

FASCIA-NATING!
Uncovering the Truth about Ties

Dr Katherine Sanchez

PROTEA  THERAPY


Financial disclosures

- Dr Sanchez receives salary from:
 - Protea Therapy (co-owner)
 - The Informed SLP
 - Murdoch Children’s Research Institute
 - The University of Melbourne
 - La Trobe University
- No relevant non-financial disclosures exist

PROTEA  THERAPY

Learning objectives


1. Define the place of the SLP in the team of professionals involved in assessing and managing possible ties
2. Discuss the current evidence pertaining to the impact of ties on feeding and communication
3. Discuss potential risks and benefits related to surgical intervention for ties

PROTEA  THERAPY


Not learning objectives


We will not cover any hypothesized link between ties and functional areas that are out of scope for SLPs, including:

- Dentition and dental hygiene
- Sleep disordered breathing, including sleep apnoea
- Mouth breathing
- Headaches

PROTEA  THERAPY


What is a tie?

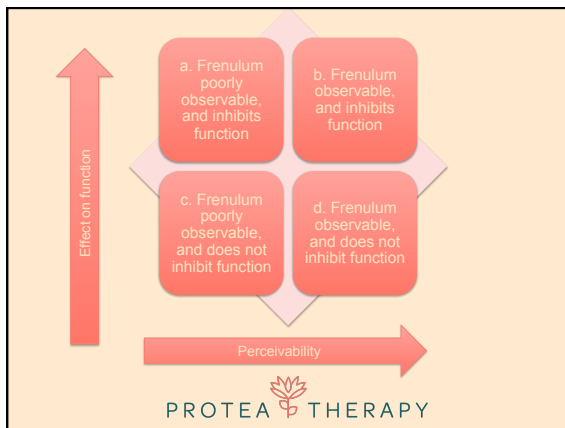
- “...there is no generally agreed definition of tongue tie” (Amir, James & Donath, 2006)
- “Upper lip tie is an inconsistently defined condition” (Messner et al, 2020)
- Buccal/cheek tie 

PROTEA  THERAPY

What do we think a tie is?

- Any visible or palpable frenulum?
- An unusually short or tight frenulum?
- A frenulum whose unusual shortness or tightness impedes lingual function (e.g. feeding, eating and drinking, speaking, dental hygiene, ‘social functions’)?

PROTEA  THERAPY



Anatomy

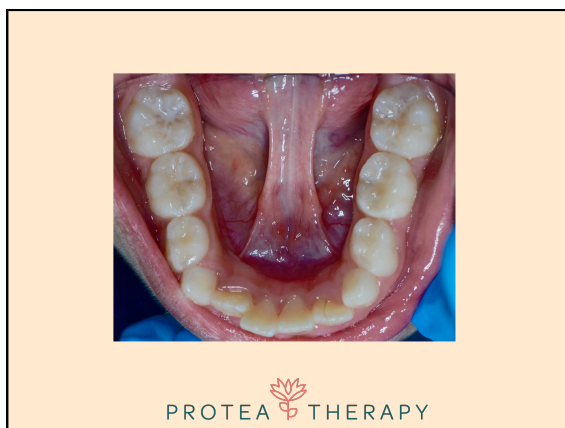
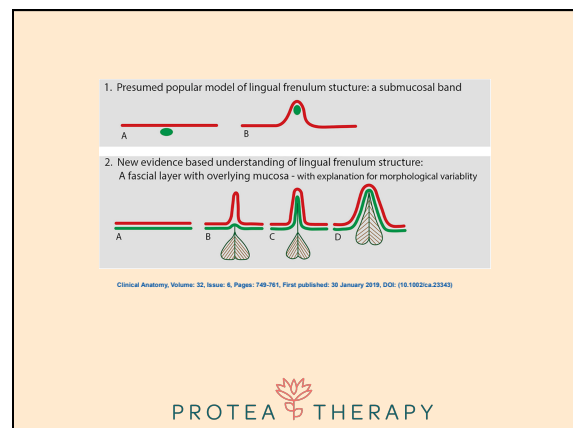
- The lingual frenulum is a **medial fold of fascia** with overlying mucosa
 - Not a string, cord, or band
 - Not the mast of a sail
- The function of FOM fascia appears to be
 - Suspending sublingual glands, vessels, and genioglossus muscle

PROTEA THERAPY

Anatomy

- Anatomical variables:
 - Thickness of the fascia
 - Abundance of elastin fibres
 - Proportion of different collagen types
 - Length of the fold of fascia
 - Position of fascial attachment to mandible
 - Position of fascial attachment to tongue
 - Position of mucosal attachment to tongue
 - Position of genioglossus relative to fascia

PROTEA THERAPY



Anatomical classifications

- Posterior vs anterior
- Point of attachment (tongue or lip)
- Size of frenulum
- Free tongue measurement

PROTEA THERAPY

Function

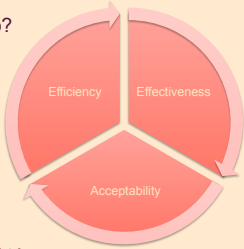
- What does the tongue do?
 - Mastication
 - Swallowing
 - Taste
 - Dental hygiene
 - Immune defense
 - Speech
 - Gesture
 - Intimacy
 - Aesthetics



PROTEA THERAPY

Function

- What does the tongue do?
 - **Mastication**
 - **Swallowing**
 - **Taste**
 - **Dental hygiene**
 - **Immune defense**
 - **Speech**
 - **Gesture**
 - **Intimacy**
 - **Aesthetics**



PROTEA THERAPY

Diagnostic tools

- Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF)
- Lingual Frenulum Protocol for Infants
- The Coryllos classification
- Kotlow's classification of labial frenula and free-tongue measurement

PROTEA THERAPY


Assessment tools

- Robust tools for differential diagnosis and characterization of speech sound disorders
- Robust tools for characterization of feeding disorders
- Tools for characterization of oral motor function

PROTEA THERAPY

Analysis

- Tongue tip elevation
- Tongue blade elevation
- Peristaltic tongue motion
- Tongue lateralisation
- Tongue protrusion
- Lip protrusion
- Lip closure
- Jaw-tongue/lip dissociation



PROTEA THERAPY

What am I looking for in a study?

- Standardized and objective assessment of tie/s
- Standardized and objective measure of outcomes (e.g. standardized speech or feeding assessment)
- Blinding
- Control or comparison group
- Level of evidence
- Published in a reputable journal
- Financial interests



PROTEA THERAPY

Frenotomy for tongue-tie in newborn infants

Journal of Oral Rehabilitation 2013; 40: 103-110

Treatment of Ankyloglossia for Reasons Other Than Breastfeeding: A Systematic Review

Journal of Oral Rehabilitation 2013; 40: 103-110

PROTEA THERAPY

Systematic reviews say...

- There is weak evidence that tongue tie revision improves some breastfeeding variables (especially nipple pain)
- There is not enough evidence to say whether tongue tie/revision has an effect on other functional outcomes (e.g. speech, bottle feeding, eating and drinking)

PROTEA THERAPY

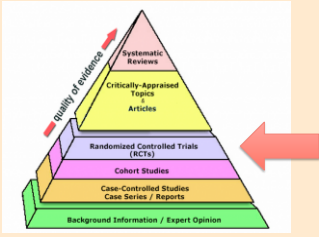
Systematic reviews say...

- Lip and buccal 'ties'



PROTEA THERAPY

Unfiltered evidence: RCTs



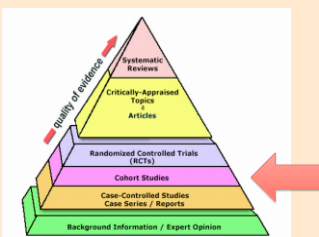
PROTEA THERAPY

Randomized controlled trials

- Tongue tie and breastfeeding ✓
- Tongue tie and bottle feeding ?
- Tongue tie and eating/drinking ?
- Tongue tie and speech ?
- Lip/cheek tie and any functional outcome ?

PROTEA THERAPY

Unfiltered evidence: other



PROTEA THERAPY

Other study designs

- Lots of studies!
- Look for **consensus**
 - E.g. two lower level studies published this year have had converging results suggesting that lip tie has no effect on breastfeeding
- Look for sources of **bias**...



	Less likely to be biased	More likely to be biased
Was the tie assessed robustly?	Yes	No
Was the outcome assessed independently and robustly?	Yes—e.g. standardized ax	No—e.g. clinical opinion
Was a control/comparison group included?	Yes	No
Were the assessors blind to the groupings?	Yes	No
Did the study have a way to deal with potential 'confounding factors'?	Yes	No
Was the study retrospective or prospective?	Prospective	Retrospective
How long were participants followed up?	A longer time	A shorter time
How many participants were included?	Lots	Not many



And finally...

- Don't forget **publication bias**



Given all of this...

- There is **some** evidence that tongue tie **may** affect speech in a small number of children presenting with SSD
- The evidence and numbers are insufficient to recommend prophylactic surgery
- There is insufficient scientific evidence to make any call on a link between tongue tie and bottle feeding, or eating/drinking



So what does that leave us?

- Lowest tier of evidence:
 - Expert opinion
 - Case reports and clinical examples
 - Physiology, bench research, or 'first principles'



Let's get philosophical

- The burden of proof and other cognitive biases (<https://yourlogicalfallacyis.com/>)
- Non-maleficence and beneficence
- The scientific method



Step 1: Form hypotheses

- Four year old child does not say alveolar sounds. Hypotheses:

1. Insufficient tongue tip elevation due to tongue tie
2. Articulation disorder
3. Phonological disorder
4. Motor speech disorder
5. Combination of two or more of the above
6. Doesn't want to
7. They are from the future, where no-one uses alveolar sounds



Step 1: Form hypotheses

- Four year old child does not say alveolar sounds. Hypotheses:

1. Insufficient tongue tip elevation due to tongue tie
2. Articulation disorder
3. Phonological disorder
4. Motor speech disorder
5. Combination of two or more of the above
6. ~~Doesn't want to~~
7. ~~They are from the future, where no-one uses alveolar sounds~~



Step 1: Form hypotheses

- Four year old child does not say alveolar sounds. Hypotheses:

1. Phonological disorder
2. Articulation disorder
3. Motor speech disorder
4. Insufficient tongue tip elevation due to tongue tie
5. Combination of two or more of the above



Step 2: Form predictions

- Given your hypothesis, what do you expect to see? E.g....
 - If hypothesis 2 is correct, the child should respond to articulation therapy
 - If hypothesis 3 is correct, the child should be stimulable for alveolar sounds



Step 3: Test hypotheses

- Design (ethical) experiments
 - Robust assessment
 - Diagnostic therapy
 - Multidisciplinary consultation
 - Surgery
- Conduct experiments
- Take data




Making a clinical recommendation

- Ask yourself:
 - Is it possible/plausible/probable that this functional issue is linked to a tie?
 - Is it possible/plausible/probable that there is another cause?
 - **How can I test my hypotheses?**
 - What is ethical in this case?




Risk/Benefit Analysis

<p>Potential benefits</p> <ul style="list-style-type: none"> • Significant improvement to the targeted functional outcome • Improvement to non-targeted functional outcomes • Run on effects 	<p>Potential risks</p> <ul style="list-style-type: none"> • No improvement • Hemorrhage • Infection • Airway obstruction • Injury to salivary structures • Loss of function due to scarring or nerve damage • Trauma to child and parent • Oral aversion/poor feeding • Weight loss • Risks associated GA • Delayed alternative diagnosis • Cost
--	---

 PROTEA THERAPY

Is surgery an ethical test of your hypothesis?

- What is the probability of your hypothesis being true?
- How significant are the potential benefits to this patient?
- How significant are the potential risks to this patient?

 PROTEA THERAPY

Our recommendations

- “Jessica appears to have an unusually tight lingual frenulum, which is restricting her tongue movement. This restriction is preventing her from achieving the range of movement required for effective breastfeeding.”


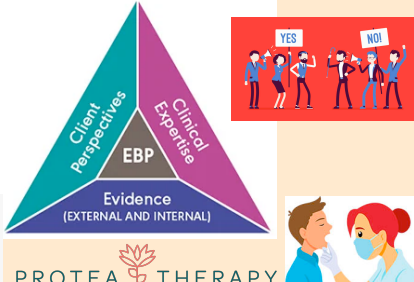
 PROTEA THERAPY


Our recommendations

- “Jack was referred with a query about a tight lingual frenulum; however functional assessment suggested that he is able to achieve an appropriate range of movement for speech. Speech-language pathology is indicated to support Jack’s speech.”

 PROTEA THERAPY

Summary

 PROTEA THERAPY

Questions



 PROTEA THERAPY