

# CASE STUDY

## Immediate Resolution of Constipation in an Infant Following Chiropractic Care: A Case Report & Selective Review of the Literature

Ian Kim,<sup>1</sup> Keith Hammond DC,<sup>2</sup> Joel Alcantara DC,<sup>3</sup> Kelly Holt BSc(Chiro), PGDipHSc<sup>4</sup>

### Abstract

**Objective:** To describe the history, treatment, and the positive outcome of chiropractic care in an infant with constipation.

**Clinical features:** A 3-week-old boy was presented by his mother with complaints of constipation since birth.

**Intervention and outcome:** The patient received chiropractic adjustments (Diversified Technique) to address subluxations at the atlas, thoracic spine, and sacrum. The patient's mother reported an immediate, dramatic improvement in the patient's bowel function following the first chiropractic adjustment. Consistent normal bowel function after each feeding was reported thereafter.

**Conclusion:** This case report suggests that further research is required to better understand if chiropractic care may be beneficial for infants suffering from constipation.

**Key words:** *Constipation, chiropractic, infant, pediatric, vertebral subluxation*

### Introduction

Constipation among the paediatric population is well documented. It has been found to account for 3% of visits to general pediatricians and 25% of visits to pediatric gastroenterologists.<sup>1</sup> An estimated 1.7 million US children reported constipation in a 2-year period from 2003 to 2004 in a Medical Expenditure Panel Survey.<sup>2</sup> The annual health care cost for children with constipation is approximately \$3,400 a year.<sup>2</sup> Constipation is defined as "delay or difficulty in the

passing of hard, sometimes large stools for longer than 2 weeks."<sup>3</sup> Clinically, it is identified by 3 elements: reduced frequency of defecation, hard stool consistency, and difficulty and/or painful bowel movements.<sup>4</sup> The frequency of normal bowel movements varies for infants. In the first year, the average number of bowel movements range from 2 to 4 times a day.<sup>3</sup> This number also varies depending on whether infants are breastfed or formula-fed. Breastfed infants have more frequent bowel movements.<sup>3</sup>

Traditionally, constipation is managed depending on the cause, severity, and duration.<sup>3</sup> Dietary changes include adding prune juice to formula for infants, increasing fruits and vegetables for older infants and children, increasing water intake, and decreasing the amount of constipating foods.<sup>3</sup> For

1. Chiropractic Intern, New Zealand College of Chiropractic, Auckland, New Zealand
2. Private Practice of Chiropractic, Auckland, New Zealand
3. Research Director, International Chiropractic Pediatric Association, Media, PA and Chair of Pediatric Research, Life Chiropractic College West, Hayward, CA, USA
4. Assistant Director of Research, New Zealand College of Chiropractic, Auckland, New Zealand

those where dietary and lifestyle changes do not resolve the constipation, disimpaction of the bowel is used.<sup>3</sup> Disimpaction can occur through oral or rectal agents. Oral agents require consumption of large volumes of liquid. Rectal agents can feel invasive and can be difficult to give. Many parents are now turning to alternative practitioners to seek an alternative approach to their child's care.<sup>5-8</sup> Of the practitioner-based alternative therapies, chiropractic is the most established and most utilized for children.<sup>5</sup> We present this case report in order to contribute to the growing evidence-base on the use of chiropractic care in children with constipation.

## Case Report

### *History*

A 3-week-old male patient, brought in by his mother, reported for chiropractic care with a chief complaint of constipation. According to his mother, he had bowel movements at 2 day intervals since birth with the stools being characterized as "firm and lumpy."

His birth history revealed that he was delivered vaginally after 4 hours of labor without complications. He was the 3<sup>rd</sup> child and born full term weighing 4,120g. His APGAR scores were 9 and 10 at 1 and 5 minutes respectively.

The patient was breastfed and in addition to constipation as a complaint, the child also suffered from irritability and frequent waking from sleep that was attributed to acid reflux. The attending pediatrician placed the child on Gaviscon, a non-prescription medication for the treatment of heartburn and gastroesophageal reflux disease (GERD).

According to his mother, he became "grumpy" and displayed excessive crying after taking Gaviscon. Losec was instead prescribed by the medical doctor as a response. When the patient presented to the chiropractic office, he was still suffering from constipation and frequent "wake-ups."

### *Examination*

Upon visual inspection, the patient appeared to be a healthy 3-week-old male infant. His development was age appropriate with clear skin and a light complexion. His vital signs were normal. An abdominal examination revealed a slightly distended belly and an uncomfortable response on digital palpation of the left lower quadrant of the abdomen as indicated by withdrawal and noticeable facial discomfort. There were no obvious masses noted upon inspection or palpation. No abnormalities were detected with inspection of the anus.

The chiropractic examination of the spine revealed no abnormalities such as postural distortion or scoliosis. Static and motion palpation of the patient's cervical spine revealed tenderness (as demonstrated by the patient's withdrawal response and facial grimacing) and edematous changes over the right C1 transverse process suggestive of a C1 anterior superior right subluxation.

Palpation of the sacral region revealed an increased right gluteal muscle tonicity, increased right quadratus lumborum tonicity, a right sacrum posteriority and decreased right sacral joint play, suggesting a right posterior sacrum subluxation. Palpation of the thoracic spine revealed tenderness (as demonstrated by the patient's withdrawal response and discomfort), decreased joint play and relatively more palpable soft tissue findings on the left side of the T5 vertebral body (VB) suggestive of a T5 VB left subluxation.

Based on static and motion palpation findings, the patient was diagnosed with a C1 anterior superior right subluxation, a sacrum posterior right subluxation, and T5 body left subluxation with concurrent constipation. His mother was informed of the examination findings and consented for him to undergo a trial of chiropractic care.

### *Interventions*

Chiropractic care was provided using Diversified Technique<sup>9</sup> as appropriate for the patient's size and neuromusculoskeletal system immaturity. C1 was adjusted with the patient supine and a C1 right transverse process contact with the clinician's right index finger. Gentle and specific pressure, matching the "tone" of the patient's C1 transverse process was applied and held for a few seconds until the tension or tone was felt to dissipate.

Using a similar approach, the patient's right posterior sacrum subluxation and T5 body left subluxation were adjusted using a thumb contact (i.e. "touch and hold") with the patient in the prone position. The patient returned the next week for his second visit.

### *Outcomes*

His mother was very excited to report that her child had a bowel movement on the day following his first chiropractic adjustment and following each feeding. Furthermore, she reported that since his last chiropractic visit, he was able to evacuate his bowels with much greater ease. His bowel movements were also described as "loose and watery", which was expected for a breastfed infant. The patient was also able to sleep longer during the night with less wake ups, crying, and general irritability.

## Discussion

Constipation is a common problem of childhood and can present at three stages in a child's life: in infants at weaning, in toddlers acquiring their toilet skills and at school age. Unlike the case presented, constipation is said to generally first appear in infants between the ages of 2-4 years.<sup>10</sup> Therefore, for the infant presenting with the problem of constipation, importance of determining an organic cause of constipation cannot be overstated.

In neonates, the failure to pass a meconium stool should alert the clinician for possible Hirschsprung's disease. Failure to recognize this disorder places the infant at risk for enterocolitis, explosive bloody diarrhea, and abdominal

distension in the second or third month of life. The anatomical position and patency of the anus were determined to be within normal limits in this case. The presence of a pilonidal dimple or hair tuft was not observed nor was tethered cord syndrome, myelomeningocele, or spinal cord tumor suspected based on normal tone and strength of the lower extremities as observed by the attending chiropractor. The above examination findings, in addition to the absence of a cremasteric or wink reflex should be confirmed to rule out an organic cause of the infant's constipation.<sup>11</sup>

The medical approach to care for the infant in this case report was utilizing Gaviscon and Losec to address his frequent crying, irritability, and possible acid reflux. Insofar as we can determine, no recommendation was made for the child's problem of constipation. According to Biggs and Dery,<sup>11</sup> when an organic cause for the child's constipation has been ruled out, constipation for an infant exclusively breastfed "may be normal."

This is counter to the findings by Aguirre et al.<sup>12</sup> where infants under artificial feeding were 4.53 times more likely to develop constipation than infants who were predominantly breastfed. Biggs and Dery<sup>11</sup> recommend for the child with functional constipation changes in his/her diet in addition to family education. If dietary changes are not effective, then medication is prescribed and if ineffective, laboratory examination (i.e. thyroxine, thyroid-stimulating hormone, calcium level, test for celiac disease, antibody tests, sweat test, lead level, etc.) and a referral to a pediatric gastroenterologist was recommended.

#### *Chiropractic Perspective*

A variety of factors may influence gut motility and constipation, including the nervous system, hormones, diet, disease, medication, and psychological factors. The patient in the present case study showed immediate improvement in symptomatology, after a single chiropractic adjustment. Since no changes in the patient's lifestyle (i.e. fluid intake, diet, exercise, stress levels, or medication) were reported at the time of chiropractic care, the following discussion will focus exclusively on the potential effects of the chiropractic adjustment on the infant's presentation.

Chiropractic has been cited in the literature for producing favourable results in infants or children with complaints of constipation.<sup>13-21</sup> Hewitt<sup>13</sup> reported a case of a 7-month-old female with constipation since birth. Full spine and cranial adjustment administration resulted in the patient's bowel function returning to normal.

Ericksen<sup>14</sup> reported a 5-year-old female with chronic constipation. Grostic upper cervical care administration resulted in a significant improvement in her bowel function. Marko<sup>15</sup> described the case of a 10-month-old female who developed constipation after switching diets, from breast milk to solid foods. After administering chiropractic biophysics technique the patient showed an improvement of symptoms, but did not reach a complete resolution.

Ressel and Rudy<sup>16</sup> conducted a large study of 650 children and found that 96% possessed subluxations of the pelvis. They suggested that there was a correlation between vertebral

subluxation and a number of somatic, immune, and visceral complaints, including constipation.

Quist<sup>17</sup> reported an 8-year-old boy with chronic constipation and sacral subluxation. After adjusting the sacrum with diversified technique, in addition to external massage of the abdomen, the patient reported an immediate improvement in bowel function.

Alcantara and Mayer<sup>18</sup> also reported favorable results of chiropractic care with three infants with complaints of constipation. Horkey<sup>19</sup> reported a 6-year-old female with constipation and gastrointestinal pain and after administering high-velocity, low-amplitude adjustments, the patient showed a significant improvement in bowel function and a decrease in gastrointestinal pain.

Batte<sup>20</sup> reported a 2-week-old male with a complaint of constipation. This infant experienced a bowel movement immediately following the first adjustment. A regular schedule of bowel movements began after the 16th adjustment. Davis and Alcantara<sup>21</sup> reported an improvement in chronic constipation in a 7 year old male undergoing chiropractic care.

#### *Mechanism*

Chiropractic's theoretical and clinical framework is based on the premise that the body has an innate ability to heal and that this ability is coordinated and controlled by the nervous system. Any interference in the nervous system will impede the body's ability to heal and adapt to its environment. In the chiropractic profession, this interference is referred to as vertebral subluxation.<sup>22</sup>

The basis of chiropractic care is to find and remove nerve interference to allow proper body function. In the case presented, subluxations were addressed to improve the quality of life of an infant with a complaint of constipation. Three potential mechanisms have been posited to explain the dramatic resolution of the patient's symptoms after chiropractic care.

Quist<sup>17</sup> suggested that sacral adjustments directly affect the pelvic splanchnic nerves either as their fibers pass through the sacral canal as part of the cauda equina or as they emerged from the pelvic sacral foramina as part of the anterior primary rami of S<sub>2</sub>, S<sub>3</sub>, and S<sub>4</sub>. Misalignment of the sacrum could potentially place traction on the nerves at either site. Only a slight effect on the gut would be necessary to produce constipation.

A second potential mechanism proposed by Batte<sup>20</sup> is based on Grostic's Dentate Ligament-Cord Distortion Hypothesis, whereby the effects of a vertebral subluxation produce mechanical distortions of the spinal cord.<sup>13</sup> Spinal cord traction that results in activation of supraspinal pathways that cause descending inhibition of parasympathetic outflow and/or alter the function of the colon.

A third mechanism of interest is Korr's theory of somatic joint dysfunction which proposes that a subluxation can cause facilitation of the nerves when there is disturbance in a joint.<sup>23</sup>

These changes will result in multiple impulses firing which change the state of the neuron. Changes in the neuronal activity will eventually lead to dysfunction and hyperactivity of the sympathetic nervous system. This causes a decrease in the enzymes of digestion, peristalsis, and anal contraction. Chiropractic care could decrease these disturbances of the joints and return homeostasis thereby resolving complaints of constipation.<sup>4</sup>

Despite a number of publications in the scientific literature documenting the success of chiropractic care in patients with constipation, we caution the reader on the generalizability of case reports. Cause and effect inferences attributed to the care rendered are challenged with competing explanatory variables such as regression to the mean, the results of placebo, the demand characteristics of the clinical encounter and subjective validation on the part of the patient and attending clinician.

With respect to the natural history of the disorder, it is established that the prognosis of children with constipation is poor. In a long term follow-up study of constipation in children under 5 years of age attended to by a specialist clinic, it was found that 50% recovered within one year and 65-70% recovered within two years. The remaining 30-35% required laxatives for daily bowel movements or continued to soil for several years.<sup>24</sup>

In a longitudinal study of 418 children with a median age of 8.0 years at enrolment, one-third of those followed beyond puberty continued to have severe constipation.<sup>25</sup> Although it is clear that further research in this area is required, we recommend for the infant presenting with a complaint of constipation, a trial of chiropractic care be instituted. This is congruent with the principles and practice of biomedical ethics that respects a patient's right to (1) beneficence; (2) nonmaleficence; (3) autonomy; (4) recognition of pluralism in healthcare; and (5) public accountability.<sup>26</sup>

## Conclusion

This case report provides supporting evidence that patients with constipation may benefit from subluxation-based chiropractic care. Further large scale research in the form of observational studies and/or clinical trials should be performed to determine the effectiveness of this non-allopathic care approach in patients with constipation.

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