

## **Cox® Technic Flexion Distraction and Decompression Treatment of L3-L4 Degenerative Spondylolisthesis and Spinal Stenosis and a Transitional L5 Vertebral Segment (Bertolotti's Syndrome)**

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Lee J. Hazen, D.C.

32475 Clinton Keith Road, Ste. 108

Wildomar CA 92595-8664

chirohazen@gmail.com

### **Brief Clinical History:**

A 57 year old white non-insulin dependent diabetic female presented to the office for diagnosis and treatment of persistent low back and bilateral thigh pain and weakness. She has been a patient for the past five years, receiving treatment intermittently when pain was severe. The last event was successfully treated six months ago. She described her symptoms as lower back and thigh deep aching, occasionally sharp and shooting. It had been getting worse over the past several weeks, particularly with walking, standing in one spot, or sitting too long at work. She stated this return of pain was insidious in onset, as was usually the case. This time the pain was down both legs. She felt her pain was getting worse with each recurrent episode, and fearing disability, she was seen concomitantly by her medical doctor. He prescribed muscle relaxants, anti-inflammatory and pain reducers. Plain film and MRI of the lumbar spine were recommended.

### **Examination:**

This obese patient presents in pain with cane assisted gait and using the walls of the clinic for balance. Sit to stand difficulty was noted. Short term sitting or recumbent were the most comfortable positions for the patient. Pain on palpation was noted from the upper lumbar area bilaterally into the L5-S1 area and along the L4-S1 myotomes. She exhibits allodynia (exaggerated pain response) in these areas. Dermatomal evaluation of the lower extremities demonstrated hypesthesia of the left L4 and L5 dermatomes to the knee, and right L5 dermatome to the mid-calf. The deep tendon reflexes were 2/2 at the achilles bilaterally and 1/2 at the patella (with Jendrassik) bilaterally, and absent at the L5. The medial hamstring (semitendinosus and semimembranosus muscles) represents an L5 reflex). The muscle strengths were 4+/5 globally in the lower extremities, and the patient is able to heel/toe walk three steps with increased pain and much fatigue. Valsalva sign is negative. Range of motion of the lumbar spine is measured at 60 degrees flexion with increased low back pulling discomfort, lateral flexion bilaterally 25 degrees with back pain only. Rotation was 20 degrees bilaterally without pain, and extension at 10 degrees with shooting lumbosacral pain that caused the patient to buckle at the knees. Recumbent/seated/ well-leg straight leg raise testing were bilaterally negative. Seated SLR with coupled Linder's, Bechterew's and Valsalva were negative, but irritating to the weakened muscle groups. Sacroiliac testing was normal. The hamstrings were bilaterally tight at 40 degrees. Rhomberg's testing is positive for difficulty maintaining balance. Lower extremity position sense is normal,

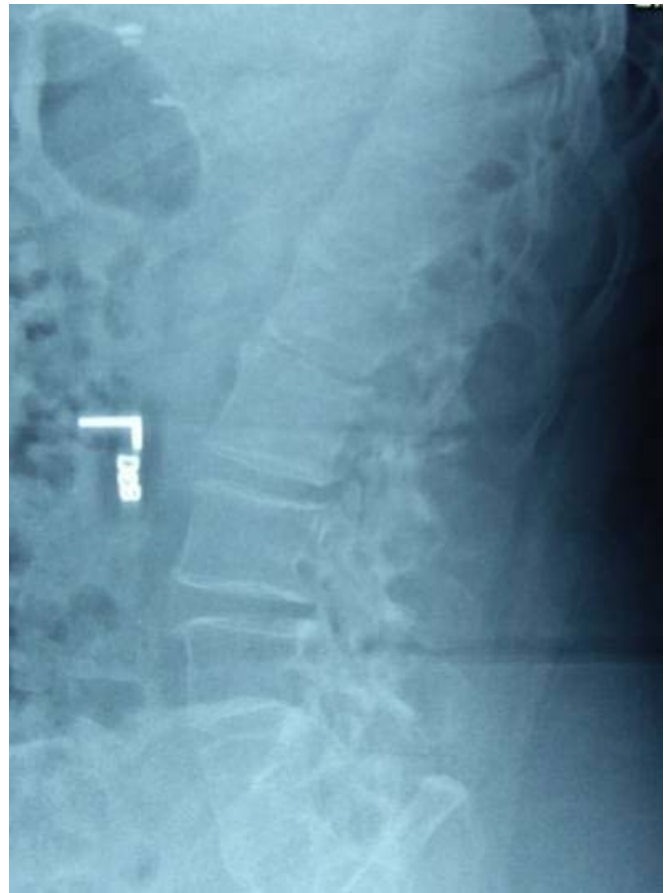
whereas some pallesthesia is noted in the great toes equally. Temperature and tactile discrimination testing is normal.

### **X-ray Evaluation:**

The AP/LAT lumbar spine xray reveals bilateral spatulization of the L5 transverse processes representing L5 sacralization, and an L3 10% grade I anterior spondylolisthesis (degenerative). Degenerative disc disease, spondylolysis and postsurgical cholecystectomy clips are also noted. Leg length inequality cannot be measured due to the recumbent film, potential spasm and lack of femur head visualization. (Fig.1 and 2)



**Figure 1**



**Figure 2**

### **MRI Imaging:**

Lumbar exam without contrast was read with the following findings:

L2-3 - There is moderate facet disease. 1mm disc bulge. Trace bilateral neural foraminal narrowing, left greater than right. No spinal stenosis. See Figure 4.

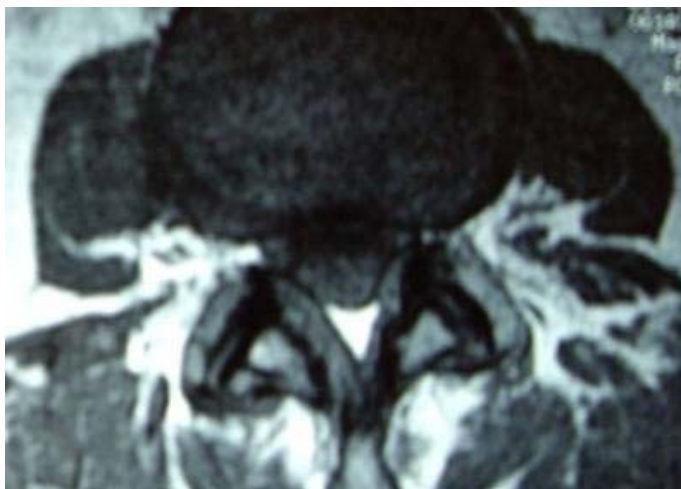
L3-4 - There is severe facet disease with a 1 mm anterolisthesis of L3 on L4. There is also a small disc bulge. There is ligamentum flavum hypertrophy. There is mild bilateral neural foraminal narrowing. The transverse dimension of the spinal canal is narrowed secondary to facet disease and ligamentum flavum hypertrophy. The AP dimension is 10-11 mm. See Figures 3 and 6.

L4-5 - There is severe facet disease. There is a 1mm disc bulge. There is trace bilateral neural foraminal narrowing, without spinal stenosis. See Figure 5.

L5-S1 - There is no disc herniation, foraminal narrowing or spinal stenosis. There is sacralization of the L5 vertebral body.



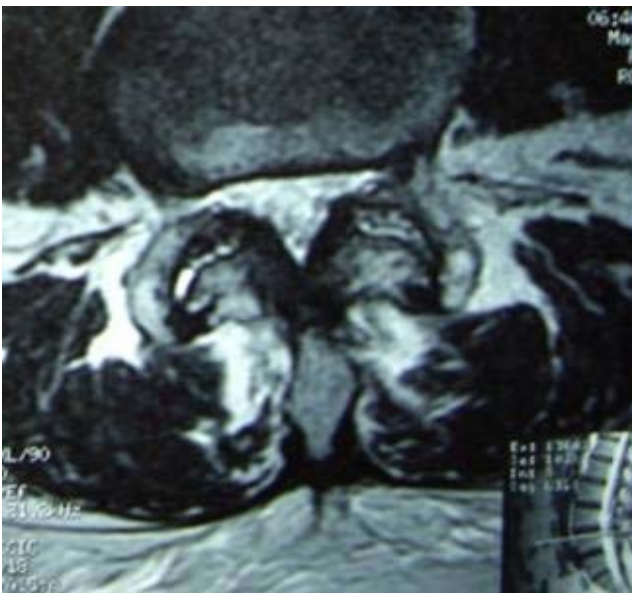
**Figure 3: Note the degenerative spondylolisthesis of L3 on L4 with ligamentum flavum hypertrophy producing spinal stenosis (yellow arrow). Also note the rudimentary L5-S1 disc space due to the transitional formation of the L5 vertebra.**



**Figure 4: Axial L2-L3 level showing stenosis of the vertebral canal and foramen, left predominately.**



**Figure 5: L4-L5 axial image**



**Figure 6: L3-L4 axial image showing ligamentum flavum hypertrophy, facet arthrosis resulting in vertebral canal and foraminal stenosis bilaterally, more marked on the left side.**

### **Impression:**

1. L3-4 Degenerative spondylolisthesis with ligamentum flavum hypertrophy causing advanced spinal stenosis.
2. L2-L3 and L4-L5 neural foraminal narrowing.
3. Bertolotti's syndrome: This is the combined transitional L5 segment and superior level spinal stenosis due to reactive degenerative spondylolisthesis, ligamentum flavum hypertrophy and facet arthrosis at the L3-L4 level.

## **Treatment Goals:**

The initial treatment goals were to relieve the DRG nerve root compression and reduce spinal stenosis with Cox® Technic Flexion Distraction and Decompression spinal manipulation, physiotherapy including mild exercise to substantially reduce the patient's pain and weakness. This patient was told that if she had not improved 50% within 4-6 weeks she would need to have a referral for more invasive, less conservative options such as injections or surgical opinion. Interestingly, she has seen the neurosurgeon in the past week, and he has suggested continued care here or with other physiotherapy because he feels her potential surgical intervention would be extensive and questionable as to the outcome.

## **Treatment Methods:**

This patient was treated with Cox® Technic Flexion Distraction Manipulation (Protocol I). Goading of the acupressure points was not tolerated well due to allodynia, but this patient tolerated light effleurage. Physiotherapy was delivered using 15 minutes of low interferential current to the lumbosacral spine and B49 areas with heat, followed with 15 minutes tetanizing current with ice. This patient was given a lumbosacral support to be worn 24 hours per day for the first 1-3 weeks. She was prescribed a glucosamine/chondroitin sulfate (Discat Plus). Cox® lumbar spine exercise program (exercises 1-3) was started immediately.

Treatment began on December 21, 2010. She received two treatments back to back, and subsequently seen once a week (due entirely to work constraints), for 5 weeks for a total of 7 treatments to date.

## **Treatment Outcomes:**

After seven treatments with Cox® Technic Flexion Distraction and Decompression treatment and associated protocols this patient has 50% relief of the lumbar spine and bilateral lower extremity pain and 30% reduction of the weakness and balance. She states that driving to and from work, coupled with sitting at the computer for hours exacerbates the condition.

## **Discussion:**

This case presents with a history of chronicity and a treatment history for periodic exacerbation/remission cycles since 2007. She would be seen for several (3-12) treatments and be relieved of the pain in the spine and lower extremity, first the right sciatic distribution, then the left, then both. This is a classic presentation of progressive spinal degenerative change and its neuropathic sequella. An early degenerative grade I spondylolisthesis is now emerging. These mid-lumbar conditions are more likely to occur in spines that present with transitional segmentation, as the mechanical torsional effects are translated cephalad. Note the diabetes in the history and its association in the literature with degenerative spondylolisthesis. As a side note, this patient has recent thoracic spine films that *hint of early DISH* which fits the DM history as well. (Figures 7 & 8)

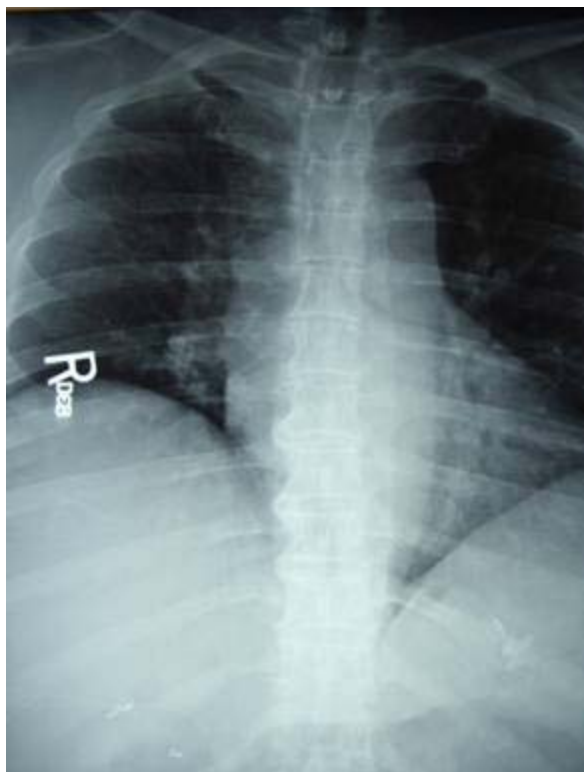


Figure 7



Figure 8



Figure 9

*Use of The Cox7 Table's cervical headpiece for Cox® Technic Protocol II which starts with long-y-axis and applies range-of-motion to each individual segment of the spine.*

The thoracic and cervical spines are treated with the cervical headpiece Protocol II with great relief. (Figure 9) It should be noted that gentle long Y axis traction of the cervical spine gives the patient a lumbosacral pulling, pleasant, relieving sensation. It can be postulated that the treatment effectively releases the cervico-occipital meningeal tension, that can help relieve the lumbar stenosis.

As these conditions are progressive in nature, there are fewer mechanical/manual techniques that can safely and effectively address them, particularly when, as in this case, they are overlapping. This case is an example of an ever increasing patient profile, with years of successful treatment with Cox Technic, and an ever-increasing stenosis. Although the condition worsens with time, she continues to have relief when treated with Cox® Technic Flexion Distraction.

My hope is that she will become compliant with steady spinal care, rather than her past history of waiting until she is in severe pain. Her lumbar dorsal root ganglion are less forgiving than her chiropractor.