

The infant with dysfunctional feeding patterns — The chiropractic assessment

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ABSTRACT

The World Health Organization recommends exclusive breastfeeding for the first 6 months of an infant's life, followed by the introduction of complementary foods while breastfeeding for 2 years and beyond. Early and consistent breastfeeding support can often make the difference in a dyad's ability to establish a functional breastfeeding relationship. While challenged dyads can sometimes accomplish competent breastfeeding given appropriate support, necessary interventions, and an opportunity to learn; timing is critical when a neonate has not been transferring adequate milk volume or is managing feeding in a passive or compensatory manner. Chiropractors should be most familiar with the diagnosis and treatment of musculoskeletal dysfunctions that could result in an inability to feed. They should also recognize and treat the compensatory changes that will develop in a healthy, neurotypical neonate who is challenged by an inability to feed efficiently in order to prevent the evolution of long term physiologic and postural ramifications.

Key words: breastfeeding, dysfunctional feeding, chiropractic, International Board Certified Lactation Consultant, tethered oral tissue, tongue tie, lip tie, neonate, pediatric.

Introduction

The World Health Organization recommends exclusive breastfeeding for the first 6 months of an infant's life, followed by the introduction of complementary foods while breastfeeding for 2 years and beyond.¹

According to the 2014 breastfeeding report card produced by the CDC, breastfeeding rates continue to rise in the United States. In 2011, 79% of newborn infants started to breastfeed, 49% were breastfeeding at 6 months, and 27% at 12 months. (However, it is important to note that this does not represent exclusivity, as another CDC report states that exclusivity rates did not rise between 2002 and 2012).² Additionally, the number of IBCLCs (International Board Certified Lactation Consultants), and others trained to support breastfeeding in various clinical and community settings has also increased.^{3,4} Short-term risks of artificial-feeding have been well-documented across the literature and include increased obesity and incidence of infection – including acute otitis media, respiratory tract and gastrointestinal infection. In the long term, failure to breastfeed is likely a factor in the development of inflammatory bowel disease, celiac disease, and diabetes. Artificial-feeding has also been associated with increased blood pressure and cholesterol levels in adulthood.⁵

Early and consistent breastfeeding support can often make the difference in a dyad's ability to establish a functional breastfeeding relationship.⁶ Despite the fact that challenged

dyads can still accomplish successful breastfeeding given time-appropriate support and interventions, timing is critical when a neonate has not been transferring milk. If released from the hospital without appropriate assessment of latch and transfer, symptoms may not appear until the dyad has gone home and the neonate's status can rapidly decline. Neifert (2001) makes a compelling argument for the importance of recognizing and resolving breastfeeding dysfunction as it affects neonatal health: "Clinicians must overcome the tendency to view the complications of mismanaged breastfeeding as an indictment of the "process". Instead, pediatric practitioners are obligated to confront the reality of breastfeeding failure, identify associated risk factors and implement intervention strategies to prevent infant morbidity."⁷

Once at home, an infant who cannot transfer milk may quickly become a lethargic infant but may be perceived as a well-behaved baby. Even if parents express concern, they are often advised not to wake a sleeping baby by well-intentioned but ill-informed family, friends, or healthcare providers. Without daily weights to observe weight loss (or gain), or taking note of the requisite number of wet diapers or stools produced, this failure to feed may go unnoticed until the situation has become tenuous, or worse, untenable. When the infant is unable to transfer a sufficient amount of milk to sustain normal activity, they will often fall asleep at the breast waking shortly afterward and crying inconsolably until put to breast again. Other signs of inadequate

milk transfer include feeding for short intervals very frequently or the infant who never gets off the breast yet fails to gain weight and meet developmental milestones.⁸ Alternatively, these babies may gain adequately in the short-term if the mother has a robust milk supply and is willing to nurse very frequently, however milk supply is dependent upon milk removal, not only time at breast.⁹

New parents often receive input from a variety of sources including family members, friends, and daycare providers as well as parent support groups and local service organizations like La Leche League¹⁰ or Breastfeeding USA.¹¹

But with all these different sources of information, there is risk of parents being overwhelmed by confusing or conflicting information, as well as myth and bias. Parents need educated support to help them evaluate the available information and resources so they can make informed decisions. Tow and Vallone (2009) assert that this role should ideally fall to the appropriately trained healthcare provider, the International Board Certified Lactation Consultant or IBCLC.

Despite the IBCLC being the most suitable portal of entry for breastfeeding education and support, a mother can potentially receive guidance at a variety of junctures: while still in the hospital by nursing or lactation support staff, incidentally at a routine well-baby follow up with nursing staff, well baby clinic or pediatrician check up due to failure to gain weight, in consultation with another provider because of past experience with a sibling or based on their reputation (taking their newborn to a chiropractor for breastfeeding difficulty), or due to an emergent condition requiring a trip to urgent care (a somnolent infant who cannot be roused). Although some of these professional interactions are with healthcare providers who have sought additional education or have experience in this arena, these interactions are often fraught with conflicting or misinformation which can lead to frustration and failure without seeking the support of an IBCLC.

Chiropractors should be most familiar with the diagnosis and treatment of musculoskeletal dysfunctions that could result in an inability to feed. The delicate balance required to nurse and transfer breast milk successfully is influenced by the functionality of the associated joints, soft tissue, and nerves of the cranium and cervical spine. Full, normal function may be negatively influenced by the neonate's innate ability to compensate for any "roadblocks" it might encounter (ranging from neurologic and musculoskeletal implications of birth trauma to the presence of a tongue or lip tie). The chiropractor also needs to recognize and treat the compensatory changes that will develop in a healthy, neurotypical neonate when challenged by an inability to feed efficiently to prevent the evolution of long term physiologic

and postural ramifications.^{12,13,14}

A chiropractor may not be the first individual who will be positioned to support the breastfeeding dyad when challenges arise. Frequently, our role will be collaborative. Yet, with the increasing number of parents seeking early assessment by a chiropractor for their newborns^{15,16,17,18} it behooves us to educate ourselves as to the differential diagnoses related to breastfeeding. This means the ability to identify the infant who cannot feed efficiently (or at all), is failing to thrive, or feeding in a compensatory pattern; and make referrals as appropriate.¹⁹

Other healthcare providers the chiropractor can expect to collaborate with when working with an infant who cannot feed include: IBCLCs, midwives, naturopaths, nurses, pediatricians, dentists, oral surgeons, pediatric surgeons, ear/nose/throat (ENT) surgeons or otolaryngologists, speech and language pathologists (SLP), occupational therapists (OT), oromyofunctional therapists (OMT), or other feeding or airway specialists who may play various roles in the care of the infant. Unfortunately, the parents may also be receiving conflicting information from these providers. When this happens, they are in even greater need for an advocate to help them create a plan of care for their infant to reduce the risk of premature cessation of breastfeeding.

When any one of these healthcare providers recognizes that the dyad is having breastfeeding challenges, an assessment should be performed including a system survey. The musculoskeletal examination (at which the chiropractor should be proficient) may reveal biomechanical dysfunction. For example, decreased range of motion of the joints of the cranium (like the temporomandibular joint) can interfere with a neonate's ability to gape comfortably and competently latch and transfer milk. Restricted cervical range of motion can result in discomfort or inability to latch with resultant behaviors like arching at the breast, crying in frustration, or pulling off the breast repeatedly.^{20,21,22,23,24,25,26,27,28,29}

The collaborative protocol might include components of natural alternatives and/or holistic interventions based on the presenting diagnosis. Interventions may be straightforward and limited to chiropractic adjustments to restore normal joint function and neurologic competency or may be fraught with comorbidities and expand to include surgery (most often to release tethered oral tissues),^{30,31} supplementation to provide calories, rehabilitative exercises, pharmaceuticals, homeopathy and nutritional supplements to support gastrointestinal health and wound healing under the instruction of the IBCLC or other healthcare providers.

It would be helpful for the chiropractor to familiarize themselves with the prescribed interventions as well as the sup-

portive measures to treat many of the comorbid conditions. Part of the chiropractor's role may be to help support the parents who have trepidation about recommended procedures. The chiropractor may also offer encouragement for parents having difficulty being compliant with protocols that may be required to help their infant attain competent feeding, ranging from a frequent pumping schedule to wound care and stretching after the revision of oral tethered tissues (lip, tongue, or buccal ties). The recognition that many of these interventions serve to prevent early cessation of breastfeeding³² is critical but the chiropractor is ideally suited to evaluate and explain the implications of musculoskeletal dysfunction as it relates to current dysfunction as well as potential problems that could arise in the future if left unaddressed.

To underscore the importance of correcting altered oral motor function (whether structural, neurological, or mechanical), there has been an association with a wide variety of developmental issues. Some that have been (or are currently) under multidisciplinary exploration include failure to thrive,³³ airway dysfunction, SIDS, aerophagia (resulting in colic and reflux),³⁴ dental caries,³⁵ oral motor dysfunction, malocclusion,^{36,37} decreased patency of the sinuses, narrowed palatal architecture, snoring, sleep apnea and sleep disordered breathing,^{38,39,40} disrupted immune function (including tonsillar hypertrophy), gastrointestinal dysfunction, and challenges in speech and articulation.^{41,42}

Physiologic function

There are far reaching effects because of the intimate relationship between the musculoskeletal and the nervous systems. Structure affects function and vice versa. Mechanical dysfunction can result in a lack of peripheral mechanoreceptor input to the central nervous system (CNS) which can influence a range of functions from the level of alertness to the modulation of visceral (mastication, swallowing, vomiting, peristalsis, glandular secretion, bladder control) and somatic (posture and general muscle tone) activities.

Local and global lack of mobility of the connective tissue (fascia) and articulations of the cranium, spine and extremities (due to injury, edema, adhesions, and compensations) can result in traction of the fascia which can also cause a mechanical barrier or alter afferent input to the CNS.⁴³

Breathing and eating are the neonate's primary driving physiologic functions. The neurologically competent neonate will draw his or her first breath and seek the breast immediately when there is no interference.⁴⁴ If anything impedes the accomplishment of these initial goals, compensations will be developed as rapid plastic connections are made in the neonatal brain. This neuroplasticity assures survival under adverse conditions even at the expense of

structural changes to achieve physiologic homeostasis. Even the neonate impaired by genetics, pharmaceutical intervention, or birth injury will frequently demonstrate this amazing ability to create compensatory neuronal pathways to accomplish these functions so basic to survival.

Structural interference impeding breathing may take other forms. For example, the use of the infant car restraint system, the "baby bucket," results in an infant positioned in a flexed posture who may not be able to inspire with sufficient capacity to supply the required oxygen to maintain sustainable pO₂. Premature or impaired infants like those with posterior tongue ties may be at even higher risk.⁴⁵

The neonate uses six cranial nerves, 22 bones connecting at 34 sutures, and 60 voluntary and involuntary muscles in order to accomplish a smooth suck, swallow, breath sequence.⁴⁶ When the movement at any of these articulations is decreased or impeded, there is an associated cascade of movements that are influenced by the original mechanical dysfunction. Mechanical dysfunction (Table 1) can result in an immediate challenge to the neonate's ability to breathe and feed. Mechanical dysfunction that interferes with critical life sustaining activities (such as breathing and eating) also results in an engagement of the sympathetic nervous system. The sympathetic nervous system responds to low pO₂ and the question, "Where's my next meal coming from?" Accordingly, the brain rapidly creates new plastic circuits in an effort to urgently resolve the problem. Compensations ensue that may be functional or dysfunctional. In the short term, the impact of these compensations on respiratory function, milk transfer, the infant's sleep patterns, and maternal stress level may be significant. Compensatory patterns may have long term effects as previously outlined.

Table 1. Structural and Physiological Pathology Can Hinder Efficient Suckling

Reduced cervical range of motion – (Torticollis, Craniocervical Dysfunction or Subluxation, Sustained or "Preferred" Head Position — rotation, flexion, lateral flexion)
TMJ Dysfunction – Muscle Hypertonia and Hypotonia and Aberrant Tongue Function (Bf)
Hyperactive Gag Reflex – Aberrant Tongue Activity (Retraction, Bundling, Thrusting, Curling, Cupping, Troughing)
Headache – Other Pain

Mechanical dysfunction also prompts nociceptive input to the central nervous system. Nociception (pain) via the spinoreticular tract can result in activation of the sympathetic nervous system (via the amygdala and the thalamus) with an associated exaggeration of infantile reflexes; altered res-

piration and infant sleep patterns; increased difficulty integrating sensory input; decreased digestion; and increased irritability — all manifestations of autonomic dysregulation.

An unmedicated neurotypical neonate will seek his mother’s breast for nourishment if left to his own devices. In utero constraint, a difficult labor and delivery, and interventions — both non emergent and emergent — employed during a home birth or in a hospital setting may thwart the neonate’s ability to nurse by altering normal biomechanical function and perhaps development (Table 2). The most direct way to effect immediate change for the neonate is to address any neuromusculoskeletal problems impeding normal function. The level of intervention will depend on the level of

Table 2. “Drive to Survive” can lead to:
<ul style="list-style-type: none"> • Autonomic Dysregulation or Imbalance in ANS • Decreased Range of Motion • Development of Muscular Imbalance • Damage to Mother’s Breast Tissue • Poor Milk Supply • Inefficient Transfer of Milk

complexity of the dysfunction. The earlier the intervention, the greater the chance of attaining competency.

The History

A thorough history and evaluation will facilitate management (including appropriate referrals) for your patient. From learning the details of the birth to recognizing key posturing or head position, a detail-oriented approach is critical. Specific questions are designed to elicit specific information about the breastfeeding relationship.

To determine appropriate management, every practitioner who interfaces with the dyad needs to look at form and function through a discerning lens and differentiate neuromusculoskeletal from other issues (Table 3). Chiropractors need to take into account the observations of the parents

Table 3. Other Factors Leading to Breastfeeding Dysfunction
<ul style="list-style-type: none"> • Lack of parental knowledge • Anatomical Variants in the mother or infant including: inverted nipple, tethered oral tissue, cleft lip or palate, tracheomalacia or laryngomalacia • Genetic Syndromes • Interventions Employed during Birth (medication, forceps, ventouse, manipulation) • Injury to the Nervous System such as perinatal stroke or anoxic incident

Table 4. Common Parental Observations that may Indicate Structural Complications
<ul style="list-style-type: none"> • Erect head control (“military” posture when held upright) • Preference to keep or turn head to one side • Inability to turn head left or right • Pushing off the breast or Arching at the breast • Milk dribbles out of mouth at breast • Frequently changing wet bibs • Facial asymmetry: crooked smile, uneven eyes, an ear that “sticks out” • Cannot lay baby down: must be carried • Intolerant of the car seat • Fusses or becomes frantic during tummy time

and caregivers who will often describe alterations in function in minute detail (Table 4).

The Exam

Examine the infant layer by layer. Indulge in observation and know that books exist to name things. A full assessment of all systems should be routinely performed with special attention given to neuromusculoskeletal integrity. Neurologic responsiveness, reflexes, and muscle tone should be assessed as well as the soft tissue structures (including skin turgor, color and temperature, fascial tension, and development of muscle mass); osseous structures to rule out fracture or displacement; and articulations to rule out hyper or hypomobility of the joints, capsular swelling, and muscle symmetry surrounding the joint.

Visual assessment (Table 4) as well as passive palpation can reveal many clues to the cause of the breastfeeding dysfunction. For example, reflexes like rooting and suckling can be stimulated digitally or, in a homebirth, simply observed while the neonate is lying prone across the mother’s chest and abdomen. A neurotypical neonate will spontaneously commando crawl (stepping reflex), root, latch, and suckle while palming the breast (Babkin) without assistance. Even the initial assessment of the suck, swallow, breath synchrony⁴⁷ can be performed by observing and listening. If the neonate is unable to do this unassisted, a chiropractic examination may reveal the cause (Table 5 - next page).

Conclusion

When evaluating an infant with breastfeeding dysfunction a “whole child” approach needs to be adopted as there are many factors that could interfere with successful latch and transfer including injured muscles, fractured clavicle, hip dysplasia, neurologic interference from an anoxic event, or an extended half-life of an administered medication. Although supplementation by bottle may be possible (whether with breastmilk or an artificial milk replacement), it may prove to be just as challenging for the impaired neonate

and ultimately more serious interventions like a nasogastric tube could be necessary.

Diligent evaluation and differential diagnosis are critical in the neonate who is having difficulty feeding. A collabora-

tive effort between chiropractors and other health care providers while utilizing an IBCLC for primary breastfeeding evaluation and support is often the most efficacious means to restoring competency for the breastfeeding dyad.

Table 5: Observation

Head Shape	Facial Features
Perfectly Round	Flat face
Elongated in the sagittal plane (scaphalocephalic)	One eye more open or protruding than the other One eyebrow higher than the other
Wider in the coronal plane (brachiocephalic) Occipital region is flattened or asymmetric (plagiocephalic)	Height of ears uneven or one appears more anterior Nose is not midline or nostrils appear uneven Wry smile as the mandible deviates left or right
Midline protrusion from the anterior fontanel to the nasal bridge (trigonocephaly — early fusion of the metopic suture)	Receding chin or mandibular retraction Mandibular width (dental arch) Mandibular length (oblique or inferior development) Lips Symmetry Peaking Buckling (deep philtrum) Cheeks Concave Convex Muscular engagement (are the muscles “awake”) Hard Palate Height Width (dental arch) Torus formation

***Adapted from Dosman 201222 and Fysh 200221.*

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