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Full Endoscopic Lumbar Discectomy InterLaminar (FELD-IL) approach – a case report

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Introduction

Minimally invasive surgical techniques are becoming increasingly common in spinal surgery in an attempt to decrease tissue trauma during surgery, which in turn decreases post-operative pain. Full endoscopic lumbar discectomy with the inter laminar approach is being increasingly used because of its potential to minimalize soft-tissue damage and decrease hospital stay. FELD using the interlaminar approach (FELD-IL) is performed only by a few surgeons. In this paper we are going to discuss a case done on Full Endoscopic Lumbar Discectomy using the Inter Laminar (FELD-IL) approach.

Case report

We describe a case of lumbar disc herniation done with the Full Endoscopic Lumbar Discectomy Inter Laminar (FELD-IL) approach using a 25° endoscope with a 4mm working diameter. After all fragments are removed, annuloplasty is performed using a radio-frequency ablator. Postop, the patient was pain free immediately followed by no recurrence till now.

Technical note of the Full Endoscopic Lumbar Discectomy Inter Laminar (FELD-IL) approach

- The patient is positioned in the prone position under general anesthesia or epidural anesthesia, or local anesthesia, with all pressure points adequately padded. The surgical site is prepared with painting and draping, ensuring sterility.
- Using a C-arm, the level of the intervertebral disc space is identified and marked.
- Entry level is marked at the level of the pathology on the same side (symptomatic side or if it is B/L disease, the more symptomatic side), just adjacent to the spinolaminar junction on the lower border of the upper lamina or the laminofacetal junction
- A 7–8 mm incision is made into the skin and fascia after local anesthesia infiltration.
- A dilator is introduced and docked over the predetermined desired point, i.e., lateral to the spinolaminar junction at the lower border of the upper lamina, the position confirmed with the c-arm and the sheath passed over it.
- For simple lumbar discectomy, we use a 25° endoscope with a 4mm working diameter.
- The 25° endoscope is attached to a camera, an irrigation channel, and a light source connected to the scope, and white balancing is done.
- The endoscope is then maneuvered into the sheath, by palpating the bony landmarks, soft tissue, and muscle fibers cleared with a punch forceps and a cutter.
- For better visualization and for a clear field of view, hemostasis should be ensured throughout the procedure with a radio-frequency ablator or a bipolar cautery device.
- Once the soft tissue and muscle fibers are cleared, the lower border of the upper lamina, inferior facet, the upper border of the lower lamina, and the intervening ligamentum flavum should be defined.

VIDEO 1 | https://youtu.be/iGN_4rKCcN4

- Before drilling the bone, the operating surgeon should reorient themselves to the anatomy and determine the limits of the drilling.
- Depending on the configuration of the pathology, part of the lower lamina, part of the upper lamina, and part of the medial facet may be safely drilled to gain access to the lateral flavum attachment.
- The superficial layer of the flavum is identified and removed, followed by a flavotomy into the deep layer using a dissector or the back of a cutter.
- Flavotomy of deep layer allows saline irrigation to sweep into the space between the flavum and the thecal sac, which helps to delineate the space between the flavum and the thecal sac better and enhances the safety of thecal sac during the removal of the deep layer of the ligamentum flavum.
- Once the flavum is adequately removed, the lateral border of the traversing root is identified before addressing the disc. The beveled end of the sheath is then advanced further and gently rotated either clockwise or anticlockwise to retract the root.
- Confirmation of the relation of the disc space may be obtained using the C-arm. Any visible extruded disc fragment is removed first, followed by small annulotomy with a cutter or a chisel to remove loose and desiccated fragments.
- After all fragments are removed, annuloplasty is performed using a radio-frequency ablator.
- Once hemostasis is secured, remove the scope and the sheath and close the skin with simple suture or stapler.

Conclusion

FELD with the IL approach is therefore a safe and effective surgical option for LDH. As FELD-IL does need steep learning curve, it is better compared to other percutaneous procedures. Hence Full Endoscopic Lumbar Discectomy Inter Laminar (FELD-IL) approach is better than other percutaneous procedures.