Chiropractic Management of a Symptomatic Patient Who Previously Had Surgery for Cauda Equina Syndrome

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Abstract

Objective: The purpose of this report is to describe the outcomes of chiropractic care for a patient after surgery for cauda equina syndrome.

Clinical Features: Following surgery for cauda equina syndrome caused by a herniated lumbar disc at L5/S1, a 28-year old woman presented for chiropractic care with an 18-month history of lower back pain. She had bilateral L5 and S1 dermatome pain and paraesthesia; saddle anesthesia; bilateral leg weakness in the L4, L5, and S1 myotomes; and urinary incontinence.

Intervention and Outcome: The patient received a variety of chiropractic manipulative techniques including cervical and thoracic spine manipulation, instrumented adjustments to the lumbar spine, and drop technique to the sacroiliac joints. Trigger point therapy was performed on the gluteus medius, quadratus lumborum, and piriformis muscles bilaterally. After 12 months, the patient reported a reduction in lower back and radicular leg pain, was able to reduce her use of opioid medications, and experienced improved lower limb function following chiropractic care.

Conclusion: The patient responded favorably to a course of chiropractic care for symptoms remaining after surgery for cauda equina syndrome. (J Chiropr Med 2021;00;1-4)

Key Indexing Terms: *Manipulation, Chiropractic; Spine; Cauda Equina Syndrome*

Introduction

Cauda equina syndrome (CES) is a potentially devastating condition caused by compression of the cauda equina nerve roots.[1] The most common cause is by a large lumbar disc herniation at L4/5 and L5/S1, but it may also be caused by trauma, neoplasm and spinal stenosis.[1] It is a rare complaint with an estimated prevalence of 0.6% in the low back pain population.[1] It can result in bowel, bladder and sexual dysfunction plus lower limb weakness, numbness, and pain.[2] CES occurs infrequently, but has serious potential morbidity.[2] CES is regarded as a neurosurgical emergency necessitating urgent surgical decompression to prevent adverse neurological problems.[3] It is generally considered that to prevent adverse neurological problems, patients should undergo emergency surgery within 48 hours of symptom onset.[4]

Presenting symptoms of CES are described as bilateral radiculopathy, difficulties in micturition, urgency of micturition, and subjective and/or objective loss of perineal sensation.[5] These symptoms are correlated with good outcomes at the time of decompressive surgery, with normal or socially normal bladder and bowel control post surgery.[5] However, other symptoms where the pathology is well established before surgery, such as impaired anal tone, urinary retention or incontinence, fecal incontinence, and perineal anesthesia, are often associated with poor, irreversible neurological deficit.[5] It is recommended that all patients presenting to the emergency department with suspected CES have magnetic resonance imaging (MRI) to avoid long-term neurological deficit.[5]

Recovery is described as slow postsurgery with follow-up studies illustrating how patients still experience neurological deficit.[5] Common symptoms postsurgery include micturition dysfunction, defecation dysfunction, sexual dysfunction, sciatica, and saddle anaesthesia.[6] Research shows that postoperative CES patients are still likely to have suffered from the neurological symptoms of CES and are likely to seek care for postoperative symptoms such as low back pain and radiculopathy.[7]

There is scant literature about chiropractic care given to a patient with postsurgical chronic CES.[8] Thus, it is difficult to know how to precede and manage a case post surgery both safely and effectively. Therefore, the purpose of this report is to describe the outcomes of chiropractic care for a patient after surgery for cauda equina syndrome.

Case Presentation

A 28-year-old female teacher presented to a chiropractic clinic for a consultation whether chiropractic care may help

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following surgery for CES. She was otherwise a healthy adult with no other known comorbidities.

Prior History

Her symptoms began 18 months previously where she experienced a sudden onset of right leg pain and numbness. She consulted her medical physician, who managed the complaint with naproxen with the patient reporting a diagnosis of sciatica. Magnetic resonance imaging 5 months later showed discal changes. She was referred for a lumbar epidural spinal injection that gave short-term relief for 4 weeks, with the symptoms quickly returning. She was then put on a waiting list to have a nerve block, which she did not receive.

Six months later she woke one night with "extreme" lower back and bilateral leg pain, urinary retention, and lack of sensation over the saddle area. She had been warned about the potential for CES, so she called the emergency services. She had to wait for 6 to 7 hours for the ambulance to arrive, followed by several hours in the emergency department. There was no explanation given as to why the patient had to wait 6 to 7 hours for the ambulance to arrive. In the United Kingdom, category 4 (nonurgent) calls have the longest time frame to attend to a patient. It is required that 90% of category 4 calls are responded to in 180 minutes.[9] She waited overnight at the hospital before MRI was taken. The MRI showed a L5/S1 disc herniation that was protruding into the thecal sac. She was then rushed into surgery for an L5/S1 microdiscectomy and a hemilaminectomy at L5/S1.

Following the surgery, she spent a week in recovery, experiencing a change from urinary retention before surgery to urinary incontinence post surgery. She was then referred to a specialist spinal injury unit. She spent 2 weeks at the spinal injury unit where she received physiotherapy designed to strengthen her ankles. During this period, she continued to experience urinary incontinence and was recommended to watch YouTube videos on how to self-catheterize.

During the recovery period at the spinal injury unit, she reported that she received no support from a qualified mental health practitioner and was eventually discharged after 2 weeks. Five months following the emergency surgery, she reported an episode of acute lower back pain and left leg numbness and weakness. Magnetic resonance imaging reportedly did not explain her symptoms, and she was referred for physiotherapy at her local outpatient department. She was prescribed medication of tramadol and oramorph to manage the pain.

After this latest episode, she decided to see whether chiropractic care might help. Her symptoms on presentation were 18 months of constant lower back pain; bilateral L5 and S1 dermatome pain and paraesthesia; saddle anesthesia; bilateral leg weakness in the L4, L5, and S1 myotomes; and urinary incontinence. Since the onset of her symptoms, she reported many changes to her activities of daily living. Her main restriction was the impact of the urinary incontinence. She reported many episodes of urinary incontinence, and reported that she relied upon the support of her family and work colleagues. Specifically, she explained that her employer was particularly supportive during her periods of work absence. In addition, she found travel difficult owing to the amount of medical equipment she needed for self-catheterization.

Chiropractic Evaluation and Care

During the chiropractic examination, postural analysis revealed anterior head carriage with a left cervical tilt, an increased thoracic kyphosis, and a reduced lumbar lordosis with a posterior pelvic tilt. Range-of-motion testing showed reduced flexion and extension in the lumbar spine, alongside a reduction in all cervical planes, especially rotation with only 60° bilaterally. Spinal palpation of the cervical spine showed reduced rotation on the right at C6/7 with a left lateral translation of the atlas. Thoracic spine assessment showed flexion restrictions at T3/4 and T5/6. Lumbopelvic exam showed restrictions into rotation bilaterally at L3/4 and L4/5 alongside an extension restriction of the left upper sacroiliac joint. Latent trigger points were noted in the gluteus medius, piriformis, and quadratus lumborum muscles. Neurological examination showed a reduced left biceps (1+) and brachioradialis (1+) reflex and a reduced left Achilles reflex (1+). Sensation to sharp touch was decreased over the left L1, L2, L5, and S1 dermatomes and over the right L1, L2, and S1 dermatomes. Muscle testing was notably weak bilaterally in the lower limb graded 4- throughout, with clonus noted bilaterally at the ankle.

The risks and benefits of care were discussed with the patient and a trial of care was recommended. We proposed an initial trial of care consisting of twice-weekly adjustments (ie, spinal manipulation) over a 4-week period, followed by a review. The patient attended a total of 40 sessions over a 12-month period at an initial treatment frequency of twice per week for 4 weeks followed by once a week for 20 weeks. This treatment frequency then reduced to once a fortnight for 7 weeks and eventually once every 3 weeks.

Each visit she received chiropractic adjustments using high-velocity, low-amplitude thrusts. The patient received chiropractic adjustments to the first cervical vertebra by using the Toggle Recoil technique.[10] The chiropractic adjustments to the lower cervical spine were delivered in a supine position.[11] Although the patient was not experiencing neck pain at the time of consultation, she did report recurrent mild neck pain, neck ache and stiffness, but without a history of neck trauma. Within the literature, this is classed as "subclinical neck pain."[12] Recurrent subclinical neck pain may be associated with neural plastic changes in

sensory processing and sensorimotor integration,[13] hence why we chose to evaluate and adjust the patient's cervical spine. The thoracic spine was adjusted with the patient lying in a prone position.[14]

For the lumbar spine, the Activator adjusting instrument was used. The Activator adjusting instrument produces a mechanically assisted high-speed, low-amplitude thrust to specific vertebrae.[15] Owing to the uncertainty of the anatomy at L5, it was decided to avoid this particular segment. The laminectomy at this level would suggest there would not be facet joint at this level to adjust with spinal manipulation. The lumbar spine was adjusted with the patient in the prone position.[16] The pelvic drop piece was used to adjust the sacroiliac joint.[17]

Myofascial trigger points (MTrP) were identified over the gluteus medius, piriformis, and quadratus lumborum muscles with the patient lying prone. MTrP are hyperirritable spots located within taut bands of skeletal muscle fibers.[18] Ischemic compression consisting of the application of sustained digital pressure was applied to each trigger point for about 20 seconds. Pressure was gradually increased as the sensitivity of the MTrP waned and the tension in the taut band faded.[19]

After 4 weeks of care she self-reported a 30% reduction in lower back and leg pain. Neurological examination showed that all reflexes were 2+ bilaterally. Previously the left biceps, brachioradialis, and Achilles reflexes were 1+. Sensation testing to sharp touch was reduced only at S1 bilaterally. Muscle testing had improved at every level in the lower limb to 4+, except for the extensor hallicus longus that was still 4- bilaterally. During this period, she has no adverse reactions to care.

After 8 weeks of weekly appointments, the reflexes were recorded as 2+ bilaterally in the upper and lower limb, and the lower limb myotomes were now graded 5 bilaterally. The clonus that was initially recorded at the ankle had resolved. Over the next few months, she experienced several recurrences of lower back pain that resolved after chiropractic adjustments. Her appointments were eventually spaced out to fortnightly appointments. On 1 occasion, 8 months after starting care she experienced a recurrence of lower back and leg pain. She reported that it was the first episode since starting care that she needed to take tramadol and oramorph. Regarding the reduction in reliance on the opioid medication, she reported that she slowly reduced her daily medication with guidance from her medical physician.

After 12 months, she reported a resolution of the lower back pain and radicular symptoms over the bilateral L5 and S1 dermatomes. Objectively, lower limb reflexes were recorded as 2+ bilaterally and myotomes as 5/5 bilaterally. Sensation was still reduced to sharp touch over the left S1 dermatome. There was no clonus at the ankle. Unfortunately, there was no change to the urinary incontinence and the patient still needed to self-catheterize. Currently, she is attending the practice every 3 weeks. She is able to attend personal training sessions at her local gym and has also started Pilates classes. The patient gave permission for the information in this case report to be published.

Discussion

Postoperative CES patients may still have pain from the neurological symptoms of CES.[6] Research suggests that optimum outcome for surgery is between 24 and 48 hours of onset of symptoms.[4] With the patient having to wait around that time frame for surgery, the appearance of "white flag" symptoms of urinary retention and perineal anaesthesia[5] suggests a possible link to symptom chronicity.

Only 1 case report has been published on the chiropractic benefits postsurgery.[8] The article reported that the patient received a typical lateral recumbent spinal manipulation. In this case, the patient had received a hemi-laminectomy at the L5/S1. Owing to the surgery, it was thought that the anatomy would have varied so much that this might have not been a safe and adequate technique. As this surgery is common for CES, it is relevant to describe treatment and management of a case that is likely to be replicable in the future.

By regularly monitoring the patient's neurology in this case, it was possible to measure an improvement beyond lower back and radicular pain. The improvements in the reflex testing after 4 weeks of care and the normalization of the myotome testing after 8 weeks of care highlights that the improvement in this case is not just a subjective response, but an objective one. The subjective nature of pain means that measuring any outcome in a chiropractic setting may be difficult to achieve. The patient reported that she rarely uses tramadol and oramorph since starting care, whereas before care this was needed daily.

In addition, the normalization of the clonus at the ankle has previously been reported in the literature,[20] but not in the previous chiropractic case report.[8] This may warrant further investigation into upper motor neuron changes.

Limitations

The limitations of this study are that by nature of a case report it details the reaction of only 1 participant. Using a valid outcome tool such as the Bournemouth Questionnaire would have helped to quantify the improvement in pain. The rarity of this as a presenting complaint to a chiropractic clinic nonetheless makes it relevant and useful for possible further study. Owing to the rarity of this condition, it may be difficult to carry out research such as a case series. Working alongside a neurological department with access to MRI may help to objectively reveal a change in the lumbar spine and thecal sac.

Conclusion

The patient reported improvements included pain reduction and neurological improvement. The case demonstrates that this patient was able to become more functional and to reduce her reliance on opiate medication after a course of chiropractic care.

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No funding sources or conflicts of interest were reported for this study.

Contributorship Information

Concept development (provided idea for the research): J.C.
Design (planned the methods to generate the results): J.C.
Supervision (provided oversight, responsible for organization and implementation, writing of the manuscript): J.C.
Data collection/processing (responsible for experiments, patient management, organization, or reporting data): J.C.
Analysis/interpretation (responsible for statistical analysis, evaluation, and presentation of the results): J.C.
Literature search (performed the literature search): J.C.
Writing (responsible for writing a substantive part of the manuscript): J.C.
Critical review (revised manuscript for intellectual content, this does not relate to spelling and grammar checking): J.C.

Practical Applications

- Following surgery for cauda equina syndrome, a 28-year old woman presented for chiropractic care.
- The patient received a variety of chiropractic manipulative and soft tissue techniques.
- After 12 months, the patient reported a reduction in lower back and radicular leg pain and was able to reduce her use of opioid medications.

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