

Tongue Tie and Management of Two Siblings: A Review with Report

Sonal Gupta¹, Dr. Menia Gumro^{2*}, Simran Isha², Ashima Varshney³

¹Professor and Head of the Department of Pediatric and Preventive Dentistry, K. D. Dental College and Hospital, Uttar Pradesh, India

²JR-3, Department of Pediatric and Preventive Dentistry, K. D. Dental College and Hospital, Uttar Pradesh, India

³JR-2, Department of Pediatric and Preventive Dentistry, K. D. Dental College and Hospital, Uttar Pradesh, India

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*Corresponding author: Dr. Menia Gumro

JR-3, Department of Pediatric and Preventive Dentistry, K. D. Dental College and Hospital, Uttar Pradesh, India

Abstract

Ankyloglossia is defined as a developmental anomaly of the tongue characterized by an abnormally short, thick lingual frenulum resulting in limitation of tongue movement or in simple terms, tongue tie. In this condition there is difficulty lifting the tongue to the upper teeth or moving the tongue from side to side, tongue appears notched or heart shaped when stuck out. Adult tongue-tie may result in mouth breathing, inability to speak clearly, difficulty kissing, jaw pain and tongue thrust. We hereby report case of tongue-tie of two siblings and its management by electrocautery, this technique was simple, easier as well as less time consuming, unlike conventional surgery. There is little damage to adjacent tissue and no blood in the operating field when using the electrocautery.

Keywords: Ankyloglossia, Tongue Tie, Frenectomy, Electrocautery.

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INTRODUCTION

The tongue is an important organ that affects speech, position of the teeth, periodontal tissue, nutrition, and swallowing. The soft tissue that attaches the underside of the tongue to the floor of the mouth is referred to as the lingual frenum (Madhusudhan KS 2017). It usually consists of mucosa (mucous membrane), dense fibrous connective tissue and occasionally superior fibers of the genioglossus muscle. This attachment binds the tip of the tongue to the posterior (back) surface of the mandible (lower jaw).

Etymologically, "ankyloglossia" originates from the Greek words "agkilos" (curved) and "glossa" (tongue). Ankyloglossia is defined as a developmental anomaly of the tongue characterized by an abnormally short, thick lingual frenulum resulting in limitation of tongue movement or in simple terms, tongue tie.

The first use of the term ankyloglossia in the medical literature dates back to the 1960s (Hillan 2008; Wallace & Clarke 2006) described tongue-tie or ankyloglossia as a congenital condition with an unusually thickened, tightened or shortened frenulum (membrane or string under the tongue). The frenulum may vary in length, elasticity and placement along the underside of the tongue to the floor of the mouth, which

then can affect infants' breastfeeding skills in different ways (Watson Genna 2008) and can affect other activities such as feeding, dental hygiene, and speech (Amir *et al.*, 2006; Kummer 2005 *et al.*).

Incidence of ankyloglossia is 4.8% and effects more males than females at almost a 3:1 ratio (Umashankar D N *et al.*, 2011). Overall prevalence of tongue-tie is 8%. Also, the prevalence of male and female in which 7% in males and 4% in females.

Tongue-tie may prevent the infant from taking enough breast tissue into its mouth to form a teat, which may affect breastfeeding. Some infants with tongue-tie are unable to attach to the breast, while others are able to attach but are less efficient at breastfeeding, due to reduced tongue mobility (Hillan 2008).

Infants may fail to transfer enough breast milk for adequate growth, while poor attachment due to tongue-tie may reduce stimulation of the breast and lead to a reduction in milk supply (Ricke *et al.*, 2005). As a result of this restricted tongue action, the mother may experience painful, bleeding nipples from the friction created by abnormal tongue movements (Griffiths 2004). Despite frequent feeds, the infant may have poor weight

gain due to poor milk intake (Amir, 2005; Blenkinsop 2003; Dollberg *et al.*, 2006; Wallace & Clarke 2006).

Nipple tenderness, damage, and breast pain are common symptoms experienced by mothers who are breastfeeding an infant with tongue-tie. Often, the level of discomfort and pain becomes unbearable, and these are primary factors that led to early breastfeeding cessation. This, in turn, can lead to maternal feelings of failure and high levels of emotional distress (Amir *et al.*, 2006).

Some clinical features of tongue tie are diastema around the lower incisor teeth, difficulty lifting the tongue to the upper teeth or moving the tongue from

side to side, trouble sticking out the tongue past the lower front teeth, tongue appears notched or heart shaped when stuck out. Adult tongue-tie may result in mouth breathing, inability to speak clearly, difficulty kissing, Jaw pain and tongue thrust (Bansal P 2010).

Suggested classification of tongue-tie: based on distance of the insertion of the lingual frenum to the tip of the tongue there are four (4) types. Clinically acceptable, normal range of free tongue: greater than 16mm: Class I: Mild ankyloglossia: 12 to 16 mm, Class II: Moderate ankyloglossia: 8 to 11 mm, Class III: Severe ankyloglossia: 3 to 7 mm, Class IV: Complete ankyloglossia: less than 3 mm (Umashankar DN *et al.*, 2011).

Grade	Description	Anterior tongue mobility	Posterior tongue mobility	Range of free tongue
1	Highly (average)	>80%	>60%	>16mm
2	Normal (moderate)	50-80%	30-60%	12-16mm
3	Moderately restricted	<50%	<30%	8-12mm
4	Severely restricted	25%	<5%	<3mm

For many years, the subject of ankyloglossia has been controversial with practitioners of many specialties having widely different views regarding its significance and management. In many individuals, ankyloglossia is asymptomatic, the affected individuals may learn to compensate adequately for their decreased lingual mobility. Some individuals however, benefit from surgical intervention frenectomy or frenuloplasty for their tongue-tie. Patients should be educated about the possible long-term effects of tongue-tie so that they may make an informed choice regarding possible therapy. Thus, we are reporting two cases of tongue tie of a siblings having speech difficulty.

CASE: 1

A 7-year-old boy reported to the Department of Pedodontics and Preventive dentistry, with the chief complaint of difficulty in protruding the tongue and speaking some words.

Intraoral examination revealed the presence of tongue tie. The lingual frenum was fibrotic inserted close to the tip of tongue. The tongue showed clefting on the protrusion and typical heart shape on elevating it towards the palate. There was the spacing between the central incisor and mesiolingual rotation of left central incisor. The patient had difficulty in tongue sounds such as t, d, th, s.

Diagnosis: Patient was diagnosed with class II ankyloglossia according to Kotlow's classification.

Treatment plan: Frenectomy under local anaesthesia using Electrocautery.

Treatment Done: After obtaining the informed consent, the following treatment was carried out. Intraoral antiseptic with betadine was done followed by topical anaesthetic spray applied to the underside of the tongue after that bilateral lingual nerve block with 2% lignocaine and 1: 80000 adrenaline was administered. Frenectomy was performed using electrocautery.

Case-1



Fig. 1 A: Pre-Operative



Fig 1 B: Heart shape of



Fig 1 C: Electrocautery



Fig. 1 D: Post-Operative

CASE: 2

A 9-year-old boy reported to the Department of Pediatric and Preventive Dentistry, with the chief complaint of trouble moving his tongue freely, which frequently causes speech problems in freely pronouncing specific words.

Intraoral examination revealed the presence of tongue tie. There was restricted tongue movement and clefting of tongue on protrusion. The patient had difficulty in tongue sounds such as t, d, th, s.

Diagnosis: Patient was diagnosed with class II ankyloglossia according to Kotlow's classification.

Treatment plan: Frenectomy under local anaesthesia using Electrocautery.

Treatment Done: After obtaining the informed consent, the following treatment was carried out. Intraoral antiseptics with betadine was done followed by topical anaesthetic spray applied to the underside of the tongue after that bilateral lingual nerve block with 2% lignocaine and 1: 80000 adrenaline was administered. Frenectomy was performed using electrocautery.

Post treatment immediate tongue movement was seen in both the cases.

Case-2



Fig. 2 A: Pre-Operative



Fig. 2 B: Clefting of Tongue



Fig. 2 C: Electrocautery



Fig. 2 D: Post-Operative

DISCUSSION

Tongue-tie can affect breastfeeding, so it is important to examine the effectiveness of treatment. It can be treated surgically by frenectomy, a minor surgical procedure involving separation or cutting of the frenulum, undertaken with sterile scissors and with local anaesthetic (Ridgers, Mccombe & Mccombe 2009). A frenuloplasty may also be used, which combines excision and repair of tongue-tie (Ballard, Auer & Khoury 2012). Although laser treatment has been used for older children and adults (Aras *et al.*, 2010; Fiorotti *et al.*, 2004) there have been no reports in the literature of its use with infants.

The weight of research evidence review has suggested that frenectomy is an effective treatment for tongue-tie and that it is conducive to successful breastfeeding; however, it is important also to establish the safety of frenectomy. Several studies have cited an evidence concerning safety of frenectomy: no problems, other than minor bleeding, have been identified (Finigan 2009; Griffiths 2004). Safety has been examined further by some researchers with the purpose of evaluating complications or negative outcomes following the procedure (Griffiths 2005; Ridgers, Mccombe & Mccombe 2009).

Lack of consensus regarding tongue-tie management: While many studies (Finigan 2009; Srinivasan 2006) have provided evidence for the effectiveness of frenectomy for tongue-tie, a review of medical guidelines reveals a lack of consensus regarding the need to treat tongue-tie in this manner. In 2007, the Canadian Paediatric Society reaffirmed its position statement from 2002, which states that management of tongue-tie should be conservative, 'requiring no intervention beyond parental education and reassurance'. Neither the American College of Paediatricians nor The Royal Australasian College of Physicians or Paediatrics and Child Health has a published position statement on tongue tie and its management, which is significant by omission. This would suggest that the need for treatment of tongue-tie is not well recognised or that there is lack of consensus in regard to tongue-tie management. A lack of consensus is further supported by two large research studies of opinion of tongue tie treatment. Thus, this case report is aim to review the ankyloglossia with their management (Yeh 2008).

Choice of management for ankyloglossia includes timely and appropriate intervention, followed by speech therapy which delivers pleasing results, often in a less time than expected. Surgical techniques for ankyloglossia can be classified into three procedures: (i) Simple cutting of the frenulum i.e. Frenotomy (ii) Complete excision of the whole frenulum i.e. frenectomy (iii) Frenuloplasty involves various methods to release the ankyloglossia and correct the anatomic situation. Surgical intervention for treating ankyloglossia includes conventional technique with scalpel, electrocautery and

LASER (Madhusudhan KS 2017). There are potential risks associated with conventional tongue-tie surgery which are rare but include, excessive bleeding, infection, damage to the tongue or salivary glands, scarring that can lead to reattachment of the frenulum to the base of the tongue and also caution should be taken while preferring scalpel in order to minimize the trauma to the adjacent vital structures (Darshan HE *et al.*, 2011). While other techniques the laser and electrocautery have been found to be safe and effective, with no bleeding, swelling, and pain (Morowati S *et al.*, 2010). Without post-operative exercise for tongue, there will be no convincing improvement in speech. It improves ability for sensation of parts of tongue (kinaesthesia) and rapid alternating movements of tongue (diadochokinesis). There is no study or case report related to the use of Laser in infant and child patient, so we used Electrocautery as the treatment of choice.

In our case, frenectomy using electrocautery was planned for the both cases, excision of the muscle fibres thus relieving the frenulum was simple, easier as well as less time consuming. The electrocautery is a much kinder method of revision, unlike conventional surgery, which is actually a burn and the scalpel which cuts deeper into treatment area than is necessary to release the frenum (Lawrence A *et al.*, 2004). There is little damage to adjacent tissue and no blood in the operating field when using the electrocautery, therefore healing appears quicker and with minimal amount of post-operative discomfort. The outcome of the frenectomy in both the cases showed good healing without any post-operative complications. The tongue movement was immediate after frenectomy with electrocautery in both the cases. We advised the parents for speech therapy and tongue exercise for more improvement.

SUMMARY

Treatment of ankyloglossia requires early diagnosis and can be successfully treated in the dental office preventing many potential problems from occurring as the child develops such as face development and speech. So, the correction can be done by electrocautery as it is simple, bloodless and less time consuming, which is a major factor for pediatric patients.

ALL DISCLOSURES

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Author Contributions

Menia Gumro, contributed to conception and design, data analysis and interpretation, drafted and critically revised the manuscript; S. Gupta, contributed to data acquisition, critically revised, gave final approval; Simran isha, contributed to conception, critically revised the manuscript; T. Dietrich, contributed to conception, critically revised the manuscript; Ashima varshney contributed to data acquisition and analysis, critically revised the manuscript.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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