



# Multiple Disc Degeneration, Free Fragment and Synovial Cyst resulting in Motor and Reflex Changes treated with Cox® Technic

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### Discussion:

The disc, when not properly contained, can lead to pain, typically extending to the extremities, such as one or both legs. This pain results from the nucleus pulposus, located at the center of the disc, escaping through tears in the annulus fibrosus, the outer layers of the disc. Consequently, the nucleus pulposus ends up in the spinal canal where it should not be, as the annulus fibrosus no longer contains it.

The disc that is not properly contained can cause irritation to the spinal nerves either through a chemical reaction or pressure. Typically, the fluid of the nucleus pulposus has never been in the spinal canal, but when it enters, it triggers a chemical reaction around the nerves, leading to pain in the pelvis and leg. The mere presence of the nucleus pulposus' fluid in the canal results in chemical irritation to the spinal nerves. If enough of it escapes into the canal, its mass puts pressure on the spinal nerves, causing pain in the leg.

Non-contained discs, also known as free fragments or extrusions, can be effectively managed through conservative measures. Non-contained lumbar disc herniations tend to experience better non-surgical relief compared to contained discs. Here are key points supporting this:

1. The size reduction is more significant for larger non-contained discs.<sup>1</sup>
2. Research indicates the spontaneous resorption of intradural disc material through macrophages and angiogenesis within the disc.<sup>2</sup>
3. Interestingly, free fragments (non-contained discs) exhibit more absorption and size reduction compared to protruding (contained) discs.<sup>3</sup>
4. Movement of the non-contained fragment leads to an even greater reduction in size.<sup>4</sup>
5. Phagocytes and cytokines play a role in facilitating the resorption of non-contained discs.<sup>5</sup>

These findings highlight the efficacy of non-surgical approaches in managing non-contained disc issues.

While synovial cysts rarely lead to spinal stenosis, they can induce pain, especially in individuals over the age of 65. These cysts are often located near the L4-5 facet joint, resulting in pain that radiates to the lower back, buttocks, and possibly the leg. Similar to a disc herniation, the cyst impacts the spinal canal, causing canal stenosis and putting pressure on the nerve roots.

**Cox® Technic** has been shown to benefit those patients with disc herniations and those with a synovial cyst.<sup>6,7,8</sup> This case demonstrates benefit in a patient with both.

**Presenting Complaints:**

Mrs. S, age 65 presented herself to my office on December 19, 2023. She is accompanied by her husband. Her chief complaint was that of constant severe, right posterior hip and anterior thigh pain with numbness over her right shin. She reports having right hip pain for some time, but it became worse after her right knee “gave out” and she fell on December 9, 2023. She describes her left hip and leg pain as a sharp, stabbing pain. She rated her pain a 10 on a visual analog scale of 0-10, with 0 being no pain and 10 being excruciating pain. Mrs. Smith reported that arising from a seated position, walking, stairs, and putting on her shoes increased her pain.

**History:**

Her history is significant for previous back pain having seen another chiropractor 5 years ago. She reports seeing an orthopedist last week after she had fallen. She was examined and x-rayed and told that her problem was not a hip problem, but a back problem. The doctor ordered a lumbar MRI for further evaluation. She was prescribed a Medrol Dosepak. Having not yet been scheduled for the MRI and upon another patient’s referral she has elected to see me.

**Examination:**

Mrs. Smith ambulates with a walker in a forward left antalgic posture. A limited exam reveals significant 3/5-weakness of the right hip flexor and knee extensor. She was unable to toe walk or heel walk on the right. Lower extremity patellar reflex was decreased on the right. Palpation of the spine produced a pain response with digital pressure over the spinous processes of L2-L5. Trigger point sensitivity was noted about the right posterior hip.

**X-rays:**

Right hip, right knee and lumbar x-rays were taken on December 13, 2023 at Central Indiana Orthopedics. Both the right hip and right knee were reported essentially normal. Severe arthritic change is reported throughout the lumbar spine with complete disc space loss with “bone-on-bone” articulation and subchondral sclerosis at L2-L3 and L5-L5.

**Treatment:**

She was treated with Cox flexion/distraction/decompression with a contact a L2. Goading was applied to the right gluteus maximus, medius, and minimus muscles and down the right lateral leg ending at the popliteal space. Contacting L2 and stabilizing her right ankle while using axial distraction gave her the most relief during the treatment. Ultrasound therapy administered right lateral to her lumbar spine. Tetanizing electric muscle stimulation was also applied to the lumbar spine and right hip each session.

On her first treatment she was fitted for a lumbar brace and prescribed chondroitin sulfate (Discat).

We began a daily treatment schedule and by the fourth treatment her pain level was down to a 7. There was a five-day break in treatment due to the Christmas holiday. She returned still at a pain level of 7 on visit five. We managed to get her pain level down to a 6 by her seventh visit before again we had a break in treatment due to the New Year’s holiday.

She returned on January 2, 2024 at a pain level of 5 and was scheduled for her MRI the following day.

**MRI:**

A lumbar MRI was obtained of Mrs. Smith on January 3, 2024.

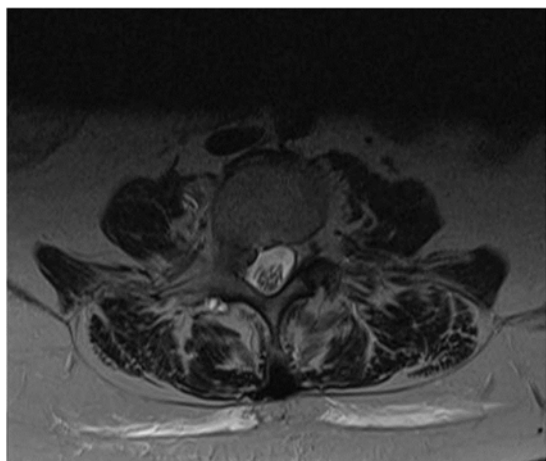
L2-L3: Severe disc height loss with Modic type II endplate change, degenerative endplate osteochondrosis, diffuse disc bulge, concentric marginal osteophyte formation. Mild facet degeneration and ligamentum flavum thickening. Mild spinal canal and right foraminal stenosis.

L3-L4: Broad-based posterior disc bulge. Facet arthropathy and ligamentum flavum thickening. Suspected free disc fragment is present within the right subarticular recess posterior to the L3 vertebral body. This extends into the proximal superior aspect of the right L3-L4 neural foramen. There is stenosis of the spinal canal and right neural foramen.

L4-L5: Severe disc height loss, disc bulge, and concentric osteophyte formation. Degenerative facet arthropathy with a right posterior facet joint synovial cyst. Severe right foraminal stenosis with encroachment on the exiting right L4 nerve.



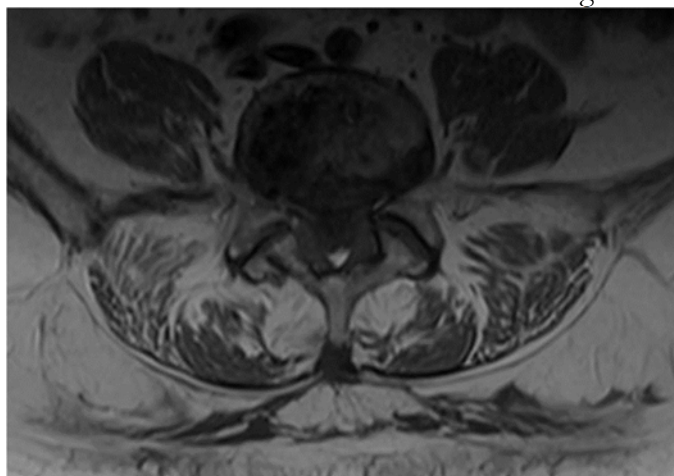
sagittal T2 synovial cyst



axial T2 L2-3



sagittal T1



axial T1 L4-5



sagittal T2



sagittal STIR

**Diagnosis:**

Severe lumbar disc degeneration complicated by an L3 disc fragment and a right posterior facet joint synovial cyst resulting in right hip and anterior thigh pain and right L4 right dermatome sciatica

**Treatment continued:**

By her 9<sup>th</sup> visit her pain level had dropped to a 3 and she was scheduled to see an orthopedic spine surgeon the following day. I instructed her to perform sit to stand exercises using her walker for support.

She reported on her 10<sup>th</sup> visit that the surgeon had reviewed her MRI with her and recommended that they schedule surgery. She declined.

We resumed treatment and, on her 12<sup>th</sup> visit she walked in the office without her walker. By her 14<sup>th</sup> visit her pain level was a zero.

**Outcome:**

Her initial low back disability index on December 18, 2023 was 78. Her low back disability index had fallen dramatically in a month's time to a 32 on January 17, 2024.

1. Erly, WK; Munoz, D; Beaton, R: Can MRI signal characteristics of lumbar disk herniations predict disk regression? *Journal Of Computer Assisted Tomography* 2006; 30 (3):486-489
2. Sakai T, et al: Spontaneous Resorption In Recurrent Intradural Lumbar Disc Herniation – Case Report. *J of Neurosurgery Spine*2007;6(6):574-578
3. Komori H: The natural history of herniated nucleus pulposus with radiculopathy. *Spine* 1996;21(2):225-9
4. Ikeda T, Nakamura T, Kikuchi T, et al: Patho mechanism of Spontaneous Regression of the Herniated Lumbar Disc: Histologic and Immunohistochemical Study. *Journal of Spinal Disorders* 1996;9(2):136-140
5. McCall IW: Lumbar herniated disks. *Radiol Clin North Am.* 2000 Nov;38(6):1293-309.
6. Cox, J: Chiropractic management of a patient with lumbar spine pain due to synovial cyst: a case report. *Journal of Chiropractic Medicine* 2012;2(1):7-15
7. Cox J, Cox J: Chiropractic Treatment of Lumbar Spine Synovial Cysts: A Report of Two Cases. *Journal of Manipulative and Physiological Therapeutics* 2005;28(2):143-147
8. Murphy D et al: Nonsurgical approach to the management of patients with lumbar radiculopathy secondary to herniated disk: a prospective observational cohort study with follow-up. *Journal of Manipulative and Physiological Therapeutics* 2009; 32(9):723-33