

Short lingual frenum in infants, children and adolescents. Part 1: Breastfeeding and gastroesophageal reflux disease improvement after tethered oral tissues release



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Abstract

Aim This study aimed to determine the impact of laser surgical tongue-tie, lip-tie, buccal tie release on breastfeeding and Gastroesophageal Reflux Disease (GERD) in a prospective cohort study conducted from June 2019 to June 2020 in a private general dental practice.

Materials and methods Preoperative, one-week and one-month postoperative surveys were completed, consisting of Visual Analogue Scale (VAS) for nipple pain severity, Breastfeeding Self-Efficacy Scale Short Form (BSES-SF), and the Revised Infant Gastroesophageal Reflux Questionnaire (I-GERQ-R). All study participants were breastfeeding dyads (0–12 weeks of age) with untreated ankyloglossia and/or tethered maxillary/buccal frena. The laser surgery was completed using 2 different near-infrared diode lasers with 300µm diameter fibre: a 980 nm wavelength diode laser (Lasotronix Smart Pro, Piaseczno Poland) was used at 4.0 W, gated with 100 µs t/on and 100 µs t/off, and a 1470 nm wavelength diode laser (Pioon S1, Wuhan Pioon Tech Co Ltd., Wuhan, China), used at 3.5W, gated with 50 ms t/on and 50 ms t/off.

Results Statistically significant improvement was noted in VAS, I-GERQ-R and BSES-SF comparing preoperative scores to both one-week and one-month scores. The study had 132 breastfeeding dyads enrolled. Posterior tongue-tie was noted in 71% of this cohort.

Conclusion This study confirms the need for functional assessment of tongue and lip movement for this significantly affected cohort. Laser surgical release (frenotomy) of tongue-tie, lip-tie, buccal-tie resulted in significant improvement in breastfeeding outcomes. These improvements (VAS, I-GERQ-R and BSES-SF) in breastfeeding outcomes were found for cohorts of the classically recognised anterior tongue-tie and the less obvious (without functional assessment) submucosal tongue-tie were found.

Introduction

The effects of tongue-tie, lip-tie, and buccal-tie on newborn orofacial growth and development are well known and range from maternal discomfort during breastfeeding, infant poor weight gain, air induced reflux and associated symptoms, to orofacial growth retardation.

If health professionals fail to diagnose a short lingual frenum, the correlated impairment can lead to a cascade of several malfunctions, that starts in children with atypical swallowing, may lead to oral breathing and craniofacial growth impairment and may also lead to speech impediment and sleep disorder during childhood and adolescence. During life these alterations can be associated or cause other oral and/or general health problems, including postural modification [Olivi et al., 2012] and pulmonary hypertension [Demirgüneş et al., 2009]. Early detection and surgical intervention in newborns and infants may prevent this vicious cascade of functional impairments from happening. All of us are born with oral frena. Whether these frena are restricting movement of the tongue, lip or cheeks is the issue. If they are restrictive they may be described as ties, or more appropriately, restrictive tethered oral tissues (TOTs). When the mother and infant have been assessed appropriately and other conservative measures are not proving beneficial, there are many breastfeeding dyads that can, and should benefit by surgical intervention [O'Callaghan et al., 2013; Pransky et al., 2015; Ghaheri et al., 2017; Caloway et al., 2019]. This may be achieved by lingual frenotomy, with or without labial frenotomy and/or buccal frenotomy, dependent once again on a well diagnosed need for such intervention.

Breastfeeding is recognised as the optimum nutrition for infants and is beneficial for mothers and infants' health. This is based upon numerous studies that have identified the protective nutritional and health benefits of breastfeeding [Victoria et al., 2016].

The current National Health and Medical Research Council infant-feeding guideline in Australia follows the WHO guidelines and recommends exclusive breast-feeding for infants up to around 6 months of age, and that breastfeeding should be continued until 12 months of age and beyond, for

KEYWORDS Breastfeeding; Laser frenotomy; Gastroesophageal reflux, Visual Analogue Scale; Ankyloglossia; Posterior tongue-tie; Lip-tie, Buccal-tie