



Disc Extrusion Resorbed Under Cox® Technic Flexion Distraction and Decompression System

presented by
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HISTORY

Mrs. P.O.
DOB: 01/12/1958

Mrs. P.O. presented with a complaints of low back pain with severe radiation to the right leg with pain, numbness and tingling. The symptoms persisted for 5 months. Mrs. P.O. rated the symptoms on a visual analog scale as 9-10/10. Mrs. P.O. reported not having these or similar symptoms in the past.

Movement in general aggravated the symptoms and the symptoms were slightly relieved by medication.

The patient saw her usual GP (general practitioner) who referred her for a CT scan. She was then seen by another GP who referred her to a Neurosurgeon at the Royal Melbourne Hospital who referred her for an MRI and recommended surgery based on the findings.

Mrs. P.O. was put on a waiting list for surgery the Royal Melbourne Hospital. Mrs. P.O. arrived to the clinic and reported that she would like to avoid surgery. Mrs. P.O. did not have any prior treatments for this condition.

The patient was wearing a "pain patch" on her arm as she did not respond to regular pain killers. She did not take any other medication on a regular basis. Her 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.

PHYSICAL EXAM: (14/02/2012)

Inspection

On inspection the following was noted: abnormal guarded gait with a limp and abnormal stance with left antalgic lean.

Range of Motion:

Severe reduction in all directions with minimal movement
Lumbar flexion - (normal is 60 degrees), today reduced with pain
Lumbar extension - (normal is 25 degrees), today reduced with pain
Lumbar left lat. flexion - (normal 25 degrees), today reduced with pain

Lumbar right lat. 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 severe 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 their legs individually and then together. The patient's inability to extend their legs individually indicates a possible lumbar or sacral lesion. The patient's inability to extend their 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**

The Percussion Test -This test has the patient seated or standing and bent over facing the floor. The examiner, standing behind the patient, tap 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. Localised 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. Localised pain in the leg would indicate tight hamstrings. TEST RESULTS: **positive at 30 degrees on the right**

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 right**

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: normal; right: normal.

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

Heels and 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 reduced on the right)

Pain Sensation Testing

Lumbosacral hyperalgesia (increased sensitivity to pain) was noted.

IMAGING

The following diagnostic imaging studies were done for this condition:

- MRI on 20/11/2011- Focal right subarticular disc extrusion compressing the transverse L5 nerve root. See report (Figure 1)
- CT on 23/11/2011 - L4-5 significant disc protrusion compressing on the L5 nerve root. (Figure 2)

Private Imaging	
 The Royal Melbourne Hospital Private Imaging	The Royal Melbourne Hospital Private Medical Centre, The Royal Melbourne Hospital, Parkville, 3090 Tel: 9342 7038 Fax: 9342 7482
RADIOLOGY REPORT	
Patient:	DOB: 01/12/1958
Copy for:	Unit No:
	PCR No: 87767557
	Request # / Series #: 2011R0167716 / 1
	Examined: 19/12/2011
	Med Unit: PCR
Ref Locn: PCR	
Ref by:	Date of original report: 20/12/2011
MRI Spine 1/2 Contig. Reg. C- S- Sciatica	
MRI LUMBAR SPINE [1/2/2011]	
Sagittal and axial sequences:	
Conus medullaris is unremarkable. Minor loss of disc height at L5-S1, with lateral osteophytes without overt is impingement.	
At L4-L5, disc height preserved, but a broad central posterior disc extrusion is present, only causing minor canal stenosis. There is however a focal right subarticular disc extrusion (5 mm) which focally compresses the traversing right L5 nerve root. This is best observed on the axial and sagittal T2 weighted images.	
Facet joints do not show any significant degenerative change. No paravertebral mass is seen. Vertebral body height and marrow signal are normal.	

Figure 1

MAIN OFFICE

Radiology Imaging Solutions
X-ray Ultrasound Dental Imaging CT

Examination Date: Wednesday, 23 November 2011

Patient Name: [REDACTED]
D.O.B.: [REDACTED]
Patient Address: [REDACTED]

Referring Practitioner: [REDACTED]

CONFIDENTIAL MEDICAL IMAGING REPORT

CT LUMBAR SPINE

Clinical Notes:
R sciatika.

Report:
L5 has been designated as the lower most mobile lumbar segment. The L5/S1 disc is markedly narrowed with prominent marginal spondylotic lipping. No vertebral compression or lysis defect is seen elsewhere. Mild spondylotic lipping is observed at other lumbar levels. There is no suggestion of sacroiliitis. Mild facet osteoarthritis is present on the right at L5/S1.

Soft tissue windows show a reasonably large central and right paracentral dorsal disc protrusion at L4/5 indenting sac and compromising the right lateral recess, almost certainly the exiting right L5 nerve root. No disc protrusion or stenosis is identified at other levels.

Conclusion:
Significant disc protrusion at L4/5. Marked disc degeneration at L5/S1.

Figure 2

Figures 3-5 are images from the CT performed 11-23-2011 of the L4-L5 disc.

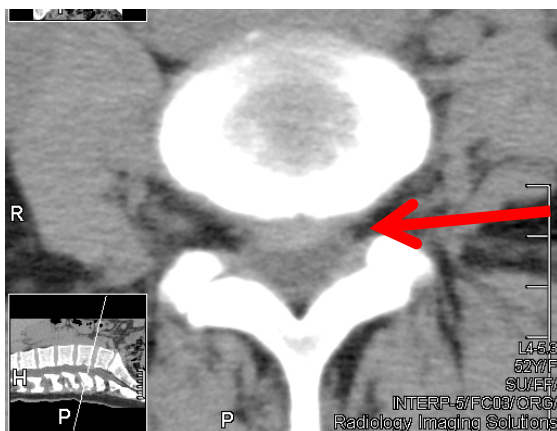


Figure 3. Note the right paracentral L4-L5 disc herniation that does contact the thecal sac.

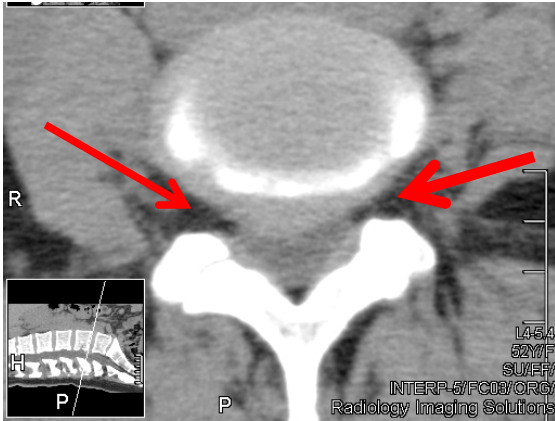


Figure 4. Note the right sided L4-L5 disc protrusion Contacts the thecal sac and narrows the right osseoligamentous canal. The right L5 nerve root is probably compressed.

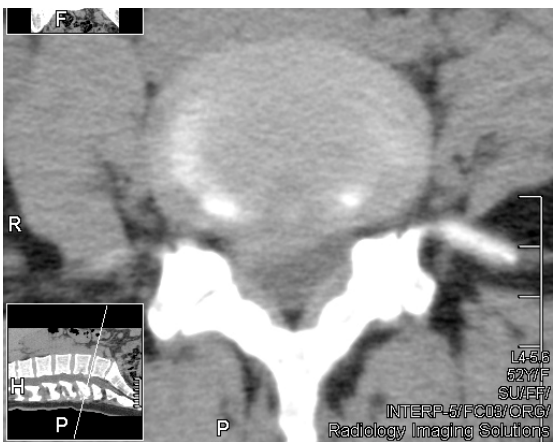


Figure 5. Note the extension of the right sided L4-L5 disc herniation into the osseoligamentous canal and lateral recess to compress the L5 nerve root complex. Also note the L5-S1 disc degeneration facet degeneration bilaterally at L4-5.

DIAGNOSIS

Lumbar Disc Disorder with radiculopathy
Lumbar Radiculitis
Sacroiliac Joint Dysfunction

TREATMENT PLAN

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

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

Cox® treatment Protocol I (5 four-second decompression sets) was administered initially to 50% relief of pain. Then, Protocol II (all ranges of motion flexion, lateral flexion, circumduction) was administered. The patient was braced with a lumbar belt. Ice was administered both in the clinic and at home. The patient was given a home instruction sheet, and she started taking some over the counter anti-inflammatory medication.

TREATMENT OUTCOME

The patient was monitored closely both subjectively and objectively until she became asymptomatic and her orthopedic and neurological symptoms cleared. From February 14, 2012, to February 13, 2013, Mrs. P.O. had 66 patient visits. She reported 0/10 on the VAS scale. She achieved a Straight Leg Raising Test of 90 degrees bilaterally.

Ten months after the original CT and MR in 2011, the patient was sent for a new MRI (2012) which was described as a normal study: "The previously reported right side L4/5 disc extrusion has largely resorbed." (See Figure 6.)



Figure 6. Note that on the sagittal T2 weighted MRI image there is no disc herniation at L4-5 observed. This is noted in the MRI report in Figure 7.

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Private Imaging
The Royal Melbourne Hospital
Private Medical Centre, The Royal Melbourne Hospital, Parkville, 3050
Tel: 9342 7038 Fax: 9342 7482

RADIOLOGY REPORT

Patient: [Redacted] DOB: 01/12/1958
Unit No:
PCR No: 87767557
Request # / Series #: 2012R0147472 / 2
Examined: 31/10/2012
Med Unit: PCR
Ref Locn: PCR
Date of original report: 31/10/2012

Copy for: **2012**

Ref by:

MRI Spine 1/2 Contig. Reg. C- S- Sciatica
MRI lumbar spine: [7/10/2012]

Technique:
Sagittal and axial T1 and T2 weighted images have been obtained through the lumbar spine.

Findings:
Comparison made to previous MR dated 19/12/2011.
The previously reported right sided L4/5 disc extrusion has largely resorbed, but there is some residual broad based disc bulging with a central annular fissure. Although contrast enhanced scans were not performed, there is a suggestion of some residual minor scarring around the traversing right L5 nerve root, but the nerve root is no longer compressed or displaced.
Spinal canal elsewhere is capacious throughout. Exit foramina are clear. Conus is at the T12/L1 level and is normal. Bone marrow and disc signal is normal.

Conclusion:
Normal examination.

accepted

Figure 7

CONCLUSION

Despite rare occasions, when she works too hard and reports a minimal feeling sensation in her lateral calf, this patient found relief of her back pain and MRI reports document that the disc herniation resorbed after 12 months and 66 visits of treatment with Cox® Technic.

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-Distracton 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-distracton procedure

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

*Flexion–distracton 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 distracton.

*Chronic pain patients, with moderate to severe symptoms, improved most with the flexion–distracton protocol.

*Patients with recurrent pain and moderate to severe symptoms improved most with the exercise program.