

ILLUSTRATIVE SURGICAL VIDEO

Multilevel biportal endoscopic treatment for lumbar disc herniations: A case report and surgical video

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We present a 61-year-old male suffering from longstanding back pain and newly developed left leg pain. Magnetic resonance imaging revealed an extruded and down-migrated central disc herniation at the L3-4 level and a left-sided subarticular L2-3 disc herniation. We decided to perform a left unilateral biportal endoscopic surgery to assess both disc herniations. The case, the surgical video, and the fast recovery of the patient highlight the benefits of applying the biportal endoscopic surgical techniques for treating multilevel lumbar pathology.

Keywords: disc herniation, Unilateral Biportal Endoscopy, endoscopy, spine, minimally invasive surgery

Introduction

Lumbar disc herniation is among the most common pathologies causing back pain. Recent advancements in minimally invasive techniques and the development of endoscopic spine surgical techniques are revolutionizing the treatment of disc herniations (1). Spine endoscopic techniques allow for precise decompression and discectomy with minimal damage to surrounding tissues such as muscles, ligaments, or facet joints, leading to faster recovery and reduced postoperative pain. Among these techniques, the Unilateral Biportal Endoscopy (UBE) offers the advantage of better maneuverability compared with the uniportal endoscopic technique. This is because, with the UBE, the two portals (“working portal” and “viewing portal”) create an angle that allows better visualization of the tip of the instruments and allows freedom of motion between the two instruments because they do not interfere during the surgical movements. Therefore, UBE provides the benefits of both open and minimally invasive techniques (2–4).

We present a multilevel UBE technique to treat a 61-year-old male presenting chronic back pain refractory to conservative treatment and acute left-sided sciatica. The surgical video demonstrates the detailed surgical procedure.

Case report

Clinical presentation and imaging findings

We present a 61-year-old male with long-lasting chronic back pain refractory to conservative treatment and bilateral leg paresthesia. The patient consulted because he developed a new-onset disabling left sciatica during the last 2 months, which was also refractory to conservative treatment and foraminal injections.

MRI revealed an extruded and inferiorly migrated central disc prolapse at the L3-4 level and a left-sided subarticular disc prolapse at the L2-3 level occupying the lateral recess.

Surgical technique

Given the pathology at two levels, we decided to perform a multilevel endoscopic approach using a left UBE technique. The patient was given general anesthesia and positioned prone (**Video 1**).

VIDEO 1 | Illustrative Video of Multilevel Biportal Endoscopic treatment of Lumbar Disc Herniations.<https://youtu.be/aVwXYIG1zv0>

L3-4 level

Preoperative planning is crucial and ensures precise alignment of the instruments. The working portal was created via a 0.8 cm left paramedian incision, 0.5–1 cm from the midline at the level of the L4 pedicle, to achieve the appropriate inferior to superior angle. The viewing portal was established with a 0.5 cm paramedian incision, 2.5–3 cm cranial to the working portal, just below the L3 pedicular plane.

Docking and triangulation were performed at the L3 espino-laminar junction. The multifidus muscle was detached from the inferior margin of L3 lamina and the superior margin of L4 lamina using a plasma probe, exposing the interlaminar window and medial edge of the L3-4 facet joint. Minimal drilling of the inferior border of the L3 lamina facilitated detachment of the ligamentum flavum. After resecting the left-sided ligamentum flavum and medializing the dural sac, we exposed the posterior margin of the L4 vertebral body and encountered down-migrated medial extruded disc herniation, which was incised and removed with pituitary forceps. Adequate dural decompression and hemostasis were confirmed.

L2-3 level

The working portal was done by enlarging the previous viewing portal to 0.8 cm, and a new viewing portal was created 2.5 cm rostrally. The same surgical steps were followed until reaching the ligamentum flavum. Anticipating a soft disc herniation, we incised and detached only the most lateral part of the ligamentum flavum from the lateral zone of the L2 lamina and medial area of the L2-3 facet joint to minimize complications and postoperative fibrosis. A soft herniation was found and resected, ensuring good decompression of the dural structures.

Postoperative course

Skin closure was performed with surgical staples. The patient experienced an uneventful postoperative course, ambulating

within 4 h post-surgery and being discharged 12 h later. Two weeks postoperatively, the patient was pain-free and had resumed mild physical activities, including cycling, swimming, and walking on varied terrain. One month post-surgery, the patient remained asymptomatic and had returned to regular daily activities.

Conclusion

This case illustrates the effectiveness of multilevel endoscopic spine surgery using an ipsilateral UBE technique for treating lumbar disc herniations. The approach resulted in excellent clinical outcomes with a rapid postoperative recovery and minimal complications.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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