

# Improvement in a Soldier with Urinary Urgency and Low Back Pain Undergoing Chiropractic Care: A Case Study and Selective Review of the Literature

Curtis Fedorchuk D.C.<sup>1</sup> & Claire Campbell B.S., D.C.<sup>2</sup>

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## ABSTRACT

**Objective:** The chiropractic care of a soldier with low back pain, vertebral subluxations and urinary urgency is described.

**Clinical Features:** A 24-year-old soldier presented with low back pain and urinary urgency of 12-15 times per day with unsuccessful medication results.

**Intervention & Outcome:** Contact-specific, high-velocity, low-amplitude adjustments (ie, Diversified Technique) were applied to sites of vertebral subluxation. The patient reported a decrease

in low back pain and urinary urgency after chiropractic care.

**Conclusion:** The chiropractic care of a soldier with low back pain and urinary urgency is presented. Marked resolution of the patient's symptoms was obtained concomitant with a reduction in subluxation findings despite the history of unsuccessful medication results.

**Key Indexing Terms:** *Low back pain, chiropractic, urinary urgency, urinary incontinence, enuresis*

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## Introduction

Overactive bladder, with symptoms of frequency, urgency, and urge incontinence, substantially affects the lives of millions of people.<sup>1</sup> The symptoms associated with overactive bladder can significantly affect the social, psychological, occupational, domestic, physical, and sexual aspects of those who suffer from it.<sup>1</sup> Unfortunately, many sufferers are reluctant to discuss their condition with their healthcare provider or family members and as a result, overactive bladder remains underreported, despite increased awareness and improved diagnosis and treatment.<sup>1</sup>

Urinary urgency is a sudden compelling, forceful urge to urinate, accompanied by bladder pain, along with discomfort in the bladder. Repeated, frequent voiding in an effort to alleviate this discomfort produces urine output of only a few milliliters at each voiding. Urinary incontinence is the unwanted or unexpected loss of urine.<sup>2</sup> Causes of urinary urgency and incontinence are often attributed to urinary tract infections, menopause, pregnancy, diabetes, multiple sclerosis, stroke, pelvic surgery, prostate problems, obesity and even medications for other conditions.<sup>2</sup> A lesion at any point in the

neurological control of micturition can also cause incontinence.<sup>3</sup>

Childhood enuresis has been identified in all cultures and was documented as early as 1500 B.C.<sup>4</sup> Nocturnal enuresis is a socially disruptive and stressful condition which affects around 15 to 20% of five year olds, and up to 2% of young adults.<sup>5</sup> Enuresis is defined as involuntary voiding of urine in children 5 years or older, who would have normally acquired and developed bladder control.<sup>6</sup> The suggestion of neuromusculoskeletal etiology has been supported by anecdotal accounts of manipulation being successful in the treatment of enuresis.<sup>7</sup>

Hypothetically, there may be a relationship among low back pain and urinary urgency but the research regarding the correlation is scarce.<sup>8</sup> Experienced physiotherapists and experts on low back pain have long since observed and discussed the empirical association between low back pain and urinary incontinence.<sup>8</sup> The question of whether spinal manipulation can alleviate diseases of the internal organs is a controversial one with the use of spinal manipulation in the

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1. Private Practice, Cumming, Georgia  
2. Private Practice Chicago, Illinois

treatment of visceral conditions being advocated based on the hypothesis that it reduces the somatic dysfunction, interrupts the viscerosomatic reflex arc and influences the viscera through stimulation of the somatovisceral reflex.<sup>9</sup> Thus, there is a great need for further data on the correlation of visceral function and its relationship to chiropractic treatment. To our knowledge, no studies have described the occurrence of low back pain and urinary urgency.

The aim of this study was therefore to describe the experience of urinary urgency and low back pain in a soldier visiting a chiropractor.

## Case Report

### *Patient History*

The patient was a 24-year-old soldier treated by a chiropractor for complaints of low back pain and urinary urgency. The low back pain began about 1 ½ years before the evaluation with an insidious onset. The patient reported achy, sharp pain in his sacroiliac joints bilaterally which radiated into the front groin and severe pain at L3-L5. The patient also reported that he could not roll during combative training or take any big steps without pain. The urinary urgency began about 2 years before the assessment, also with an insidious onset. He had bouts of urinary urgency that required him to urinate approximately 12-15 times per day and described only a few ounces of urine passing each time. He was given multiple prostate exams over a two year period by medical doctors, all of which came back negative. He was unable to receive any diagnosis or conclusion regarding the urinary urgency while serving overseas. The patient's diet was fairly healthy, he had no known allergies and exercised about 20 hours per week. He had a family history of diabetes and no previous diseases, disorders or syndromes diagnosed. He also presented with sinus trouble and was wearing arch supports. He was taking prescription pain medications for the past 2 years and has been a smoker (1/2 pack per day) for the past 6 years.

### *Chiropractic Examination*

Approximately 2 years after the onset of the patient's low back pain, he consulted a chiropractor for alternative care. Physical examination of the patient showed the following notable findings. Static palpation revealed severe restriction and hypertonicity from the T12 to L5. Motion palpation of the lumbar spine was performed and confirmed the presence of a subluxation at L3. Subluxation findings in the lumbar spine were found as evidenced by static palpation, motion palpation and radiographic findings using Chiropractic Biophysics Analysis.

His lumbar ranges of motion were extremely limited to 10° flexion, 5° extension, 5° right and left lateral flexion and 0° of rotation bilaterally. Lower extremity neurological testing for reflexes and sensory changes were found to be normal and symmetric. However, L3 motor test was a Grade 4 on the left; all other motor changes were found to be normal and symmetric. Neurological evaluation was performed and showed normal deep tendon reflexes at C5-7, L4 and S1, bilaterally.

Radiographic analysis was performed on the patients' first visit via Posture Ray System. This system utilizes highly accurate and precise computerized measurements to evaluate spinal alignment. It measures inter segmental angles and global angles and can also measure if there is ligament damage. The anteroposterior lumbopelvic radiograph is shown in Fig. 1 and lateral lumbopelvic in Fig 2. Minor postural changes are noted, but there was a significant loss of 28.8% of the patients' lumbar lordosis. The data produced by the Posture Ray System showed the largest deviation from normal was at the segments at L2-L3. See Fig 3.

### *Chiropractic Care & Outcome*

A specific contact, high-velocity, low-amplitude adjustment was applied by using the Diversified Technique. Diversified Technique is a high-velocity, low-amplitude maneuver, virtually always done in a side posture or a prone position. Diversified Technique uses specific lines of drives for all manual thrusts, allowing for specificity in correcting mechanical distortions of the spine. The adjustment was a PR listing (vertebral body left) on the third lumbar vertebra. The mamillary process was used as a contact in the side posture position. No other adjustments were given on the first three visits besides a PR at L3.

The patient was adjusted once a week for the first three weeks. After receiving his third adjustment, the patient indicated that his urinary urgency had decreased from 12-15 times per day to 3-4 times per day. The patient was expressed happiness about his results and the care he was receiving. In addition, the patient stated that his low back pain had decreased greatly and lumbar ROM has increased globally. The patient is currently being seen today by a chiropractor once every three weeks. He continues to have normal urinary patterns of 3-4 times per day without any low back pain.

## Discussion

### *Anatomy & Pathophysiology*

A critical foundation for understanding any dysfunction or disease process is a firm concept of the underlying anatomy and physiology of the system involved.<sup>9</sup> In a healthy adult, the normal process of micturition is under voluntary control. Sufficient disruptions or defects in either the function or structure of the components responsible for micturition can cause urinary incontinence.<sup>10</sup> Depending on the type and location of the pathophysiology, these disruptions may occur in the storage/filling or emptying phases of urination.<sup>10</sup>

The two main organs involved in micturition are the urinary bladder and urethra. The walls of the bladder are composed mainly of the detrusor muscle, which is innervated by both sympathetic and parasympathetic fibers. Sympathetic fibers are conveyed from inferior thoracic and upper lumbar spinal cord levels to the pelvic plexus primarily through the hypogastric plexuses and nerves, whereas parasympathetic fibers from sacral spinal cord levels are conveyed by the pelvic splanchnic nerves and the inferior hypogastric plexus.<sup>11</sup> The parasympathetic fibers are motor to the detrusor muscle and inhibitory to the internal urethral sphincter of the male bladder.<sup>11</sup> At high bladder volumes the stretch receptors

become sensitive to the filling of urine, which are located within the detrusor muscular wall. As the bladder fills, afferent firing is sent along the visceral afferent fibers, causing a conscious sensation of urinary urgency. Therefore, when the visceral afferent fibers are stimulated, the bladder contracts reflexively and the internal urethral sphincter relaxes in males, and urine flows into the urethra.<sup>11</sup> In addition, the sympathetic innervation that stimulates ejaculation simultaneously causes contraction of the internal urethral sphincter. As a result, when the individual is ready to urinate, he or she can voluntarily begin to urinate, causing the bladder to contract and the outlet to relax. Voiding continues until the bladder empties completely, at which point the bladder relaxes and the outlet contracts to re-initiate storage.

Urinary incontinence is a common health problem that seriously affects patients lives.<sup>12</sup> Although urinary incontinence is not life threatening, it can have enormous costs to individuals and the health service in terms of expenditure and impact on quality of life.<sup>13</sup> The costs to a patient's self-esteem, disruption of social relations, depression and despair or inestimable.<sup>14</sup> Epidemiological studies have demonstrated that urinary incontinence is a very common symptom, with a reported prevalence of any urinary incontinence (in those aged 40 and over) of 34% for women and 14% for men.<sup>13</sup> At least 16% of seniors living at home need assistance for urinary incontinence.<sup>15</sup> People with urinary incontinence report restrictions on physical activity,<sup>16,17</sup> stress, frustration, thoughts of suicide,<sup>18</sup> confusion, depression, anger, less well-being,<sup>19</sup> low self-esteem, social isolation, and poor sleep.<sup>20, 21</sup> Good evidence shows that initial management by primary care physicians is effective.<sup>12</sup> After basic assessment and tests, strategies such as bladder retraining, pelvic floor exercises, and lifestyle modifications, augmented by appropriate medications, can be successful.<sup>12</sup> However, the studies regarding urinary incontinence, loss of lordosis and chiropractic care are very scarce and thus there is a great need for further data regarding this correlation.

#### *Selected Review of Literature*

Literature reveals that chiropractors have documented several studies and case studies on the effectiveness of chiropractic adjustments and the resolution of enuresis.<sup>22</sup> A case study by McCormick<sup>23</sup> found improvements of a 10-year-old girl with a history of primary nocturnal enuresis. The patient's improvements were dramatic after the first week of care which may suggest that vertebral subluxations were in part responsible for the enuresis.<sup>23</sup> In addition, a study by Reed<sup>6</sup> suggested a trend toward the effectiveness of chiropractic treatment for nocturnal enuresis. Twenty-five percent of the treatment subjects experienced a 50% or greater reduction of wet nights under chiropractic care, while none of the control subjects experienced such reduction.<sup>6</sup>

Additional literature indicates that urinary incontinence is linked to low back pain.<sup>24</sup> Urinary bladder dysfunction is reported in patients with confirmed disc herniations without nerve root compressions.<sup>25</sup> One explanation is the production of a parasympathetic discharge stimulated by pain neuropeptides acting directly on the S2, S3, S4 nerve plexus, resulting in detrusor contraction.<sup>25</sup>

A study by Garnecki<sup>24</sup> found that the implementation of flexion-distraction in a 13-year-old boy with a history of urinary incontinence associated with spastic quadriplegia cerebral palsy (CP) experienced significant improvements. This result may indicate that vertebral subluxations in conjunction with CP were in part responsible for the urinary incontinence and that the specificity of the applied technique resulted in a positive outcome.<sup>24</sup>

A descriptive paper by Zhang<sup>26</sup> examined the spinal adjustment approach to treat elderly patients with urinary incontinence. This study examined 13 patients with urinary incontinence that were treated for 1-8 weeks with Pro-Adjuster technique without any other additional drug or physical therapy. They concluded that the urinary frequency at night was significantly reduced from 3.8 to 1.2 times a night. The adjustment given to the patients had no side effects and the results provide evidence that the Pro-Adjuster treatment might be used in chiropractic clinics for bladder control treatment.<sup>26</sup>

Lastly, another paper by Stude<sup>9</sup> examined a conservative approach for a patient with traumatically induced urinary incontinence after a fall to her coccyx. Manual adjusting procedures and soft tissue therapy were applied initially and were later modified to include an intra-rectal technique. The quantity of urine loss decreased slowly with the initial treatment approach but never resolved completely.<sup>9</sup> This case also demonstrated the correlation between dysfunction of the neuromuscular system and visceral symptoms.<sup>9</sup>

#### **Conclusion**

Chiropractors have a significant role to play in investigating and applying non-invasive, primary and rehabilitative strategies.<sup>14</sup> A specific Diversified chiropractic adjustment appeared to be beneficial for the reduction in severe low back pain and urinary urgency. However, these findings are not irrefutable due to the small sample size and lack of a control group. A large randomized and controlled study should be performed to explore the effect or correlation of subluxation, and loss of lordosis in patients with urinary urgency.

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## Figures 1 & 2 - A-P & Lateral Lumbar Radiographs

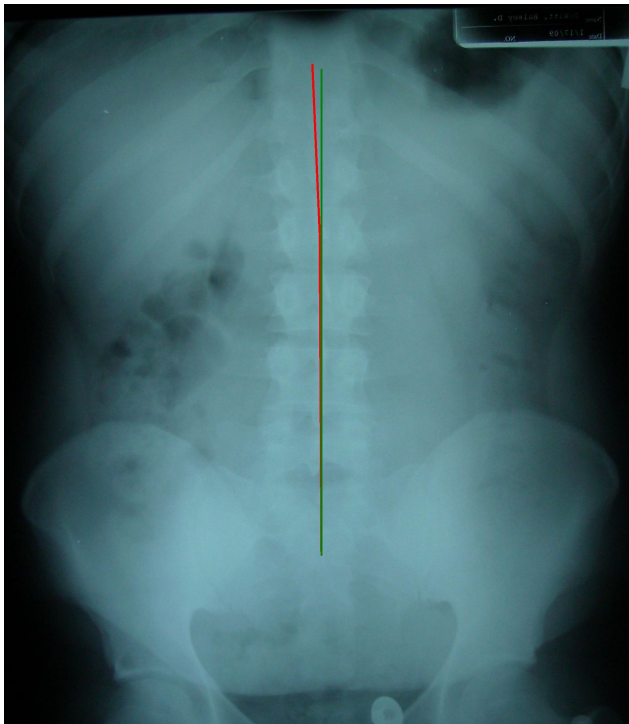


Figure 3 - Radiographic Biomechanical Analysis

### Lumbar Spinal Level

Segments Analyzed	RRA Normal Values	RRA Patient Values	Difference From Normal	Segmental Translations *
T12-L1	-1°	4.1°	510.0%	1.1 mm
L1-L2	-5°	-4.2°	16.0%	-1.6 mm
L2-L3	-6°	-2.9°	51.7%	0.0 mm
L3-L4	-9°	-12.0°	33.3%	-0.6 mm
L4-L5	-19°	-9.5°	50.0%	-0.9 mm
L5-S1	-33°	-33.8°	2.4%	-3.5 mm
Sacral Base Angle	40°	31.2°	22.0%	
Global Analysis	Normal Values	Patient Values	Difference From Normal	
ARA L1-L5	-40°	-28.5°	28.8%	
Translation T12-S1	0 mm	-7.3 mm	7.3 mm	
Pelvic Tilt	50°	Not Digitized	n/a	
Pelvic Incidence	56°	Not Digitized	n/a	
CBP PTPIA	67°	Not Digitized	n/a	

RRA = Relative Rotational Angle of Measurement

ARA = Absolute Rotational Angle of Measurement

\* Values in Red Exceed Established Normal