

CASE STUDY

Resolution of Chronic Constipation in a 5-Year-Old Female Following Chiropractic Care: A Case Study & Review of the Literature

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Abstract

Objective: To review the history, chiropractic management, and positive outcome of a 5-year-old female patient suffering from chronic constipation.

Clinical Features: Static and motion palpation revealed restricted movement in the cervical and lumbar spine along with widespread hypertonicity of the paraspinal muscles in the lumbar region. A prone leg check revealed a left short leg of ½ inch. Mild distention and tenderness were noted upon abdominal palpation. The patient presented with a clinical diagnosis of gastritis and constipation, although no organic cause of constipation was identified. The patient experienced little to no relief with a high fiber diet and laxative use as directed by her medical doctor.

Interventions and Outcomes: Chiropractic care was initiated at the first visit using the Diversified technique. The patient was instructed to return for care two times a week for two weeks, followed by one time week for 10 weeks. The patient's progress was monitored using leg length checks, pattern analysis of subluxations, observational reports from the patient's mother, and verbal accounts from the patient. At visit number 12, the patient was no longer complaining of abdominal pain, and the patient's mother reported an improvement in the patient's demeanor in addition to her reports of the patient's normal bowel function.

Conclusion: The positive outcome of a patient with pediatric constipation undergoing chiropractic care as described in this case study suggests that more research is warranted in this subject area.

Key Words: *Chiropractic, vertebral subluxation, adjustment, constipation, chronic constipation, pediatric, Diversified Technique*

Introduction

Constipation is a common problem among pediatric patients, and affects up to 29.6% of children.¹ It is estimated to account for 3% of visits to pediatricians, and a subsequent 25-30% of referrals to pediatric gastroenterologists.^{2,3} The most basic definition of constipation is, "the slow movement of feces through the large intestine."³ Constipation is differentiated between functional and organic, the latter being described as having an organic cause such as various diseases and disorders. Functional constipation envelopes the remaining cases in which no organic cause can be identified.⁴ Regardless of the classification, constipation has three clinical features

including decreased frequency of stool passing, hard stools, and difficulty passing stools.³ Because pediatric constipation is such a common ailment, parents of patients suffering from constipation are searching for alternative treatments in place of the traditional medical approach, and amongst the different alternative therapies, chiropractic care is the most sought after.² It is estimated that up to 30 million visits per year to the chiropractor office are accounted for by pediatric patients.⁵

The Diversified chiropractic technique is considered the most general technique, as it uses a wide variety of assessment

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methods as well as multiple adjusting methods. The philosophy behind Diversified technique is based upon the notion that the body is a self healing entity and when nerve interference is removed through the identification and adjustment of vertebral subluxations, the body is capable of managing and correcting imbalances in its various homeostatic mechanisms. Nerve interference may be caused by direct pressure on the nerve by an osseous structure, or the nerve may be irritated by inflammatory components. In either case, both visceral and somatic malfunction may be a product of the subluxation. The doctor may identify subluxations using a combination of patient history, static and motion palpation, X-Ray analysis, instrumentation, muscle testing, and leg checks, with the objective assessment narrowly focused around tissue changes and motion restrictions. Diversified Technique practitioners also utilize both high and low velocity adjustments, and may also use adjusting tools and drop tables to deliver the adjustment depending on the unique situation of each patient. The Diversified Technique is considered a full spine technique, and assessment and correction are not restricted to one area of the spine.⁶

The primary purpose of this case study and selective literature review is to highlight the successful use of chiropractic intervention for a visceral complaint, specifically chronic constipation, and to bring to mind the documentation of numerous cases very similar to the one described below. In a society that is largely dependent on allopathic interventions, it is imperative to provide patients with the knowledge of alternative therapies, along with evidence supporting the efficacy non-allopathic treatment.

Case Report

Health and Presenting Complaints

The patient was a 5-year-old female of Caucasian decent who presented to the doctor's office with complaints of constipation, bloating, and abdominal pain since six months of age, as reported by the patient's mother. Both the patient and her mother report the patient experiences these symptoms on a daily basis and experienced little to no relief from the use laxatives, oils, and high fiber diets as prescribed by her medical doctor.

History

The mother reports that the patient was conceived via In Vitro Fertilization methods due to the mother's health history of an abnormally small uterus and pelvic kidney, and both the course of the pregnancy and the birth were high risk. After 16 hours of labor and an attempt to induce labor for a vaginal birth, the patient was delivered via cesarean section. The patient suffered from low birth weight (5 lb. 3 oz.), meconium lungs, and was monitored in the NICU for the 10 days following her birth. The mother reports abnormal bowel function and constipation since six months, but symptoms began to worsen just after the patient turned five years of age. According to the mother, the patient would complain of stomach pain and subsequent difficulties evacuating feces. The patient had bowel movements on a daily basis, but spent extended amounts of time in the bathroom attempting to evacuate her bowels, and pain was associated with almost

every bowel movement. The patient would alternate between passing small amounts of stools to single large stools, and were described as mostly hard but were sometimes normal.

The mother denies any diarrhea associated with the patient's bowel issues. Upon her visit to the pediatrician the patient was diagnosed with constipation and was prescribed Miralax along with dietary changes such as adding prune juice and whole prunes for daily consumption. The mother reports this treatment course lasted about 1 week before the patient was experiencing extreme stomach pain, and was taken to the Emergency Room. An X-Ray analysis confirmed severe constipation, and the patient was immediately referred to a gastroenterologist. The gastroenterologist prescribed increased doses of Miralax for a 48-hour time period, and also recommended the patient for an endoscopy, to which the patient's mother declined. Over the course of the following months the patient was placed on a high fiber, dairy and gluten free diet consisting of mostly fruits and vegetables, and experienced some relief.

Examination

Upon presenting to the chiropractic office, the patient walked back to the examination area by accompanied by her mother with the doctor following behind, and during this time gait and ambulation were assessed and marked as normal. While standing in front of the flat bench, the patient was guided through active and passive ranges of motion of the lumbar spine before being seated on the table. Active ranges of motion were preformed solely by the patient as she was prompted to mimic the doctor to perform lumbar flexion, extension, right and left lateral flexion, and right and left rotation. Passive ranges of motion were performed by the doctor by placing his forearm across the back of the patient's shoulders and carefully moving her through all lumbar ranges of motion including flexion, extension, lateral flexion to the right and left, and rotation to the right and left. Once seated on the edge of the table with feet toward the floor, the patient was then guided through active and passive motion of the cervical spine. Active ranges for motion for the cervical spine including flexion, extension, left and right lateral flexion, and left and right rotation were all performed by the patient as she was prompted to mimic the doctor. Passive ranges of motion for the cervical spine were performed by the doctor by placing the knife edge of one hand on the patient's forehead with the other hand stabilizing on the back of the head, and guiding the patient through all ranges of motion for the cervical spine including flexion, extension, lateral flexion to the left and right, and rotation to the left and right. All ranges of motion in both the lumbar and cervical spines were within normal limits.

The patient was then instructed to lay prone on the flat bench by first coming to her knees at the edge of the table and carefully laying belly down from that point, and a prone leg check was performed by placing the second and third digits of the doctor's hand on either side of the patient's lateral malleoli bilaterally, with the doctor's thumbs across the bottom of the patients shoes. Prone leg length analysis revealed a left short leg of 0.5 inches.

Prone static palpation using the doctor's finger pads of the 2nd, 3rd, and 4th digits revealed taut and tender muscle fibers around

the 1st, 2nd, 3rd, 4th, and 5th Cervical vertebrae (C1, C2, C3, C4, and C5), and the 6th, 7th, and 8th Thoracic Vertebra (T6, T7, and T8). Seated Motion Palpation revealed posterior fixations between C1 and C2, C3 and C4, and C4 and C5 as well as T6 and T7, and T7 and T8. Motion Palpation is achieved by the doctor placing the tip of his index finger on the spinous process of the suspected segment and stabilizing on the patient's forehead with the knife edge of the opposite hand for the cervical and upper thoracic regions, or the forearm across the patient's shoulders for the lower thoracic and lumbar regions, and gently moving the patient through all ranges of motion in order to detect decreased ability of movement in one specific spinal segment. The C2 and C3 spinous processes were also positive for left spinous process deviation, and C3-C5 and T6-T8 were positive for right spinous process deviation. Static palpation of the lumbar spine demonstrated tight musculature bilaterally in the regions of the 1st, 2nd, 3rd, 4th, and 5th lumbar vertebrae (L1, L2, L3, L4, and L5), with edema noted bilaterally around the area of L5 spinous process. Motion Palpation was positive for posteriority of segments L1-L5, as well as spinous process deviation to the right for the aforementioned segments.

Diagnosis and Management

Upon completion of the physical examination, the patient was diagnosed with the following: Abnormal posture, Lumbago, vertebral subluxations (Cervical and Lumbar Regions). More specifically, listings of PR-M were assigned to the L1-L5 segments, PR-T to T6-T8 segments, PR-L to C3-C5 segments, and the listing PL was assigned to the C2 segment, and ASL to the C1 segment. A management plan was developed and included chiropractic intervention two times a week for the initial two weeks, followed by one time a week for 10 weeks. The goal of treatment was to reduce the presence of subluxations in the cervical, thoracic, and lumbar spinal regions with the intent to restore proper visceral function, ultimately resulting in a resolution of symptoms for the patient. The patient's mother was advised to continue the patient's dietary modifications as directed by the medical doctor.

Interventions and Outcomes

The Diversified Technique (DT) is a broad technique in which the doctor utilizes his or her hands to deliver a High Velocity Low Amplitude (HVLA) adjustment to specific segments of the spine. The doctor uses a combination of leg checks, static palpation, motion palpation, instrumentation, and X-Ray analysis to locate these segments prior to the adjustment.⁶ In regards to the previously described case, at the beginning of each patient visit, the doctor used the examination procedure detailed above including prone leg checks, static palpation, and motion palpation to locate and confirm the presence of vertebral subluxations before proceeding to the adjustment.

Once the involved spinal segments were located (using the above identified segments of L1-L5, T6-T8, and C1-C5, for example purposes), the doctor instructed the patient to position themselves into a prone position on the flat bench. The Lumbar and thoracic segments were addressed first, specifically beginning with the lowest fixated segment. The doctor addressed the Lumbar fixations at levels L5, L4, and

L3 with a Single Hand technique using his inferior hand, in which he stood on the side of patient contact in a straight away position facing the bench, and began by placing his inferior hand pisiform on the transverse process opposite to the side of spinous process rotation, with the doctor's fingers pointing up the patient's spine. Just prior to placing his pisiform, the doctor took a "tissue pull" to remove tissue slack around the transverse process in an inferior to superior direction. The doctor then placed the closed fist of his superior hand on top of his contact hand, with his thumb wrapping around the wrist of the contact hand. A single thrust with no recoil was then applied through the plane line of the vertebral disc, with a posterior to anterior, inferior to superior, and lateral to medial line of correction. L2 and L1 spinal segments were also addressed with a Single Hand technique in which the set up was the same except the doctor's superior hand was used for contact. He faced the table in a straight away position placing the pisiform of his superior hand on the transverse process opposite the side of spinous process rotation, as his contact hand fingers point down the patient's spine. The inferior hand was then placed on top of the contact hand for stabilization in the same manner as described above. The thoracic segments were addressed in the same manner (Single Hand, superior hand contact), but the line of correction was modified to posterior to anterior, slight inferior to superior, and lateral to medial to account for the thoracic kyphosis.

Following the Thoracic and Lumbar spinal segment adjustments, the doctor then instructed the patient to move into a supine position where the cervical segments were adjusted using a Supine Cervical Set for the C5 and C1 segments. For the C5 segment, the doctor stood at the head of the table with a 45-degree angle to the segmental contact point of the patient, on the side of patient contact. The doctor then used his inferior hand to contact the C5 spinous process with his index finger, with his superior hand stabilizing just above the segmental contact point. The doctor then laterally flexed the patient's head over the contact point, and rotated the head away from the contact point, and a single thrust with no recoil was given in the posterior to anterior, inferior to superior, and lateral to medial line of correction. For correction of the C1 spinal segment, the doctor again stood at the head of the table at a 45-degree angle from the segmental contact point on the patient, on the side of contact. He contacted the posterior aspect of the C1 transverse process with the tip of his inferior hand index finger, and stabilized over the occiput with his superior hand. The patient's head was then laterally flexed over and rotated away from the contact point. A single thrust with no recoil was administered in the lateral to medial, superior to inferior, and posterior to anterior line of correction. The C2, C3, and C4 segments were not addressed at the doctor's discretion.

For all of the subsequent patient visits, the same analysis and adjusting procedures were used to manage the patient throughout the remainder of her care plan.

As reported by the patient's mother, a reduction in symptoms was noted after one month of treatment, or more specifically after the 6th visit. The patient began experiencing more manageable bowel movements that did not involve pain, straining, or extended time in the bathroom. By the 10th visit, the patient's symptoms were completely resolved. She was

able to evacuate her bowels completely, and the consistency of the stools passed was the same as the previous at subsequent bowel movements. The patient's mother reported that there were no longer large, solitary stool, or multiple, small, pebble like stools. Upon re-examination at the 11th visit, the patient's abdomen was no longer tender and distended. The patient completed her care plan as advised by the doctor, and continues to see him once a month for maintenance. At a one year follow up conversation with the patient's mother, the patient symptoms remain resolved.

Discussion

Review of Literature

In the following selective review of literature and discussion, a total of four cases that pertain directly to constipation and chiropractic care are presented in the form of case studies or case reports, and three cases are presented as a single case series. Additionally, multiple reviews of literature on the topic are considered, as well as a retrospective study with information and anecdotal accounts from 87 chiropractors on the topic of non-musculoskeletal disorders and chiropractic care. This is not a comprehensive review of literature on the topic of chronic constipation in pediatric patients receiving chiropractic care.

Quist and Duray³ prepared a case report describing the history, treatment, and discussion regarding the explanation of a positive outcome of a patient suffering from chronic constipation. In the case report, the authors describe the history of an 8-year-old boy who presented to the chiropractor, accompanied by his mother, with a history of chronic constipation since birth. The boy was described as an otherwise healthy male of Caucasian descent who reportedly suffered from painful and prolonged defecation, sometimes lasting up to two hours, with an interval of seven days up to two weeks between bowel movements. The patient had been previously referred to a gastroenterologist, who subsequently diagnosed the patient with "chronic constipation," and prescribed the patient laxatives in conjunction with a high fiber diet and increased water intake. Although compliant with the care plan, the patient experienced very little relief. Upon chiropractic analysis including static palpation, the cervical, thoracic, and lumbar areas were unremarkable, however, edematous areas were found surrounding the region of the S2 tubercle bilaterally, and a chiropractic diversified full spine listing of "Base Poster Sacrum," was diagnosed. The fixation was corrected using a drop adjustment with the patient prone, and a posterior to anterior vector was applied to the S2 tubercle. Following the adjustment external manual massage was administered to the patient following the pattern of the large intestine beginning in the right lower quadrant. Within in the four days following the adjustment, the patient's mother reported he had three bowel movements, and the patient was able to defecate with decreased pain levels, and at shorter time intervals. The patient was released after one month of continuous care, and was advised to follow up in three months. The patient did not return for his follow up as his bowels were functioning normally. A 13-year post treatment follow up call was made, and the patient still reported normal bowel function.

Authors Alcantara et al.⁷ compiled a comprehensive review of literature on the topic of chiropractic care of infants with constipation. The databases used were Pubmed, MANTIS, and the Index to Chiropractic literature, and the search revealed 14 case reports, one case, series, and one review of literature using the criteria of children ranging from ages 0 to 18 who suffer from chronic constipation. All of the subjects in these publications displayed little to no improvement with medical based treatment using combinations of laxatives, high fiber diets, colonics, and increased fluid intake, but did experience a reduction in severity of symptoms and eventually a return to normal bowel function chiropractic treatment. The comprehensive review of literature aims to emphasize that although up to 10 different chiropractic techniques were utilized, chiropractic treatment allows the practitioner to personalize the encounter and treatment for each individual, and this allows for the needs unique to each patient to be met, and the idea of a blanket treatment protocol for each patient can be avoided. The authors concluded that the positive results from the literature explored in this review warrants for more extensive research into the efficacy of chiropractic treatment for chronic constipation.

Angus, Asgharifar, and Gleberzon⁸ performed a narrative review of literature discussing the effects of chiropractic treatment on gastrointestinal (GI) disorders. The topics GERD, Colic, Colitis, Irritable Bowel Disorder, and Constipation were reviewed. Specifically for the topic of constipation, two case series and two case reports involving six subjects total report similar results indicating that chiropractic care is an effective treatment for constipation. In addition to reporting significant improvement of symptoms, none of the patients experienced any adverse reactions or worsening of symptoms. The authors argue, however, that although chiropractic intervention was documented thoroughly in all of the encounters, other details of treatment were not documented, including but not limited to dietary changes, exercise habits, stretching habits, soft tissue treatment, etc. The authors conclude that although there seems to be significant documentation on a case-by-case basis, there is a severe lack in evidence from clinical trials, and the information gathered warrants for more in depth research of the topic of chiropractic intervention for GI disorders.

In their case series and review of literature, Alcantara and Mayer⁴ discuss the care of pediatric patients suffering from chronic constipation. In the series, three patients all under the age of two years were successfully treated with chiropractic care after dietary changes and mineral oil usage showed no positive outcomes. All three patients were under full spine care, and chiropractic adjustments were administered using the Activator Technique. The patients all showed immediate improvement upon receipt of care, and were released from care after very short time periods (patient one was released from care after two months, patient two after three weeks, and patient three after two months). Patients one and two still reported normal bowel movements at the one-year follow up mark, and patient three reported normal bowel movements at the three year follow up mark. The authors also mention that throughout the course of treatment, no adverse reactions or regression of symptoms were reported. In the review of literature, the etiology of chronic constipation is discussed, along with the medical approach to treating the condition. The authors also briefly describe the mechanisms in which

chiropractic care can impact the gastrointestinal system. The authors conclude that their case series provides support for the effectiveness of chiropractic care as treatment for chronic pediatric constipation, and state that more research is warranted.

Kim, Alcantara, and Holt² describe the successful outcome of an infant suffering from chronic constipation under chiropractic care in their case study and selective review of literature. In the study, a 3-week-old boy suffering from constipation since birth was treated using Diversified technique. In addition to experiencing large, hard, and painful stools, the child was also described as irritable, and had very poor sleeping habits. The day following the first adjustment the child was able to void with much greater ease and frequency, his demeanor improved, as well as his sleeping habits, as reported by his mother. The authors discuss various case studies in the subject area in a selective review of literature, and conclude that their case study and the warrants for more research on this topic, specifically clinical trials or observational studies.

In her case study, Hewitt⁹ describes the history, care, and outcome of a 7-month-old female with a chief complaint of chronic constipation since birth. The child was unsuccessfully treated with prune juice and corn syrup, and the mother reported her daughter was experiencing bowel movements every 1-3 days, and her stools were described as hard and pellet like. The patient was also reported to be in large amounts of distress, as she would cry for hours preceding her bowel movements. The child was assessed with static and motion palpation, and her subluxations were adjusted using Diversified technique, as well as DeJarnette and Upledger techniques for cranial fixations. Two days post care, the child's mother reported that the patient had one soft bowel movement same day that care was initiated, and one bowel movement each day thereafter. At the one-year follow up, the patient's mother reported that her bowel problems were no longer an issue. Hewitt calls for multiple retrospective studies to identify and document similar patterns and positive outcomes regarding the treatment of chronic constipation with chiropractic care.

Redly¹⁰ describes the chiropractic care of a 64-year-old woman who complains of constipation since childhood. The patient reported that all of her bowel movements produced hard, small, pellet-like stools, and occurred at a frequency of 0-3 a week since childhood. She reports having somewhat regulated her bowel activity with consumption of a high fiber diet. The reports a severe bout of constipation in which she was hospitalized for not being able to void for more than two weeks, but not organic cause for constipation was discovered. The patient was assessed and her subluxations were addressed using Diversified technique, and she was seen in the chiropractic office four times a week for three months. The patient saw improvement in the consistency and frequency of her stools after the 1st visit, and also reported less straining, and an improvement in her associated low back pain. Redly concludes that chiropractic treatment seems to play a role in the improvement of chronic constipation, yet more research is warranted on the subject.

In their retrospective study, Leboeuf-Yde et. al¹¹ discussed the

anecdotal incidence of improvement in non-musculoskeletal disorders upon receipt of spinal manipulation. 1504 total questionnaires were distributed to the patients of 87 chiropractors, and information was obtained regarding visceral changes experienced by the patient within two weeks of their last chiropractic adjustment. The results of the questionnaires yielded a positive response in 21-25% of the population in question. 26% percent of the responses were related to the respiratory system, 14% were related to vision, 14% were related to the circulatory system, and 25% percent of the responses were related to the digestive system, in which a majority of the patients reported, "improved function." The authors conclude that the results of their retrospective study are promising, and indicate that more research is warranted to differentiate whether or not these changes are in fact related to chiropractic care, or if they are simply normal physiological changes within the body.

In their study of 650 children, Ressel and Rudy¹² state that many childhood ailments can be directly traced back to specific subluxation patterns. In this study, the authors describe children with various somatic, immune, and visceral pathologies, with 96% of them possessing pelvic subluxations. Due to large sample size and proportionally large incidence of pelvic subluxations, the authors conclude that there is a direct correlation between the presence of (pelvic) subluxations, and many childhood diseases, including constipation.

Pathophysiology of Vertebral Subluxation

Before discussing the consequences of vertebral subluxations on overall health, it is important to first examine the components of the subluxation complex. In his review of vertebral subluxation models, Kent¹³ describes various interpretations of the term "vertebral subluxation." The similarities between all of these interpretations lead to a common understanding that a vertebral subluxation refers to a malposition of one or more vertebra in relation to those contiguous to it, and because of this, biomechanical dysfunction occurs leading to the disturbance of normal bodily functions. Altered spinal biomechanics can generate pressure on spinal nerve roots, creating altered interpretation of afferent and efferent nerve impulses. Multiple pathologies subsequently arise including spinal kinesio-pathology, neuropathology, myopathology, and histopathology. Disturbances in the body's physiology may also lead to altered biochemistry and inflammation.

In relation to the specific impact a vertebral subluxation can have on visceral function, Korr¹⁴ hypothesizes that improper somatic function (caused by vertebral subluxation) may interfere with the innervation of the viscera of the corresponding level. Quist and Duray³ delve further into this concept and relate it directly to the abnormal functioning of the large intestine during chronic constipation. Sympathetic and parasympathetic innervation to the large intestine are derived from thoracic and lumbar splanchnic nerves, which are specifically derived from thoracic segmental levels T10-T11 (parasympathetic), and lumbar segmental levels L1-L3 (sympathetic).³ In reference to the case of the 5-year-old female patient with chronic constipation as described above, subluxations were located at all 5 lumbar segmental levels. It is feasible to say that traction or pressure placed on any of the

nerve roots at the L1-L3 segmental levels could result in abnormal functioning of the colon, leading to chronic constipation.

In a second discussion of the spinal cord and the disease process, Korr¹⁵ states that, “musculoskeletal trauma or stress produces segmental sympathetic nervous system hyperactivity.” Due to the fact that the large intestine has both sympathetic and parasympathetic innervation, and these systems work in opposition to one another, it can be deduced that subluxations located at any of the lumbar segmental levels of L1, L2, or L3 could have direct consequences on the functioning to the large intestine. Sympathetic stimulation to the large intestine works in opposition to parasympathetic stimulation in that it slows motility and movement of feces, so with the presence of pronged vertebral subluxations in the regions responsible for the origin of innervation to the colon, chronic hyper-stimulation of the sympathetic components of the large intestine could result in stagnant stool accumulation, resulting in chronic constipation. This concept is directly reported by the experimental work performed by Sato¹⁶ in which he uses a rat as a representation of the human somatovisceral reflex. In his experiment, the skin on the abdominal region of the rat was pinched, and with this occurred corresponding reduction in the rat’s gastric motility.

Conclusion

The chiropractic intervention in a pediatric patient with chronic constipation has been discussed at length, and it is reasonable to conclude that this case study in conjunction with the numerous case studies and case series presented in the literature discussion serve as gateway to further research in this subject area. The patient discussed above and the patients referenced in the related literature all experienced favorable results after chiropractic treatment of chronic functional constipation. With further research in the form of case control studies to obtain quantitative data, it is feasible to presume that chiropractic care should be considered in the management for chronic constipation.

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