Trends in Treatment of Ankyloglossia: A Survey Based, Provider Perspective on Current Practice Trends

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Abstract

Background

Ankyloglossia, “tongue tie,” is a condition in which the lingual frenulum is shortened. Ankyloglossia can interfere with speech articulation as well as tasks like chewing or playing an instrument; however, the biggest factor is difficulty breastfeeding. To treat ankyloglossia, providers perform frenectomy or frenotomy. With minor bleeding and recurrence as the common complications, frenotomies are generally well received by providers and parents. This survey polled provider preferences and views on the ankyloglossia treatments.

Methods

Proceeding IRB approval. A 22-question survey on treatment and trends for ankyloglossia was sent to SENTAC (Society for Ear Nose Throat Advancement in Children) members. Questions addressed area of sub-specialization, years in practice, type of practice, performance of frenotomy and frenectomy, criteria for surgical repair, procedure frequency and change over time, and individual comments.

Results

Of the 62 respondents, there was a difference between use of frenotomy vs frenectomy (94.3% vs 38.6%) $p < 0.001$. Common provider criteria for the procedure were improvement of pain with breastfeeding and improvement latching, followed by future speech concerns. Of respondents, 94% reported that they would repair anterior ties; 63% of respondents perceived an increase of frenotomies in the past five years both in their practice and in the practice of colleagues. Respondents also reported an increase in parents asking about tongue ties.

Conclusion

Treatment of this condition tends to be very provider dependent/regional. The results from this survey in association with the new consensus statement will lead towards the creation of a clinical care pathway that would stabilize these numbers and create a stream-lined process.

Background

Ankyloglossia, “tongue tie,” is a condition in which the lingual frenulum is shortened or thickened.¹ The prevalence ranges from 3-16% due to many asymptomatic cases remaining undiagnosed.² Ankyloglossia has the potential to interfere with speech articulation as well as oral tasks like chewing;³ however, the biggest factor is difficulty breastfeeding, particularly maternal nipple discomfort.⁴⁻⁸ In order to treat

ankyloglossia, providers often perform frenectomy (frenulum removal) or frenotomy (frenulum incision). With minor bleeding and recurrence as the most common complications,⁷ frenotomies are generally well received by parents and providers.⁹

Internationally there has been an increase in the diagnosis and treatment of ankyloglossia. In British Columbia there has been an 89% increase in treatment from years 2004-2013.¹⁰ Similarly, the documented prevalence of ankyloglossia tripled in Canada from 2002 to 2014, and over the same years, treatment increased almost four-fold.¹¹ Moreover there has also been an increase in queries online about ankyloglossia. Researchers speculate this could be due to increased awareness of the condition, increased interest in frenotomies, or increased diagnosis.¹²⁻¹³ Furthermore, while certain diagnostic tools exist, many providers use anecdotal evidence to make decisions.¹⁴

There are two major systems to classify ankyloglossia, the Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF), which is extremely comprehensive, or the Bristol Tongue Assessment Tool (BTAT), which is simpler and quicker to evaluate.²³ The BTAT has been shown to correlate to the findings of the HATLFF well, and it is used more reliably by providers when examining the severity of a tongue tie.² Unger et al found that although providers had awareness of these different assessments/grading tools, they had no formal training on how to approach ankyloglossia treatment objectively.

Not only has the frequency of frenotomies increased, but the surgical options are expanding. Classically, scissors are used, but with the advent of new approaches, providers and patients now have options. Providers may choose a favorite method or may base the decision off age and availability of equipment. The advent of lasers and z-plasty (frenuloplasty) have also come with the increase in treatment.¹⁵⁻¹⁶

While a recent consensus statement has helped guide practices for treatment, there are inconsistent indications for treatment, and treatment of choices can vary.¹⁷ Our project aims to collect more information about provider preferences and viewpoints on how treatment has changed over the years, and what clinical practice with ankyloglossia looks like today.

Methods

We sent a behavioral and attitudinal 22-question survey via electronic mail to Society for Ear Nose Throat Advancement in Children (SENTAC) members in April of 2020. SENTAC has 473 members, from which 77% are physicians. Membership includes pediatric otolaryngologists, pediatricians, audiologists, and speech-language pathologists, along with many other specialties dedicated to care for children with ear, nose, and throat disorders. The survey contained questions regarding the surgical treatment and trends in ankyloglossia. Questions addressed provider area of sub-specialization, years in practice, type of practice, performance of frenotomy, and frenectomy, criteria for surgical repair, frequency and chance over time of the procedures and individual comments. The terms frenotomy and frenectomy were explicitly defined within the survey. Frenotomy was defined as a surgical procedure in which the frenum is incised and frenectomy as a surgical procedure in which frenum tissue is excised.

A two-sample t-test for equality proportions with continuity correction was used to evaluate the difference in proportions between the use of frenotomy and frenectomy. The number of frenotomies and frenectomies per year, and years in practice were collected as ordinal categorical variables and were further compared using Fisher's exact test. Additionally, years in practice were used as numeric ordinal categorical variables and correlated to the number of frenotomies and frenectomies per year using a spearman correlation. A p-value of <0.05 was established *a priori* to be statistically significant. The analyses were made using R statistical software R 4.0.4.¹⁸

Results

There were 71 respondents, which is approximately 19% response rate. Further, after excluding those with incomplete responses and those who did not give consent to use their answers, 62 respondents remained. Population demographics from the final cohort can be found in Table 1. Ninety-five percent of the respondents were fellowship trained pediatric otolaryngologists, and a majority of participants, (66% [n=41]) practiced in a university based academic hospital. Over half had been in practice for over 16 years. Ninety-four percent of providers said that they performed frenotomy in their practice with the many (42%) performing 21-50 per year (Figure 1). Respondents were more evenly split when asked about frenectomy: almost 39.7% performed frenectomy and 60.3% did not. Those who did frenectomy usually performed 21-50 in a year (33%) (Figure 1). When asked about factors when deciding whether or not to surgically repair tongue ties, 100% of respondents said they believed it would help the patient, 41.8% said if parent requests it, and 28.4% said if another provider requests it. Moreover, when asked about what criteria to consider for repairing tongue ties, 98% said improving pain with breastfeeding, 96.9% said improving latch, and 39% said to address future speech concerns (Figure 2).

Table 1
Demographics

	level	n
n		62
Specialty (%)	Pediatrics	60 (96.8)
	Otology	2 (3.2)
Time in Practice (%)	0-2 yr	5 (8.1)
	3-5 yr	8 (12.9)
	6-15 yr	16 (25.8)
	16+ yr	33 (53.2)
Practice Type (%)	University-based, hospital based practice.	41 (66.1)
	University-based, small, single-specialty, multi-physician practice.	8 (12.9)
	Private, small, single-specialty, multi-physician practice.	5 (8.1)
	Solo	3 (4.8)
	Large multispecialty practice or health maintenance organization.	3 (4.8)
	Private, hospital-based practice.	1 (1.6)
	Some other organizational arrangement.	1 (1.6)

Overall, 63.2% of respondents answered that their rates of treatment have increased in the past five years, while 5.9% said it had decreased. However, 97% had not changed the procedure of choice. When asked about the practices of their colleagues, 58.8% had seen an increase, 2.9% had seen a decrease, and 38% had seen no change. 91% have noticed an increase in frequency of parents asking about tongue ties. Lastly, 93% of providers treated anterior ties, 48.5% treated posterior, 56% treated upper lip ties, and 12.1% treated submucosal ties (Figure 3). Additionally, the correlation between years in practice and the number of frenotomies ($p=0.077$) or frenectomies ($p=0.95$) was not statistically significant.

Discussion

There has undoubtedly been an increase in diagnosis, treatment, and treatment options for ankyloglossia based on the experts surveyed. The reason is likely multifactorial; there are more mothers breastfeeding, more parental social media/forums discussing ankyloglossia, more providers treating with no clear guidelines, and more options for treatment.

First, breastfeeding rates have increased in the US as well as globally. According to the CDC, 83.2% of mothers now breast feed compared to the 73.8% in 2007.¹⁹ With more mothers breastfeeding, there is an

increased rate of difficulties doing so; based on the survey responses, this may explain some of the increase in treatment.

Second, online parental community through forums and public health websites may play a role. For example, Aaronson et al found on Google Trends that in 2018 there were increased queries about tongue tie treatments from parents online.²⁰ Per our query, from 2013 to 2014 the number of Facebook support/information groups about “tongue ties” or “ankyloglossia” almost tripled. The number of groups doubled in 2020. Furthermore, on an examination of breastfeeding online forums, Ray et al found that the majority of mothers had overall positive experiences after frenotomy.²¹ According to a 2019 study, 97% of parents would get frenotomy for their child again.² The increased social media and positive feedback about treatment are likely contributors to increased parental requests for treatment, a known driving factor for treatment according to this study.

Third, it has been found that many providers do not follow a specific care pathway or protocol, rather they look to anecdotal evidence and consensuses with other providers when treating ankyloglossia.²³ Overall, treatment of ankyloglossia was found to be very provider dependent/regional. In fact, LeTran et al found that in clinicians with known high rates of frenotomy, there was a 4.4 times greater likelihood that a patient with ankyloglossia would receive treatment.¹ Lisonek et al noted some regions in Canada have quadruple as many frenotomies as surrounding areas.¹¹ Further, in our project there was no correlation between the number of procedures and the number of years in practice, which suggests that this trend is not generational.

Internationally, there has been an increase as well. Without an internationally recognized protocol, some countries have placed recommendations for treatment. In New Zealand, Dixon et al incorporated multidisciplinary approach and set specific standards for frenotomy. The standards for frenotomy were a breastfeeding assessment and a Bristol score of 4 or greater. Along with this specific guideline, public health professionals increased education and awareness for breastfeeding and ankyloglossia through public forums online. In doing so, the rate of frenotomy decreased from 11.3–3.5%.²² Similarly, Caloway et al found that upon development of a multidisciplinary team including speech and language pathology, 62.6% of those originally referred for frenotomy did not receive the procedure.²⁴

Moreover, the Canadian Pediatric Society deemed that ankyloglossia was an insignificant diagnosis that did not require frenotomy except in the case of difficulty breastfeeding or other clinical issues. Similarly, The National Institute for Health and Care Excellence in the UK issued a guideline detailing that while there are no serious consequences to frenotomy, there is also little evidence for breastfeeding improvement.¹² Interestingly, it has been estimated that 40-70% of babies with ankyloglossia never experience any problems with breastfeeding,²⁵ and overall, there is generally no difference when comparing speech in those with or without frenotomy later in life.²⁶

Lastly, there are expanding surgical treatment options for ankyloglossia. Perhaps the newest treatment is the laser, which allows for less anesthetic, bleeding, and swelling. Frenuloplasty is another method used

for ankyloglossia treatment where a surgeon rearranges the tissue in the shape of a z¹⁵ Another author describes using four flap Z-plasty as a more complete way to perform frenectomy; per authors, they achieved better tongue protrusion and speech articulation in previously symptomatic patients.¹⁶ This increased selection in procedures may also be contributing to the increased rate of overall tongue tie treatment.

Limitations of this project include small sample size out of those who perform frenotomies overall. Additionally, this study was primarily completed before release of the consensus statement, which attempted to provide clinical guidelines for this condition based on a panel of experts addressing both tongue and lip ties.¹⁷

Conclusion

There has been an increase in treatment of ankyloglossia in the past decade as well as increased parental interest in treatment in online forums and office visits. Treating ankyloglossia is low risk, a rapid procedure, and has high satisfaction rates, but its recent high prevalence across the practices of specialists in the nation is worth noting. Several specialist participants in this study have commented that they believe social media plays a large role in increasing treatment for ankyloglossia as well as the increased use of laser treatment. Some express pressure to perform these procedures to parallel the increasing treatment from other providers and to address the increasing number of both self-referrals and referrals from speech centers. Following this trend, introducing a standardized care pathway would be useful. In other health systems, this has led to a decrease in procedures. Not only would implementation streamline the referral process, but it could allow a more regimented approach to this diagnosis.

Abbreviations

Society for Ear Nose Throat Advancement in Children (SENTAC), Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF), Bristol Tongue Assessment Tool (BTAT)

Declarations

Ethics: All authors have participated in the production and editing of this manuscript. All authors agree to submission of this project. The data is original and not published elsewhere. All participants received informed consent. This research project was approved by University Hospitals Institutional IRB (STUDY20191559). Informed consent was given with the submission of survey as written in the introduction of the survey. Study data were collected and managed using REDCap electronic data capture tools

Consent for Publication: Authors consent to publication.

Availability of data and materials: The datasets generated during and/or analyzed during the current study are not publicly available due to participant confidentiality, but are available from the

corresponding author upon reasonable request.

Competing Interests: none

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Author Contribution:

Madeline Goosmann- writing, literature review, survey creation

Claudia Cabrera- survey creation, statistics, editing

Jay Shah- editing, advising for survey creation

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Figures

Figure 1: Number of Frenotomies and Frenectomies performed by year by Physician Years of Practice

Figure 1

See image above for figure legend.

Figure 2: Which criteria do you use when considering repairing tongue ties?

Figure 2

See image above for figure legend.

Figure 3

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