CASE STUDY

Resolution of Allergic Colitis, Colic, Plagiocephaly, and Breastfeeding Challenges Following Chiropractic in an Infant with Birth Trauma: Case Study

Stanton Hom, DC, DACCP[1] & Kaitlyn Shikada, DC[2]

Abstract

Objective: To report on the positive health outcomes experienced by an infant with numerous health challenges following birth trauma.

Clinical Features: A 2-month-old infant male presented with primary health concerns following a traumatic birth. The umbilical cord wrapped around the baby's body, a vacuum extraction was performed and the mother was induced. When the baby was born he was not breathing, was completely cyanotic and had to be resuscitated. His head was deformed and he experienced bruising as a result of the birth process. The infant had blood and mucous in the stool, severe discomfort in the digestive system, severe colic, breastfeeding challenges and sleep issues. The patient's mother received chiropractic care in a therapeutic setting during pregnancy and post-partum.

Intervention and Outcomes: Various analyses were used to detect subluxation including static and motion palpation of the spine and cranium, range of motion, inversion, and infrared thermography. Adjustive care included a combination of functional neurology, MLS, Sacro-Occipital Technique, and Activator. Following chiropractic care the infant experienced relief from all of his symptoms.

Conclusion: This case study demonstrates the successful management of vertebral subluxation over an 8-month period in an infant who had experienced birth trauma with resulting health challenges. Further research is warranted in this population of patients.

Key Words: *Pediatric chiropractic, adjustment, manipulation, vertebral subluxation, colic, digestive disorders, allergic colitis, deformational plagiocephaly, birth trauma*

Introduction

The purpose of chiropractic is to help patients, families, and communities express their innate human potential. Doctors of Chiropractic help patients realize this by establishing an optimal neural connection between their brain and body as it relates to the structure and function of the spine. Vertebral subluxation as well as subluxation patterns in the cranial/sacral region are a source of primary interference to the brain body connection and they occur when the body's ability to adapt to external and internal environmental stressors is compromised.[1]

Vertebral subluxation is defined by the Association of Chiropractic Colleges as "...a complex of functional and/or structural and/or pathological changes that compromise neural integrity and may influence organ system function and general health."[2] RW Stephenson, in his 1927 textbook of

1. Private Practice of Chiropractic, San Diego, CA
2. Private Practice of Chiropractic, Sparks, NV

chiropractic, defined chiropractic as ". . . a philosophy, science and art of things natural: a system for adjusting the segments of the spinal column by hand only, for the correction of the cause of dis-ease."[3]

With this as our starting point, we have a framework for how chiropractic can be an appropriate intervention in the care of a 2-month-old infant suffering from colitis. Keeping in mind that the goal of chiropractic care is not to treat the symptoms of any condition, but to build resiliency and efficiency in the nervous system through adjustive procedures.[4]

In the Annals of Vertebral Subluxation Research, Kent presented multiple models for vertebral subluxation that include interference in both efferent and afferent aspects of the nervous system.[5] Research from Haavik and other scientists has shown that the subluxation need not be separated and segregated into one arm or another of the nervous system. The sensorimotor loop along with the intraneuronal pathways within the brain are all influenced by structural and motor aberrancies in the spine.[6-10] Both models have been recognized throughout the history of the chiropractic profession as noted in The Chiropractic Textbook (Stephenson) and Senzon (video).[11,12]

Pediatric health has been on the decline for decades. Children born today have a lower life expectancy than their parents - this is the first time since the 1990s for this to occur. Currently 43-54% of our children suffer from at least one chronic illness and most medical professionals believe this is due to the genetics and the heritability of disease pathology.[13]

Below are the current statistics surrounding pediatric diseases, all of which are on the increase:

- 1 in 6 – Neurodevelopmental/Learning Disorder
- 1 in 9 – Asthma
- 1 in 10 – Mental Disorder
- 1 in 26 – Seizures
- 1 in 50 – Autism
- 1 in 400 – Type 2 Diabetes

According to the CDC from 2011-2014, 48% of the US population used at least one prescription drug.[14] Additionally in 2015 CDC reported that 76.2% of physician's visits resulted in drug therapy.[15] It is not uncommon for neonates to be prescribed multiple medications prior to their first visit in our office. This is a public health crisis not only due to the inherent toxic nature of drugs, but most drugs prescribed to neonates and the pediatric population at large are considered 'off-label'.[16] Limited to zero studies have been performed to evaluate the safety of many pharmacological interventions in younger populations.

Chiropractic care, like all vitalistic healthcare professions, has the premise that the body has an internal directive to heal itself - to self-regulate, self-adapt, and self-heal.[17] Modern healthcare science through the fields of epigenetics and neuroplasticity are validating this premise and bringing true hope to those suffering at the hands of a short-sighted, disease management system.

For decades, the American public has been utilizing alternative healthcare services in greater numbers in search of a model of care that is more holistic and preventative in nature.[18]

Epigenetics, meaning control *above* the genetic level, is highlighting the significance of lifestyle choices as the internal and external environmental triggers that lead to genetic expression.[19] The genotype (genes) is merely the blueprint and genetic potential of the individual, but the phenotype (genetic expression of the environment) is the actual manifestation of the proteins that animate life.[20] Epigenetics essentially is showing that our choices inherently matter and as we change our internal and external environment our genes will express differently.

Neuroplasticity is founded on the concept that nerves that fire together, wire together. The brain and nervous system are exceptionally plastic from conception to death in ways that we cannot even yet fully comprehend.[21] There is good research to show that even if a neuropathway is completely destroyed that the body can often find another pathway to achieve the same outcome.[22] The nervous system may build a completely new branch of neurons to accommodate a needed functional outcome. This is incredibly profound in the field of self-healing and can be one of the major ways to explain the miracles seen in chiropractic practices and those of other natural health providers.

This case report highlights a condition of growing significance in the pediatric population. Digestive disorders are on the rise in all stages of life including the neonatal period of life with cases reporting up to 40% presenting with Colic.[23] From a medical perspective colitis is a condition that not only requires pharmacological intervention but often obligates mothers to stop breastfeeding their babies as the allergy is often dairy based.[24]

The effectiveness of subluxation-focused chiropractic care on the expression of health in a neonate suffering from colitis is significant when considering risks of using pharmaceutical drugs in an untested population. This case has the potential to positively influence the scope and severity of the cases chiropractors manage.

Interventions

Analysis and adjustive procedures were based on four unique technique systems including:

- Chiropractic (Functional) Neurology (FN)
- Mastery, Love and Service (MLS)
- Sacro-Occipital Technique (SOT)

Chiropractic neurology was the main lens utilized to assess the neural integrity of this infant while the other technique systems helped determine whether a subluxation existed upon analysis. Chiropractic neurology obligates that the clinician understand that the neurophysiological system is a sensory based entity, and that output is dependent upon perceiving, receiving and integrating sensory input from the environment accurately.[25]

Chiropractic neurology was founded primarily by Carrick and

is focused on optimizing brain function. This is particularly applicable because of the stage of neurodevelopment of the patient whose function is primarily reflexive. Interventions and analyses were also influenced by Melillo.[26]

MLS (Mastery Love and Service) was utilized as the foundational chiropractic technique because it is a tonal based technique. Tone is foundational to chiropractic and highly effective in analyzing neonates for subluxation because their joints and osseous structures have not fully developed.[27] The force applied matches the tone of the body as it relates to subluxation patterns. Additionally, the adjustive force is delivered when the patient is in a state of relaxation.[28]

SOT was founded by Dr. Major DeJarnette and is a system of analysis and adjustive procedures that focuses on the function and structure of both the cranial and sacral regions as they relate to global health and function.[29] Because of the traumatic nature of even the most 'natural' birth, a technique system focusing on creating normal cranial biomechanics is a key in establishing normal physiology in the baby.

Case Report

History

Patient is a 2-month-old boy diagnosed with allergic colitis by the pediatrician. He presented with mucous and blood in his stool that began at four weeks of age. Additionally, he was unable to latch comfortably or efficiently. The patient was very irritable for several hours during the day (upwards of 4-5 hours). Although the symptomology of the patient is present all day, it worsens at night. The baby is inconsolable at night and is noticeably in duress.

The infant experienced a traumatic birth. His mother described his birth as 'horrific' detailing a lot of pain, the umbilical cord wrapped around baby's body, and a vacuum extraction was necessary. The mother had to be induced with Cytotec because she presented with pre-eclampsia at 38 weeks. The mother received an epidural, pain medication, antibiotics, and one round of Pitocin during labor and delivery.

When the baby was born, he was not breathing, was completely cyanotic and had to be resuscitated. His APGAR scores were 8/10 at birth and 9/10 at 5 minutes losing both points because he presented cyanotic. He was born with an odd-shaped head and bruising.

Pregnancy was noted as 'terrible' by his mother. Her previous health history included polycystic kidney disease (PCKD), migraines and osteoarthritis. She noted multiple falls as a child, several motor vehicle accidents and history of ectopic pregnancy. She also identified as 'vegan' and had been eating strictly vegan for many years.

Examination

A full newborn examination was performed on this child. The purpose of the examination in our clinic is to measure the function of the nervous system. We employed palpation, range of motion, primitive reflex testing, paraspinal infrared thermography, among other metrics that aim to measure the functional and structural connection between the brain and body. Additionally, primitive reflexes were measured in order to understand the overall function of the brainstem. This is particularly important because these reflexes begin neurodevelopment as early as eight weeks in utero (with the Moro reflex) and progress all the way to 24-28 weeks (Root and Suckle Reflex). (Table 1)

While chiropractic is not focused on the rehabilitation of these reflexes, they offer the clinician a window into the integrity of the nervous system. As they resolve, we can attain a greater understanding of the maturity of the CNS.

Chiropractic Analytical Findings

Subluxations were found in the craniofacial, spinal, and pelvic/sacral regions. Methods for identifying subluxation within the body include observation of posture, palpation, infrared thermography, and the respective analyses for each chiropractic technique. However, for the examination metrics, we utilized palpation as the primary analysis. At the initial exam, levels of subluxation were located at Occiput (Bilat Ext), C1 (ASRP), T1-5 (PA), Sacrum (R AI).

Schedule of Care

The goal of the schedule of care recommended was to create optimal neural efficiency and effectiveness, as a result of the correction of subluxation patterns. Although not the goal of subluxation correction, a likely outcome is not only a resolution of symptomology but also disease pathology as health is restored to the body. Our schedule of care was as follows:

- 5 adjustments per week for 4 weeks
- 4 / week for 8 weeks
- 3 / week for 16 weeks
- 2 / week for 20 weeks
- 1 / week for 8 weeks

Outcomes

During weeks 0-3, there were profound changes in symptoms of the gastrointestinal tract and mild improvements of emotional distress that persisted through the patient's follow-up visit with the pediatrician at the 3-week mark. At this visit, the pediatrician noted no remaining blood in the stool. There was however, remaining mucous and symptoms of colic had increased significantly. At this stage crying had reduced at most times during the day with the exception of the car seat. This was still a major trigger of crying. At this point, the pediatrician was no longer worried about the severity of the case and ended all orders for prescription drugs. Primitive reflexes (particularly suckle, root, palmar grasp, Moro) had all resolved. Static and motion palpation revealed C1 (Lateral Right), T2-4 (PA), Sacrum (R AI).

During week 6-12, the infant completely resolved all emotional distress related to colic. He was happy while sitting in his car seat while driving - something that had been an initiator of crying fits since birth. Additionally, at this stage, we noticed improvements in his infrared thermography to a point where there were no remaining regions of moderate or

severe neurological dissonance in the autonomic system.

During week 12-20, the patient had resolved all of his neurological deficits. Every primitive reflex was normal and symmetric with the exception of the Spinal Galant which was dampened bilaterally - it presented symmetrical. Additionally, his cranial asymmetry resolved as well. Symptomology related to primary and secondary concerns were completely resolved.

Beyond 20 weeks, outside of vertebral subluxation there were no other clinical metrics notable upon exam. This baby had restored his own normal physiology.

Discussion

Chiropractic care has been a vitalistic health care intervention for over 120 years.[30] All vitalistic health care providers acknowledge a similar primary value for the healing power stored within the body.[31] Chiropractors call this Innate Intelligence. Chiropractors recognize the primacy of the nervous system as the source of the self-healing, self-regulating and self-adapting system within the body. This is a much different premise than allopathic medicine whose primary premise is that the body has a genetic predisposition for illness and failure.

The central nervous system is the first system to differentiate in utero[32] and the CNS has a primary role in the development and function of all cells, tissues, and organ systems in the body. The birth process has been shown for years to be a physically, emotionally and spiritually challenging and traumatic experience for mom and baby.[33] The birth process has been shown to put an incredible amount of stress on a neonate's spine (upwards of 200N).[34]

To date, outside of pediatric focused chiropractic care, there are no interventions within the healthcare system to address the effects of these damaging stresses on a newborn's upper cervical spine. The upper cervical spine is anatomically significant because its location essentially safeguards the brain's transition to the spinal cord (brainstem). This region's anatomic relationship to the brainstem is clinically significant because of the brainstem's role in the function of a neonate's global physiology.[35]

Neurodevelopment begins essentially upon cellular differentiation in utero (by 3 weeks of gestation). By 8 weeks, the baby develops the Moro reflex. This reflex has a primary role in homeostatic function of the neonate upon birth. By 12 weeks, the baby develops the palmar and plantar grasp reflexes. By 16-20 weeks in utero, the baby develops the Asymmetrical Tonic Neck Reflex and the Spinal Galant reflex both of which have a relationship to a fetal positioning in third trimester. ATNR and Spinal Galant are also related to development of appropriate cross crawl patterning and the normal spinal development and neurological function of both the cervicothoracic and lumbosacral regions respectively. At 24-28 weeks, the fetus develops reflexes related to breastfeeding: root, suckle and latch.[36]

A baby expressing normal physiology at birth should be able to function normally without assistance including sleep, digest, nurse, etc. When babies are symptomatic, parents are faced with two general perspectives:

1) Take the child to the pediatrician and get advice on how to manage symptoms of various conditions or
2) Take the child to a qualified pediatric chiropractor who will look to help this patient reestablish normal physiology by removing the interferences to the healing capacity of the body.

Although not the focus of this paper, the above neurodevelopmental cascade explains from the perspective of the baby the necessity of prenatal focused chiropractic care. This type of care not only focuses on sacro-pelvic balance and symmetry but also optimizing neurological function in the mother.[37] Including primitive reflexes as an outcome measure is an essential practice for the pediatric chiropractor aspiring to see chronic cases. An exam including primitive reflexes can not only inform the practitioner with real time neurodevelopment of the infant but also may provide context for mother's stress adaptability during pregnancy (i.e. if ATNR is not functional at birth, mother may have been exposed stresses at 16 weeks she could not efficiently adapt to).

Why would a baby present with suboptimal primitive reflexes? If there was a disturbance to the mother's system while the baby was supposed to develop the reflex? Was it trauma at birth? Can any of these questions be answered when the provider simply masks the symptoms with drugs? Or worse, normalizes the abnormal states of physiology?

While the rehabilitation of primitive reflexes is not necessarily congruent with chiropractic care, using them as outcome measures is. Primitive reflexes are an objective clinical metric that gives the provider a window into the maturity of the central nervous system. When primitive reflexes are present, they are a sign that the CNS has not graduated the responsibility of the physiological function of the body to the conscious brain. Primitive reflexes are specifically a brainstem entity.[38]

In the case of this neonate, because he had virtually no reflexive activity at his initial exam, we know his CNS was not functioning optimally at the brainstem level. At his next exam, some primitive reflexes graduated to within normal limits and most had at the very least turned on with the exception of the acoustic blink. Upon his exam at 7 months, he was performing perfectly in all reflexes with the exception of a dampened Spinal Galant reflex.

Primitive reflexes are not pathognomonic of the neurodevelopmental delays, however they are a useful tool in understanding developmental age of the CNS (versus chronological age). With 1 in 6 children suffering from a neurodevelopmental delay, this is a very important exam metric along with the analysis of vertebral subluxation. Globally vertebral subluxation can be considered an important public health concern because of its relationship to the root cause of abnormal physiology in the body. Primitive reflexes are an effective method of measuring the effects of subluxation patterns. They also give parents context to the health of their child's nervous system even if they are

asymptomatic otherwise.[39]

Clinical chiropractic care for the pediatric population is a necessity for the resolution of symptoms related to any childhood illness because of its ability to address the traumatic nature of pregnancy and birth but also because of its ability to non-therapeutically restore normal/optimal function to the neuraxis.[40] Because of its gentle application, chiropractic care is extremely safe for the infant population. When considering the use of potentially dangerous off label drugs for the treatment of a multitude of diseases in neonates, the safe and effective nature of chiropractic care becomes even more valuable.

Conclusion

Chiropractic care aimed at establishing normal neurophysiological development of the neonate is not only safe but effective. Effectiveness has a multitude of levels including restoration of health, ensuring normal brain development, establishing normal movement patterns and relationship to the gravitational field, optimizing stress adaptability and as a result of the former, self-healing the symptoms of disease.

In this above case, allergic colitis, colic and breastfeeding issues were all present in a 2-month old and within 8 months not only were all symptoms resolved but according to his exam, the infant's chronological age matched his developmental age. Initially, he presented with multiple neurodevelopmental delays in the form of suboptimal primitive reflexes and by 8 months presented with none.

With the present epidemic of neurodevelopmental disorders and the 1 in 4 children requiring special education, pediatric chiropractic care is not just a modality to try out. It is a must for all infants, toddlers, children and teens. With the rate of children with autism now at 1 in 38, we need a viable preventative solution and there is no practitioner better suited than a qualified pediatric chiropractor.

References

1. Sinnott, R. Textbook of Chiropractic Philosophy. [www.chiropracticbooks.com: Rob Sinnott DC DPhCS]. 2009.
2. Association of Chiropractic Colleges. Chiropractic Paradigm / Scope & Practice. Available from: http://www.chirocolleges.org/resources/chiropractic-paradigm-scope-practice/.
3. Stephenson, Ralph W. The Chiropractic Textbook. [Davenport: Palmer School of Chiropractic.] 1948.
4. Sinnott, R. Textbook of Chiropractic Philosophy. [www.chiropracticbooks.com: Rob Sinnott DC DPhCS]. 2009.
5. Kent, Christopher. Models of Vertebral Subluxation: A Review. J of Vert Sublux Res.1996;1(1): 1-7.
6. Lelic D, Niazi IK, Holt K, Jochumsen M, Dremstrup K, Yielder P, Murphy B, Drewes AM, Haavik H. Manipulation of Dysfunctional Spinal Joints Affects Sensorimotor Integration in the Prefrontal Cortex: A Brain Source Localization Study. Neural Plast. 2016;2016:3704964.
7. Baarbé J, Yielder P, Daligadu J, Behbahani H, Haavik H, Murphy B. A novel protocol to investigate motor training-induced plasticity and sensorimotor integration in the cerebellum and motor cortex. J Neurophysiol. 2014 Feb;111(4):715-21.
8. Baarbé JK, Yielder P, Haavik H, Holmes MWR, Murphy BA. Subclinical recurrent neck pain and its treatment impacts motor training-induced plasticity of the cerebellum and motor cortex. PLoS One. 2018 Feb 28;13(2): 10.1371/journal.pone.0193413. Haavik H, Niazi IK, Jochumsen M, Sherwin D, Flavel S, Türker KS. Impact of Spinal Manipulation on Cortical Drive to Upper and Lower Limb Muscles. Brain Sci. 2016 Dec 23;7(1):2.
9. Haavik H, Niazi IK, Jochumsen M, Sherwin D, Flavel S, Türker KS. Impact of Spinal Manipulation on Cortical Drive to Upper and Lower Limb Muscles. Brain Sci. 2016 Dec 23;7(1):2.
10. Haavik H, Murphy BA, Kruger J. Effect of Spinal Manipulation on Pelvic Floor Functional Changes in Pregnant and Nonpregnant Women: A Preliminary Study. J Manipulative Physiol Ther. 2016 Jun;39(5):339-347.
11. Haavik H, Özyurt MG, Niazi IK, Holt K, Nedergaard RW, Yilmaz G, Türker KS. Chiropractic Manipulation Increases Maximal Bite Force in Healthy Individuals. Brain Sci. 2018 Apr 27;8(5):76.
12. Sinnott, R. Textbook of Chiropractic Philosophy. [www.chiropracticbooks.com: Rob Sinnott DC DPhCS]. 2009.
13. Senzon, Simon [internet]. Asheville: History of Subluxation. [cited 2019 Jan 07] Available from: http://members.institutechiro.com/portfolio/chiropractic-vertebral-subluxation/.
14. Bethell CD, Kogan MD, Strickland BB, Schor EL, Robertson J, Newacheck PW. A national and state profile of leading health problems and health care quality for US children: key insurance disparities and across-state variations. Acad Pediatr. 2011 May-Jun;11(3 Suppl):S22-33.
15. National Health Statistic Center [internet].Washington DC: Therapeutic Drug Use. [cited 2019 Jan 07] Available from: https://www.cdc.gov/nchs/fastats/drug-use-therapeutic.htm.
16. National Health Statistic Center [internet]. Washington DC: Physician Office Visits. [cited 2019 Jan 07] Available from: https://www.cdc.gov/nchs/fastats/drug-use-therapeutic.htm.
17. Frattarelli DA, Galinkin JL, Green TP, Johnson TD, Neville KA, Paul IM, Van Den Anker JN; American Academy of Pediatrics Committee on Drugs. Off-label use of drugs in children. Pediatrics. 2014 Mar;133(3):563-7.
18. Barge, Fred. One Cause, One Cure. [La Crosse: Barge Chiropractic Clinic S.C.] 1996.
19. National Center for Complementary and Integrative Health. Washington DC: The Use of Complementary and Alternative Medicine in the United States. [cited 2019 Jan 07] Available from: https://nccih.nih.gov/research/statistics/2007/camsurvey_fs1.htm.

20. Ornish D, Magbanua MJ, Weidner G, Weinberg V, Kemp C, Green C, Mattie MD, Marlin R, Simko J, Shinohara K, Haqq CM, Carroll PR. Changes in prostate gene expression in men undergoing an intensive nutrition and lifestyle intervention. Proc Natl Acad Sci U S A. 2008 Jun 17;105(24):8369-74.
21. Ornish D, Magbanua MJ, Weidner G, Weinberg V, Kemp C, Green C, Mattie MD, Marlin R, Simko J, Shinohara K, Haqq CM, Carroll PR. Changes in prostate gene expression in men undergoing an intensive nutrition and lifestyle intervention. Proc Natl Acad Sci U S A. 2008 Jun 17;105(24):8369-74.
22. Kandel, Eric. Principles of Neural Science. [New York City: McGraw-Hill Education] 2012.
23. Kandel, Eric. Principles of Neural Science. [New York City: McGraw-Hill Education] 2012.
24. van de Heijning BJ, Berton A, Bouritius H, Goulet O. GI symptoms in infants are a potential target for fermented infant milk formulae: a review. Nutrients. 2014 Sep 25;6(9):3942-67.
25. Molnár K, Pintér P, Győrffy H, Cseh A, Müller KE, Arató A, Veres G. Characteristics of allergic colitis in breast-fed infants in the absence of cow's milk allergy. World J Gastroenterol. 2013 Jun 28;19(24):3824-30
26. Beck, Randy. Functional Neurology for Practitioners of Manual Medicine. [London: Churchill Livingstone] 2011.
27. Melillo Robert and Leisman, Gerry. Neurobehavioral Disorders of Childhood -An Evolutionary Perspective. [New York City: Springer] 2009.
28. Palmer, Daniel David. The Chiropractor's Adjustor. [Portland: Portland Printing House Company], 1910.
29. Burnier, Arno. Mastery, Love and Service Technique. Los Angeles: Live Seminar (2008-9).
30. Howat, Jonathan. Chiropractic: Anatomy and Physiology of Sacro Occipital Technique. Headington: Cranial Communications Systems (1999). Print.
31. Palmer, Daniel David. The Chiropractor's Adjustor. [Portland: Portland Printing House Company], 1910.
32. Demartini, John. Prophecy II Manual. [Houston: Demartini Institute] 2010.
33. Goddard, Sally. Reflexes, Learning and Behavior: A Window into the Child's Mind. [Eugene: Fern Press Ridge] 2005.
34. Biedermann, Heiner. Manual Therapy in Children. [London: Churchill Livingstone] 2004.
35. Ashton-Miller JA, Delancey JO. On the biomechanics of vaginal birth and common sequelae. Annu Rev Biomed Eng. 2009;11:163-76.
36. Goddard, Sally. Reflexes, Learning and Behavior: A Window into the Child's Mind. [Eugene: Fern Press Ridge] 2005.
37. Anrig, Claudia and Plaugher, Greg. Pediatric Chiropractic. [Philadelphia: Lippincott Williams & Wilkins] 2010.
38. Goddard, Sally. Reflexes, Learning and Behavior: A Window into the Child's Mind. [Eugene: Fern Press Ridge] 2005.
39. Goddard, Sally. Reflexes, Learning and Behavior: A Window into the Child's Mind. [Eugene: Fern Press Ridge] 2005.
40. Anrig, Claudia and Plaugher, Greg. Pediatric Chiropractic. [Philadelphia: Lippincott Williams & Wilkins] 2010..

Appendix

	Initial	Reexam #1	Reexam #2
Head Circumference	38cm	40cm	41cm
• **Right**	18.5cm	19.5cm	20.5cm
• **Left**	19.5cm	20.5cm	20.5cm
Cranial Sutures			
• **Metopic**	Tension	Tension	Tension
• **Coronal**	L Ridged	R Ridged	WNL
• **Sagittal**	Ridging L inferior	Tension	WNL
• **Squamosal**	WNL	WNL	WNL
• **Lambdoidal**	R Flat, Tension	Improved (Same)	WNL
Head Rotation	Decreased Bilat	R>L	WNL
Head Righting	NA	R>L	WNL
Acoustic Blink	Absent Bilat	Absent Bilat	WNL
Neck Righting	Bilat Decreased	WNL	WNL
ATNR / Fencers	Absent Bilat	R>L	WNL
STNR	NA	NA	NA
Rooting	Absent Bilat	R>L	WNL
Suckle	Absent Bilat	WNL	WNL
Latch	Shallow/Disorganized	WNL	WNL
Hard Palate Fixation	Left Dropped	WNL	WNL
TMJ	L superior	WNL	WNL
Palmar Grasp	L decreased	WNL	WNL
Barlow's/Ortolani	Negative	Negative	Negative
Patellar Reflex	L side mild clonus	WNL	WNL
Achilles Reflex	WNL	WNL	WNL
Lateral Bend Fixation	Right sided fixation	WNL	WNL
Moros	Absent	WNL	WNL
Parachute	NA	NA	NA
Spinal Galant	Absent Bilat	R>L	B dampened
Gluteal Deviation	R	R	L
Placing Response	WNL	WNL	WNL
Inversion	Extension	Extension	WNL

Table 1. Examination findings