Severe Post-Surgical Stenosis Successfully Treated With Cox® Distraction Manipulation

submitted by
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Brief Clinical History:

This 59 year old white male was seen in this office with chief complaints of lumbar spine and bilateral leg pain, numbness, and weakness to the feet. He had a long history of back and leg pain that began in his 30's. He stated that in his occupation he had to stand, and walk on concrete for many hours. His symptoms progressed to severe back and sciatic pain. He had attempted many conservative treatments prior to surgery to include physical therapy, chiropractic, back exercises, swimming, massage, acupuncture, traction, three epidurals and oral steroids. None were of substantial benefit. Because of worsening symptoms, in 2005 he had a L4 spinal laminectomy. The surgery was a success and gave him relief of the low back and leg pain. Unfortunately, the pain in the back and legs returned in 2009-10 and he sought another neurosurgical consult. The neurosurgeon told him that the surgery "would not be a good idea". He was told to live with the pain as well as he could. He did so until a severe bout of bilateral leg and spine pain lasting for one week caused him to follow his sons' suggestion to consult with me.

Examination:

The patient presented in pain with a 15 degree flexed antalgia posture while standing. Sitting and recumbent postures were generally the most comfortable. The deep tendon reflexes were 1/2 at the patella and Achilles tendons. Muscle strengths were globally +4/5 in the lower extremities. Dermatomal evaluation of the lower extremities showed patchy hypesthesia in the L3- S1 dermatomes with the L5 most affected. Valsalva sign was negative. Pain on palpation was evident from L3 through S1 bilaterally in the paraspinal musculature and caudally into the gluteals, sciatic notch, and especially tender at the popliteal fossa and abductor muscles. Range of motion of the lumbar spine was as follows: extension 10° degrees with pain and bilateral radicular symptoms to the feet. Flexion 60° with lumbosacral discomfort described as aching and stiff. Lateral flexion 20° bilaterally with the same symptoms. Rotation is limited to 15° bilaterally with no pain. Bilateral SLR's were positive for mild radicular pain at 40° with very tight hamstrings. Kemp's sign was positive for radicular and low back pain bilaterally. Sacroiliac testing was negative. The patient was unable to squat to stand without balance and arm assist for strength. This patient could perform Rhomberg's test and heel/toe walk however balance was difficult.

X-ray evaluation (2010, *5 years post op*)

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

MRI Imaging 11-10-2014

Figure 6 (9 mm disc prolapse)

Figure 7 (both anterior and posterior disc herniation)

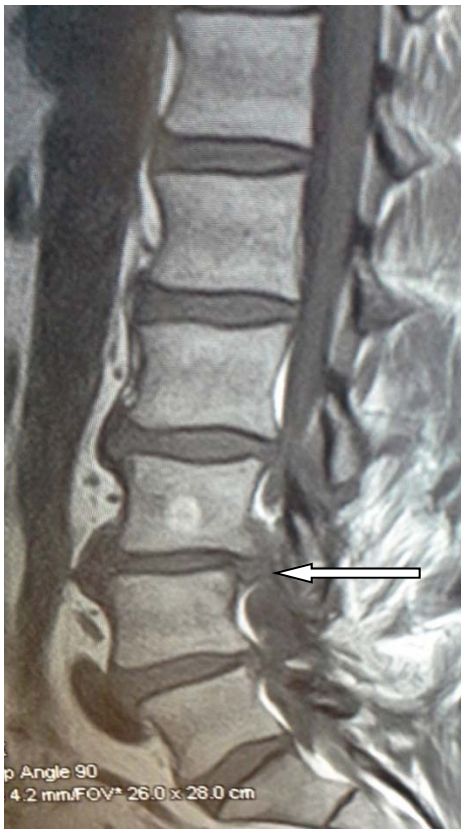

Figure 8 (retrolisthesis exacerbating stenosis)

Figure 9

Figure 10 (severe stenosis)

Figure 11 (severe stenosis)

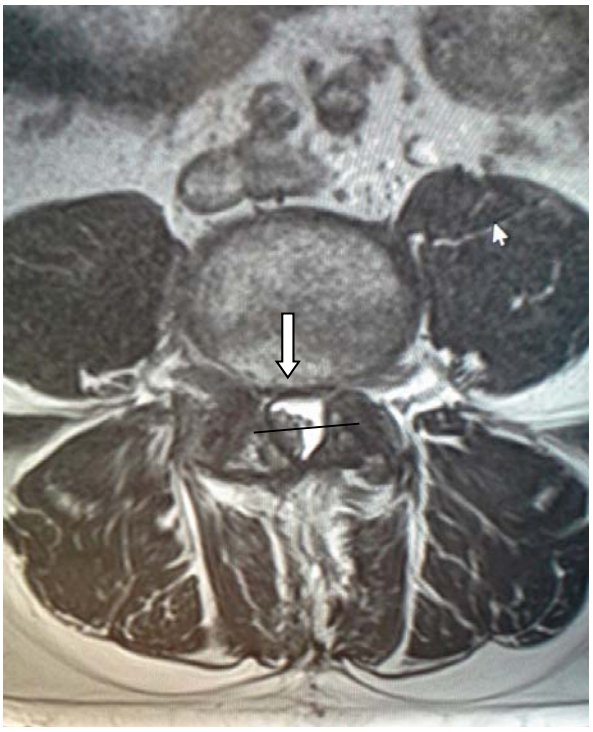

Figure 12 (positive sedimentation sign)

Figure 13

Figure 14

Figure 15 (positive sedimentation sign)

Figure 16 (surgical changes)

Figure 17 (Trefoil canal)

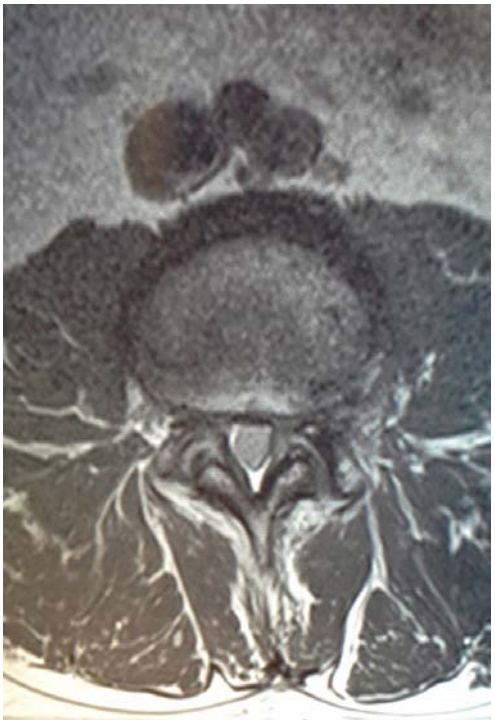

Figure 18 (severe stenosis)

MRI Report 11-13-14:

1. **Laminectomy change at L4.**
2. **Degenerative change with a disc bulge measuring 3 mm and bilateral facet arthropathy at L2-3 causing moderate dural compression and minimal neural foraminal stenosis.**
3. **Grade I retrolisthesis of L3 on L4 measuring 6 mm, bilateral facet arthropathy and left subarticular disc extrusion extending cranially for 8 mm causing moderate dural compression with bilateral lateral recess narrowing contacting the traversing L4 nerves, severe left neural foraminal stenosis and moderate right neural foraminal stenosis at L3-4.**
4. **Degenerative change with a disc bulge measuring 5 mm and a superimposed right central disc extrusion extending caudally for 9 mm at L4-5 causing severe dural compression, moderate right neural foraminal stenosis and mild left neural foraminal stenosis.**
5. **There is no tumefactive scar formation or arachnoiditis.**

Treatment and Outcome:

The patient was given EMS with hot pack to the lumbar spine and buttocks on 11-04-2014. Due to the seriousness of his symptoms and the potential for iatrogenic response no manipulation was given and a referral for MRI was provided. The patient returned with the MRI results on 11-12-2014. We reviewed the images together and a full report of findings was given to include the potential for a worsening of the condition with care. I described the cauda equina syndrome symptoms and explained the pros and cons of several alternative therapies, both conservative and surgical. The patient was further told that the goal of initial treatment was to achieve 50% overall improvement within 4 weeks of care. He stated he understood and felt he could afford twice weekly visits and wished to begin care. He was treated with Cox F/D protocol 1, bi-phasic electrical muscle stimulation, hot pack and given complete home care instructions to include the Cox exercises, Discat Plus, anti-inflammatory nutricuticals etc.. He was treated for 4 weeks with twice a week visits. A re-exam was then done with the following findings: The patient no longer had an antalgic posture while standing. The deep tendon reflexes were unchanged. Muscle strengths were unchanged at +4/5 in the lower extremities. Dermatomal evaluation of the lower extremities showed less profound hypesthesia, with the L5 still the most affected. Pain on palpation was reduced in the paraspinal musculature caudally into the gluteals, sciatic notch, popleteal fossa and abductor muscles. Range of motion of the lumbar spine was as follows: extension 30° degrees with low back pain only. Flexion 80°. Lateral flexion 20° and rotation 25° bilaterally with no pain. Bilateral SLR's were negative for radicular pain yet the tight hamstrings were painful when challenged muscularly. Kemp's sign was positive for low back pain bilaterally. The patient was asked to stretch the hamstrings more diligently.

On this first re-exam he stated that he was 50% improved. In fact he said he felt that much improved after the third treatment. He was then reduced in treatment frequency and treated

with Cox Protocol II once per week for 6 weeks. This was followed by re-exam with essentially the same findings as the first. The patient stated that he was then 85% overall improved. His legs were pain free most of the time and the low back was more manageable. At this point he asked about inversion therapy at home. I suggested he use it at a limited 40 degree beyond horizontal plane for short durations (5-minutes) with caution. He is currently continuing to be seen for care and will taper down care to maintenance treatment. He has been laid off work for quite a while and received a call in Jan. 2015 to return to work. He has decided that can return to work now that the pain is under control. I have suggested he be fitted for custom made orthotics to reduce the irritation to the spine, especially as he goes back into the work force standing on concrete all day.

Discussion:

For interest's sake I have included my finding of a positive sedimentation sign on MRI axial images (Figures 12 and 15 with explanation below).

This article was published in Dr. Cox's Dec. 2014 PEARLS:
THE SEDIMENTATION SIGN HAS HIGH SENSITIVITY AND SPECIFICITY FOR DIAGNOSING SEVERE LUMBAR SPINAL STENOSIS. ITS PERFORMANCE IN DIAGNOSING MODERATE AND MILD SPINAL STENOSIS, HOWEVER, HAS YET TO BE CORROBORATED IN PROPERLY DESIGNED STUDIES
Zhang L, Chen R, Xie P, Zhang W, Yang Y, Rong L: Diagnostic Value Of The Nerve Root Sedimentation Sign, A Radiological Sign Using Magnetic Resonance Imaging, For Detecting Lumbar Spinal Stenosis: A Meta-Analysis. Skeletal Radiol 2014 [Epub Ahead Of Print].

The following explanation of sedimentation sign is from The Egyptian Journal of Radiology and Nuclear Medicine Volume 45, Issue 1, March 2014, Pages 203–209:
A positive sedimentation sign was defined as the absence of nerve root sedimentation in at least 1 axial MRI scan, at a level above or below, disregarding the location of the scan within the level and its proximity to the maximal stenosis (Fig. 1). It is not uncommon for a sign to refer to the absence of a finding, e.g., the positive Thompson test in which the absence of plantar flexion helps to confirm the diagnosis of an Achilles tendon rupture. As a rule, nerve roots normally sediment, due to gravity, to the dorsal part of the dural sac, which was defined as negative sedimentation sign. The only exception from this is the 2 nerve roots leaving the dural sac one segmental level below the stenosis. If there are nerve roots in the ventral part of the dural sac except for the ones exiting the dural sac, the sedimentation sign is positive. By this method, no intermediate or indeterminate results of the sedimentation sign are to be expected. The sedimentation sign was measured at a level above or below the maximal stenosis because, at the level of the stenosis, nerve roots lie tightly packed in the dural sac and, therefore, cannot be identified and judged adequately.

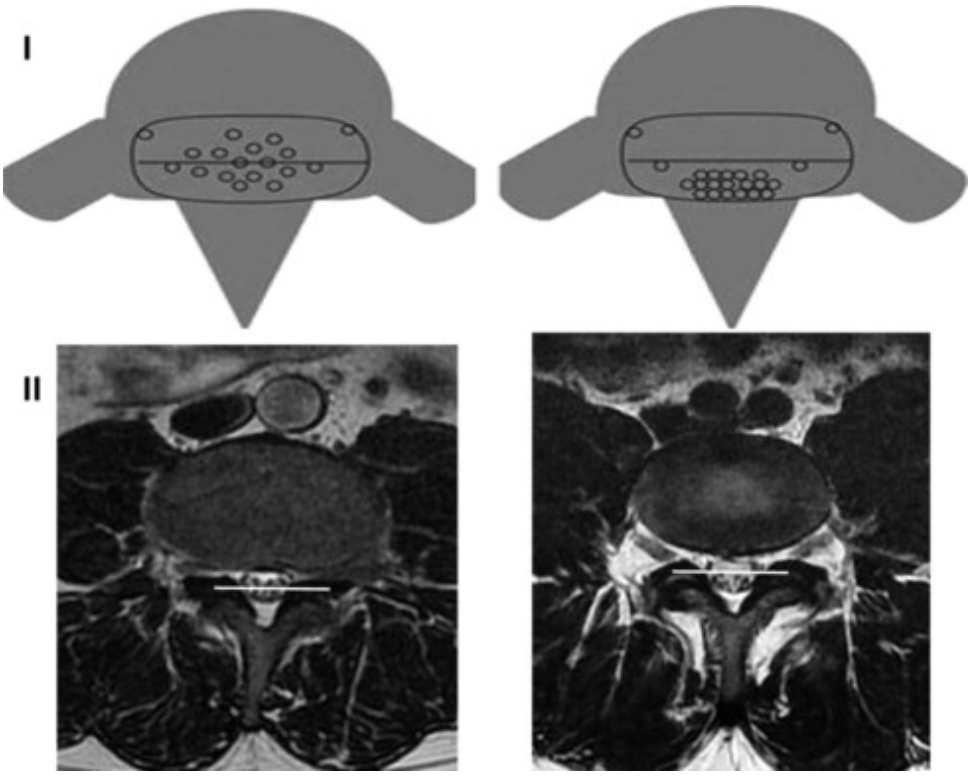

Fig. 1.
(I) Illustrative figure about sedimentation sign (quoted from [11]). (II) Comparative MRI: (A) positive sedimentation sign (B) negative sedimentation sign.

This case held several positive findings and results. First and foremost was the rapidity with which the patient responded to the Cox® treatment in spite of the severity of the patient history, clinical findings and diagnostic imaging. Fifty percent improvement in three visits was astounding. Further, the sedimentation sign was a nice confirmation of severe stenosis. For this author, this case highlights the valuable tools we possess as chiropractors to alleviate even the most challenging stenosis cases, and help our patients regain their quality of life.