

TONGUE-TIE RELEASE: AN OBSERVATIONAL STUDY CARRIED OUT AT PEDODONTIC DEPARTMENT OF QUEEN RANIA AL-ABDULLAH HOSPITAL, AMMAN

¹AYMAN F ALELAIMAT, ²TAGHREED F JARADAT, ³ENAS F OTHMAN, ⁴SAMAM TAAMNEH, ⁵TAMARA A OBEIDAT, ⁶MOHAMMAD A ALQUDAH

ABSTRACT

Present study was done to determine the most common reasons for tongue-tie release by the patients parents attending the paediatric dental clinics of Queen Rania Al-Abdullah Hospital and to assess the correlation between parents' concerns and the presence of a real complication related to the tongue-tie condition.

A detailed questionnaire was designed, which included Questions on medical history, age, patient gender, reasons for seeking treatment. The questionnaires were filled in during interviews with parents or guardians attending the paediatric dental clinic.

A sample of 111 patients was selected from among 150 children who attended the clinic from November 2018 to July 2019 seeking tongue-tie treatment. The sample comprised 30 female patients (27%) and 81 (73%) male patients. The study group had a mean (\pm SD) age of 38.05 ± 30.416 months. The youngest child was one month old, and the oldest was 156 months old. The most common reason for seeking tongue-tie release was speech difficulties (49.5%), followed by feeding problems (12.6%), swallowing (4.5%) and other issues. Speech difficulties were reported as being parents' main concern in the case of males and females (about 50% of males and 46% of females), with no significant difference between genders.

It was concluded from this study that the most common reasons for treatment being sought were speech difficulties or feeding problems, and ankyloglossia. Diagnosis of tongue-tie is subjective and varies among different specialists.

Keywords: Tongue tie, Frenotomy, Speech difficulties .

This article may be cited as: Alelaimat AF, Jaradat TF, Othman EF, Taamneh SM, Obeidat TA, Alqudah MA. Tongue-tie release: An observational study carried out at Pedodontic Department of Queen Rania AL-Abdullah Hospital, Amman. Pak Oral Dent J 2020; 40(4):201-04.

INTRODUCTION

Parents attending the paediatric dental clinic at

¹ AymanF Alelaimat, BDS, JB. Senior Specialist in Pediatric Dentistry, (Corresponding author) Phone: 0796777925 E-mail: aymfarmo@yahoo.com

² Taghreed F. Jaradat, BDS, JB, Senior Specialist in Pediatric Dentistry Phone: 0795708518 E-mail: Tagreed_j@yahoo.com

³ Enas F. Othman, BDS, JB. Senior Specialist in Pediatric Dentistry Phone: 0775819448 E-mail: enasfothman@yahoo.com

⁴ SamaM. Taamneh, BDS, JB. Senior Specialist in Pediatric Dentistry Phone: 0777722542 E-mail: SmKhoury2000@yahoo.com (Authors number 1-4 are from Pedodontic Department , Queen Rania Al-Abdullah hospital)

⁵ Tamara A. Obeidat, MD, JB Senior Specialist Radiology Phone: 0706555927 E-mail: tamararadio83@yahoo.com

⁶ Mohammad A. Alqudah, BDS, JB Senior Specialist Periodontics, Dental department Phone: 0796482510 E-mail: mohdsalam97@yahoo.com (Authors number 5-6 are from king Hussein military hospital)

Received for Publication: Oct 11, 2020

Revised: Nov 19, 2020

Approved: Nov 20, 2020

Queen Rania Al-Abdullah Hospital were generally concerned about speech or feeding problems, They may have been referred by a doctor or been told by relatives (e.g., the child's grandmother) that their children have a tongue-tie problem.

Limited tongue movement is a congenital anomaly that occurs among newborns. Various terms are used to describe or define this condition, such as tongue-tie or ankyloglossia, and they refer to a congenital anomaly consisting of an abnormally short frenum. This is an embryological anatomical malformation of the tongue, characterized by an abnormally short and thick lingual frenum with restricted tongue movement.¹⁻⁴

Recently, many parents sought treatment for this anomaly, and there has been an increase in the number of patients attending the paediatric dental clinic because of this condition. Whether treatment should

be provided or whether clinicians should refrain from intervening remains controversial,^{2,4-6} and practitioners are divided about what treatment should be given.

Tongue-tie has a prevalence of approximately 4–5% among the newborn, due to a lack of diagnosis protocols.¹⁻⁶ The prevalence of this condition varies. The abnormality limits tongue movement to various degrees, and the tongue can sometimes be completely attached to the floor of the mouth (ankyloglossia). Many problems can be caused by tongue-tie, such as breast feeding difficulties, speech disorders, articulation problems, oral-motor dysfunction and social issues related to limited tongue functionality.^{1,2-6}

There are four types of ankyloglossia. In type 1 ankyloglossia, the frenum is attached to the tip of the tongue, usually in front of the alveolar ridge in the lower lip sulcus. Type 2 ankyloglossia is 2–4 mm behind the tongue tip and is attached on or just behind the alveolar ridge. Type 3 ankyloglossia is an attachment to the mid-tongue and type 4 ankyloglossia is attachment of the frenum to the base of the tongue.⁷

Aside from breastfeeding concerns, tongue-tie has been identified by some researchers as being a factor associated with speech difficulties and maxillofacial development.⁸

Diagnosis of tongue-tie and treatment decisions for managing the condition can be subjective in many cases. A clinical examination may also indicate no real limitation in tongue movement.^{2,4,6,9,10} Diagnosis and surgical treatment appear to have increased in recent decades despite the absence of widely accepted diagnostic criteria and treatment indications.⁸

Although there are reports of a possible relationship between the occurrence of ankyloglossia and breast feeding difficulties, this association remains inconclusive due to methodological limitations of published studies.^{12,13} Additionally, focusing on ankyloglossia could potentially cause undue delays in diagnosing and treating other possible causes of poor feeding, such as an underlying medical condition.¹⁴

As numerous researchers and systemic reviews have indicated patient selection for frenectomy is very important, especially when the problem concerns feeding behaviour among young babies. Different treatment modalities may be used to correct this anomaly, like the traditional surgical technique of using a blade, scissors or cautery machine, besides the use of a dental laser.¹⁵

Table 4 shows that speech difficulties were the main reason for which treatment was being sought in the case of both male and female patients (about 50% of males and 46% of females), with no significant difference between genders chi-square test (0.153.).

METHODS

This cross-sectional descriptive study was conducted at Royal Medical Services Hospitals. Prior to commencing the study, ethical approval by the Human Research Ethics Committee at the Royal Medical Services was obtained under number 39/8/2018. Patients' parents were informed about the purpose and method of the study, and only those who gave their consent were included. The sample consisted of 150 randomly selected patients of either gender who attended pediatric dental clinics in Queen Rania Hospital between November 2018 and July 2019. Age group from one month old to 156 months old, 111 were selected for inclusion in the study (81 males and 30 females). Exclusion criteria included those patients who didn't have a real tongue tie as was determined by the dental examination

A detailed questionnaire was designed, which included questions on medical history, age of patients, gender, reasons for seeking treatment and the existence of another family member with a tongue-tie history. The questionnaire was filled in during interviews with parents or guardians attending the paediatric dental clinics at Queen Rania Al-Abdullah Hospital, seeking treatment for tongue-tie.

The patients were examined by two paediatric dental specialists using a dental examination kit (mirror and tweezers), with the patient sitting in a dental chair. Two dentists examined the participants in order to confirm the presence of a true tongue tie and these were the cases used in this study.

Data were analysed using the computerized Statistical Package for Social Sciences (SPSS), version 20, Means, standard deviations and frequency distributions were calculated.

RESULTS

A sample of 111 patients was selected from among 150 children who attended the clinic between November 2018 and July 2019 seeking treatment for tongue-tie. Thirty were female patients (27%) and eighty one (73%) were male (Table I). The mean (\pm SD) age of participants was 38.05 \pm 30.416 months. The youngest child was one month old, and the oldest was 156 months old. (Table 2)

The most common reason for tongue-tie release being sought was speech difficulties (49.5%), followed by feeding problems (12.6%), swallowing (4.5 %) and other issues (33.3%) (Table 3).

Table 4 shows that speech difficulties were the main reason for which treatment was being sought in the case of both male and female patients (about 50% of males and 46% of females), with no significant difference between genders chi-square test (0.153.).

TABLE 1: MALE-TO-FEMALE RATIO

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Male	81	73.0	73.0	73.0
	Female	30	27.0	27.0	100.0
	Total	111	100.0	100.0	

TABLE 2: DESCRIPTIVE STATISTICS ACCORDING TO THE AGE OF PATIENTS (IN MONTHS)

	N	Minimum	Maximum	Mean	Std. Deviation
Age of patients Valid	111	1	156	38.05	30.416
N (list wise)	111				

TABLE 3: REASONS FOR SEEKING TREATMENT

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Speech difficulties	55	49.5	49.5	49.5
	Feeding problems	14	12.6	12.6	62.2
	Swallowing	5	4.5	4.5	66.7
	Others	37	33.3	33.3	100.0
	Total	111	100.0	100.0	

TABLE 4 : CROSS TABULATION OF REASONS FOR TREATMENT BEING SOUGHT AMONG MALES AND FEMALES

		Reasons				Total
		Speech Difficulties	Feeding Problems	Swallowing	Other	
Gender	Male	41	12	5	23	81
Total	Female	14	2	0	14	30
		55	14	5	37	111

DISCUSSION

The subjects in this study were selected from among paediatric patients seen at the Queen Rania Al-Abdullah Hospital. It is a large hospital that deals with medically compromised and disabled patients. In this study, speech difficulties were the main concern of parents despite the lack of clinical data supporting a clear relation between speech difficulties and tongue-tie.^{16,17} Speech difficulties are the second-most common problem mentioned in tongue-tie articles (aside from breastfeeding concerns).¹⁷

Many studies have reported an improvement in speech after a tongue-tie release procedure. These studies focused on modalities (with safety and feasibility as the main outcome) rather than measures of speech itself.¹⁸⁻²¹ Given the lack of good-quality studies (and limitations associated with measurement of their outcomes), insufficient evidence is available in terms of the effects of surgical interventions aimed at improving speech and articulation.¹⁷

Examination of the patients in this sample indicated their inability to make an 'r' sound was the main problem. This sound is produced by the tip of the tongue reaching the anterior part of the hard palate, and with tongue-tie, this movement is restricted. The effect of a frenotomy on 'r' sound pronunciation will be evaluated in a future study because the patients are still under follow-up evaluation.

Feeding problems were the second-most common reason for seeking treatment in this study. The youngest patient seeking treatment was one month of age. There is increasing evidence that the presence of a tongue-tie (ankyloglossia) in an infant may lead to breast feeding difficulties. Feeding difficulties (both breast and bottle) have been reported in 25%–44% of infants with tongue-tie.²²⁻²³

Tongue-tie has been cited as a cause of poor breastfeeding due to the inability of infants to attach or stay latched on and maternal nipple pain.²⁴ On the other hand, some studies have suggested that there

was no relation between breastfeeding difficulties and ankyloglossia.²⁵ Following a frenotomy, improvements in infants' feeding have not been clearly shown, but maternal nipple pain has been shown to improve after the procedure.¹¹

There is also no universal clinical assessment tool for assessing the presence of tongue-tie or the success of tongue-tie release.²⁶ Referrals to other specialists for assessment of breast feeding problems (and the exact cause of these) are useful. Many medical conditions and systemic diseases may affect speech and feeding ability among patients, so it is important to exclude these conditions when a diagnosis of tongue-tie is to be made.¹⁴

Other reasons for seeking treatment mentioned during interviews with parents included swallowing difficulties and limited tongue mobility. Some patients had been referred by other specialists, and some had the problem pointed out to them by relatives.

Current study included some medically compromised patients and patients with systemic diseases, who were seeking treatment for tongue-tie due to speech difficulties, swallowing or feeding problems. Careful clinical examination and a full discussion with the parents (in addition to consultations with other specialists and physicians) were carried out to identify the exact cause of these problems.

CONCLUSION

The results of this study indicate that the most common reasons for parents seeking treatment were speech difficulties and feeding problems. Ankyloglossia is an important issue for such parents. Diagnosis of tongue-tie is subjective, however, and varies among different specialists.

REFERENCES

- 1 Varadan M, Chopra A, Sanghavi AD. Etiology and clinical recommendations to manage the complications following lingual frenectomy: A critical review. *J Stomatol Oral Maxillofac Surg* 2019;120(6):549-53.
- 2 Daggumati S, Cohn JE, Brennan MJ. Speech and language outcomes in patients with ankyloglossia undergoing frenulotomy: a retrospective pilot study. *Oto Open* 2019;3(1):2473974X19826943.
- 3 Zaghi S, Valcu-Pinkerton S, Jabara M. Lingual frenuloplasty with myofunctional therapy: Exploring safety and efficacy in 348 cases. *Laryngol Invest Otolaryng* 2019; 4: 489-96.
- 4 Mills N, Pransky SM, Geddes DT. What is a tongue-tie? Defining the anatomy of the in-situ lingual frenulum. *Clin Anat* 2019;32(6):749-61.
- 5 Walsh J, Tunkel, DE. Tongue-tie and frenotomy: what evidence do we have and what do we need? *Med J Aust* 2018; 208(2): 67-68.
- 6 Walker RD, Messing S, Rosen C. Defining Tip-Frenulum Length for Ankyloglossia and Its Impact on Breastfeeding: A Prospective Cohort Study. *Breastfeed Med* 2018; 13(3):204-10.
- 7 Shavit I, Peri-Front Y, Rosen-Walther A. A Randomized Trial to Evaluate the Effect of Two Topical Anesthetics on Pain Response During Frenotomy in Young Infants. *AAcad Pain Med* 2017; 18(2): 356-62.
- 8 Ray S, Hairston TK, Giorgi M. Speaking in tongues: what parents really think about tongue-tie surgery for their infants. *Clin Pediatr* 2020; 59(3), 236-44.
- 9 Lisonek M, Liu S, Dzakpasu S, Moore AM. Canadian perinatal surveillance system (public health agency of Canada). Changes in the incidence and surgical treatment of ankyloglossia in Canada. *Paediatr Child Health* 2017;22(7):382-86.
- 10 Jin RR, Sutcliffe A, Vento M. What does the world think of ankyloglossia?. *Acta Paediatr* 2018; 107(10):1733-86.
- 11 Dixon B, Gray J, Elliot N. A multifaceted programme to reduce the rate of tongue-tie release surgery in newborn infants: Observational study. *Inter J Pediatr Otorhinolaryngol* 2018;113:156-63.
- 12 M do Re go Barros de Andrade Fraga M., Azoubel Barreto K., Barbosa Lira TC. Is the Occurrence of Ankyloglossia in Newborns Associated with Breastfeeding Difficulties?. *Breastfeed Med* 2020;15(2):96-102.
- 13 Unger C, Chetwynd E, Costello R. Ankyloglossia Identification, Diagnosis, and Frenotomy: A Qualitative Study of Community Referral Pathways. *J Hum Lact* 2019 Dec 13;890334419887368.
- 14 Hale M, Mills N, Edmonds L. Complications following frenotomy for ankyloglossia. *J Paediatr Child Health* 2019 Nov 12.
- 15 Mohamad I, Haw L, Manan A. Ankyloglossia release using ultrasonic scissors. *Bangladesh J Med Sci* 2017; 16(2), 332-33.
- 16 Baxter R, Hughes L. Speech and Feeding Improvements in Children After Posterior Tongue-Tie Release: A Case Series. *Int J Clin Pediatr* 2018;7(3):29-35.
- 17 Chinnadurai S, Francis DO, Epstein RA. Treatment of Ankyloglossia for Reasons Other Than Breastfeeding: A Systematic Review. *Peds* 2015;135(6):1467-74.
- 18 Puthussery FJ., Shekar K., Gulati A. Use of carbon dioxide laser in lingual frenectomy. *Bri J Oral Max Surg* 2011;49(7): 580-18.
- 19 Dave J, Sinha V, Barot D. Speech disorders encountered in routine ENT practice and the role of speech NT practice and the role of speech therapy in its effective management. *Ind J Oto* 2013; 19(4):169-72.
- 20 Klockars Pitka'ranta A. Pediatric tongue-tie division: Indications, techniques and patient satisfaction. *Inter J Pediatr Otorhinolaryngol* 2009;73(10): 399-401.
- 21 Ito Y, Shimizu T, Nakamura T. Effectiveness of tongue-tie division for speech disorder in children. *Peds Inter* 2015;57(2): 222-26.
- 22 Ghaheri BA, Cole M, Fausel SC. Breastfeeding improvement following tongue-tie and lip-tie release: A prospective cohort study. *Laryngoscope* 2017;127(5):1217-23.
- 23 Ingram J, Johnson D, Copeland M. The development of a tongue assessment tool to assist with tongue-tie identification. *Arch Dis Child Fetal Neonatal Ed* 2015;100(4):344-48.
- 24 O'Shea JE, Foster JP, O'Donnell CP. Frenotomy for tongue-tie in newborn infants. *Cochrane Database Syst Rev* 2017;3(3):CD011065.
- 25 Joseph KS, Kinniburgh B, Metcalfe A. Temporal trends in ankyloglossia and frenotomy in British Columbia, Canada, 2004-2013: a population-based study. *CMAJ Open* 2016;4(1):33-40.
- 26 J Billington J, Yardley I, Upadhyaya M. Long-term efficacy of a tongue-tie service in improving breastfeeding rates: A prospective study. *JPedSurg* 2018; 53(2): 286-88.

CONTRIBUTIONS BY AUTHORS
All authors contributed substantially