

# THORACIC DISC HERNIATION WITH MYELOPATHY: A DIAGNOSTIC CHALLENGE. CASE REPORT AND REVIEW OF THE LITERATURE

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**Abstract:** Thoracic disc herniations are uncommon as a cause of spinal cord compression causing myelopathy. Pain, sensory disturbances, myelopathy and lower extremity weakness are the most common presenting symptoms, but other atypical extra-spinal complaints, such as gastrointestinal or cardiopulmonary discomfort may be reported. We present a case of a 60-year old female who was admitted in our department for a 6-month history of lower back pain, gait instability and weakness, constipation, and urinary frequency. A thoracic spine Magnetic Resonance Imaging showed a disc herniation at the T10-T11 level with compression of the spinal cord with myelomalacia changes at that level. Because of the chronic evolution of the disease, the surgical intervention does not improve the gait and the strength in legs.

## INTRODUCTION

New developments in modern imaging have revealed that thoracic disc herniation is no longer considered rare, with a prevalence of 11–37% in asymptomatic patients. Symptomatic thoracic disc herniation has been noted to be one in a million per year, accounting 0.15–4% of disc herniations requiring surgical treatment. Most symptomatic thoracic disc herniations occur in the lower thoracic region, with 75% occurring in the lower four disc levels of the thoracic spine (T8-T12).(1,2)

The diagnosis of thoracic disc herniations has always been a challenge, especially when based solely on history and clinical findings.

The treatment of herniated thoracic discs has undergone significant changes since the first surgeries were attempted. The first case of herniated disc with spinal cord involvement reported in the literature was in 1838. From the beginning, the myelopathy due to disk herniation represented a challenge for spinal surgeons, essentially due to the lesion's location, which is often anterior to the spinal cord, and therefore difficult to approach, involving a high neurological risk via the traditional posterior laminectomy route, and the biomechanical concept of vertebral stability.(3)

Early cases were treated solely via a dorsal approach and involved a significant risk of causing irreversible paraplegia, with operative mortalities approaching 10%. As surgeons began to explore alternative techniques that allowed the lateral and ventral surface of the thecal sac to be exposed, the risk of neurological injury was reduced dramatically. The last decade has seen the application of minimally invasive methods to the treatment of thoracic disc herniation; these procedures have brought a significant change in the postoperative care of these patients: critical care requirements and discharge times have been reduced dramatically.(3,4)

## CASE REPORT

We present a case of a 60-year old female admitted in our department for an insidious onset of lower back pain with gait instability, asymmetrical weakness in lower legs and urinary

and bowel dysfunctions. A physical examination revealed 2/5 motor weakness on the left foot and 3/5 on the right one, with deep sensitivity disorders and bilateral ataxia of the lower legs, gait instability, polikinetic reflexes, rotulian and plantar clonus and bilateral Babinsky sign. Additionally, the patient presented constipation and increasing urinary frequency. No sensory level was found.

A magnetic resonance imaging scan of the spinal cord revealed a large herniated disc at the T10-T11 level with the presence of T2 intramedullary hyperintensity at that level. Due to the atypical clinical presentation we performed a head CT that demonstrated the presence of cortical atrophy, with no other lesions.

Figure no 1. Axial T2



Biochemistry showed normal blood values, negative human immunodeficiency virus (HIV), B and C type hepatitis viruses, negative syphilis serology (VDRL, TPHA), normal level of B12 vitamin and folates. Cerebrospinal fluid (CSF) showed increased proteins 0.54 g/l (max. 0.45 g/l), 3 cells/mm3 (max. 2/mm3).

The patient underwent successful right T10-T11 costotransversectomy with ablation of disk herniation and sectorial T10-T11 discectomy. Postoperatively, the patient underwent rehabilitation but, because of the chronic evolution of

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## CLINICAL ASPECTS

the disease the surgical intervention did not improve the gait and the strength in legs. Soon after the emergency surgery, she had complete relief of her backache.

Figure no. 2. Sagittal T2



### DISCUSSIONS

Thoracic disc herniation is an uncommon, but treatable cause of spinal cord compression.(5)

The incidence of symptomatic thoracic disc herniation has been reported to be one per million per year and occurs in only 0.25–0.75% of all intervertebral disc herniations. The rarity of thoracic disc herniation probably results from the fact that the thoracic vertebrae are mechanically stabilized by the rib head joints and, as a result, they avoid dynamic stress.(6)

The presentation of thoracic disc herniation is nonspecific and there is a relative paucity of examination findings; therefore, diagnosis of this disease is a challenge to emergency doctors.

Once a definite diagnosis of herniated thoracic disc has been established, it is time to decide on the best treatment, so that the patient can benefit from the outcome.

Herniated thoracic discs are very rare and difficult to diagnose and therefore, are a complex problem to treat, and there are anatomical aspects as well that characteristically distinguish the spinal cord from other vertebral regions.(6)

The treatment of choice for thoracic disc extrusion associated with myelopathy is surgery. Removal of the extruded thoracic disc through posterior and posterolateral approaches by laminectomy has been previously reported. The success rate of the posterior approach was very low, with only 29% of the patients registering an improvement in their symptoms. 50% of the patients operated on with laminectomy showed an overall neurological deterioration of 50%. Costotransversectomy, the postero-lateral method, seems to be more effective than laminectomy in neurological improvement.(7)

The proper approach should be based on the anatomical location of the herniated material, the general health of the patient, and the surgeon's experience. Complication rates of 15–24% have been reported in the literature. These include spinal cord injury, postoperative neuralgia, cerebrospinal fluid leak, and postsurgical kyphosis. However, each approach has its own outlined risk.(3)

Generally, there are no characteristic neurological patterns for symptomatic thoracic disc herniation and the localization of pain induced by thoracic disc herniation is sometimes ambiguous. For these reasons, accurate diagnosis of symptomatic thoracic disc herniation has been reported to be considerably difficult. These facts can lead to delay in diagnosis, which may result in progressive neurological

impairments. Previous reports have shown, however, that postoperative results of acutely developing thoracic disc herniation are generally satisfactory. Therefore, appropriate diagnosis and earlier treatment based on accurate neurological examination and diagnostic imaging, such as MR imaging, and lead to excellent recovery of neurological function.(10)

The prognosis of the disease depends on the time elapsed since the onset of disk herniation and the time of surgery.

Another important aspect is that physiotherapeutic procedures also play a very important role in the recovery of motor functions and should be performed as soon as possible.

### CONCLUSIONS

- Thoracic disc herniation should be considered in a patient with clinical signs of myelopathy (spastic paraparesis, polikinetetic reflexes, plantar and rotulian clonus, Babinsky sign and posterior column syndrome).
- The diagnosis is based on magnetic resonance imaging scan of the spinal cord, which can detect with great sensitivity the compressive myelopathy (T2 intramedullary hyperintensity at the level of thoracic disk herniation).
- The treatment of choice for thoracic disc extrusion, in particular when it is associated with myelopathy, is surgery. There are different types of techniques procedures used, which are selected according to the localization and type of the disk herniation.
- Prompt recognition and early treatment are the keys to preventing permanent neurologic sequelae.

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