

# Lumbar Central and Foraminal Stenosis

By

## Dual Portal Endoscopic Spine Surgery (Unilateral Biportal Endoscopy)

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GOOD MOONHWA HOSPITAL, BUSAN, SOUTH KOREA

# Evolution of minimally invasive spine surgery

Open  
Surgery



Tubular  
Surgery



Endoscopic  
Spine  
Surgery



# Evolution of minimally invasive spine surgery



“MIS” is not Trend,  
**Evolution**

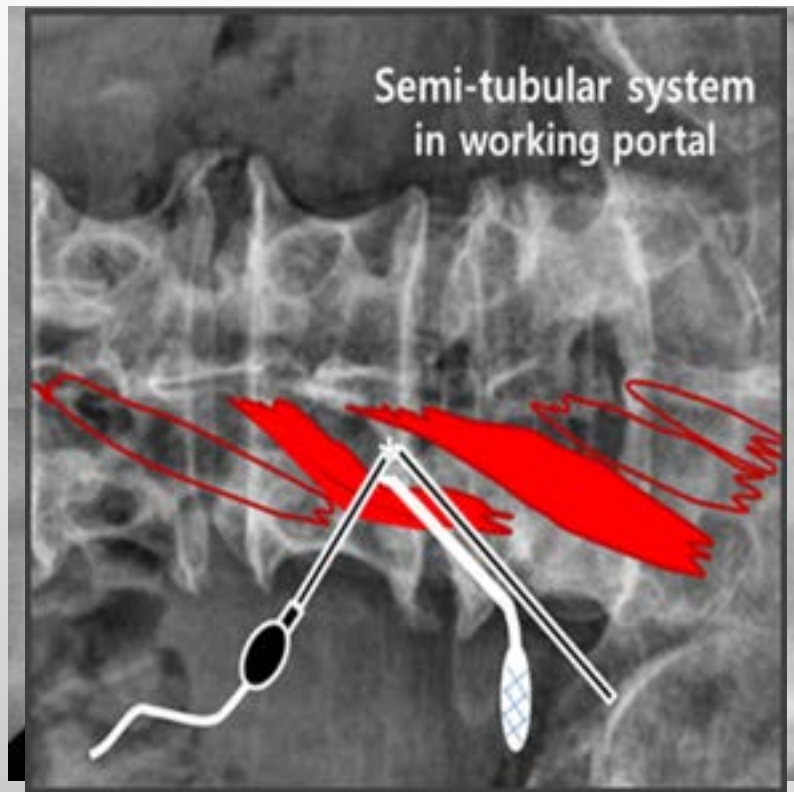
Should follow **The goals of surgery**



# Lumbar central stenosis by UBE

## Skin marking and Making portals

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### Docking point

The lower part of the cranial lamina

### Two skin incision

About 3 cm apart, with the center being the docking point

At the medial margin of the proximal and distal pedicles

# Lumbar central stenosis by UBE

Bone working





# Lumbar central stenosis by UBE

Flavectomy



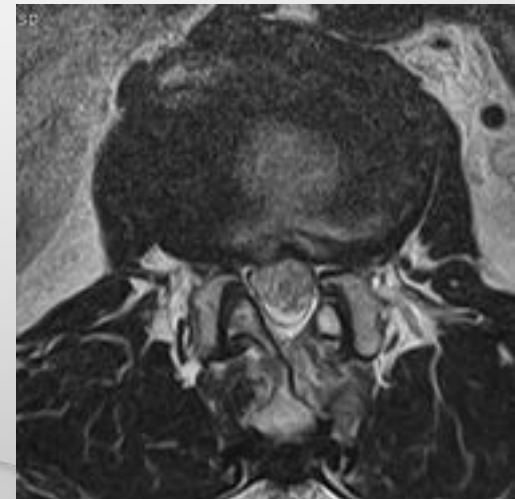
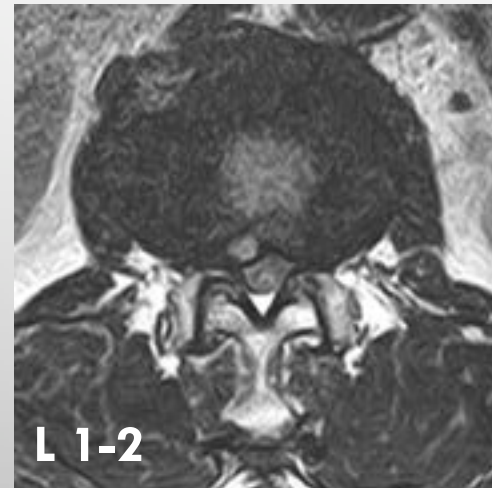
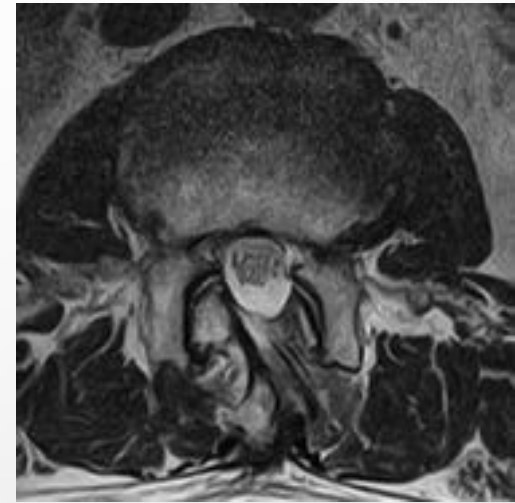
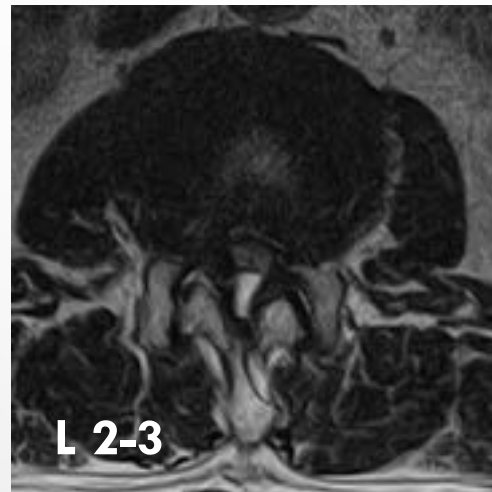
# Lumbar central stenosis by UBE

## Multiple lumbar stenosis



# Lumbar central stenosis by UBE

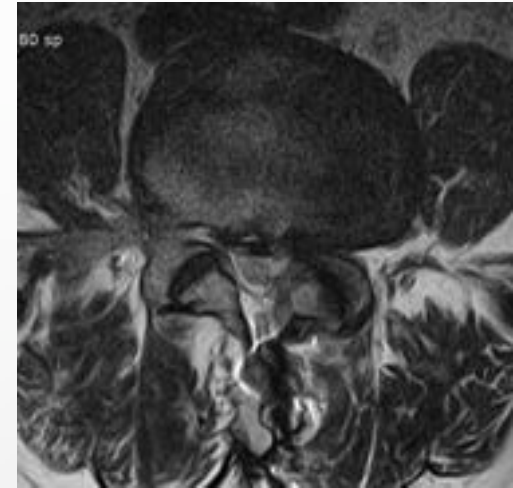
Narrow width of lamina



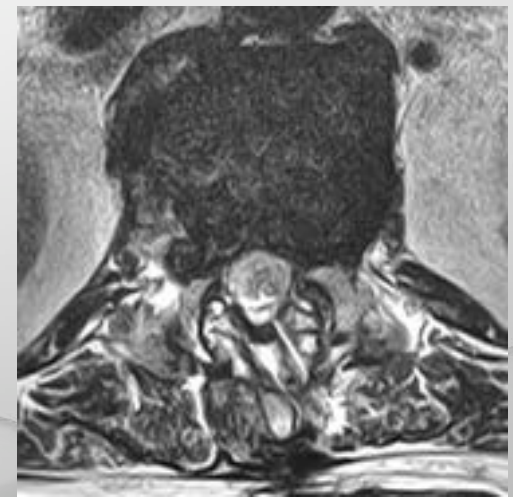
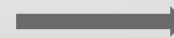
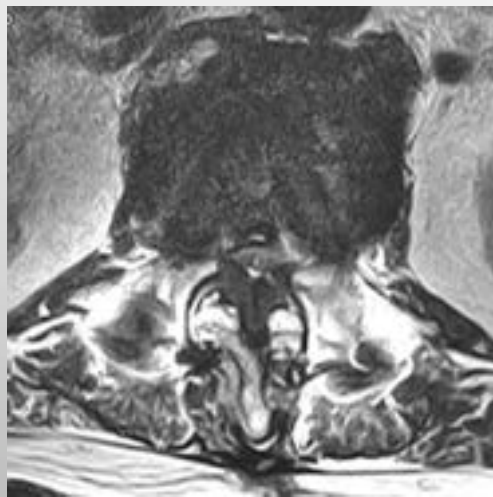


# Lumbar central stenosis by UBE

## Revision surgery



## Adjacent segment disease



# Lumbar foraminal stenosis by UBE



# Lumbar foraminal stenosis by UBE

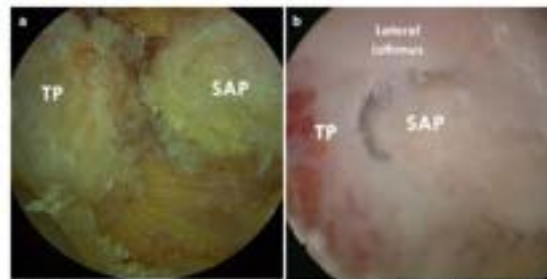
## Advanced Techniques of Endoscopic Lumbar Spine Surgery

Hyeun Sung Kim  
Michael Mayer  
Dong Hwa Heo  
Cheol Woong Park  
Editors

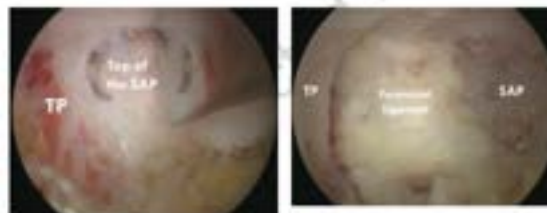
Springer

MOREMEDIA

### Biportal Endoscopic Paraspinal Approach for Foraminal and Extraforaminal Disc Herniations

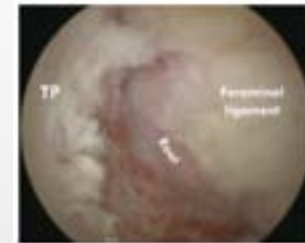


**Fig. 6** (a) The first step is to expose the lower part of the TP and the top of the SAP using a tuboretractor system. (b) After drilling these osteophytes, the surgical anatomy is first identified as a landmark, including the lateral part of the inferior, the lower part of the TP, and the top of the SAP.



**Fig. 7** Partial removal of the top of the SAP by using an osteotome.

**Fig. 8** After these working, the foraminal ligament is identified.



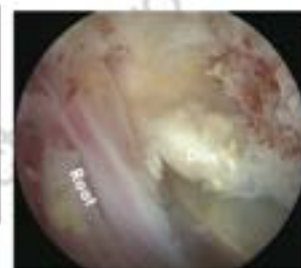
**Fig. 7** The lower part of the TP is removed from medial to lateral until detachment of the foraminal ligament.



**Fig. 9** The annulus is exposed just below the root.



**Fig. 8** The proximal portion of the foraminal ligament is detached from the intervertebral space and SAP using a heat ablator.



**Fig. 10** Removal of disc fragment.

# Lumbar foraminal stenosis by UBE

## Surgical technique

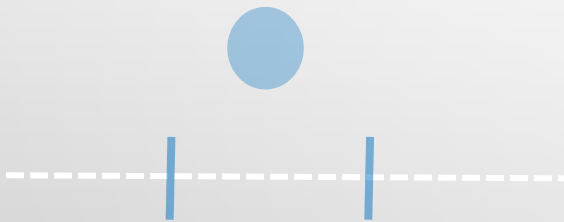
### Making portals – Foraminal stenosis

#### Target Point

- . Below the pedicle (Tip of SAP)

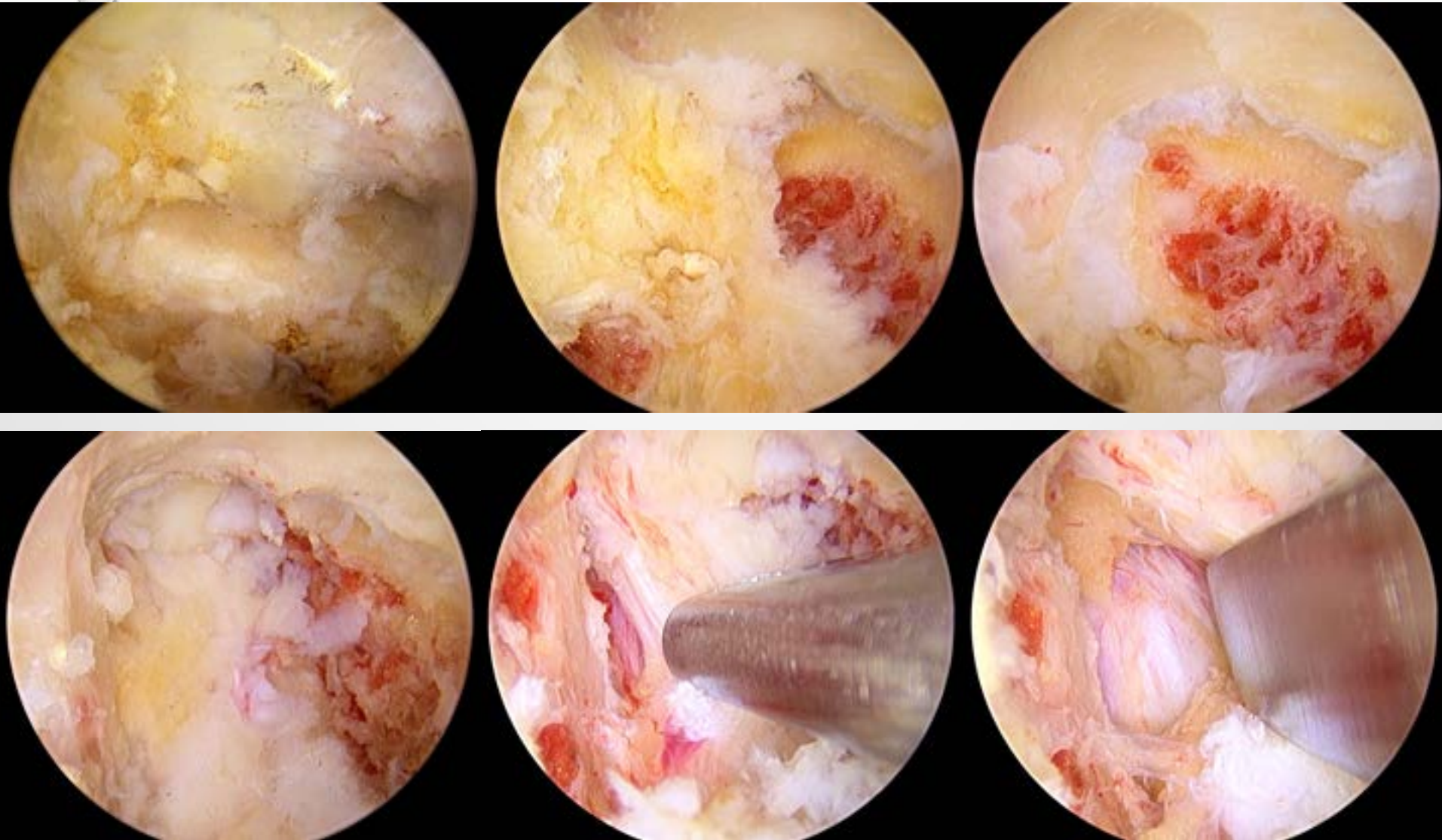
#### Skin Incision

- . Above on the 1 cm lateral of the Pedicle
- . 2 skin entries about 3-cm apart



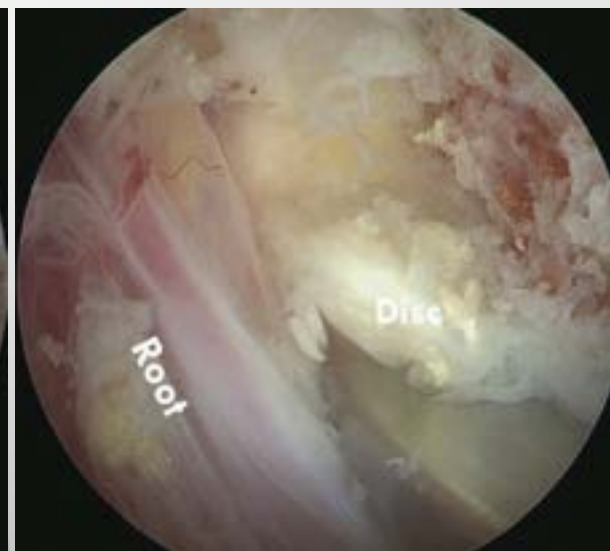
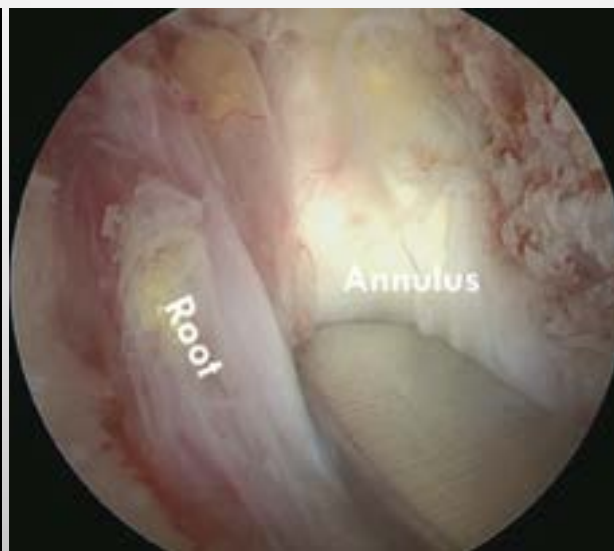
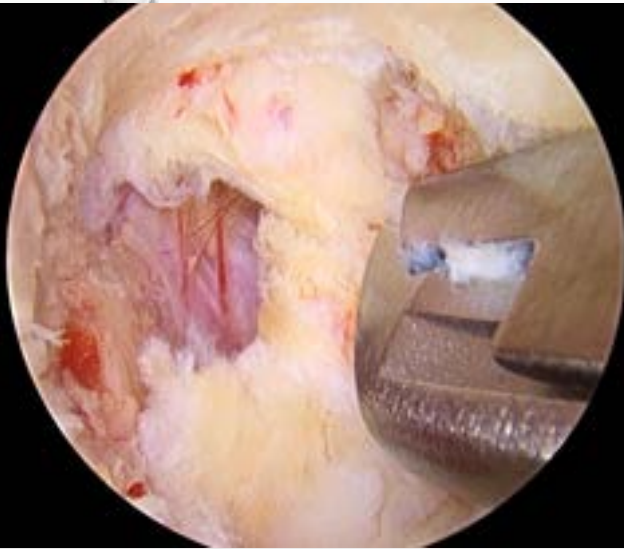


# Lumbar foraminal stenosis by UBE





# Lumbar foraminal stenosis by UBE



# Lumbar foraminal stenosis by UBE



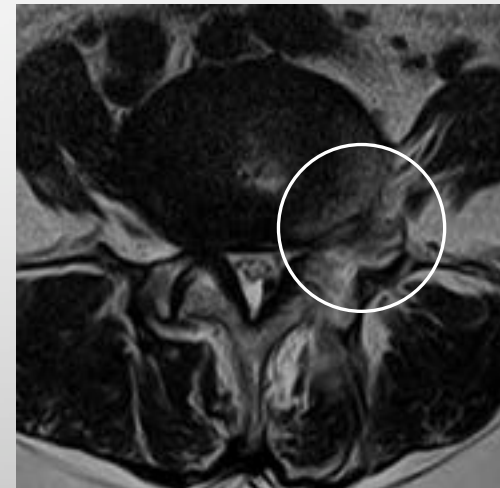
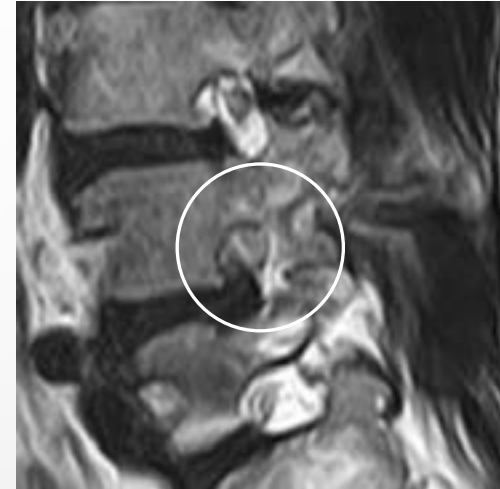
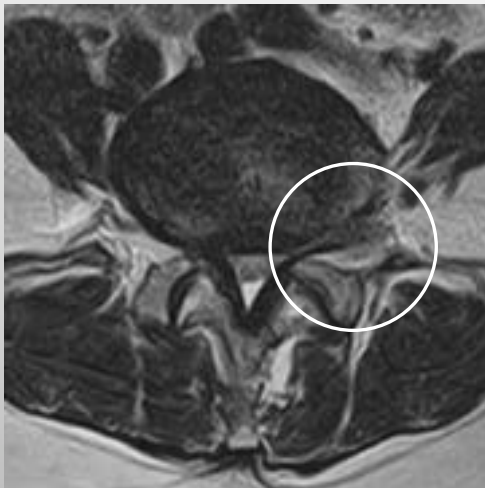
# Lumbar foraminal stenosis by UBE

Cases

Foraminal stenosis



postoperatively

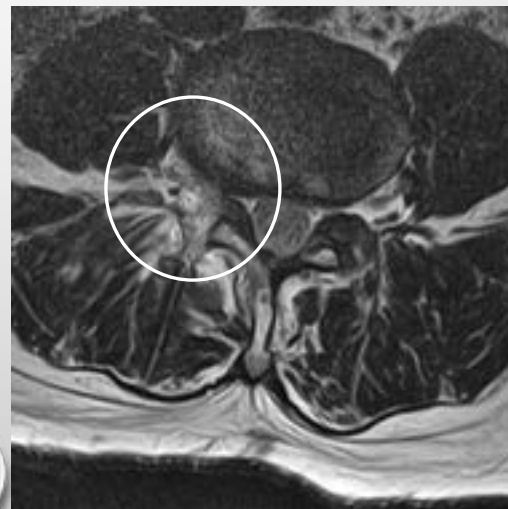
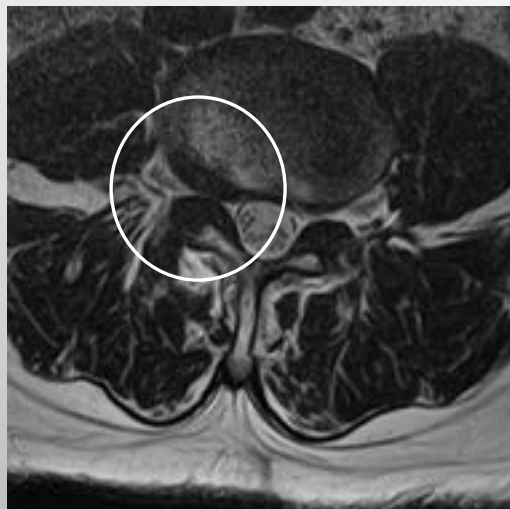
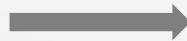
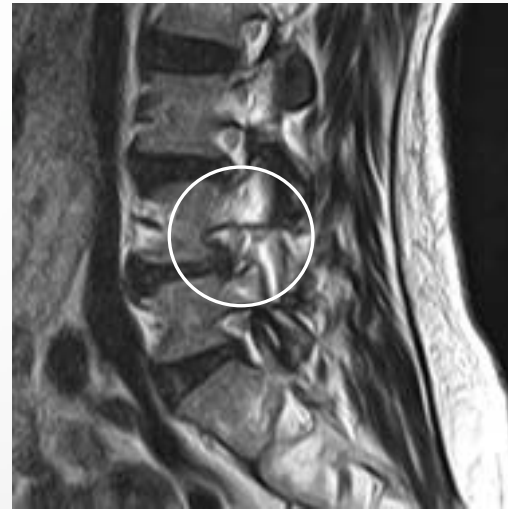




# Lumbar foraminal stenosis by UBE

Cases

Foraminal stenosis

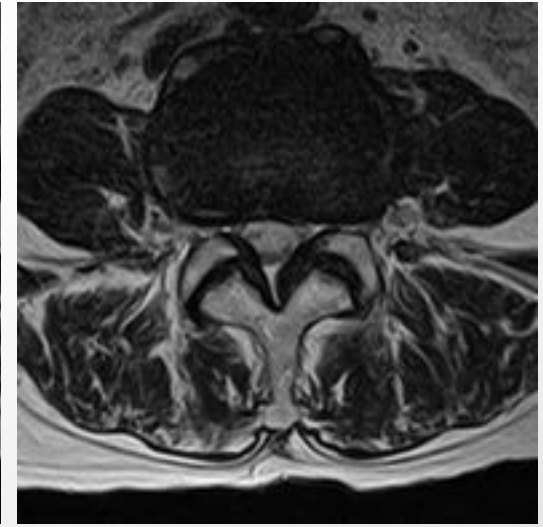
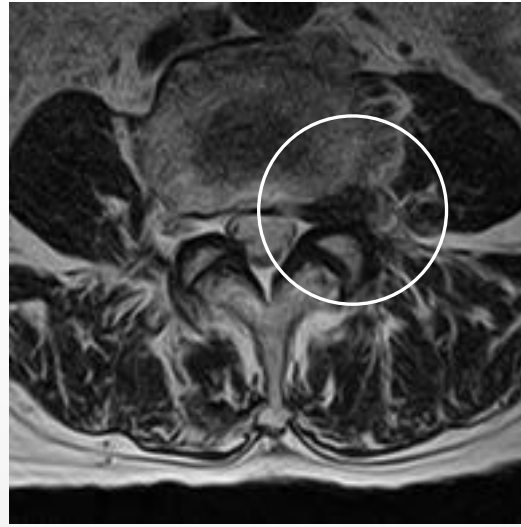


# Lumbar foraminal stenosis by UBE

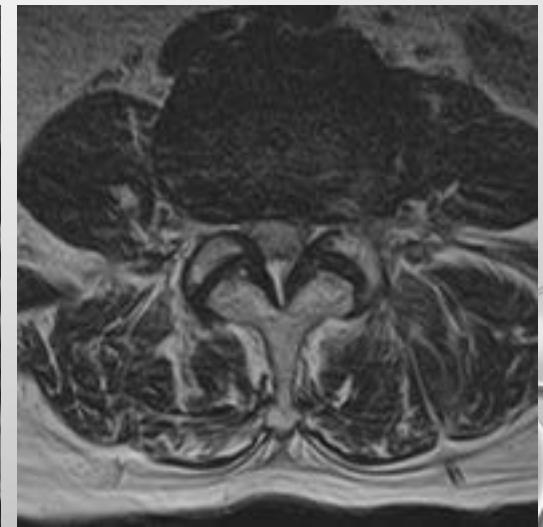
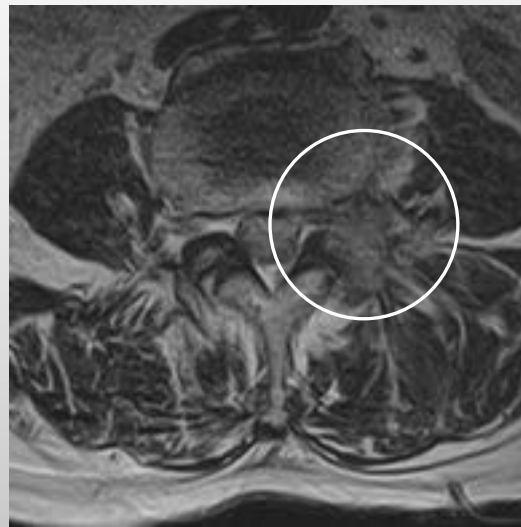
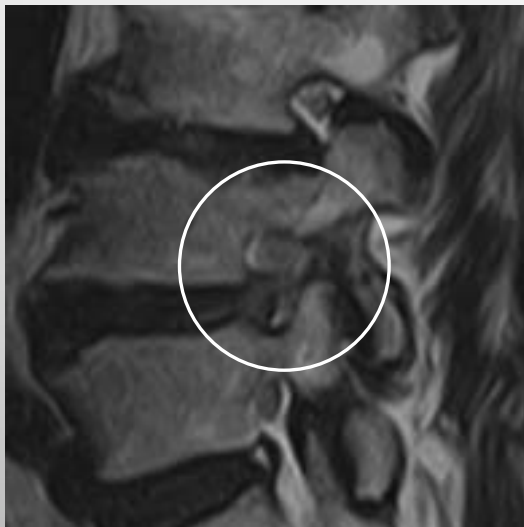
Cases

Foraminal HNP

Pre



Post



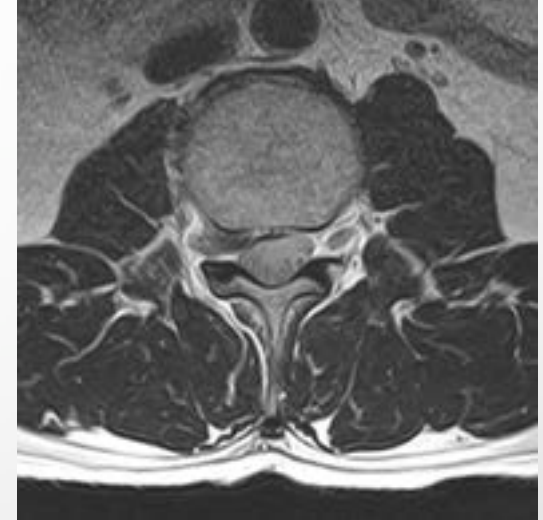
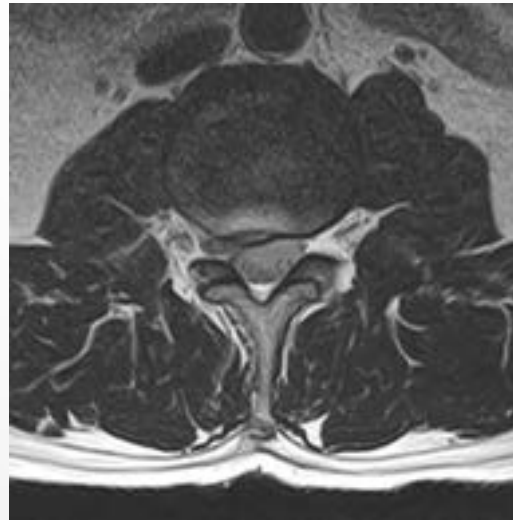


# Lumbar foraminal stenosis by UBE

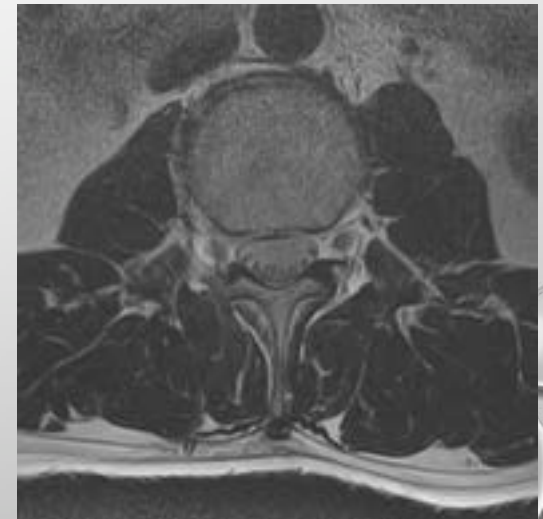
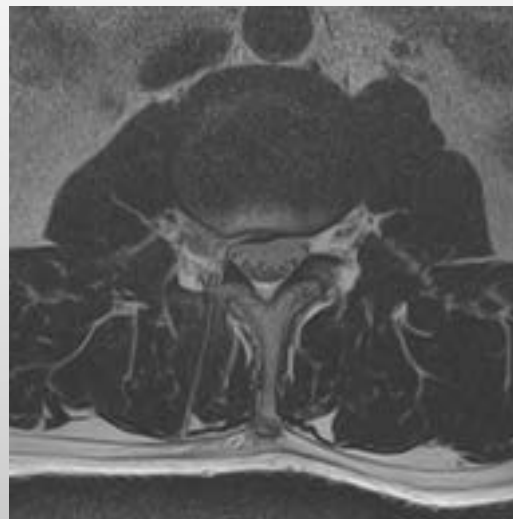
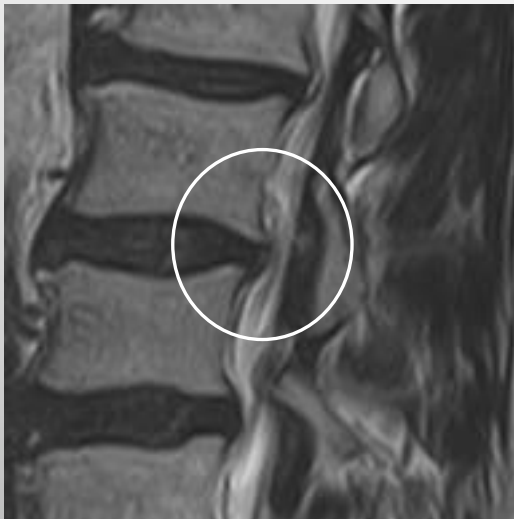
Cases

Up migrated HNP

Pre



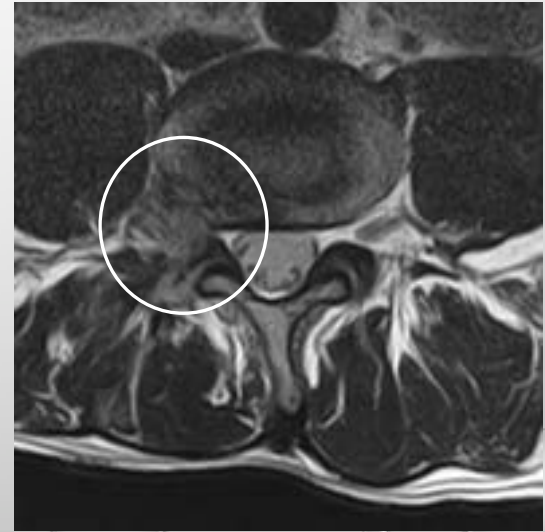
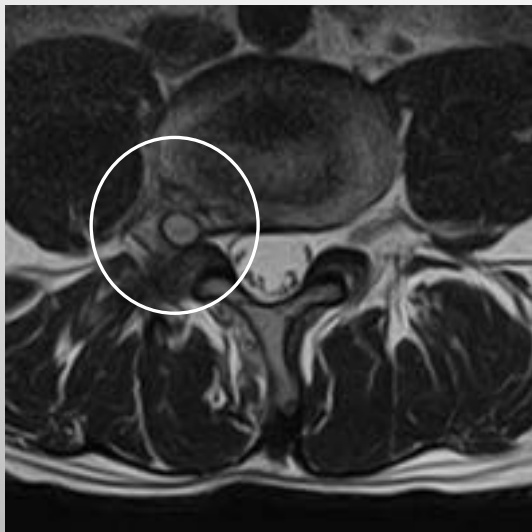
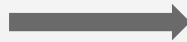
Post



# Lumbar foraminal stenosis by UBE

Cases

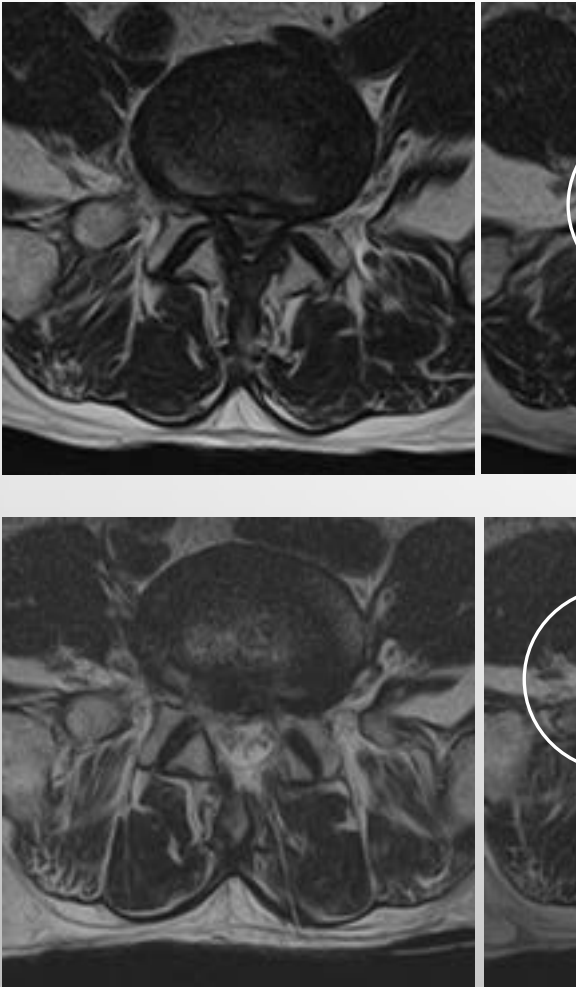
Revision foraminotomy



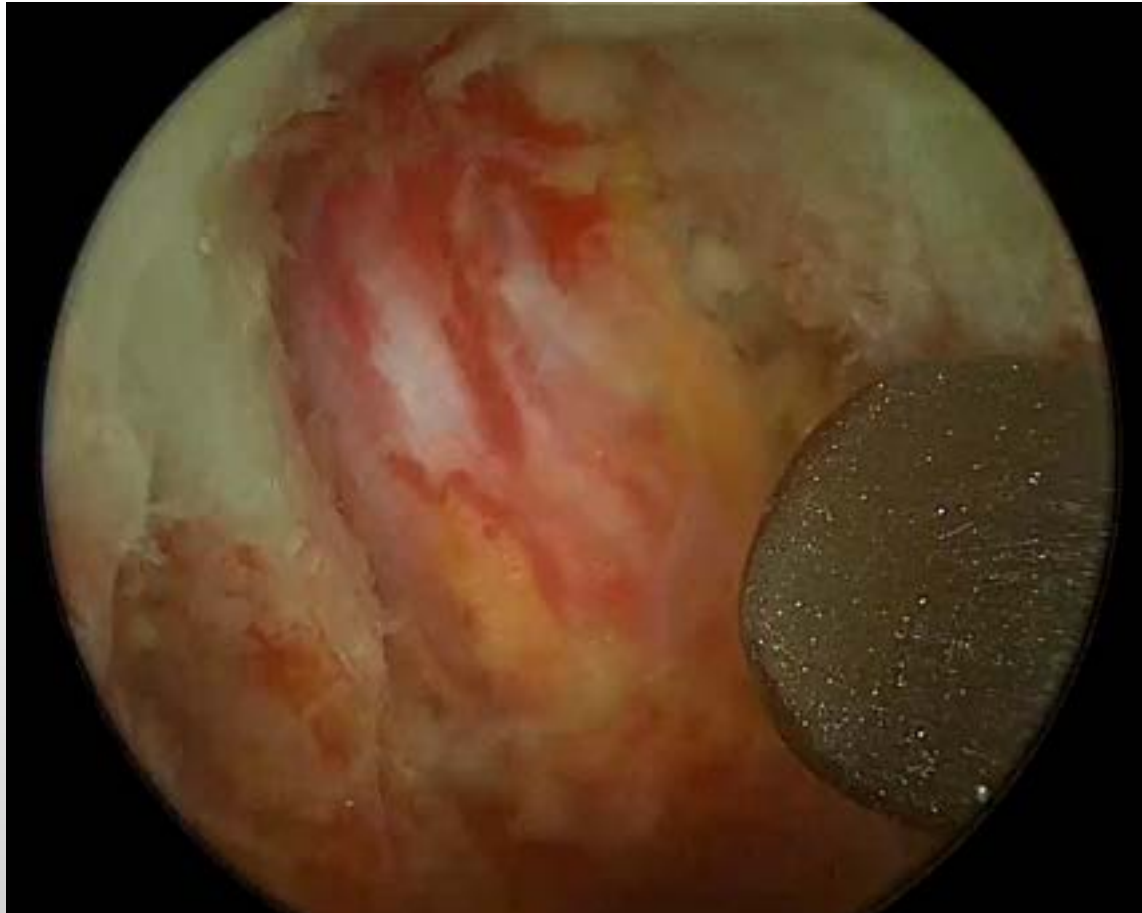
# Lumbar foraminal stenosis by UBE

Cases

Contralateral foraminotomy



## Extraforaminal stenosis at L5-S1 by UBE





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## Original Article

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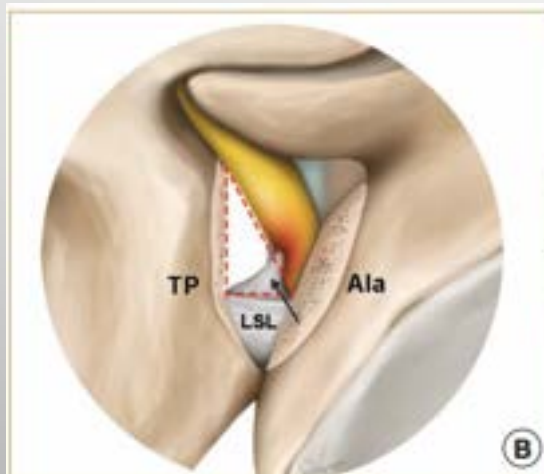
See the commentary on "Unilateral

## Unilateral Biportal Endoscopy for Decompression of Extraforaminal Stenosis at the Lumbosacral Junction: Surgical Techniques and Clinical Outcomes

Man-Kyu Park<sup>1</sup>, Sang-Kyu Son<sup>1</sup>, Weon Wook Park<sup>2</sup>, Seung-Hyun Choi<sup>2</sup>,  
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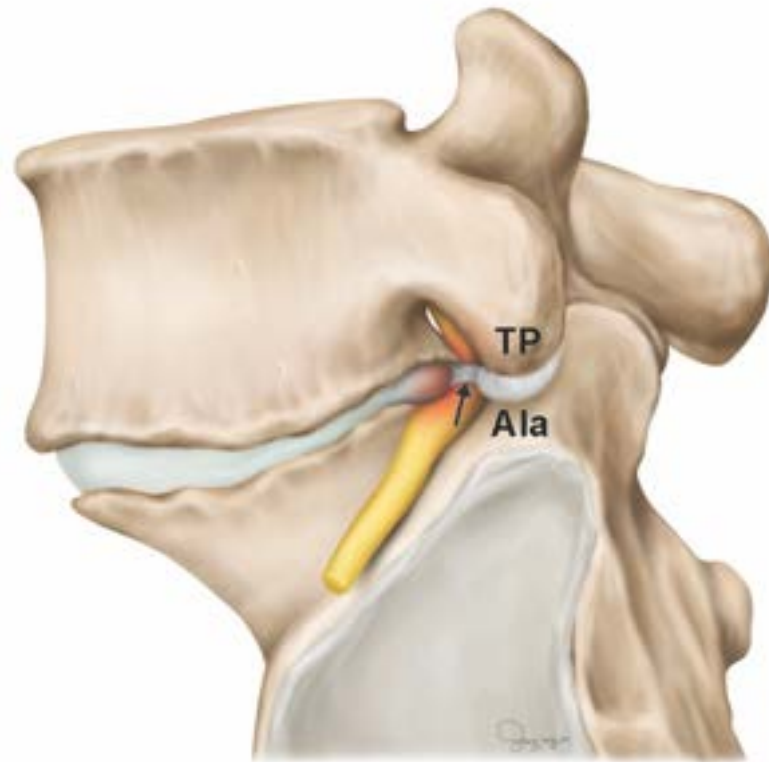
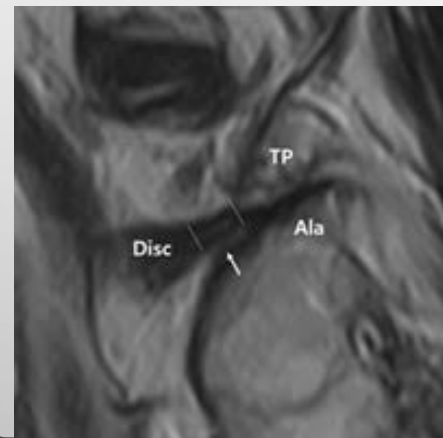
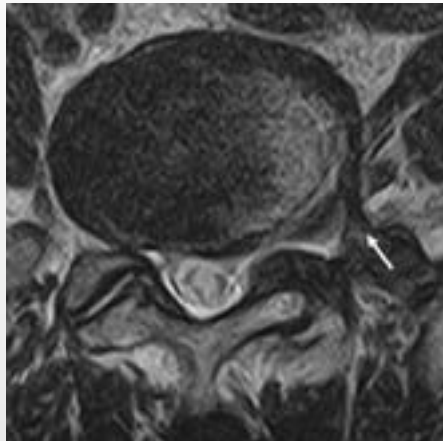




# Extraforaminal stenosis at L5-S1 by UBE

## Compression factors

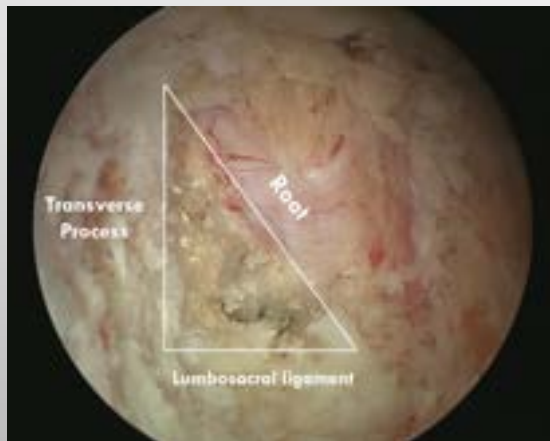
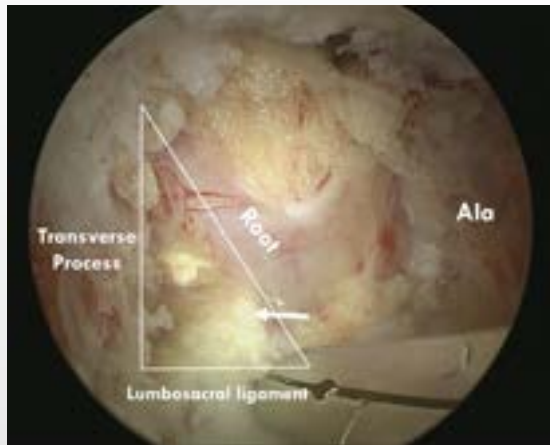
Thickened lumbosacral and extraforaminal ligament



# Extraforaminal stenosis at L5-S1 by UBE

Thickened lumbosacral and extraforaminal ligament

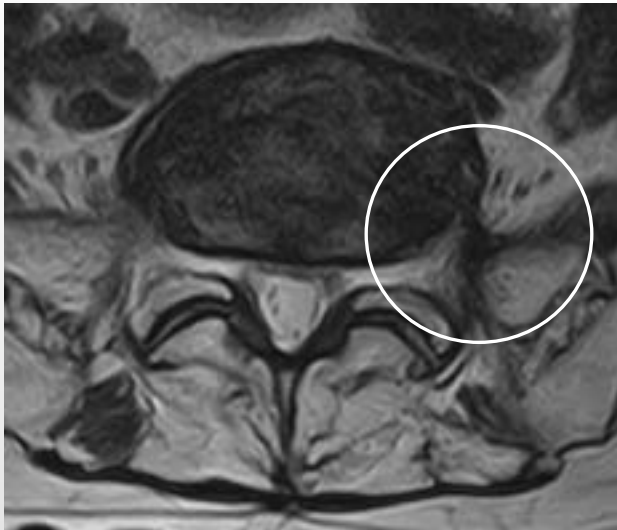
**Compression factors**



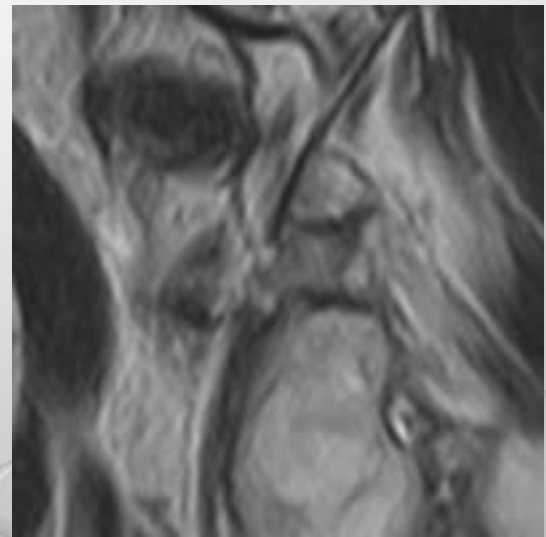
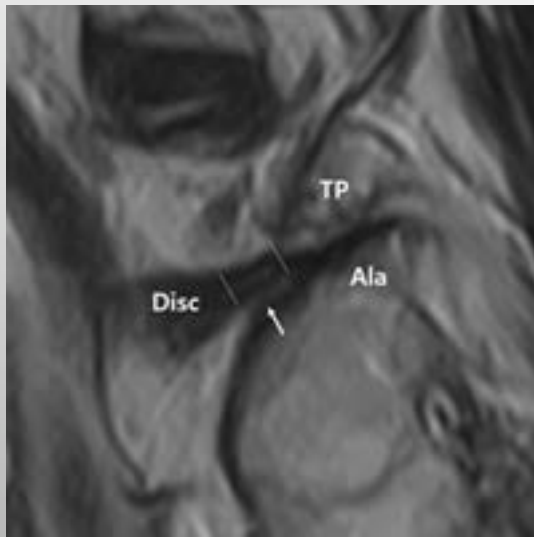
# Extraforaminal stenosis at L5-S1 by UBE

Cases

Extraforaminal stenosis



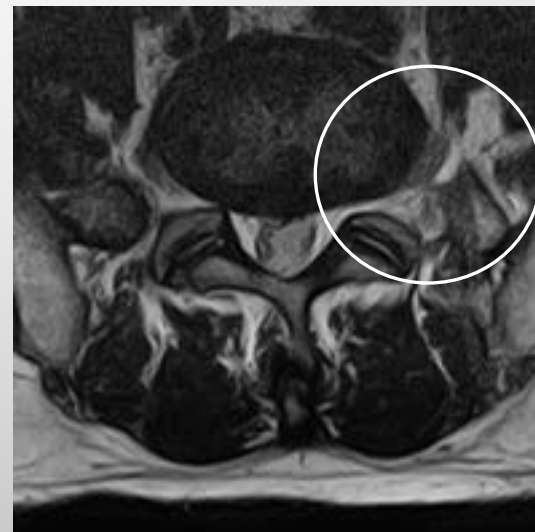
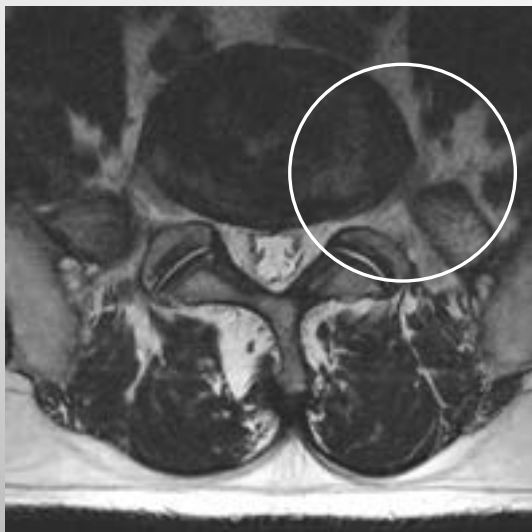
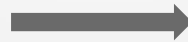
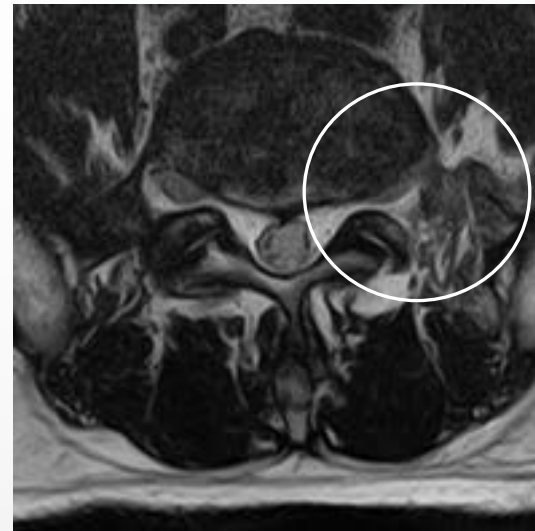
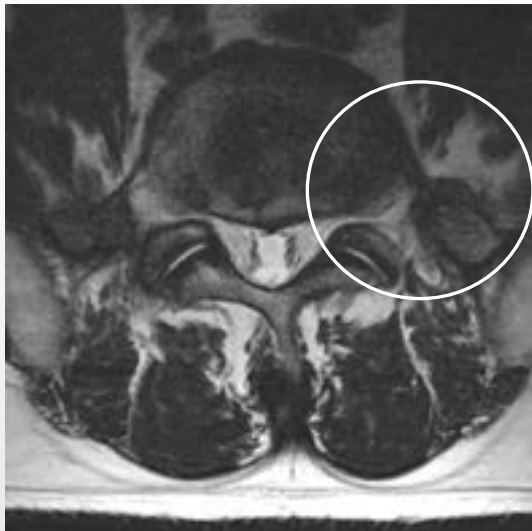
postoperatively



# Extraforaminal stenosis at L5-S1 by UBE

Cases

Extraforaminal stenosis



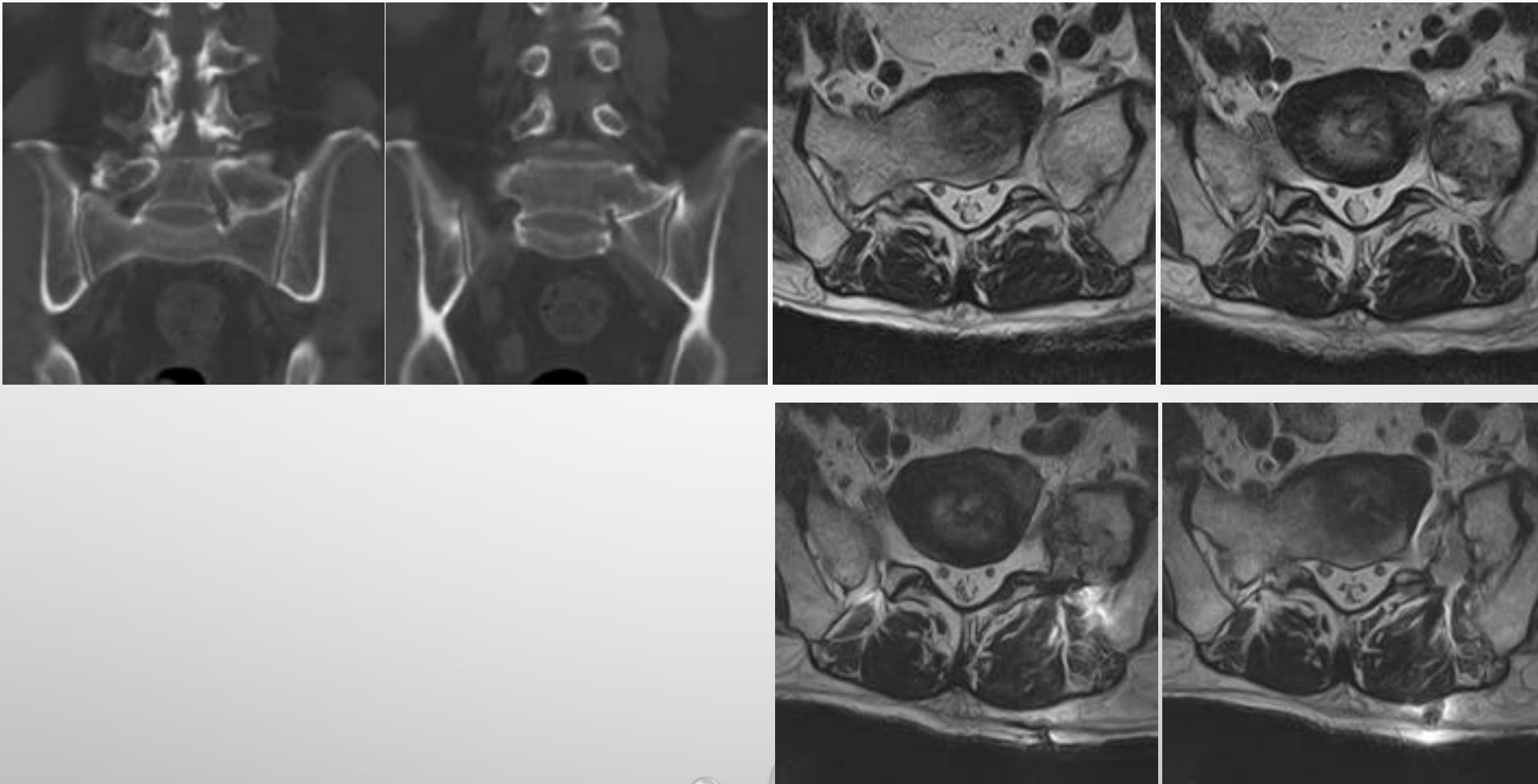


# Extraforaminal stenosis at L5-S1 by UBE

Bertolotti's syndrome

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Cases





# Deformity correction by UBE

Lumbar degenerative scoliosis/kyphosis



Pre-op



POD 2D



POD 12M

# Deformity correction by UBE

Lumbar degenerative scoliosis/kyphosis

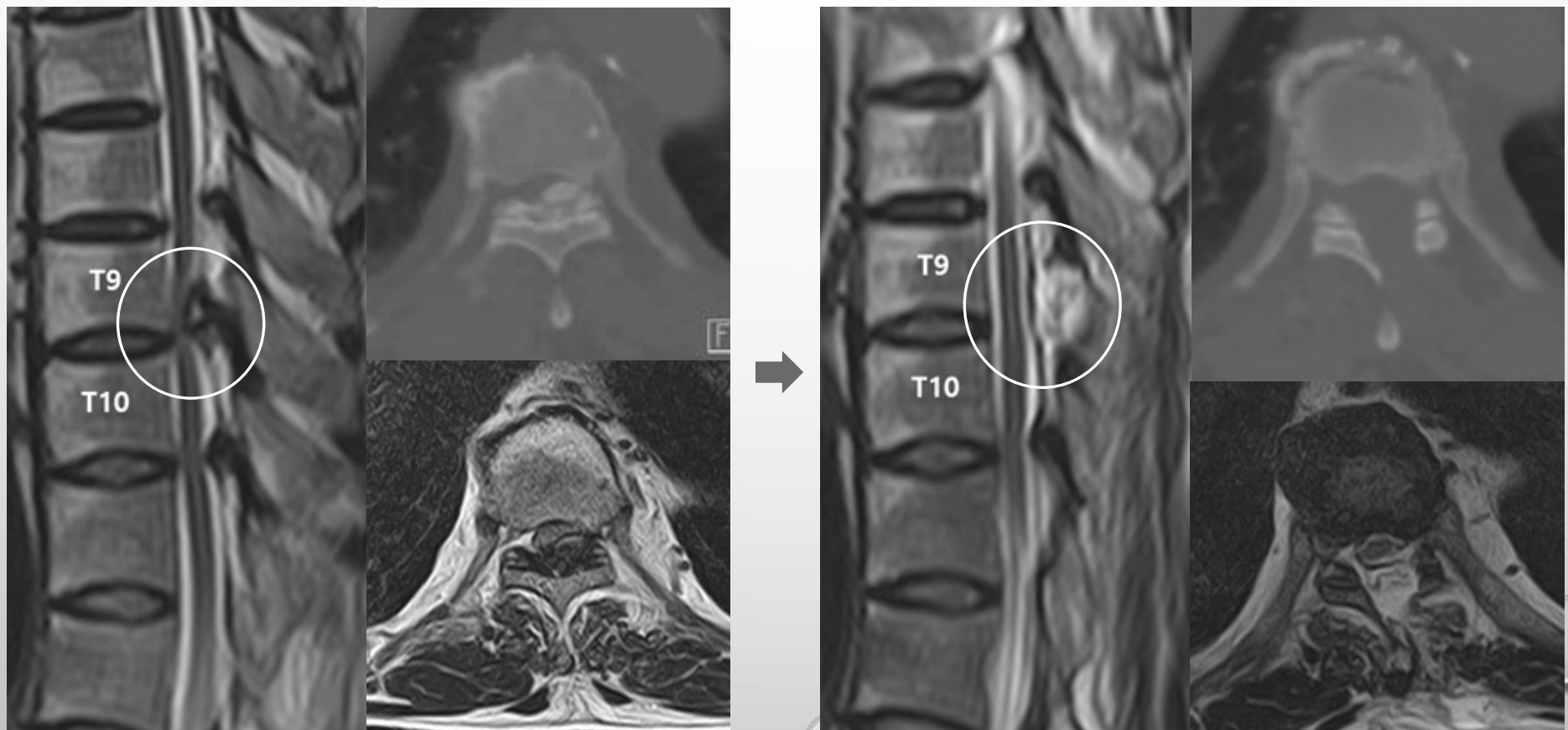


# Thoracic ULBD by UBE

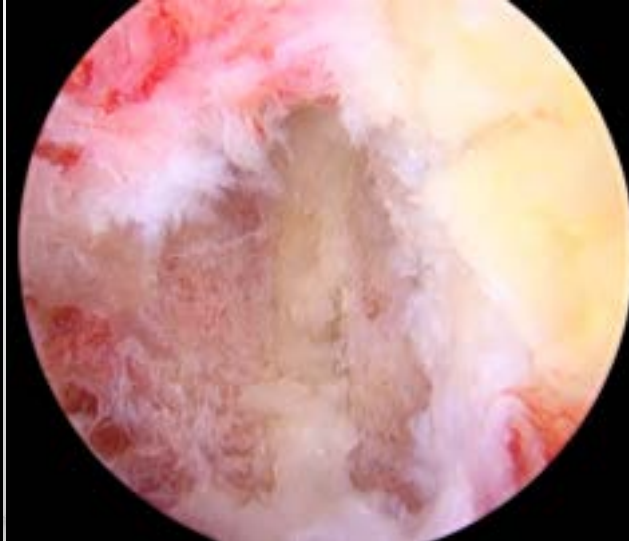
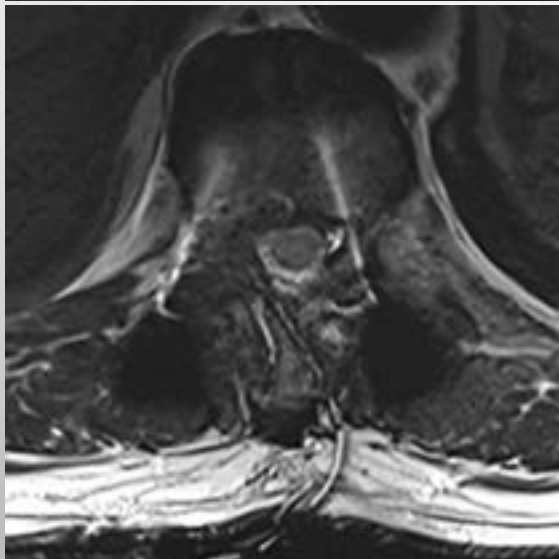
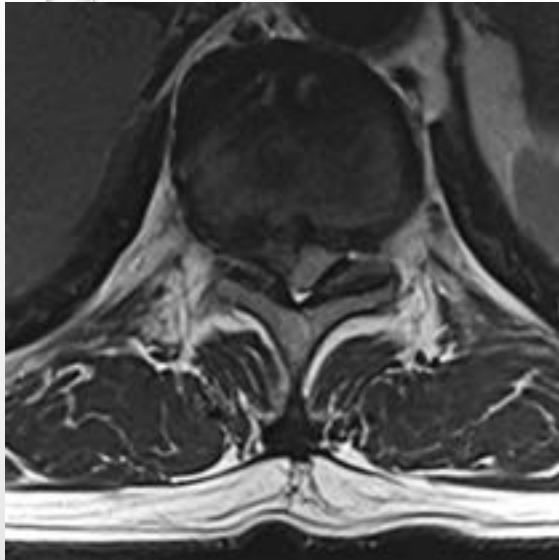
## Translaminar approach

OLF (Fused type, T9-10)

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HNP with stenosis on T10-T11

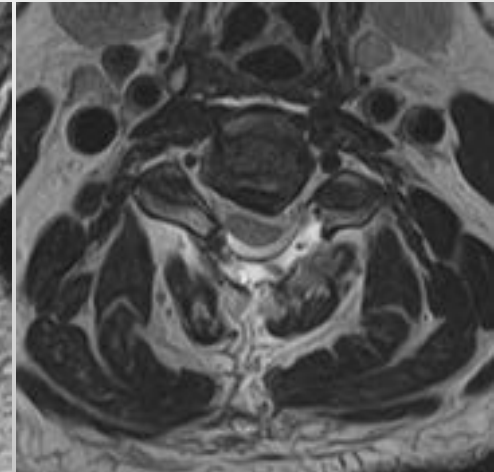
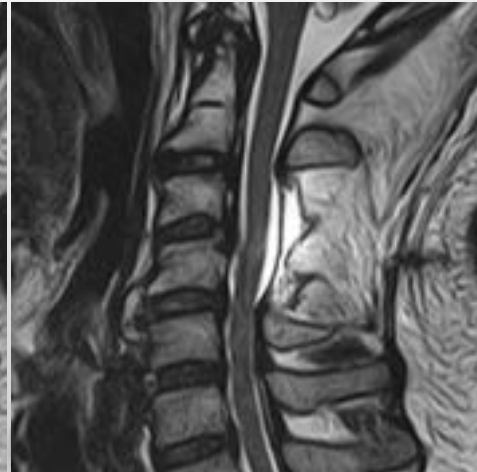
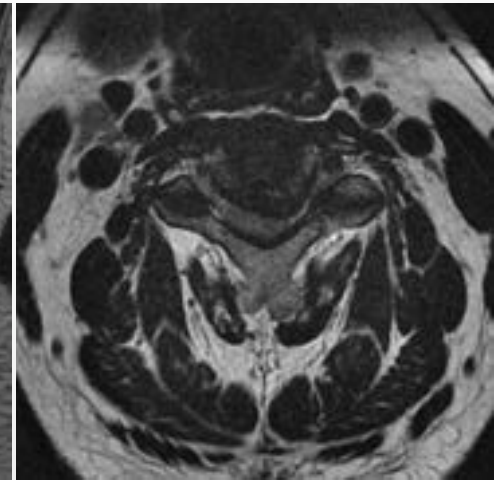
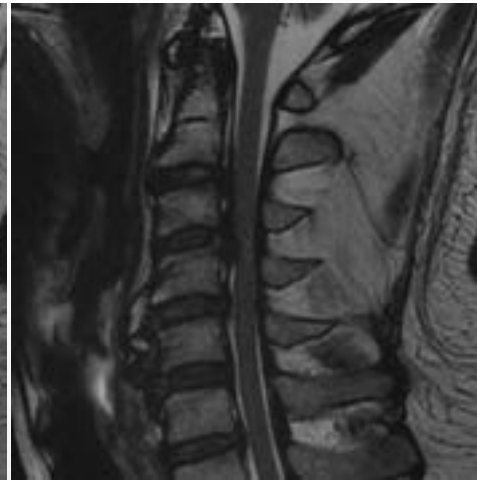




# Cervical laminectomy by UBE

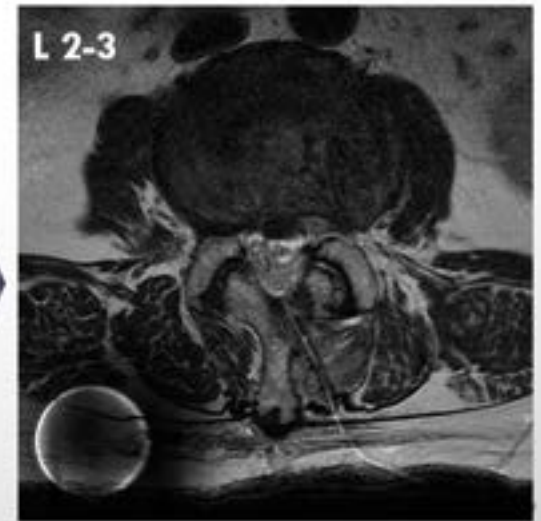
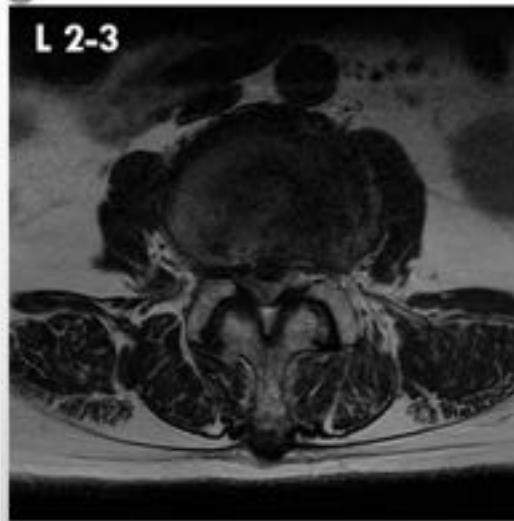
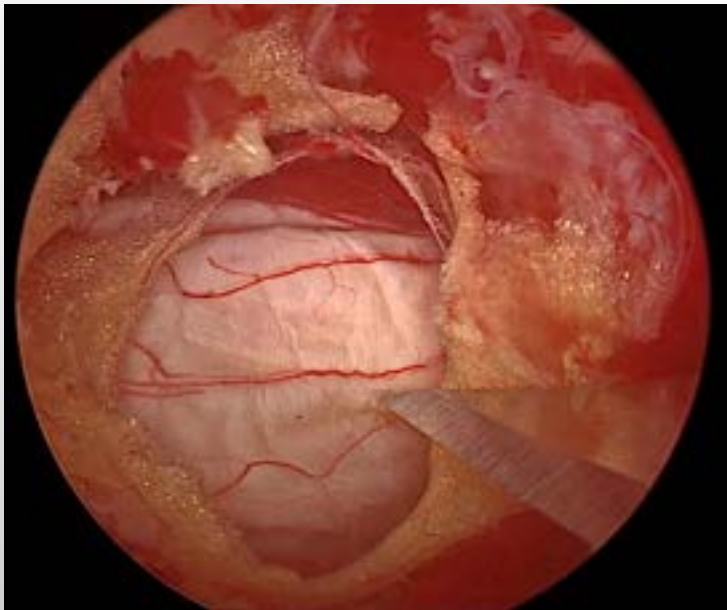
## Cases

OPLL on C3-4, C4-5 with myelopathy



# Lumboperitoneal shunt assisted by UBE

Normal pressure hydrocephalus combined with spinal stenosis

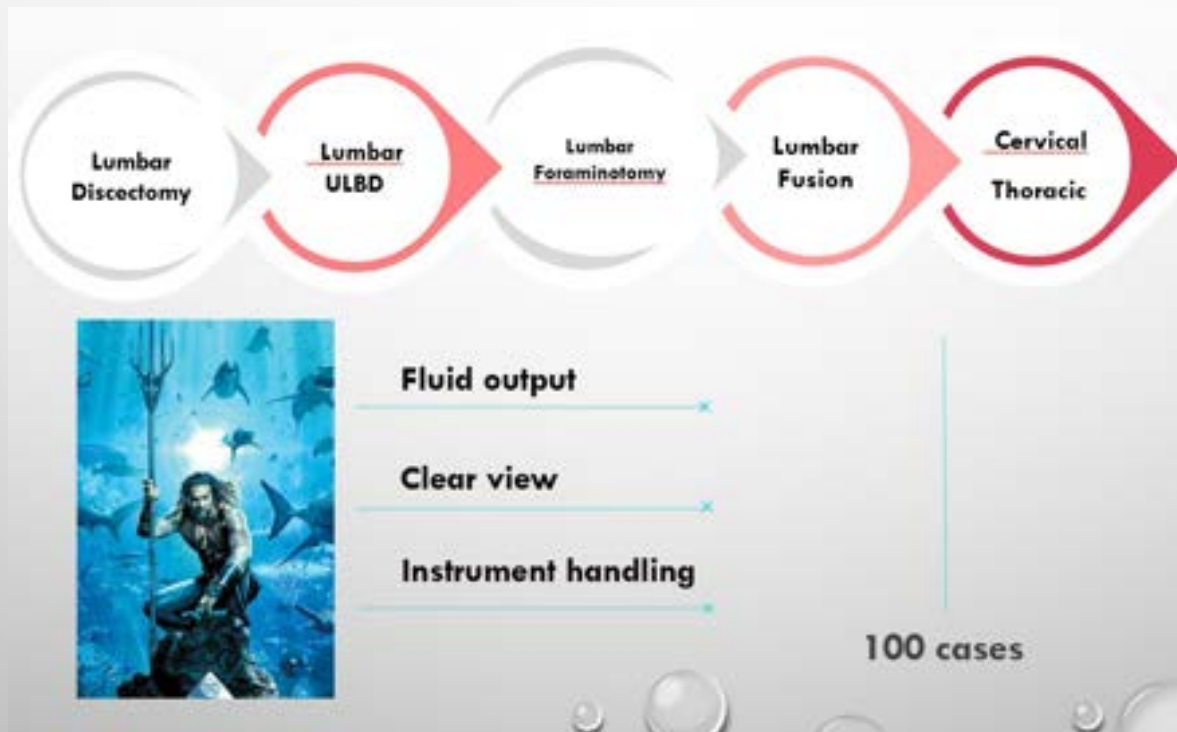


Learning curve

Safety

Indication

Evidence



### Comparative cohort studies

Randomized clinical trials  
with long-term follow-up





UBE, Society of Unilateral Biportal Endoscopy



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