

CASE STUDY

Resolution of Constipation and Nocturnal Enuresis in a 10-year-old Female Following Adjustment of Vertebral Subluxations: A Case Study

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Abstract

Objective: The purpose of this case study is to present findings in which a 10-year-old girl received relief from acute constipation and primary nocturnal enuresis as result of chiropractic care.

Clinical Features: This is a case study of a 10-year-old girl who presented to a chiropractic clinic for evaluation with a history of four-day constipation and symptoms of nocturnal enuresis. Previous attempts of fecal disimpaction with the use of probiotics, castor oil and flax seeds were unsuccessful.

Intervention and Outcomes: A pediatric patient received subluxation based chiropractic care using Thompson technique protocol that resolved the symptoms of acute constipation and primary nocturnal enuresis. Thompson leg checks were used to determine the area of aberrant biomechanics. Improvement was seen within an hour of reducing cervical and ilium subluxations. On the third visit the mother of the patient revealed that a life time of nocturnal bedwetting three to four times a week had been resolved following her initial chiropractic evaluation and adjustment.

Conclusion: This case study provides support that chiropractic care may be beneficial in the management of constipation and nocturnal enuresis.

Keywords: *Bedwetting, Constipation, Chiropractic, Enuresis, Subluxation, Thompson technique, Adjustment, Spinal manipulation*

Introduction

There are very few benign conditions that are as distressing as defecation disorders.¹ Defecation disorders are a group of functional and anatomical abnormalities of the anorectum that lead to symptoms of constipation.² In the United States it is estimated that 28% of the adult population roughly 55 million people are constipated.¹ Children however are commonly affected by constipation as well.^{1,4} Constipation accounts for 3-5% of pediatric office visits.¹⁻⁵

Functional, non-transit constipation is the most common form of constipation seen by care providers.² Functional

constipation includes delayed colonic transit and dysfunction of the pelvic floor muscles.³ The prevalence of functional constipation in children ranges from 4-36%. Affecting both genders equally in ages less than five years old, with symptoms favoring females as ages increase greater than thirteen years. It is believed that the peak incidence of constipation in pediatric patients is around 2-3 years old during toilet training.⁴ Children most often have physiological and sociological symptomatology. When the rectum is full of stool, neural reflexes delay gastric emptying and transit in the small bowel and proximal colon, leading to decreased

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appetite, abdominal pain, and distension.¹ Pain is the most important feature prompting fear and withholding stool, which can lead to chronic constipation.⁶

What is considered normal bowel pattern for children and adolescents varies among physicians making it difficult to diagnose children with constipation.¹ A constipation diagnosis can be made using the more common Rome III criteria or the Iowa criteria. Functional constipation defined by Rome III classification as two or more of the following features in a child with a developmental age of at least 4 years, occurring at least once per week for at least two months before diagnosis:¹

- 2 or fewer defecations in the toilet per week
- At least 1 episode of fecal incontinence per week
- History of retentive posturing or excessive volitional stool retention
- History of painful or hard bowel movements
- Presence of large fecal mass in the rectum
- History of large diameter stool that may obstruct the toilet

The Paris Consensus on Childhood Constipation (PACCT) group aimed to develop a cross the board definition of defecation disorders to facilitate discussions on the Rome III Diagnostic criteria for Childhood Function Gastrointestinal Disorders because some healthcare providers believed Rome II criteria was too restrictive.^{1,7} The Iowa criteria requires that the child be at least two years and include two or more of the following features during the eight weeks prior to presentation:¹

- Greater or equal to fecal incontinence per week
- Large stools in the rectum or felt on abdominal examination
- Passing of stool so large that they obstruct the toilet
- Retentive posture
- Painful defecation
- Less than 3 bowel movements per week

The frequency of stool passages is age dependent, noted that a peak 4.4 per day by the age of five whereas an infant may pass 13 stools per day.⁴

Multiple components within the body maintain fecal continence therefore the cause of constipation remains multifactorial. Primary causes of constipation arise from intrinsic defects in colonic function or malfunction of the defecation process.² When the rectal wall is distended by stool, there is a reflex contraction of the rectum with relaxation of the internal anal sphincter, pushing fecal material into the anal canal. The sensitive lining of the anoderm perceives the stool, and a decision is made whether to expel it or to postpone defecation by contracting the external anal sphincter and the puborectalis muscle. Any disruption of this sequence of motor events may lead to constipation. The most common cause of constipation in pediatrics is a decision made by the child to delay defecation after experiencing a painful or frightening evacuation; this form of functional constipation has normal colonic motility.¹

Nocturnal enuresis is commonly associated with children

suffering from constipation. The 9-13% of children with constipation have been reported to have urinary symptoms including nocturnal enuresis. The impacted stool in the rectum compresses the bladder and reduces its ability for proper function.⁴ Defined as involuntary voiding of urine during sleep at least twice per week in children over five.^{8,9} Diagnosis requires exclusion of congenital or acquired defects of the central nervous system and the absence of a diurectic.⁸ It is believed by health care providers that there is a correlation between bedwetting and developmental delays on motoricity, language development, learning disability, physical growth and skeletal maturation.⁹ Approximately 13-19% of boys and 9-16% of girls over five years are affected by nocturnal enuresis in the Western countries. At 16 years 1-2% of both girls and boys continue to have symptoms of nocturnal enuresis.^{8,10} An estimated 2.3% of childhood bedwetters become adult bedwetters.¹⁰ Causative factors of nocturnal enuresis include nocturnal polyuria, bladder over-activity at night and disorder of arousal.^{11,13}

Nocturnal enuresis has been reported to cause renal dysfunction because of the high incidence of renal parenchymal damage especially in individuals with recurrent urinary tract infections or if vesicoureteral reflux exist.¹² Along with primary and secondary nocturnal enuresis, enuresis can be considered as monosymptomatic or nonmonosymptomatic. Monosymptomatic nocturnal enuresis does not include urinary symptoms in the daytime whereas nonmonosymptomatic nocturnal enuresis has urinary symptomatology in the daytime.^{9,13} The prevalence of monosymptomatic enuresis in children between 6 and 12 years ranges from 0.2 to 9.0%, and 1.5 to 2.8% for nonmonosymptomatic enuresis. Urinary incontinence is associated with various comorbid conditions such as urinary tract infection, vesicoureteral reflux, constipation and behavioral troubles.^{12,13}

In this case we describe the positive outcomes of a 10-year female presenting for chiropractic evaluation for four-day constipation along with symptoms of nocturnal enuresis.

Case Report

Patient History

A 10-year-old female began to experience symptoms of constipation four days prior to her initial chiropractic evaluation. The patient's mother explained that the pediatric patient had the urge to evacuate waste however she had been unsuccessful in doing so. Probiotics as well as other natural methods of stool softening were used including the consumption of castor oil and flax seeds. However they had not been helpful in aiding the reduction of the patient's constipation symptoms. The afternoon prior to the child's chiropractic visit her pediatrician prescribed suppositories. Along with a sudden onset of constipation, the child had a history of nocturnal enuresis that was revealed dating back to when she began potty training.

Physical & Chiropractic Examination

As part of the physical examination the patient was evaluated using various assessment tools including: Postural

assessments, which allow for a global assessment of subluxations¹⁴; range of motion, orthopedic and neurological examinations; paraspinal thermography, a well established protocol assessing the temperature of the paraspinal musculature^{15,16}; surface electromyography, a highly reliable assessment essential for outcome measurements and the establishment baseline of care¹⁷; heart rate variability and radiographs. Chiropractic analysis to detect vertebral subluxations followed Thompson technique, which uses well-developed algorithms to connect specific examination findings to specific adjustive procedures.¹⁸ Utilizing the primary component of Thompson technique and leg check analysis, it was determined there were cervical and pelvic subluxations present. The two pelvic syndromes involved in Thompson technique, positive Derefield (+D) and negative Derefield (-D), fundamentally work in opposites manners. Positive Derefield is characterized by posterior innominate rotation and negative Derefield is characterized by anterior innominate rotation. Derefield pelvic model involves pelvic torsion and chronic postural deviation.¹⁸

Evaluation of the patient required that she lay in the prone position where her legs were analyzed during extension, then with flexion of the knees to 90 degrees followed by extension with her head rotated to her right and left. While performing this task, a left short leg was exposed relative to right leg during extension. When the patient turned her head to the right her legs balanced. Palpating the contralateral side of head rotation for a tender nodule confirmed a cervical subluxation at spinal level C5 on the left, indicative of a right cervical syndrome. Flexion of her knees to 90 degrees showed a long left leg concluding a crossing-over phenomenon that falls under the positive Derefield category in Thompson technique. Positive Derefield classification indicates a posterior-inferior ilium (PI ilium).

Interventions

Specific chiropractic adjustments were made at both the pelvic and cervical region using a Thompson drop point table. While in a prone position, the patient received a cervical adjustment by doctor contact at the lamina pedicle junction of the C5 vertebra on the left. Once the patient's cervical syndrome was "clear" leg checks were performed once again to determine if there were pelvic adjustments remained necessary. Again the patient displayed a short left leg in extension crossing over long during flexion. A pelvic adjustment was given with the patient in a prone position by contacting the ipsilateral medial-inferior PSIS on the short leg side with a stabilization on the contralateral ischial tuberosity. The patient was then put on a management that recommended she be assessed one time weekly with a reassessment every 12 weeks (three months). Adjustments were made to the cervical and pelvic regions on her next four visits. Each visit the patient's leg checks analyses indicated a PI ilium. The cervical subluxation differed however, C6 (visit 2,4) and C3 (visit 3).

Outcomes

Three days after the patient's first chiropractic adjustment it was reported by the patient's mother that one hour subsequent to her daughter's adjustment she was able to eliminate all of the waste that had accumulated over the course of four days.

Furthermore it was reported that the patient no longer experienced the symptoms of pain and discomfort that coincide with constipation. The patient's mother reported that she never got the prescription filled prescribed by the pediatrician. Knowledge of the resolution of the patient's nocturnal enuresis was discovered on the second visit two weeks after her initial chiropractic visit. The child's mother explained that her daughter experienced a lifetime of bedwetting, more than four times a week and she had not wet the bed since her first adjustment. Noted that on her fourth visit three weeks later her mother reported one "wet night" the week prior otherwise the patient had been dry.

Discussion

It is imperative to understand the pathophysiology of constipation and nocturnal enuresis as well as the standard of treatment. Neurological symptoms of subluxation may arise due to the displacement of a vertebra, which causes the patient to experience local derangement. The vertebral subluxation complex allows for chiropractic clinical management to be integrated into a single conceptual model where anatomical, physiological and biochemical alterations involved with subluxation can show normalization of structure and function through adjustment procedure.¹⁴ A study by Pohlman et al,¹⁹ reported that referrals to doctors of chiropractic include geriatrician, neurosurgeons, maternal health nurse, occupational therapist, radiologist, craniofacial therapist, optometrist, nurse practitioner and naturopathic physicians. There is existing literature that supports the hypothesis that chiropractic care is a favorable course of treatment in treating symptomatology of non-musculoskeletal conditions such as constipation and nocturnal enuresis.

Mills and Alcantara²⁰ reported on a 6-year-old male presenting with a complaint of constipation accompanied by leg pain. Details of the child's medical history included prescription medication since the age of three include Miralax, Exlax, Lasoprizole and Periactin. The patient was unable to gain weight, only weighing 35 lbs. at the time of his first chiropractic visit. Over the course of three weeks (10 visits) the patient resolved constipation symptoms along with leg pain as well as gained weight. Adjustments were given utilizing high velocity, low amplitude (HVLA) Diversified Technique. Initial adjustments were received at left sacroiliac joint, sacrum and atlas. Following the initial adjustments the patient's mother reported that the child was having bowel movements on a daily basis. With continued care the child was able to move bowels without causing pain or discomfort. By the sixth visit the patient's mother removed him from all previous medications and a 4 lbs. weight gain was noted on the eighth visit, 17 days into care.

Kim et al,⁵ discusses the immediate resolution of constipation in a three-week male following chiropractic care. A three-week boy presented with his mother with a history of hard, firm bowel movements in two days intervals. Birth history was reported to have gone without any complications. Atlas and thoracic (T5) adjustments were given relative to the patient's size. The patient's mother reported successful bowel movements following the first adjustment. The bowels were described as loose and watery which is common with breastfed infants.

A case report by Rectenwald and Rosado²¹ describes a case where a 9-month female with chronic constipation presented into an office. Constipation began after the child stopped breastfeeding. Birth history revealed the mother's labor was induced at 42 weeks. The child reportedly had fallen twice once at three weeks and another time at three months. HVLA adjustments were given at the atlas and sacrum. Following the first adjustment the patient was able to have more frequent bowels however they still were hard and dry. The patient's mother proceeded with chiropractic care along with consulting her pediatrician who prescribed Miralax. Fruits were introduced into the child's diet at this time as well. It was noted that the patient had occasional constipation after three weeks of care. Frequent, soft stool was described after five months of care.

Davis and Alcantara^{22, 23} reported on two case reports with the resolution of constipation. The first case a 7-year-old male presented with constipation along with neck pain and headaches. On the first visit adjustments were made at the atlas as well as the thoracic (T2) and lumbar regions (L5) using HVLA. The following visit the patient's mother reported that her son had a bowel movement immediately upon arriving home after his adjustment with several bowel movements the next three days. After 10 weeks of chiropractic care the child reportedly was able to have bowel movements 5-6 times per week without laxatives. The mother of the patient reduced care with the successful elimination of constipation symptoms however the child's bowel frequency decreased. The child was brought back in to continue with regular chiropractic visits and normal frequency of bowel movements was attained again.

In the second case it was reported that an 11-week-old neonate experiencing constipation received relief through the utilization of Gonstead technique to reduce vertebral subluxation. The mother of the patient reported that the patient only had five bowel movements in an 8-week time span and medical treatment had not relieved the child's constipation symptoms. Adjustments were made at the child atlas and S1/S2 tubercle with appropriate pressure for patient's size. After the first adjustment the mother report the infant was able to have his first bowel movement without assistance. On the second visit it had been two days since the child had bowel movement. Chiropractic analysis determined subluxation at the same areas and adjustments were made. After 10 weeks of care (14 visits) the infant showed improvement with several bowel movements per day.

Horkey²⁴ detailed a case where a 6-year-old female presented into an office with chronic constipation. The child was only able to have bowel movements once a week or every 2 to 3 days. On the initial visit adjustments were made to atlas and the thoracic, lumbar and pelvic regions. After 13 visits it was reported that the child had normal bowels 4-5 times daily.

Batte²⁵ presented a case study of a two-week-old infant with abdominal distension, gas and excessive crying. The infant's mother received Webster technique because the baby was in the breech position, yet two weeks into receiving treatment the baby turned vertex without complication. Chiropractic analysis was done on the infant and Logan Basic chiropractic technique adjustments were made sacrotuberous ligament, L4, L5 and the atlas with the patient lying prone on the parent.

Within five adjustments the mother reported that bowel movements had become more regular. After 16 adjustments the mother reported complete resolution of constipation and colicky behavior.

In respect to the patient's symptoms of nocturnal enuresis, upon the initial chiropractic consult the condition was not made known to the physician. With the positive outcomes associated with the chief complaint of constipation the patient's mother explained the child had also seen results with urinary symptoms she had experienced for a lifetime. A standard treatment includes motivational therapy that has shown to decrease nocturnal enuresis symptoms by more than 80% in greater than 70% of patients. Medical intervention is rare with a high self-resolution rate.²⁶ Rodnick and Rodnick¹⁰ proposed a connection between the reduction of vertebral subluxation and nocturnal enuresis proposing there may be reversal of neurological deficits to restore normal function to the urinary system following the reduction of subluxation.

Rodnick and Rodnick¹⁰ discussed a case where an 11-year-old was brought into an office with symptoms of bedwetting seven nights a week along with attention problems. Treatment of the patient included HVLA adjustments, Gonstead technique and the use of activator technique. Adjustments were made at the left innominate (PI ilium), right innominate (AS) with the patient in side posture. An activator was used to adjust T12, L3 and L5 vertebral segments. T1 and T5 were adjusted with the patient in a prone position with a single hand contact. C2 and C6 cervical segments were adjusted with the patient in supine position. Improvement was seen with bedwetting decreasing for seven a week to one time every two to three weeks on the course of 33 patient visits.

Noriega A¹¹ reported a case on 6-year-old who presented into an office with chronic nocturnal enuresis and autism symptoms. The mother described her pregnancy has complicated. Utilizing NUCCA assessment protocol the child was assessed for proper chiropractic care. A care plan was advised that required the child to be assessed twice weekly for twelve weeks. An adjustment was given on the second visit at the atlas. The patient's mother reported complete resolution of nocturnal enuresis as well as 70% improvement with his autism spectrum disorder.

A study by Alcantara and Weisburg,²⁷ report that 9-year-old male present in an office with complaints of nocturnal enuresis. Prior medical care did not prove to be effected noting that the pediatrician had not prescribed medicines however suggested limiting water intake two hours prior to sleep and waking him every few hours to use the restroom. Diversified technique adjustments were administered at the appropriate spinal levels. A subluxation at C0-C1 was adjusted with the patient in a supine position. With the patient in a prone position C7-T1 subluxation was adjusted as well. Side posture adjustments were made at L5 and a BP sacrum in the prone position. The mother of the patient was advised not give her child dairy or processed foods. Recommendation of two Standard Process supplements Calcium Lactate and Chewable Catalyn due to the patient's diet survey results. On the 7th visit it was reported that child had not had an episode of nocturnal enuresis in two weeks. Resolution was noted after 4-month evaluation.

Reed et al,²⁸ performed a study that measured the effectiveness of chiropractic management in those individuals with nocturnal enuresis symptoms. Patients were divided into two treatment groups. One group received chiropractic manipulative therapy where as the other group received sham adjustments. This study revealed a reduction of 50% in enuretic nights in 25% of patients in the chiropractic manipulative therapy group compared to that of sham group that showed no improvement.

Blomerth²⁹ reported on a case study of an 8-year-old boy who presented with nocturnal enuresis symptoms. The child was undergoing chiropractic care for asthma previous to his mother's report of bedwetting. Immediate resolution was seen following chiropractic adjustments to the lumbar spine. Each time the symptoms returned chiropractic analysis reveal lumbar subluxation and adjustments were made at specific sites resulting in immediate cessation of symptoms.

Limitations

Limitations of this study include a small sample size, as this is the only case. Failure to document pre and post outcome assessments makes it difficult to assess quantifiable improvements for the patient undergoing chiropractic care in this case.

Conclusion

Chiropractic care has shown to be a beneficial treatment in patients with constipation and nocturnal enuresis. The effectiveness of chiropractic care in the treatment of constipation and nocturnal enuresis can be seen in this case report along with other literature available. A reduction of pain and uncomfortable bowels was documented with a return of regular normal bowel movements. More research is needed on the neurological effects of constipation and nocturnal enuresis relative to vertebral subluxation. Better documentation on the comparative data and analysis of pre/post outcome assessments in regards to chiropractic care is needed.

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Figure 1 Heart Rate Variability – Autonomic Activity Diagram

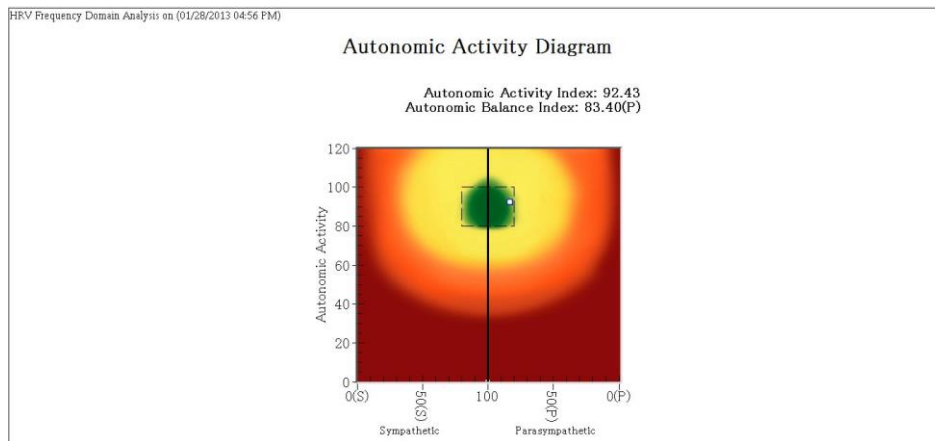


Figure 2 Heart Rate Variability – Instantaneous Heart Rate Graph

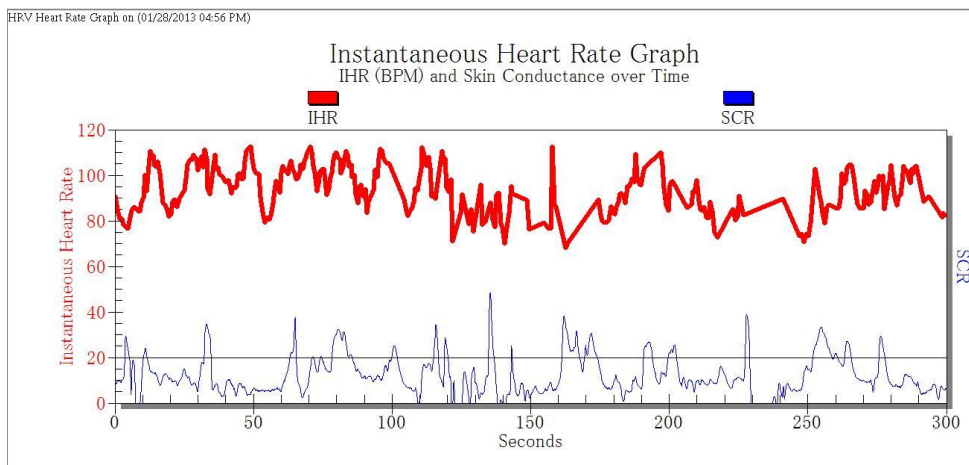


Figure 3 Thermography

