

## Case Report

# An Unusual Intraoperative Lumbar Disc Herniation Migrating into the Posterior Epidural Space

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**Abstract:** Background: The migration of a herniated fragment of the intervertebral disc towards posterior epidural space remains an exceptional phenomenon and its clinical presentation is not unequivocal. Its diagnosis in modern imaging can cause confusion with other lesions of the posterior epidural space. We report an unusual migration of a herniated disc fragment into the posterior epidural. Method: we describe a case of an unusual migration of disc fragment into the posterior epidural space admitted in Neurosurgery department of University Teaching Hospital of Cotonou in 2019. Result: A 33-year-old man was admitted for progressive bilateral radiculopathy, gait disturbances and constipation. The clinical examination noted a moderate perineum and right buttock hypoesthesia, a flaccid paraparesis, bilatéral straight leg raising limitation (45°). The right patellar and achilean reflexes were depressed. MRI of the lumbar spine showed a right L4L5 herniated disc and its migration into the anterolateral epidural space. Surgery was performed with posterior approach. After an L4 and L5 laminectomy, we discovered a very compressive large fragment of L4L5 intervertebral disc. The fragment was delicately dissociated from its dural adhesions. Histological examination confirmed the fibrocartilaginous nature of the sample. The post-operative period was uneventful. Three months post-operatively, he had regained his autonomy with a strength score of 5/5 in both pelvic limbs. Conclusion: Migration of intervertebral disc fragment into the posterior epidural space is a rare phenomenon. Diagnosis errors are possible. In case of posterior migration with cauda equina syndrom, we recommend laminectomy with removal of herniated disk fragment. This approach remains a simple and secure.

**Keywords:** Disc Migration, Herniated Disc, Posterior Epidural Space

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## 1. Introduction

The migration of a herniated fragment of the intervertebral disc, excluded or not, usually takes place towards the anterior epidural space (EEA) with an ascending or descending path or laterally [1]. Its secondary displacement towards the posterior epidural space (EEP) remains an exceptional phenomenon and

is currently incompletely elucidated [2-4]. Its clinical presentation is not unequivocal and its diagnosis in modern imaging can cause confusion with other lesions of the posterior epidural space [4].

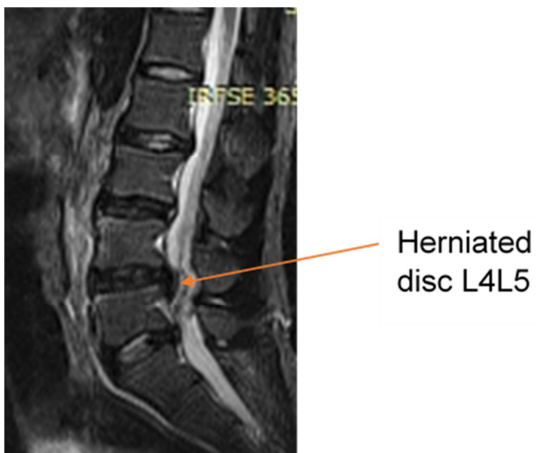
Here we report the case of an unusual migration into the posterior epidural space of an operative discovery of a herniated fragment initially visible in the anterior epidural space on MRI.

## 2. Method

We report and describe one case of herniated disc migrated into posterior epidural space which is presented as a cauda equina syndrom.

## 3. Result

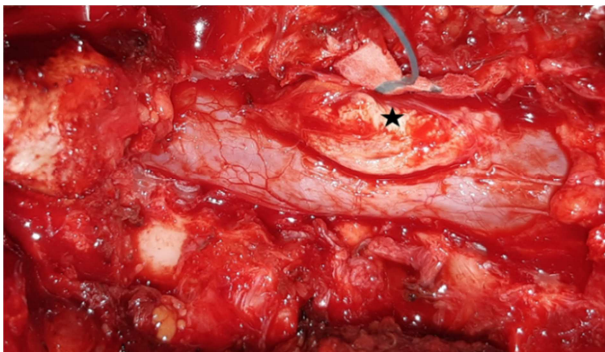
A 33-year-old man with no previous history was admitted for progressive bilateral radiculopathy since three weeks, with recent onset of constipation. The clinical examination noted a moderate perineum and right buttock hypoesthesia, a flaccid paraparesis predominant on the relievers of feet with a strength score of 3/5, bilatéral straight leg raising limitation (45°). The right patellar and achilean reflexes were depressed. Figure 1 shows a right L4L5 herniated disc and its location in the anterolateral epidural space on MRI of the lumbar spine.



**Figure 1.** Herniated disc L4L5 seen in the epidural space prior to lumbar spine MRI.

Surgery was performed with posterior approach. After an L4 and L5 laminectomy, we discovered a very compressive large fragment of L4L5 intervertebral disc migrated into postérieure epidural space.

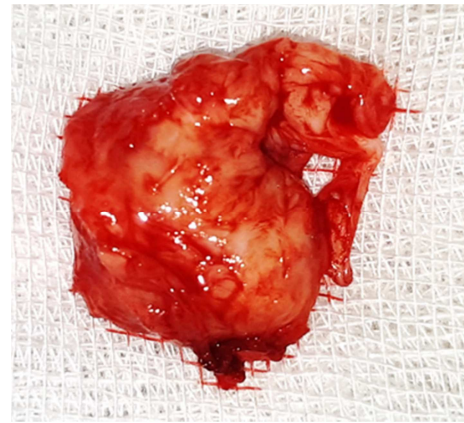
Figure 2 shows this large disc fragment which adhered laterally to the dural sheath on the right.



**Figure 2.** Large disc fragment on the right and migrated into the posterior epidural space.

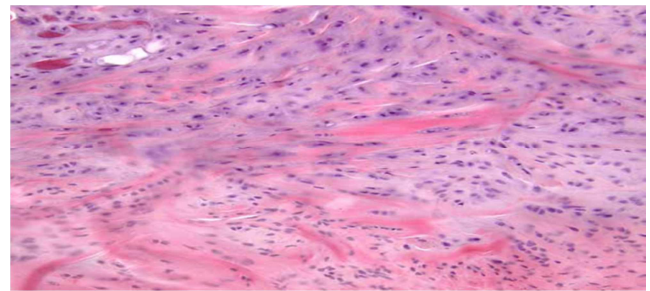
The fragment free of any attachment with the L4L5 disc was delicately dissociated from its dural adhesions. Figure 3

presents a piece of removed disc fragment.



**Figure 3.** L4L5 disc fragment dissected from its adhesions with the dural matter.

A complementary L4L5 discectomy was performed with good release of the dural mater and L4, L5 and S1 roots at the end of the surgery. Figure 4 presents histological examination which confirmed the fibrocartilaginous nature of the sample.



**Figure 4.** Histological examination of disc fragment. Cartilage matrix separated by collagen tissue (magnification x20).

The post-operative period was uneventful. Patient was discharged from hospital for his home on the post operative day 7. Three months post-operatively, he had regained his autonomy with a strength score of 5/5 in both pelvic limbs and a total regression of hypoesthesia.

## 4. Discussion

The migration of a disk fragment in EEP is a phenomenon little reported in the literature. Only 101 cases were listed in the last literature review from 1973 to 2019 [2]. Even more rarely, the migration of a fragment initially present in the EAE at the MRI to the EEP is described more rarely. To our knowledge, only one case has been described by a Japanese team [5]. This later migration is still not fully understood. Several theories based on anatomical bases of the spinal canal and its content attempt to explain why the migration of the disc fragment occurs rather frequently in the EAE [6-8].

The migration path of a disc fragment is determined by the anatomy of the EEA, a fairly well defined space, delimited behind by the posterior longitudinal ligament and the lateral membrane, medially attached to the free edge of the longitudinal ligament posterior, and extends laterally into the

spinal canal [9]. Due to this anatomy, most of the excluded disc fragments generally migrate laterally into the spinal canal. In addition to the posterior longitudinal ligament and the lateral membrane, other constituents of the spinal canal also limit posterior epidural migration of disc fragments: nerve roots, fat and epidural vessels [9, 10].

All the stages of the lumbar spinal segment can be affected by a posterior migration of a disc fragment but there is a predilection for the L3L4 stage followed by the L4L5 stage as for the case which we report. There appears to be a male prevalence and the average age at surgery was 54.05 years (26–83 years) [2].

In the event of posterior migration of a disc fragment, the clinic is far from unequivocal: low back pain and / or radiculalgia with or without sensory-motor deficit have been described but in the majority of cases, the initial clinical presentation can be serious immediately in the form of a cauda equina syndrome as in our case [1, 2, 4, 7, 8, 12, 13].

Magnetic resonance imaging (MRI) is the examination of choice, but radiological diagnosis can be laborious. The disc fragment may appear hypointense or isointense in T1-weighted sequence and hyperintense in T2-weighted sequence, [2, 13]. However, this presentation remains variable and may point to other pathological processes in the posterior epidural space: hematoma, tumor or infectious lesion [7, 14].

Treatment is surgical; it is conventionally laminectomy associated with herniectomy after careful release of any adhesions with the dural sheath. In rare cases, treatment has been conservative [2] or by endoscopic surgery [5]. As in the case reported here, the outcome after surgery are usually good; but the neurological sequelae can be significant [2].

## 5. Conclusion

Migration of intervertebral disc fragment into the posterior epidural space is a rare phenomenon. Diagnosis errors are possible. In case of posterior migration with cauda equina syndrom, we recommend laminectomy with removal of herniated disk fragment. This approach remains a simple and secure.

## Conflict of Interest

The authors state that there is no conflict of interest.

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