



## Posterior epidural mass : can a posteriorly migrated lumbar disc fragment mimic tumour, haematoma or abscess ?

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**A 60-year-old woman complained of low back pain radiating to both buttocks and to the anterior aspect of the left thigh. MRI showed a left posterolateral epidural mass at the L1-L2 level. An epidural abscess was suspected, but the biochemistry was normal. Excision yielded complete relief of symptoms. Pathological examination demonstrated that the specimen was a migrated disc fragment. The authors found 29 other cases of disc migration to the posterior epidural space ; two of these were at the thoracic level. Eleven of the 27 lumbar cases (40%) were complicated with Cauda Equina Syndrome (CES). MRI is the method of choice to make the diagnosis. The differential diagnosis includes tumour, haematoma and abscess.**

**Keywords :** lumbar disc fragment ; migration ; epidural space.

### INTRODUCTION

Lumbar disc herniation is the most common cause of radicular pain in the lower limbs between ages 20 and 50. Ninety-five percent of these herniations involve the L4-L5 and L5-S1 level. Patients typically present with back pain and sharp, stabbing leg pain accompanied by abnormal sensations (numbness or tingling) in a specific dermatome. Rostral, caudal, intradural and transdural migration of disc fragments have been described (1), but migration to the posterior epidural space is less well

known. The authors report a case and found 29 other cases in the literature.

### CASE REPORT

A 60-year-old woman suffered moderate back pain radiating to both buttocks since one month. One week before admission the pain increased and radiated to the front of the left thigh. Walking became difficult and she started to use crutches. Non-steroidal anti-inflammatory drugs had no effect. There was no history of trauma, fever, or weight loss ; she was treated for hypertension and bilateral gonarthrosis. Neither were there any sphincter symptoms nor saddle hypoesthesia.

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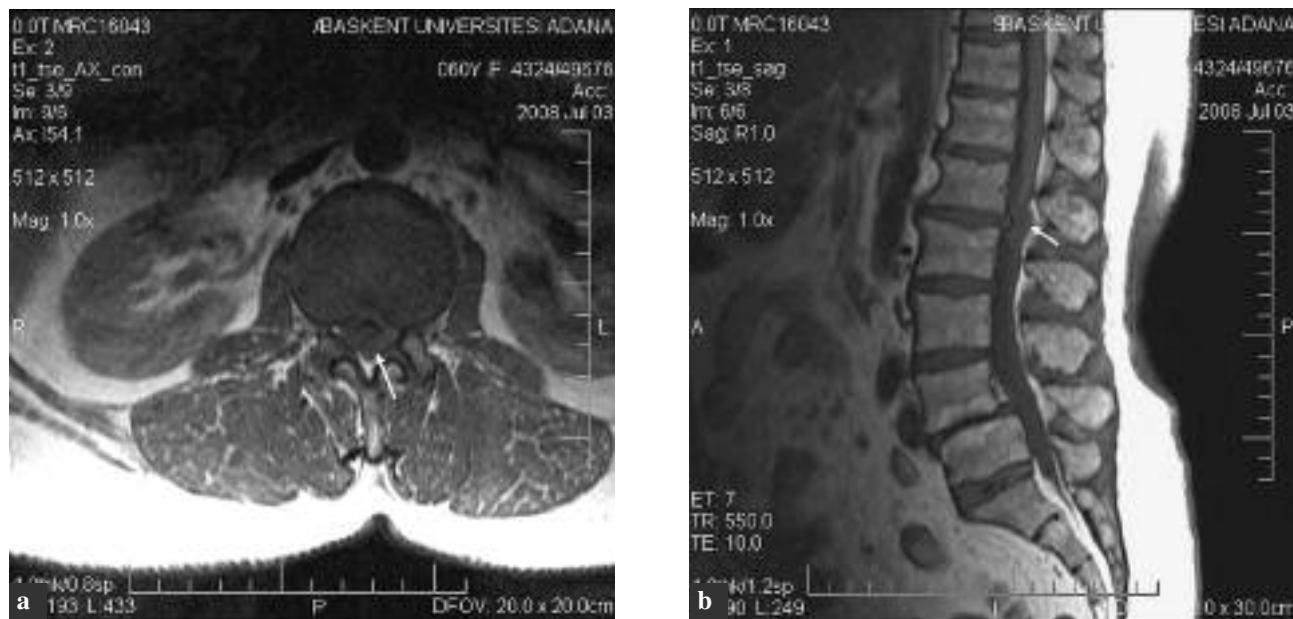
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**Fig. 1.** — a) axial and b) sagittal T1-weighted images showing an L1-L2 disc extrusion with a left posterolateral isointense free fragment (arrows). The sagittal view also shows pseudobulging and grade 1 spondylolisthesis L4-L5.

At physical examination there was tenderness over the thoracolumbar junction, hypoesthesia L1-L2, and grade 3/5 hip flexor and 4/5 knee extensor strength on the left side. The straight leg raising test was negative, but the femoral nerve traction test was positive on the left. Reflexes were normal. The biochemistry was also normal.

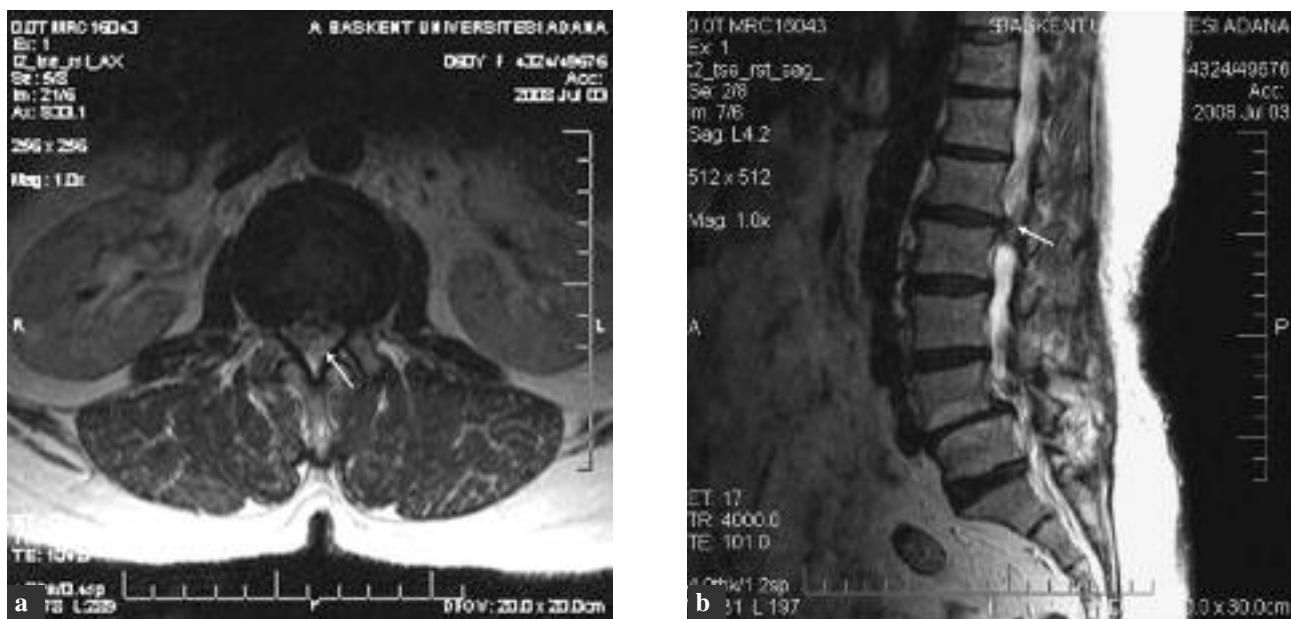
Plain radiographs demonstrated a degenerative spondylolisthesis L4-L5. MRI showed a disc protrusion L1-L2, and at the same level an 8 × 20 mm large epidural mass, isointense on T1-weighted images (fig 1), hyperintense on T2-weighted images (fig 2), with peripheral rim enhancement after gadolinium-DTPA injection (fig 3). MRI also demonstrated focal bone marrow oedema at the inferior end plate of L1 (fig 3).

A left laminectomy L1-L2 was performed. As soon as the ligamentum flavum was removed, a sticky, soft, immobile mass became visible. At first it looked like an epidural tumour (fig 4). It was carefully dissected out, and found to be connected with an extruded disc hernia L1-L2, which was removed, as well as the disc. Pathologic examination of the specimen confirmed that it was a seque-

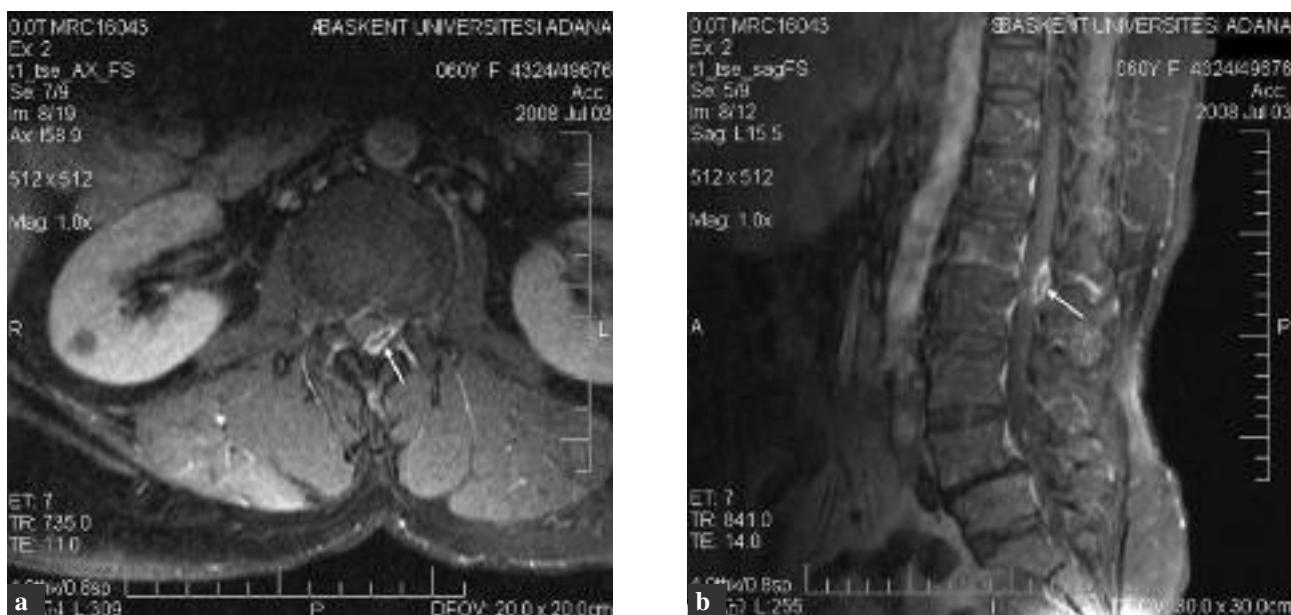
rated disc fragment. The postoperative course was uneventful.

## DISCUSSION

Posterior epidural migration of sequestered lumbar disc fragments is uncommon. Schellinger *et al* (20) state that displaced disc components are most frequently (in 94% of the cases) dislodged into the right or left area of the anterior epidural space. Indeed, the sagittal midline septum, the peridural or lateral membrane, the epidural fat, the epidural venous plexus and the nerve root itself limit posterior migration of the disc fragment (1). However, the authors found 17 articles (1-5,7,8,10-13,15-17,21-23) about posteriorly migrated epidural or extradural disc fragments, and a total of 29 cases in the English literature since 1989 : two at the thoracic level, and 27 at the lumbar level (table I). Interestingly, 11 of the 27 lumbar cases, or 40%, were complicated with a cauda equina syndrome (CES). This is in sharp contrast with the statements of other authors, who claim that a cauda equina syndrome (CES) is rare in case of posteriorly migrated



*Fig. 2.* — a) axial and b) sagittal T2-weighted images showing left posterolateral hyperintense free disc fragment



*Fig. 3.* — a) axial and b) sagittal T1-weighted gadolinium-enhanced images with fat suppression showing intense enhancement around the periphery of the mass. The sagittal view also demonstrates focal bone marrow oedema at the inferior end plate of L1.

disc fragments (1,3,16,17,21,23). CES requires urgent surgery (1,3,16,17,21,23).

History taking and clinical examination are important. In the current case, the anterior thigh

pain and the femoral nerve traction test pleaded for a high lumbar affection, and against the L4-L5 spondylolisthesis, as the cause of complaints. The differential diagnosis must include all epidural

Table I. — Posterior epidural migration of sequestrated disc fragments : review of the literature

Author/s	Number of cases	Level of herniation	Clinical picture
Bonaroti and Welch, 1998 (1)	1	L2-L3	CES
Chen <i>et al.</i> , 2006 (2)	1	L2-L3	Rad
Dösoglu <i>et al.</i> , 2001 (3)	1	L3-L4	CES
El Asri <i>et al.</i> , 2008 (4)	2	L4-L5 / L4-L5	CES / Rad
Eysel and Herbstrofer, 2001 (5)	3	L3-L4 / L4-L5 / L3-L4	CES / Rad / Lumb
Hirabayashi <i>et al.</i> , 1990 (7)	1	L3-L4	Lumb
Hodges <i>et al.</i> , 1999 (8)	1	L4-L5	Lumb
Kuzeyli <i>et al.</i> , 2003 (10)	3	L4-L5 / L1-L2 / L2-L3	Lumb / CES / CES
Lakshmanan <i>et al.</i> , 2006 (11)	2	L4-L5 / L4-L5	Rad / Rad
Lichtor, 1989 (12)	1	L2-L3	Rad
Lutz, 1990 (13)	1	L4-L5	Rad
Morizane <i>et al.</i> , 1999 (15)	1	T10 / T11	Lumb
Neugroschl <i>et al.</i> , 1999 (16)	3	T7-T8 / L2-L3 / L3-L4	Lumb / Lumb / Rad
Robe <i>et al.</i> , 1999 (17)	2	L3-L4 / L3-L4	Rad / CES
Sakas <i>et al.</i> , 1995 (18)	1	L4-L5	Rad
Saruhashi <i>et al.</i> , 1999 (19)	1	L5-S1	Rad
Sekerci <i>et al.</i> , 1992 (21)	1	L3-L4	CES
Şen <i>et al.</i> , 2001 (22)	1	L4-L5	CES
Tatlı <i>et al.</i> , 2005 (23)	2	L3-L4 / L5-S1	CES / CES
Authors' case	1	L1-L2	Rad

CES = Cauda Equina Syndrome / Lumb = Acute lumbago / Rad = radicular.



Fig. 4. — Peroperative view of posterior epidural mass. The patient's head is on the left.

disease entities such as synovial cyst, ligament cyst, cystic neurinoma, tumour, haematoma and abscess (1,17).

MRI is ideal. Disc sequestra are classically of intermediate intensity on T1-weighted MRI

images (14). They are hyperintense, in 80% of the cases, on T2-weighted images, as compared with the degenerated disc of origin (14); the remaining 20% have an isointense signal intensity as compared with the degenerated disc. An interesting MRI finding is the peripheral rim enhancement after gadolinium injection, which has been attributed to an inflammatory process or to vascularized granulation tissue (9). But enhancement is also possible in case of a. abscess, b. neoplasm, and c. haematoma; Bonaroti and Welch (1) described their specific features :

a. An *epidural abscess* may present as a mass, hypointense to isointense on T1-weighted images, hyperintense on T2-weighted images, with diffuse homogenous, heterogenous, or rim enhancement. This explains why an epidural abscess was the initial diagnosis, all the more as the bone marrow oedema in the vertebral body L1 suggested an L1-L2 spondylodiscitis. However, the laboratory findings did not plead for an infection.

b. Metastatic *tumours*, chordoma, medulloblastoma and ependymoma are the most common midline extradural tumours in the spine (6). Epidural

neoplasms have variable signal and enhancement characteristics. Synovial cysts have a characteristic MRI signal intensity, and they are related to the facet joint.

c. Typical for a *haematoma* is isointensity or hyperintensity on T1-weighted imaging, no enhancement, and an associated trauma history.

## CONCLUSION

MRI is a valuable tool for the diagnosis of epidural masses, but clinical examination and biochemistry must support the MRI findings. A posteriorly migrated disc fragment should always be considered in the differential diagnosis of posterior epidural abscess, tumour or haematoma.

## REFERENCES

1. Bonaroti EA, Welch WC. Posterior epidural migration of an extruded lumbar disc fragment causing cauda equina syndrome. Clinical and magnetic resonance imaging evaluation. *Spine* 1998 ; 23 : 378-381.
2. Chen CY, Chuang YL, Yao MS et al. Posterior epidural migration of a sequestered lumbar disk fragment : MR imaging findings. *AJNR Am J Neuroradiol* 2006 ; 27 : 1592-1594.
3. Dösgülu M, Is M, Gezen F, Ziyal MI. Posterior epidural migration of a lumbar disc fragment causing cauda equina syndrome : case report and review of the relevant literature. *Eur Spine J* 2001 ; 10 : 348-351.
4. El Asri AC, Naama O, Akhaddar A et al. Posterior epidural migration of lumbar disk fragments : report of two cases and review of the literature. *Surg Neurol* 2008 ; 70 : 668-671.
5. Eysel P, Herbstrofer B. Dorsal compression of the epidural cord due to free sequestral lumbar prolapse. Diagnostic problems in magnetic resonance imaging and computed tomography. *Arch Orthop Trauma Surg* 2001 ; 121 : 238-240.
6. Greenberg MS. *Handbook of Neurosurgery*, fifth edition, Thieme, New York, 2001, pp 285-350.
7. Hirabayashi S, Kumano K, Tsuiki T et al. A dorsally displaced free fragment of lumbar disc herniation and its interesting histologic findings. A case report. *Spine* 1990 ; 15 : 1231-1233.
8. Hodges SD, Humphreys SC, Eck JC et al. Posterior extradural lumbar disk fragment. *J South Orthop Assoc* 1999 ; 8 : 222-228.
9. Hwang GJ, Suh JS, Na JB et al. Contrast enhancement pattern and frequency of previously unoperated lumbar discs on MRI. *J Magn Reson Imaging* 1997 ; 7 : 575-578.
10. Kuzyeli K, Cakir E, Usul H et al. Posterior epidural migration of lumbar disc fragments : report of three cases. *Spine* 2003 ; 1 ; 28 : E64-67.
11. Lakshmanan P, Ahuja S, Lyons K et al. Sequestered lumbar intervertebral disc in the posterior epidural space : a report on two cases and review of the literature. *Spine J* 2006 ; 6 : 583-586.
12. Lichter T. Posterior epidural migration of extruded lumbar disk. *Surg Neurol* 1989 ; 32 : 311-312.
13. Lutz JD, Smith RR, Jones HM. CT myelography of a fragment of a lumbar disk sequestered posterior to the thecal sac. *AJNR Am J Neuroradiol* 1990 ; 11 : 610-611.
14. Masaryk TJ, Ross JS, Modic MT et al. High-resolution MR imaging of sequestered lumbar intervertebral disks. *AJR Am J Roentgenol* 1988 ; 150 : 1155-1162.
15. Morizane A, Hanakita J, Suwa H et al. Dorsally sequestered thoracic disc herniation – case report. *Neurol Med Chir (Tokyo)* 1999 ; 39 : 769-772.
16. Neugroschl C, Kehrli P, Gigaud M et al. Posterior extradural migration of extruded thoracic and lumbar disc fragments : role of MRI. *Neuroradiology* 1999 ; 41 : 630-635.
17. Robe P, Martin D, Lenelle J et al. Posterior epidural migration of sequestered lumbar disc fragments. Report of two cases. *J Neurosurg* 1999 ; 90 (2 Suppl) : 264-266.
18. Sakas DE, Farrell MA, Young S et al. Posterior thecal lumbar disc herniation mimicking synovial cyst. *Neuroradiology* 1995 ; 37 : 192-194.
19. Saruhashi Y, Omura K, Miyamoto K, Katsuura A, Hukuda S. A migrated lumbar disc herniation simulating a dumbbell tumor. *J Spinal Disord* 1999 ; 12 : 307-309.
20. Schellinger D, Manz HJ, Vidic B et al. Disc fragment migration. *Radiology* 1990 ; 175 : 831-836.
21. Sekerci Z, İldan F, Yüksel M et al. Cauda equina compression due to posterior epidural migration of extruded lumbar disk. *Neurosurg Rev* 1992 ; 15 : 311-313.
22. Sen O, Aydin V, Erdo an B et al. Cauda equina syndrome caused by posterior epidural migration of extruded lumbar disc fragment. *Turkish Neurosurgery* 2001 ; 11 : 108-110.
23. Tatlı M, Güzel A, Ceviz A, Karadağ O. Posterior epidural migration of sequestered lumbar disc fragment causing cauda equina syndrome. *Br J Neurosurg* 2005 ; 19 : 257-259.