Case Report

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Lumbar Disc Herniation with Contralateral Radiculopathy: Can Traction Force be the Cause

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Keywords

Contralateral radiculopathy, Lumbar disc herniation.

Radiculopathy caused by nerve root compression due to herniated disc is a common pathology in the lumbar spine. However, radiculopathy contralateral to the side of disc herniation is uncommon and it often confuses spine surgeons. We report a case of extraforaminal L4–L5 disc herniation on the right side presenting with radicular leg pain on the opposite side. Only via a surgical approach ipsilateral to the herniated side, could a clinical improvement be obtained postoperatively.

Case Report

A 41-year-old man presented with severe left leg pain along L5 sensory dermatome for 20 days. He had a history of low back pain (LBP) 6 months prior. Neurological examination revealed Hypaesthesia on the lateral side of the left shank. Lasegue's sign was positive on the left side (30˚/80˚). His visual analog scale (VAS) severity of LBP on the left side was 9/10. However, he did not demonstrate any motor weakness.

Computed tomography and magnetic resonance imaging (MRI) demonstrated an extruded L4–L5 disc on the right side. There were modic type 2 changes in L4–L5.

An interlaminar approach was performed on the right side at the L4- L5 level and the herniated fragment was successfully removed, and a significant symptom remission was obtained immediately in the immediate postoperative period.

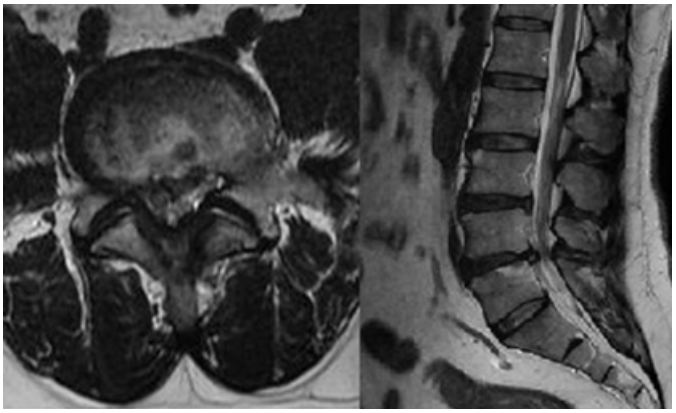

Figure 1: Magnetic resonance imaging (MRI) demonstrated an extruded L4–L5 disc on the right side in axial and sagital T2-weighted MRI.

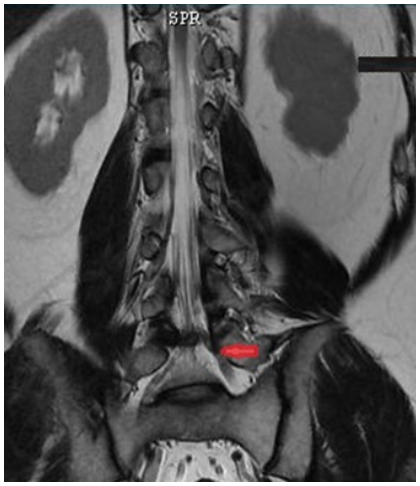

Figure 2: Coronal T2-weighted MRI demonstrated the traction generated on the contralateral nerve root.

Study	Year	Patient number	Surgical Techniques
Choudhury et al.	1978	3	total laminectomy and facetectomy
Kornberg	1994	4	explored the symptomatic nerve roots including removal of portions of inferior and superior facets
Mirovsky	2000	5	diskectomy and have removed ligamentum flavum and lamina from both sides of the canal
Sucu	2006	5	diskectomy on the side where the disc was detected radiologically
Akdeniz	2012	5	surgery on the same side as the disc even if motor deficits were detected.
Pius Kim	2017	8	4 Discectomy and contralateral decompression; 2 PLIF; 2 discectomy
ZIYA ASAN	2018	8 of 27	microdiscectomy performed on the side where the disc was detected with radiography
Safdarian	2018	1	Bilateral foraminotomy and microscopic discectomy produced relaxed roots and dura bilaterally,
Our clinical case	2019	1	diskectomy on the side where the disc was detected radiologically

In the present case, The procedure was performed from the herniation side and recurrent disc herniation was successfully removed.

In the literature, on surgical approaches for LDH with contralateral symptoms, different techniques are detailed on the table.

Discussion

Patients with lumbar disc herniation can present with contralateral symptoms, which sometimes confuse the surgeons of making a surgical plan. Determining whether the herniated disc is the cause of the patient's presenting symptoms is much more challenging when the imaging studies show LDH on the contralateral side of symptoms. After reviewing all published literature, the factors responsible for contralateral radiculopathy are listed as follows.

In 1978 Choudhury et al. [1] have reported three cases of lumbar radiculopathy contralateral to LDH and they explained, for the first time, that the syndrome may be caused by the prominent spondylotic changes and stenosis contralateral to the side of disc herniation associated with anatomical anomalies of lumbar nerve roots.

In the series reported in Mirovsky and Halperin [2], 3 of 5 patients had compression of the contralateral nerve root and both nerve roots were explored by removing the yellow ligament. Hasegawa et al. [3] showed that the etiology of lumbar radiculopathy contralateral to the side of lumbar disc herniation is related to Lateral recess stenosis and friction radiculitis.

Sucu et al. [4] Have described radicular symptoms with root traction in a series of 5 cases and recommended surgical interventions to be performed on the side where the disc was detected radiologically. Karabekir et al. [5] concluded that a hypertrophied ligamentum flavum was the likely etiology of contralateral sciatica comparing five patients with only contralateral symptoms, with 200 disc herniated patients with ipsilateral symptoms. Kalemci et al. [6] have reported a case of a contralateral neurological deficit, in which venous congestion was regarded as the cause.

In 2015, Yang et al. presented a case of contralateral radiculopathy and assumed that the migrated epidural fat was the cause of associated contralateral neurological deficit. With a series of 27 cases, Ziya ASAN [7]. Concluded that the reason for the symptoms and the most important factor leading to contralateral root tension is the top of the disc and its excision provides greater relaxation of the root.

Recently, Safdarian, et al. [8] have hypothesized that the cause of the symptoms of contralateral apparent compression patients observed in imaging studies involves a phenomenon similar to a Kernohan notch. After analyzing the axial and coronal sections of the lumbar MRI of our patient, we believe that the mechanism responsible for the contralateral symptomatology is that which is provided by the Sucu study, when the apex of the hernia is deviated laterally, the traction generated on the contralateral nerve root is greater than that exerted on the ipsilateral nerve root giving the tapered aspect of the root pressed against the pedicle [9-11].

Conclusion

Traction, rather than direct compression, may cause in the pain mechanism of LDH with contralateral radiculopathy. Only via a surgical approach ipsilateral to the herniated side, could clinical improvement be obtained postoperatively.

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