

Microdiscectomy for recurrent L5–S1 disc herniation

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Learning targets

- To discuss the surgical indications for recurrent disc herniation.
- To understand how to safely perform a microdiscectomy in the presence of scar tissue.

Introduction

Recurrent lumbar disc herniation (RLDH) is a complication in the surgery for lumbar disc herniation (LDH). In different cohorts, a range between 0.5 [3] and 25 % [5] of patients primarily operated for LDH suffered from RLDH (symptomatic or asymptomatic). Many of them needed repeat surgery. Risk factors for RLDH seem to include obesity, smoking and persistence of weight lifting after first surgery [2, 4–6]. Male patients who undergo surgery when still young carry a higher risk of recurrence [3]. Surgical management and decisions are variable, and they depend on many aspects: patient age, level of discopathy,

foraminal stenosis and segmental instability. There is good common agreement about the indication of selective excision of the prolapsed disc in cases of first recurrence of disc herniation, unless instability or significant chronic low back pain emerging from the affected disc is present [1, 5, 7]. In the remaining cases, dynamic stabilization or, more commonly, spinal fusion is frequently indicated [7].

Case description

A 23-year-old man, primarily operated 1 year earlier for an L5–S1 left disc herniation, with a favourable postoperative outcome, approached our spine surgery division. His symptoms, during the previous 6 months, were new onset of left sciatica and left gluteal pain. Conservative treatment performed in the meantime, consisting of rest, avoidance of weight lifting, physical therapy, and several cycles of parenteral dexamethasone, had not significantly improved the symptoms. Straight leg raise test was positive and Achilles reflex was absent on the left side. His muscle power was diminished in the left gastrocnemius (M4) and sensation was intact. The Oswestry Disability Index score was 38 %. MRI of the lumbar spine showed a massive left disc herniation at L5–S1 (Figs. 1, 2, 3) with mild disc degeneration (Pfirrmann III), at the previous surgery site. Considering the absence of severe low back pain history and genuine radicular symptoms, the absence of significant discopathy as well as the absence of segmental instability and foraminal stenosis, left L5–S1 microdiscectomy surgery was proposed.

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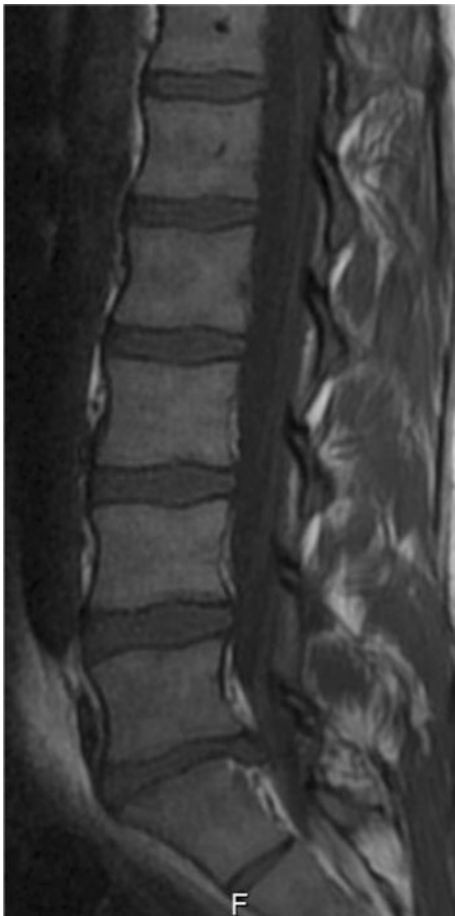


Fig. 1 Preoperative sagittal T1 MRI of the lumbar spine showing the massive L5-S1 disc herniation

Surgical strategy

The patient is positioned on a surgical table designed to allow for modified genupectoral position. Prophylactic parenteral antibiotics are routinely used. Preoperatively and intraoperatively, the level is identified with a C-arm. A 3 cm midline skin incision, centred over the disc space, is obtained. Muscular fascia is incised just lateral to the spinous process. After the introduction of an operating microscope, a left-sided skeletonization of L5 spinous process and lamina is performed to reach the articular process and the interlaminar space. The exposed surgical field is centred on the lower limit of the L5 lamina and includes medially the spinous processes of L5 and S1 and laterally the articular processes of L5 and S1. Low-intensity electrocautery is used to identify the bone limits (caudal to the L5 lamina and medial to the inferior articular L5 process). A surgical scar, related to previous surgery, is found and carefully separated from the bony elements with blunt curettes and dissectors. Typically, microsurgical access to the lumbar spine requires resection of some bone



Fig. 2 Preoperative sagittal T2 MRI of the lumbar spine showing the massive L5-S1 disc herniation and mild disc degeneration (Pfirman III)

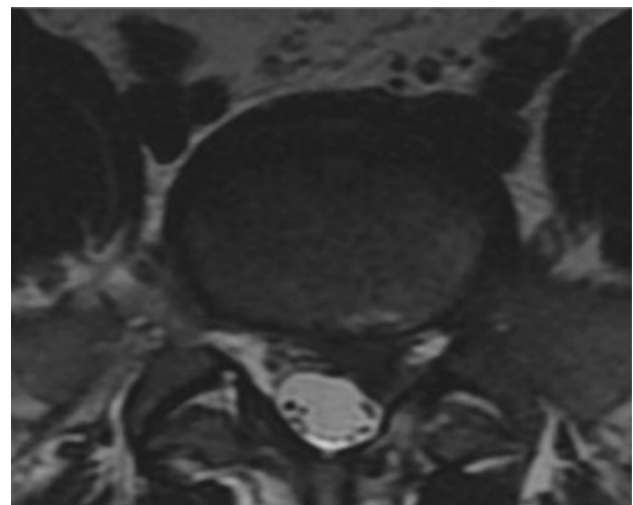


Fig. 3 Preoperative axial T2 MRI of the L5-S1 segment showing massive left disc herniation determining left lateral recess obliteration and root compression

from the inferior aspect of the lamina of the superior vertebra in the affected level (i.e. the inferior part of the L5 lamina for the L5–S1 level). The more cranial the lumbar level access, the greater is the amount of laminar resection

necessary to access the disc space. As the safest access to the lumbar roots is from the lateral to medial (medial retraction of the roots is much better tolerated than lateral retraction), the authors prefer improving the lateral access to the root by routine resection of a small part of the medial aspect of the articular processes (usually 3–5 mm). Additionally, in case of revision, the authors consider it safer to access the canal from a previously intact area. This is achieved by additional resection of the inferior part of the L5 left lamina and approximately 5 mm of the medial L5–S1 facet joints. In the area of new bone resection, the ligamentum flavum or the articular capsule can be identified, incised and resected, giving access to the spinal canal in an area free of scar tissue. Blunt dissection and bipolar coagulation of epidural vessels permit identification and exposure of the disc. By palpation, the root is identified and also its relationship to the hernia. The herniated nucleus can then be exposed and resected from the canal, or, as in this case, from inside the disc, with appropriate pituitary rongeurs. Nerve hooks are used to palpate around the root and into the disc to ascertain the completeness of root decompression and to identify possible remaining fragments of nucleus pulposus. After complete dissection of the herniated disc and canal exploration, final bipolar haemostasis and thorough irrigation are performed. Fascia and subcutaneous tissue are closed with simple stitches and the skin with resorbable intradermal suture.

Postoperative information

Postoperative progress was good, with rapid regression of sciatica. The patient is allowed to stand up on the same day of surgery or next day, and can be discharged in the first or second postoperative day. Adequate pain management and anaesthetic protocols permit carrying out the procedure in a day surgery setting. In the first month, forward bending is

discouraged, while the patient is invited to walk and swim with adequate wound protection. Weight lifting is avoided for 2 months and heavy weights are avoided in the first 3–4 postoperative months. After 1 month, the patient can begin a physical therapy programme, consisting of muscle chain stretching (avoiding forward bending of the spine under load), lumbar stabilization and aerobic training. A light, elastic orthosis is suggested for better comfort in the first postoperative month.

Conflict of interest None.

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