

TONGUE-TIE IN BABIES. DIAGNOSIS AND LASER FRENECTOMY. CASE REPORT.

Anquiloglosia en bebés. Diagnóstico y frenotomía con láser.
Informe de Caso.

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ABSTRACT:

Introduction: The World Health Organization (WHO) establishes that breast-feeding must be promoted, supported, and protected due to its benefits in maternal and child health and for the economic, environmental, family and community benefits it produces.

Case Report: Ankyloglossia in the newborn can cause early cessation of breastfeeding. A clinical case of a 2-month-old baby, referred to the surgical team of the Dental Service of the Pereira Rossell Hospital Center, with difficulties in breastfeeding due to ankyloglossia is presented. Diagnosis and laser surgical treatment was performed. In the immediate postoperative period, there was an improvement, achieving breastfeeding without the aid of devices, and a progressive improvement during the month following the intervention occurred.

Conclusion: Early diagnosis and timely intervention collaborate in the maintenance of lactation and in the progressive improvement of the process.

KEYWORDS:

Ankyloglossia; Infant; Lingual Frenum; Lasers; Breast Feeding; Case report.

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RESUMEN:

Introducción: La Organización Mundial de la Salud (OMS) establece que la lactancia materna debe ser promovida, apoyada y protegida por sus beneficios demostrados en la salud materno-infantil y por las ventajas económicas, ambientales, familiares y comunitarias que produce.

Reporte de Caso: La anquiloglosia en el recién nacido puede provocar el abandono temprano de la lactancia. Se presenta un caso clínico de un bebé de 2 meses, derivado al equipo quirúrgico del Servicio Odontológico del Centro Hospitalario Pereira Rossell, por dificultades en el amamantamiento a causa de anquiloglosia. Se realizó

el diagnóstico y tratamiento quirúrgico con láser. En el postoperatorio inmediato se registró una mejoría en el amamantamiento, logrando la lactancia sin intermediario y una mejoría progresiva en la praxis durante el mes siguiente a la intervención.

Conclusión: El diagnóstico precoz y la intervención oportuna colaboran en el mantenimiento de la lactancia y en la mejora progresiva de la praxis.

PALABRAS CLAVE:

Anquiloglosia; Lactante; Frenillo Lingual; Rayos Láser; Lactancia Materna; Informe de caso.

INTRODUCTION.

The World Health Organization (WHO) recommends maintaining exclusive breastfeeding (EBF) until 6 months of age and the progressive introduction of safe and age-appropriate complementary foods until the child is at least 2 years old.¹

There is agreement that breastfeeding (BF) should be promoted, supported, and protected due to the benefits it provides for the mother and her child, in addition to the economic, environmental, family, and community advantages that it involves.² There are several pathophysiological, social, cultural, and educational factors associated with early abandonment of EBF,³ so problems in EBF must be approached in a comprehensive and transdisciplinary way.

The 04/2019 version of the WHO International Classification of Diseases defines ankyloglossia as "a condition of the tongue, caused by short, tight, lingual frenulum or fusion of the tongue to the floor of the mouth".⁴ Also called tongue-tie, it is one of the conditions that can accelerate weaning due to the possible breastfeeding difficulties it can cause. Shortened time between breastfeeding sessions with longer duration, tiredness and discouragement

for the mother and the child have been reported.^{5,6} There may be less milk production due to poor stimulation of sucking, clicking, and choking⁵⁻⁷ or, conversely, increased milk production due to a compensatory effect on the breast, producing frequent engorgements in the baby with increased initial milk intake (rich in lactose and difficult to digest) with more regurgitation, colic, and gas.⁷

There may also be little weight gain or loss for the child.⁵⁻⁸ The baby bites the nipple, stretches it, gets angry at not being able to breastfeed efficiently, causing the mother pain and/or cracks in the nipples due to trauma.⁶⁻¹¹ Other signs on the baby are the appearance of sucking pad the baby's lip, jaw tremor and/or sunken cheeks due to intense suction effort.^{6,7,12}

Ankyloglossia is caused by persistence of tissue in the ventral lingual midline due to failure of apoptosis in the sublingual area during embryogenesis.¹³ There are several evaluation tools for the diagnosis of the lingual frenulum and its function during breast-feeding such as the Hazelbaker Tool,¹⁴ the Lingüinha test,¹⁵ the Coryllos classification,¹⁶ and the Bristol Tongue Assessment Tool (BTAT-TABBY).¹⁷⁻¹⁹

The LATCH breastfeeding system can be used

as a clinical instrument to evaluate the efficacy of breastfeeding, providing additional data for decision-making on the possible therapeutic approach.²⁰ The assessment of tongue form and function is only part of the evaluation of infant feeding. To decide on performing a frenectomy, questions about difficulties during feeding should be included.

BF and the anatomy of the maternal breast should be observed. Using clinical judgment, considering the opinion of the parents, and obtaining their informed consent are also essential elements.

The aim of this study is to present a case of ankyloglossia in an infant, the diagnostic criteria used, the applied multidisciplinary clinical approach, the therapeutic decision, and its follow-up procedure, to provide knowledge on a subject on which there still is no consensus.

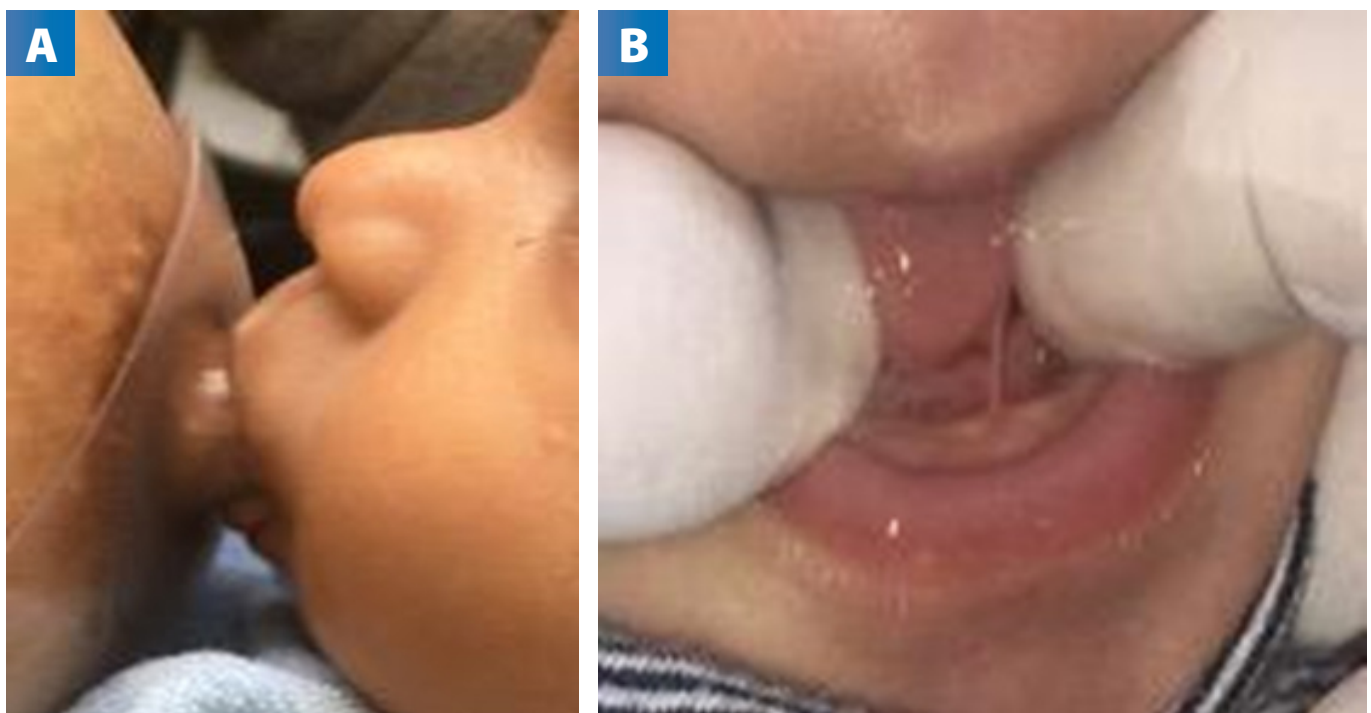
CASE REPORT.

A healthy, two-months old, male baby was referred by the pediatrician because of difficulties in breast-feeding due to ankyloglossia aggravated by the lack of adequate protrusion of the maternal nipple. The mother reports that, since her baby's birth, she uses a nipple shield to get her baby to latch on to her breast and maintain breastfeeding.

The mother was asked to breastfeed the child in order to observe the baby's latch on the breast and her BF praxis. It was observed that the baby placed his lips around the silicone teat of the nipple shield but did not make a mouth opening that encompassed the areola or everted the upper lip; the tongue managed to position itself just below the teat (Figure 1A).

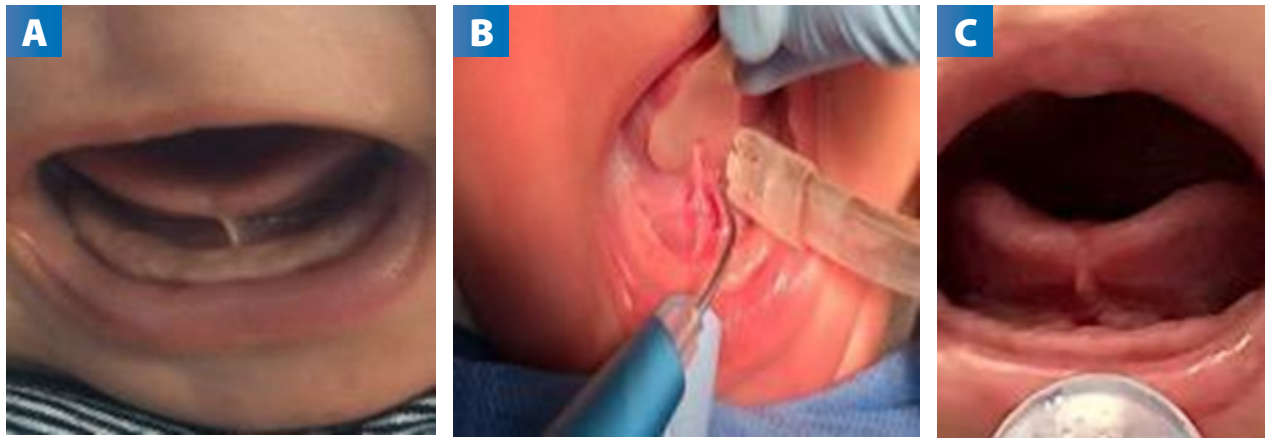
The upper labial frenulum appeared normal un-

Figure 1. Breastfeeding and Murphy's Maneuver.



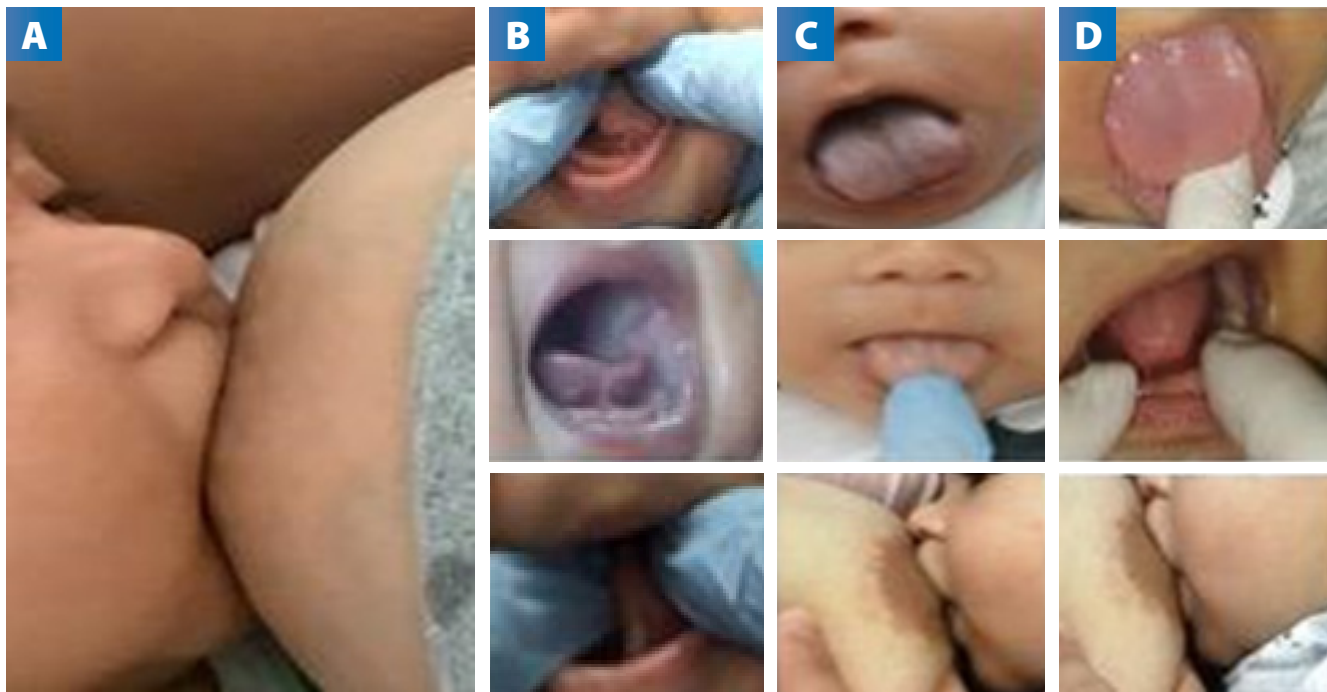
A: Breastfeeding with the help of a nipple shield. **B:** Tongue elevation maneuver to observe the length and position of the frenulum (Murphy's Maneuver). It is verified that it is a short frenulum, with insertion on the tip of the tongue and on the alveolar ridge.

Figure 2. Position and Appearance of the tongue.



- A:** Low position of the tongue during crying.
- B:** Laser frenectomy. Note the absence of bleeding and the whitish tissue that is achieved with the vaporization of the tissue.
- C:** Appearance of the tongue and frenulum in the immediate postoperative period.

Figure 3. Position and appearance of the tongue immediate and remote or medium control.



- A:** Position of the upper lip encompassing the areola and a more open mouth.
- B:** Evaluation at 72 hours.
- C:** Evaluation at one week.
- D:** Evaluation at one month.

der clinical inspection, not being an obstacle for appropriate BF.²¹⁻²⁵ The tongue lift maneuver to observe the frenulum was difficult. The position of the tongue during crying was also observed (Figure 1B and Figure 2A).

A complete clinical history was made, from which it appeared that, in the first days after the baby's birth, ankyloglossia was not diagnosed. The mother received advice and training on how to breastfeed her baby. At one month of life, the pediatrician noted the short lingual frenulum, referring the baby to the ambulatory surgery team of the Dental Service at Centro Hospitalario Pereira Rossell (CHPR).

The infant's nutritive and non-nutritive sucking function was observed and registered. The type of frenulum was assessed visually and by touch. Various classification and assessment instruments for the lingual frenulum were used.

The baby presented 3 of the 5 elements that the Coryllos-Watson Classification identifies as possible determinants of a short lingual frenulum (irregular movement of the tongue, clicking during breastfeeding, and deep aspect of the palate). It was classified as an anterior type 2 frenulum, with insertion a few millimeters behind the lingual tip, without the appearance of a forked tongue, but with a descent of the tip during crying.

The Hazelbaker Tool for assessing the function of the lingual frenulum gave a score of 2 in appearance and 5 in function (frenectomy is indicated with a score of less than 8 in appearance and less than 11 in function), which supported the intervention.

The clinical history and the anatomical-functional evaluation of the Lingüinha test yielded 15 in total, indicative of interference of the frenulum in mobility. The BTAT-TABBY evaluation yielded,⁴ which implies a deterioration of the lingual function.

All the tests confirmed the presence of ankyloglossia with alteration of normal tongue function, justifying the relevance of surgery. After 2 months of follow-up and support for breastfeeding received by the mother, and given her desire to achieve natural breastfeeding, without the use of a nipple

shield, frenectomy was programmed.

It was performed with a surgical diode laser (Medelux Co. Lda. of 980 nm) after application of topical anesthesia (benzocaine 5% for 4 min.) and local anesthesia (¼ tube of mepivacaine 2% with epinephrine 1:100,000), raising the child's tongue with a grooved probe and "brushing" the frenulum with the laser to vaporize the tissue needed to free the tongue.

Absence of bleeding and whitish appearance of the area due to vaporization of the tissue was observed (Figure 2B and Figure 2C). Post-surgical therapeutic laser was applied to favor tissue regeneration by biostimulation, to generate angiogenesis, and obtain analgesic and anti-inflammatory action.²⁶

IMMEDIATE AND REMOTE OR MEDIATE CONTROL

Immediate postoperative period

Immediately after surgery, the baby was put to the breast, initially with the nipple shield, because the components of breast milk favor hemostasis and calm both the child and the mother.²⁷⁻²⁹

Continuous sucking was observed, with no breaks between feeds and no clicking. The mother reported feeling that the baby exerted greater suction force. A few minutes later, she "puts him on her chest" directly, a greater anteroposterior mandibular movement is observed, a greater movement of the mother's nipple when sucking, a correct lip positioning (Figure 3), and a greater lingual protrusion when stimulating the lower lip.

Mediate postoperative period

Mother and child were evaluated at 72 hours (Figure 3B), at one week (Figure 3C), and at one month (Figure 3D). Throughout this period, the mother did not use the nipple shield again. One month after the intervention, it was possible to observe clinically an increase in mobility in protrusion and elevation, a better positioning of the lips and the tongue surrounding the nipple during breastfeeding.

The mother reported a reduction in breastfee-

ding time to 20 minutes, with a better rhythm of sucking and pausing. The improvement observed between the evaluations at one week and one month, in the tip of the tongue and the position of the lips during breastfeeding was significant, (Figure 3C and Figure 3D), evidencing the importance of recovering tongue mobility to enable the training of its function, thus achieving the correct praxis.

DISCUSSION.

Prevalence of ankyloglossia reported in recent studies ranges between 4% - 5%^{30,31} and 1% - 11% in newborns.⁹⁻¹¹ Some authors report a higher prevalence in males in a proportion of 2.6: 1.0.^{31,32}

The cause of the reported low prevalence could be due to underreporting of this condition, lack of consensus on the diagnostic criteria, and the lack of clear protocols for its treatment. It has been documented that between 25% - 80% of newborns with ankyloglossia have some complication during breast-feeding.^{6,33,34}

However, Segal *et al.*,³⁵ estimate that the presence of tongue-tie does not automatically cause breast-feeding problems and that, despite this, between 40% - 75% of the babies with this condition manage to breastfeed successfully.

A 2017 Cochrane review by O'Shea *et al.*,¹¹ concluded that frenectomy does not systematically improve BF but it is likely to reduce maternal nipple pain. These elements show the importance of making a careful selection of babies who can benefit from a surgical technique such as frenectomy. Consequently, it is essential to have consistent diagnostic criteria to determine symptomatic ankyloglossia and an assessment of tongue function during infancy.

Later in the child's life, during their growth and development, the presence of ankyloglossia can produce functional and craniofacial structural alterations, different types of dysgnathia, predisposition to respiratory diseases, otitis, and alterations in the articulation of some consonants, among others.^{7,8,33,36,37}

It has been stated that a short lingual frenu-

lum at birth can stretch or rupture spontaneously and therefore, as the child grows, the severity of ankyloglossia would decrease.³⁸ However, recent studies confirm that the thickness, elasticity, and fixation area of the frenulum do not change, nor does it suffer spontaneous rupture, during the first year of the child's life.³⁹⁻⁴¹

Monitoring, breastfeeding support by specialized personnel, myofunctional therapy, and frenectomy^{42,43} are among the possible procedures to alleviate the difficulties in BF related to ankyloglossia. In this case, lactation monitoring and support procedures were provided, but they were not enough to achieve adequate BF, so it was decided to resort to surgical treatment.

Authors such as Hogan *et al.*,⁴⁴ Berry *et al.*,³⁴ Buryk *et al.*,⁴⁶ and Dollberg *et al.*,⁴⁵ conducting randomized clinical studies, have found that the lingual frenulum can interfere with BF and that frenectomy significantly improves breastfeeding and contributes to prevent pain in the maternal nipple.⁴⁸ Additionally, another review reported that frenectomy may be associated with mother-reported improvements in BF and reduction in nipple pain, but the evidence for sustained improvement in BF rates is scant.³³

As for the right time for performing frenectomy in infants, some authors propose that it is between the third and fourth week or even in the first days of life.⁴⁹ Others suggest the ideal moment between the first weeks of birth and 6 months of age.⁵⁰ The purpose of performing this procedure early is to avoid the abandonment of BF.^{9,51,52}

Subjective improvement in breastfeeding was reported by 90% of mothers immediately post-frenectomy and 83% by day 14. Frenectomy, for posterior-type ankyloglossia, may improve breastfeeding and reduce pain in nipples.⁵² In the clinical case described here, both improvement in the praxis and performance of the child during BF (immediate and during the follow-up month) as well as improvement in symptoms and maternal comfort were achieved.

The conventional (scissor) frenectomy procedure

has been shown to be simple, fast, efficient, and safe for the child.⁴⁶⁻⁴⁷

However, laser technology provides some benefits. It allows the surrounding healthy tissue to have a greater amount of O₂ and ATP, to perform a selective tissue elimination, achieve hemostasis, produce bacterial phototoxicity and generate a protective layer over the exposed vaporized tissue. The postoperative period shows accelerated healing, less edema, less pain, reduced risk of infection, and better tissue repair.²⁶ The mother reported pain-less and favorable evolution during the immediate and short-term postoperative period, without the need for analgesics.

CONCLUSION.

Ankyloglossia in the newborn must be diagnosed by the neonatologist and/or the lactation team at the time of birth. The absence of diagnosis can result in an early abandonment of BF, which may have repercussions on the general health of the infants, functional alterations, and affect the development of their stomatognathic system.

Therefore, once diagnosed and having verified that it alters lactation it must be resolved quickly to maintain EBF until 6 months and supplemented by other foods beyond that age.

With an effective and timely treatment, the results are immediate and progressive. Laser surgery could decrease recurrence, because it seems to produce less fibrous scarring, although more studies are needed to confirm this observation.

Conflict of interests:

The authors declare no conflict of interests.

Ethics approval:

Informed consent was obtained from the mother for case presentation.

Funding:

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Authors' contributions:

Both authors contributed to the diagnosis, planning, execution and follow-up of the clinical case, as well as the writing of the article.

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