

EDITORIAL

Endoscopic Spine Surgery, Challenges and Handicaps

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Full-endoscopic spine surgical techniques were developed to minimize the invasiveness of traditional spine surgeries. The beginnings of full-endoscopic spine surgery date back to the early 1970s, when transforaminal endoscopic spine surgery was developed as an evolution of needle-based percutaneous endoscopic discectomy. Full-endoscopic spine surgery is carried out via a working channel endoscope and requires generation of an artificial working space assisted by a tubular retractor. Progression of full-endoscopic spine surgery is facilitated by radiographic imaging, palpation, and visualization of anatomic target areas. Principal anatomic landmarks are described for all full-endoscopic procedures and allow for safe identification of neural structures. Both transforaminal and interlaminar approaches allow for access to the lumbar spinal column. Full-endoscopic spine surgery allows the surgeon to address common degenerative pathology. Traditional surgery should always be considered in cases of moderate to severe deformity or instability. Tubular retractor systems are a critical component of full-endoscopic spine surgery. The tubular retractor is necessary to generate an artificial working space, and the bevel is essential for dissection and retraction of neural structures.

AOSpine Endoscopic Spine Surgery Nomenclature System

Full-endoscopic surgical approaches typically progress in three stages

• FULL-ENDOSCOPIC DISCECTOMY

A- Full-Endoscopic Cervical Discectomy

- a- Anterior endoscopic cervical discectomy (AECD)
- b- Posterior endoscopic cervical discectomy (PECD)

B- Full-Endoscopic Thoracic Discectomy

- Transforaminal endoscopic thoracic discectomy (TETD)

C- Full-Endoscopic Lumbar Discectomy

- a. Transforaminal endoscopic lumbar discectomy (TELD)
- b. Interlaminar endoscopic lumbar discectomy (IELD)
- c. Extraforaminal endoscopic lumbar discectomy (EELD)

D- Full-Endoscopic Foraminotomy

- a. a-Posterior endoscopic cervical foraminotomy (PECF)
- b. b-Transforaminal endoscopic lumbar foraminotomy (TELF)
- c. Interlaminar contralateral endoscopic lumbar foraminotomy (ICELF)

E- Full-Endoscopic Lumbar Lateral Recess Decompression

- a. Transforaminal endoscopic lateral recess decompression (TE-LRD)
- b. Interlaminar endoscopic lateral recess decompression (IE-LRD)

F- Full-Endoscopic Laminotomy For Bilateral Decompression

- a. Cervical endoscopic unilateral laminotomy for bilateral decompression (CE-ULBD)
- b. Thoracic endoscopic unilateral laminotomy for bilateral decompression (TE-ULBD)
- c. Lumbar endoscopic unilateral laminotomy for bilateral decompression (LE-ULBD)

Endoscopic Surgical approaches:

1. Traditional Transforaminal Approach

Indications:

- a. Treatment of disk pathology located in the foramen or in the lateral recess *ventral to the traversing nerve root.*
- b. Resection of foraminal, subarticular, and central disk herniations.

Relative contra-indications:

- a. Severe foraminal stenosis.
- b. Facet hypertrophy.
- c. Location of the exiting nerve root within the inferior portion of the foramen .

All these increase the risk for irritation or damage of the exiting nerve root

2. Trans-pars Approach

- a. Provides access to the extraforaminal space and the lateral aspect of the intervertebral foramen.
- b. This approach may be utilized for extraforaminal disk herniations .
- c. Other pathologies located within the extraforaminal area such as osteophytes or protruding interbody cages.

3. Interlaminar endoscopic lumbar approaches.
well-suited for resection of

- a. Subarticular disk herniations
- b. Subarticular disk herniation with coexisting lateral recess stenosis.
- c. Resect migrated disk fragments, particularly in the lower lumbar spinal segments

Pearls and Pitfalls of Interlaminar Approaches

In patients with a congenitally narrow spinal canal or for the upper lumbar spinal segments Endoscopic spine surgery for soft disc herniation can be effective with benefits of minimal tissue trauma in properly selected cases

Limitations of Endoscopic Surgery:

1. Small field of view.
2. Significant potential for disorientation.
3. Small working cannulas

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