



Clinical management of oral disorders in breastfeeding

Maria Teresa C. Sanches*

Abstract

Objective: To address aspects associated with the early detection and clinical management of oral disorders in breastfeeding.

Source of data: Review of bibliographic sources (research articles, technical books, dissertations and national and international publications) focused on the clinical management of oral disorders in breastfed babies.

Summary of the findings: Suction disorders may lead to inadequate actions that can compromise the mother/baby relation during breastfeeding. Healthcare professionals may have an important role in these cases, as they can early detect such disorders. For that end, they must be able to assess breastfeeding and be prepared to manage oral disorders clinically. In the clinical management of babies with breastfeeding difficulties significant aspects of the oral physiology and breastfeeding observation should be considered. We stress the importance of an interdisciplinary team work and the need for oral training and specialized care in most complex cases.

Conclusion: The baby's oral disorders in breastfeeding can be corrected if they were early detected. Healthcare professionals may help mothers and babies to overcome these problems if they have knowledge that enable them to perform right clinical procedures.

J Pediatr (Rio J). 2004;80(5 Suppl):S155-S162: Breastfeeding, newborn, suction behavior.

Introduction

Newborns (NB) and healthy infants, without intercurrent diseases that interfere with breastfeeding, occasionally have atypical oral movements (oral dysfunctions) that can cause difficulty in breastfeeding, due to transient oral function disorders or to some individual anatomical characteristics that hinder latch-on, or to iatrogenic factors. Among the several factors that interfere in the establishment of breastfeeding and that are related to the infant, we have oral dysfunctions, which may cause nipple trauma, low weight gain and even early weaning.¹⁻⁴

Although oral dysfunctions can be reversed early on, the mother/infant relationship established during the first breastfeedings results in habits that are difficult to change, especially regarding the NB's sucking pattern. Therefore, the careful assessment of breastfeeding and specific actions to correct any problems that may arise are very important at the very beginning.^{2,5}

Aspects of the breastfeeding physiology and assessment are discussed, with special emphasis on oral functioning and on the correction of major oral dysfunctions, in order to facilitate the diagnosis and the practice of health professionals in the clinical management of these oral dysfunctions.

Physiology of sucking in breastfeeding

In the embryonic period, the fetus begins to prepare itself to perform tasks of sucking, swallowing, breathing and crying, which allow for its survival after birth.

* MSc. Doctoral student, School of Public Health, Universidade de São Paulo (USP). Speech therapist and researcher of the Instituto de Saúde, Health Department of São Paulo, SP, Brazil.

Suggested citation: Sanches MT. Clinical management of oral disorders in breastfeeding. *J Pediatr (Rio J)*. 2004;80(5 Suppl):S155-S162.

Therefore, the newborns have oral reflexes, which guarantee their feeding at the initial stage of development, and have distinct anatomical features, which facilitate feeding in the neonatal period.^{6,7}

Due to the small mandibular growth in the neonatal period (physiological jaw retraction), the tongue extends over the gum or lower lip, in a protruded and lowered position, producing an oropharyngeal space that forces nasal breathing, which occurs in every NB. The increased tongue size, larger than the bone structure that sustains it (jaw), is related to its function in feeding, since contact with the lower lip allows a proper positioning for breastfeeding.^{6,8} In the posterior part of the mouth, the base of the tongue is quite close to the epiglottis, due to the higher position of the NB's larynx (quite close to the soft palate) until the third or fourth month, so as to protect the lower airways during swallowing, also facilitating the passage of food.⁹ These anatomical differences are important because the infant's oral system is not so structured and efficient as in adults to control the suck, swallow and breathe functions.

The anatomical structures that are important to the NB's oral functioning include the oral cavity, lips, tongue, cheeks, jaw, hard and soft palate, hyoid bone, thyroid cartilage, epiglottis, facial and perioral muscles and pharyngeal constrictor muscles, besides other 40 muscles in charge of the movement of the whole oral system. The pairs of cranial nerves responsible for the innervation of these muscles are: I - Olfactory; V - Trigeminal; VII - Facial; IX - Glossopharyngeal; X - Vagus; and XII - Hypoglossal.^{6,10}

The oral reflexes guarantee the feeding of newborns at this initial stage of development and include: rooting reflex (tactile stimulus to the cheeks and mainly to the four cardinal points of the lips), whose aim is to make the baby turn his/her head towards the stimulus and search for the nipple; sucking reflex (triggered by touching the tip of the tongue and the incisive papilla), whose aim is to allow for milk removal; and swallowing reflex (obtained by stimulating the posterior region of the tongue, soft palate, pharynx and epiglottis with the milk). Also, the following swallowing protection reflexes are present: biting (obtained by touching the internal region of the gums), vomiting (triggered by a stimulus to the tip of the tongue, when swallowing is totally refused) and coughing reflex.⁷ After the fourth or fifth month, with the growth of oral structures, maturation of the nervous system and the possibilities for proper oral experimentation, the reflexes are replaced by a voluntary pattern of oral movement.⁸

Although suction is a reflex, extraction of milk from the breast is not, which requires the baby to learn how to remove the milk, adjusting his/her oral anatomical structures to proper latch-on; latch-on is not always easy and may present some difficulty along the process.^{5,11,12} Bu'Lock et al.¹³ highlight the importance of proper latch-on in breastfeeding, based on studies using cineradiography and conducted after the 1950s, and later confirmed with ultrasonography after the 1980s,¹⁴ allowing us to understand the movements of the tongue inside a baby's mouth.

In a proper latch-on, the baby opens his/her mouth wide, grasping not only the nipple, but also part of the areola, establishing a perfect seal between the oral structures and the breast. To establish this seal, the lips should be anteriorly turned outwards (the upper lip and the tongue are responsible for a proper seal) and the tongue extends over the lower gum, turning upwards (tongue humping), in contact with the breast. The aim of this seal is the formation of an intraoral vacuum (with negative air pressure), obtained from jaw movements and associated with the movements of lips, cheeks and sucking pads. Sucking pads are located between the skin and cheek muscles, and help provide stability during sucking, and proper latch-on.

The jaw extends over the lactiferous sinuses (where milk is collected) and the baby grasps the nipple and approximately 2 to 3 cm of the areola. In the posterior part of the mouth, the tongue raises and functions as an occlusive mechanism against the soft palate, thus establishing an intraoral negative pressure (along with the anterior seal). This pressure keeps the breast (nipple + areola) inside the baby's mouth, despite its retractile nature. This way, the nipple and part of the areola are placed into the mouth, and the breast nipple touches the transition region between the hard and soft palate, facilitating milk removal and swallowing. The jaw performs a cycle of movements, starting with lowering for the opening of the mouth (with the participation of jaw-opening muscles, suprahyoid and infrahyoid, mylohyoid, geniohyoid and digastric). Later on, mandibular protrusion occurs, whose aim is to reach the breast, especially the lactiferous sinuses (with the help from the medial pterygoid, masseter and lateral pterygoid muscles). Afterwards, the jaw is elevated for closing of the mouth and compression of the lactiferous sinuses (masseter, medial pterygoid and temporalis muscles) and is then retruded for effective milk removal (action of oblique and horizontal fibers of the temporalis and digastric muscles and of the superior fibers of the lateral pterygoid muscle). These jaw movements provide important stimuli to the growth of the temporomandibular joint and, consequently, to the harmonic growth of the baby's face.^{8,14-17}

During breastfeeding, the tongue elevates its borders laterally (transversal and vertical muscles), along with its tip, forming a trough, which collects the milk to be swallowed in the oropharynx.¹⁴⁻¹⁶ When the milk collects on the tongue, in the posterior region of the mouth, a rhythmic peristaltic movement is started, going from the tip of the tongue to the oropharynx, gently compressing the whole nipple, thus finishing milk removal and starting the swallowing process. The tip of the tongue is kept in the anterior region throughout the process, thus warranting the sealing of the mouth. This way, the milk is extracted smoothly, without any pressure, which could cause friction and nipple injury.¹⁴⁻¹⁷

Breastfeeding assessment

Given the fact that hospital routines and the practices of health professionals can enhance the establishment and

duration of breastfeeding, the World Health Organization (WHO) and UNICEF have put a lot of effort into establishing a public policy for breastfeeding promotion since the 1980s. In 1991, the Baby Friendly Hospital Initiative (BFHI) was implemented, with the aim of changing the maternity ward routines in order to comply with the Ten Steps to Successful Breastfeeding.¹⁸⁻²¹ Step 2 suggests that the whole healthcare staff who assist mothers and infants should be properly trained in the clinical management of breastfeeding. This is achieved by means of courses that highlight the importance of breastfeeding assessment through a specific protocol (form for observation and assessment of breastfeedings), including the observation of mother and infant positioning, infant responses (global behavior), mother and infant bonding, anatomy of the breast, aspects related to suction, and oral functioning. The major objective of the training course is to detect problems at the beginning of breastfeeding and check which group of mothers/newborns have special needs and require breastfeeding support.^{21,22}

There are two key aspects that should be considered while observing a breastfeeding: positioning and latch-on. Inappropriate positioning of the mother and/or infant during breastfeeding hinders the proper positioning of the baby's mouth in relation to the nipple/areola complex, resulting in an improper latch-on. A poor latch-on interferes with suction and extraction of milk, and may cause nipple damage, pain and discomfort to the mother, sometimes hampering the continuance of breastfeeding, if not corrected properly.^{11,12,18,23-26.}

Regardless of the position assumed by the mother and infant during breastfeeding, both should feel comfortable and the mother should facilitate the infant's oral reflexes by helping him/her to grasp a considerable portion of the breast (excellent latch-on). The baby should be well-positioned so that he/she can remove the milk effectively, swallow and breathe freely. For NBs who are still learning to nurse, it is essential that their body always faces their mothers' and that they are held closely to her in such a way that their mouth is lined up with the nipple and areola. Inappropriate positioning can make breastfeeding inefficient, hampering the transfer of hindmilk (at the end of the breastfeeding), which is richer in energy. Consequently, this may cause discomfort to the mother and demand excessive effort from the baby, making him/her overtired and sleepy or remain restless, hungry, feeling like nursing frequently, becoming irritable and cranky. This may culminate in "nursing strike", or refusal to breastfeed, having a negative effect on weight gain, and strengthening the misconception of mother and family members that milk is insufficient or weak, causing conflicts, frustration and maternal uncertainty about her ability to breastfeed.^{5,11,12,18,25,27,28}

With regard to latch-on and milk removal by the baby, the way oral reflexes are triggered should be observed, as well as whether the baby shows signs of hunger and a rooting reflex and whether he/she is alert and prepared for the breastfeeding. As to latch-on, check whether the chin touches the breast, whether the lips are flanged out, creating a seal, and whether a larger portion of the areola

is visible above instead of below the baby's mouth. Also check whether the tongue covers the nipple/areola complex inferiorly during suction. The sucking movements of the jaw should be smooth, and in coordination with the swallowing and breathing pattern, without the participation of the buccinator muscle (no dimpling), and deep and slow sucks, with a pause between them, should be perceived.^{5,11,12,25}

Health professionals should pay attention to the general condition of breasts and nipples, checking for engorgement and nipple trauma, and for situations that interfere with breastfeeding.^{18,28} Mother and infant bonding should be assessed by considering the way the mother holds her baby, touches him/her and establishes eye contact. In an effective breastfeeding assessment, the dyad should be observed before, during and after the breastfeeding in order to check the level of satisfaction of the baby and comfort of the mother (absence of pain).^{9,12,18,22,27}

The puerperal period is a delicate moment, since it requires learning and observation from the mother to understand and meet the needs of her baby, as well as his/her skills in showing preferences, behavior and difficulties.²⁹ So, this demands attention and special care from the health team, and a careful assessment of breastfeeding.^{12,22,27,30}

Some studies have shown critical aspects regarding the initial difficulties in the establishment of breastfeeding. Carvalhaes & Correa²² applied the protocol suggested by UNICEF¹⁸ (form for observation and assessment of breastfeeding) to 50 mother-infant dyads in a maternity ward of Botucatu, state of São Paulo, Brazil. The authors noted that 18 to 34% of the mother-infant dyads had some difficulty related to the initiation of breastfeeding, in one of the assessed areas (mother and infant positioning, baby's response (global behavior), mother-baby bonding, anatomy of the breast and aspects related to sucking pattern and oral functioning). These difficulties were more frequent when mothers were not submitted to a C-section and when newborns received supplementary foods.

Sanches²⁷ conducted an audiophonological study assessing breastfeeding in 409 mothers and their healthy full-term infants at the maternity ward of Hospital Guilherme Álvaro, in Santos, state of São Paulo, accredited with the Baby-Friendly Hospital (UNICEF/1993). With the aim of analyzing the factors associated with the initial difficulties in breastfeeding, this study detected 13% of initial difficulties, although the study population showed physical, psychological and functional conditions to breastfeed. Among several variables, the ones that remained associated with inappropriate breastfeeding after the multivariate analysis, were baby's behavior during the breastfeeding, for the ravenous, hyperexcited and gourmet babies (OR = 7.08; CI = 3.30–15.05) and poor suck (OR = 7.70; CI = 3.66–16.16). The behavior of babies during breastfeeding was initially described by Barnes et al.³¹ in 1953, who classified babies into five types: ravenous, ineffective excited, procrastinators, gourmets and resters. Ravenous babies show an avid interest in suckling and as soon as they are put to the breast they start sucking vigorously. Ineffective excited babies are so excited and hyperactive that they cannot have a constant

sucking pattern at the beginning. Procrastinators put off sucking for up to 4-5 days after delivery and often wait for milk let-down. Unlike the ravenous type, they do not show any particular interest or any ability to suck in the first days. Gourmet babies insist on tasting, savoring some milk before nursing, smelling and enjoying the contact with the breast, at a slow pace.

The behavior of babies should be taken into account in breastfeeding assessment, as it may interfere in its results. Specific guidance should be given so that every mother can understand the singularity of her infant, thus facilitating the process. For instance, fussy babies like the "ineffective excited" have to be held and soothed before being put to the breast. Other babies like the "gourmet" type require a longer time before they start to suck, as they need to stimulate all their senses first. This initial interaction is important, requiring intimacy between mother and infant.^{12,30-32}

Widström & Thingström-Paulsson³³ highlight that it is important to respect the baby's global organization, oral functioning and behavior so that he/she can respond properly, trying to use rooting and sucking reflexes in an efficient way during breastfeeding. In a study with 11 healthy full-term NBs, born by vaginal delivery, whose aim was to detect the position of the tongue in the oral cavity during the stimulation of oral reflexes before the first feeding, the authors diagnosed inappropriate tongue position when the baby would not stop crying. When babies are force-fed and still do not show signs of hunger, they will often respond by crying and by raising their tongue, which may hinder a proper latch-on.

Oral dysfunctions

In general, several factors may cause sucking disorders during breastfeeding, such as intercurrent clinical events, low birthweight (especially due to premature birth), metabolic disorders, neurological disorders, syndromes and congenital abnormalities, such as cleft lip and palate, submucosal fissures, ankyloglossia and laryngomalacia. Some clinical practices related to the treatment of preterm babies and the use of orogastric or nasogastric tubes can also interfere with the normal development of the suck/swallow/breathe pattern, and also cause respiratory problems due to gastroesophageal reflux and aspiration.^{1,2,11-14,25,34}

In addition to the factors that have already been mentioned, there may be more specific sucking disorders in healthy full-term babies without any intercurrent clinical events, known as oral motor dysfunctions.

These are consequences of the NB's neurological immaturity, facial pain (as the one resulting from the use of forceps), individual anatomical features and iatrogenic factors, such as the use of artificial teats.^{1,2,5,35,36} Immediately after birth, some NBs show incoordinated oral reflexes, requiring some days to develop a more mature pattern, which may occur concomitantly with milk let-down, on the third or fourth day after delivery. Oral anatomical dysfunctions can also occur in the baby (high-arched palate,

retracted jaw, or short or excessively tight frenulum – ankyloglossia –, resulting in inappropriate latch-on) and in the mother (inelastic, flat, inverted or too long nipples). In these cases, it is necessary to help babies latch onto the breast properly and suck correctly.^{3,5,36}

Another factor that may lead to oral dysfunction is the so-called "nipple confusion," due to the early contact of infants with artificial teats (bottle nipples, pacifiers or nipple shields). Due to the NB's restricted ability to adapt to different oral configurations, nipple confusion may establish itself, leading to early weaning.³

In clinical practice, NBs who have oral dysfunctions require a lot of skill and learning before they can feed properly at their mothers' breasts. These babies may need unusual maneuvers and oral motor exercises, besides follow-up by a specialist, a lactation consultant with practical expertise, or a speech therapist acquainted with neonatology and breastfeeding practices. These oral motor exercises are known as "suck training."^{12,35,36}

Righard et al.,²⁶ on assessing the breastfeeding technique in the first week of life, showed that the proper sucking technique has a strong effect on the duration of breastfeeding. The authors studied 82 mother-infant dyads in Sweden, with an improper sucking technique (nipple sucking only). They split the study population into two groups: one in which the sucking technique was corrected, and another one in which it was not. They compared the results of both groups and concluded that the probability of early weaning and introduction of bottle-feeding in the first month of life was 10 times higher in the group in which the sucking technique was not corrected. They also observed that exclusive or partial breastfeeding rates were higher in the group in which the sucking technique was corrected.

Andrade & Gulo⁴ observed 30 mothers and their full-term NBs, without intercurrent clinical events or malformations that could hamper breastfeeding, and found a correlation between oral pattern and nipple fissure. The major oral disorders they detected were inappropriate positioning of the lips and orbicularis oris muscles, which did not allow the baby to grasp the nipple, and also movements of "nipple chewing" during suction, instead of protrusion and elevation movements, the latter of which is considered the main cause of nipple trauma.

In the previously described study carried out by Sanches,²⁷ out of 409 healthy full-term NBs assessed in the first 24-48 hours, 134 (33%) had inappropriate breastfeeding, 71 of which (17% of the total sample) were related to the incorrect grasp of the areola by the NB. Of these, 43 showed excessive lip pressure and 20 revealed low pressure. In relation to infant sucking, a poor suck was observed in 95 babies (23% of the total sample) due to the jaw movements of "nipple chewing – biting pattern" (91 cases), change in the sucking rhythm (too fast or too slow) (59 cases), and absence of an established rhythm (29 cases). Still with regard to infant sucking, 69 cases (17% of the total sample) of inappropriate tongue movements (poorly retracted tongue with no humping) and 14 cases (3%) with totally retracted tongue.

Clinical management of breastfeeding in the presence of oral dysfunction

The experiences that occur during the first breastfeedings quickly become well-defined patterns and tend to repeat themselves for both mother and infant.^{5,34} If any dysfunction exists, it should be corrected as soon as possible by assessing the NB's oral motor functions, since it is still possible to change the sucking dynamics. It is estimated that 5 to 6% of full-term, well-nourished babies with no intercurrent clinical events have oral dysfunction and require special maneuvers in order to feed successfully.^{27,35}

In the presence of oral dysfunction, a thorough specific anamnesis including maternal history, pregnancy, birth, lactation and previous and current breastfeeding conditions should be performed. Other aspects, besides the observation of nonnutritive sucking and detailed breastfeeding assessment, include the number of sucks per pause and sucking pressure. Aspects such as mother-infant interaction and NB's behavior should be included in the observation and practice due to their relationship with breastfeeding.^{12,22,26,27,35}

To observe nonnutritive sucking, the examiner should slip his/her gloved little finger into the NB's mouth, paying attention to tongue movements. The hard palate is pressed against the finger pulp (fingernail pointed down), so as to stimulate the sucking reflex. As a result, in a vigorous and appropriate suck, the tongue should cover the finger, passing by the lower gum and performing an undulating movement, from tip to base, while the lip of the tongue can be seen slightly protruding over the lower lip, in the anterior portion of the mouth. The lips should be relaxed and remain open, with no tension.^{1,2,35}

In the specialized literature only few scientific studies recommend specific practices for correction of oral dysfunction during breastfeeding. Most of them are concerned with problems related to the clinical management of breastfeeding as a whole, with correction of positioning and latch-on, as, in general, the cases of healthy full-term babies with improper latch-on are related to inappropriate mother/infant positioning. The clinical management of breastfeeding allows improving these situations.^{5,15,27,36}

The clinical management of oral dysfunctions often employs suck training, which consists in stimulating the sucking reflex again and again, in synchronization with the baby's pace, as described in the nonnutritive sucking technique.^{1,35} All exercises that include oral stimulation should be always performed before breastfeeding, taking advantage of the baby's alertness and hunger. Precautions with orofacial exercises should be concerned with the severity of oral dysfunctions, state of awareness, baby's global behavior, parent-infant bonding, duration and use of the exercises and conditions for reassessment and follow-up, if necessary.^{9,34,36,37} The exercises should be performed while the baby is alert,³² in an organized manner, and stimulation should last for 2 to 5 minutes, not exceeding this time limit to avoid making the baby tired and stressed.

Table 1 describes maneuvers and orofacial exercises recommended for simple oral dysfunctions, which are common in clinical practice.^{1,2,33,36,38-41}

The techniques described in Table 1 are illustrative and summarized, and concern several oral disorders that can occur during breastfeeding. Therefore, these techniques should be used as a clinical management tool for oral dysfunctions, and should not be considered a way to solve all breastfeeding problems.

Originally, many of the exercises shown in Table 1 were developed for oral stimulation of preterm and/or neurologically compromised babies.^{9,34,40,41} These exercises were adapted for healthy full-term babies, and they should be used with caution, and require qualified knowledge and practice by health professionals in the clinical management of breastfeeding, so that they can be functional for babies with breastfeeding problems:

Likewise, finger feeding, which also was used in preterm and/or neurologically compromised NBs, is currently recommended for babies with sucking disorders, allowing for a more efficient oral functioning. This technique consists in slipping a gloved finger into the baby's mouth, with a coupled tube through which the milk flows during suck training.^{35,39} The other end of the tube is placed in a vessel with expressed breastmilk, banked milk or milk-based formula, and the baby receives this milk while sucking at the breast. However, Marmet & Shell³⁹ warn that if this technique is improperly used, it may enhance inappropriate behaviors during breastfeeding. The authors suggest training the NB's mouth to open adequately prior to using this technique and suggest that breastfeeding be continued so that the baby does not enhance inappropriate patterns and does not refuse to breastfeed.

The participation of parents as active agents in the process is crucial, observing and facilitating the changes, since these interventions are carried out in the family environment until oral functioning during breastfeeding is totally adapted.^{2,36,39}

The correction of oral dysfunctions may be easy and occur within a few days, provided that the exercises and maneuvers be performed continuously and that the mother and family members be properly instructed. In more persistent cases, it may take several weeks, and specialized care is then necessary³⁴ (speech therapist with experience in neonatology and breastfeeding or a lactation specialist), and consists of individualized oral stimulation, involving a sequence of exercises, including maneuvers and adjustments, in addition to varied orofacial exercises. A strict control of the duration and amount of stimuli is necessary, by carefully observing the baby's responses and behavior.^{34,36} The indiscriminate use of orofacial exercises may aggravate oral dysfunctions, causing more disorganization of the baby's oral functioning, and the use of these exercises for neurologically healthy babies has been controversial among therapists, since they can be too strong for the full-term baby's neuromuscular system.³⁵ It is important that as many reassessments as necessary be made and that the follow-up of mother-infant dyads and

Table 1 - Clinical management of oral dysfunctions

Type of oral dysfunctions	Description of the inadequate oral pattern	Mother/infant maneuvers
Weak rooting reflexes and sucking	Before the feeding, reflexes are not very active, irregular, and weak.	First, gently stimulate the rooting reflex by touching the infant's lips, mainly the lower lip, and the cheeks. According to the response of the infant's rooting, stimulate the sucking reflex three to four times before the feeding. Remove some milk from the breast and position the infant to the breast when the ejection reflex of the milk is activated. Repeat the maneuver several times until the suction is stronger.
Inverted lips	Lips, mainly the lower lip, are in an inward position, even after the response of the rooting reflex, when the infant attaches to the breast.	Lip maneuver: <ul style="list-style-type: none"> - If the latch occurs in the correct position, gently pull the lips outward. If the infant is breastfeeding only from the nipple, it is necessary to change the position, and adjust the lips. - If the inadequate pattern is maintained, keep doing the lip maneuver during the feeding until the infant is able to do it by itself.
Bitting pattern	It occurs when the jaw makes repetitive downward movements, opening and closing the mouth, causing a traumatic contact of the gums and the nipple.	Facilitating maneuver: <ul style="list-style-type: none"> - First, stimulate the rooting reflex of the infant several times and support the adequate latch to the breast. - During the feeding, support the jaw by gently touching it using your pointer or middle finger, and stimulate the opening of the infant's mouth, so that the infant puts his tongue outward while sucking.
Excessive oral tension	Perioral muscles present increased tonus, which leads to difficulties to open the mouth, and to keep it open.	Stimulate the rooting reflex of the infant before the latch for several times. Just allow the infant to latch when the mouth is broad open and the perioral muscles do not present the excessive tension. Then allow the infant to latch correctly. If the inadequate pattern is maintained, perform the maneuver mentioned in the bitting pattern.
Posterior position of the tongue	Posterior position of the tongue.	Use the oral sucking training technique by gently pulling the tongue outward.
Hypertonic tongue, in an elevated position in the oral cavity	Elevated position of the tongue inside the oral cavity when the nipple is introduced, which creates an obstacle to the breast.	Wearing gloves, gently introduce your little finger inside the infant's mouth and put the tongue downward for several times. Next, use the sucking training technique.

observation of the development of breastfeeding be maintained.^{2,34,36,39}

In case of ankyloglossia, the recommendation of frenulectomy is controversial and depends on the functional response of sucking movements of the tongue during breastfeeding. Ballard et al.⁴² evaluated ankyloglossia and its effect on breastfeeding in 2,763 full-term babies receiving breastfeeding admitted to the Cincinnati Children's Hospital Medical Center, USA, and in 273 outpatients, with

breastfeeding difficulty due to possible problems caused by ankyloglossia. Each baby was observed during breastfeeding and assessed using a special protocol (Hazelbaker Assessment Tool for Lingual Frenulum Function), which is a quantitative method for assessing lingual function and appearance, allowing for the identification of babies with important ankyloglossia. Of 3,036 babies receiving breastfeeding, 88 cases (3.2%) were detected among hospitalized NBs and 35 cases (12.8%) among the

outpatients. Significant ankyloglossia was responsible for severe breastfeeding problems among outpatients. After careful evaluation of lingual function, frenulectomy, in the presence of significant ankyloglossia, proved to facilitate breastfeeding in 123 cases with surgical indication. Consequently, milk transfer and nipple problems, as well as breast diseases, could be improved or solved.

Final remarks

Oral dysfunctions can be early detected through specific anamnesis, oral evaluation of the NB, and careful observation of breastfeeding. These procedures should be part of the routine at maternity wards. Therefore, it is essential that health professionals receive constant training (mandatory in all hospitals classified as Baby-Friendly Hospitals - WHO/UNICEF) in breastfeeding assessment and in interdisciplinary team work, which should include a speech therapist in the maternity wards, whenever possible.

For proper management of oral dysfunctions, specific knowledge about the oral anatomy and neurophysiology of the NB is necessary, as well as experience in the clinical management of breastfeeding. More complex and persistent cases must be diagnosed and followed up by specialists (e.g.: speech therapist with expertise in breastfeeding or a lactation specialist).

Acknowledgments

Thanks to Maria Lúcia de Faria Ferraz, librarian at the Faculdade de Saúde Pública / USP, for her support and invaluable contribution to the extensive review of the literature.

References

- Váldez V, Sanchez AP, Labbok M. Técnicas de amamentação. In: Váldez V, Sanchez AP, Labbok M, editores. Manejo clínico da amamentação. Rio de Janeiro: Revinter; 1996.p. 48-54.
- Sanches MTC. Amamentação-Enfoque fonoaudiológico. In: Carvalho RT, Tamez RN, editores. Amamentação-bases científicas para prática profissional. 1ª ed. Rio de Janeiro: Guanabara Koogan S.A.; 2002. p. 50-59.
- Neifert M, Lawrence R, Seacat J. Nipple confusion: toward a formal definition. *J Pediatr*. 1995;126:125-9.
- Andrade CF, Gullo AC. As alterações do sistema motor oral dos bebês como causa das fissuras/rachaduras mamilares. *Pediatria São Paulo*. 1993;15:28-33.
- Escott R. Positioning, attachment and milk transfer. *Breastfeeding Review* 1989;5:31-7.
- Crelin E. cavidade oral e língua. In: Crelin E, editor. Anatomia do recém-nascido. São Paulo: Panamericana; 1988. p. 27-30.
- Douglas CR. Conceitos gerais sobre fisiologia bucal. In: Douglas CR, editor. Tratado de fisiologia aplicada às ciências da saúde. São Paulo: Robe Editorial; 1994. p. 827-910.
- Segovia ML. Maduración de las praxias estomatológicas. In: Segovia ML. Interrelaciones entre la odontoestomatología y la fonoaudiología - la deglución atípica. 2ª ed. Buenos Aires: Panamericana; 1988. p. 67-82.
- Morris SE, Klein MD. Pré-feeding skills: a comprehensive resource for feeding development. Arizona: Communication Skill Builders; 1987.
- Naylor JA. Development of oral function. In Developmental readiness of normal full term infants to progress from exclusive breastfeeding to introduction of complementary foods. Wellstart International in collaboration with Linkages: breastfeeding; 2001.
- King FS. Como ajudar as mães a amamentar. Londrina: Universidade Estadual de Londrina; 1991.
- Lawrence RA. Breastfeeding: A guide for the medical profession. 4th ed. Saint Louis: Mosby; 1994.
- Bu'Lock F, Woolridge MW, Baum JD. Development of coordination of sucking, swallowing and breathing: ultrasound study of term and preterm infants. *Dev Med Child Neurol*. 1990;32:669-78.
- Weber F, Woolridge MW, Baum JD. An ultrasonographic study of the organization of sucking and swallowing by newborn infants. *Dev Med Child Neurol*. 1986;28:9-24.
- Woolridge MW. Aetiology of sore nipples. *Midwifery*. 1986;2:172-6.
- Woolridge MW. The anatomy of infant sucking. *Midwifery*. 1986;2:164-71.
- Carvalho GD. Amamentação e o sistema estomatognático. In: Carvalho RT, Tamez RN, eds. Amamentação-bases científicas para prática profissional. Rio de Janeiro: Revinter; 2002. p. 37-49.
- OMS/UNICEF. Organização Mundial de Saúde. Aconselhamento em amamentação: um curso de treinamento. São Paulo: Instituto de Saúde/OMS/OPAS; 1995.
- Rea MF. Reflexões sobre a amamentação no Brasil: de como passamos a 10 meses de duração. *Cad Saúde Publ*. 2003;19:109-18.
- Toma TS. Iniciativa Hospital Amigo da Criança: diagnóstico das práticas de alimentação infantil em maternidades públicas e privadas do município de São Paulo [dissertação]. São Paulo: Universidade de São Paulo; 2000.
- Venancio SI. Dificuldades para o estabelecimento da amamentação: o papel das práticas assistenciais das maternidades. *J Pediatr (Rio J)*. 2003;79:1-2.
- Carvalho MABL, Correa CRH. Identificação de dificuldades no início do aleitamento materno mediante aplicação de protocolo. *J Pediatr (Rio J)*. 2003;79:13-20.
- Vinha VP, Pelá NT, Shimo AK, Scocchi CG. Trauma mamilar: proposta de tratamento. *Femina*. 1987;15:370-8.
- Motter A, Ferreira CA, Schaffer G, Wengerkiewicz JC, Rosa LC. Prevenção de fissura de mamilo e estímulo à amamentação. *Fisioterapia em movimento* 1992;5:61-70.
- Murahovschi J, Teruya KM, Bueno LGS, Baldin PE. Amamentação. Da teoria à prática. Manual para profissionais de saúde. 2ª ed. Santos: Fundação Lusíadas/Centro de Lactação/OPAS/INAM/INST. DE SAÚDE; 1998.
- Righard L, Alade MO. Sucking technique and its effect on success of breastfeeding. *Birth* 1992;19:185-9.
- Sanches MTC. Dificuldades iniciais na amamentação – Enfoque fonoaudiológico [dissertação]. São Paulo: Universidade de São Paulo; 2000.
- Giugliani ERJ. O Aleitamento Materno na Prática Clínica. *J Pediatr (Rio J)*. 2000;76(Supl 3):S238-252.
- Winnicott DW. Os bebês e suas mães. 3ª ed. São Paulo: Martins Fontes; 1996.
- Nascimento LFC. Amamentação: influência de alguns fatores dos períodos pré-natal e perinatal. *Pediatria Moderna*. 2002;38:507-12.
- Barnes GR, Lethin Jr AN, Jackson EB, Shea N. Management of breastfeeding. *JAMA*. 1953;151:192-9.
- Brazelton TB. O desenvolvimento do apego: uma família em formação. Porto Alegre: Artes Médicas; 1988.
- Widström AM, Thingström-Paulsson J. The position of the tongue during rooting reflexes elicited in newborn infants before the first suckle. *Acta Paediatr*. 1993;82:281-3.
- Marmet C, Shell E. Training neonates to suck correctly. *J Matern Child Health*. 1984;9:401-7.
- Bovey A, Noble R, Noble M. Orofacial exercises for babies with breastfeeding problems? *Breastfeeding Review*. 1999;7:23-8.

36. Glass RP, Wolf LS. A global perspective on feeding assessment in the neonatal intensive care unit. *Am J Occup Thy.* 1994;48:514-26.
37. Als H. A synactive model of neonatal behavior organization: framework for assessment of neurobehavioral development in the premature infant and for support of infants and parents in the neonatal intensive care environment. *Phys Occup Thy Pediatr.* 1986;6:3-53.
38. Sanches MTC. Intervenção fonoaudiológica no aleitamento materno. Abstracts do II Congresso Goiano de Odontopediatria e II Encontro Goiano de Promoção de Saúde. Goiânia, 1997 Nov 13-15; Goiás, Brasil. Goiânia: Associação Goiana de Odontopediatria; 1997. p. 64-6.
39. Marmet C, Shell E. Assessing infant suck dysfunction: case management. *J Hum Lact.* 2000;16:332-6.
40. Lang S. Posicionamento e fixação do lactente ao seio. In: Lang S, editor. *Aleitamento do lactente, cuidados especiais.* São Paulo: Livraria Editora Santos; 1999. p. 21-42.
41. Fucile S, Gisel E, Lau C. Oral stimulation accelerates the transition from tube to oral feeding in preterm infants. *J Pediatr.* 2002;141:230-6.
42. Ballard JL, Auer CE, Khoury JC. Ankyloglossia: assessment, incidence, and effect of frenuloplasty on the breastfeeding dyad. *Pediatrics.* 2002 Nov;110(5):e63.

Corresponding author:
Maria Teresa Cera Sanches
Instituto de Saúde, NISM
Rua Santo Antônio, 590, 2o andar
CEP 01314-000 - São Paulo, SP
Brazil
Phone/Fax: +55 (11) 3293.2232
E-mail: mtsanches@isaude.sp.gov.br or mtesan@uol.com.br