

# Cauda Equina Syndrome Caused by Posterior Epidural Migration of an Extruded Lumbar Disc Fragment

## Ekstrüde Lumbal Disk Fragmanının Posterior Epidural Migrasyonuna Bağlı Cauda Equina Sendromu

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**Abstract:** Cauda equina syndrome due to posterior epidural migration of an extruded disc fragment is extremely rare. This report describes such a case in a 36-year-old male with disc fragment extrusion at the L4-5 intervertebral space. We discuss the case and review the relevant literature.

**Key words:** Cauda equina syndrome, lumbar disc herniation, magnetic resonance imaging

**Özet:** Cauda Equina sendromuna neden olan ekstrüde disk fragmanının posterior epidural migrasyonu oldukça nadir görülen bir olgudur. Bu olgu sunumunda 36 yaşında erkek hastada L4-5 disk seviyesinde cauda equina sendromuna neden olan ekstrüde disk fragmanının posterior epidural migrasyonu anlatılarak literatür eşliğinde tartışıldı.

**Anahtar Kelimeler:** Cauda equina sendromu, lumbal disk hernisi, manyetik rezonans görüntüleme

### INTRODUCTION

The lumbar region is the most common site for central and lateral disc herniation, but posterior epidural migration of an extruded disc fragment with cauda equina syndrome is relatively rare in this area (10). This condition requires urgent surgical intervention. In this paper, we present the case of a patient with posterior epidural migration of an extruded disc fragment that compressed the cauda equina. The magnetic resonance imaging (MRI) features of this rare entity are highlighted.

### CASE REPORT

A 36-year-old man who had suffered moderate lower back pain for 5 years developed acute-onset severe lower back pain, with pain radiating to both legs and urinary incontinence. Ten hours before he arrived at hospital, the pain had been increased dramatically, and 6 hours prior to admission he had developed urinary incontinence. There was no history of trauma, fever, weight loss, or any other systemic symptoms. Palpation revealed extreme tenderness in the lumbar region. The straight leg-raising test was limited to 30 degrees bilaterally.

Reflexes were absent at the knee and ankle, and motor strength was 3/5 in both legs. There was bilateral lumbosacral anesthesia in the S1, -2, -3, and -4 dermatomes. Rectal tone was decreased, and the bulbocavernosus reflex was absent.

MRI demonstrated a large ovoid mass at the L4-5 disc space. The lesion was hypointense on T1- (Figure 1) and T2-weighted images (Figure 2), and was located posterolateral to the thecal sac. Imaging of the lesion after gadolinium-DTPA injection showed rim enhancement (Figure 3).

The surgery involved wide bilateral decompressive laminectomies at L4. Once the ligamentum flavum was removed, we could see the extruded disc fragment at the right posterior and posterolateral dura, compressing the thecal sac. After the extruded disc fragment was removed, we performed a bilateral L4-5 discectomy.

The patient had recovered full motor, sensory, urological, and sexual functions by 1 month post-surgery.



Figure 1: A sagittal T1-weighted image shows disc extrusion and a large free fragment.

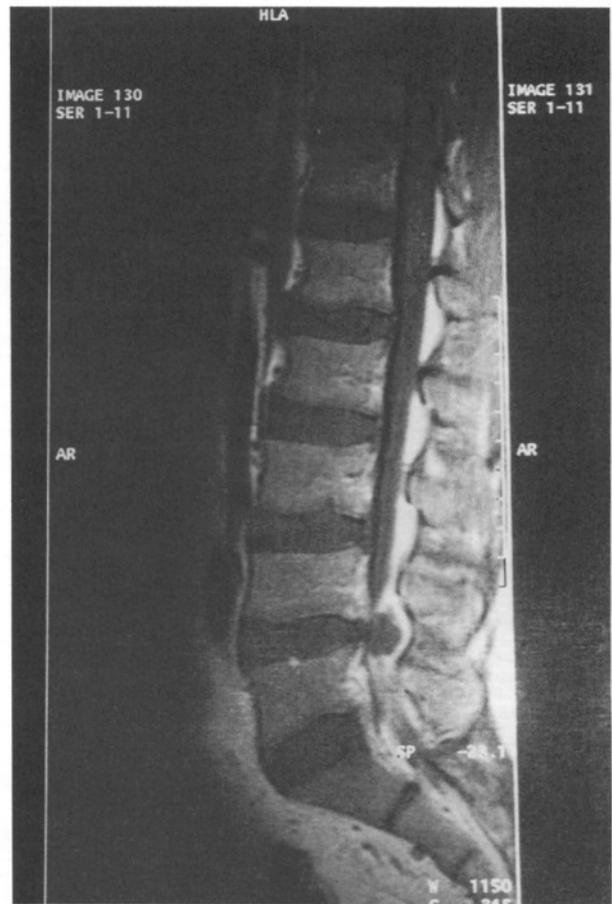


Figure 2: An axial T2-weighted image shows a large hyperintense disc fragment causing severe compression.



Figure 3: The lesion showed peripheral enhancement after intravenous gadolinium-DTPA injection.

## DISCUSSION

Posterior extrusion of the nucleus pulposus in the lumbar region is a common phenomenon. Disc fragment migration patterns are generally restricted by the attachments of the posterior longitudinal ligament, and its associated midline septum and peridural or lateral membrane (1). Rostral, caudal, and lateral migration of herniated disc fragments in the spinal canal are also well known; however, posterior epidural migration of a disc fragment is very unusual, and cauda equina syndrome as a result of this is extremely rare (1,5,6,10).

The reasons why extruded disc fragments migrate posteriorly are not well understood. The sagittal midline septum of the posterior longitudinal ligament spans the space between the vertebral body and this ligament, limiting side-to-side movement (9). Another membrane, the peridural or lateral membrane, attaches to the free edge of the posterior longitudinal ligament medially and to the wall of spinal canal laterally, thus limiting posterolateral migration. Any structural failure of these tissues may allow posterior epidural migration of an extruded disc fragment (3,9,11).

There are distinct clinical pictures associated with the three main locations of cauda equina lesions in the adult. These locations are lateral, midline inside the dura, and midline outside the dura. Neurofibroma is the most common lateral lesion to affect the cauda equina. The most frequent midline lesions inside the dura are ependymoma, dermoid tumor, and lipoma of the terminal cord. The most common midline lesions outside the dura are simple disc disease, chordoma, metastatic disease, trauma, spinal epidural hematoma, leukemic reticuloendotheliosis, and direct seeding from malignant tumors, most notably medulloblastomas, ependymomas, or pinealomas (4,7).

MRI is the diagnostic tool of choice for evaluating acute cauda equina compression (2). In our case, intravenous gadolinium-DTPA helped distinguish the disc fragment from other causes of cauda equina compression, as extruded fragments show characteristic peripheral enhancement. Only three reports in the literature have documented posterior migration of an extruded lumbar disc associated with cauda equina compression (1,8,10). Two of these cases were diagnosed by myelography and computerized tomography-myelography, and one by MRI. Our case is only the second well-documented case to include MRI findings.

Rapid surgical intervention is recommended for all cases of posterior migration of extruded lumbar disc with cauda equina compression, but one of the reports in the literature described surgery being done 9 days after symptoms developed. The authors reported a good recovery, except for residual paresis that limited dorsal movement of the affected foot (10). We stress that, in order to reverse the neurological symptoms and achieve full recovery in these cases, MRI and surgery must be performed immediately.

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*Prognosis for recovery after operative intervention is much better in cauda equina syndrome than with corresponding conus lesions.*