

**Spinal Canal Stenosis, Facet Arthropathy and Disc Prolapse
Resulting in Foot Drop and Responding to
Cox® Flexion Distraction Decompression**

*submitted by Ilan Sommer DC
Toorak, Victoria, Australia
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A 64-year-old white married female, presented with a complaint of left leg pain and weakness. The symptoms persisted for 3 weeks after gardening and lifting a heavy paving stone. The patient rated the symptoms on a visual analog scale as 7 on a scale between one (no pain) and ten (worst pain). The patient reported not having these or similar symptoms in the past.

Activities that aggravated the symptoms are walking and turning in bed, and the symptoms are relieved by shifting weight to the other leg. The patient is not taking any medications.

General Review of Systems: recent weight loss or weight gain - negative; Gastrointestinal: nausea, vomiting, or diarrhea - negative and Genitourinary: frequency or urgency - negative. Other past medical history is non contributory.

The patient visited her Medical Doctor and was referred for xrays of the lumbar spine. She was treated by her Medical Doctor with laser therapy 14 times. She reported limited to no help.

The patient contacted our clinic and based on her initial examination and severe leg weakness, her general practitioner (GP) was contacted over the phone. The patient was sent over to his clinic with a request for a CT of the lumbar spine on the day. (In Australia, a CT ordered by the GP is covered by Medicare with no out of pocket expense to the patient).

CT dated January 11, 2010, has shown **Spinal Canal Stenosis** at **L4-5** and a **left sided disc prolapse with impingement of the left L4 root**.

PHYSICAL EXAM:

Inspection

On inspection the following was noted: abnormal gait with a limp and slight right flexion antalgic posture.

Range of Motion:

Lumbar flexion - (normal is 60 degrees), today reduced with pain
Lumbar extension - (normal is 25 degrees), today reduced with pain
Lumbar left lateral flexion - (normal 25 degrees), today reduced with pain
Lumbar right lateral flexion - (normal 25 degrees), today reduced with pain
Lumbar left rotation - (normal is 25), today reduced with pain
Lumbar right rotation - (normal is 25), today reduced with pain

Palpation

On palpation muscle spasm was noted in the lumbar region. Trigger Point Sensitivity was also noted in the lumbosacral region. Joint dysfunction was found in the lumbosacral region at the sacroiliac and palpatory tenderness was detected in the lumbosacral region .

ORTHOPAEDIC EXAMINATION

Valsalva Manoeuvre: Valsalva Manoeuvre is performed by directing the patient to bear down as if straining at stool by way of forcible exhalation effort against the closed glottis thereby increasing intrathoracic pressure. Valsalva's Manoeuvre indicates a space occupying lesion such as a disc injury. **TEST RESULTS: negative**

Bechterew's Test: The patient extends the legs individually and then together. The patient's inability to extend the legs individually indicates a possible lumbar or sacral lesion. The patient's inability to extend the legs together indicates a possible lumbar disc injury. **TEST RESULTS: positive.**

Kemp's Test: The patient leans back obliquely and is placed in axial traction by the examiner. Localized low back pain would indicate a lumbar sprain/ strain. Radicular pain would indicate a nerve root compression. **TEST RESULTS: Positive on the left.**

The Percussion Test: This test has the patient seated or standing and bent over facing the floor. The examiner, standing behind the patient, taps the spinous processes within and outside the main area of complaint, first moving superiorly, then moving inferiorly. This is then repeated on the paraspinal musculature in the same manner. The test is considered positive when the percussion reproduces or aggravates the pain of the main complaint. **TEST RESULTS: negative.**

Lasegue's Straight Leg Raising Test: The sciatic leg is straight and passively raised by the examiner. Localized low back pain would indicate a lumbar or sacral sprain/strain. Radicular pain would indicate a lumbar facet or disc syndrome involving the nerve root. Localized pain in the leg would indicate tight hamstrings. **TEST RESULTS: Positive at 60 degrees on the left**

Cox Sign: This test is performed with the patient supine. The examiner performs straight leg raising, and if the patient's pelvis rises from the table instead of the hip being passively flexed, then the sign is present. **TEST RESULTS: Positive on the left.**

Erichsen's Sign: This test is done with the patient prone. The examiner, with the hands over the dorsum of the ilia, bilaterally thrusts toward the midline. If this produces pain over the sacroiliac area, the test is positive. **TEST RESULTS: positive**

Patrick's Fabere Test: The examiner flexes, abducts, externally rotates and extends the thigh. If the patient experiences pain this would indicate a possible hip, sacroiliac or groin disorder. **TEST RESULTS: negative**

Yeoman's Test: The examiner passively flexes the knee to 90 degrees, then extends the thigh to end range. If the patient experiences pain low back or sacroiliac pain this would indicate a possible sacroiliac sprain/strain, lumbar facet syndrome, or lumbosacral disorder. **TEST RESULTS: positive**

Neurological Examination

Deep Tendon Reflexes:

Patellar (L2\L4): **left: Abnormal (Reduced)**; right: normal.

Achilles (S1\S2): **left: Abnormal (reduced)**; right: normal.

Heels walk: Unable to preform on the left

Toes walking test: well performed.

Dermatome evaluation revealed no altered sensation to light touch in the lower extremity.

Myotomes

Grading Scale

5 - Normal- complete range of motion against gravity, with full resistance.

4 - Good - complete range of motion against gravity, with some resistance.

3 - Fair - complete range of motion against gravity.

2 - Poor - complete range of motion with gravity eliminated.

1 -Trace - evidence of slight contractility. No joint motion.

0 - Zero - no evidence of contractility.

Ankle dorsiflexion (L4-L5): 5/5 (normal).

Ankle plantarflexion (S1-S2): 5/5 (normal).

Extensor Hallicus Longus: 4/5 (abnormal weaker on the left)

Pain Sensation Testing

Lumbosacral hyperalgesia (increased sensitivity to pain) was noted.

Diagnosis

Lumbar disc disorder with radiculopathy

Lumbar Radiculitis

Lumbar Retrolisthesis

Lumbar Spinal Canal Stenosis

Sacroiliac joint dysfunction

IMAGING



Figure 1 January 4, 2010

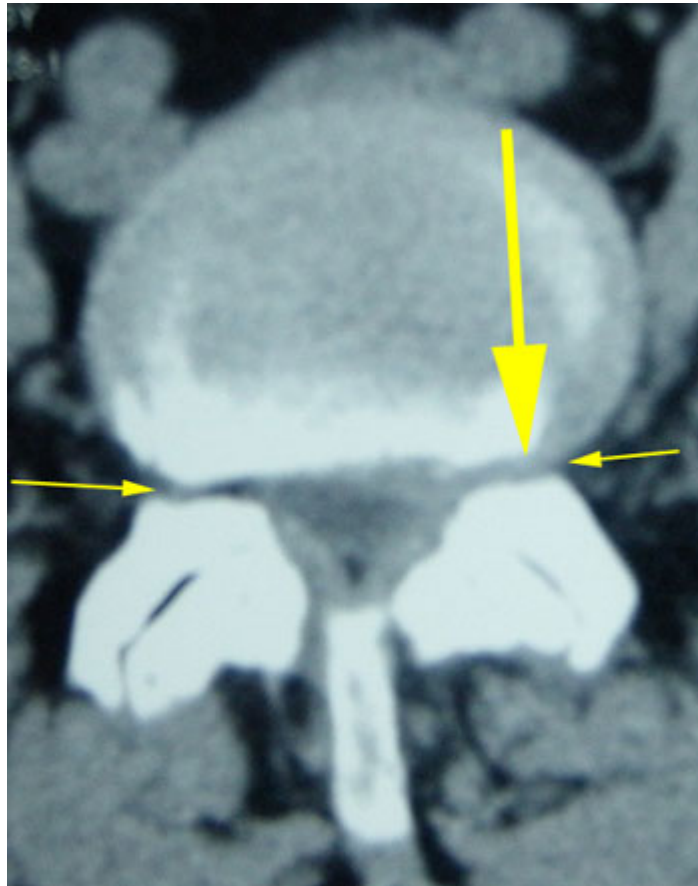


Figure 2 January 11, 2010

Figure 1 - X-ray Lumbosacral Spine report

Clinical Notes: Lower back pain with left sciatica

Findings: There is approximately 2mm anterolisthesis of L4 on L5 [See arrow.] presumably related to facet joint degenerative arthropathy. There is multilevel disc space narrowing involving the lower four-most lumbar disc spaces with associated mild degenerative changes.

There is degenerate arthropathy of moderate severity involved the lower three-most levels of the lumbar spine facet joints.

No fracture identified. Sacroiliac joints relatively well preserved for age.

Conclusion: Multilevel disc and facet joint degenerate arthropathy. The exact cause for left sided sciatica is not determined, however in the setting of multi level spondylosis, cross-sectional imaging may be of further value to assess for nerve root impingement.

Figure 2 - CT Lumbosacral Spine

The lumbar spinal canal was examined from L1/2 to the lumbosacral junction.

Changes of spondylosis were minimal but degenerative changes were prominent in the apophyseal joints of the lower lumbar spine and lumbosacral junction.

At L4/5, there is evidence of spinal canal stenosis with loss of perineural fat in the lateral recesses [See small arrows.] and a small left-sided disc prolapse [See large arrow.] impinging upon the left lateral recess and left L4 nerve root.

At the remaining interlumbar levels and at the lumbosacral junction, the spinal canal and lateral recesses were adequate and there was no evidence of any further disc prolapse or nerve impingement and good preservation of perineural fat in the lateral recesses.

Comment: Spinal canal stenosis at L4/5 and a small left-sided disc prolapse with impingement of the left L4 nerve root.

TREATMENT

The patient was treated with Cox® Flexion Distraction Decompression based on the following:

1. Increases the intervertebral disc height to remove tension on the anular fibers and spinal nerve by increasing foraminal area and increasing circulation.
2. Intradiscal pressure within the nucleus pulposus drops from a positive of 25 mm Hg to a negative centripetal force within the nucleus pulposus of -39 to 192 mm Hg.
3. The area of the intervertebral foramen (osseoligamentous canal) increases up to 28%
4. Physiological range of motion is restored to the zygapophyseal joints via mobilization under distraction.

Cox® treatment protocol was administered. The patient was braced with a lumbar belt. Ice was administered both in the clinic and at home. The patient was given at home instruction sheet, and she started taking some over the counter anti-inflammatory medications.

Within three and a half weeks over, 50% improvement of the condition was achieved both subjectively and objectively.

Three and a half months later, the patient was released from active care asymptomatic walking on heels and toes normally and back to work.

Conclusion

This case represents the necessity of proper diagnostic evaluation even when the patient arrives from another physician.

The request for more diagnostic imaging was necessary in order to achieve the proper diagnosis and the course of treatment.

A great relationship was built with the general practitioner and trust based on the diagnosis and outcome was achieved.

References

1- Cox JM: Low Back Pain: Mechanism, Diagnosis, Treatment, 6th edition, Baltimore; Lippincott Williams & Wilkins, 1990, Chapter 8, Appendix B.

- *Reduction of intradiscal pressure to as low as -192 mm Hg
- *Increase in intervertebral disc height

2- Gudavalli MR: Estimation of dimensional changes in the lumbar intervertebral foramen of lumbar spine during flexion distraction procedure. Proceedings of the 1994 International Conference on Spinal Manipulation, June 10-11, 1994, Palm Springs, CA, pp 81.

- *Increase in intervertebral foramen size by 28%

3-Gudavalli MR, Cox JM, Baker JA, Cramer GD, Patwardhan AG: Intervertebral Disc Pressure Changes During a Chiropractic Procedure. Proceedings of Bioengineering Conference, Phoenix, 1997

- *Significant decrease in intradiscal pressure during the flexion-distraction procedure for low back pain

4-Gudavalli MR, Cox JM, Baker JA, Cramer GD, Patwardhan AG: Intervertebral Disc Pressure Changes During The Flexion-Distraction Procedure for Low Back Pain, Proceedings of the International Society for the Study of the Lumbar Spine, Singapore 1997

- *Decrease in intradiscal pressures may provide opportunity for reduction in the disc bulge during the flexion-distraction procedure

5-Gudavalli R et al: A randomized clinical trial and subgroup analysis to compare flexion-distraction with active exercise for low back pain. European Spine Journal (online—December 2005).

- *Flexion–distraction group had significantly greater relief from pain than those allocated to the exercise program.
- *Patients with radiculopathy (back pain with pain into the legs) did significantly better with flexion distraction.
- *Chronic pain patients, with moderate to severe symptoms, improved most with the flexion–distraction protocol.
- *Patients with recurrent pain and moderate to severe symptoms improved most with the exercise program.

Respectively submitted,

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