“OMM: Osteopathic Considerations in Feeding for the Newborn”
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OSTEOPATHIC CONSIDERATIONS IN FEEDING FOR THE NEWBORN
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NEWBORN ANATOMY
- Newborn bone is in various forms of maturity
- Bones will form in response to pressures placed on it as the child grows
- Bones of the newborn skull are individual and separated by membranous fascia
- Newborn reflex arcs in the spinal cord are still immature
- Newborn cranium will drastically change shape as the child grows
FEEDING ISSUES IN THE NEWBORN

Increased cheek fat pads in newborns = narrow oral cavity
Newborn tongue is larger in size relative to the mouth
Newborn hyoid and larynx are more forward under the tongue
Newborns must learn to coordinate suck and swallow with respirations

ANKYLOGLOSSIA

Tongue tie
- Tight lingual frenulum
- Can be associated with high arched palate and narrow oral cavity
- May contribute to orofacial feeding disorders
- Can cause ineffective latch with breastfeeding
- Newborns tend to lisp
- May cause canker sores

4 types:
1. Type 1: attachment of frenulum to tip of tongue, usually in front of alveolar ridge in lower lip
2. Type 2: 2-4 mm behind tongue tip, attaches on or just behind alveolar ridge
3. Type 3: attachment to mid-tongue and the middle of the floor of the mouth
4. Type 4: attachment to base of tongue

Tongue tie presentation
- Poor latch and suck
- Clicking sound when nursing (poor suction)
- Insufficient weight gain or weight loss
- Irritable
- Fussiness and arching away from breast
- Fatigue quickly when beginning to nurse
- Chewing of nipple
- Falling asleep at breast after less than optimum feed

If the infant can’t maintain the tongue over the lower gum during suck, initiates chewing reflex
- Sufficient to transfer milk from bottle nipple to mouth
- Not sufficient at the breast
- Breastfeeding requires well-defined peristalsis from front to back of tongue as well as tongue palate synchronization
TONGUE TIE TREATMENT

Frenotomy
- Simple, safe, effective surgical procedure
- Can be done with blunt-ended scissors
- Minimal bleeding
- Minimal complications, not harmful to baby

NIPPLE FEEDING DYSFUNCTION

Initial nipple feeding requires muscles innervated by CN V and VII to seal the mouth around the nipple
Bottle/breast feeding requires different actions by infant tongue
Pharyngeal swallowing requires use of intrinsic tongue muscles, mandible, hyoid
Esophageal swallowing relies on peristalsis

CRANIAL NERVES ESSENTIAL FOR PROPER SUCK/SWALLOW

- Trigeminal (V)
  - Muscles of mastication, mylohyoid, tensor veli palatini, anterior digastric
- Facial (VII)
  - Facial muscles, stylohyoid, posterior digastric
- Glossopharyngeal (IX)
  - Stylopharyngeus (dilates esophagus when swallowing assists with gag)
- Vagus (X)
  - Levator veli palatini, palatopharyngeus, salpingopharyngeus, intrinsic laryngeal, cricopharyngeus, pharyngeal constrictors
- Hypoglossal (XII)
  - Intrinsic tongue muscles, myoglossus, geniohyoid, genioglossus, styloglossus, thyrohyoid, mylohyoid
CN IX - GLOSSOPHARYNGEAL NERVE

- **Function**: Motor to muscle; Parasympathetic to glands; Sensory to palate
- **Structure**: Jugular foramen
- **Dysfunction**: Difficulty swallowing, excessive gag reflex
- **History**: Trauma to occiput &/or temporals
- **Physical examination**: Test gag reflex

CN XII - HYPOGLOSSAL NERVE

- **Function**: Motor to Tongue
- **Structure**: Hypoglossal canal
- **Dysfunction**: Dysphagia, tongue function (latch-suck)
- **History**: Occipital condyle trauma; intraosseous strain
- **Physical examination**: Test tongue motions

OSTEOPATHIC CONSIDERATIONS IN NIPPLE FEEDING DYSFUNCTION

- Consider entrapment of hypoglossal nerve in the hypoglossal canal
- Cranial base somatic dysfunction
- Occipital condylar compression
- Consider entrapment of glossopharyngeal and vagus nerves in jugular foramen
- Dorsolateral sulcus compression
- Odontoid dysfunction
- Stabilization of hyoid bone position and surrounding muscles to level tongue
- Convergent platform for tongue
- Consider dysfunction of stabilizing muscles may shift hyoid laterally or inferiorly
- Obstruct breath or airway of the tongue or associated medullary region head and neck and can generate respiratory disease
- Consider comorbid respiratory disease affecting breathing coordination
- Consider dysfunction related to upper chest wall, diaphragm, upper cervical rib could influence breathing and feeding synergists

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TECHNIQUE: SUTURAL SPREAD

Direction of Fluid Technique
Objective: release restricted cranial suture (i.e. OM)
1. patient supine, physician at head of table
2. place index and middle fingers on either side of restricted suture, other hand directly opposite
3. with light force, direct impulse toward restricted suture with hand opposite suture to initiate fluid wave
  - Fluid wave may bounce off restricted suture and return to initiating hand – receive and redirect wave back
Continue back-and-forth for several cycles until physician feels suture spread and wave penetrating suture does not return to initiating hand
Resume rate and amplitude of OM or suture

TECHNIQUE: DECOMPRESSION OF THE OCCIPITAL CONDYLES

Objective: balance reciprocal tension membrane of hypoglossal canal, permitting normalized function of CN XII
1. patient supine, physician seated at head of table
2. patient’s head rests in physician’s palm, with physician’s index and middle fingers (or middle and ring fingers) contacting approximately the condylar processes
  - As far caudad on the occiput as the soft tissues and C1 will allow
3. initiate a gentle cephalad and lateral force on condylar processes
4. hold until release felt

OSTEOPATHIC CONSIDERATIONS IN NIPPLE FEEDING DYSFUNCTION

- JAOA 2011: case report of ex-25 week twin girls with poor transition from gavage to nipple feeds complicated by GER
- Twin A: respiratory distress syndrome (required endotracheal intubation followed by nasal CPAP and nasal cannula [high and low flow]) – weaned to RA on DOL 76
- Twin B: more severe RDS with pulmonary interstitial emphysema
  - Surfactant, mechanical ventilation (including high frequency oscillatory ventilation), NCPAP, high and low flow nasal cannula – weaned to RA on DOL 49
- Both: nutrition issues, anemia of prematurity, hyperbilirubinemia
  - Parenteral nutrition from DOL 1-22
  - Enteral nutrition (gavage tubes) DOL 6
  - Nuzzling at breast started on DOL 53 followed by attempts to breastfeed
  - Nipple feeding did not improve by 41 1/7 weeks GA (corrected)
  - Initially preparing for surgical placement of gastrostomy tubes
  - OMM service consulted
  - Twins received series of evaluations and OMT sessions (techniques left to discretion of physician)
  - OMM for cranial decompression and to sacrum, BLT to hyoid bone and associated musculature, BLT to scapula, upper thoracics, respiratory diaphragm, inhibition pressure to celiac and superior mesenteric ganglion
  - Progressed to full oral feedings by 43 1/7 weeks and discharged home
OSTEOPATHIC MANIPULATIVE TREATMENT AND LATCH

Journal of Human Lactation, 2017: single blind randomized controlled trial looking at the efficacy of a single osteopathic treatment coupled with usual lactation consultations on infant’s ability to latch

1. Looked at nipple pain and mothers’ perception on effectiveness of treatment
2. 67 mother-infant dyads recruited over 1 year timeframe
3. Randomized to one of 2 groups
4. Control: 2 lactation consultations and 30 minute session of osteopathic assessment and sham treatment
5. Treatment: 2 lactation consultations and 30 minute session of osteopathic assessment and osteopathic treatment
6. IBCLC assessments
   - Baseline assessment
   - LATCH assessment tool: assess baseline ability to latch
   - VAS: completed by mothers regarding nipple pain
7. Questionnaires: maternal perceptions, sociodemographics, breastfeeding management (i.e. number of feeds vs. bottle feeds, use of nipple shield, etc.)
8. Osteopathic assessments
   - Balanced membranous tension
   - Cranial suture releases
   - Myofascial release
   - Controlled pressure far from dysfunctional areas

OSTEOPATHIC MANIPULATIVE TREATMENT AND LATCH (CONTINUED)

Results:
- Statistically significant improvement in mean LATCH scores in treatment group compared to control
- No significant differences in VAS scores
- Infant’s observed pain on VAS between assessments immediately after treatment and 2 days later in treatment group
- Statistically significant difference in mothers’ perception on infant’s ability to open mouth widely, nipple biting, and tendency for infant’s mouth to slip on nipple
- Mothers of infants in treatment group reported that infants slept better, appeared soothed, or better enjoyed lying on back (perceived as uncomfortable prior to treatment)

References: