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Approach to Lingual Frenulum in Children at a Baby-Friendly University Hospital

Bebek Dostu Bir Üniversite Hastanesinde Çocuklarda Dil Altı Bağına Yaklaşım

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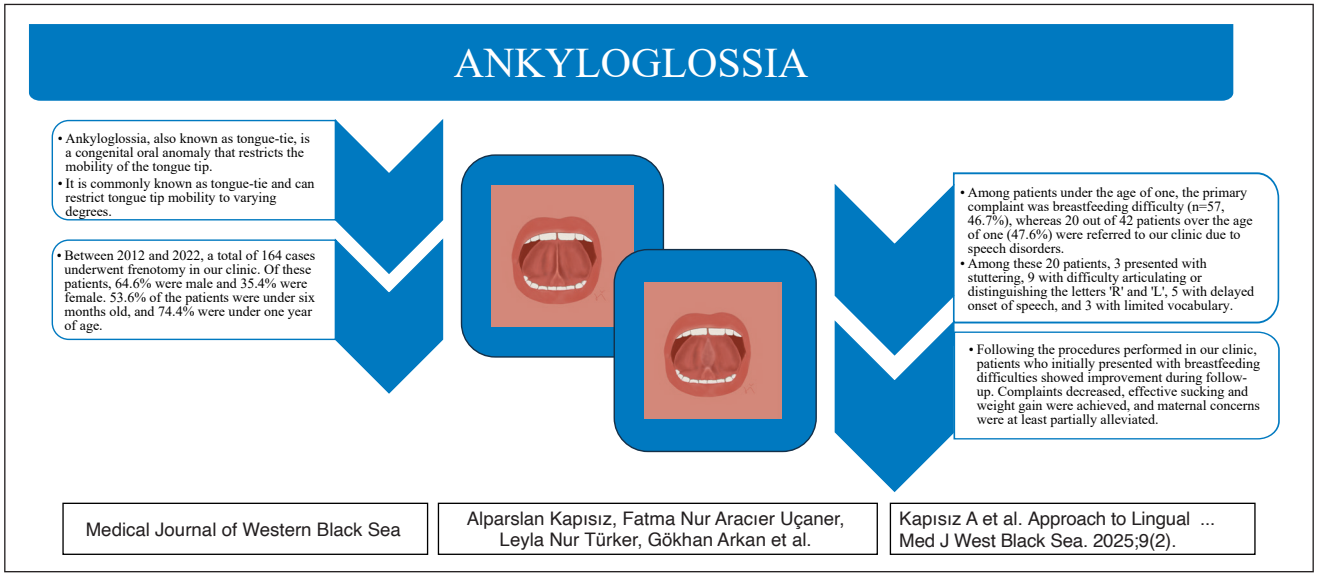
GRAPHICAL ABSTRACT



ABSTRACT

Aim: Ankyloglossia, also known as tongue-tie, is a congenital oral anomaly that restricts the mobility of the tongue tip. Frenotomy is the primary treatment method for ankyloglossia. The aim of this study is to share our experiences with patients aged 0-18 years who underwent frenotomy for ankyloglossia in our clinic between 2012 and 2022.

Material and Methods: A total of 164 patients who underwent frenotomy between 2012 and 2022 at the Department of Pediatric Surgery, Faculty of Medicine, Gazi University, were included in this study. The classification and treatment of tongue-tie were based on the Ferres-Amat classification. Patients were evaluated based on age, gender, presenting complaints, degree of tongue-tie, and surgical procedures. Additionally, the gender distribution and grade classification of tongue-tie patients were analyzed according to age groups, and the differences in grade distribution among different age groups were compared.

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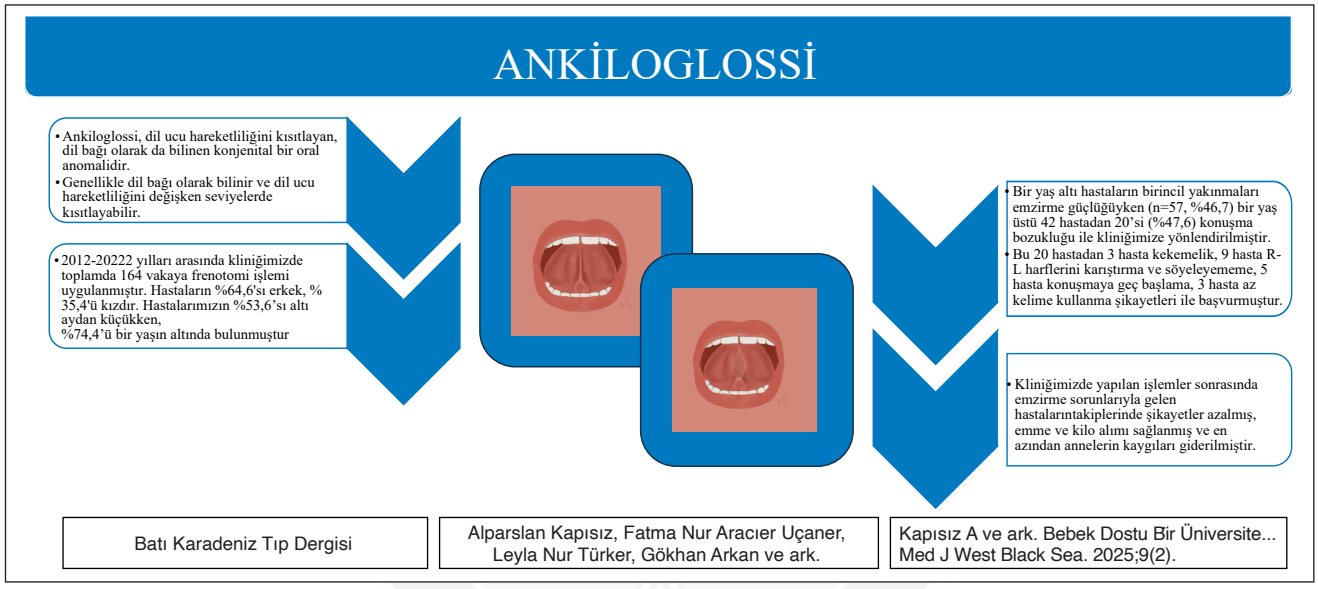
Results: In our baby-friendly hospital, 164 patients, the majority of whom were referred to our clinic by breastfeeding and speech therapy clinics with tongue-tie complaints, underwent frenotomy. The patients presenting to our center with complaints of tongue-tie are 74.4% under one year of age, and 64.6% male. The primary complaint in infants under one year of age was difficulty in sucking while breastfeeding, while in children over one year of age, it was speech disorder.

Conclusion: The frenotomy procedure was typically performed by our physicians using a straight clamp to crush the frenulum, followed by excision with scissors. In some cases, bipolar cautery was required for hemostasis. Contrary to the complication rates mentioned in the literature, only two of our operated patients experienced burns on the lower lip due to bipolar cautery contact, and appropriate wound care was provided. Following the procedures performed in our clinic, complaints decreased in patients who presented with breastfeeding problems, sucking and weight gain were achieved, and at the very least, maternal anxiety was alleviated.

Keywords: Ankyloglossia, frenotomy, tongue tie, breastfeeding, speech therapy

GRAFİKSEL ÖZET



ÖZ

Amaç: Ankiloglossi, dil ucu hareketliliğini kısıtlayan, dil bağı olarak da bilinen konjenital bir oral anomalidir. Frenotomi işlemi başlıca tedavi yöntemi olarak uygulanmaktadır. Bu çalışmamızın amacı; 2012-2022 yılları arasında kliniğimizde ankiloglossi tanısı ile frenotomi işlemi uygulanan 0-18 yaş arası hastalardaki deneyimlerimizi paylaşmaktır.

Gereç ve Yöntemler: Çalışmaya 2012-2022 yılları arasında kliniğimizde frenotomi yapılmış olan toplam 164 hasta dahil edilmiştir. Dil bağının sınıflaması ve tedavisi Ferres -Amat klasifikasyonuna göre yapılmıştır. Hastalar yaş, cinsiyet, başvuru şikâyetleri, dil bağı derecesi ve cerrahi prosedürleri dikkate alınarak değerlendirilmiştir. Ayrıca dil bağı hastalarının yaş gruplarına göre cinsiyet dağılımı ve evreleri incelenmiş, farklı yaş gruplarındaki evre dağılımlarının karşılaştırması yapılmıştır.

Bulgular: Bebek dostu hastanemizde çoğunluğu yenidoğan polikliniği, emzirme destek merkezi relaktasyon ünitesi, dil ve konuşma terapisi bölümü tarafından kliniğimize dil altı bağı nedeniyle yönlendirilmiş olan 164 hastaya frenotomi operasyonu uygulanmıştır. Bu hastaların %74,4'ü bir yaş altı, %64,6'sı erkek çocuklardan oluşmaktadır. Asıl şikayet bir yaş altı bebeklerde emme güçlüğü, bir yaş üstü çocuklarda konuşma bozukluğu olduğu tespit edilmiştir.

Sonuç: Frenotomi işlemi merkezimiz hekimleri tarafından genellikle düz klemp yardımı ile frenulumun ezilmesinin ardından makasla eksize ederek yapılmıştır. Bazı vakalarda ise hemostaz için bipolar koter gereksinimi olmuştur. Literatürde bahsedilen komplikasyon oranlarının aksine opere edilen iki hastada alt dudakta bipolar koter temasına bağlı yanık meydana gelmiş ve gerekli yara yeri bakımı yapılmıştır. Kliniğimizde yapılan işlemler sonrasında emzirme sorunlarıyla gelen hastaların takiplerinde şikâyetler azalmış, emme ve kilo alımı sağlanmış ve en azından annelerin kaygıları giderilmiştir.

Anahtar Sözcükler: Ankiloglossi, frenotomi, dil bağı, emzirme, konuşma terapisi

INTRODUCTION

Ankyloglossia is a congenital oral anomaly characterized by a short and thick lingual frenulum. Commonly known as tongue-tie, it can restrict the mobility of the tongue tip to varying degrees. The prevalence of ankyloglossia in children is estimated to range between 0.1% and 12.1%, and studies have reported a higher incidence in males (3:1) (1-7).

The tongue originates from the first, second, and third pharyngeal arches and begins to develop around the 4th week of embryogenesis. By the sixth week of gestation, the tongue is already fully formed. Subsequently, a horseshoe-shaped sulcus develops in front of and on both sides of the oral part of the tongue, which later forms the linguogingival sulcus and separates the embryonic tongue from other oral structures. This separation allows for tongue mobility, except at the site where the lingual frenulum (LF) remains attached. Following this, apoptosis of LF cells occurs along with the resorption of developing skeletal muscle, which leads to the posterior retraction of the LF towards the apex, thereby permitting the final range of tongue mobility. In its fully developed state, the LF consists of a connective tissue band covered by oral mucosa that connects the mid-ventral surface of the tongue to the floor of the mouth. Biomechanically, the LF helps anchor and support the ventral tongue to the mouth floor and ensures secure tongue movement to prevent any involuntary deviation during function. A significant portion of tongue functions and mobility (such as sucking, chewing, swallowing, and speaking) depends on the length, thickness, and position of the LF. Incomplete apoptosis of this anteromedial lingual prominence, excessive fusion of the lateral prominences, and/or underdevelopment of the anterior tongue—possibly in conjunction with genetic factors observed in familial cases—may play a role in the pathogenesis of ankyloglossia (1,8).

Although recent studies have shown an increase in the frequency of tongue-tie diagnoses and lingual frenotomy procedures, there is still no consensus regarding the diagnosis and management of the condition. In our country, studies reporting the prevalence of ankyloglossia in children are limited; one publication has reported a rate of 0.3% (9). As in other parts of the world, frenotomy is the primary treatment method used in our clinic for tongue-tie. Although evidence supporting the improvement of breastfeeding following frenotomy is limited, the procedure is frequently performed in infants with tongue-tie and breastfeeding difficulties (1,7,10,11).

The aim of this study, which utilizes data from our baby-friendly hospital, is to share our experiences with children aged 0-18 years diagnosed with ankyloglossia and predominantly treated with frenotomy procedures between the years 2012 and 2022.

MATERIALS and METHODS

A total of 164 patients who underwent surgical intervention due to tongue-tie by the Department of Pediatric Surgery at Gazi University Faculty of Medicine between the years 2012 and 2022 were included in this study. Ethical approval was obtained from the Clinical Research Ethics Committee of Gazi University Faculty of Medicine (Decision no: 783). Classification and treatment of tongue-tie were performed according to the Ferres-Amat classification (8,12) (Table 1).

According to this classification: If the tongue can move completely freely, the tongue tip can reach the highest point, and even with maximum mouth opening the tongue can reach its highest point when touching the palate, it is classified as grade 1**,** and there is no surgical indication. If the tongue can almost move freely, a mild tongue-tie is present during maximum mouth opening, the tongue can reach up to three-quarters of the intermaxillary vertical space but cannot touch the palate, it is classified as grade 2**,** and there is a surgical indication in the presence of accompanying feeding or speech disorders. If the tongue has moderate mobility, there is moderate lingual frenulum hypertrophy, the tongue can reach up to half of the intermaxillary vertical space, causing a bifid or heart-shaped appearance of the tongue (due to tension resulting from restricted tongue mobility), it is classified as grade 3, and there is a surgical indication in the presence of accompanying feeding or speech disorders.If tongue mobility is significantly reduced, the tongue can reach only up to one-quarter of the intermaxillary vertical space, and poor oral function is present (likely to result in impaired bone growth in later ages), it is classified as grade 4, and there is a surgical indication. If tongue movement is completely restricted (dentofacial deformities may develop in later years), and the tongue cannot be lifted to the palate, it is classified as grade 5**,** and there is a surgical indication (8,12) (Figure 1).

Data Analysis

Based on this classification, patient data were retrospectively reviewed, taking into account age at the time of surgery, gender, presenting complaints, the severity level of ankyloglossia, and surgical procedures performed. Using SPSS 26.0 for Windows, the chi-square test was applied to evaluate whether gender distribution varied according to age groups and whether the differences in grade distribution among age groups were statistically significant. A p-value of <0.05 was considered statistically significant in all analyses.

RESULTS

A total of 164 cases underwent frenotomy. Of the patients, 106 (64.6%) were male, and the mean age was 9.6 months (ranging from 5 days to 8 years). It was found that 53.6% of

Table 1: Ferrés-Amat Classification for Ankyloglossia (11,12).

Characteristics	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Tongue Mobility	Completely free movement; the tongue tip can reach its highest point	Almost free movement; a slight tongue-tie is present and can be observed during maximum mouth opening	Moderate tongue mobility disorder with moderate tongue-tie hypertrophy	Severely reduced tongue mobility	Completely restricted tongue mobility (the patient cannot move or lift the tongue and often suffers from dentofacial deformities in later ages)
Degree of Tongue Elevation (if possible, lifting the tongue to reach the palate)	Excellent elevation; despite maximum mouth opening, the tongue can reach its highest point when touching the palate	The patient can lift the tongue to reach 3/4 of the intermaxillary vertical space, but touching the palate is impossible	The patient can lift the tongue to reach 1/2 of the intermaxillary vertical space, resulting in a forked or heart-shaped tongue appearance (due to tension from limited tongue mobility)	The patient can lift the tongue to reach 1/4 of the intermaxillary vertical space; the patient may have poor oral function and possibly impaired bone growth in later ages	No elevation
Indication for Frenotomy (Tongue-Tie Surgery)	Not indicated	Indicated only if associated with another change, pathology, or disorder, e.g., feeding issues or speech alterations (e.g., rhotacism)	Indicated only if associated with another change, pathology, or disorder, e.g., feeding issues or speech alterations (e.g., rhotacism)	Indicated	Indicated

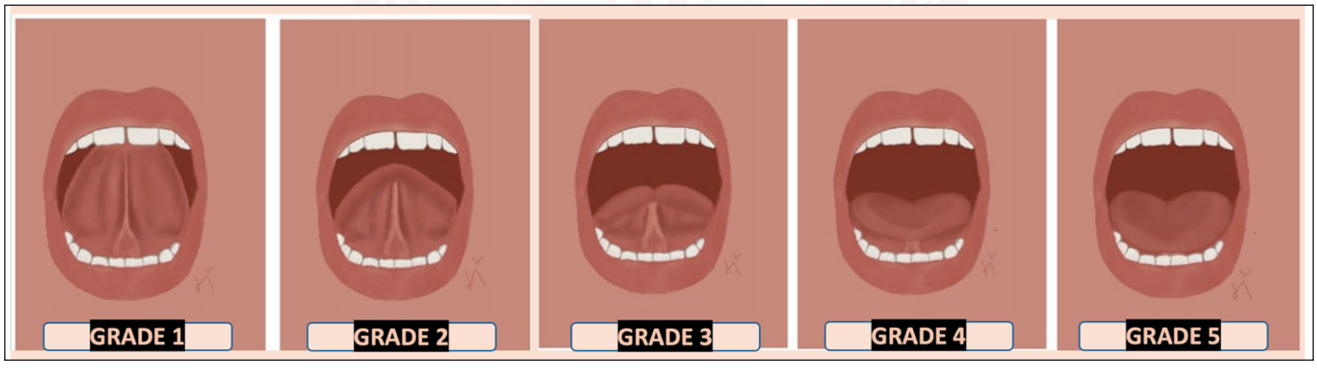


Figure 1: Ferres-Amat Ankyloglossia Classification (8,12).

the patients were under six months of age, and 74.4% were under one year of age (n=122) (Table 2). In all age groups, the proportion of male patients was higher. No statistically significant difference was found between gender distribution and age groups (p=0.987).

The primary complaint in patients under one year of age was difficulty in breastfeeding (n=57, 46.7%), while 20 out of 42 patients over the age of one (47.6%) were referred to our clinic by the speech therapy center of our hospital due to tongue-tie. Of these 20 patients, 3 presented with stuttering, 9 with difficulty or inability to pronounce or distinguish the letters R and L, 5 with delayed speech onset, and 3 with limited vocabulary. After frenotomy was performed for tongue-tie in these patients, speech therapy was initiated. The number of patients referred due to inadequate frenotomy performed at an external center was two (Table 2).

The degree of ankyloglossia was classified as follows: 42 patients (25.6%) had grade 1, 49 patients (29.9%) had grade 2, 67 patients (40.8%) had grade 3, 4 patients (2.4%) had grade 4, and only 2 patients (1.2%) had grade 5 ankyloglossia. Grade I patients were most commonly seen in the 0-1 month age group. Grade II patients were predominantly

Table 2: Demographic, clinical characteristics and grades of ankyloglossia patients

Age Group	Number (%)	Gender (M/F)	Breastfeeding Difficulty (%)	Breast Complaint (%)	Speech Disorder (%)	Grade I (%)	Grade II (%)	Grade III (%)	Grade IV (%)	Grade V (%)	Need for Anesthesia (%)
0-1 month	40 (24.4)	13 (32.5)/ 27 (67.5)	19 (47.5)	7 (17.5)	-	26 (65.0)	12 (30.0)	2 (5.0)	-	-	4 (10.0)
1-6 months	48 (29.3)	17 (35.5)/ 31 (64.5)	23 (47.9)	15 (31.2)	-	16 (33.3)	28 (58.3)	4 (8.3)	-	-	36 (75.0)
6-12 months	34 (20.7)	12 (35.2)/ 22 (64.7)	15 (44.1)	12 (35.3)	-	-	4 (11.8)	29 (85.2)	1 (2.9)	-	34 (100)
1-3 years	27 (16.5)	10 (37)/ 17 (63)	-	-	12 (44.4)	-	5 (18.5)	19 (70.4)	2 (7.4)	1 (3.7)	27 (100)
>3 years	15 (9.1)	6 (40)/ 9 (60)	-	-	8 (53.3)	-	-	13 (86.7)	1 (6.7)	1 (6.7)	15 (100)

in the 1-6 month age group. Grade III patients were mainly observed in the 6-12 month and over 3 years age groups. Grade IV and V cases were rare and limited to the 1-3 years and over 3 years age groups. Additionally, the difference in grade distribution by age was statistically significant ($p<0.001$) (Table 2).

All patients underwent correction of tongue-tie via frenotomy. The lingual frenulum was crushed using a straight clamp from the tip of the tongue toward the floor of the mouth and then excised with scissors. In cases where electrocauterization was needed for hemostasis, bipolar cautery at 8-10 watts was used instead of scissors. Among patients under six months of age, six required bipolar cautery due to grade 3 or higher frenulum and need for adequate hemostasis. In children older than six months, all procedures were performed under anesthesia with the use of a laryngeal mask airway (LMA), due to tight mouth closure, presence of teeth, higher tongue-tie grade, and older age.In one patient, due to a technical malfunction of the bipolar cautery, bleeding control was achieved intraoperatively using 5/0 absorbable sutures. In cases requiring bleeding control post-frenotomy, short-term compression was applied to the base of the tongue using gauze. In patients referred from external centers, inadequate frenotomy was attributed to incomplete procedures due to lack of proper equipment (cautery, anesthesia, etc.), and both were aged five and seven. To reduce infant pain and maternal anxiety, breastfeeding was initiated early post-procedure. For patients over six months of age who experienced pain postoperatively, paracetamol was recommended at 10 mg/kg/dose, four times daily. No outpatient visits due to pain were recorded.No bleeding or recurrence was observed in any of the patients after frenotomy performed in our clinic. Except for the patient who received sutures and one with a burn injury during the procedure, no follow-up was required. In two patients, a superficial injury (first-degree burn of 2-3 mm in diameter) on the lower lip occurred due to bipolar cautery contact, and topical antibiotic eye ointment was prescribed. Follow-up revealed scar-free healing in both cases. In one patient with grade 4 and one with grade 5 ankyloglossia, exudate was observed at the frenulum region on postoperative day 7 due to bipolar cautery use; however, by day 15, the sublingual mucosa had returned to normal with no signs of fibrosis or traction.

DISCUSSION

Ankyloglossia can be either asymptomatic or symptomatic. Tongue-tie often causes difficulties such as poor breastfeeding, ineffective sucking, prolonged and/or frequently interrupted feeding, nipple pain due to fissures, and mastitis. Another indirect indicator of difficult breastfeeding can be poor weight gain in the newborn, as well as maternal anxiety, feelings of inadequacy, and eventually depression accompanied by weight loss. There are no uniform diagnostic criteria or treatment indications in the current literature, and many authors emphasize the need for a preoperative evaluation before considering ankyloglossia as the actual determinant of breastfeeding problems (1,2,4-8,13). According to a systematic review by O'Shea et al., the optimal age for performing lingual frenotomy remains unclear, although intervention is recommended before the development of atypical swallowing (14).

With the improvement of healthcare services in both developed and developing countries and the increasing frequency of routine check-ups, as well as the World Health Organization's policy promoting exclusive breastfeeding during the first year, the diagnosis of tongue-tie appears to have increased. Studies show that while the incidence of ankyloglossia ranged between 0.01% and 4.8% in the early 2000s, it rose to as much as 13% after 2015 (1,3,15). In a previous study from our clinic, 127 cases were reported over 18 years, whereas this study, covering the last 10 years, includes 164 cases (16). This indicates an increase in case numbers similar to the literature and, consistent with

the literature, shows a higher prevalence in males. The rise in diagnoses and the large number of cases under one year of age are believed to result from regular neonatal and infant check-ups, active breastfeeding support units, and our hospital's status as a baby-friendly hospital. In our series, most patients undergoing frenotomy were under one year old and had mostly grade 2 or 3 tongue-tie, likely due to early diagnosis and increased parental anxiety upon being informed about the condition. As seen in Table 2, approximately 46.7% of patients under one year had feeding difficulties, and frenotomy in the remaining infants was performed due to parental concern. Similarly, a study by Ata et al. found that feeding difficulties were the most common reason for referral in children under two years (17).The exact relationship between ankyloglossia and breastfeeding insufficiency is unknown. However, it has been proposed that due to limited tongue mobility, infants with tongue-tie struggle to create an adequate seal on the nipple, leading to inefficient sucking and nipple trauma. Therefore, it is believed that releasing the tongue from the lingual frenulum allows for proper tongue movement during latch-on, sucking, and swallowing (5,18). The literature provides conflicting data on the effectiveness of lingual frenotomy in resolving infant feeding problems. While a Cochrane review highlights numerous methodological flaws in existing studies, it agrees that frenotomy reduces nipple pain in breastfeeding mothers in the short term (14). A 2022 study using the LATCH scoring system—which assesses latch, audible swallowing, nipple type, comfort, and the amount of help needed during breastfeeding—found that frenotomy improved breastfeeding efficiency and reduced maternal nipple pain (19,20). In our clinic, patients presenting with breastfeeding difficulties showed improvement in symptoms, weight gain, and/or decreased maternal anxiety following the procedure.

Particularly in neonatal frenotomy and in appropriately selected cases within the first six months (those with thin, low-grade frenula), the procedure can be performed without anesthesia in neonatology or otolaryngology clinics and in outpatient settings by surgeons, neonatologists, pediatricians, ENT specialists, obstetricians, lactation consultants, or pediatric dentists. However, in patients over six months of age and in those with thick frenula, the use of scissors or bipolar cautery under laryngeal mask airway (LMA) anesthesia, or laser lingual frenotomy, has been described as a safe and comfortable technique (2,5,6,10,15).

Laser frenotomy carries risks such as ocular inflammation from light exposure without protective goggles, rapid heat generation, need for external cooling, and internal fire hazards. Due to the need for an experienced team and specialized equipment, the economic cost is also high. The advantages of laser frenotomy include short operative time, immediate hemostasis, low risk of bleeding, clear visibility, no need for sutures, reduced need for local anesthetics, lower postoperative edema and pain, shorter healing time, and a lower risk of intraoperative bacteremia (5). Various reports suggest that the laser technique allows for better wound healing than cold knife surgery through its anti-inflammatory and biostimulatory effects and by reducing colonization by myofibroblasts. Laser lingual frenotomy performed with preoperative lidocaine 2.5% + prilocaine 2.5% cream and postoperative cold application has been shown to result in low pain scores (10). Several authors have reported the use of acetaminophen for prophylactic analgesia four to eight hours postoperatively (3).

Although concerns about speech are a more common complaint, parents have also reported social and mechanical concerns associated with tongue-tie, such as difficulty licking lips or ice cream cones. Despite limited tongue mobility, it has been shown that children with tongue-tie can develop normal speech. However, a significant percentage (71%) of young children with ankyloglossia have articulation difficulties as measured by formal speech pathology evaluations (13). In our series, 22 of the 42 patients over one year old (52.3%) had speech disorders, while other parents expressed concerns about potential future speech issues. Contrary to the belief of some parents, ankyloglossia is not associated with failure or delay in speech development. These parents may request surgical intervention in hopes of rapid speech improvement and seek help from pediatricians or ENT specialists. A prudent clinician should recognize that ankyloglossia may lead to articulation problems in normal speech development rather than complete speech deficiency. Such patients should be referred for further evaluation including audiologic, speech/language, and neurodevelopmental assessments. Surgical correction may be considered after verifying the true etiology of speech delay (13).

In a study by Zahou et al, 341 pediatric patients aged 2-5 years with speech issues due to ankyloglossia were divided into two groups: those who underwent surgical intervention (n=166) and those who did not (n=175). The patients were further stratified into three age groups: 2-3, 3-4, and 4-5 years. Evaluations were made preoperatively and at 2, 6, and 12 months post-intervention in terms of tongue appearance, tongue mobility, speech production, and parental/clinician intelligibility ratings. No statistically significant differences were found between intervention and non-intervention groups in the 2-3 age group, but in children older than three, speech skills and intelligibility significantly improved in the surgical group (3). However, despite frequent parental requests for frenotomy to prevent speech disorders, some studies argue that there is insufficient evidence of postoperative speech improvement and recommend against frenotomy solely for this reason (8,13,20). In our study, frenotomy was performed in 20 patients due to speech disorders, all of whom received speech therapy. Eighteen of these patients benefited from the procedure and therapy, while two were

diagnosed with autism. The contribution of surgery and therapy to speech improvement must be clarified. Randomized controlled studies are needed to compare each intervention separately. While some studies have shown better speech and language outcomes post-frenotomy in children with moderate preoperative speech and language disorders, many others have reported no significant improvement in speech following surgical intervention (2,6,21,22). These discrepancies may result from differences in study design, subject characteristics, follow-up periods, and evaluation methods. Additionally, natural improvement of speech with age and the lack of standardized articulation assessment methods contribute to these inconsistencies (3).

Approximately 50% of infants with tongue-tie do not have breastfeeding issues and thus require no treatment. For those with breastfeeding difficulties, non-surgical interventions such as breastfeeding therapy and optimizing infant positioning during feeding should be attempted before surgery (11). However, in our country, concerns about poor feeding and inadequate weight gain often override supportive treatment.

As in the literature and in this study, frenotomy is frequently preferred as a surgical treatment. According to the literature, no single technique (frenotomy, frenuloplasty, Z-plasty, etc.) is superior; all are considered effective in appropriate cases (22). A systematic review and meta-analysis comparing conventional, laser, and Z-plasty frenotomy evaluated 35 studies and concluded that all three techniques are safe and effective in symptomatic cases (10). Especially in older children, frenuloplasty is often recommended as it allows greater tongue release and is believed to reduce recurrence risk (23).

In infants aged 0-6 months, the lingual frenulum is typically thin and contains few blood vessels, resulting in minimal bleeding that can be controlled with gauze pressure. Therefore, the procedure can be performed in an office setting, and young children can feed immediately afterward and be discharged within 30 minutes. In our clinic, frenotomy was preferred for most patients under six months. In older children, bipolar cautery-assisted frenotomy under anesthesia was preferred due to its safety. Based on our past and current experiences, we also recommend frenotomy in older children.

In the literature, the overall complication rate after frenotomy is about 9%. Common complications include bleeding (3-5%), recurrence (5%), injury to lips or salivary glands, infection, lingual nerve injury, cyst formation, and mucous retention. In our series, none of these complications were observed. However, two patients experienced 2-3 mm burns on the lower lip due to contact with bipolar cautery, which were managed with appropriate wound care. The low complication rate in our series may be attributed to factors such as the predominance of patients under one year, low-grade tongue-tie severity, standardized procedural settings, the use of anesthesia, bipolar tools, and clinical experience. Higher complication rates reported in the literature may be due to variations in case diversity, operator specialty and experience, and procedural environment (3,5,11,13).

Limitations of this study include its retrospective design, incomplete patient feedback, and lack of randomized patient selection. Furthermore, a study using standardized tools for classifying speech and feeding disorders, such as the Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF), LATCH, Infant Breastfeeding Assessment Tool (IBFAT), Kotlow's Classification (KC), and the Goldman-Fristoe Test of Articulation-2, is necessary (3,5,13).

Conclusion

Frenotomy should be the primary method of choice in patients diagnosed with tongue-tie and presenting with breastfeeding difficulties or speech disorders. It can be safely performed without anesthesia in children under six months, and with LMA-assisted anesthesia in those older than six months.

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Author Contributions

The authors declare that they have contributed equally to this manuscript. Concept and design: **Ramazan Karabulut,** Analysis and interpretation: **Ramazan Karabulut, Alparslan Kapısız, Cem Kaya,** Data collection: **Ramazan Karabulut, Alparslan Kapısız, Gökhan Arkan, Fatma Nur Aracıer Uçaner, Leyla Nur Türker,** Manuscript writing: **Ramazan Karabulut, Alparslan Kapısız, Fatma Nur Aracıer Uçaner, Leyla Nur Türker,** Critical review and revision: **Kaan Sönmez, ZT,** Final approval: **Kaan Sönmez, Zafer Türkyılmaz, Ramazan Karabulut, Alparslan Kapısız, Fatma Nur Aracıer Uçaner, Gökhan Arkan, Leyla Nur Türker, Cem Kaya.**

Conflicts of Interest

The authors declare that there is no conflict of interest among them.

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Ethical Approval

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Review Process

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REFERENCES

1. Hill RR, Lee CS, Pados BF. The prevalence of ankyloglossia in children aged <1 year: a systematic review and meta-analysis. Pediatr Res. 2021;90(2):259-66. https://doi.org/10.1038/s41390-020-01239-y
2. Bruney TL, Scime NV, Madubueze A, Chaput KH. Systematic review of the evidence for resolution of common breastfeeding problems-Ankyloglossia (Tongue Tie). Acta Paediatr. 2022;111(5):940-47. https://doi.org/10.1111/apa.16289
3. Zhao H, He X, Wang J. Efficacy of Infants Release of Ankyloglossia on Speech Articulation: A Randomized Trial. Ear Nose Throat J. 2022:1455613221087946. https://doi.org/10.1177/01455613221087946
4. Ellehauge E, Jensen JS, Grønhøj C, Hjuler T. Trends of ankyloglossia and lingual frenotomy in hospital settings among children in Denmark. Dan Med J. 2020;67(5):A01200051.
5. Dell'Olio F, Baldassarre ME, Russo FG, Schettini F, Siciliani RA, Mezzapesa PP, Tempesta A, Laforgia N, Favia G, Limongelli L. Lingual laser frenotomy in newborns with ankyloglossia: a prospective cohort study. Ital J Pediatr. 2022 Sep 5;48(1):163. https://doi.org/10.1186/s13052-022-01357-9
6. Jamani NA, Ardini YD, Harun NA. Three case reports of infants with ankyloglossia affecting breastfeeding. Med J Malaysia. 2020;75(4):439-41.
7. Kelly Z, Yang CJ. Ankyloglossia. Pediatr Rev. 2022;43(8):473-75. https://doi.org/10.1542/pir.2020-005108
8. Auychai P, Neff A, Pitak-Arnnop P. Tongue-Tie children with a severe Hazelbaker score or difficult breastfeeding greatly benefit from frenotomy or frenuloplasty with/without anaesthesia - First do or do no harm? J Stomatol Oral Maxillofac Surg. 2022;123(3):e76-e81. https://doi.org/10.1016/j.jormas.2021.09.007
9. Cetinkaya M, Oz FT, Orhan AI, Orhan K, Karabulut B, Can-Karabulut DC, Ilk O. Prevalence of oral abnormalities in a Turkish newborn population. Int Dent J. 2011 Apr;61(2):90-100. https://doi.org/10.1111/j.1875-595X.2011.00020.x
10. Khan U, MacPherson J, Bezuhly M, Hong P. Comparison of Frenotomy Techniques for the Treatment of Ankyloglossia in Children: A Systematic Review. Otolaryngology-Head and Neck Surgery. 2020;163(3):428-43. https://doi.org/10.1177/0194599820917619
11. Costa-Romero M, Espínola-Docio B, Paricio-Talayero JM, Díaz-Gómez NM. Ankyloglossia in breastfeeding infants. An update. Arch Argent Pediatr. 2021;119(6):e600-e609. https://doi.org/10.5546/aap.2021.eng.e600
12. Ferrés-Amat E, Pastor-Vera T, Ferrés-Amat E, Mareque-Bueno J, Prats-Armengol J, Ferrés-Padró E. Multidisciplinary management of ankyloglossia in childhood. Treatment of 101 cases. A protocol. Med Oral Patol Oral Cir Bucal. 2016;21(1):e39-47. https://doi.org/10.4317/medoral.20736
13. Shekher R, Lin L, Zhang R, Hoppe IC, Taylor JA, Bartlett SP, Swanson JW. How to Treat a Tongue-tie: An Evidence-based Algorithm of Care. Plast Reconstr Surg Glob Open. 2021 Jan 25;9(1):e3336. https://doi.org/10.1097/GOX.0000000000003336
14. O'Shea JE, Foster JP, O'Donnell CP, Breathnach D, Jacobs SE, Todd DA, Davis PG. Frenotomy for tongue-tie in newborn infants. Cochrane Database Syst Rev. 2017 Mar 11;3(3):CD011065. https://doi.org/10.1002/14651858.CD011065.pub2
15. Barberá-Pérez PM, Sierra-Colomina M, Deyanova-Alyosheva N, Plana-Fernández M, Lalaguna-Mallada P. Prevalence of ankyloglossia in newborns and impact of frenotomy in a Baby-Friendly Hospital. Bol Med Hosp Infant Mex. 2021;78(5):418-23. https://doi.org/10.24875/BMHIM.20000391
16. Karabulut R, Sönmez K, Türkyilmaz Z, Demiroğullari B, Ozen IO, Bağbanci B, Kale N, Başaklar AC. Ankyloglossia and effects on breast-feeding, speech problems and mechanical/social issues in children. B-ENT. 2008;4(2):81-5.
17. Ata N, Alataş N, Yılmaz E, Adam AB, Gezgin B. The Relationship of Ankyloglossia With Gender in Children and the Ideal Timing of Surgery in Ankyloglossia. Ear, nose, & throat journal, 2021;100(3):NP158-NP160. https://doi.org/10.1177/0145561319867666
18. Chinnadurai S, Francis DO, Epstein RA, Morad A, Kohanim S, McPheeters M. Treatment of ankyloglossia for reasons other than breastfeeding: A systematic review. Pediatrics. 2015;135(6):e1467-74. https://doi.org/10.1542/peds.2015-0660
19. Wen Z, Walner DL, Popova Y, Walner EG. Tongue-tie and breastfeeding. Int J Pediatr Otorhinolaryngol. 2022;160:111242. https://doi.org/10.1016/j.ijporl.2022.111242
20. Jensen D, Wallace S, Kelsay P. LATCH: a breastfeeding charting system and documentation tool. J Obstet Gynecol Neonatal Nurs. 1994;23(1):27-32. doi:10.1111/j.1552-6909.1994.tb01847.x
21. Bhandarkar KP, Dar T, Karia L, Upadhyaya M. Post Frenotomy Massage for Ankyloglossia in Infants-Does It Improve Breastfeeding and Reduce Recurrence? Matern Child Health J. 2022;26(8):1727-31. https://doi.org/10.1007/s10995-022-03454-x
22. Kim TH, Lee YC, Yoo SD, Lee SA, Eun YG. Comparison of simple frenotomy with 4-flap Z-frenuloplasty in treatment for ankyloglossia with articulation difficulty: A prospective randomized study. Int J Pediatr Otorhinolaryngol. 2020;136:110146. https://doi.org/10.1016/j.ijporl.2020.110146
23. Rajain T, Tsomu K, Saini N, Namdev R. Lingual Frenuloplasty for Ankyloglossia in Children: A Case Series. Contemp Clin Dent. 2021;12(4):447-50. https://doi.org/10.4103/ccd.ccd_660_20