"Pediatric Oral Motor Dysfunction: from Breathing to Breastfeeding and Beyond"

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Goals

- To discuss dysfunctional feeding and airway function of infants
- The chiropractor's role in early intervention to
- Promote success for the breastfeeding dyad as well as
- Prevent future systemic dysfunction that can result from long term compensatory behaviors.

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Breastfeeding

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.

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Breastfeeding

Full, normal function will be 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).

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Physiologic function

What are the neonates primary driving physiologic functions?

- Breathing
- Eating

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- The Tissue Cell sends nerve impulses to the brain communicating what it wants and needs to function properly
- The Brain Cell responds by coordinating the various systems of the body to supply what is being demanded.

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Adapted from:
http://www.hudsonchiropracticbradenton.com/secondary-conditions

What is the cell asking for???

- More oxygen
  - increased respiration
- Hormone release
  - adrenaline under sudden stress
- Movement
  - fast vs slow: remove hand from a fire vs. carefully moving to swat a mosquito on your arm
- More milk please…
  - Sensory cells in the nipple tell the brain to produce milk for the baby at the breast

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Structure affects Function…… Function affects Structure

- for those of us practicing in the field, it becomes clear as we work with our patients that when any part of the human musculoskeletal system is not able to move in the fashion and with the freedom it was designed to, there are far reaching effects because of the intimate relationship between motion/the musculoskeletal and nervous system.

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More oxygen?

- If the "normal" response is to increase respiration, what happens?
  - Increase in Number/frequency of breaths
  - Use of full Lung capacity
  - Recruitment of accessory muscles
- What happens if there is "interference"
  - Structural - The "baby bucket"
  - Neurologic – "fight or flight" – high sympathetic tone

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More oxygen?

- If there is a rib that is immobile restricting thoracic expansion?
  - Decrease in lung capacity
  - Increase in CO2 levels
  - Increasing number/frequency
  - Recruiting secondary muscles of respiration
  - Elevating the entire rib cage instead of expanding it
  - Creating translation of occiput on atlas posteriorly
  - Fixing the chin on the chest (C01 in flexion)
  - Decrease in airway patency?

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Structure affects Function…… Function affects Structure

- Subluxation or Joint dysfunction
  - lack of joint mobility affecting nerves, blood vessels, lymphatics, connective tissue, muscles
- Adjustment
  - Physically restoring that motion (the function of the musculoskeletal system) is the only thing that can normalize the nervous system and, by restoring its function, normalize physiology and ameliorate the symptoms the patient is experiencing .

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Why?

- Local (and global) lack of mobility of the soft tissue and articulations of the cranium/ spine/extremity (due to injury, edema, adhesions, compensations) can result in traction of the fascia which forms a sleeve around the nerve or pressure on the nerve, results in a change in the action potential of the nerve and how it fires (too often or too infrequently or erratically).

http://www.ck12.org/book/CK-12-Life-Science-Concepts-For-Middle-School/section/11.41/

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Why?

- Mechanical dysfunction results in a
  - lack of mechanoreceptor input to the cerebellum and thalamus (therefore the cerebral cortex) via the dorsal column and the spinothalamic tract to the reticular formation.
  - This input influences our level of alertness (consciousness) and modulates visceral (mastication, swallowing, vomiting, peristalsis, glandular secretion, bladder control) and somatic activities (posture and general muscle tone).

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Why?

- Mechanical dysfunction can results in
  - Immediate challenges in the neonate's ability to
    - Breath
    - Feed
- The sympathetic nervous system is engaged
    - Low oxygen
    - "Where's my next meal coming from?"
    - Pain?

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Why?

Mechanical dysfunction

- The sympathetic nervous system is engaged and the brain rapidly creates new plastic circuits in an effort to immediately resolve the problem at hand.
- Compensations ensue that may be functional or dysfunctional.
- Functional compensations may have long term effects

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Why?

- Nociception (pain) via the spinoreticular tract resulting in activation of the sympathetic nervous system (via the amygdala and the thalamus)with an associated exaggeration of infantile reflexes, increased difficulty integrating sensory input, decreased digestion, increased irritability all manifestations of **autonomic dysregulation**.

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The newborn uses

- 6 cranial nerves
- 22 bones connecting at 34 sutures
- 60 voluntary and involuntary muscles

...in order to accomplish a smooth suck, swallow, breath sequence.

Smith, LJ, Impact of birthing practices on the breastfeeding Dyad. J of midwifery and women's health, 2007;52(6):621-30.

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Who fails to suck (and breathe?) effectively?

- Infants with physical problems:
  - Torticollis/stiff neck/preferred head position
  - TMJ dysfunction
  - Hyoid dysfunction
  - Difficulty latching due to muscular hypotonia or hypertonia
  - Hypertonic gag reflex
  - Tongue bundling
  - Headache, sore neck, pain

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The same questions can be asked about ***breathing*** and ***swallowing*****.....**

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Why Chiropractic?

- A neurotypical neonate will seek his mother's breast for nourishment if left to its own devices when born
  - UNICEF initiation breastfeeding through the breast crawl
    - https://www.youtube.com/watch?v=YW72pFFEIUo
- We know in utero constraint, a difficult labor and delivery and interventions employed in the traditional setting may thwart the neonate's ability to nurse by altering the normal biomechanical function of the jaw, neck, shoulder, etc.

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Why Chiropractic?

- The most direct way to effect an immediate change for the neonate is to address the problem (if it is a NMS problem).
- The level of intervention will depend on the level of the problem (do muscles need to be relaxed with gentle massage or does motion have to be introduced into joints that are immobile?)

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Structure affects Function……
Function affects Structure

- Understanding the efficacy of chiropractic lies in an understanding of how form and function are intertwined.
- Chiropractors are responsible for diagnosis problems of the neuromusculoskeletal system .
- Chiropractors address the joint dysfunction with a chiropractic adjustment.

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Breastfeeding

- This drive to survive may result in
  - an imbalance in autonomic nervous system
  - decreased range of motion
  - development of muscular imbalance
  - damage to mother's tissues
  - poor milk supply
  - inefficient transfer
  - failure to thrive.

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BREASTFEEDING…

What does chiropractic have to do with it?

Have Chiropractors been missing the boat?

by hereforthememes

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Maternal report of feeding practices: a cross-sectional survey of 1753 mothers presenting infants to a chiropractic teaching clinic

By Ann Kristin S. Homdrum, BSc, MSc1 and Joyce Miller,
http://jccponline.com/Feeding-Practices.pdf

- ABSTRACT
  - Objectives: The objectives of this survey were to investigate maternal choices to initiate or preserve exclusive breastfeeding and to map out the main domains of problems with feeding in infants in a population of mothers who presented their infant for chiropractic care.
  - Results: In all, 1753 surveys were collected. Most mothers (88%) initiated breastfeeding. The mean age when mothers stopped breastfeeding was 3 weeks (SD=5.5). Among women who stopped breastfeeding (n=502), 197(39%) had routine vaginal births and 305 (61%) had assisted births. There was no statistically significant correlation between type of birth and feeding. There was a significant correlation (0.048) between when the mothers stopped breastfeeding and the lack of satisfaction with the breastfeeding experience. Of those mothers who stopped breastfeeding, mothers who planned to breastfeed while pregnant, breastfed for twice as long compared to the women who did not plan to breastfeed (p =.005).
  - Conclusion: This population was representative of the UK population in that breastfeeding initiation rate was high and there was also significant early discontinuation. Further study is required to determine which factors might work toward helping new mothers continue in order to support public health initiatives to improve the health of mother and infant.

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How the Chiropractor Can Assess Breastfeeding

- The earlier the intervention, the greater the chance of restoring normal competency.
- A thorough history and step by step observation will help direct your client to the help they need.

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What resources are out there?

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Resources

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  - Journal of Clinical Chiropractic Pediatrics (JCCP), Volume 6, No. 1 2004
- Contribution of chiropractic therapy to resolving suboptimal breastfeeding: a case series of 114 infants
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  - Jennifer Tow, Sharon Vallone
  - Journal of Clinical Chiropractic Pediatrics (JCCP), June 2009, 10(1).

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Resources

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  - Journal of chiropractic medicine (2011), 10.
- Retrospective Medical Record Review of an Osteopathic Manipulative Medicine Hospital Consultation Service
  - Karen T. Snider, Eric J. Snider, Brett R. DeGooyer, Allison M. Bukowski, Regina K. Fleming, and Jane C. Johnson,
  - The Journal of the American Osteopathic Association, October 2013 .Vol 113 No. 10
- The Effect of Optimally Timed Osteopathic Manipulative Treatment on Length of Hospital Stay in Moderate and Late Preterm Infants: Results from a RCT
  - Gianfranco Pizzolorusso, Francesco Cerritelli, Alessandro Accorsi, Chiara Lucci, Lucia Tubaldi, Jenny Lancellotti, Gina Barlafante, Cinzia Renzetti, Carmine D'Incecco, Francesco Paolo Perri,
  - Evidence-Based Complementary and Alternative Medicine Volume 2014,

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Resources

- Chiropractic and breastfeeding dysfunction: A literature review (CHECK THE CITATIONS)
  - Lauren M. Fry
  - Journal of Clinical Chiropractic Pediatrics (JCCP), Volume 14, No. 2, March 2014
- Resolution of Breastfeeding and Latching Difficulty Following Subluxation Based Chiropractic Care: Case Report and Review of the Literature
  - Danielle Drobbin &JessicaStallman
  - J. Pediatric, Maternal & Family Health – July 30, 2015
- The chiropractic care of infants with breastfeeding difficulties
  - Joel Alcantara, Joey Alcantara, Junjoe Alcantara
  - Explore, Nov/Dec 2015, 11(6).

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Resources

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  - Journal of Evidence-Based Complementary & Alternative Medicine 2016, Vol. 21(2)
- Lactation Consultants' Perceptions of Musculoskeletal Disorders Affecting Breastfeeding
  - Valérie Lavigne
  - Clinical Lactation, 2016, 7(1)
- The infant with dysfunctional feeding patterns – The chiropractic assessment
  - Sharon Vallone, Faraneh Carnegie-Hargreaves
  - Volume 15, No. 2, May 2016 Journal of Clinical Chiropractic Pediatrics (JCCP)

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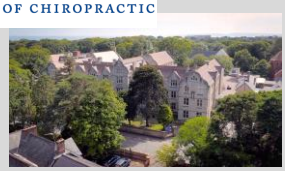
ANGLO-EUROPEAN
COLLEGE OF CHIROPRACTIC



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IATP
International Affiliation
of Tongue-tie Professionals

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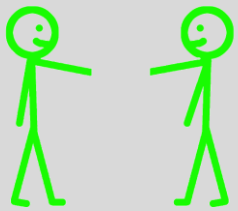
Collaborative Healthcare

- It's time to shake hands with our fellow practitioners and get to work!



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What's the hierarchy?

- Observation
  - Assess Function
  - Recognizing compensations
- Management
  - Ergonomics
  - Biomechanics
- Diagnosis
  - Referral if appropriate
- Intervention
  - Education
  - Manual therapy
  - Revision
  - Other healthcare specialists
- Post care and ABILITATION
  - Wound care
  - Retraining of dyad
    - Exercises
    - ergonomics

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Who sits on the "top of the heap"?

It's not always so straightforward!

- In an ideal world, Who should the expectant mother have met before the birth?
  - An obstetrician or midwife and a doula
  - A pediatrician
  - A Lactation consultant
  - A chiropractor, Osteopath or other manual therapist skilled in caring for the breastfeeding neonate

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Who sits on the "top of the heap"

- **Who is in attendance at the birth and might first assist the dyad in breastfeeding?**
  - Obstetrician
  - Hospital nursing staff
  - Midwife
  - Doula
  - A Family member or friend
  - Home birth team
  - A chiropractor (It's what I do if invited and permitted, can and do you?)

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Who sits on the "top of the heap"

- **Who should see the dyad as soon as possible after birth?**
  - A lactation consultant
  - The pediatrician
  - A chiropractor, osteopath or other manual therapist skilled in caring for the breastfeeding neonate
  - An ENT, Dentist, PEDIATRIC OR ORAL SURGEON *if there is an apparent oral motor or airway deficiency*

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Who sits on the "top of the heap"

- **Who might the new parents receive input from?**
  - All of the above
  - La Leche League or other lay breastfeeding support groups
  - The "internet" community of breastfeeding…

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Who sits on the "top of the heap"

- **Who will the dyad be referred to?**
  - A LACTATION CONSULTANT
  - A chiropractor, osteopath or other manual therapist skilled in caring for the breastfeeding neonate
  - AN ENT, DENTIST, PEDIATRIC OR ORAL SURGEON
  - A PEDIATRICIAN OR PEDIATRIC SPECIALIST

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So, have I made my point?

- If someone "should" sit on the top of the heap, the IBCLC or midwife with his or her extensive training in the science and art of breastfeeding should be the "point" person for the breastfeeding dyad
- This behooves them to stay current with diagnosis and management to support the dyad

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So, have I made my point?

- But in the real world, the point of entry for the breastfeeding dyad to seek help can be very diverse
- it would be in the best interest of the dyad for all of us to be familiar with the rudiments of the functional latch, seal and ability to transfer milk properly and
- how to differentiate the issues surrounding the dysfunction and whom to refer to for what.

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Assessing oral motor function in the infant, toddler and preschool child

- Do we possess the assessment tools?
- If we don't, who does?
- When we collaborate we see the same thing through different lenses

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What do we look for in our patient (young and old)?

- **Dysfunctional breathing**
  - Apnea
  - Sleep disordered breathing
  - Snoring
  - Mouth breathing

- Dysfunctional feeding
- Postural Asymmetry

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What do we look for in our patient (young and old)?

- Dysfunctional breathing
- **Dysfunctional feeding**
  - Inability to breastfeed or bottle feed efficiently
  - Food aversions
  - Gagging, vomiting
- Postural Asymmetry

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What do we look for in our patient (young and old)?

- Dysfunctional breathing
- Dysfunctional feeding
- **Postural Asymmetry**
  - Local – torticollis
  - Global – increase in the AP curves of the spine

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Why does dysfunction occur?

- Lack of knowledge or Poor ergonomics
- Toxicity
- Injury
  - Mechanical
  - Neurologic
- Compensations for anatomical deficiencies?

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What is Normal?

- Ameda film: https://www.youtube.com/watch?v=Zln0LTkejIs&list=PL989B737E10FDA14C
- Ergonomics for Mom - How To Breastfeed - Deep Latch Technique: https://www.youtube.com/watch?v=Ep6EK_nFsLk (7:50)
- Newmann/Edith assymetric latch:
- Dr. Jack Newmann's visual guide to latching: https://www.youtube.com/watch?v=56YzjsZr4hQ (33 min)
- https://www.youtube.com/watch?v=Zln0LTkejIs&list=PL989B737E10FDA14C

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The Latch and Associated Positions require free range of motion of what joints?

Note: This is TRUE for Mom and Baby! SO…should we always examine the dyad?

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functional biomechanics and manual therapy

- For the steps necessary to latch, seal and transfer milk to occur successfully the neonate must be…
  - Neurologically intact (suck, swallow, breathe sequence intact):
    - Prematurity
    - Drugs
    - Injury
    - genetics
  - Have full, free, painless range of motion
    - Cranium, spine and extremities (including the temporomandibular joint)
    - Symmetric muscle activity
    - The Tongue

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The History

To plan the appropriate intervention, every practitioner that interfaces with the dyad need to look at form and function through a new lens and discern neuromusculoskeletal from other issues like

- lack of knowledge on the part of the mother,
- anatomical variants like an inverted nipple,
- Genetic syndromes
- interventions employed during birth (like the effects of medication) or
- injury to the nervous system like an anoxic incident or stroke perinatally or during the birth process.

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What do they see?

- Erect head control ("military" posture when held upright)
- Preference to keep or turn head to one side
- inability to turn head left or right
- Head Tilt or Rotation
- Favoring one breast over the other

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What do they see?

Common Parental Observations
that may Indicate Structural Complications

- Pushing off the breast or arching at the breast
- Sleeps with back arched in extension
- Cannot lay baby down: must be carried
- Distress when supine

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What do they see?

Common Parental Observations
that may Indicate Structural Complications

- Deviation of the mandible when smiling (wry smile), yawning, crying or gaping to go to breast
- Won't open mouth widely when going to breast or bottle
- Eating the nipple like spaghetti

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What do they see?

- Failure of the tongue to cross the gum or lower lip
- Failure of the tongue to elevate
- Divot in the center of the tongue
- Cupping of the tongue
- Bunching up of the tongue
- Tongue thrust
- Tongue always resting on the floor of the mouth
- Mom experiences
  - Licking the nipple
  - Biting or chewing the nipple
  - Sliding off the nipple
  - Flicking the tip of the nipple
  - Slurping at the breast
  - Clicking at the breast
  - Humming at the breast

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What do they see?

- Shallow latch (on tip of nipple)
- Lip sucked in
- Milk dribbles out of mouth at breast or on th= bottle
- Frequently changing wet bibs
- Difficult to burp
- Frequent Hiccups

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What do they see?

Common Parental Observations
that may Indicate Structural Complications

- Facial asymmetry: crooked smile, uneven eyes, an ear that “sticks out”
- Misshapen head

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Intolerant of the car seat

Fusses or becomes frantic during tummy time

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What do they see (and hear)?

Common Parental Observations
that may Indicate Structural Complications

- Mouth breathing
- Irregular, rapid or noisy (raspy, wet, whistling, wheezing) breathing
- Snoring

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Who are the players in manual medicine?

- Physicians
  - Osteopaths
    - In the USA (DO)
    - Education is not the same in all countries of the world
  - Chiropractors
  - Physiatrists (MD or DO)
- Physical Therapists
- Occupational Therapists
- Speech and Language Pathologists
- CST/CFT/other cranial therapies
- Massage therapists
- Bowen Therapists
- Oromyofunctional Therapists
- Etc.

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Those who practice Manual Therapies see…

- Neuromusculoskeletal (NMSK) dysfunction
- Musculoskeletal compensations
- How these relate to breastfeeding and or airway obstruction
- Potential problems that can arise in addition to breastfeeding dysfunction and interfere with airway patency if not addressed

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What are they looking at?

- Depending on level of education and scope of practice
  - Neurologic function
    - Body posture
    - Movements
    - Infantile reflexes
    - Muscle tone
    - Autonomic regulation

- Fascia
- Muscle
- Boney Articulation
- Anomalies or pathologies

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The Exam

- Examine the infant layer by layer
  - Indulge yourself in "the visual" and know that books exist to "name" things
- Did you Listen and remember the observations of the parents
- Assess
  - The Brain
    - neurologic responsiveness, reflexes, muscle tone
  - Soft Tissue Structures
    - skin turgor, joint laxity
  - Bones
  - Articulations

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What do we see?

- Misshapen head
  - Plagiocephaly
  - http://www.medscape.com/viewarticle/520047_print
- Narrow gape
- Head tilt
- Head tilt with rotation
  - Classic torticollis

- Any curvature of the spine
- Odd positioning of the limbs
- Uneven facial features
- Chin to chest or flexion posturing
- Military head posture (in vertical position)
- Performing pushups off of the breast or chest/shoulder
- Arching at the breast

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- Tongue Tie
- Lip Tie
- Buccal Tie

- Elevated Palate
- Tipped Palate
- Cleft Palate
- Narrow dental arch
- Joint malformation
- Joint derangement
- Short tongue

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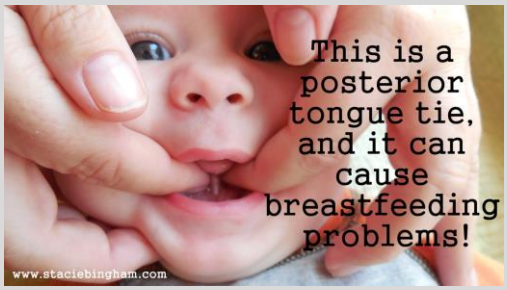

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Potential problems that can arise in addition to breastfeeding dysfunction if not addressed

- NMSK dysfunction issues
  - Postural distortions
  - Articulation problems/decreased range of motion
  - Musculoskeletal pain syndromes
  - Gravitational and repetitive use stress that cause degeneration over time

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Potential problems that can arise in addition to breastfeeding dysfunction if not addressed

- Other concomitants:
  - Aerophagia
  - Airway dysfunction
  - Failure to Thrive
  - SIDS
  - Colic/reflux
  - Dental carries
  - Oral motor dysfunction
  - Malocclusion
  - Hypertrophy of the tonsils and adenoids
  - Snoring
  - Sleep apnea
  - Sleep disordered breathing
  - Disrupted immune function
  - GI dysfunction
  - Speech and articulation issues

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Reduced Range of Motion

- Global and local lack of mobility of the fascia and articular derangement or restriction can create a mechanical barrier
- A mechanical barrier can limit how freely the child moves their head and neck, how widely they gape to encompass the nipple and areola, how comfortable they are in the position mother holds them to feed.
- A mechanical barrier may limit how easy it is to suck, swallow and breath simultaneously at breast.

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Restricted range of motion

- Change in vascular
- Change in lymphatic flow
- Edema
- Adhesions
- Strain of muscles/sprained ligaments
- Change in mechanoreceptor input to the central nervous system
- Input of PAIN sensation to the central nervous system (CNS)

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What does this mean?

- Change in mechanoreceptor input to the central nervous system
  - Alters level of alertness
  - Alters modulation of visceral activities
    - Mastication
    - Swallowing
    - Vomiting
    - Peristalsis
    - Glandular secretions
    - Bladder control
  - Alters somatic activities
    - Muscle tone
    - Posture
  - Input of PAIN sensation to the central nervous system
    - Autonomic dysregulation
      - Fight or flight
      - Rest and Digest

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Autonomic dysregulation

- Exaggerated and retained infantile reflexes
- Altered respiration
- Altered sleep patterns
- Increased difficulty integrating sensory input
- Decreased digestive function
- Disruption the integrity and maturation of the microbiome
- Increased irritability
- Can lead to
  - Slow growth and maturation
  - Poor wound healing

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What should be done?

- Thorough history
- Examination
  - Visual
  - Orthopedic and neurologic
    - Example of an assessment:
      - http://www.winfssi.com/appraisalspf.html
  - Palpation
- Assessment and differential diagnosis
- Treatment planning
  - Including referrals

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The History

To plan the appropriate intervention, every practitioner that interfaces with the dyad need to look at form and function through a new lens and discern neuromusculoskeletal from other issues like

- lack of knowledge on the part of the mother,
- anatomical variants like an inverted nipple,
- Genetic syndromes
- interventions employed during birth (like the effects of medication) or
- injury to the nervous system like an anoxic incident or stroke perinatally or during the birth process.

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History

- Gestational and Birth History
- Initial Vital signs
- Early Feeding history
- Mom's milk supply
- Feeding Interventions
- What is happening at feeding time
- Weight loss or gain
- *Explore the diaper*
- Other possibly associated complaints

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Examination

- Head Shape
  - Perfectly Round
  - Elongated in the sagittal plane (scaphalocephalic)
  - Wider in the coronal plane (brachiocephalic) Occipital region is flattened or asymmetric (plagiocephalic)
  - Midline protrusion from the anterior fontanel to the nasal bridge (trigonocephaly – early fusion of the metopic suture)
- Facial Features
  - Flat face
  - One eye more open or protruding than the other One eyebrow higher than the other
  - Height of ears

**Adapted from Dosman 201222 and Fysh 200221.

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Examination

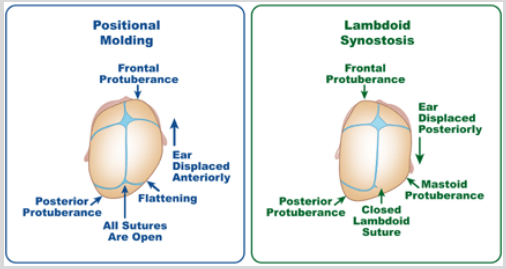
- Facial Features (continued)
  - uneven or one appears more anterior
  - Nose is not midline or nostrils appear uneven
  - Wry smile as the mandible deviates left or right
  - Receding chin or mandibular retraction
    - Mandibular width (dental arch)
    - Mandibular length (oblique or inferior development)
  - 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.

"Something's just not right!"

Photo sources

- http://o.quizlet.com/i/aFXbBL3LTu7IxOPzj52NVA_m.jpg
- craniokids.org
- http://www.informationdailynews.com/mrs/mrs-kay-plastic-surgery.html



It is important to distinguish positional plagiocephaly (a non-surgical condition) from lambdoid synostosis and unilateral coronal synostosis, which require surgery to correct the problem.
cincinnatichildrens.org http://craniokids.org/

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The neurologically intact neonate

- Breathe
- Eat
- Bond
- Neurologic competency
  - If impeded in any of the above will compensate
  - Neuroplasticity assures survival under adverse conditions
  - Even the neonate impaired by genetics, pharmaceutical or birth injury will open retain some level of neuroplasticity and demonstrate compensations

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What might be a simple mechanical compensation resulting from these plastic changes?

- Neonate cannot breath through his nose
  - Deviated septum
  - Displaced glabella or nasal bones
  - Swelling of the nasal passages
- Neonate will begin to breathe through his mouth.
  - At the expense of a secure seal when feeding
  - At the expense of the palatal shape
  - At the expense of the tonsils

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Photo sources:

- http://ctsleepdentist.com/about-obstructive-sleep-apnea/
- http://blog.armoni.info/%D7%90%D7%A4%D7%A0%D7%99%D7%90%D7%94-%D7%93%D7%95%D7%9D-%D7%A0%D7%A9%D7%99%D7%9E%D7%94-%D7%91%D7%A9%D7%99%D7%A0%D7%94-sleep-apnea/
- http://utofs.com/wp-content/uploads/2014/08/Sleep-Apnea-Explanation.jpg

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If the airway continues to be restricted…
posturing (arching)

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Question: What might be a simple mechanical compensation resulting from these plastic changes?

An infant will fail to seal if the lips are loose or floppy with a poor seal around the nipple

if the lips won't flange or are sucked in

if lip movement is restricted by a tether (maxillary or buccal ties)

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Question: What might be a simple mechanical compensation resulting from these plastic changes?

ANSWER: The innate drive to find a way to obtain milk from the breast results in new **neuroplastic connections which might result in the recruitment of the orbicularis oris muscle to tighten or purse the lips around the nipple** which over time can break down the tissue of the nipple.

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What might be a simple biomechanical reason a Baby is not breastfeeding successfully?

- decreased range of motion at the temporomandibular joint reducing gape
  - Dislocation
  - Subluxation
  - Taut or overactive pterygoids or temporalis muscles
    - causing retraction or clenching
  - Tethered oral tissue (sublingual frenum)
  - Flexion of the chin onto the chest (head tipped forward)

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- Dysfunction: decreased range of motion at the temporomandibular joint reducing gape
  - Dislocation
  - Subluxation
  - Taut or overactive pterygoids or temporalis muscles
    - causing retraction or clenching
  - Tethered oral tissue (sublingual frenum)
  - Flexion of the chin onto the chest (head tipped forward)

- Compensation
  - Muscle spasm to stabilize the jaw
  - "eating up the nipple like a piece of spaghetti" to compensate for a narrow gape
  - Holding nipple with lips or gums
  - Arching away from the breast in an attempt to gape more widely

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A more complex biomechanical reason a Baby is not breastfeeding successfully

- An alteration in the Movement at the craniocervical junction
  - Assuming there are no other complicating and concomitant factors like joint anomaly, injury, fracture, subluxation or dislocation from birth, etc., Muscle activity is based on
    - mobility of the articulation - it is designed to move
    - Distance between the origin and insertion
    - Amount of activity it is required to do

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A more complex biomechanical reason a Baby is not breastfeeding successfully

- An alteration in the Movement at the craniocervical junction can be caused by a variety of reasons:
  - Compressive forces resulting in edema and shortening of ligaments and spasm of muscles that act on the joints
  - Misalignment or lack of mobility of one of individual components of the cranial base
  - Change in mobility of the origin or insertion of a muscle affecting the actions on the associated joint.

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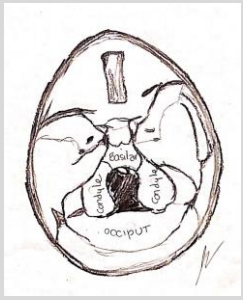

The occiput is in four parts at birth, each with it's own growth center.

As the child grows into adulthood, the four pieces will unite into one solid ring of bone

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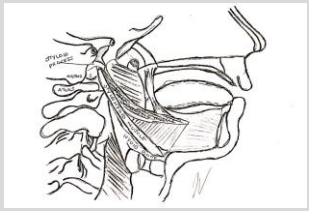

Change in mobility of the origin or insertion of a muscle affecting the actions on the associated joint.
***Stylohyoid**
***styloglossus**

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In 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.

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In conclusion:

- Diligent evaluation and differential diagnosis are critical in the neonate who is having difficulty feeding.
- A collaborative effort between chiropractors and other health care providers ***while utilizing an IBCLC or midwife for primary breastfeeding evaluation and support*** is often the most efficacious means to restoring competency for the breastfeeding

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Kentuckiana Children's Center
www.Kentuckiana.org

The Vision:
Healing all Children...Hope for the Whole Child

Our Mission:
The mission of Kentuckiana Children's Center is to improve the lives of Children by providing a foundation for healing through integrative Chiropractic care.

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