

Analytical Armadillo

Infant Feeding & Early Parenting, Food For Thought... doi 20/02/17

Intro

All content of this blog is my own opinion only. It does not represent the views of any organisation or association I may work for, or be associated with. Nothing within this blog should be considered as medical advice and you should always consult your Doctor.

Upper Lip Tie Treatment in Infants - Informed Choice, Risks & Efficacy

In all the noise about lip ties, is there risk of misdiagnosis? And are parents really making an informed decision?

We acknowledge there are risks to most things - from getting out of bed, to taking a paracetamol or treating a tongue tie. We typically weigh up what the benefits may be, what risks are involved and we (hopefully) get the chance to make an informed choice.

When it comes to treating tongue ties, we have (thanks to diligent practitioners and researchers) over 20 years of studies under our belts. NICE have explored the research, discussed this with experts in the field and drafted guidelines. These tell us (among other things) that frenulotomy (treatment for tongue tie), is a procedure of minimal risk for most healthy neonates.

Risks & Benefits need examining both short and long-term.

Short-term risks of tongue tie treatment would include for example infection in the wound site, baby bleeding more heavily than expected following the procedure or perhaps later in the day after the event. Long-term risk may include say keloid scarring at the wound site, if you're genetically predisposed.

In short - aside from discussing the potential benefits and effectiveness of tongue tie treatment, we've also established what the potential knock on associated effects may be, and we can examine rates to discuss risks.

Recently some seem to have made the leap of logic to assume it's also therefore safe and beneficial to release other oral frena babies have too - if it is considered "tied". Tied means that the frenulum is shorter, thicker or placed abnormally compared to a typical frenulum.

So here are the things I think we need to know:

- 1) What is a normal infant upper lip frenulum & what is its function?
- 2) How do we diagnose an abnormal infant upper lip frenulum?
- 3) What problems can an abnormal upper lip frenulum cause?
- 4) When & how should we treat it?
- 5) What are the benefits, risks and outcomes of treatment?

Language that features below:

Frenulum/Frenum/Frena/Frenula: The "string" that attaches to the top lip or tongue (or bottom lip/ cheeks)

Maxillary/ labial fraenum: Upper lip frenulum

Diastema: Gap in the front teeth

Babies should have an upper lip frenum that attaches to the gum or palate. Seriously I want to drive round with a loudspeaker on the top of my car simply repeating this phrase.

These pictures below show you **normal infant placement**. **Infant upper lip frena are supposed to be "low sitting"**.



SOME EXAMPLES OF NORMAL UPPER LIPS.

These babies had no feeding problems, reflux, wind or any other issues.

The confusion as to why everyone at the moment thinks these are ties, is I believe is because they can see the low sitting frenum, but **93.4% of babies do, as the frenum attaches to the gum or palate.**

Why?

The frenulum acts as a spacer for teeth. People are concerned their child has a gap in their teeth, and yet **this is exactly as it should be.**

Here we can see a normal ADULT MOUTH:

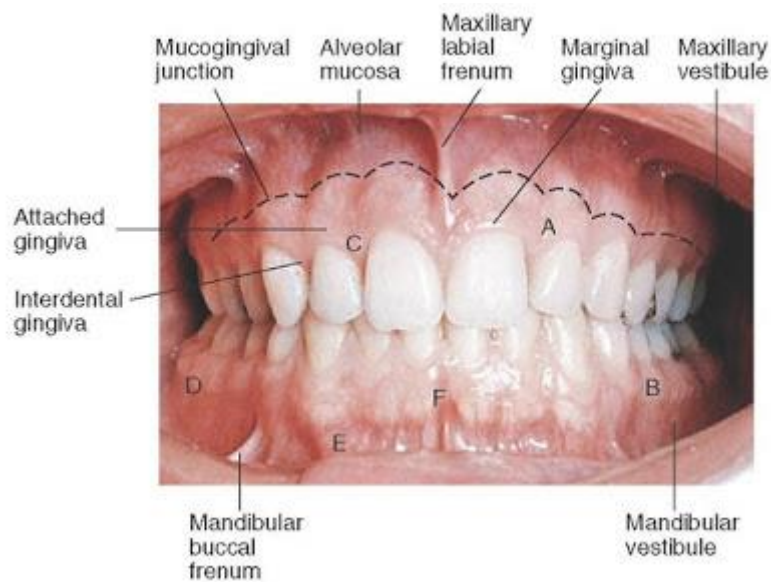


image pocketdentistry.com

In contrast let's look at the ideal INFANT MOUTH:



Image Glenn Carty Orthodontics

See how different it looks? And note the low sitting frenulum. Glenn Carty Orthodontist tells us:
"Did you know that Adult front teeth are 2-3 mm wider than baby front teeth? Adult front teeth therefore occupy more space than baby front teeth. A young child's smile should appear very different to that of an adult's. The smile should resemble a picket fence. The baby front teeth should be spaced. While this might not look pretty, the extra space is needed for proper alignment of the adult front teeth"

The frenulum moves up the gum-line in the first 10 years of life, until it sits in the adult position. The gap closes as second teeth align - as per the photo below.



Same child: shows normal frenulum regression and appropriate dental development during childhood

This spacing also makes teeth easier to keep clean.

A 2011 paper states:

The superior labial frenum is triangular in shape and attaches the lip to the alveolar mucosa and/or gingiva. It extends over the alveolar process in infants and forms a raphe that reaches the palatal papilla. Through the growth of alveolar process as the teeth erupt, this attachment generally changes to assume the adult configuration. [1] Taylor has observed that a midline diastema is normal in about 98% children between six and seven years of age, but the incidence decreases to only 7% in persons 12-18 yrs old. [2] But in some instances, the infantile arrangement is retained.

So normally they regress but sometimes this doesn't happen and the frenulum remains lower on the gum. Sometimes a gap (or a diastema) can be seen. A very famous example of this being of course, Madonna:



Diastema is heavily prevalent in some cultures - for example Nigeria has incredibly high rates. In turn it's considered extremely attractive and surgery exists to create the gap. In contrast it's very uncommon in other areas such as china.

What criteria are we using to diagnose tied versus normal? How was this established and is it reliable?

When it comes to tongues we look at what normal presentation and function is, and we establish (or we should) how far away from that each baby is.

When it comes to lips, there seems to be a lot of confusion and inaccurate information shared.

The advice many are given is to push the lip back and see if there is blanching, that if it pulls tight and there is a "notch" this will create a gap - and as such removing the frenulum prevents the risk of a diastema.

But is this true?

It's not just as simple as the skin you can see...

Initially it was assumed the frenulum caused the gap, it seems obvious - we can see a thick meaty piece of skin between the teeth, which we know acts as a "gap holder" for infant teeth. Thus it was assumed that the frenulum not regressing at the expected age, was the root cause of a persistent gap into adulthood. Interestingly as researchers began exploring further, they discovered it wasn't quite so clear cut.

Some concluded that when the normal regression of the frenulum didn't happen, it wasn't the frenulum causing the gap, but the gap that resulted in the frenulum remaining low. Another study found a cleft in the bone was associated with some gaps, and others found removing the frenulum did not alone, appear to make a difference to the gap compared to those that remained untreated; 10 years later there was no identifiable differences between the two groups. Some theorised certain types of frenulum could cause a gap, but researchers decided ultimately this wasn't so. They noted gaps with frenula and frenula without gaps. They also noted wide variance in the normal frenulum in terms of visual presentation - thickness and so on.

A 2012 review outlines the evidence concerning the cause of a persistent gap, and the possibility of closing it by removing the frenulum:

"At the beginning it was thought that the labial fraenum interfered with the closure of the midline diastema. This belief resulted in misdiagnosis and unnecessary surgical intervention of the fraenum 13,14.

They then outline all the papers and their findings - I've linked below if you want to look in more detail.

They continue:

"Since there is no evidence concerning the fact that the maxillary labial fraenum is the main causative factor for a midline diastema, some orthodontists propose the following therapeutic methodology 37,45: Initially, it is necessary for the dentist to make a diagnostic trial, in order to find out whether the fraenum is implicated in the pathogenicity of the diastema.

1. Positive "blanch test" of the incisal papilla, when pulling the lips forward. By pulling the upper lip and exerting pressure on the fraenum, if there is a blanching, it is safe to predict that the fraenum will unfavourably influence the development of the anterior occlusion;

It is important to emphasize the fact that frenectomy has clinical validity **only after the eruption of all 6 permanent teeth** if it failed to close the diastema, and then only in conjunction with orthodontic treatment. So after the eruption of all 6 permanent teeth, ^{9,14,16,20,34,36,37} orthodontic appliances are used to close the diastema. A frenectomy is carried out, so as the scar tissue will hold the teeth together ^{16,20,27,33,37,39,48}. **During the primary dentition phase, surgical intervention of the labial fraenum is not recommended⁷.**

This clarifies blanch tests etc are a tool that may be useful as a diagnostic tool **once 6 permanent teeth are in**. They weren't designed for, nor tested in terms of accuracy or reliability, in babies and young infants **who are expected to have a low sitting frenulum**.

The above paper continues to explain the different opinions held by dentists and oral surgeons.

Surgeons tend to prefer removing the frenum and following immediately with orthodontics (so they have good, clear access to the tissue), some dentists agree; other dentists feel a better result is obtained by pushing the teeth together first with orthodontics, and then removing the frenulum, or only removing it if the teeth "drift" back apart again - so any resulting scar tissue holds the teeth together. The last group don't feel there are any benefits to frenectomy.

What all seem to agree on, is the risk of removing tissue from the gum when there are no teeth to push together, suggesting that this may at times result in scar tissue on the gum that makes it impossible to completely close the gap. They continue:

"In the orthodontic community there is unanimity on this issue ³⁷. Orthodontists support that the fraenum should be maintained until the age of the eruption of all 6 permanent anterior teeth. After that, and only if the diastema remains the same, a frenectomy is indicated, with subsequent orthodontic closure of the diastema ^{9,16}"

"Oral surgeons suggest that in case of a maxillary midline diastema, a small intervention of the fraenum is useful. In this way, the closure of the diastema is facilitated and the orthodontic treatment is not affected ^{9,2} "

So the "unanimous" view is that 6 permanent teeth should be in before the frenulum is removed - ie this is the optimal time for removal along with orthodontics.

What are the risks and benefits therefore to removing it earlier than this, or before the top teeth have even appeared?

I couldn't turn up any studies exploring this.

Here we can see the progression of teeth following lip tie removal in a child who should still have a low sitting frenum, as they do in the first picture:



We can see the child has typical spacing in the first picture, similar to that we saw above. These pictures have been shared as evidence removing a tie removes a gap - and in this instance it seems clear that removing the "spacer" indeed rapidly resulted in adult dentition and lack of spacing between the teeth.

However we know already this is what happens in the majority of people with time, so what benefits and risks of hastening this process? How will this impact on adult teeth spacing long-term?

Interestingly we can note the top lip still looks thin and pinched. There also appears to be slight yellowing between the teeth on the last photo, although I'm not sure whether that is just this particular photo and the light.

One mum has expressed concern her child's top teeth have come in crossed following his upper tie removal (he had no teeth at the time of the procedure):



Will this self correct as other teeth align and a correctly functioning tongue exerts appropriate pressure? Is this linked with premature removal of the frenulum and something parents need to factor their decision making process?

Without studies we're working from anecdote, which is non-transparent and unreliable.

Mr Sheehan (ENT) Manchester, proposes that as part of the role of the upper lip frenum is to stabilise the top lip, removal of the upper lip tie may also allow over extension when smiling in some people, perhaps those with naturally longer gums.

Helen Marshall (IBCLC) shares similar concerns:

"I had my upper tie removed at around 10 or 11 years old because of a gap in my teeth. My lip pulls higher up and exposes more of the gum when smiling, and which started post-revision. You can see where it attached to my lip and gum, and my smile would not be the same if it hadn't been cut - --my lips wouldn't be able to ride up and uncover my gums"



Assessing an infant for lip tie.

Even if we were to establish the blanch test above may accurately determine the lip is tight, does that mean we can assume the cause is the length of the frenulum? We talk about assessing function not appearance, but even this isn't straightforward.

Tongue ties can cause tension through the lips that makes them tight:



Lips before & after tongue tie release

The above baby had incredible tension pulled through his mouth by his tongue tie. When we "flipped his lip", it didn't flip at all - instead it blanched and felt incredibly tight. His parents commented they didn't know where he got his mouth shape as they both had full, plump lips. After the tongue was released and baby turned to his parents, the first thing they both noted was the phenomenal difference in his lips and mouth shape.

The little girl below didn't just have her lips bound down by her tongue tie, her whole chin and jaw was pulled back too. We saw her chin move forward when feeding immediately post revision, and function was completely changed.



Something as simple as being hungry can cause a baby to tighten their lips. When we assess hungry infants post feed and note tightness, this often presents different when baby is full and relaxed.

Therefore in order to accurately hope to assess function, don't we need to release the tongue first?

What people also often don't understand is that if baby is in a shallow latch on the breast or bottle, the top lip can sometimes curl under when feeding, appearing as though it can't do anything but - to try and compensate.

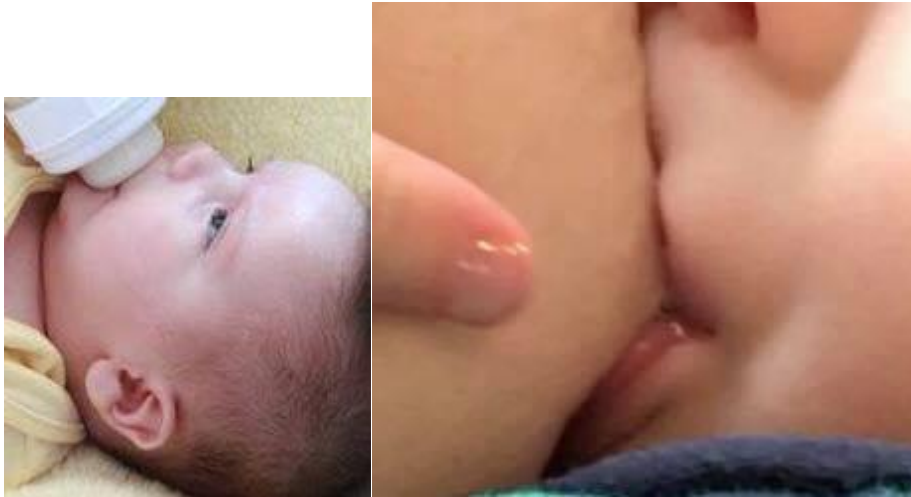


Image Milk Matters - tongue tied baby compensation

This is extremely common in tongue tied babies [as this post demonstrates](#). However as anyone who fully understands the mechanics of milk transfer and has observed thousands of dyads will know - **it is not desirable for the top lip to flange outwards when feeding either** - it should be neutral as the post above highlights (and the image below shows), flange suggests anything from slightly shallower to very shallow latch.



Below is the same breastfed baby as above with the curled under top lip, immediately after tongue tie release:



Image Milk Matters

If we just treat the lip, do we sometimes just allow for more or better compensation?
"The added ability to fully flange the top lip will allow a baby to compensate for continued poor positioning or tongue function issues. But of course this is treating a symptom and not the underlying cause. Improving positioning, tongue –tie division, tongue exercises and suck training to promote effective tongue mobility would be more appropriate. "(Oakley 2016)"

And of course, again without studies - what about possible negative consequences?

One mum on Facebook explained how her journey developed.

Her son had a tongue tie, he had learnt to feed gripping extra hard with his top lip - just like the babies above. However they were unable to find anyone who would release the tongue and so only the lip was treated.

Following this, he was no longer able to adequately grip with the excess force he had been doing to compensate, and was no longer able to breastfeed.

This proved an extremely traumatic time for all involved and mum feels more studies are needed.

Lack of Guidance

We have no NICE guidance pertaining to lip tie, nor recommendations from any other recognised authority.

Nobody has (in any official capacity), questioned whether the procedure is beneficial to infant feeding, or for the prevention of diastema; whether it has the desired outcome or when the best time for treatment is. Whether the area needs numbing and if pain relief afterwards is required. Whether both tongue and lip should be released together, given not only the change in presentation post tongue tie release, but because of the difficult or discomfort baby may have feeding with two sore areas in the mouth.

At the moment different practitioners use different lasers (some use heat to cauterise the area, others use intense water jets to vapourise tissue). This paper

(CASE REPORT (2011) Vol: 15 Iss : 3 Pages : 265-269 Perio-esthetic surgery: Using LPF with frenectomy for prevention of scar K Krishna Chaubey, Vipin K Arora, Rajesh Thakur, Inderpreet S Narula)

discusses that scarring can occur, and describes a surgical technique combining the frenectomy with a "laterally positioned pedicle graft", to give the best aesthetically pleasing response- are infant frenectomies different? Which method is safest, most effective?

Best practice should surely be based on best for baby, not "we've travelled a long way so may as well just do both..."

Perhaps most importantly, nobody seems to have explored whether there could be any unintended risks associated with the procedure. Some argue those who treat would have observed problems should that be the case - however long-term risks can be very difficult to identify in practice rather than research, especially if we're approaching with a bias, and we're not clarifying what "normal" is.

Abnormal lip frena of course exist, and whilst those promoting removal of the ULT claim we in the UK are "behind" and "ignorant" when it comes to diagnosis and treatment, I'm not entirely convinced.

I've found when there is truly abnormal presentation (such as a excessively wide, tight frena that have bound down the lip) the NHS (UK) *have* treated.

Interestingly they tend to release the tissue up where it is attached to the lip, not touching tissue on the gum margin. In the private sector I have seen both methods used, suggesting we also need assessment and standardisation of this area too.

However, when presented with normal low sitting frena being called a tie, the NHS (as evidence supports), recommend reassessing again age 8-10 and treating if appropriate.

This is why controlled studies are key.

We need to start asking questions, so that we continue to push for studies and evidence to support guidance for practice. **Simply accepting the word of those performing the procedure is not enough.**

Some charge as much as £500 for a consult and release lasting around 15 minutes, enabling them to see 4 per hour. A 7 hour day that's potentially £14,000, or £70k per week, 280k per month, and so on. Further charges may be applied for feeding support, which many [parents](#) report is often needed.

That's of course not to say there aren't situations where removal may be beneficial - lack of evidence isn't lack of efficacy, but we need to know more!

Parents need facts on which to base a decision, as do those supporting infant feeding.