



# Chiropractic treatment of a pregnant patient with lumbar radiculopathy

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## Abstract

**Objective:** The purpose of this report is to describe chiropractic treatment of lower back and unilateral leg pain in a pregnant patient.

**Clinical Features:** A 26-year-old woman in her second trimester of pregnancy had severe pain in her lower back that radiated to her hips bilaterally and to her right leg. She reported tingling down her right lower leg to the dorsum of her foot. Although no diagnostic imaging was performed, her differential diagnoses included lumbalgia with associated radiculopathy.

**Intervention and Outcome:** Treatment consisted of manual traction in the side-lying position using a specialized chiropractic table and treatment technique (Cox flexion-distraction decompression) modified for pregnancy. Relief was noted after the first treatment, and complete resolution of her subjective and objective findings occurred after 8 visits.

**Conclusion:** When modified, this chiropractic technique appears to be an effective method for treating lower back pain with radiation to the leg in a pregnant patient who cannot lie prone.

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## Introduction

Up to 90% of pregnant women will experience back and pelvic pain at some point during the course of their

pregnancy,<sup>1-9</sup> and one third of these women will describe the pain as disabling or severe.<sup>1,2,5</sup> This condition may be due in part to the increased biomechanical stresses placed on the lumbopelvic region throughout pregnancy, as well as the widening of the pelvis in preparation for birth.<sup>10</sup>

Unfortunately, many pregnant women go without care for their pain. Skaggs et al<sup>9</sup> demonstrated that 85% of women surveyed perceived that they had not been offered treatment of their musculoskeletal disorders. In

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a 2004 study by Wang et al,<sup>11</sup> 32% of pregnant women with low back pain informed their prenatal care provider of their pain; but only 25% of the providers who were informed recommended any type of treatment. A further study by this group of investigators determined that 62% of surveyed pregnant women with low back pain would try complementary and alternative medicine for their back pain during pregnancy.<sup>12</sup> Chiropractic care appears to be a safe and viable option for pregnant women with back pain.<sup>13,14</sup>

The purpose of this case report is to describe the outcome of the application of a form of complementary and alternative medicine therapy, more specifically a modified chiropractic technique, to a pregnant patient with lower back pain and symptoms radiating down her lower extremity.

## Case report

A 26-year-old pregnant woman presented to a private chiropractic clinic with complaints of severe, unremitting pain in her lower back for approximately 1 month. The pain radiated to her buttocks and hips bilaterally and to her right lower leg. She had tingling down to the dorsum of her foot. She reported no precipitating incident; however, she stated the complaints were probably due to being 24 weeks pregnant. Although she reported a history of occasional lower back pain before this pregnancy, it typically resulted from improper or heavy lifting, was self-limiting, and did not radiate to her hip or extremity. Because of her pregnancy, no diagnostic imaging was performed nor medication prescribed by her primary care physician; and her obstetrician prescribed at-home stretches. However, the pain worsened progressively.

This normally athletic woman had guarded ambulation due to pain that she described as severe and debilitating. Initial visual analog scale<sup>15-17</sup> for pain was 59 out of 100; and her low back Oswestry Disability Index<sup>18-21</sup> was 55 out of 100, indicating severe disability.<sup>18</sup> She demonstrated a mild to moderate left antalgic stance with obvious distress when arising from a seated position. All lumbosacral ranges of motion were limited because of pain; extension elicited the most pain, causing radiation from her lower back to her lower right leg.

Results of the Bechterew test,<sup>22</sup> which is a seated nerve tension sign, and the supine straight leg raise at 45°<sup>23-25</sup> were positive on the right for increased pain in her lower back and leg with an increase in intensity of the tingling to the dorsum of her foot. The result of the Bechterew test performed to the left, or unaffected side,

was positive for right lower back and thigh pain. The result of the Kemp test<sup>22,25</sup> was positive on the right for lower back, thigh, and lower leg pain. Her lower extremity strength, sensation, and deep tendon reflexes were all within normal limits. Palpation revealed hypertonicity of bilateral lumbar erector spinae, gluteus maximus, piriformis, and quadratus lumborum muscles. Tenderness was noted specifically at the L4/5 and L5/S1 levels. No radiographs or advanced imaging was performed on this patient because of pregnancy.<sup>26</sup> Working diagnoses included lumbalgia, lumbar radiculopathy, and possible disk pathology.

Treatment consisted of Cox flexion-distraction decompression performed with the patient in the right lateral recumbent position facing the physician. This procedure is normally performed with the patient prone.<sup>27</sup> The flexion-distraction adjusting table was not modified; however, the position of the patient and the application of the technique by the physician were modified. Treatment was performed with the physician's cephalic hand contacting and tractioning, or distracting, the L4 spinous process in the cephalad direction and the caudal hand tractioning the base of the sacrum in the caudal direction. These contacts (Fig 1) were used to decompress the L4/5 and L5/S1 levels. From this neutral position (Fig 2), the caudal piece of the treatment table was laterally flexed toward the doctor (Fig 3), thus causing flexion of the desired spinal segments and a corresponding reduction in the patient's pain. The standard Cox protocol I for radicular pain<sup>27</sup> was performed consisting of 3 sets of 5 flexion motions, with each flexion motion taking approximately 4 seconds and with a 20-second break between sets. The treating physician was in constant control of the motions applied and remained in contact with the



**Fig 1.** Physician contacting the patient's spine above and below the spinal levels treated.



**Fig 2.** Adjusting table in neutral position.

patient. All procedures were always performed within the patient's comfort level. No other form of treatment was rendered.

Immediately after the first treatment, the patient reported feeling a reduction in the severity of pain. During the third visit, the electronic axial distraction feature on the treatment table was used to increase the distraction force. In effect, the caudal section was slightly separated from the thoracic section of the table, effectively accentuating the separation and decompression of the lumbar segments being treated. This was done to correlate with the point of maximum flexion of the caudal piece of the table. Clinically, the patient's progress and tolerance to the increased distractive force allowed for the addition of axial distraction in combination with the flexion motion.

Progressive relief was reported with each visit, and a complete reduction of radicular symptoms occurred after 4 treatments. Low back pain continued to be present when getting up from a seated position; however, the patient had returned to all activities of daily living. During the fourth visit, active exercises were prescribed in the form of pelvic tilts and pelvic lifts. During the seventh treatment, the VAS for pain was rated at 7 out of 100; and the Oswestry Disability Index was 13 out of 100. The patient reported only transient and mild low back pain precipitated by prolonged sitting or lying on one side.

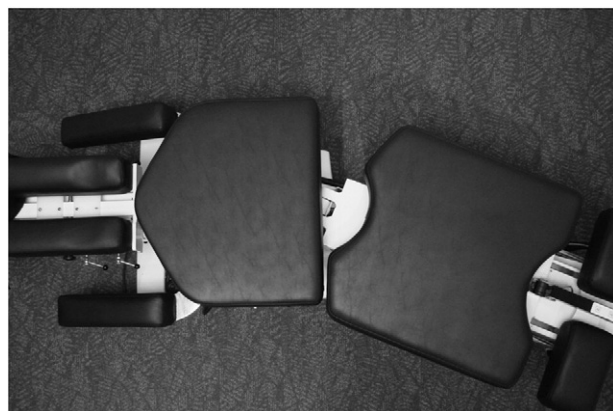
During the eighth visit, the patient reported a complete absence of pain with activities of daily living; and her examination was completely normal. Her Oswestry and VAS scores were 0 out of 100, representing no disability. She was treated a total of 8 times over a period of approximately 6 weeks. She was treated 3 times the first week and twice a week for the next 2 weeks. The treatment frequency was then decreased to one time the subsequent week, and her final visit occurred 2 weeks later. During that ninth and final visit, the patient was assessed for any

change in status and was given an additional treatment before being discharged from care. She was instructed to call as needed. At 1-year follow-up, she remained symptom-free.

## Discussion

The reported prevalence of lower back pain during pregnancy ranges from 50% to 68%.<sup>1-3</sup> Approximately 1 in 10 000 cases of low back pain in pregnant women can be attributed to a herniated lumbar disk.<sup>28</sup> Wang et al<sup>11</sup> reported that 34% of the women they studied presented with sciatica or a radicular component to their back pain. LaBan et al<sup>29,30</sup> demonstrated disk herniations in 7 pregnant women through the use of magnetic resonance imaging; however, most pregnant women will not receive any form of imaging for a definitive diagnosis because of concern of fetal injury.<sup>26</sup>

Conservative manual treatment of low back pain in the pregnant patient can be challenging with evidence lacking. A systematic review assessing physical therapy for prevention and treatment of pregnancy-related back and pelvic pain demonstrated that only 3 of 9 trials were found to be of high quality.<sup>31</sup> Of these trials, 2 demonstrated no difference in change in pain or function between exercise and control groups,<sup>32,33</sup> whereas the third study showed a reduction in sick leave in favor of water gymnastics compared with no treatment.<sup>34</sup> A more recent trial for pregnancy-related low back pain demonstrated a significant decrease in low back pain with exercise including lumbar extension movements and strengthening of abdominal, hamstring, iliopsoas, and paravertebral muscles.<sup>35</sup> This study also demonstrated a positive correlation between increased flexibility and low back pain, suggesting that when weight increases, some instability may occur in the sacroiliac joint. This correlation is in alignment with



**Fig 3.** Adjusting table with caudal piece laterally flexed.

Ritchie, who described the mechanical strain on the low back and sacroiliac joints during pregnancy due to the anterior shift in the center of gravity.<sup>10</sup>

Chiropractors commonly treat low back and sacroiliac joint dysfunction leading to low back pain. Wang et al reported that 37% of prenatal care providers recommended chiropractic care for patients with low back pain.<sup>11,12</sup> In a retrospective case series of 17 patients, Lisi<sup>36</sup> reports that 94% of the women had improvement in pain and no reported adverse effects after spinal manipulative treatment. However, no patients in this study presented with lumbar disk herniation.

Cox flexion-distraction decompression adjusting, a specific form of chiropractic treatment, has been shown to be an effective and safe technique for low back pain and radiculopathy.<sup>37-46</sup> In a randomized clinical trial comparing chiropractic treatment to physical therapy, patients with radiculopathy did significantly better with flexion-distraction treatment than with physical therapy.<sup>39,40,47</sup> In a cadaveric study, flexion-distraction in the lumbar spine was shown to create an increase in posterior disk height, thereby opening the vertebral canal and facet joints, reducing posterior disk stress and intradiscal pressure, and increasing the intervertebral foramen area by up to 28%, giving more space for the nerve or dorsal root ganglion.<sup>48-51</sup> The authors feel that the physiological effects from this technique may also be beneficial in counteracting the effects of pregnancy-related hyperlordosis.

The treating physician used flexion on this patient because it caused centralization of the patient's pain and provided the most relief. The application of the ranges of motion and force of distraction used with Cox technique relies heavily upon careful tolerance testing of the patient. Patients are only treated in the position and range(s) of motion that relieve symptoms, more specifically those that lead to centralization. The Cox technique consists of 2 broad protocols.<sup>27</sup> Protocol I is used on patients with symptoms that radiate below the knee (generally considered radicular). Protocol II is used when a radicular component is not present, and the diagnosis is primarily one involving the facets. Therefore, protocol I was performed on this patient because the treating physician felt clinically that a radicular component was present.

In this case, the examining physician felt the primary differential diagnosis most likely included a radicular component. Although there were no objective neurologic signs to support this, there were subjective and objective findings supporting the inclusion of this clinical diagnosis. Subjective complaints included

symptoms below the knee to the foot and a sensation of tingling, both of which support a radicular component, rather than scleratogenous pain.<sup>22,27,52,53</sup> Objectively, there was antalgia, evidence of ipsilateral and contralateral nerve root tension,<sup>22,25</sup> and orthopedic tests that increased her lower back and extremity symptoms. The authors understand that other etiologies for her symptoms are possible. Although the authors believe the treatment rendered was responsible for the resolution of her complaints, they realize that other factors may have been responsible and that a case study does not prove effectiveness.

## Conclusion

A significant number of pregnant women experience low back pain, and some are burdened with associated radiculopathy. There are no currently defined treatment strategies for these women; and therefore, many go untreated. This case report demonstrates a treatment for a pregnant woman with the clinical presentation of lower back pain and unilateral leg pain and tingling, which included the use of Cox flexion-distraction decompression. The authors hypothesize that flexion-distraction treatment may be beneficial for other women with similar case presentations, without compromising safety or comfort. Future randomized and controlled studies are needed to determine clinical efficacy in a larger population of pregnant women.

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