Case Lesson 31-2025

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Spontaneous Resorption of Lumbar Disc Herniation

Introduction: The treatment options for lumbar disc herniation (LDH) is a challenge for clinicians[1]. Conservative management of LDH is preferred for patients with radicular pain without motor weakness, if it improves within 6–12 weeks[2]. According to the 2024 WFNS Spine Committee consensus, surgery is recommended primarily for cases of failed conservative management, persistent severe pain, or neurological deficits[3].

We report a patient with a large L5–S1 herniation with spontaneous resorption and clinical improvement during conservative treatment. It is important to correlate clinical and radiological findings before making any treatment decision.

Key words: resorption, phagocytosis, spontaneous, disc herniation

Case Presentation: A 42-year-old female presented with acute-onset, severe low back pain, aggravated in the sitting position. The pain irradiated to the left lower extremity and was associated with numbness and paresthesia over S1 dermatome. No motor deficits or sphincter involvement were noted. The Buttock sign was positive on the left. Lumbar spine MRI revealed a large posterior paracentral disc protrusion at the L5–S1 level on the right, with superior fragment disc migration and extension into the left posterolateral recess. Conservative treatment was initiated for two weeks. In tempo the pain resolved consequently and four months later, she reported only paresthesia localized over the S1 dermatome, while motor strength remained intact. A repeated lumbar MRI demonstrated resorption of the herniated disc fragment without root compression at that level. The patient was advised to continue conservative treatment.

Fig 1. Sagittal T2 weighted MR images of lumbar spine (October 2020):Lumbar disc herniation with superior fragment migration at L5–S1(red arrow)

Fig 2. Sagittal T2 weighted MR images of lumbar spine (February 2021): Resorption of the migrated fragment (blue arrow)

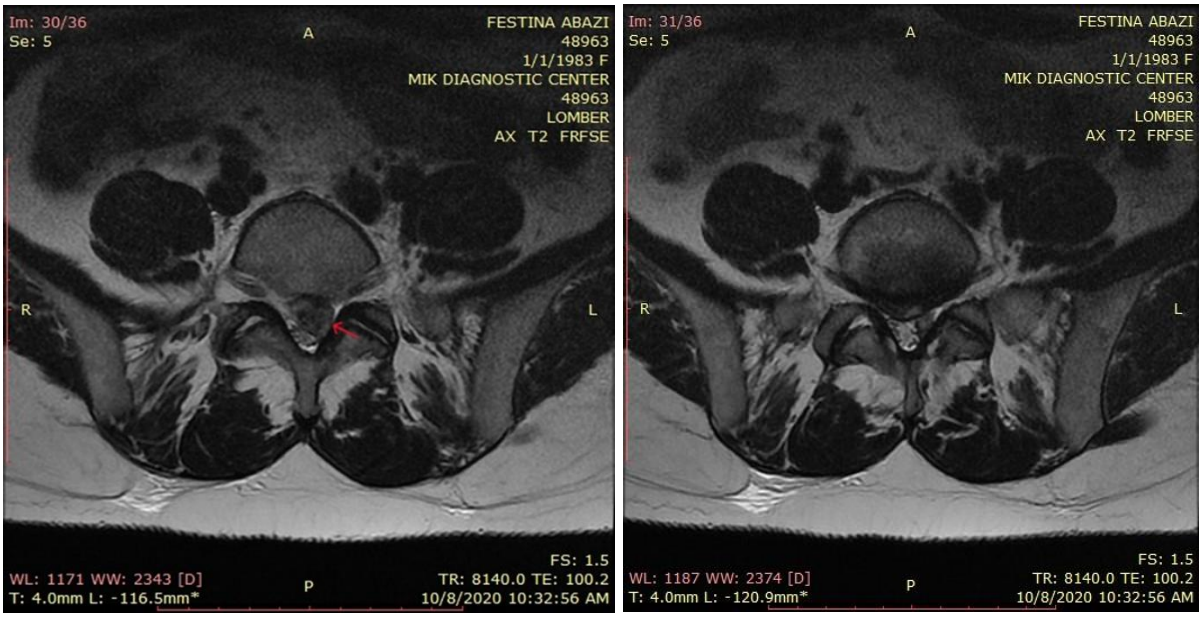

Fig 3. Axial T2 weighted MR images of lumbar spine (October 2020):Lumbar disc herniation with superior fragment migration at L5–S1(red arrow)

Fig 4. Axial T2 weighted MR images of lumbar spine (February 2021): Resorption of the migrated fragment (blue arrow)

Discussion: The present case highlights the natural history of lumbar disc herniation (LDH) with partial disc resorption during conservative treatment. The patient's clinical course is consistent with findings from major longitudinal studies. Landmark investigations, including the Maine Lumbar Spine Study, the SPORT trial, and the Leiden–The Hague Study, have compared conservative and surgical management of LDH[1,4,5]. These studies consistently report that surgical intervention offers faster symptom relief, yet long-term outcomes over 5–10 years are comparable between the two treatment approaches.

The mechanisms underlying the spontaneous resorption of LDH are multifactorial and may involve dehydration of the nucleus pulposus, mechanical retraction of the disc fragment, macrophage-mediated phagocytosis, neovascularization, inflammatory cytokine signaling, and enzymatic degradation via matrix metalloproteinases[6]. The relative contribution of these mechanisms depends largely on the morphology and anatomical characteristics of the herniation.

As recently reported by Novak in JNS[1], we may speculate that the resorption mechanism was macrophage-mediated phagocytosis. Direct exposure of the extruded fragment to the epidural vascular and immune environment likely promoted neovascularization and inflammation, facilitating macrophage infiltration and subsequent degradation of the nucleus pulposus.

Imaging predictors, such as disc fragment enhancement on gadolinium-enhanced MRI and disruption of the posterior longitudinal ligament, are well-documented markers of heightened immunological activity and increased likelihood of resorption. Additionally, factors such as larger fragment size and annular disruption have been shown to correlate positively with spontaneous regression through immune-mediated mechanisms[7].

Conclusion: In very rare conditions, the migrated L5–S1 disc herniation can be resorpted spontanoussly during conservative treatment , eliminating the need for surgical intervention.

References

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