Case Report Article

Ankyloglossia: case report

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Abstract

Introduction: The lingual frenulum is an anatomic structure that plays an important role in the act of suction, speech and feeding. A short and adhered lingual frenulum obstructs the tongue movement. This can impair the diverse functions of this structure. This alteration is called ankyloglossia. Objective and case report: The aim of this article is to relate a case of ankyloglossia in a female child of two-years old who was examined in the Clinic of Child Care of the Department of Pediatrics, Federal University of Paraná. The child was diagnosed with type II ankyloglossia and treated by frenectomy. Conclusion: The routine examination of the lingual frenulum permits the identification of insertion abnormalities and enables the establishment of preventive measures for complications during the period of breastfeeding.

Introduction

The lingual frenulum, or tongue's frenulum, connects the tongue to the mouth floor, allowing tongue's free movement. The frenulum is not a muscular tissue. It is a median fold of mucosa tunic that joints the tongue's posterior-inferior surface and gingival tissue, covering the lingual surface of the anterior alveolar ridge. Lingual frenulum is formed by a dense fibrous conjunctive tissue and, often, by superior fibers of the genioglossus muscle. As there is bone development and growth with tongue projection and dental eruption, the lingual frenulum migrates towards a central position up to occupy its definitive position after the tooth eruption. It is classified as short lingual frenulum, with anterior fixation and short with anterior fixation [5, 6, 7, 17, 18]. Madeira (1993) [19] described the frenulum as part of oral mucosa forming a corrugated fold resulting in a fringy fold. This structure covers the deep vein of the tongue and the anterior lingual gland close to apex.

Histologically, the lingual frenulum is composed of a conjunctive tissue rich in collagen and elastic
fibers, with some muscular fibers, blood vessels, and fat cells, covered by a stratified pavementous epithelium [14].

Ankyloglossia, so-called tongue-tie, constitutes a developmental anomaly characterized by alteration in tongue’s frenulum resulting in limitations of this structure’s movements, leading to speech and deglutition changes. The change of the insertion occurs in the tongue’s tip up to the lingual alveolar ridge, being visible at birth [6]. Its definition ranges from since a vague description of “tongue functioning with the activity extension lower than normal” up to the description of a “short, thick, muscular or fibrous frenulum” [17].

The joint of the mouth floor with the tongue is a rare condition; partial ankyloglossia is more common. This abnormality makes the tongue’s movements difficult, mainly the pronunciation of certain consonants and labial-dental diphthongs [21]. Although it is a very much known clinical entity, ankyloglossia affecting children younger than 1 year-old represents a challenge for dentists regarding to its diagnosis [17]. Moreover, it interferes in toothbrushing process, consequently, favoring the risk of plaque accumulation, tissue inflammation onset, and gingival recession [33].

The lingual frenulum examination should consider the clinical and functional aspects of the tongue. Ballard and Kroury (2002) [3] cited the lingual frenulum evaluation according to Hazelbaker (table I) for frenectomy indication when the child is presenting difficulty during breastfeeding with pain in the mother’s nipple.

<table>
<thead>
<tr>
<th>Clinical aspects</th>
<th>Function</th>
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<tbody>
<tr>
<td>Tongue’s aspect when elevated</td>
<td>Lateralization</td>
</tr>
<tr>
<td>2: Round or square</td>
<td>2: Complete</td>
</tr>
<tr>
<td>1: Mild apparent cleft in the tip</td>
<td>1: Tongue’s body, without the tip</td>
</tr>
<tr>
<td>0: Shape of “heart” or “V”</td>
<td>0: None</td>
</tr>
<tr>
<td>Frenulum elasticity</td>
<td>Tongue’s elevation</td>
</tr>
<tr>
<td>2: Very elastic</td>
<td>2: Tongue tip in the middle of the mouth</td>
</tr>
<tr>
<td>1: Mild elastic</td>
<td>1: Only the tip in the middle of the mouth</td>
</tr>
<tr>
<td>0: Little or no elasticity</td>
<td>0: The tip is below the inferior alveolar ridge or it</td>
</tr>
<tr>
<td>is only elevated when the mandible is closed</td>
<td></td>
</tr>
<tr>
<td>Frenulum length when the tongue is elevated</td>
<td>Body’s tongue depression</td>
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<tr>
<td>2: Greater than 1 cm</td>
<td>2: Complete</td>
</tr>
<tr>
<td>1: 1 cm</td>
<td>1: Moderate</td>
</tr>
<tr>
<td>0: Lesser than 1 cm</td>
<td>0: Little or none</td>
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<td>Frenulum insertion into tongue</td>
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<td>2: Posterior to tip</td>
<td>2: Complete</td>
</tr>
<tr>
<td>1: Tip</td>
<td>1: Moderate or partial</td>
</tr>
<tr>
<td>0: Tip in “V” shape</td>
<td>0: Little or none</td>
</tr>
<tr>
<td>Frenulum insertion into inferior alveolar ridge</td>
<td>Abrupt tongue’s movement</td>
</tr>
<tr>
<td>2: Insertion into mouth’s floor or very below the ridge</td>
<td>2: None</td>
</tr>
<tr>
<td>1: Insertion very below the ridge</td>
<td>1: Periodical</td>
</tr>
<tr>
<td>0: Insertion into the ridge</td>
<td>0: Frequent or in each suction</td>
</tr>
</tbody>
</table>
The baby's mouth presents a small membrane that extends from tongue to mandible's inner surface. Such membrane maintains the tongue in correct position during breastfeeding. After some days of child's development, this membrane is transformed into the lingual frenulum, modifying its insertion. Therefore, the child will be able of stretching the tongue forward. In some cases, this membrane becomes thicker and shorter and the tongue's tip is confined, causing ankyloglossia [20, 29, 32].

Tongue plays an important role in deglutition. During breastfeeding, the mother's nipple is compressed and flattened by the baby's tongue against the palatine papilla. The child apprehends the nipple with the lips and tongue, performing a sealing composed by the upper lip, above, and by the tongue's tip and lower lip, below [1]. Occasionally, newborn and nursing babies show atypical oral movements of the tongue that are capable of interfering in breastfeeding. These oral disturbances may be transitory alterations of the oral function or individual anatomical features. Tongue's correct movement favors the proper fit between the baby's mouth and the mother's breast. Oral dysfunctions, when present, result in little weight gain or early ablactation. The breastfeeding of children showing ankyloglossia is frequently inappropriate, being uncomfortable and painful for the mothers [27, 30]. If these alterations are not corrected, they will result in breastfeeding impairment [24].

Frenectomy provides the lingual mobility return because no adherence is formed after the horizontal incision of the frenulum (with scissors and under local anesthesia). In some cases, the surgical procedure is repeated for successfully obtaining tongue articulation mobility [11, 13, 22]. According to Santos et al. (2007) [25], the frenectomy should be executed, as early as possible, or as soon as it is diagnosed. The protocol aims to prevent or reduce the implications related to poor tooth positioning and muscle development, which are damaged. Besides the surgical procedure, treatment should be completed by a speech therapist, in order to reestablish the normal deglutition and speech physiology. The authors emphasized that if the frenectomy is delayed, patient's psychological and social well-being will be compromised.

A study on the determination of the frenectomy effectivity in children presenting breastfeeding difficulty, through submental ultrasonography, revealed that there was less compression of the mother's nipple by the baby's tongue after frenectomy, which resulted in small discomfort during breastfeeding, according to the mothers [12].

Baldini et al. (2001) [2] performed a study on the prevalence of the oral alterations in children aging from 0 to 2 years-old. The incidence of ankyloglossia in children aging from 0 to 3 months-old and from 4 to 12 months-old was 1.59% and 1.49%, respectively. The anomaly was more recurrent in girls. According to Vieira (2004) [31], the occurrence of ankyloglossia is about 1 subject to 300 births. However, a similar study performed in Mexico, with newborn babies, demonstrated that ankyloglossia in the studied population was approximately 1% [10]. This same investigation pointed out that the abnormality occurred more in male than in female subjects (male:female ratio = 1.5:1).

In a population of 621 children aging from 0 to 6 months-old, the most prevalent oral alterations were inclusion cysts, comprising Bohn's nodules, Epstein's pearls, and dental lamina cysts; there was no case of ankyloglossia [26].

The aim of this study was to report a case of ankyloglossia in a child, emphasizing its clinical features and the recommended treatment.

Case report

The parents of a female, Caucasian, two-year-old child sought for the Clinic of Child Care of the Department of Pediatrics, Federal University of Paraná. The child's mother reported the child's difficulty in feeding and pronouncing the labial-dental diphthongs. Moreover, the mother was concerned about the child's learning at school. During anamnesis, the mother reported difficulty during the child's breastfeeding due to tongue-tie, which hindered the nipple's apprehension.

Intraoral clinical examination showed a short lingual frenulum limiting tongue's movement amplitude, with insertion close to tongue's tip (figure 1). The frenulum insertion into the tongue's tip and basis interfered in tongue's protrusion forward, resulting in tongue bending (figure 2). Such condition did not allow a normal deglutition pattern. The girl showed speech difficulties associated with lingual movement limitation. Frenectomy was recommended as treatment, under topical anesthesia. The anomaly occurred more in male than in female subjects (male:female ratio = 1.5:1).

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tongue’s function was evaluated, and there was an improvement in the capacity of movimentation. Such fact suggested an excellent prognosis for the case.

Discussion

Undoubtedly, any problem affecting the tongue’s health may seriously reflect in oral functions. Ankyloglossia is a congenital oral anomaly characterized by a very short lingual frenulum capable of resulting in variable degrees of lingual mobility reduction.

The tongue plays an important role in food transportation and deglutition [9, 23], as well as in words articulation [4]. Also, it influences tooth positioning and breastfeeding. A very short lingual frenulum restricts the tongue movements’ amplitude, impairing the capacity of executing its functions [17].

In the case reported here, ankyloglossia presented a social and clinical relevance, since it caused morphofunctional modifications. The child showed difficulty in speech in association with limitation of tongue’s movements, besides an abnormal pattern of deglutition due to a short lingual frenulum that limited the amplitude of tongue’s movements. The child also displayed difficulty in articulating labial-dental words.

Babies with an altered lingual frenulum may present problems in mother’s nipple apprehension, complicating the removal of milk and interfering in the weight gain. Surgical releasing of the frenulum, when carefully indicated, promotes this function improvement [28].

The ankyloglossia correction at early ages reduces the risks of complications to nursing babies, and frenectomy should be performed when there is interference in deglutition and speech [6, 13, 16].

The pediatrician, pedodontist, and general dentist are capable of detecting abnormalities in the mouth of newborn and nursing babies, and children. On one hand, the pediatrician is responsible for the diagnosis of the manifestations present in the baby’s mouth in the early life. On the other hand, the pedodontist usually examines the children at the moment of deciduous tooth eruption (about 6 months-old). With the advent of Dentistry for babies, early attention prior to tooth eruption potentiates the diagnosis of oral alterations, such as neonatal and prenatal tooth, and ankyloglossia [7].

The evaluation of lingual frenulum problems will enable the identification of abnormalities in its insertion and prevention of alterations in deglutition and speech function after the surgical correction of ankyloglossia.

Conclusion

The routine examination of the lingual frenulum enables to both find anomalies in its insertion and plan preventive measurements for intercurrences during breastfeeding. In this present case report, the abnormal tongue insertion altered significantly the deglutition function, tongue’s movements, speech, and word’s articulation. Lingual frenulum surgery returned the tongue’s functions to patient’s stomatognathic system.

References


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