

The Role of Subluxation and Chiropractic Care in Hypolactation

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ABSTRACT

Objective: To present a series of case studies where patients experienced hypolactation after giving birth and to discuss how subluxation of the cranium and vertebrae may interfere with the normal neuro-hormonal regulation of lactation and the role of the chiropractor in the reduction of subluxation and re-establishment of structural integrity.

Design: Case Series

Setting: Private Practice

Results: Chiropractic treatment consisting of specific chiropractic spinal adjustments and craniosacral therapy was successful in resolving hypolactation in all three cases so that the establishment of a full nursing relationship was possible between both mothers and their infants.

Conclusion: Neurologic competence of the mother is as important as that of the infant in establishing a successful nursing relationship. In these three cases chiropractic adjustments and craniosacral therapy corrected the subluxation complex restoring normal neurologic function.

Key Words: hypolactation, chiropractic, chiropractic adjustments; vertebral subluxation complex, vertebral cranial subluxation, craniosacral therapy, myofascial release.

INTRODUCTION

Today, practitioners involved in the healthcare support of women through the experience of pregnancy, birth and postpartum care are encountering a greater number of mothers and infants who are unable to feed at the breast. As birth has come to involve more technology, we also run the risk of intervening with artificial supplementation without fully evaluating and treating the impediments to establishing this important relationship. Midwives and lactation consultants play a vital role in providing conservative, holistic support and have begun to embrace the co-management of patients with chiropractors when vertebral or cranial subluxation may be interfering with the mechanical or neuro hormonal prerequisites for successful lactation.

In chiropractic, a vertebral subluxation is defined as a spinal vertebra or cranial bone which has lost its proper juxtaposition with one or both of its neighboring vertebrae or cranial bones to an extent less than a luxation in such a way as to impinge upon nerves, disrupt lymphatic and vascular flow, and interfere with the transmission of *neural impulses* resulting in somatic or organic dysfunction and, over time, to disease.¹

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Birth and its cascade of hormones guide a mother in the attachment and bonding process with her newborn. The normal neonate is also neurologically equipped to elicit milk production from its mother which continues and reinforces this bonding process. The chiropractor must assess structure as it relates to function within the context of this mother-infant relationship and appreciate the parameters of normal neuro-hormonal competency. Individual cases of biomechanical disruption in the neonate's ability to latch and suckle successfully have been previously published in the literature.^{2,3,4,5} The inability of the neonate to properly stimulate the production of milk can play a role in hypolactation. During galactopoiesis (the secretion and continued production of milk by the mammary glands)⁶, the hypothalamus is dependent upon nipple stimulation and withdrawal of milk in order for lactation to continue.⁷

In this paper, the focus will be on the neuro-hormonal competency of the mother in her ability to produce an adequate milk supply for the neonate. The three case studies presented will discuss the chiropractic care of the patients who experienced hypolactation after giving birth. The author hypothesizes that in each of these cases, subluxations of the cranium and vertebrae interfered with normal neuro-hormonal regulation of lactation.

CASE # 1

History

The patient presented at the referral of her midwife. The primary complaint was her inability to establish a milk supply 10 days after giving birth to her second child. She had given birth to her first child four years earlier after an uneventful pregnancy, labor and home birth under the care of a midwife. She had been successful in establishing a breastfeeding relationship with her firstborn. She had produced an abundant milk supply sufficient to solely breastfeed for seven months when solid foods were introduced, and continued to supplement solid foods with breastfeeding until weaning her toddler at 18 months.

The patient's most recent pregnancy, labor and delivery had been unremarkable, having given birth at 41 weeks gestation. She labored and delivered at home, again, under the care of a midwife. The patient related that her labor did not initially progress rapidly, stalling several times, but finally, after establishing rhythmic contraction and 11 hours of steady labor, she gave birth after only three pushes. She gave birth to a 7lb. 3oz., 19.5" boy with 8 and 9 APGARS at birth and 5 minutes after birth. She related that she did not feel strong contractions immediately post partum, as she had with her firstborn. She also related that the midwife expressed concern about the residual laxity of the uterus.

Overall, she felt that her stress level was controlled due to the support and attendance of her husband, sister and mother-in-law and midwife during the late prenatal and postnatal period, but that her stress was rapidly escalating as her newborn's bilirubin levels increased and he failed to gain weight while her milk supply failed to increase in response to continued pumping and putting the infant to breast. She had begun supplementing the infant with formula at her midwife's suggestion and was utilizing a supplemental nursing system along with herbal galactagogues prescribed on the third day after birth by her midwife.

This patient's past medical history was also unremarkable for surgery, pathology, medication or supplementation except for a prenatal vitamin prescribed by her midwife. The only exception was her involvement in a motor vehicle accident two years before this pregnancy in which she was struck from the rear when parked at a stop sign, by a vehicle traveling at 40 mph. She sustained injuries to her cervical spine and cranium and suffered a concussion when her head struck the head rest from the rear

impact. She was immediately transported to and treated at an emergency room with a follow up visit to a neurologist and a course of nonsteroidal anti-inflammatories for approximately six months. She received no chiropractic or other manual therapy but began working with an athletic trainer to restore what she felt were deficits in her posture and decreased strength. She continued that program throughout this pregnancy until 36 weeks gestation.

Examination Findings

Patient was a 31-year-old Caucasian female; 5'4"; 132 lbs; BP 100/70 bilaterally; pulse 82 bpm; respirations 16 rpm; system survey unremarkable except the complaint of difficulty swallowing and failure of lactogenesis, stage 2. (Lactogenesis, stage 2, characterizes the onset of copious milk secretion after birth.)⁸ Examination of the throat and mouth revealed normal mucous membranes with no apparent post nasal drip or enlargement of the tonsils or adenoids which were intact. Palpation of the throat revealed no masses or enlargement of the thyroid. The hyoid was retracted and superior with palpable hypertonicity of all the submandibular muscles. Sinuses were clear upon transillumination and the ears were bilaterally unremarkable upon otoscopic examination. When requested to swallow water from a glass, the patient demonstrated a retraction and further flexion of the chin on chest rather than the anticipated extension of the head and neck to accommodate drinking.

Postural evaluation demonstrated normal anterior to posterior curves of the spine without visible lateral curvatures except for the cervical spine which demonstrated a straightening of the AP curve and flexion of the cranium on C1 approximating the chin to the chest. Hyperextension of the cervical spine and of the cranium on C1 were limited to 0 degrees. Rotation was bilaterally symmetrical as was lateral flexion although lateral flexion was only 10 degrees bilaterally. The anterior cervical muscles were hypertonic and the posterior cervical muscles were hypotonic to palpation and when actively resisted. C01 was fixed in flexion and when the hard palate was palpated intra-orally, the sphenobasilar junction was not flexing or extending with respiration or with the craniosacral rhythm. There was reduced tone in all the erector spinae muscles. Abdominal exam demonstrated a soft, enlarged uterus and low tone with right upper quadrant tenderness and taut and tender fibers in the right abdominal muscles consistent with 10 days postpartum.

X-ray examination

AP and lateral taken during her visit to the emergency

room at the time of the accident, demonstrated loss of cervical lordosis and no other apparent pathology.

Treatment program

Patient was started on a treatment program of daily adjustments for five days, advised to drink eight glasses of water a day, and to continue the galactogogues prescribed by her midwife. Her daily treatment consisted of a supine Diversified adjustment of the occipito-atlantal junction to promote extension. This was performed by tractioning the C01 junction axially while contacting the occiput bilaterally with the medial aspect of the third finger, and placing the second finger and thumb around the ears while adjusting C01 into extension utilizing a drop head piece. Normal flexion and extension of the sphenobasilar junction was induced via intraoral compression of the hard palate with a gloved finger while holding and axially tractioning the C01 junction and encouraging deep inhalation and exhalation. C5 was also adjusted utilizing a drop cervical piece in an anterior to posterior fashion utilizing bilateral knife edge contact along the posterior laminae.

To treat the hyoid restriction, myofascial release of the hyoid was performed by contacting the bilateral aspects of the hyoid using the thumb and forefinger and gently compressing further into retraction initiating soft tissue release.

After the fifth visit, the patient was asked to return twice weekly for two additional weeks, and her program was supplemented with a cervical pillow for sleeping and specific cervical isometric strengthening exercises to improve and retain a more normal cervical lordosis. Her treatment, consisting of diversified chiropractic adjustments, craniosacral adjustments and myofascial release technique was continued after the initial week of daily visits over a period of seven months in total for a total of 27 visits, daily for 5 days, twice a week for 6 weeks, weekly for 6 weeks, bimonthly for 2 months then monthly for 2 months at which time a regular maintenance care program was recommended.

Results

After the second treatment, the patient found it much easier to swallow when drinking water. Also, the patient related a sensation of tingling in the breasts and experiencing her first let down of milk when putting the infant to breast. By the third day, there was visible engorgement of the breasts bilaterally and she discontinued the use of

the SNS. The baby's weight was watched daily and he continued to gain weight within acceptable parameters.

After four weeks, the midwife felt the uterus was normal for 6 weeks postpartum. Resolution of her structural problems and restoration of her posture and normal lordosis were reached at the end of 27th visit.

CASE #2

History

Patient presented with chief complaint of upper back pain since the birth of her child one month earlier. Incidental to her presenting complaint, was her failure to establish a sufficient milk supply to feed her infant.

There was no reported history of previous trauma or injury to the spine, chest or ribcage although she related having been told that she had a mild scoliosis observed by the school nurse during a regular yearly scoliosis screening (when was this, how many years ago, may be relevant to show deterioration). She had never been treated or evaluated for the scoliosis and denied any related symptoms of discomfort, dysfunction or decrease in range of motion or respiratory capacity.

This was the patient's second pregnancy but her first live birth, having miscarried a nonviable conceptus at seven weeks. Her second pregnancy was unremarkable except for morning sickness from the 6th through the 14th week of the pregnancy. Her symptoms were controlled by eating saltine crackers, sipping ginger ale or hot water with fresh ground ginger. She had some spotting during the 11th week, but followed her midwife's precautions not to exert herself and the spotting did not occur again. She gave birth at 42 weeks gestation after taking large doses of evening primrose oil and herbs under the guidance of her midwife to soften the cervix and promote labor.

The patient's labor remained controlled and relaxed through breathing and meditative techniques. She utilized a birthing ball and birthing stool as well as spending time in a large home hot tub and resting in different postures. She related having heard a "popping" sound between her scapulae around the 20th hour of labor and the immediate onset of pain was worsened by deep inhalation. Lying prone on the birthing ball or supporting herself on all fours reduced the pain by 50%. As the labor progressed, the pain decreased, but deep inhalation remained difficult.

The patient labored for 38 hours before giving birth

vaginally. There was no tearing of the perineal tissue. The infant girl was immediately put to breast and latched successfully, nursing for 20 minutes at each breast. She continued to take the breast when offered every two hours but became progressively lethargic over the next 32 hours and failed to pass any meconium or stool. The infant also dropped below her birth weight by 6 oz in those first 32 hours. She was supplemented at the breast with an SNS with breast milk from a local milk bank and rapidly regained her birth weight and became more alert and responsive. Now, at 4½ weeks old, the infant was meeting all her milestones but continued to be supplemented with donated milk since the patient's own milk supply had never been established.

Examination

The patient was a 27-year-old African American female; 5'6"; 198 lbs; BP 125/85; pulse 90 bpm; respirations 18 rpm; systems survey otherwise unremarkable except discomfort on deep inhalation, pain midscapularly and hypolactation.

Postural presentation included forward head carriage, rounded shoulders and increased lumbar lordosis. The patient's breast size was 46 DD and the breast mass was flaccid to palpation. There appeared to be deep grooving on either shoulder related to the thin straps of the non supportive bra worn by the patient. There was a right lateral curvature of the thoracic spine extending from T10 to T1 with the vertebrae T3-T6 into left rotation. There was no thoracic expansion on inhalation and the left costal elements were approximated. The patient recruited the anterior cervical musculature to lift the anterior thoracic wall to inspire. Spinal extension was limited to the lumbar spine with the thoracic spine remaining fixed in flexion. The C01 junction is fixed in extension, while C1 is fixed in flexion on C2. T4,5,6 were fixed in flexion and left rotation as a unit. The sacral base was fixed in nutation.

Treatment

The patient was seen daily for four days and was adjusted using diversified technique. C01 was adjusted with the patient supine, tractioning the C01 junction axially while contacting the occiput bilaterally with the medial aspect of the third finger, and placing the second finger and thumb around the ears while adjusting C01 into flexion utilizing a drop head piece. The same adjustment was performed specifically at C1/2 adjusting C1 into extension. T4/5/6 were adjusted in an anterior to posterior posi-

tion with the patient's arms folded across the chest and her chin retracted and tucked into her neck and the chiropractor's folded hand placed inferiorly to each segment to act as a fulcrum for movement into extension and derotation at each level. The sacrum was adjusted in left side posture contacting the sacral apex with the base of the chiropractor's palm and using a posterior to anterior line of drive to correct for nutation. The patient was then seen twice weekly for 2 weeks, then once every two weeks for an additional month.

The chiropractic adjustments were supplemented with instructions for a better support bra and gentle stretching of the pectoral muscles bilaterally by stretching placing either arm along a door jamb and moving the body forward to stretch the muscles of the chest. The patient was also given instructions to perform gentle standing pushups facing the corner of the room and placing her hands at shoulder level on the wall on either side. She was then to articulate the spine between the scapula towards the wall then away from the wall to increase flexibility and strength.

Results

The patient presented on the 4th day with an increase in breast weight due to engorgement and complained of constant leaking of milk from both breasts when she heard her infant crying, a normal reflex when oxytocin release is triggered by the infant's signal that she is hungry. She had not been instructed to discontinue the SNS and had continued to allow the infant the ease of draining the supplemental formula while still stimulating her breast. She also continued pumping every 2 hours after feeding and was now producing copious amounts of milk at each pumping (2½ to 4 oz). She was instructed to decrease her pumping to twice daily and to put the baby to breast on demand. After an additional week, she stopped pumping and was fully breastfeeding without the need for any breastmilk supplementation. After the 8th adjustment, the patient had no midscapular pain on inhalation, thoracic expansion was approximate 1½" on inhalation and her posture was more erect with alignment of the pinna of the ear over the shoulder and acetabulum when observed from the lateral aspect. She demonstrated normal ranges of motion full spine and had dropped her weight down to 185 lbs.

CASE #3

History

This patient presented with her daughter who was six days old at the suggestion of the hospital lactation

consultant. The lactation consultant had observed flattening and damage to the nipple suggesting a poor or inefficient latch of the neonate which could result in the mother's low milk production. In this case, upon examining the infant and performing a suck assessment, the neonate appeared to be able to effectively latch and suckle, but when there was no milk ejection reflex elicited, the infant would begin to "chew" the nipple in an attempt to elicit milk. It was suggested that the mother might benefit from an evaluation to assess if there were any contributing structural problems resulting in her low milk production.

This patient's history was remarkable only for structural strain due to 15 years of playing the flute. She had worked with an Alexander instructor when she was a teenager to help improve her performance and decrease cervical pain she was experiencing at that time, but had not followed through with postural instructions during the last five years since her playing had become more intermittent. She and her husband had conceived after five years of marriage and stated that they had not used any means of contraception previous to this pregnancy.

Her pregnancy was unremarkable except for 18 weeks of morning sickness that lasted only during her first hour of awakening. She went into labor at 37 weeks gestation and labored for eight hours in hospital before delivering vaginally without intervention or medication. She gave birth to a 6lb. 11oz., 18.5" girl with APGARS of 8 and 9 at birth and 5 minutes after birth. She experienced a grade 1 tear of the perineum which was allowed to heal naturally.

The baby was put immediately to breast after delivery and attached readily, nursing for 30 minutes on each side. The patient related that there was no sensation of soreness or pain of the nipples until after the 5th day of nursing. The mother could express a small amount of milk from each nipple but when attempted pumping, produced less than 1/2 oz. total pumping both sides. The baby dropped 6 oz. below birth weight by the third day and had neither gained nor lost any weight in the following three days which was of concern to the lactation consultant and pediatrician who had recommended supplementation with formula. At the time of presentation at the chiropractic office, the mother had not begun that supplementation. The baby was still urinating and moving her bowels at least once daily since day one, but was becoming progressively lethargic.

Examination Findings

The patient was a 24-year-old Caucasian female; 5'4",

122 lbs., BP 105/60, Pulse 78 bpm, respirations 13 rpm; system survey unremarkable except for low milk production. Postural evaluation revealed an elevated right shoulder and right lateral head tilt. Examination of the spine revealed left lateral curvature extending from C4 through T7 with right rotation of the vertebral bodies. T4/5 were fixed in right rotation and right lateral flexion. C01 was fixed in left lateral flexion.

Treatment

The patient was treated daily for three days, then twice weekly for two additional weeks. She was treated utilizing specific diversified chiropractic techniques adjusting T4/5 in an anterior to posterior fashion with the patient's arms folded across the chest and her chin retracted and tucked into the neck. The chiropractor's folded hand was placed inferiorly to each segment to act as a fulcrum to derotation and reduce lateral flexion. C01 was adjusted with the patient lying supine and the chiropractor using knife edge along the left occiput with a line of drive into right lateral flexion. The instructions previously given to the patient by her Alexander instructor were reviewed and it was recommended that she reinstitute this protocol as well as begin to use a cervical support pillow.

Results

Within 24 hours after the first adjustment, the patient was able to pump a total of 1oz. of milk from both breasts in addition to nursing her infant every two hours for 20 minutes on each breast. The number of wet diapers increased by three diapers and the infant was no longer chewing at the breast. By the third adjustment, the infant was within 1oz. of her birth weight. At the end of three weeks of treatment, the patient's curvature had been reduced by 75% and her milk supply was constant and adequate measured by the weight gain and growth of her infant who was now in the 40th percentile for age.

DISCUSSION

A woman's breasts grow during puberty in response to hormones. These hormones include prolactin, estrogen, progesterone, cortisol, insulin, thyroid hormones and growth hormone. During puberty the release of these hormones causes proliferation of the lactiferous ducts and the development of breast tissues. Many factors, including stress levels, nutritional deficits or excesses, structural faults including subluxations or organic pathology can potentially interfere with hormone production at this time, and

as a result, interfere with lactation at this early developmental stage.

During pregnancy breasts increase in size due to an increase in lobules and alveoli. The release of estrogen and progesterone from the placenta and prolactin from the adenohypophysis causes the breast development. Therefore placental and pituitary integrity are essential to develop the breasts and prepare them for the production and delivery of milk to her newborn. When the neuro-hormonal axis is intact, women's breasts are prepared to produce milk as early as the 16th to the 20th week of gestation. Breast milk production is inhibited during pregnancy by the effect of progesterone on prolactin.^{9,10}

The presence of subluxation can interfere with the integrity of the neuro-hormonal axis at the cranial or vertebral level. The uterus, cervix, and vaginal canal are innervated by afferent fibers in the hypogastric and pelvic nerves.¹¹ Subluxation at the vertebral levels from which these branches originate could interfere with the function of the placenta and its important hormonal role in the maintenance of pregnancy, the onset and progress of labor and delivery and the development of the breast tissue.

Anatomically, the pituitary has 2 main parts posterior, or neurohypophysis and anterior, or adenohypophysis (the pars distalis, pars intermedia, and pars tuberalis). Between the two a specialized vascular (portal) system allows communication from the brain to peripheral endocrine organs and other systems.¹² When a subluxation of the cranium exists, as in this case, at the sphenobasilar junction, the normal flexion and extension of the sphenobasilar junction is restricted. This subluxation can be due to a variety of traumas, but in the case of Patient #1, appeared to be directly related to the blow to the occipital portion of the cranium when she was struck from the rear in a motor vehicle accident. The normal action at this junction during the inhalation phase of cranial respiration helps to compress the pituitary as it sits in the sella turcica against the diaphragma sellae, the circular dural fold which covers the *hypophyseal fossa* to release hormones from the pituitary into general circulation.^{13,14} The failure to release adequate levels of these hormones could affect the onset and progress of labor and delivery, the involution of the of the post partum womb¹⁵ (as in Patient #1) and it could affect lactation via hormonal inadequacy of prolactin (affecting milk production) or oxytocin (affecting milk ejection).

The nerve supply of the breast is derived from the intercostals nerves of the fourth, fifth and sixth intercostals

spaces. The fourth intercostals nerve penetrates the posterior aspect of the breast and supplies the greatest amount of sensation to the nipple and to the areola.¹⁶ This sensory function is the direct feedback mechanism to the mother's posterior pituitary to release oxytocin which in turn regulates the milk ejection reflex (MER) or "let down".¹⁷ Vertebral subluxations at these thoracic levels could interfere with the appropriate responsiveness of these important sensory nerves disrupting the feedback cycle to the posterior pituitary preventing efficient release of milk when the infant goes to breast. These vertebral subluxations could be pre-existing conditions related to chronic postural strain (as in Patient #3), scoliosis, pulmonary compromise (asthma, COPD, smoking), ergonomics or breast mass, or could be the result of subluxations induced injuriously during the postures and physical activity associated with labor and delivery. As seen in the case of Patient #2, multiple contributing factors could lead to this situation (adolescent scoliosis/breast mass/strain during labor).

Milk production is initiated in the breasts in the postpartum period due to prolactin production and decreased estrogen and progesterone after delivery of the placenta. The onset of lactogenesis has been shown to be delayed by stressful events around delivery. Women who underwent an urgent Cesarean section or had a long duration of labor before vaginal deliveries were more likely to have a delayed onset of breast fullness in the first days after delivery.¹⁸ This cannot be ruled out as contributory in Case #1. By day three or four post-partum, stimulation of the breast by suckling is required to continue milk production. Mothers produce milk between feedings due to elevated baseline levels of prolactin. They produce more milk during feedings due to the prolactin surge caused by suckling.¹⁹ As stated earlier in this discussion, an interference with the sensory feedback from the nipple due to subluxations of the thoracic spine or costal elements could reduce the prolactin surge as well as prevent the release of adequate levels of oxytocin resulting in a poor milk ejection reflex as in Cases #2 and 3.

During continued lactation, milk production is based on infant demand. The average mother's ability to produce milk is much greater than the average infant's appetite.²⁰ The rate of milk production varies over the day. If a breast is not emptied at the end of the feeding, that breast produces less milk prior to the next feeding than it would have if the breast had been emptied completely.²¹ Suckling or any nipple or breast manipulation should stimulate sensory nerves in the areola and nipple if the integrity

of these nerves are intact. These nerves stimulate the pituitary gland to release oxytocin along with prolactin. A conditioned milk ejection can occur when a woman hears her baby cry. This is due to a conditioned release of oxytocin without the release of prolactin,²² and as seen in Case #2, this conditioning can occur very rapidly upon return of sensory integrity.

CONCLUSION

Structural dysfunction as a result of posture, ergonomics, strain or trauma can result in a disruption in the neural competency of a mother to successfully breastfeed her infant. This suggests that chiropractic evaluation for subluxations would be a key element in the holistic assessment of the failure to establish a milk supply in the post partum patient. As seen in all three cases, reduction of subluxations in the cranium and vertebral segments associated with the neuro hormonal axis governing lactation were successful in promoting successful stage 3 lactogenesis and galactopoiesis. These case studies demonstrate the value of chiropractic care along with other established interventions and merit further observation and data collection in the care and treatment of this population of patients.

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