Pre and Post-surgical MRI Study of Lumbar Herniated Nucleus Pulposus at L4-L5 & L5-S1 Following A Non-Traumatic Small Endoscopic Approach at L5-S1 only and the Application of Cox® Decompression Manipulation

from
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* IMAGES ARE AT THE END OF THE REPORT

Background: The patient is a 35 year-old Caucasian male who presented for an evaluation on September 2, 2003. This gentleman reported that he began experiencing a deep ache in his left posterior thigh (worse while sitting) in April of 2003, which possibly occurred as a result of "sneezing", which had progressed to pain into his left calf and appeared to have been rapidly worsening.

Previous Care: The patient reported that he had undergone several physical therapy and six acupuncture sessions with no relief. At the time of the initial visit the patient was experiencing important amount of pain and was taking 1200mg of Ibuprofen daily and Vicodin as needed.

Examination Findings: (Sept. 2, 2003) Upon physical examination the patient's inspection revealed a slight antalgic lean to the right as well as a decreased girth on the left calf compared to the right (atrophy). The lumbar paraspinal muscles appeared to be hypertonic resulting in a significantly reduced and guarded active lumbar range of motion especially upon forward flexion, which resulted in an increment in the left posterior thigh and calf discomfort. The left calf revealed a decreased muscle tone.

The seated Straight Leg Raise Test upon left leg extension (Bechterew's) was reduced with significant left posterior thigh and lumbar spine discomfort. When the right leg was extended the patient complained of left posterior thigh pain.

Even though the Toe and Heel-Walk were unremarkable, a decrease in the left knee flexion strength was noted at "4"/5.

The examination of the sensory modalities and deep tendon reflexes of the left lower extremity showed a slight numb area on the lateral aspect of the foot and a decreased Achilles tendon reflex, but Clonus and Babinski's signs were not apparent.

Pre-treatment Imaging Findings: An MRI performed on the lumbar spine on 6/14/2003 showed a 4mm disc diffuse disc bulge with bilateral narrowing of the neuroforamina at the L4-L5 level and a 9mm left paracentral focal disc protrusion at L5-S1. At L5-S1, the annulus appeared to be ruptured allowing free disc material to enter the spinal canal.

Procedure and Subsequent Course of Care: A non-traumatic small endoscopic procedure was performed on October 2, 2003 at the L5-S1 level by Neurosurgeon Dr. David Ditsworth and Orthopedic Surgeon Dr. Luis Lombardi. This procedure preserves the spinal support structures and provides a focal, precise treatment of the lumbar disc herniation.

A post-surgical Modified Oswestry completed by the patient on 10/7/2003 showed a Disability index score of 48%.

The patient presented for post-endoscopic care with Dr. Gangemi on November 6, 2003. Upon physical examination the following positive findings were noted:

The patient displayed an antalgic lean to the right with hypertonicity and tenderness to palpation of the paraspinal muscles. His active lumbar flexion was guarded and reduced with complaints of lower back “tightness” and mild posterior left thigh discomfort. The left calf girth was slightly decreased. There was a decreased left knee flexion at “4”/5. Supine SLR on the left was reduced to 40 degrees.

Further evaluation took place with a MedX Lumbar Extension unit showing pain free lumbar flexion reduced to 27 degrees (“normal” being 72), 38% of expected normal active lumbar flexion.

Treatment Protocol

Therapies applied to the patient included Cox® Flexion-Distraction Decompression Manipulation, specifically, Protocol 1 with a modified contact point at the T-12/L-1 level; this remained consistent throughout the course of care. Other therapies included PNF stretching of the lower extremities (to patient tolerance), the application of MedX Lumbar Extensor strengthening exercises and a home exercise and stretching program. Additionally, the patient was tolerance tested on each visit and the ankle straps were applied.

During November of 2003 the patient attended six in-office sessions; during December of 2003 four sessions; two sessions in February 2004; two sessions in March of 2004 and subsequently one session in April, May, June and July.

Results

During the course of care the following progression was noted:

Oswestry Disability Index: 10/7/2003 (5 days post surgical procedure): 48%; 12/30/2003: 20% which represents an improvement of 42% in the score.

Active Pain-Free Lumbar Flexion (as measured by the MedX Lumbar Extension device) improved from 27 degrees of flexion (11/6/03) to 51 degrees (12/15/03). Subsequent improvements were also measured on 2/6/04 at 72 degrees (100% of expected normal ROM and 167% improvement over base ROM). On 7/14/2004 the ROM remained at 72 degrees.

Measured Lumbar Extensor strength improved by 22.38% over the course of care (11/6/2003 through 7/14/2004). However, these improvements are based upon common test points between these two measurements, and since the range of test angles was limited initially (11/6/03) to four test points through 27 degrees (0 degrees of flexion, 12 degrees, 24 degrees, and 27 degrees), it lacked a comparable point of reference.

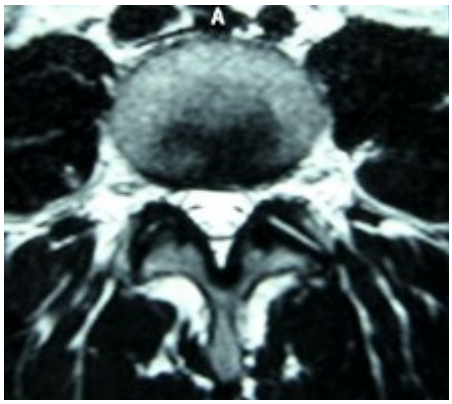
Subjectively the patient reported a significant decrease in pain and a restoration of functional capacity that allowed him to resume his active lifestyle. On October 12, 2004 the patient presented for medical follow-up and had no discomfort expressing that the surgical procedure and subsequent care were “successful.”

Post-Treatment Imaging Study: A subsequent MRI dated October 2, 2004 showed a reduction of the posterior left paracentral disc protrusion at the L4/L5 level at 2mm and a complete resolution of the posterior left paracentral disc herniation at the L5-S1 level.

Conclusion

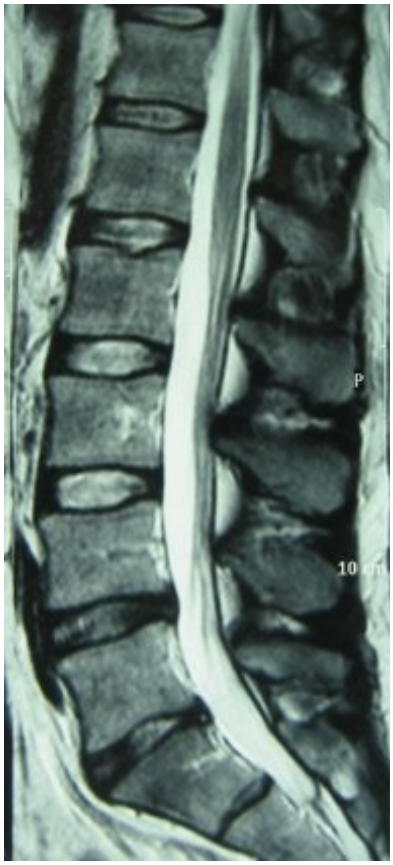
It is our opinion that this highly efficient surgical approach that provides a focal non-disruptive treatment of disc herniations can be coupled with a sound manual therapy approach (Cox® Decompression manipulation) and isolated exercise technique (MedX) to yield a successful outcome. Furthermore, it could be concluded that the reduction of the disc herniation size located at the L4/L5 level is due to a reduction of the local stress at L4/L5 achieved by the surgical procedure on the level below along with the aforementioned manual therapy approach.

L4-L5 2003

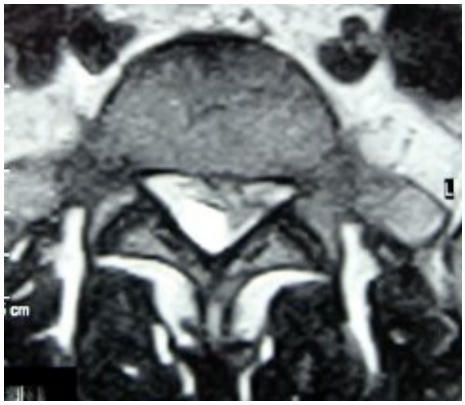


L4-L5 2004

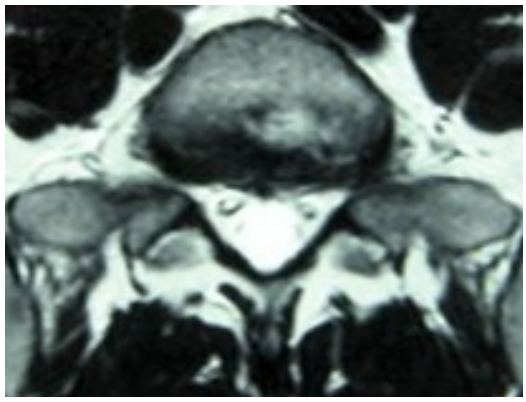
Sagittal 2003



Sagittal 2004



L5-S1 2003



L5-S1 2004