Member*
  - International Board Certified Lactation Consultant
  - Speech/Language Pathologist
  - Orofacial Myofunctional Therapy
- *Follow-Up In Office*
  - 1 week (revise now if needed)
  - 3 weeks
  - More often if needed

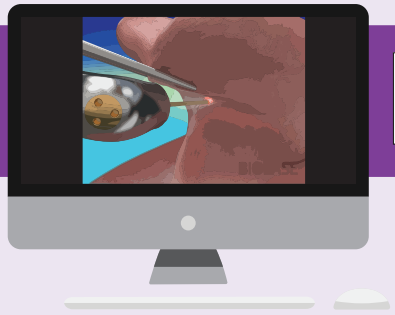
BILLING

Check with billing consultants for medical coding and reimbursement rates, as they are subject to change

DENTAL CODING

- D7962
  - Lingual Frenum
  - Mandibular Labial Frenum
  - Mandibular Right and Left Buccal Frenum
- D7961
  - Maxillary Labial Frenum
  - Maxillary Right and Left Buccal Frenum

WATCH THE
CLINICAL ANIMATION!
Visit biolase.com/LingualFrenectomy



Waterlase

The Waterlase WOW Factor

DO LESS SHOTS, AND MORE RESTORATIONS!
Keep soft tissue procedures in house instead of referring out. Parents are **WOW**ed by laser technology and safety, and patients go right back to their normal routines!

- Gentle and precise tooth decay removal with less aerosols, less vibration and little-to-no anesthesia
- Faster, multi-quadrant dentistry for more same day treatments and fewer follow up visits
- Soft tissue procedures with less blood and faster healing than traditional scalpel/suture methods
- Help fix Tongue-Tie with an easy, 5-minute frenectomy while growing your practice

ACADEMY™ WATERLASE

World Class Laser Education, Resources and Connections

TRAINING:

- Beginning your laser journey? Seminars teach a broad overview of laser benefits
- Choose Waterlase Foundations or our Advanced Series- 5 highly focused specialist courses
- Want a one-on-one mentorship? On-Demand in-person training with content tailored to your practice.

FREE RESOURCES:

- Live, free CE webinars monthly featuring the best in laser dentistry
- Library with 100+ hours of free on-demand webinars
- Join thousands of clinicians to connect and share knowledge in the Waterlase Dentist Facebook group
- Clinical animation guides, protocol guides, clinical gallery

Visit **Education.biolase.com** for more information.