

# CASE STUDY

## Resolution of Infantile Colic, Torticollis, Plagiocephaly & Feeding Difficulties Following Subluxation Based Chiropractic: A Case Report

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### Abstract

**Objective:** To discuss the care of a three month old male with colic, congenital torticollis, plagiocephaly and resultant feeding difficulties.

**Clinical Features:** The three month old male was brought into the clinic by his mother with a history of incessant crying, torticollis, occipital flattening (plagiocephaly) difficulty feeding, abdominal distension, gas and restless sleep.

**Interventions and Outcomes:** Chiropractic adjustments by means of sustained contact as well as Craniosacral Therapy, were performed aimed at reducing vertebral subluxations in the upper cervical spine. The crying, colic, torticollis and feeding difficulties were resolved by the fourth adjustment.

**Conclusion:** The resolution of these health challenges in four adjustments suggests there is a possible connection between them and vertebral subluxation. Research supports this possibility that colic and torticollis are related to upper cervical chiropractic adjustments. There is a need for more research to explore the association between vertebral subluxation and these childhood disorders.

**Key Words:** *Chiropractic, colic, irritable baby, torticollis, flattened occiput, plagiocephaly, adjustments, craniosacral therapy, spinal manipulation, subluxation*

### Introduction

Colic is said to affect 29% to 39% of infants.<sup>1</sup> There is no test to definitively diagnose colic but the criteria for determining a diagnosis of colic are: occurrence in the first three weeks of life lasting until month three or four, extended episodes of relentless paroxysmal crying lasting longer than three hours of crying per day, three or more days per week lasting a period of at least three weeks. In addition to abdominal pain and distension, the patient will have excessive bowel gas and legs

held in a position drawn up toward the body. Symptoms are typically worse in the evening and into the night with no consolation.<sup>1-8</sup>

There is no definite etiology for colic but some hypothesized causes are: inappropriate feeding positions, food intolerance, paternal anxiety, and musculoskeletal misalignments causing the child to be in unrelenting pain.<sup>1-3</sup> Colic is not only uncomfortable for the baby but may be ultimately dangerous. This disorder deprives both baby and parents of sleep leaving the parents with feelings of inadequacy; their child is inconsolable even after its physiological needs have been sustained. It puts extra strain on the parent-baby bond which

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may put the child at a higher risk for abuse, specifically shaken-baby syndrome.<sup>4,7,8</sup>

Another common condition affecting infants shortly after birth is congenital torticollis. This is defined as unilateral contracture of the sternocleidomastoid muscle (SCM), presenting in a head tilt (laterally flexed) toward the side of the contracted SCM and with the chin rotated to the opposite side. This disorder usually presents itself within the first few weeks after birth and is thought to be caused by abnormal stresses put on the infant's cervical spine due to positioning in the uterus or during the birthing process. In addition to the head tilt, an accompanying characteristic is asymmetry or a flattening of the cranial bones called plagiocephaly.<sup>9</sup> It has been shown that children who are born breech or those who are assisted by forceps or vacuum extraction have a higher incidence of developing torticollis than those who are not.<sup>10</sup>

## Case Report

### History

The patient, a three-month old male, was brought into the office by his mother with complaints of incessant crying and torticollis. Patient history revealed he was born six weeks early by cesarean section and spent two weeks in the Neonatal Intensive Care Unit. He began experiencing gastric reflux and colic during his first month of life. After his first pediatric check-up he was diagnosed with colic, torticollis and flattening of the bones on the top of his head as well as his left occipital area (plagiocephaly). His mother also reported that he had trouble turning his head to either side comfortably, especially to the left; because of this his breastfeeding was supplemented with formula. One week before coming into the clinic he attended a pediatric check-up and the patient's mother was troubled by a suggestion of a helmet and physical therapy to correct her son's torticollis, which prompted the initial chiropractic appointment.

### Examination

During the initial visit the patient cried the whole time from the waiting room through completion of the physical. The only way to keep him somewhat comfortable was for his mother to continuously bounce him on her knee. The physical findings were as follows; low left occiput, high right occiput, smaller than normal anterior fontanel. The internal palate was palpated presenting lower on the left indicating a sphenoid misalignment.

A supine leg check revealed a short left leg indicating upper cervical involvement, and a prone leg check revealed a short right leg, indicating pelvic involvement. Cervical ranges of motion were performed showing restriction in flexion as well as left rotation. An abdominal exam revealed a tender, hard abdomen with muscle guarding and intense crying indicating pain upon palpation.

A spinal examination revealed a left C1 subluxation. His right ilium had misaligned to the posterior and inferior directions, and tension was noted in the upper thoracic spine from T1-T6. The patient's care plan was scheduled for chiropractic evaluations twice per week with spinal/cranial adjustments as

necessary.

### Intervention

The patient returned two days after the physical for his first adjustment. A Diversified Webster Pediatric Adjusting Technique<sup>2</sup> utilizing a sustained contact was performed on his atlas. A sustained contact is done using the contact point of a finger-tip matching the size of the segmental contact held on the left transverse process maintaining a light pressure in the lateral to medial vector until the motion segment restriction gives way and is freely moveable again, generally 5-10 seconds.

Craniosacral therapy was used on the occiput during this visit. Craniosacral therapy is defined as a form of adjustment using light pressure applied with the hands to restore movement in the cranial bones and related to soft tissues exhibiting restricted motion. Its goal is to normalize the cranio-sacral rhythm.<sup>2, 8</sup> Internal palate work was also explained to the parents on this visit, to be performed by the parents at home on their child. Internal palate work consists of inter-oral insertion of the finger used to massage the palate on the low side to restore motion and encourage proper alignment of the sphenoid bone potentially improving suction during feeding. This was done by the parents for one minute per day. Upon completion of this visit the child was subdued and relaxed.

Two days later the patient came into the office for his second adjustment. His mother stated that since the previous adjustment he had begun sleeping with his head to the left; up until this point, he had only slept with it to the right. She reported many positive behavioral changes; he was a happier baby in general with less crying. The patient was adjusted in the same manner as the first adjustment at the levels of C1 and Occiput.

The next week the patient came into the office for a third visit and reported more positive progress still. He was sleeping better and continued to cry less frequently. Identical subluxations were found and adjustments were performed in the same manner as the previous two visits.

Two days later the patient came into the office for the fourth visit. At this point the patient's mother felt comfortable stating that the torticollis as well as the colic were completely resolved. During this adjustment, the child's ilium was adjusted and craniosacral therapy was performed. From this point forward the baby was described as being a happy child with complete resolution of presenting complaints.

### Outcome

After the first adjustment was administered the baby was immediately relaxed. The patient's mother stated she had noticed improvement in his ability to turn his head left and right thus improving his feeding habits. She reported many positive behavioral changes: he was a more content baby in general, and he slept better with less crying. The child's mother reported increasingly positive improvements after each visit. By the fourth visit the torticollis and colic were completely resolved and he was said to be a completely different baby. The child continues to be checked on an as

needed basis.

## Discussion

Chiropractic is based on the concept that restriction or misalignment of the joints of the spine or cranium may disrupt optimal nervous system function which is then transmitted to the organs that these nerves control resulting in symptoms and disease.<sup>11</sup> The way which we normalize the nervous system functioning is through the chiropractic adjustment.

Chiropractors have attributed colic to neurologic dysfunction due to vertebral and cranial subluxation complex.<sup>11</sup> The subluxation is defined as a motion segment in which alignment, movement integrity and/or physiological function are altered though contact between joint surfaces remains intact. A motion segment is a functional unit made up of the two adjacent articulating surfaces and the connecting tissues binding them to each other.<sup>11</sup> Spinal trauma, including birth trauma, has been shown to cause many non-spinal symptoms.<sup>9</sup> Trauma in this sense is defined as the internal and external forces undergone by an infant during labor and delivery.

Multiple traumas can have an impact on a newborn child: the contorted position of the baby in the womb, cranial/cervical positioning, pressures undergone by the infant during the labor process, the traction forces applied to the infant during cesarean section assisted extraction in vaginal births. It is very possible that any and all of these forces could cause a subluxation in an infant. Upledger discussed the relationship between correct cranial alignment with proper mobility and the function of the nervous system which lies within the vertebrae and cranium. He declared negative changes in the structure or function of the cranio-sacral system can undesirably affect the organs.<sup>2</sup>

The physiological expressions of colic, hyperirritability and poor sleep may be explained by misalignment of various areas within the posterior cranium. The functioning of the hypoglossal nerve controls the motions of the tongue, inhibiting adequate nursing. The same misalignment could have an impact on the Vagus nerve inhibiting optimum motor and sensory control in the digestive tract resulting in gastric reflux, inadequate nutrition absorption and chronic constipation. Headaches are also a common result of cranial misalignments as well as cervical subluxations. Headaches have been shown to create an inability to fall asleep consequentially resulting in irritability and exhaustion.<sup>11</sup>

A study was done with 316 infants diagnosed with colic treated in fifty chiropractic offices throughout Denmark. The colic resolved in 94% of babies following an average of three applications of spinal manipulation over an average of 14 days.<sup>2, 7, 8, 11</sup> A randomized controlled trial on 86 infants with colic was done separating the infants up into two groups. The first group was adjusted by a modified finger-tip mobilization by a chiropractor, the second group was held for ten minutes by a nurse. 69.9% of infants under chiropractic care improved compared to 60% of infants held by the nurse.<sup>6, 8, 12</sup>

A common medical treatment for colic has been the administration of Dimethicone. A study was done comparing Dimethicone to chiropractic spinal manipulations on 50

colicky infants. The manipulation group experienced a decrease in daily crying by 67% after an average of 3.8 sessions as opposed to a 38% reduction in crying of the Dimethicone group.<sup>12</sup>

In addition to the aforementioned studies there are many more cases which have had notable success with resolving colic through chiropractic adjustments. Numerous studies found subluxation in the area of C1<sup>1,2</sup>, C2<sup>9</sup> or the C1-C2 motion segment.<sup>3,5,7,8,13,14,16</sup> Although not every chiropractor chooses the same method by which to analyze and adjust patients, all had some level of success. The types of adjusting varied from high velocity, low amplitude diversified adjusting, modified for a patient's height and age, craniosacral therapy,<sup>8,9</sup> modified upper cervical specific toggle recoil,<sup>7</sup> as well as Logan Basic, Activator, and sustained light pressure.<sup>3</sup>

There are various sequellae that often accompany the vertebral subluxations and/or cranial misalignments that may cause colic. These include dysfunctional nursing, abnormal digestion, gastric reflux, regurgitation, chronic constipation, failure to thrive, poor sleep, chronic otitis media and torticollis.<sup>11</sup> Literature has shown these conditions to benefit from chiropractic - especially torticollis.<sup>11</sup> The sternocleidomastoid muscle (SCM) is innervated by the second cervical nerve. Abnormal stresses can be put on the spine during labor or irregular positioning in the uterus. This abnormal stress can cause the SCM to spasm unilaterally presenting with the head laterally flexed toward the effected side and the chin rotated to the contralateral (opposite) side.<sup>10</sup> The cervical spine is involved in up to 50% of cases. The most common subluxation associated with torticollis is in the atlanto-occipital and/ or the atlanto-axial motor units. It has been reported that the more common of the two is a C1-C2 subluxation with 92 percent having anterior rotation of C1 on the side opposite the SCM contracture.<sup>10</sup>

Correction of congenital torticollis has been shown to be effective by chiropractic spinal adjustments. A study was done in which infants with congenital torticollis responded positively to a short course of conservative spinal care. An example of a typical spinal adjustment in this area consists of the infant lying in the supine position. The doctor would apply a light adjustive thrust using the tip of the index finger to the spinous process of the C2 vertebra.<sup>10</sup> The thrust is administered from a lateral to medial direction as well as posterior to anterior. There is a finite amount of research performed on the effectiveness of chiropractic care and the resolution of colic and torticollis, however the studies which have been done show very promising results pertaining to these areas. This was a case study of a child who presented with both complaints and was relieved of them through chiropractic care. It is suggested that release of the neural interference which was inhibiting the normal functioning of this child through chiropractic care may have been what caused the resolution of the colic and torticollis. More research on these topics is required.

## Conclusion

This case study has shown the chiropractic care of a three month old male with colic and torticollis. It is unknown what etiology was causing his disorders or if chiropractic care was

the sole intervention which corrected his dysfunction. However, the child showed marked improvement after each chiropractic visit with complete resolution of the colic and torticollis after just four visits. This completely changed the demeanor and character of this child illustrating the positive effect of chiropractic on this child as well as his parent's lives. The connection between nervous system dysfunction due to vertebral subluxation, cranial misalignment, and the causal relationship to colic and torticollis should be further studied.

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