

# Spontaneous Regression of Lumbar Disc Herniations at Different Levels and Times in a Patient: A Case Report

## Bir Hastada Farklı Zamanlarda ve Seviyelerde Ortaya Çıkan Lomber Disk Herniasyonlarında Kendiliğinden Gerileme: Bir Olgu Sunumu

### ABSTRACT

Lumbar intervertebral disc herniations can regress spontaneously at different levels and times in a patient even in the presence of a neurological deficit. A patient with spontaneous regressions of two herniated lumbar discs at different levels and time periods, which regressed after conservative treatment, is presented. Both spontaneous regressions of the two independent herniated lumbar discs in the patient correlated with clinical improvement. Magnetic resonance imaging studies of the lumbosacral spine revealed spontaneous regressions of L5-S1 and L4-L5 intervertebral disc herniations at different times in the patient. Because lumbar disc herniations can regress spontaneously, conservative treatment of these pathologies should be taken into consideration for at least two or three months before offering surgery, even in the presence of a mild neurological deficit.

**KEY WORDS:** Spontaneous regression, conservative treatment, disc herniation

### ÖZ

Nörolojik defisit var olsa da, bir hastada farklı zaman ve seviyelerde ortaya çıkan intervertebral disk herniasyonları kendiliğinden gerileyebilirler. Farklı iki seviyede ve değişik zamanlarda ortaya çıkan ve konservatif tedavi sonrasında kendiliğinden gerileyen lomber disk herniasyonları olan bir hasta sunulmuştur. Birbirinden bağımsız olarak gelişen lomber disk herniasyonlarının kendiliğinden olan gerilemeleri klinik iyileşme ile birlikte. Lumbosakral omurganın manyetik rezonans görüntüleme çalışmaları, bir hastada farklı zamanlarda görülen L5-S1 ve L4-L5 intervertebral disk herniasyonlarının kendiliğinden gerilediğini gösterdi. Lomber disk herniasyonları kendiliğinden gerileyebildiğinden, ılımlı bir nörolojik defisit varlığında bile, cerrahi tedaviyi önermeden önce bu patolojilerin tedavisinde hiç olmazsa iki ya da üç ay konservatif tedavi göz önünde bulundurulmalıdır.

**ANAHTAR SÖZCÜKLER:** Kendiliğinden gerileme, konservatif tedavi, disk herniasyonu

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**INTRODUCTION**

It has been reported that protruded discs can be found in 20-30% of the normal population (1, 17, 18). Spontaneous regression of herniated lumbar disc material has been well documented (4, 5, 10, 12, 14). Guinto first documented spontaneous intervertebral disc regression in 1983 (5). Although some patients required surgical intervention due to the prolonged intolerable leg pain, the majority healed spontaneously (7, 10).

We present spontaneous regression of two herniated lumbar discs at different levels in one patient.

**CASE**

A 42-year-old man presented to our outpatient clinic in April 1999 with a two-week history of low back and right leg pain, without neurological deficit except an Achilles tendon reflex loss and positive right straight leg raising (SLR) test. The initial MRI study in April 1999 revealed a right-sided posterolateral L5-S1 extruded disc fragment, migrated caudally (Figure 1A, 1B). He was given conservative therapy but this failed to relieve his symptoms and surgery was offered to remove the herniated disc material. The patient refused surgery and chose instead to proceed with physical therapy. His radicular pain disappeared after two months.

The patient was admitted to our outpatient clinic for follow-up examination nearly three years after his initial symptoms. In the second MRI study in October 2002, the previously extruded L5-S1 disc fragment had disappeared completely and there was no evidence of dural sac compression, but a L4-5 posterocentral protrusion was observed (Figure 2A, 2B, 2C).

One year after the second MRI study, the patient again presented to our hospital with one-month history of low back and left leg pain. His neurological examination revealed a positive left-sided SLR test and left extensor hallucis longus muscle weakness (4/5). The third MRI study in August 2003 revealed a left posterolaterally extruded L4-5 disc herniation with caudal migration (Figure 3A, 3B). This time he was offered medical treatment instead of surgery and his symptoms resolved in almost one month. His follow-up MRI of the lumbar region in March 2004 again showed spontaneous regression (Figure 4A, 4B).



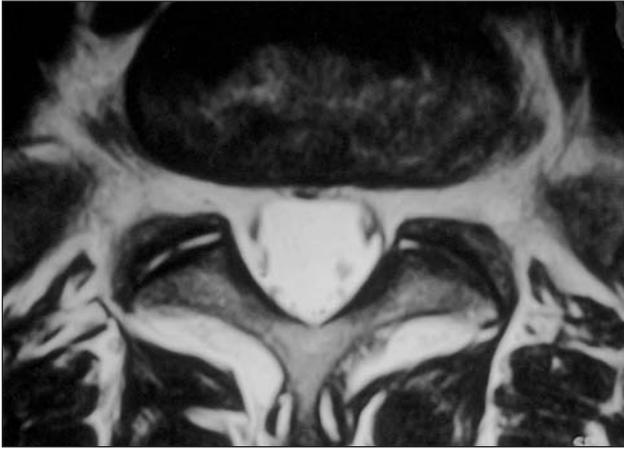
**Figure 1A:** The sagittal T2WI of the initial MRI study in April 1999 revealed an L5-S1 extruded disc fragment, migrated caudally.



**Figure 1B:** The axial T2WI of the initial MRI study in April 1999 revealed a right-sided posterolateral L5-S1 extruded disc fragment.



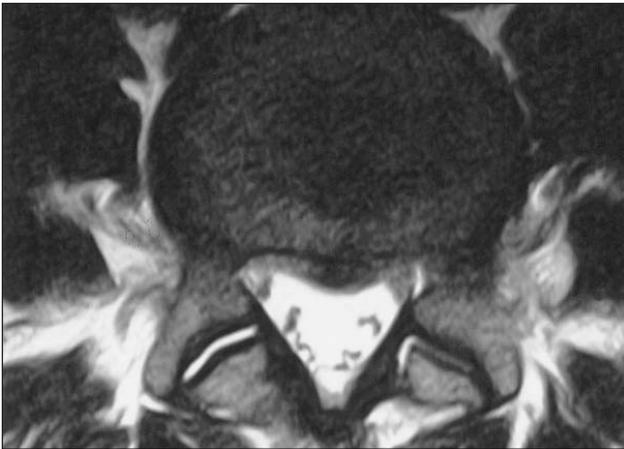
**Figure 2A:** The sagittal T2WI of the second MRI study in October 2002 revealed an L4-L5 protrusion without L5-S1 extruded disc fragment.



**Figure 2B:** There was no evidence of the previous extruded disc herniation in the axial T2WI of the second MRI study in October 2002.



**Figure 3B:** The axial T2WI of the third MRI study in August 2003 revealed a left-sided L4-5 extruded disc herniation.



**Figure 2C:** The axial T2WI of the second MRI study in October 2002 revealed only a L4-L5 posterocentral protrusion.



**Figure 4A:** The sagittal T2WI of the follow-up MRI of the lumbar region in March 2004 again showed spontaneous regression.



**Figure 3A:** The sagittal T2WI of the third MRI study in August 2003 revealed an extruded L4-5 disc herniation with caudal migration.



**Figure 4B:** The axial T2WI of the follow-up MRI of the lumbar region in March 2004 again showed spontaneous regression.

## DISCUSSION

Guinto first documented spontaneous herniated nucleus pulposus (HNP) regression in 1983 (5). In 1985, Teplick and Haskin first documented the spontaneous resolution of a lumbar disc by computerized tomography and they reported that 9 out of their 55 patients harboring lumbar disc herniation showed spontaneous regression (16,4%) (16). Since that time, the spontaneous resolution in several cases of lumbar disc herniations have also been documented (9, 2, 13).

Recently, CT and MRI have been used to document such regression in different spinal compartments (4, 5, 9, 11, 12, 14). MRI has provided more detailed information about disc herniations and their natural history (9, 11, 12, 14).

The spontaneous regression of intervertebral disc herniation is well documented, but the exact mechanism is still controversial.

Migrated type herniation, neovascularization, phagocytosis and proinflammatory chemokines (MCP-1 and IL-8) are all suggested as mechanisms responsible for the regression of herniated intervertebral discs (3, 7, 8, 11, 15).

The phagocytosis of macrophages, one of the mechanisms of herniated disc regression, was observed more often in sequestration type lesions than subligamentous type lesions (7). When the HNP migrated until the midline of the vertebral body, the posterior longitudinal ligament would be ruptured and the HNP would be exposed to the epidural space (11).

Komori et al reported that disappearance of HNP was seen frequently in cases of migrating herniation (Type 3 cases where the base of the extruded disc extended beyond the disc height) and they also speculated that the migrating HNP mass might be exposed to the epidural vascular supply in almost all Type 3 cases and inflammatory response and neovascularization around the disc material would lead to macrophage phagocytosis and HNP resorption (11). They also reported that, in accordance with our case, the duration of leg pain was significantly less in the patient showing marked degree of herniation (11).

Burke et al concluded that human intervertebral disc tissue is capable of spontaneously producing proinflammatory chemokines, monocyte chemoattractant protein-1 and interleukin-8, which are chemoattractant for macrophages and capillaries

and may explain the ingrowth of granulation tissue seen in spontaneous disc herniation resorption (3).

Minamide et al, in their experimental study, demonstrated new vessel formation and increased number of inflammatory cells that facilitated the resorption of intervertebral disc material relocated in the epidural space in the fibroblast growth factor-treated group (15).

According to another hypothesis, the herniated disc material retracts to the intervertebral space (16). Theoretically this may occur if there is a disc bulge or if the disc material protrudes through the annulus fibrosus but is not separated from it (6).

## CONCLUSION

Our case report points out the potential for the spontaneous regression of posterolateral and migration-type lumbar intervertebral disc herniations and the possibility of spontaneous regression at different levels and time periods in one patient.

Our initial treatment should be conservative even in the presence of mild neurological deficit, for at least two or three months before offering surgery.

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