Microdiscectomy for Lumbar Disc Herniation

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Surgical Principles

One-level herniated or sequestrated disc material in the lumbar spinal canal is removed through a 3 cm long incision using a speculum shaped muscle retractor (speculum) and specially angulated microsurgical instruments.

The surgical field is illuminated with a headlight if surgery is not performed with a microscope.

Advantages

The incision is smaller and results in decreased surgical trauma and epidural scarring than conventional discectomy techniques.

Disadvantages

Localization of the correct level is only possible radiologically and not by palpation.

Displaced sequestrated disc fragments are more difficult to find through the small incision.

Indications

The microsurgical technique is indicated in one level lumbar disc herniations without osteophytes or bony stenosis of the lateral recess or the spinal canal.

Computed tomography (CT) or magnetic resonance imaging (MRI) should clearly show a sequestered disc. The patient should have a history of at least six weeks of severe radicular pain and unsuccessful conservative treatment. The clinical examination should show radicular symptoms such as a positive straight leg raising test and little or no back pain. If CT or MRI show a bulging disc, discography is indicated before surgery. If there is no leakage at discography, chemonucleolysis or percutaneous discectomy are indicated (Figure 1).

Contraindications

Patients with discrepancy between CT, MRI, myelography, and clinical findings should not be considered for surgery.

For patients with a bilateral disc herniation, or with sequestra at more than one level, conventional discectomy should be carried out.

The same applies for patients with severe spinal stenosis.

Prerequisites

The correct placement of the skin incision is very important. Even though palpation may help with orientation, it is necessary to determine the correct level on a lateral radiograph or by image intensifier before the skin is incised. At the estimated level a
Fig. 1  Indications for percutaneous discectomy, chemonucleolysis and microsurgical discectomy. The main indication for microsurgery is the extruded, one level lumbar disc sequester. Herniation with an intact anulus fibrosus are better indications for intradiscal therapy with chemonucleolysis or percutaneous discectomy after discography which confirmed the contained disc.

Fig. 2  Microsurgical discectomy for lumbar disc herniation with head light and speculum.

Before induction of anaesthesia, the checklist for patient preparation should be followed to ensure that nothing has been forgotten or overlooked. Surgery with a headlight and a speculum (Figure 2) as well as surgery with the microscope requires practice. Experience with the conventional surgical technique and a wide approach are helpful but not essential. When first attempting the procedure, the incision may be made slightly longer, the speculum may be opened slightly further, and an additional self-retaining retractor used. With increasing experience in microdiscectomy the incision will become smaller.