Recurrent lumbar disc herniation

- When can lumbar fusion be considered appropriate in the treatment of recurrent lumbar disc herniation? A systematic review and meta-analysis
- Application of extracorporeal collagenase chemonucleolysis and combined intradiscal and extracorporeal collagenase chemonucleolysis via FLEX electrode in patients with lumbar disc herniation: a retrospective study
- Radiological and Patient-Derived Predictors for Recurrent Lumbar Disc Herniation After Minimally Invasive Tubular Discectomy: A Single Center Analysis of 404 Patients
- Clinical Efficacy of Percutaneous Endoscopic Discectomy for the Treatment of Lumbar Disc Herniation in Patients Over 70 Years Old
- Dorsal epidural disc migration-MRI characteristics and surgical microdiscectomy treatment: Case report and review of the literature
- ISASS Recommendations and Coverage Criteria for Bone-Anchored Annular Defect Closure Following Lumbar Discectomy: Coverage Indications, Limitations, and/or Medical Necessity-An ISASS 2025 Policy Update on the Use of Bone-Anchored Annular Closure to Prevent Reherniation in High-Risk Lumbar Discectomy Patients
- Risk factors for recurrent lumbar disc herniation after unilateral biportal endoscopy: a retrospective study
- Hederagenin promotes SIRT6 to attenuate epidural scar formation by aggravating PRMT1 deacetylation

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General information

Rates quoted in the literature range from 3–19% with the higher rates usually in series with longer follow-up [1].

In an individual series with 10-year mean F/U, the rate of recurrent disc herniation was 4% (same level, either side), one third of which occurred during the 1st year post-op (mean: 4.3 yrs) [2].

A second recurrence at the same site occurred in 1% in another series [3]. with mean F/U of 4.5 yrs. In this series, 108 patients presenting for a second time with disc herniation had a recurrence at the same level in 74%, but 26% had an herniated lumbar disc (HLD) at another level. Recurrent HLD occurred at L4–5 more than twice as often as L5–1.

It is often possible for a smaller amount of recurrent herniated disc to cause symptoms than in a “virgin back,” due to the fact that the nerve root is often fixated by scar tissue and has little ability to deviate away from the fragment [4].

Definition

The strict definition of recurrent lumbar disc herniation is the presence of herniated disc material at the same level, ipsi- or contralateral, in a patient who has experienced a pain-free interval of at least 6 months since surgery. The clinically more appropriate definition, however, is disc herniation at the previously operative site and side. The pain-free interval should not be restricted to the minimum of 6

months. It has been suggested that the mean interval for recurrent pain associated with recurrent herniated discs is 18 months, longer than that for de novo herniated discs or symptomatic epidural fibrosis.

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Epidemiology

Although the recurrence of lumbar disc herniation (LDH) requiring reoperation remains a controversial question in spinal surgery, the incidence is reported to linger around 5-15% according to several previous studies [6) 7) 8) 9) 10) 11)].

Risk factors

see Recurrent Lumbar Disc Herniation Risk Factors.

Clinical features

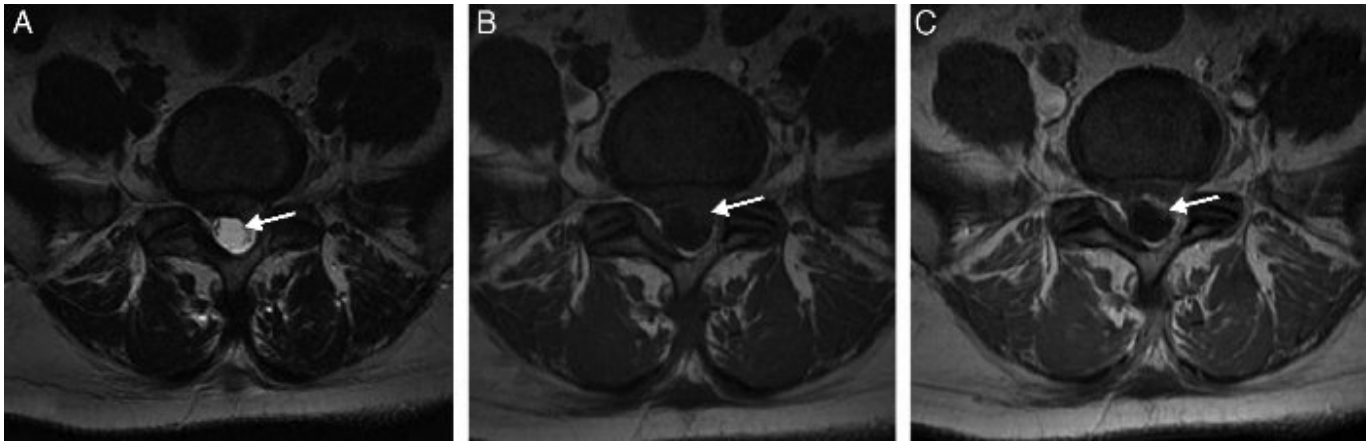
A recurrent lumbar disc herniation (RLDH) is the most prevalent cause for new radicular pain after surgery for disc herniation-induced sciatica.

Differential diagnosis

Normal postdiscectomy appearances can be mistaken for recurrent or retained disc. In the early (0 to 6–month) postoperative period, MR imaging reveals an interspace high signal intensity band extending from the nucleus pulposus to the site of anular disruption (especially noticeable at 0–2 months). The anulus is typically hyperintense and the nucleus hypointense. There is loss of disc space height. The endplates and marrow can exhibit changes as well, often low signal on T1 -weighted and high signal on T2 -weighted images suggesting inflammation and edema. The anterior epidural space initially reveals an increase in soft-tissue mass, evidence of tissue disruption, edema, and hemorrhage, with the appearance of mass effect [12)].

Nerve root enhancement with Gd is normal, reflect- ing breakdown of the blood–nerve barrier, but should resolve by 6 months. Adhesions within the thecal sac at the operative level usually resolve within several weeks. Postoperative changes at the laminectomy site depend on the extent of surgery, ligamentum flavum removal, and whether fat graft was placed in the epidural space. Facet joint enhancement occurs as a local response to dissection and persists long (□□ 6 months) after surgery in more than half of the patients in whom imaging is performed [13) 14) 15)].

Diagnosis



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Persistent/recurrent disc herniation. 48-Year-old female who underwent laminectomy and L5-S1 discectomy. Follow-up MRI was performed 20 days after surgery due to persistent lumbar pain radiating to the left lower extremity. The axial T2-weighted image (A) shows persistent-recurrent left parasagittal DH connected to the left S1 nerve root at the lateral recess level (arrow). Unenhanced and contrast-enhanced axial T1-weighted image (B and C) shows peripheral enhancement of the herniated material.

Treatment

Recurrent lumbar disc herniation treatment.

Outcome

see Recurrent Lumbar Disc Herniation Outcome.

Case series

2017

Guan et al., used the National Neurosurgery Quality and Outcomes Database (N2QOD) to assess outcomes of patients who underwent repeat discectomy versus instrumented fusion at a single institution from 2012 to 2015. Primary outcomes included Oswestry Disability Index (ODI) score, visual analog scale (VAS) score, and quality-adjusted life year (QALY) measures. Secondary outcomes included hospital length of stay, discharge status, and hospital charges.

The authors identified 25 repeat discectomy and 12 instrumented fusion patients with 3- and 12-month follow-up records. The groups had similar ODI and VAS scores and QALY measurements at 3 and 12 months. Patients in the instrumented fusion group had significantly longer hospitalizations (3.7 days vs 1.0 days, $p < 0.001$) and operative times (229.6 minutes vs 82.7 minutes, $p < 0.001$). They were also more likely to be female ($p = 0.020$) and to be discharged to inpatient rehabilitation instead of home ($p = 0.036$). Hospital charges for the instrumented fusion group were also significantly higher

($54,458.29 vs $11,567.05, p < 0.001). Rates of reoperation were higher in the repeat discectomy group (12% vs 0%), but the difference was not statistically significant (p = 0.211).

Repeat discectomy and instrumented fusion result in similar clinical outcomes at short-term follow-up. Patients undergoing repeat discectomy had significantly shorter operative times and length of stay, and they incurred dramatically lower hospital charges. They were also less likely to require acute rehabilitation postoperatively. Further research is needed to compare these two management strategies [16].

2016

A total of 163 patients who underwent Microendoscopic diskectomy (MED) for LDH and could be followed for a minimum of 1 year after surgery were enrolled in this study (follow-up [FU] rate: 79.9%).

Ikuta et al., investigated the characteristics of LDH recurrence and conducted a comparative study between the patient groups with and without recurrence to identify the risk factors for the recurrence.

The recurrence of LDH was observed in 19 patients (11.7%) during a mean of 38 months FU. Although the mean length of time from MED to recurrence was 19.2 months, 36.8% of the LDH recurrence occurred in the first 3 months following MED. Eleven patients were treated successfully by conservative treatments, and the remaining eight patients had to undergo revision surgery (MED in five patients, microdiskectomy in one, and instrumented fusion in two). In the analysis of risk factors for the recurrence, the presence of diabetes mellitus (DM) was significantly correlated with the recurrence (p = 0.0027).

The recurrence rate following MED for LDH was equivalent to those of previous reports of conventional and microscopic diskectomy. However, a third of the LDH recurrences occurred in the first 3 months after MED. We should pay attention to LDH recurrence at an early phase following MED and recognize the presence of DM as a risk factor for LDH recurrence [17].

2013

A study included 344 patients who underwent MED (213 males and 131 females; mean age, 39.3 years; age range, 11-82 years; mean follow-up, 3.6 years; follow-up range, 2.0-6.5 years). The clinical outcomes were evaluated using the Japanese Orthopedic Association Score for Low Back Pain (JOA score). Recurrence factors investigated by logistic regression analysis included age; sex; level, laterality, and classified type of LDH; occupation; sports activity; and learning curve of the surgeon.

LDH recurrence was observed in 37 patients (10.8%). It was observed at the same level in the ipsilateral side as the original LDH in 30 patients, in the contralateral side in three patients, and at a level adjacent to the original level in four patients. The mean time interval between MED and the recurrence was 16.6 months (range, 0.5-52 months). Twenty patients (54.1%) developed recurrence within 1 year after MED. Twenty-two patients (59.5%) were treated by revision surgery (MED in 20 patients and microdiscectomy in two patients), and 15 patients (40.5%) were treated conservatively. The mean JOA score of all the patients was 14.7 ± 3.5 before surgery and 26.5 ± 2.2 at the final follow-up, yielding an average recovery rate of 82.3 ± 15.7%. The recovery rate was 83.1 ± 14.8% in patients without recurrence and 75.7 ± 20.4% in patients with recurrence (p = 0.006). By logistic

regression analysis, we identified migration of LDH as a significant factor related to recurrence. The patients with caudal migration of LDH had recurrence more frequently (19.0%) than those with rostral migration (12.5%) or without migration (10.2%) ($p = 0.04$; odds ratio, 2.0; 95% confidence interval, 1.0-3.8).

The recurrence rate and reoperation rate for LDH after MED were comparable to those of conventional discectomy. More than half of the cases of recurrence occurred at an early postoperative phase, and patients with caudally migrated LDH experienced recurrence significantly more often than those with rostrally migrated or nonmigrated LDH [18].

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