OMT in Newborns with Breastfeeding Dysfunction

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Objectives

- Why breastfeeding is important
- The anatomy of an infant affecting breastfeeding
- Review current literature for breastfeeding dysfunction
- Review current literature for OMM and breastfeeding infants
- Discuss new research plans for increasing knowledge in this field

Breastfeeding Recommendations

- Breastfeeding is recommended as the main source of feeding for the first 6 months after birth by American College of Obstetricians and Gynecologists.
- American Academy of Pediatrics (AAP) recommends breastfeeding at least until 1 year of age and as long the baby and mother mutually would like to
- The World Health Organization (WHO) recommends mother breastfeed until 3 years of age

Benefits of breastfeeding

- Benefits to the baby
  - Less upper respiratory tract infections
  - Less otitis media
  - Less gastrointestinal infections during and up to 2 months following breastfeeding
  - Lower risk of SIDS
  - Decrease incidence of atopic diseases
  - Lower risk of childhood obesity
  - Lower risk of DM (type I and type II)
  - Increased neurodevelopmental benefits
- Benefits to the mother
  - Decreased incidence of post-partum depression
  - Decreased infant neglect and abuse
  - Increased weight loss following parturition
  - Decreased risk of developing DM later in life
  - Reduction of both breast and ovarian cancer
  - Economic benefits

Current statistics

- Globally, 41% of Infants are breastfeed for the first 6 months of life

	Ever breastfed %	Exclusive breastfed 4mo	Exclusive breastfed 6 mo
US Males	74.2	33.3	13.6
US Females	73.7	32.9	13.7
Oklahoma	65.6	30.6	8.4

- From OSUMC, 10.5% of mothers breastfeed after the first week of life (2011)

BREASTFEEDING | THE GOAL

By 2025, increase to at least 50% the rate of exclusive breastfeeding in the first six months

WHY IT MATTERS

Babies who are fed **nothing but breastmilk** from birth through their first 6 months of life get the **best start**

Exclusive breastfeeding provides babies: **the perfect nutrition** & everything they need for healthy growth and brain development

Protection from respiratory infections, diarrhoeal disease, and other **life-threatening ailments**

Protection against **obesity & non-communicable diseases** such as asthma and diabetes

Updated October 2018

RECOMMENDED ACTIONS

LIMIT FORMULA MARKETING

WHAT? Significantly limit the marketing of breastmilk substitutes

HOW? Strengthen the monitoring, enforcement and legislation related to the International Code of Marketing of Breastmilk Substitutes

SUPPORT PAID LEAVE

WHAT? Empower women to exclusively breastfeed

HOW? Enact six-months mandatory paid maternity leave and policies that encourage women to breastfeed in the workplace and in public

STRENGTHEN HEALTH SYSTEMS

WHAT? Provide hospital and health facilities-based capacity to support exclusive breastfeeding

HOW? Expand and institutionalize the baby-friendly hospital initiative in health systems

SUPPORT MOTHERS

WHAT? Provide community-based strategies to support exclusive breastfeeding counselling for pregnant and lactating women

HOW? Peer-to-peer and group counselling to improve exclusive breastfeeding rates, including the implementation of communication campaigns tailored to the local context

SCOPE OF THE PROBLEM

Globally, only **41% of infants** are exclusively breastfed

Suboptimal breastfeeding contributes to more than **800,000** infant deaths

Countries lose more than **$300 billion annually** because of low breastfeeding rates

Anatomy of Breastfeeding

- Breastfeeding is an intricate process requiring the coordination of approximately 30 muscles and nerves.

- 3 distinct phases
  - Oral Phase
    - Moving food (breastmilk in this case) from the mouth into the throat
  - Pharyngeal phase
    - Start of the swallowing and squeezing of the milk down to throat
  - Esophageal phase
    - Opening and closing of the esophagus to allow food into the stomach

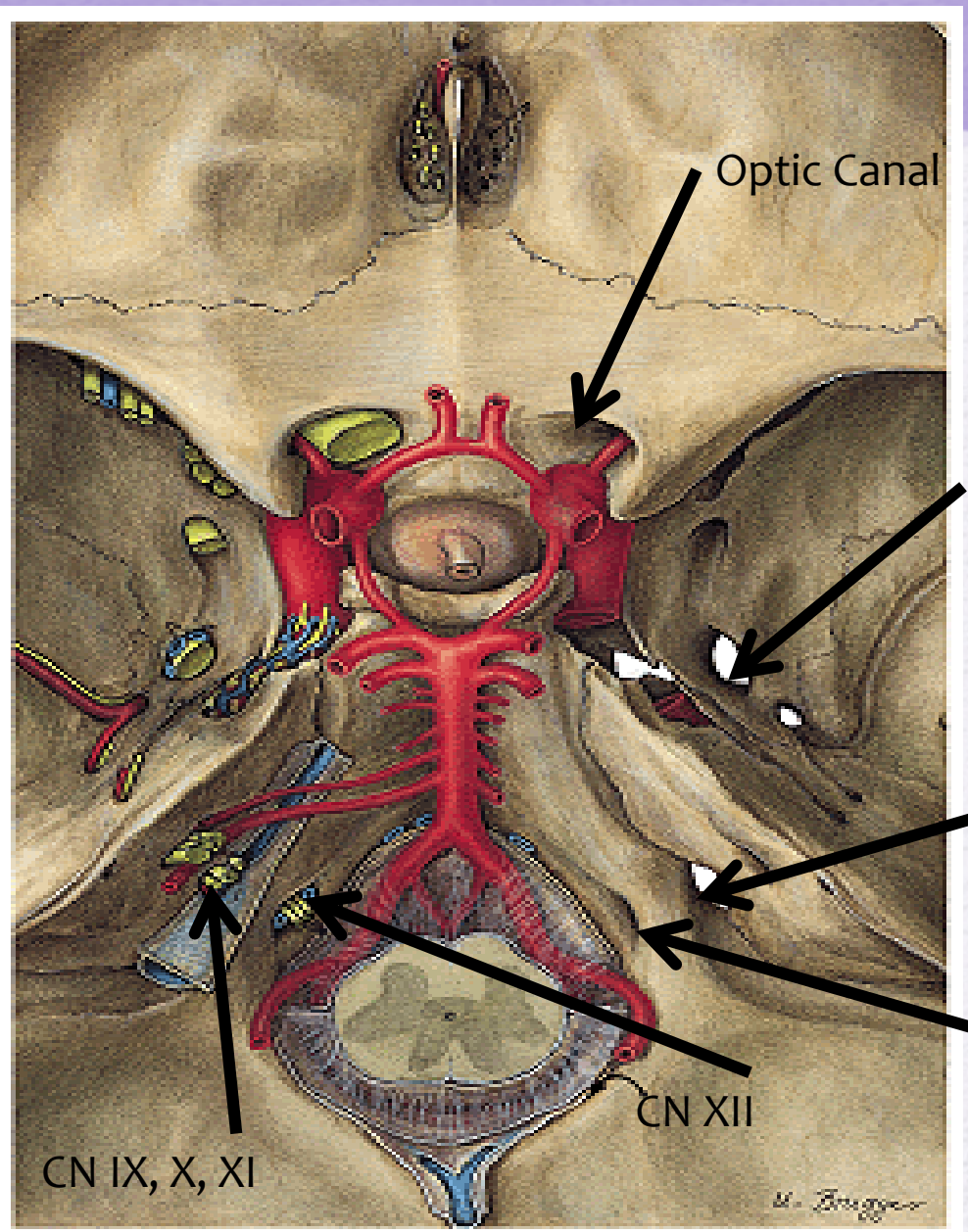
Anatomy of Breastfeeding: Oral Phase

- This phase is forming a seal around the nipple and creating negative pressure via rhythmic motion of tongue against the hard and soft palate.
- The tongue is innervated by the Hypoglossal Nerve (CN XII) and the Vagus Nerve (CN X)
- Soft palate is innervated by the third branch of the Trigeminal Nerve (Cranial Nerve V3) and CN X via separate muscles.
- The orbicularis oris muscle of the lips, which are forefront in creating the seal, are innervated by the Facial Nerve (CN VII)
- Sensation of the tongue and mouth will also play a role in the coordination of latch and feeding as milk is transferred to the pharyngeal phase.

Anatomy of Breastfeeding: Pharyngeal and Esophageal Phase

- Protection of the airway is the major function of the pharyngeal phase
- The pharyngeal phase is ensured by the epiglottis, suprahyoid, and thyrohyoid muscles closing the larynx and tucking it underneath the tongue.
- This process is orchestrated by CN IX, CN X, and CN XII and transfers food to the esophageal phase
- The esophageal phase is coordinated involuntarily by smooth muscles, innervated by the parasympathetics functions of CN X.

Jugular Foramen



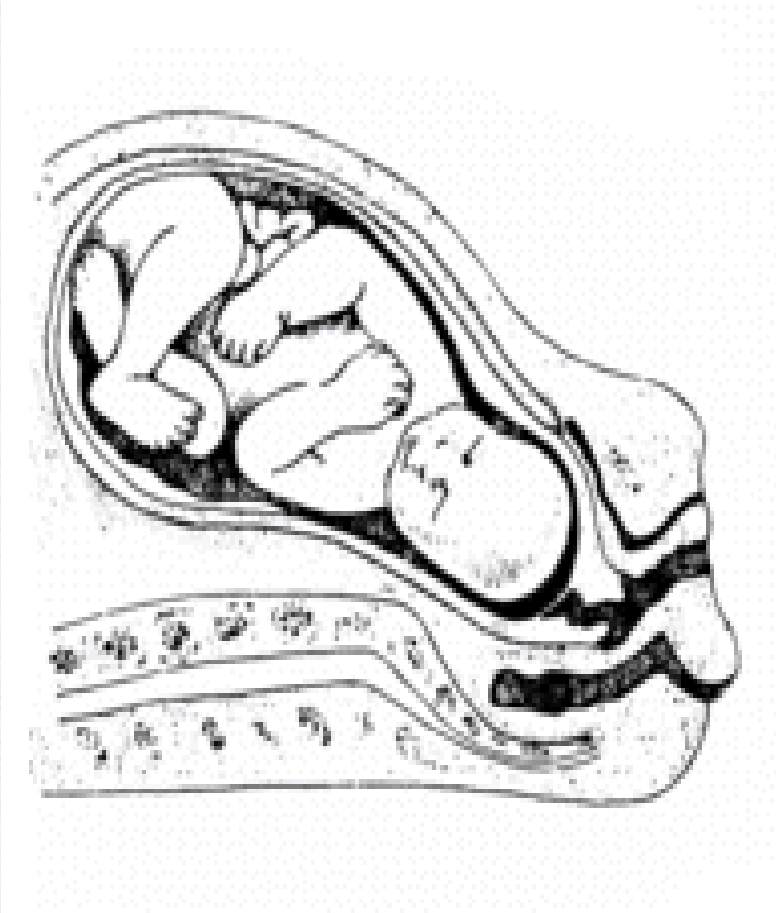
Consider the Cranial Anatomy

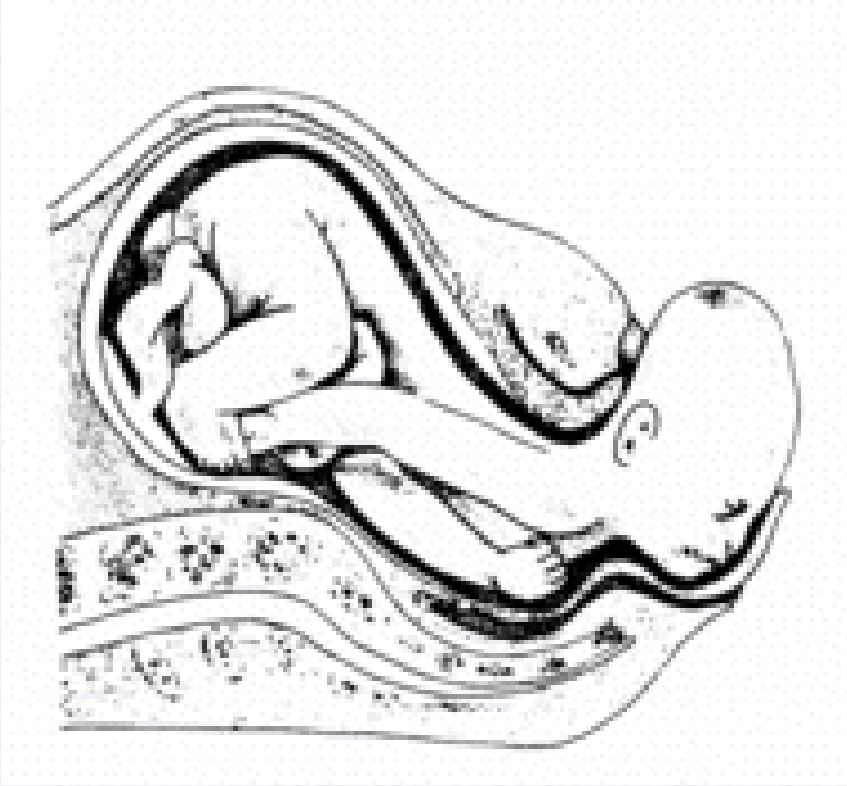
- The Cranial Nerves responsible for the phases of feeding are intimately associated with the cranial bones that protect them.
- Cranial Nerves IX and X exit the cranium via the jugular foramen and track anteriorly along the condylar portion of the occipital bone.
- Cranial Nerve XII exits the cranium via the hypoglossal canal of the occipital bone, and then follows a course along the occipital condyles and through the anterior condylar canals.

The Osteopath's Thoughts on Anatomy

- During the process of vaginal delivery, the fetal head is compressed against the cervix and perineum: this results in compression of the fetal body and subsequently the spine into the base of the occiput.
- The occipital condyles are compressed by the facets of the atlas, leading to distortion between the occipital condyles and increased tension of the dura mater of the jugular foramen.
- The distorted dura mater can lead to inhibition of the Cranial Nerves exiting through the jugular foramen and thus discoordination of latching and feeding

Forces of Delivery





Pictures courtesy of Dr. Laura Griffin's presentation on Osteopathic Care for the Newborn and Infant

Current Assessment for Breastfeeding Dysfunction

- Standard of Care is a LATCH score
- Currently the most efficient way to assess and document a feeding concern consistently in a newborn
- gives quantitative data that assesses all three phases of breastfeeding
- Statistically proven as reproducible by another evaluator

How the LATCH score works

- The scoring system is based on a system of poor/fair/good with a numerical value of 0/1/2
- A total of 10 indicating no great difficulties with feeding.
- It is scored on five areas, depicted by the mnemonic LATCH

What does LATCH stand for?

- L = latch, assesses how well the infants mouth attaches to the breast and nipple
- A = audible swallowing, indicates transference of expressed milk through the mouth to the esophagus
- T = type of nipple, scores how accessible the nipple is to the infant's mouth.
- C = comfort, assesses the condition of the mother's breast and nipple in response to attempts at feeding
- H = hold, assesses mom's ability to hold the infant during feeding.

14.2 Appendix B: Latch Score

Patient's Label: Date: _____

	0	1	2	SCORE
L Latch	- Too sleepy - No sustained latch or suck	- Repeated attempts for latch or suck - Holds nipple in mouth only, no suck	- Grasps breast - Tongue down - Lips flanged - Rhythmical sucking	
A Audible Swallow	None	A few swallows with stimulation of infant	Spontaneous and intermittent swallowing	
T Type of Nipple	Inverted nipples	Flat nipples	Everted (after stimulation if necessary)	
C Comfort	- Engorged breast - cracked or bleeding nipples - large blisters, large amount of bruising	- Breast are filled, but not completely engorged - Reddened, small blisters or bruises	Soft, Non-tender	
H Hold	Full assist (staff holds infant to breast)	- Minimal assist (staff holds, then mother takes over)	No assist from staff (mother able to hold infant in position)	
			TOTAL:	

Signs of Breastfeeding Dysfunction

- Baby won't latch
- Baby won't stay latched
- Baby cries and fusses while feeding
- Baby constantly falls asleep when feeding
- Baby nurses constantly
- Mother is in pain when nursing
- Mother with cracked and or bleeding nipples
- Baby arches their back and stiffens with feedings
- Baby coughs and gags during feedings
- Baby has milk coming out of their mouth and nose while feeding
- Baby is constantly stuffy when feeding
- Baby sounds gurgly, horse, or breathy cry after feeding and during feeding
- Baby spits up and throws up often
- Poor weight gain in the infant

Causes of Breastfeeding Dysfunction

Infant Problems

- Prematurity
- Nervous system disorders
- Reflux
- Anatomical problems (head/neck anatomy, heart disease, lung disease)

Mother problems

- Variants of breast anatomy
- Dehydration
- Depression and Frustration

Who is consulted for Breastfeeding Dysfunction

- Lactation Consultant
  - Healthcare professionals who specialize in preventing and problem solving breastfeeding dysfunctions
  - Board certified through the International Board of Lactation Consultant Examiners (IBLCE)
    - Pathway 1: 1000hrs lactation specific clinical experiences
    - Pathway 2: graduate fro academic program (14 health science classes) + 3– hrs supervised lactation clinical experiences
    - Pathway 3: 500 hrs supervised lactation clinical experienced under certified IBLCE
- Speech Therapist/Speech-Language Pathologist (SLP)
  - Specifically, Infant speech and feeding pathologist
- Allied health professionals Investigate in-depth oral and motor swallowing evaluation
- Obtain Masters degree through the American Speech – Language – Hearing Association (ASHA), can then pursue a doctorate degree
  - Masters involves about 400 hours of training

Other Team Members to Consider

- Occupational Therapy
- Physical Therapy
- The physicians
- The nurses
- Dietitian/nutritionist
- Developmental specialists
- Social Workers

Imaging for Breastfeeding Dysfunction

- Modified Barium Swallow
  - Infant drinks liquid containing barium, which shows up on an xray. These xrays are taken in series while the SLP assesses the oral, pharyngeal, and esophageal phase
- Endoscopic Assessment
  - Small scope with a light and camera is place din the infants nose, and SLP can watch the child swallow on a screen (assesses the oral phase, and beginning of pharyngeal phase)

Think of our Osteopathic Applications

Tenants of Osteopathy

- The body is a unit; the person is a unit of body, mind and spirit
- The body is capable of self-regulation, self-healing and health maintenance
- Structure and function are interrelated at all levels
- Rational treatment is based on an understanding of these basic principles

5 Models of Osteopathic Patient Care

- Structural/Biomechanical Model
- Neurologic Model
- Metabolic – Energetic Model
- Behavioral Model
- Respiratory – Circulatory Model

Osteopathic Studies Investigating Breastfeeding Dysfunction in Newborns

- Pilot study conducted by Cornall et. al. investigated and qualified the international osteopath's experience in treating a baby with breastfeeding problems
  - intent of this study was to further the understanding of the experience of osteopathically treating a baby with breastfeeding problems.
  - This report provided a rationale for osteopathic treatment, however, it also noted more research would be beneficial in this area.

Osteopathic Studies Investigating Breastfeeding Dysfunction in Newborns

- Pilot study conducted by Fraval et. al. directly studied pre- and post-treatment effects of OMT on suckling dysfunction in infants.
- They measured pre- and post- feed fat estimation in breast milk from mothers with six infants with suckling dysfunction and six without dysfunction to determine if breast milk fat could be used to determine treatment efficacy.
- In the infants with suckling dysfunction, the difference was comparable to those who had a normal suck after 1 month of treatment.
- The author determined that measuring fat estimation in breast milk could potentially be used as a standardized method to show if breast feeding is more effective or successful but will require further study before it can be standardized.
- This did not go to a full trial as the methods used in this study have no evidence to support this is a valid tool of measurement at this time, and research on fat estimation in breast milk should be performed first to evaluate this as a tool.

Osteopathic Studies Investigating Breastfeeding Dysfunction in Newborns

- Unpublished pilot study on OMT in neonates with breastfeeding dysfunction by Castillo et. al.
- This study used the LATCH scoring system before and after OMT for newborn feeding dysfunction.
- Only 4 patients included in this study, and only a few osteopathic treatments were performed, without a treatment protocol or sham groups, and there was not a statistical significance with N = 4.
- Promising methods to use for further studies, as LATCH is the standard of care of evaluating breastfeeding dysfunction.

Benefits of Higher LATCH Scores in a Newborn

- Kumar et. al. have shown that women with LATCH score of 9 or greater between hours 16 and 24 of the infant's life are 1.7 more times likely to continue breastfeeding at 6 weeks postpartum.
- Tornese et. al. showed that LATCH score assessed within the first 24 hours after delivery will predict non-exclusive breastfeeding at hospital discharge.

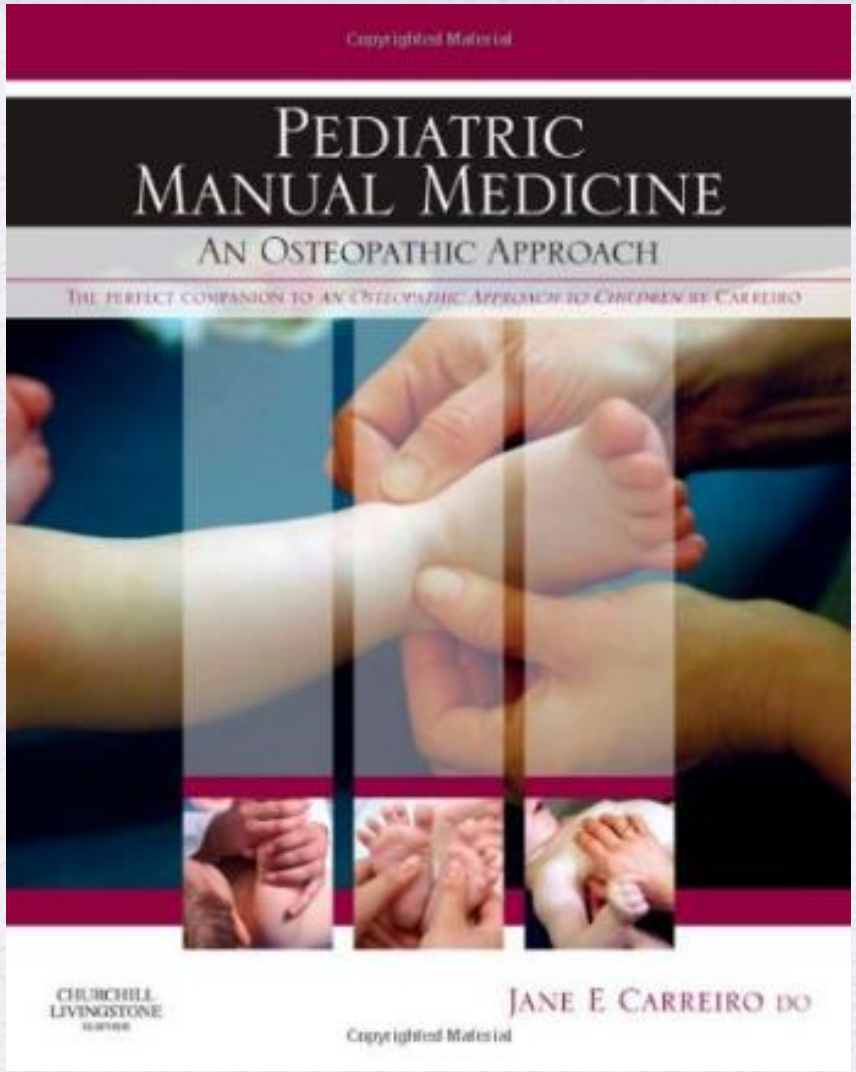
Our Study

- 30 mother/infant pairs born at the Oklahoma State University Medical Center in Tulsa, OK that have been documented as having a breast feeding problem (LATCH score 7 or less) within the first three breastfeeding attempts following birth
- Our primary aim is to determine if there is a statistically significant difference in the change in LATCH of those treated with OMT and those not.
- This study will be a double blinded study, except to physicians performing OMT.
  - 3 Groups:
    - Group 1: treatment group
    - Group 2: Sham group
      Group 3: No treatment group

Osteopathic Treatments for Breastfeeding Dysfunction

- Cranial
  - Temporal bone dysfunction
  - Sphenobasilar Synchondrosis (SBS)
  - Reciprocal Tension Membrane
- Condylar Decompression
- Cervical, Thoracic, and Lumbar Myofascial Treatment
- Thoraco-abdominal Diaphragm Treatment
- Balanced Ligamentous Tension of the Hyoid Bone and Associated Musculature
- Balanced Ligamentous Tension of the Mandible
- Inhibition Technique of the Tongue
- Sternum Myofascial Treatment
- Myofascial treamtnet of Sacral Dysfunction

Resources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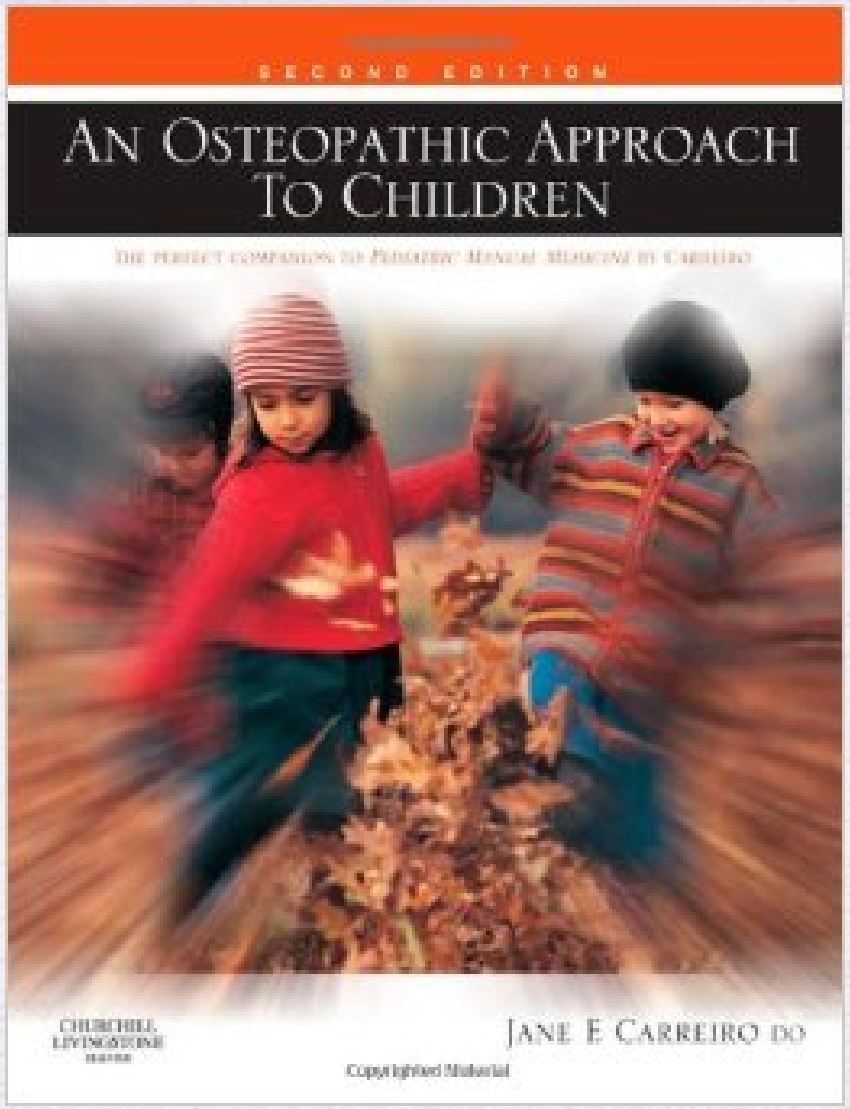
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SUCKLING DYSFUNCTION/ OROPHARYNGEAL DYSFUNCTION

Clinical Notes

Suckling dysfunction may involve latching on, maintaining contact, or generating sufficient pressure to successfully obtain breast milk. From an osteopathic perspective, problems with latching are most likely due to inability to open the mouth wide enough or failure to control the lips to form a seal. Inability to maintain contact can arise because the infant fatigues or cannot position her head appropriately. When the problem is due to the latter, the infant will typically nurse better on one breast than the other. Problems generating sufficient force are often due to mechanical dysfunction of the hyoid stabilizers, the tongue or the muscles controlling the mandible.

Oropharyngeal dysfunction may present as difficulties feeding, stuttering, or speech abnormalities. The problem may be neurological or mechanical. Mechanical etiologies typically involve the ability to properly position and control the tongue. The structures influencing the base of the tongue, the hyoid and mandible need to be addressed.

ASSESSING INFANT SUCKLING

Tongue/Coordination of the Tongue and Hyoid

1. The infant is supine. The physician places her gloved smallest finger into the infant's mouth so that the palmar surface contacts the palate. This position should stimulate the infant to begin suckling. The other hand monitors first the cranium (Fig. 2.96).
2. Both sides of the tongue should approximate the infant's palate simultaneously. The physician should feel equal pressure on her finger. Movement between the mandible, tongue and palate should be smooth and coordinated.
3. The physician then places her free hand on the anterior cervical tissues and the hyoid (Fig. 2.97). The hyoid can be palpated within the arch of the mandible. It should be seated in the midline and move in synchrony with the mandible as the tongue moves against the palate.
4. If the hyoid deviates laterally, there may be involvement of the digastric or omohyoid muscle on the ipsilateral side. If the cornua do not lie on the same horizontal plane, then the sternohyoid muscle and clavicle should be evaluated on the inferior side, and the stylohyoid muscle, temporal bone and cranial base mechanics on the superior side.

Fig. 2.96

Fig. 2.97

ASSESSMENT

Hyoid Stabilizers – Omohyoid

Supine Infant

The omohyoid should be assessed in children with oropharyngeal dysfunction, especially if there is a history of prolonged second stage of labor, shoulder dystocia or large size for gestational age.

1. The infant is supine or held by the parent. The physician sits beside or at the head of the infant. The physician uses one hand to gently contact the hyoid and the other to contact the scapula and the clavicle (Fig. 2.98A, B).
2. The physician monitors the positions and tensions in the associated tissues as the infant suckles. The hyoid should move symmetrically.
3. If strain in the shoulder is influencing the hyoid through the omohyoid then the hyoid may deviate laterally and the physician will feel increased stress in the myofascial tissues or movement of the scapula.

A B

Fig. 2.98

SUCKLING DYSFUNCTION/ OROPHARYNGEAL DYSFUNCTION

Treatment Notes

When there is an abnormal or ineffective sucking pattern the infant should be evaluated and treated osteopathically, and consultation with a lactation specialist should be initiated. Often maternal posture, nipple characteristics and poor technique can play a role in suckling problems. Recommendations to keep the child nursing on one breast for the entire feed should be considered to afford maximum opportunity for the infant to obtain high-fat breast milk (Woodward et al. 1989). Studies suggest that the 'hind breast milk' has a higher fat content than the 'fore breast milk' (Jensen et al. 1978, Woodward et al. 1989, Boersma et al. 1991).

The stabilizers of the hyoid and tongue need to be evaluated and treated. This often requires initial treatment of the cranial base, cervical spine, upper torso and/or shoulders. Once the stabilizers have been addressed then the base of the tongue should be treated using an intraoral inhibition technique described by Miller (1996, personal communication).

The mandible plays a key role in suckling. At birth the mandible is in two parts, joined by a cartilaginous junction at the mental. Intraosseous strains are possible with abnormal uterine lie or abnormal presentation. The petrosphenoid articulation passes through the posterior aspect of the mandibular fossa of the temporal bone. Cranial base strains may alter mechanics at the temporomandibular joint.

The following techniques may be beneficial in treating an infant with suckling dysfunction.

BALANCED LIGAMENTOUS TENSION

Hyoid Stabilizers – Omohyoid

Supine Infant

1. The infant is supine or held by the parent. The physician sits beside or at the head of the infant. The physician uses one hand to gently contact the hyoid and the other to contact the scapula and the clavicle (Fig. 2.99).
2. The physician uses the contacts on the hyoid and scapula to balance the tensions in the omohyoid and associated tissues (Fig. 2.100).
3. Once balanced tension is achieved, the position is maintained until there is a change in tissue texture, an improvement in motion mechanics or a resolution of the strain. The hyoid should move more symmetrically after treatment.

Fig. 2.99

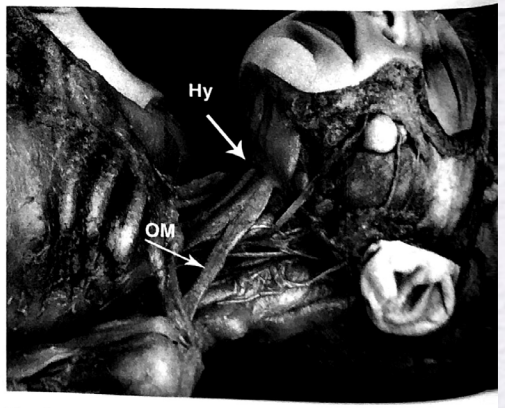

Fig. 2.100

BALANCED LIGAMENTOUS TENSION

Mandible

Supine Infant

The mandible is not fused at birth. There is a cartilaginous juncture at the mental (Fig. 2.101).

1. The infant is supine or held in parent's arms. The physician sits at the infant's head and contacts the mandible bilaterally. The middle fingers contact the submandibular tissues (Fig. 2.102).
2. The myofascial elements of the submandibular area are assessed for strain, and the mandible is assessed for intraosseous strain patterns.
3. The physician uses her contacts to bring the myofascial tissues and mandible into balanced tension.
4. Once balanced tension is achieved the position is maintained until there is a change in tissue texture, an improvement in motion mechanics or a resolution of the strain.

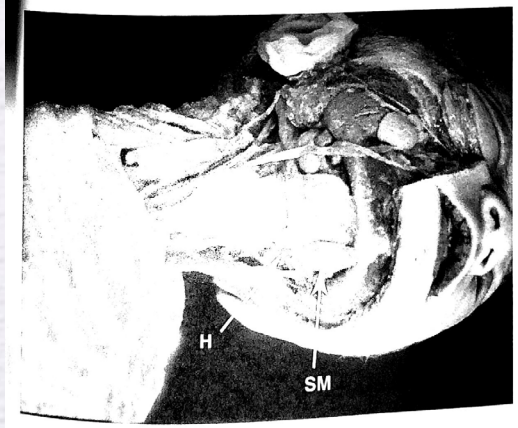

Fig. 2.101

Fig. 2.102

INHIBITION TECHNIQUE

Tongue

Infant Supine

This technique should be performed after dysfunctions of the hyoid and mandible have been treated. This technique may also be of benefit in older children with bruxisms or temporal mandibular joint issues.

The tongue is part of a postural reflex loop that includes the cervical spine and jaw. The muscles controlling the tongue are densely innervated with proprioceptive fibers that influence the muscles of mastication and suboccipital muscles. Primitive reflexes exist between these structures as well, so that persistent dysfunction at the craniocervical junction or temporomandibular area may alter tongue mechanics and vice versa.

1. The child is supine. The physician monitors the cranium with one hand. The physician places the gloved smallest finger of her other hand under the infant's tongue superior to the sublingual fold and at the root of the genioglossus (Fig. 2.103).
2. This is an inhibition technique. The physician will sequentially contact the genioglossus and hyoglossus muscles on each side of the tongue and apply a gentle pressure (Figs 2.104 and 2.105).
3. The physician begins by making contact just lateral to the frenulum on the side opposite to which she is seated. The physician slowly sweeps the pad of her finger along the root of the tongue (an area of approximately 1.2 cm in a newborn) assessing tissue tension in the genioglossus muscle. A small, palpable pea-sized area of muscle spasm or bogginess may be present.
4. The physician places her finger on this area and gently uses a tissue unwinding technique until there is a change in tissue tension.
5. The physician then moves her finger posteriorly along the root of the tongue to the anterior edge of the hypoglossus and perhaps the most anterior aspect of the styloglossus as it interdigitates into the genioglossus. Again tissue tension is assessed. A small, palpable pea-sized area of muscle spasm or bogginess may be present.
6. The physician places her finger on this area and gently uses a tissue unwinding technique until there is a change in tissue tension.
7. The procedure is repeated on the opposite side of the tongue.

Fig. 2.103

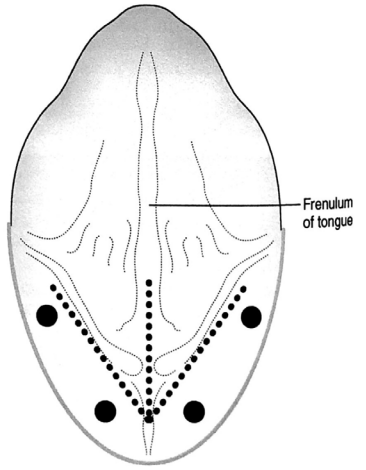

Fig. 2.104 • Schematic diagram looking into the opened mouth with the tongue raised. The black dots indicate the approximate points of contact. (Adapted from Williams P. Gray's anatomy. London: Churchill Livingstone, 1995, with permission.)

Questions?

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