Trans-SAP Approach for Cranial Extrusion

Quick Reference Guide

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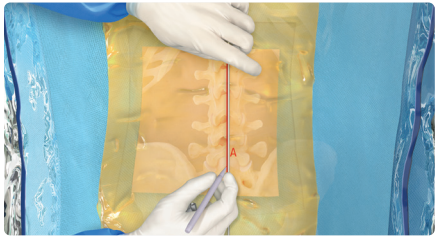
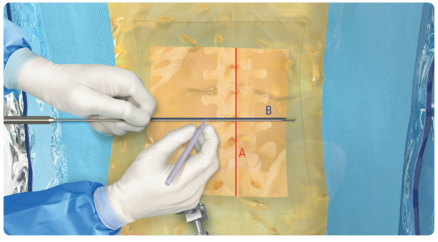


A

Midline

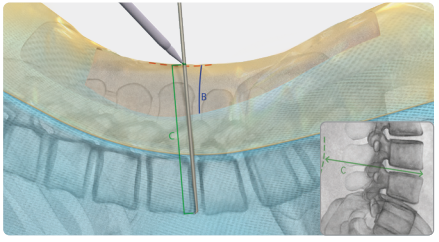
- With a blunt dissector, mark the midline using the spinous processes as reference (Line A).



B

Disc Space

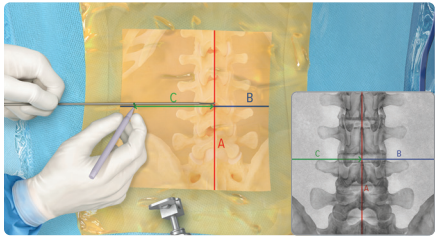
- Mark the disc space at the level of herniation (Line B).



C

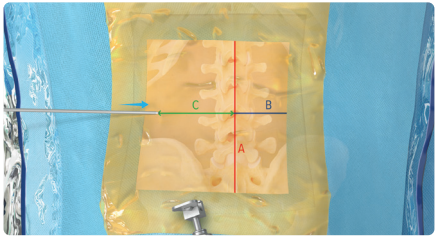
Measuring Lateral Line

- On a lateral x-ray, measure the distance from the ventral disc space to the dorsal surface of the skin (Line C).



Marking Lateral Line

- From the midline (Line A), mark a horizontal line that is the length of Line C and aligns with the disc space line (Line B).



Needle Placement

- Insert the needle at the lateral end of Line C, advancing it along the disc space line (Line B) to dock on the ventral medial aspect of the superior articular process (SAP).

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Far Lateral Discectomy L5-S1

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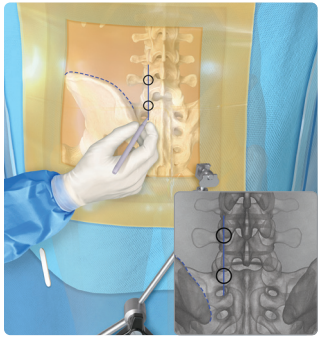
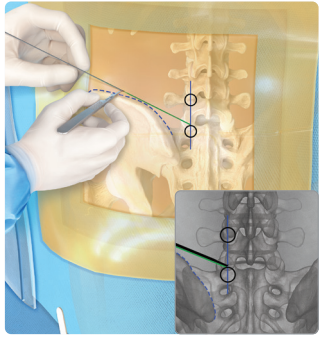


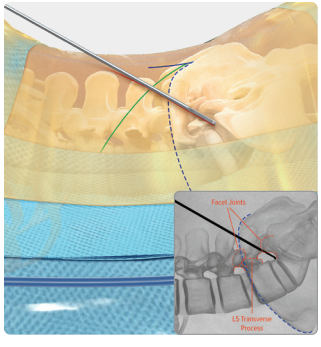
Midpedicular Line

- Obtain an AP view of the S1 endplate.
- Identify and mark the iliac crest and the midline of the L5 and S1 pedicles.



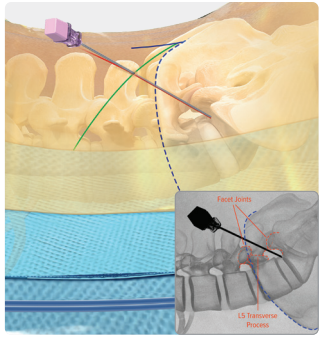
Oblique Line

- With a blunt dissector, mark an oblique line extending cranially from the midpedicular line of the S1 pedicle, cranial to the iliac crest shadow.



Lateral Line

- Mark a line starting at the junction of the S1 pedicle and endplate.
- Ensure the trajectory passes through the pars interarticularis, cranial to the L5-S1 facet joint and caudal to the L5 transverse process.



Needle Placement

- Use the intersection of the oblique and lateral lines as the insertion site for the needle, targeting the 12 o'clock position of the S1 pedicle using lateral and lateral and AP fluoroscopy to confirm.

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Lateral Recess Decompression

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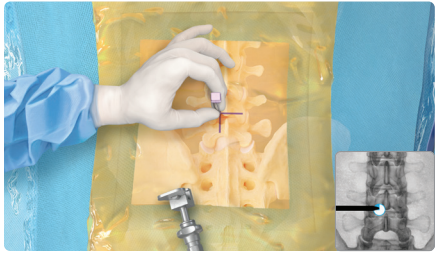
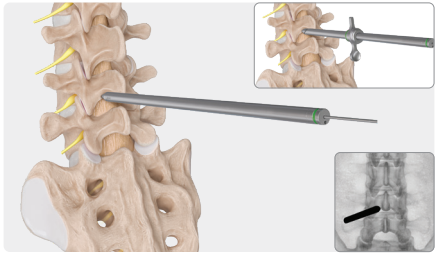


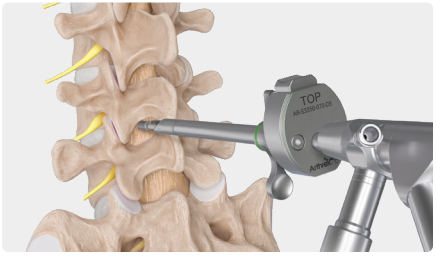
Target

- Tilt the C-arm to maximize the interlaminar window at the level of the decompression.
- In the interlaminar window, target between the 9 and 12 o'clock positions for a left-sided decompression or between the 12 and 3 o'clock positions for a right-sided decompression.



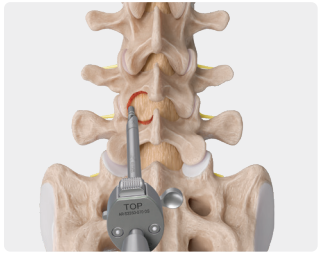
Access

- Use a #11 or #15 blade to create an incision <1 cm in length through the skin and fascia. Dilate through the musculature and fascia.
- Dock on the inferior medial edge of the cranial lamina. Use fluoroscopy to confirm positioning.



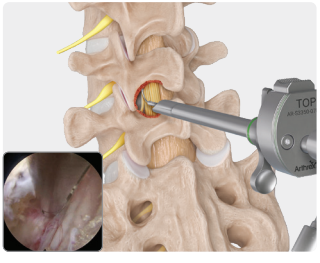
Expose

- Dissect to expose the lamina and ligamentum flavum, making sure to expose the junction between them.
- Rest the bur on the ligamentum flavum caudal to the cranial lamina.



Undercut

- Undercut the ventral lamina at the attachment of the ligamentum flavum until the ligamentum flavum is detached.
- Follow the lateral aspect of cranial lamina to the medial facet and the caudal lamina. Rest the bur on the ligamentum flavum and bur the caudal lamina until the ligamentum flavum is detached.
- Extend this drilling to the medial facet until reaching the medial aspect of the superior articulating process.



Resect and Decompress

- Resect the ligamentum flavum to decompress the traversing nerve. Decompress the lateral recess and mobilize the traversing nerve.

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Complexity of Endoscopic Spine Procedures

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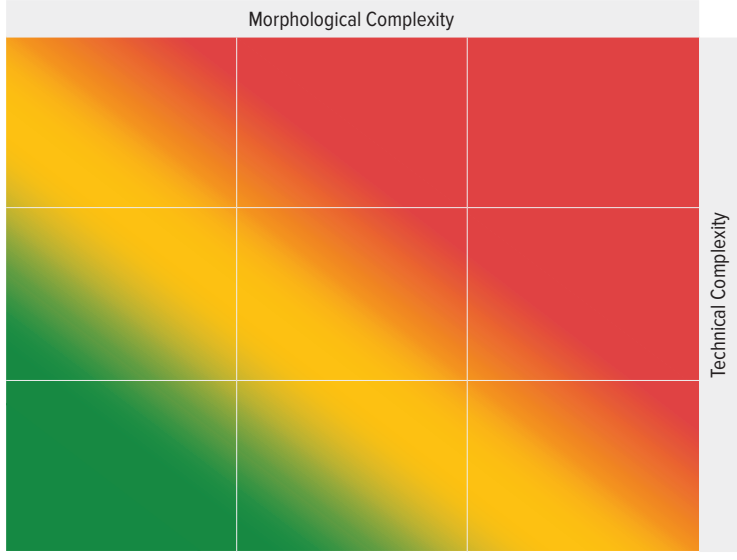

- **PECCD** (Posterior Endoscopic Cervical Central Decompression)
- **TETD** (Transforaminal Endoscopic Thoracic Discectomy)
- **TE-ULBD** (Thoracic Endoscopic Unilateral Laminotomy for Bilateral Decompression)
- **Endoscopic Fusion**

- **PECF** (Posterior Endoscopic Cervical Foraminotomy)
- **EELD** (Extraforaminal Endoscopic Lumbar Discectomy)
- **TE-LRD** (Transforaminal Endoscopic Lateral Recess Decompression)
- **ICELF** (Interlaminar Contralateral Endoscopic Lumbar Foraminotomy)
- **LE-ULBD** (Lumbar Endoscopic Unilateral Laminotomy for Bilateral Decompression)
- **TELF** (Transforaminal Endoscopic Lumbar Foraminotomy)

- **IELD** (Interlaminar Endoscopic Lumbar Discectomy)
- **TELD** (Transforaminal Endoscopic Lumbar Discectomy)
- **IE-LRD** (Interlaminar Endoscopic Lateral Recess Descompression)
- **MBT** (Medial Branch Transection)

>1b = c (eg, deformity [b] + degeneration [b] = c)

- Easy access (eg, interlaminar L5-S1)
- Soft disc herniation

- Level-specific difficulty (eg, transforaminal L5-S1)
- Relevant deformity/ spondylolisthesis
- Severe degeneration
- Calcified disc herniation
- Osteodiscal stenosis

- Potential danger to critical structures (eg, vertebral artery looping)
- Scarring (eg, revision at the same side)

Reference
Farshad M, et al. *N Am Spine Soc J.* 2025;22:100603. doi:10.1016/j.xnsj.2025.100603.

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