

# History and Current Status of Biportal Endoscopic Spine Surgery

Jin Hwa Eum

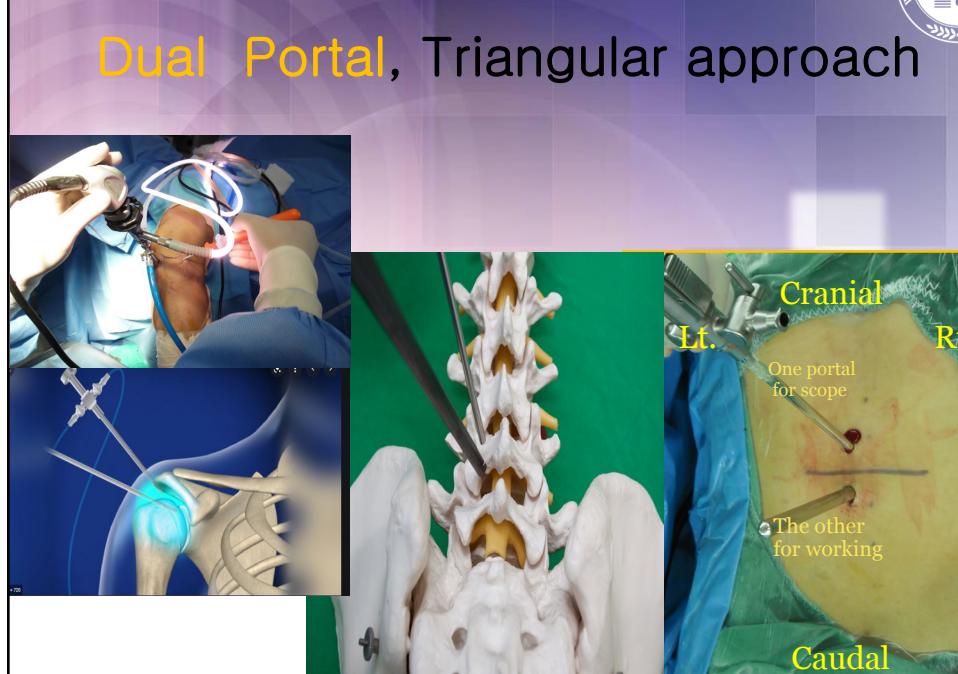
Ain Alkhaleej Hospital

Al ain Abudhabi ,UAE

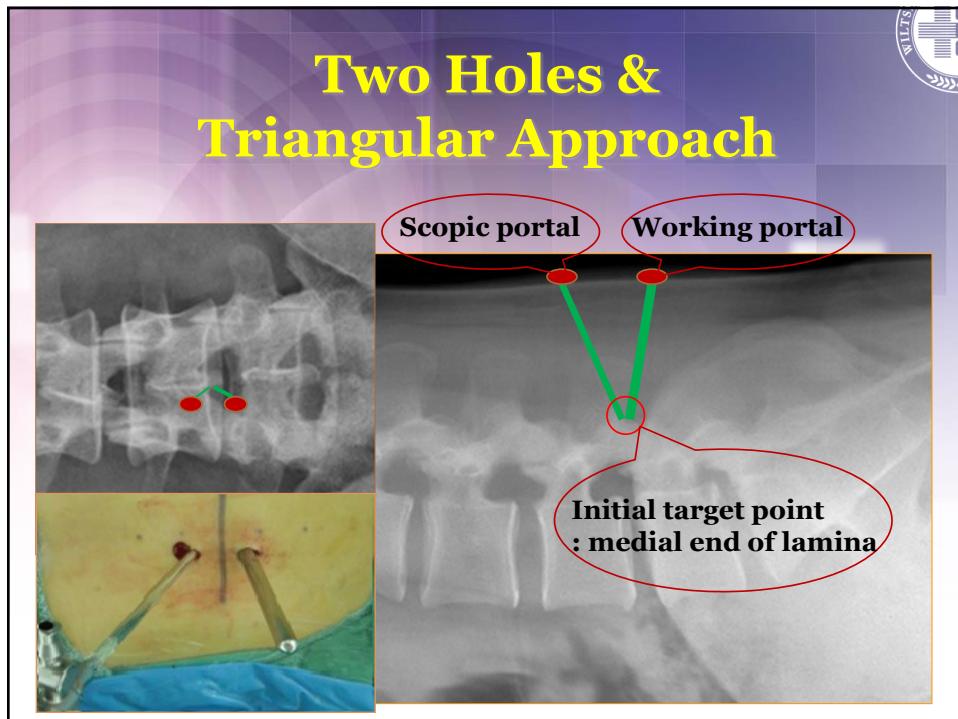
South Korea

1

## Dual Portal, Triangular approach



2



3

UBE is a modification of translaminar lumbar epidural endoscopy

**De Antoni D, Claro ML.**

- 1) (Technical Note) Translaminar Lumbar Epidural Endoscopy: Anatomy, Technique, and Indications. *Arthroscopy: The Journal of Arthroscopic and Related Surgery*, Vol 12, No 3 (June), 1996: pp330-334
- 2) Translaminar Lumbar Epidural Endoscopy: Technique and Clinical Results. *Journal of the Southern Orthopedic Association*, Vol 7, No 1 (Spring), 1998: pp6-12

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SILVIS

# Original Article 1996

Technical Note

## Translaminar Lumbar Epidural Endoscopy: Anatomy, Technique, and Indications

Daniel Julio De Antoni, M.D., Maria Laura Claro, M.D., Gary G. Poehling, M.D., and Steven S. Hughes, M.D.

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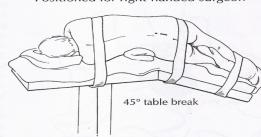
**Summary:** This article describes a new technique to achieve access to the epidural space via a direct posterior portal. This minimally invasive technique allows treatment of lumbar disc extrusion with minimal tissue manipulation and preservation of the paraspinal musculature. Hemostasis, visualization, and triangulation is performed with standard arthroscopic instrumentation. The anatomy of, indications for, and advantages of this technique are described. **Key Words:** Discectomy—Epidural—Endoscopy.

The last two decades in spine surgery have been marked by increased minimally invasive surgical dissection. Patient comfort, hemorrhage, and minimal scarring are some of the most pertinent reasons for the increase in minimally invasive techniques. In addition to microdiscectomy, the other minimally invasive ways to approach the lumbar disc include posterolateral percutaneous procedures popularized by Parviz Kambin, and more recently the paraforaminal endoscopic approach.<sup>1-5</sup>

Improved illumination and magnification technology have greatly aided the development of endoscopic systems for use in the spine over the past 5 years. This article describes a new direct posterior portal and the use of standard arthroscopic instruments for magnification, illumination, and irrigation.<sup>6</sup> This technique allows excellent visualization of diseased lumbar disc segments (L<sub>1-2</sub>-S<sub>1</sub>) and the ability to remove extruded nuclear tissue in a gentle way, with minimal dissection, and excellent hemostasis.

**PATIENT SELECTION**

The indications for this procedure include those patients who have single-level, unilateral, intraforaminal,



Positioned for right-handed surgeon  
45° table break

FIG 2. Patient positioned in the lateral decubitus with the symptomatic side superior.

From the Instituto de Cirugía Arroscópica Buenos Aires, Instituto Médico Platense, Buenos Aires, Argentina (D.J.D., M.L.C.), and the Bowman Gray School of Medicine, Department of Orthopaedic Surgery, Winston-Salem, NC (G.G.P., S.S.H.). Address correspondence and reprint requests to Daniel Julio De Antoni, M.D., Instituto de Cirugía Arroscópica Buenos Aires, Instituto Médico Platense, Calle 11 N° 428, La Plata 1900, Buenos Aires, Argentina. © 1996 by the Arthroscopy Association of North America. Published by John Wiley & Sons, Inc.

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SILVIS

# ✓ Translaminar Epidural Endoscopy

1996,1998 De Antoni D, Claro ML

2001. Feb Abdul Gaffar, AAOS



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## New Developments since 2001



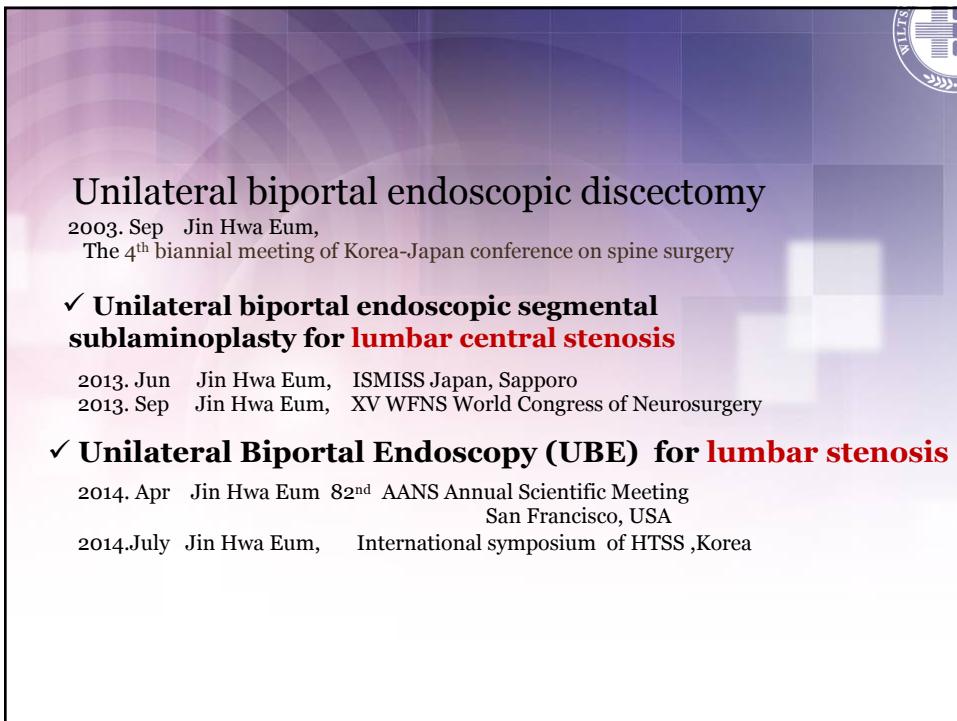
- Radiofrequency device
- Prone position
- Modified instruments

7

## Development of Tools

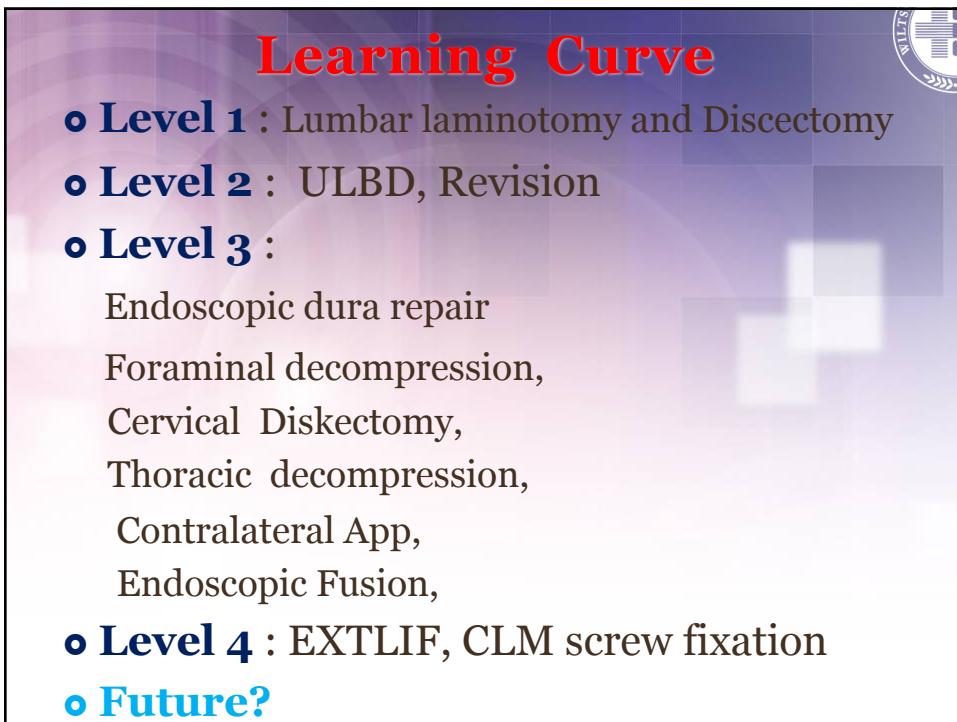


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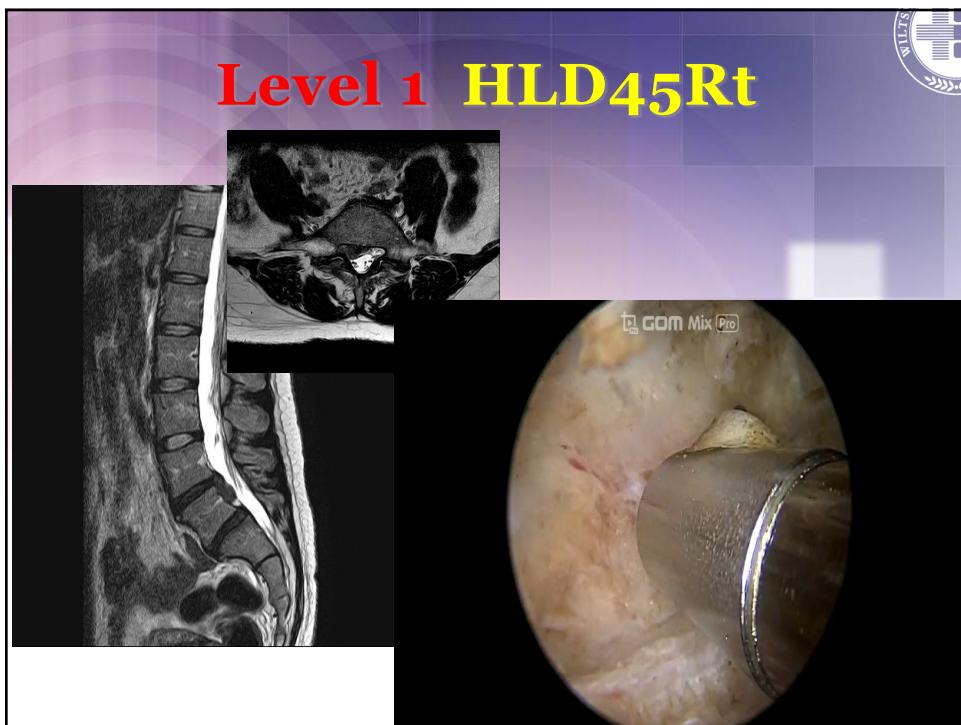
The poster features a purple and blue abstract background with a faint cross symbol. In the top right corner is a circular logo with a stylized 'E' or medical symbol and the word 'SANTITAS' around it. The title 'Unilateral biportal endoscopic discectomy' is at the top left. Below it, the text '2003. Sep Jin Hwa Eum, The 4<sup>th</sup> biannual meeting of Korea-Japan conference on spine surgery' is present. A red checkmark leads to the text '✓ Unilateral biportal endoscopic segmental sublaminoplasty for lumbar central stenosis'. Below this, two dates are listed: '2013. Jun Jin Hwa Eum, ISMISS Japan, Sapporo' and '2013. Sep Jin Hwa Eum, XV WFNS World Congress of Neurosurgery'. Another red checkmark leads to the text '✓ Unilateral Biportal Endoscopy (UBE) for lumbar stenosis'. Below this, two more dates are listed: '2014. Apr Jin Hwa Eum 82<sup>nd</sup> AANS Annual Scientific Meeting San Francisco, USA' and '2014. July Jin Hwa Eum, International symposium of HTSS ,Korea'.

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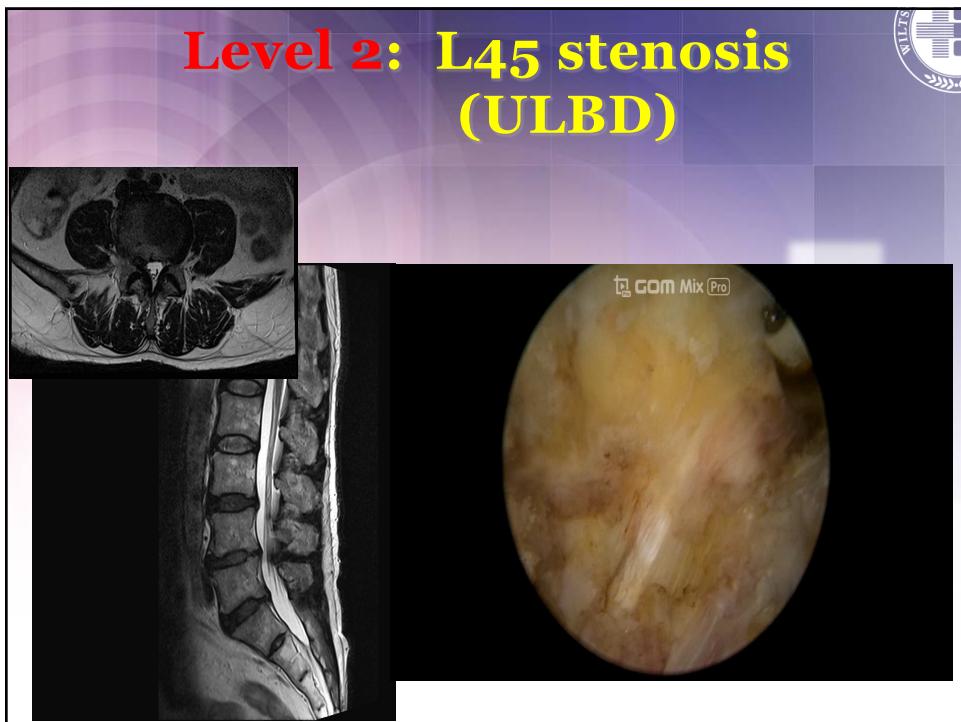


The poster has a purple and blue abstract background with a faint cross symbol. In the top right corner is a circular logo with a stylized 'E' or medical symbol and the word 'SANTITAS' around it. The title 'Learning Curve' is at the top center in red. Below it, a blue circle contains the text '• Level 1 : Lumbar laminotomy and Discectomy'. Another blue circle contains '• Level 2 : ULBD, Revision'. A third blue circle contains '• Level 3 :'. Underneath 'Level 3', there is a list of procedures: 'Endoscopic dura repair', 'Foraminal decompression', 'Cervical Diskectomy', 'Thoracic decompression', 'Contralateral App', and 'Endoscopic Fusion'. A fourth blue circle contains '• Level 4 : EXTLIF, CLM screw fixation'. A fifth blue circle contains '• Future?'.

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Jan 1 2016

**JNS SPINE**

TECHNICAL NOTE

**🎥 Percutaneous biportal endoscopic decompression for lumbar spinal stenosis: a technical note and preliminary clinical results**

Jin Hwa Eum, MD,<sup>1</sup> Dong Hwa Heo, MD, PhD,<sup>1</sup> Sang Kyu Son, MD,<sup>2</sup> and Choon Keun Park, MD, PhD<sup>1</sup>

<sup>1</sup>Department of Neurosurgery, Spine Center, The Leon Wiltse Memorial Hospital, Suwon, and <sup>2</sup>Department of Neurosurgery, Spine Center, Gumi Kang-dong Hospital, Gumi, Korea

**OBJECTIVE** The use of conventional uniportal spinal endoscopic decompression surgery for lumbar spinal stenosis can be limited by technical difficulties and a restricted field of vision. The purpose of this study is to describe the technique for percutaneous biportal endoscopic decompression (PBED) for lumbar spinal stenosis and analysis of clinical postoperative results.

**METHODS** The authors performed a unilateral laminotomy with bilateral foraminal decompression using a unilateral biportal endoscopic system in patients with single-level lumbar stenosis. The authors enrolled only patients who underwent follow-up for longer than 12 months after PBED. Fifty-eight patients were enrolled in this study. This approach was based on 2 portals: one portal was used for continuous irrigation and endoscopic viewing and the other portal was used to manipulate the instruments used in the decompression procedure. Clinical parameters such as the Oswestry Disability Index (ODI), Macnale criteria, and postoperative complications were analyzed.

**RESULTS** Neural decompression was effectively performed in all enrolled patients. The mean ODI was significantly lower after PBED. Of 58 patients, 47 (81.0%) had a good or excellent result according to the Macnale criteria. Postoperative ODI and visual analog scale scores were significantly improved compared with preoperative values.

**CONCLUSIONS** From a surgical point of view, percutaneous biportal endoscopy is very similar to microscopic spinal surgery, permitting good visualization of the contralateral sublaminar and medial foraminal areas. The authors suggest that the PBED, which is a minimally invasive procedure, is an alternative treatment option for degenerative lumbar stenosis.

**KEY WORDS** biportal endoscopy; lumbar stenosis; endoscopic decompression

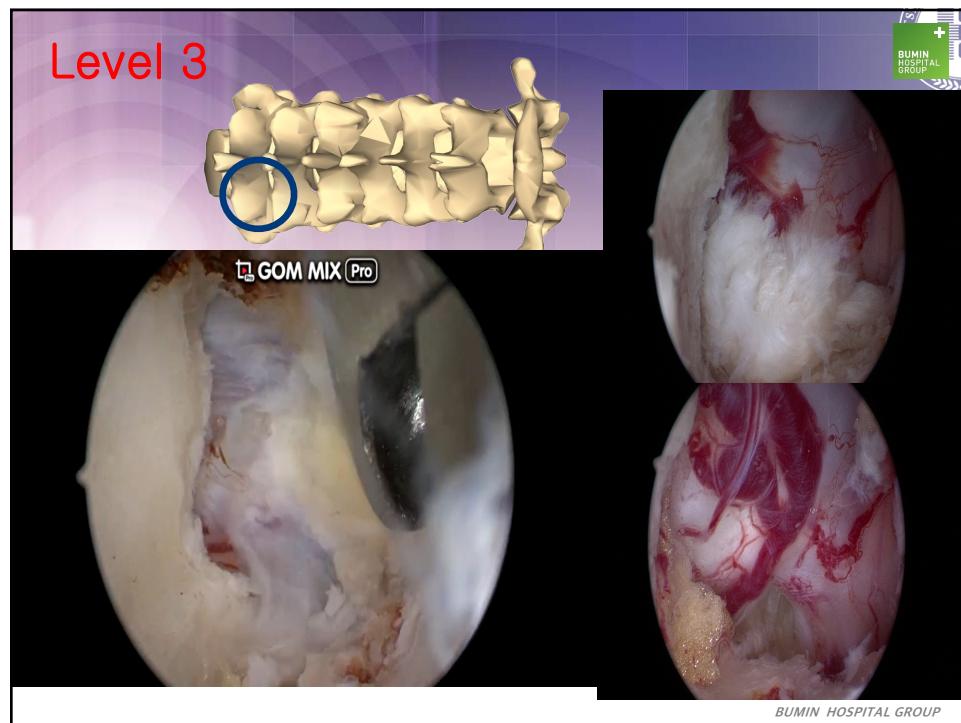
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**Level 3 : HCD C67 Rt**

**Preop**      **postop**

BUMIN HOSPITAL GROUP

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 **Fully endoscopic lumbar interbody fusion using a percutaneous unilateral biportal endoscopic technique: technical note and preliminary clinical results**

\*Dong Hwa Heo, MD, PhD,<sup>1</sup> Sang Kyu Son, MD,<sup>2</sup> Jin Hwa Eum, MD,<sup>3</sup> and Choon Keun Park, MD, PhD,<sup>1</sup> on behalf of the International Unilateral Biportal Endoscopic Spine Surgery Research Society

<sup>1</sup>Department of Neurosurgery, Spine Center, The Leon Wiltse Memorial Hospital, Suwon; <sup>2</sup>Department of Neurosurgery, Spine Center, Gangdong Hospital, Busan; and <sup>3</sup>Department of Neurosurgery, Spine Center, Centum Hospital, Changwon, Korea

**OBJECTIVE** Minimally invasive spine surgery can minimize damage to normal anatomical structures. Recently, fully endoscopic spine surgeries have been attempted for lumbar fusion surgery. In this study, the authors performed a percutaneous unilateral biportal endoscopic (UBE) technique as a minimally invasive surgery for lumbar fusion. The purpose of this study is to present the UBE technique of fully endoscopic lumbar interbody fusion (LIF) and to analyze the clinical results.

**METHODS** Patients who were to undergo single-level fusion surgery from L3–4 to L5–S1 were enrolled. Two channels

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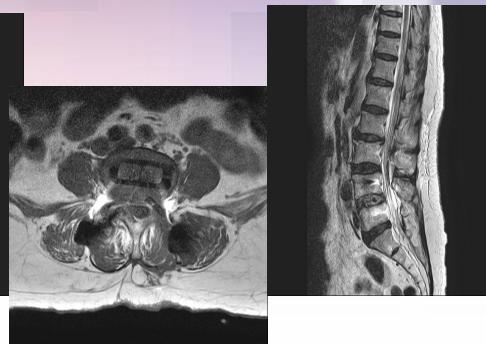
## Level 4 : EXTLIF(OLIF Cage)

75 yo F /LBP with left leg radiation pain/  
spondylolisthesis L45

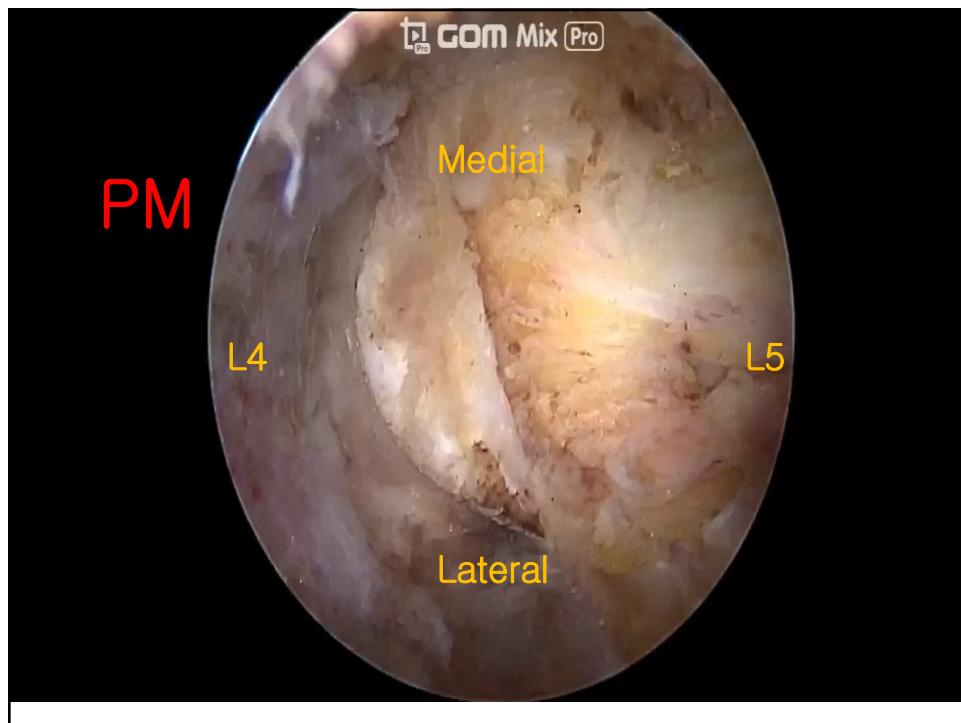
Preoperative MRI



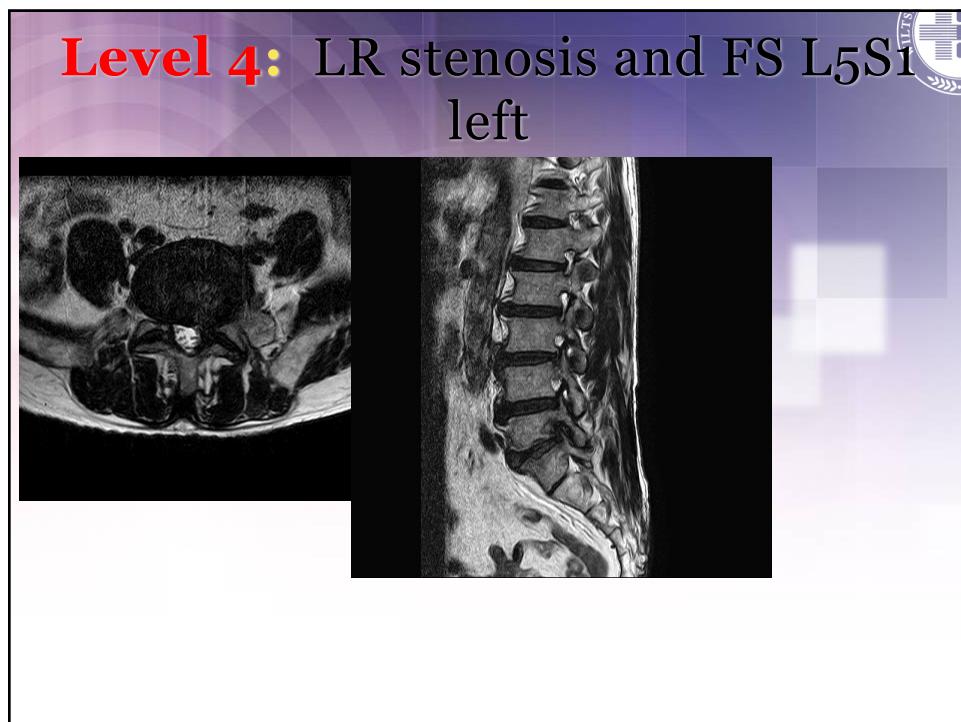
Postoperative MRI



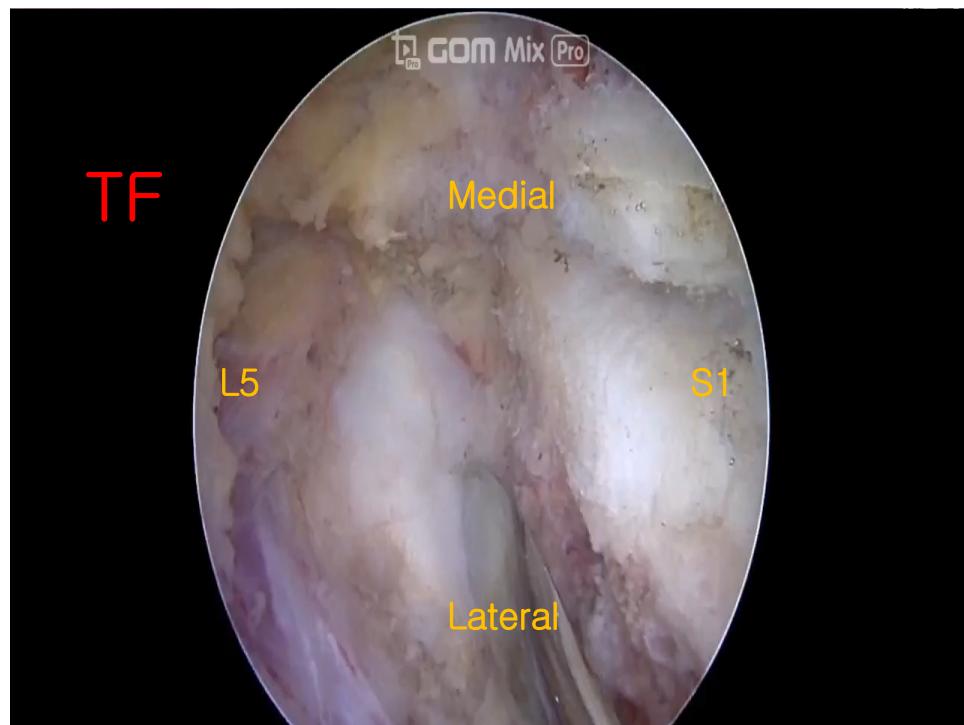
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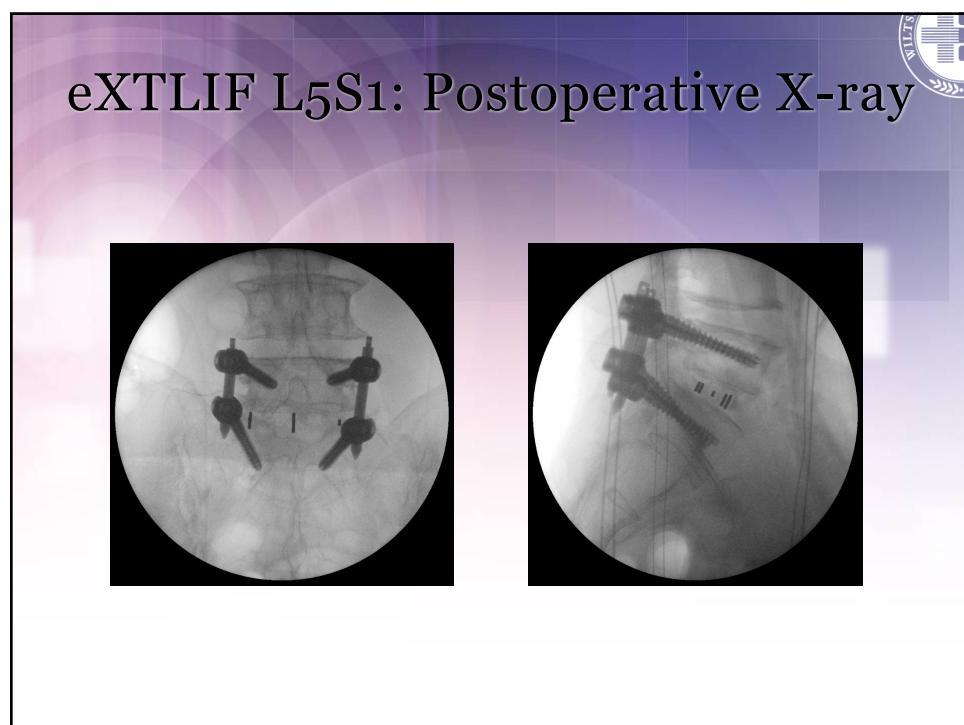
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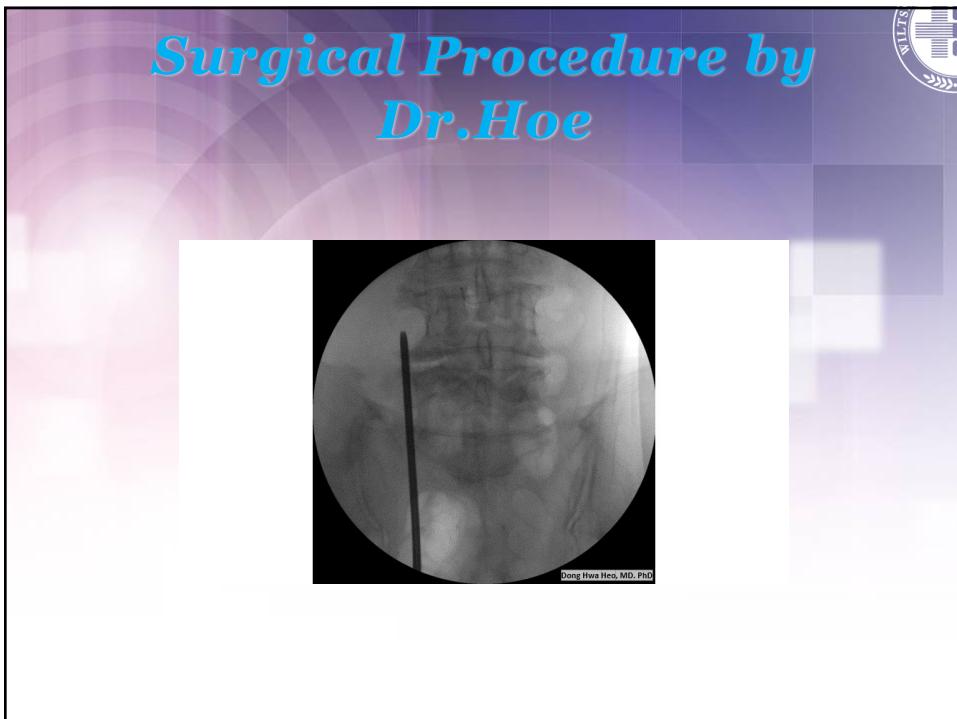
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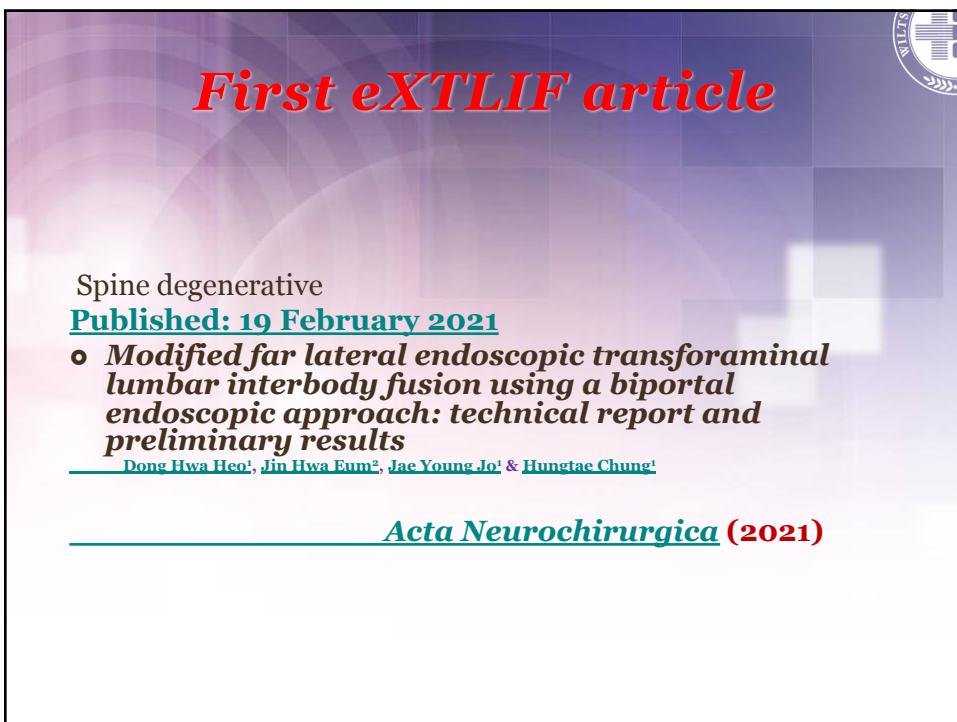
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**Difference from nonendoscopic surgery(Eyes,loupes,Microscope)**

- Endoscopic cameras allow us to move the “eye’s” lens remotely to the site of the surgical pathology. **(Unmanned probes on Mars and drones in remote areas of conflict bring our eyes “directly” but remotely to the points of interest)**

NEUROSURGICAL FOCUS

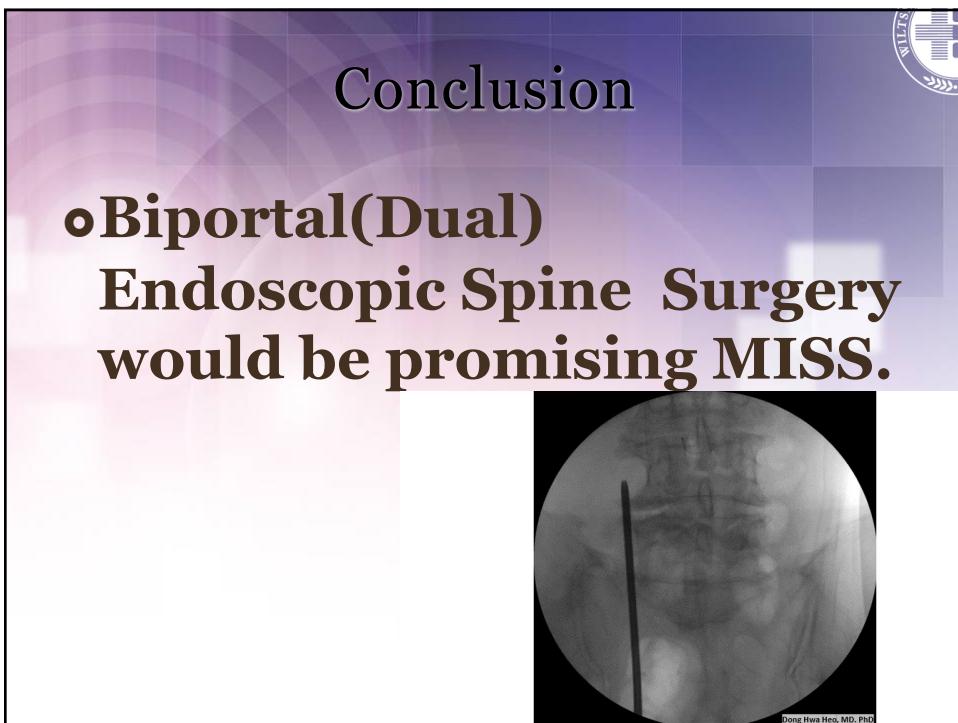
A brief history of endoscopic spine surgery

Albert E. Telfeian, MD, PhD; Arand Veeravagu, MD; Adetokunbo A. Oyelesi, MD, PhD<sup>1</sup>; and Ziya L. Gokaslan, MD<sup>2</sup>

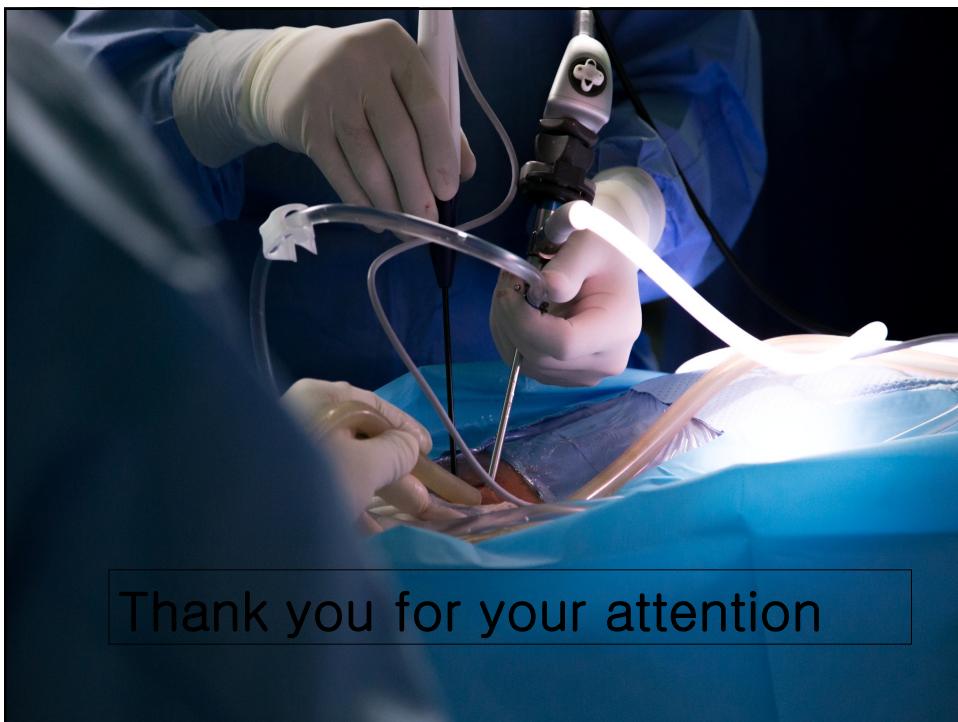
<sup>1</sup>Department of Neurosurgery, Rhode Island Hospital, The Warren Alpert Medical School of Brown University, Providence, Rhode Island; and <sup>2</sup>Department of Neurosurgery, Stanford University School of Medicine, Palo Alto, California

Few neurosurgeons practicing today have had training in the field of endoscopic spine surgery during residency or fellowship. This article provides a brief history of endoscopic spine surgery and highlights the evolution of the technique.

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