Posterior epidural migration of a lumbar disc fragment causing cauda equina syndrome: Case report and review of the relevant literature

**Abstract** Posterior epidural migration (PEM) of free disc fragments is rare, and reported PEM patients usually presented with radicular signs. An uncommon case involving a patient with cauda equina syndrome due to PEM of a lumbar disc fragment is reported with a review of the literature. The patient described in this report presented with an acute cauda equina syndrome resulting from disc fragment migration at the L3–L4 level that occurred after traction therapy for his lower back pain. The radiological characteristics of the disc fragment were the posterior epidural location and the ring enhancement. A fenestration was performed and histologically confirmed sequestered disc material was removed. An early postoperative examination revealed that motor, sensory, urological, and sexual functions had been recovered. At late follow-up, the patient was doing well after 18 months. Sequestered disc fragments may occasionally migrate to the posterior epidural space of the dural sac. Definite diagnosis of posteriorly located disc fragments is difficult because the radiological images of disc fragments may mimic those of other more common posterior epidural lesions.

**Keywords** Cauda equina syndrome · Disc migration · Lumbar disc · Sequestered disc

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**Introduction**

Disc sequestration (noncontained herniations) is defined as a perforation of the fibrous ring and posterior longitudinal ligament (PLL), and migration of the fragment to the epidural space. The sequestered disc is completely separated from the parent disc and disc space. Free fragments generally migrate within the spinal canal in superior, inferior, and lateral directions [1, 5, 9]. In contrast, disc extrusion (contained herniations) is characterized by rupture of the fibrous ring, but a variable degree of connection with the parent disc or disc space. Extruded disc fragments may migrate subligamentously behind the PLL [1, 9].

The most common path of disc migration is in a posterior and posterolateral direction to the anterior epidural space, and the most commonly recognized clinical syndrome is a radiculopathy [1, 4, 7, 8]. Posterior epidural disc migration is an uncommon event, and posterior migration causing cauda equina syndrome is exceptionally rare [1, 2, 4, 6, 7]. In this report, a patient with cauda equina syndrome resulting from a posteriorly migrated disc material is presented and difficulties in diagnosis which might delay appropriate therapy are discussed.

**Case report**

A 47-year-old man who had been suffering mild lower back pain for 6 weeks was given medical treatment for 1 month. His symptoms did not subside, and he underwent subsequent traction therapy by a chiropractor. His condition suddenly deteriorated and was followed at home for 15 days prior to admission. When he was admitted to our hospital, a neurological examination revealed bilateral leg weakness and bowel and bladder retention. The Laseque and provocative tests were negative bilaterally. Motor strength was 80% of normal proximally and distally in both lower extremities. Diminished pinprick and light touch sensation was detected below...
the L3 dermatome bilaterally, and this was worse on the left. Cre-
master reflex and bilateral deep tendon reflexes at the knee and at
the ankle were absent. The patient had erectile dysfunction.

Plain radiograms were unremarkable. Magnetic resonance im-
ages (MRI) showed a left L3–L4 posterior epidural lesion. MRI char-
acteristics of the lesion are shown in Figs. 1 and 2. The lesion showed
ring-like enhancement after contrast injection (Fig. 3).

An emergency left-sided L3–L4 fenestration was performed. A
large sequestered disc fragment was identified posterior and lateral
to the dural sac. There was no communication between the disc
material and the facet joint posteriorly or the intervertebral disc
space anteriorly. The lesion was not attached to the dura and was

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**Fig. 1** A Axial T₁-weighted magnetic resonance imaging (MRI) demonstrates an iso- and slightly hyperintense lesion in the poste-
rrior epidural space at the L3–L4 level. **B** The same lesion was hy-
perintense on T₂-weighted images.

**Fig. 2** On T₁-weighted sagittal images, the lesion at the L3–L4
level was extended cranially. The height and intensity of L3–L4
and adjacent intervertebral disc spaces below and above the lesion
were similar to each other.

**Fig. 3** Cyst-like appearance of the lesion after contrast administra-
tion on T₁-weighted axial image. The absence of communication
of the lesion with the disc space and the facet joint is shown after
contrast injection.