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A Giant Lumbar Disc Herniation Causing Chronic Cauda Equina Syndrome: A Clinical Image

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ABSTRACT

Giant lumbar disc herniations can produce severe sciatica and neurological deficits, in both acute and chronic stages, potentially resulting in symptoms of cauda equina syndrome, depending on their specific location.

1 | Introduction

The size of the disc herniation and the severity of symptoms in patients with giant lumbar disc herniations pose treatment challenges. Surgical intervention should be strongly recommended for patients with neurological deficits, foot drop, or symptoms of cauda equina syndrome to prevent complications [1, 2]. We present a case image of giant lumbar disc herniation at the L4–L5 level causing chronic cauda equina syndrome, emphasizing the size and location of the disc herniation.

2 | Case Presentation

A 57-year-old female with a 9-year history of rheumatoid arthritis presented to our outpatient clinic with low back pain and sciatica (left lower limb) that began approximately 3 months ago, suggestive of chronic cauda equina syndrome. The patient did not have any major trauma. Until now, the patient had followed conservative treatment as directed by another doctor and underwent multiple episodes of physiotherapy, which provided minimal relief, while she progressively developed resistance to the medication—specifically anti-inflammatory drugs, opioids, and

doses of corticosteroids—without relief of her pain and symptoms. She reported neurogenic claudication during her daily activities, approximately 60 m. The patient had bladder dysfunction referring to cauda equina syndrome, accompanied by a neurological deficit in the left lower limb.

During the physical examination, a clinical test evaluating L4 and L5 nerve root function indicated impaired dorsiflexion of the foot. There was a noticeable foot drop on the left side, causing the patient to adopt a steppage gait during ambulation. Furthermore, the patient also struggled with walking on the toes, indicating weakness in the muscles controlling plantarflexion, which further supports the involvement of the lumbosacral nerves. Sensory examination revealed hypoesthesia over the entire left leg. This numbness extended over the L4–L5 dermatome on the lower left extremity. Additionally, there was a mild reduction in reflexes in the left lower limb, which indicated that there was a disruption in nerve function by possible ongoing nerve root compression.

Magnetic resonance imaging (MRI) of the lumbar spine was performed (Figure 1), which revealed a cephalad migrating disc herniation causing central and lateral stenosis at the L4–L5 level.

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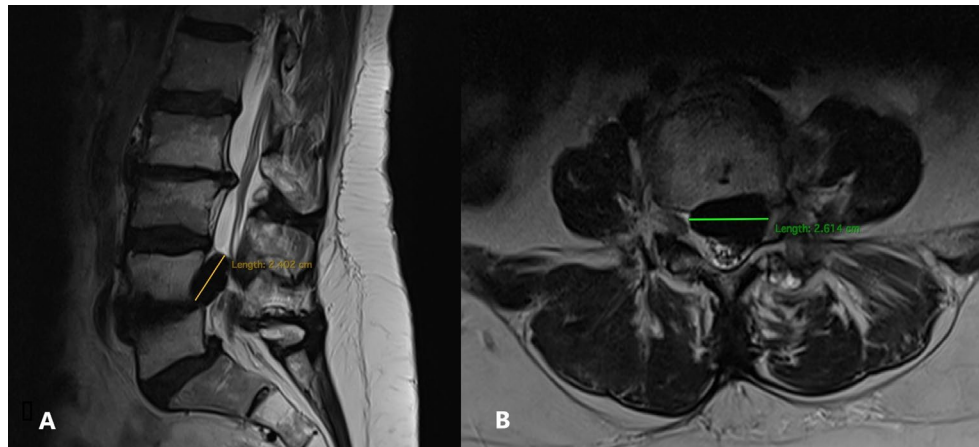


FIGURE 1 | Preoperative coronal (A) and axial (B) views of MRI scan. The dimensions of the giant disc herniation at L4, L5 in these views.

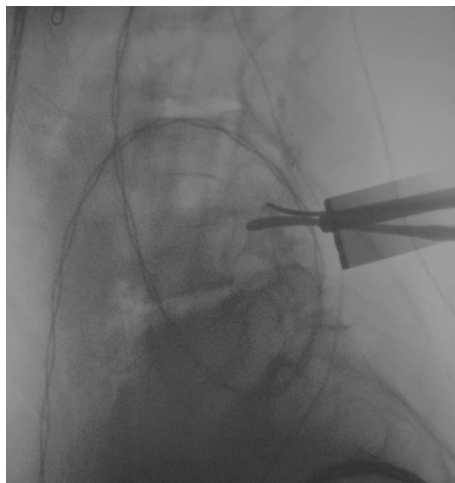


FIGURE 2 | Intraoperative fluoroscopy view. It is worth noting the severe loss of the L4, L5 intervertebral space, indicating that the intervertebral disc has been displaced posteriorly. We present the point where our surgical technique was performed to gain direct access to the area where the herniation is located. We used a minimally invasive technique to avoid causing instability in the area. The entry point was determined under fluoroscopic guidance. Additionally, during the surgery, we used fluoroscopic guidance to continuously confirm the location of the herniation. The instruments are the muscle dilator, the suction tool and two nerves dissectors.

This revealed that the patient's symptoms were caused by a large disc protrusion impinging the exiting nerve roots. Based on these image findings and clinical examination, the patient had to undergo surgical intervention. To address the patient's L4–L5 disc herniation, a microdiscectomy was done to remove the herniated disc. Additionally, a semilaminectomy was conducted to widen the spinal canal. To further decompress the nerve roots, a foraminotomy was done to expand the neural foramina and relieve the impingement on the exiting nerve roots. Intraoperative fluoroscopy (Figure 2) was used to confirm the precise location of the L4–L5 level and to monitor instrument placement at that level. As seen in the fluoroscopic image (Figure 2) at the L4–L5 level, there is nearly complete loss of the intervertebral space, indicating full posterior displacement of the intervertebral disc.



FIGURE 3 | Intraoperative view of the surgical field indicates a minimally invasive procedure. We present the pathway we created intraoperatively to gain access to the area where the herniation is located, allowing us to safely proceed with its removal.

Figure 3 shows an intraoperative image taken to highlight the minimally invasive approach.

3 | Conclusion

Giant lumbar disc herniations can cause severe sciatica and neurological deficits, either in the acute phase or the chronic phase, which may lead to symptoms of cauda equina syndrome depending on the level at which the disc herniation occurs and

its size [1, 2]. Early diagnosis and appropriate management of the patient will also affect the patient's functional recovery.

Author Contributions

Stylianios Kapetanakis: conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, writing – original draft, writing – review and editing. **Mikail Chatzivasiliadis:** data curation, formal analysis, investigation, methodology, validation, visualization, writing – original draft. **Krikor Gkoumousian:** data curation, formal analysis, investigation, methodology, validation, visualization, writing – review and editing. **Christos Siopis:** data curation, investigation, methodology, validation, writing – review and editing. **Paschalis Tsioulas:** data curation, investigation, methodology, validation, writing – review and editing. **Constantinos Chaniotakis:** conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, visualization, writing – original draft.

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The authors have nothing to report.

Ethics Statement

The authors have nothing to report.

Consent

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

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