

Tongue Tie and Breastfeeding: of the Gap or Another Hype?

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Abstract

In this mini-review the pathogenesis, pathophysiology, course and treatment of ankyloglossia or “tongue tie” are discussed in relation to its impact on breastfeeding. Tongue tie surgery has been sky-rocketed last two decades. Pediatric association Campaigns promoting breastfeeding up to the age of 6 months and media attention all contributed. However, the number of operations outpaces the low and weak evidence by far. But young mothers don't wait for further evidence by randomized controlled trials. The number of clinics on internet offering tongue tie surgery to improve breastfeeding rises enormously following the law of demand and supply.

Introduction

Tongue tie (ankyloglossia) is where the strip of skin connecting the baby's tongue to the floor of their mouth is shorter than usual. Some babies who have tongue tie don't seem to be bothered by it. In others it can restrict the tongue's movement, making it harder to breastfeed. Tongue tie is sometimes diagnosed during a baby's routine newborn check but it is not always easy to spot. Tongue tie affects around 4-11% of newborn babies. It is more common in boys than girls and sometimes runs in families. Babies with tongue tie are not able to open their mouth wide enough to latch on the breast properly. They may have difficulty attaching to the breast or staying attached for a full feed, feed for a long time and be unsettled and seem hungry all the time. They may not gain weight as quickly as they should and can make a “clicking” sound as they feed [1-3]. Tongue tie can cause problems for a breastfeeding mother as sore or cracked nipples, low milk supply or mastitis. Recently, the subject tongue tie and breastfeeding received much attention in the press and media [4-7]. Tongue tie surgery is sky-rocketing in Australia. During 2006-2016 52.473 Medicare frenotomy items for 0-4 year old children were recorded; the rate increased from 1,22 per 1000 population in 2006 to 6,35 per 1000 in 2016. These data do not capture frenotomies performed by dentists by CO2 laser frenotomy [8]. Between 1997 and 2012 the U.S. showed an increase in frenotomies of 886% [9] and Canada (2004-2013) an increase of 89% [10]. This raises the question of whether this surgical management is supported by sufficient evidence [11,12]. In this

mini-review pathogenesis, pathophysiology, course and treatment of tongue tie will be discussed.

Pathogenesis and pathophysiology

Ankyloglossia is a congenital anomaly characterized by an abnormally short lingual frenum. Its prevalence in the population is approximately 4% but varies from 0,02 to 10,7% in different studies [13-15]. Its definition and severity classification have not yet been clearly established. It mostly appears as a sole anomaly, though it is sometimes accompanied by other congenital anomalies such as cleft palate. As it has a hereditary nature, it occurs more commonly in male children and has been suggested to be related to the X-chromosome [16-18]. A study of the risk factors of ankyloglossia showed that morbidity among infants whose mothers smoked cocaine was three times that among mothers who did not smoke cocaine. Ballard [19] showed that about 21% of pediatric patients had affected parents [20]. Han showed in a study of 149 Korean children who underwent frenuloplasty an inheritance rate of 20,69% .X-chromosome mediated inheritance and variation in the gene expression was revealed in the pedigree. The male-female ratio was 2:1. They concluded that ankyloglossia is inherited through X-linked recession and that the mothers of the female patients were carriers [21]. Other environmental factors linked to ankyloglossia and cleft palate are folate deficiency and excess retinoic acid (Vitamin E), a known teratogenic [22]. The link with folate deficiency is however much weaker than in spina bifida. Epigenetic factors may also play

a role [23]. There is no standard definition of ankyloglossia and multiple classifications exist. When examined the “free tongue” length in newborns it should be greater than 16 mm. Measurements of less than 11 mm indicate moderate ankyloglossia and less than 7 mm indicate severe ankyloglossia. However, this measurement may not be useful in infants. The term posterior ankyloglossia is used when the frenulum is attached at the middle or posterior aspect of the undersurface of the tongue. Taking into consideration the anatomy and function there are many assessment tools for classification. One of them is the Hazelbaker Assessment for Lingual Frenulum Function. This tool uses a scoring system of anatomy and function [24]. The anatomy part pays attention to the tongue when lifted, elasticity of frenulum, length of lingual frenulum when tongue lifted, attachment of lingual frenulum to tongue and attachment of lingual frenulum to inferior alveolar ridge. The function is viewed as lateralization, lift of tongue, extension of the tongue, spread, cupping of tongue, peristalsis and snapback. It consists of 10 points for frenulum appearance and 14 points for tongue function.

Course of Tongue Tie

The clinical presentation of symptomatic ankyloglossia varies. The biggest concern as well as research and data collection focus on breastfeeding difficulties that include prolonged feeding, difficulty latching and irritability while feeding. These all lead to poor weight gain. With the American Academy campaign to exclusively breastfeed babies up to 6 months of age, ankyloglossia and its management have gained more attention due to the difficulties when breastfeeding is attempted [25]. There are concerns that ankyloglossia can persist beyond the neonatal period. While some authors describe the possibility of speech related issues due to decreased tongue mobility, others disagree. However, concerned parents frequently ask about future problems with articulation. As the speech develops, some children may exhibit difficulties with the sound of several letters or the combination of letters: l, r, t, d, n, z, th, and sh. It is quite difficult to predict which patients will have articulation problems, or in fact, this association exists [26]. Other reported problems in patients with ankyloglossia include difficulty eating certain foods that include licking (ice cream), playing certain wind instruments (flutes, clarinets, tubas and trumpets) and orthodontic problems (open bite and malocclusion) [26]. Dental caries could occur due to food debris not being removed by the tongue’s action of sweeping the teeth and spreading of saliva. Spreading of lower incisors with periodontitis and teeth mobility due to long-term tongue thrust are associated problems in untreated ankyloglossia [27].

Treatment of Tongue Tie

Ankyloglossia may be treated with surgical or non-surgical approaches. Surgical modalities include frenotomy, frenulectomy and frenuloplasty. These interventions involve clipping or cutting of the frenulum, generally without sedation. In ancient years this was done by midwives with their finger nails [28]. Laser frenotomy or

frenulectomy has also been described and proponents argue that it is more exact and provides better hemostasis than standard frenotomy or frenulectomy. Frenoplasty, is mostly used in older children and adults and refers to rearranging tissue or adding grafts after making incisions and closing the resultant wound in a specific pattern to lengthen the anterior tongue and is most commonly performed under general anaesthesia. There is no sufficient evidence in the literature to favor any one of these 3 main techniques [29]. Frenotomy of the neonate is a simple procedure of less than 2 minutes. Frenotomy and frenuloplasty at or after 6 months of age are performed under general anaesthesia. Revision of the frenum by laser can be performed without a general anaesthetic and revision by electrocautery uses a local anaesthetic. All these methods are equally successful when used in appropriate circumstances. Non-surgical approaches consist of observation and speech therapy [1-3].

Frenotomy, may be accomplished by incising 2-3mm into the lingual frenulum, care being taken not to incise any vascular tissue. There should be minimal blood loss, no more than a drop or two. However, when the procedure is performed by untrained personnel complications can be serious. These include bleeding, soft tissue injury and infection which can be life-threatening [30]. Laser and electrocautery techniques offer a safe and effective alternative for scalpel frenotomy operations [31]. If the only goal were to improve breastfeeding, snipping the tie in infancy would be the obvious solution. No anaesthetic is needed, it is relatively cheap, the infant’s pain is slight, bleeding is negligible and feeding improves immediately. However, when ankyloglossia is associated with foreshortening of the genioglossus muscle, as often occurs, merely snipping the lingual frenulum may not allow free and coordinated movement of the tongue sufficient for the demands of a gradually growing speech and language structure. As a result, further surgery may legitimately be needed later. Therefore, the possibility that re-evaluation of the situation might become appropriate later, should be emphasized.

Tongue Tie Evidence

There are few subjects in medicine that have raised so much controversy as the relatively minor and simple surgical treatment of tongue tie in breastfeeding. Consensus on ankyloglossia’s role in breastfeeding difficulties is lacking. A minority of surveyed pediatricians (10%) and otolaryngologists (30%) believe it commonly affects feeding, while 69% of lactation consultants feel that it frequently causes breastfeeding problems [32]. In a 2016 Cochrane analysis five randomized controlled trials (RCTs; n=302) met the inclusion criteria [11]. It was concluded that frenotomy reduced breastfeeding mother’s nipple pain in the short term. Investigators did not find a consistent positive effect on infant breastfeeding. Researchers reported no serious complications, but the total number of infants was small. The small number of trials along with methodological shortcomings limits the certainty of

these findings. Further RCTs of high methodological quality are necessary to determine the effects of frenotomy.

A 2016 NICE guidance concluded that there are no major safety concerns about division of ankyloglossia and limited evidence suggests that this procedure can improve breast feeding. This evidence is adequate to support the procedure, provided that normal arrangements are in place for consent, audit and clinical governance [6]. The American Academy of Pediatrics concluded in 2015 that a small body of evidence suggests that frenotomy may be associated with improvements in breastfeeding as reported by mothers, and potentially in nipple pain, but with small, short term studies, inconsistently conducted, strength of evidence is generally low to insufficient [1]. Australia's National Health and Medical Research Council's (NHMRC) 2012 Infant Feeding Guidelines state there is limited evidence that tongue tie occurs in appropriately 4-10% of healthy newborn infants (Evidence Grade D). There is limited evidence (Grade D) to suggest that infants with tongue tie more commonly experience breastfeeding difficulties and further trials are required [8,9].

Conclusion

It is evident the increase in the number of tongue tie operations outpaces evidence. It is also clear the increased numbers are likely a reflection of breastfeeding recommendations by pediatric associations [25] and an underlying commitment to helping women breastfeeding and media attention. It is true that classic tongue tie was missed for decades. Unfortunately, the evidence is not there to show that frenotomies improve outcomes. Anyway, young mothers made already their choices and are not waiting for the results of further RCTs of tongue tie and the impact on breastfeeding. The amount of clinics on the internet offering tongue tie surgery has raised enormously following the laws of demand and supply.

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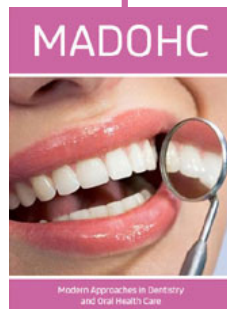
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