

# BIPORTAL ESS FOR SPINAL CANAL STENOSIS (ULBD)

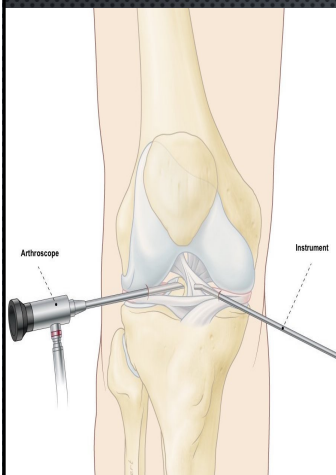
## : PRINCIPLES, ANATOMY, WORKFLOW

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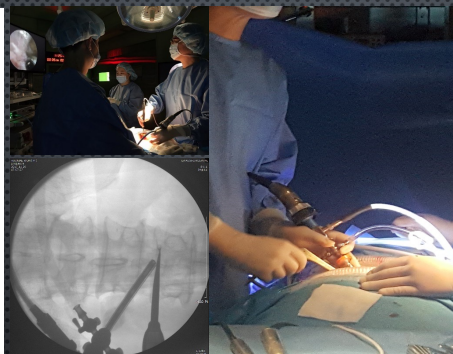


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### What is Biportal Endoscopic Spine Surgery?



Arthroscopic Knee Surgery



Arthroscopic Spine Surgery

- ◆ Unilateral biportal endoscopy surgery
- ◆ Just a minimally invasive & magnified version of open surgery

### What are its dimensions?

Similar to open.

- ◆ It is an arthroscopic spine surgery, similar to arthroscopic knee surgery

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# WATER BASE SURGERY

=> FLUID CONTROL IS MOST IMPORTANT

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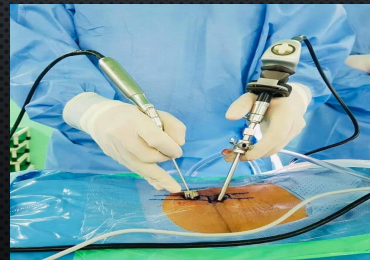
## Important Concepts : Water base surgery



- ◆ Two entry portals
- ◆ Triangulation technique
- ◆ Multifidus triangle
- ◆ Hydrostatic pressure



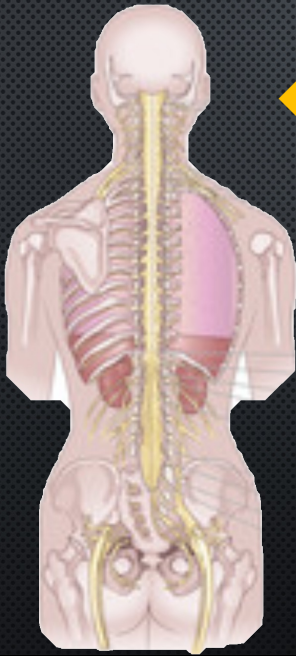
VS



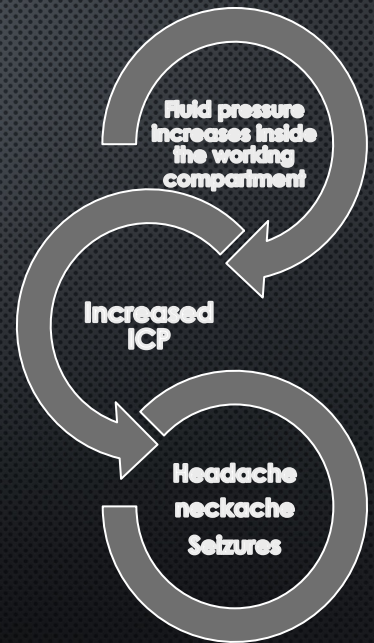
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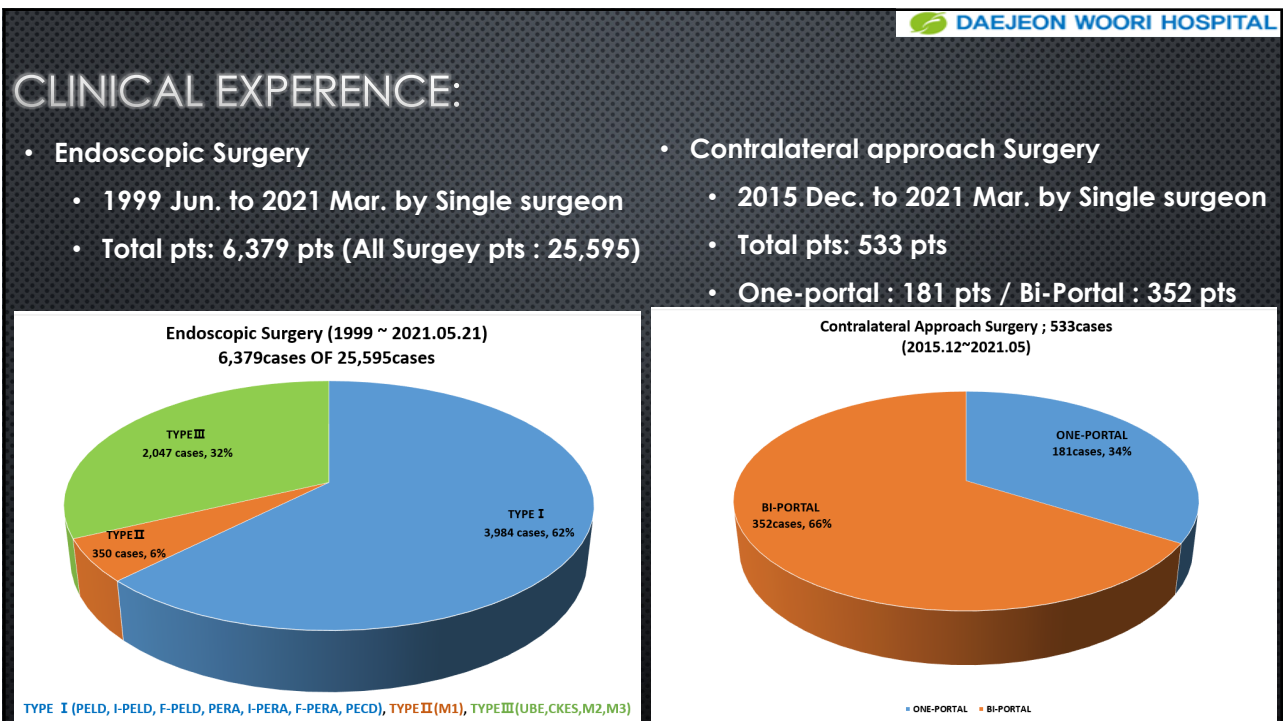
## What is the most significant difference between the two?



- ◆ Spinal canal is connected to the cranium which encases the brain thus restricts the fluid management unlike knee surgery

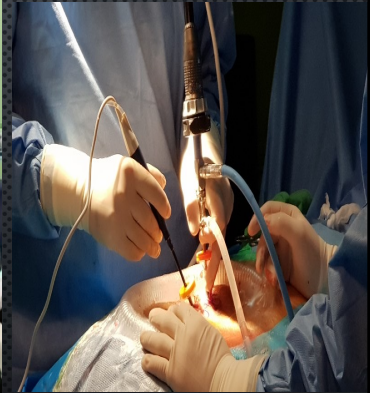


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## Fluid Pressure control for bleeding and clear vision



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## Comparison of Surgical Procedures

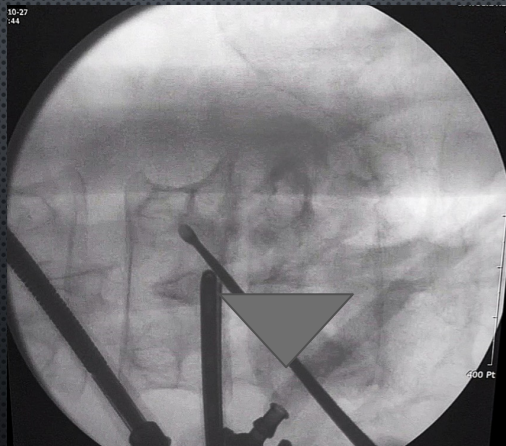
### MICRO

PROXIMITY AND  
MOVEMENT OF  
ENDOSCOPY

Low risk of  
infection

BLIND AREA가 생겨,  
기구조작에 의한  
신경손상의 위험이 있다.

### BI PORTAL



### UNI PORTAL

INDIPENDENCE OF  
ENDOSCOPY AND  
INSTRUMENT  
MANIPULATION.

내시경 시야 확보를 위한  
BONE DRILLING 이 필요하  
다..

BLIND AREA가 생겨,  
기구조작에 의한 신경손상  
의 위험이 있다.

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## Instruments



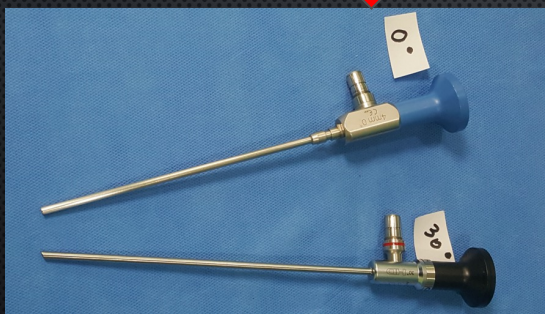
- Uni ESS with L.W.C
  - Long & Uncomfortable



- Bi ESS
  - Short & Easy to handle

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## Instruments required



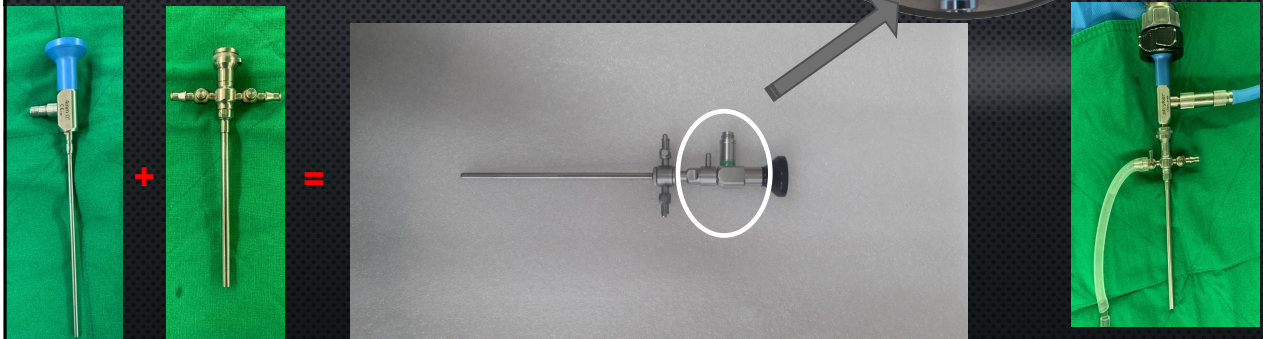
Approx. 1500-3000 USD

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## Scope / Sheath

- ◆ Totally Length : 175mm
- ◆ Working length : 145mm
- ◆ Viewing direction : 0° / 30°
- ◆ Ø 4.0mm, 3D 4k grade



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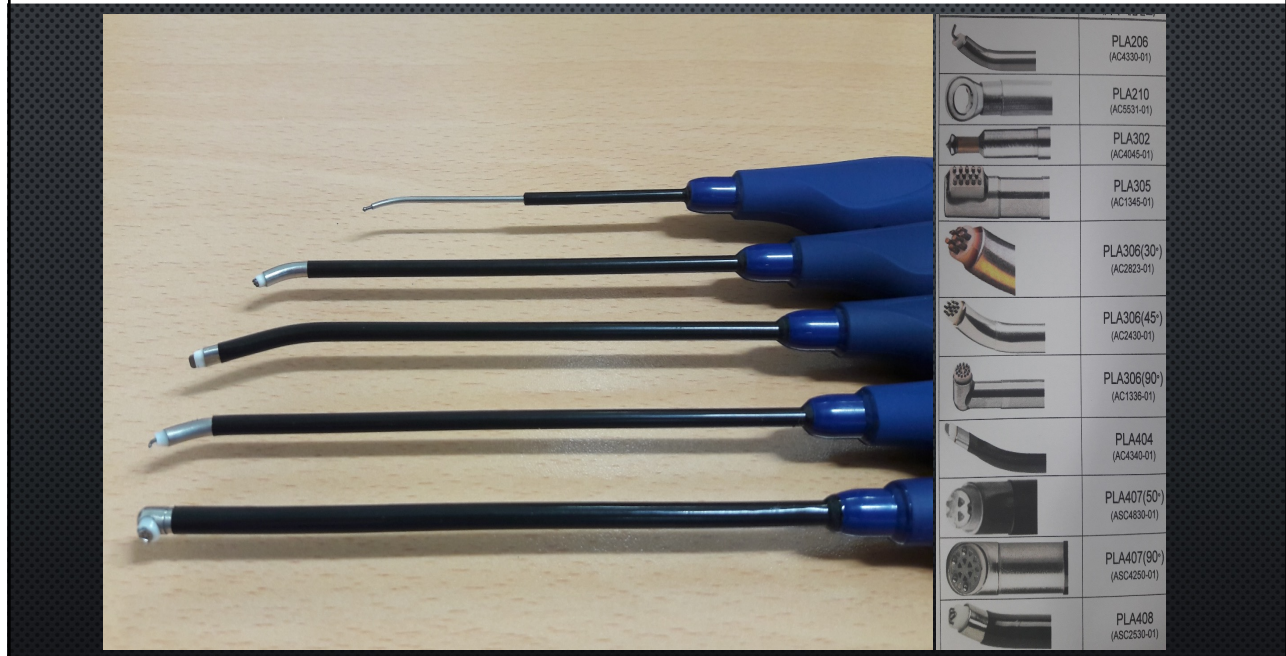
## Radiofrequency system



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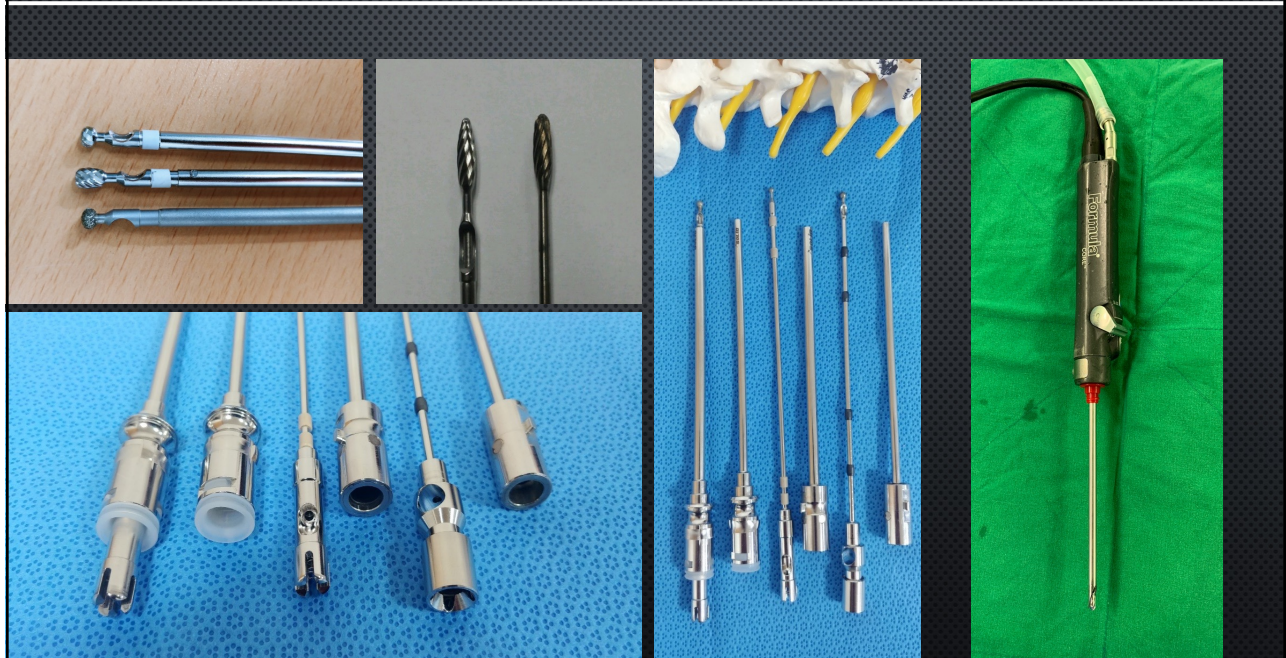


## PLA-Plasma Probe (Less heat generation)



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## Shaver and drills (Water base surgery=>minimize heat injury)



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## Drilling of Biportal



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## Anesthesia

- ◆ Usually done under the epidural anesthesia.
- ◆ It is advised to perform it under the GA for it may take longer time for the beginners.

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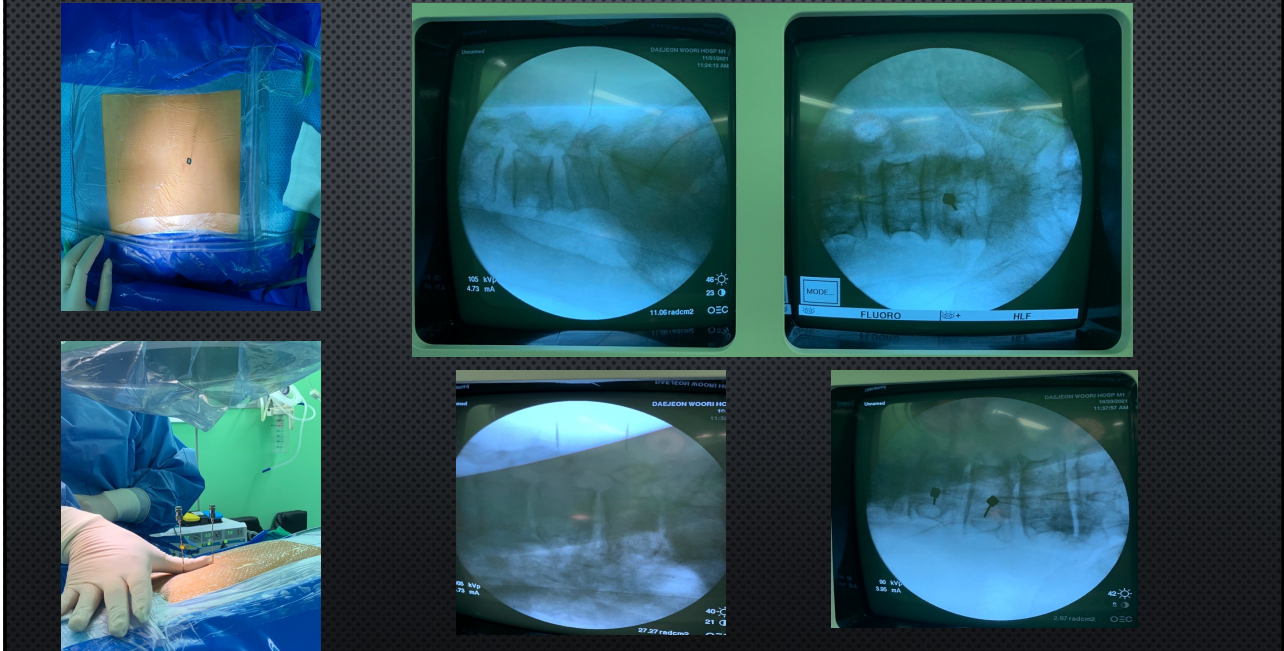


## Surgical steps to follow



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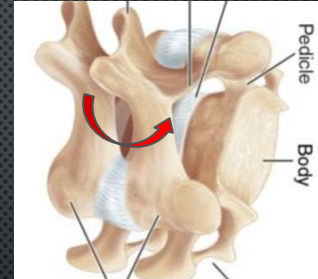
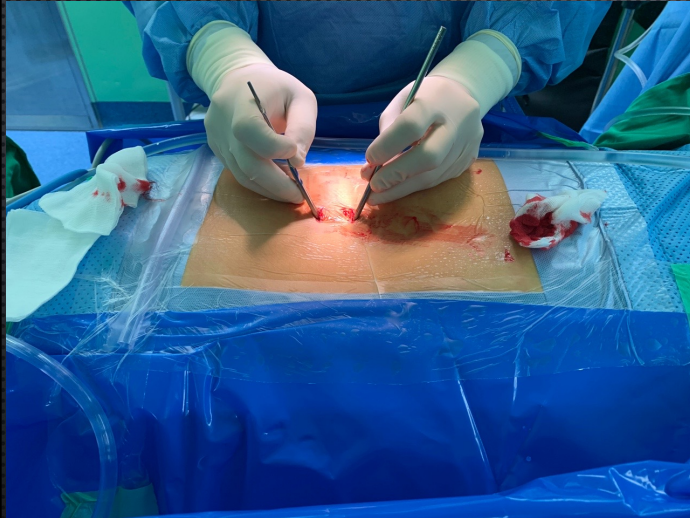
## Marking and skin incision(Distance 2-3cm)



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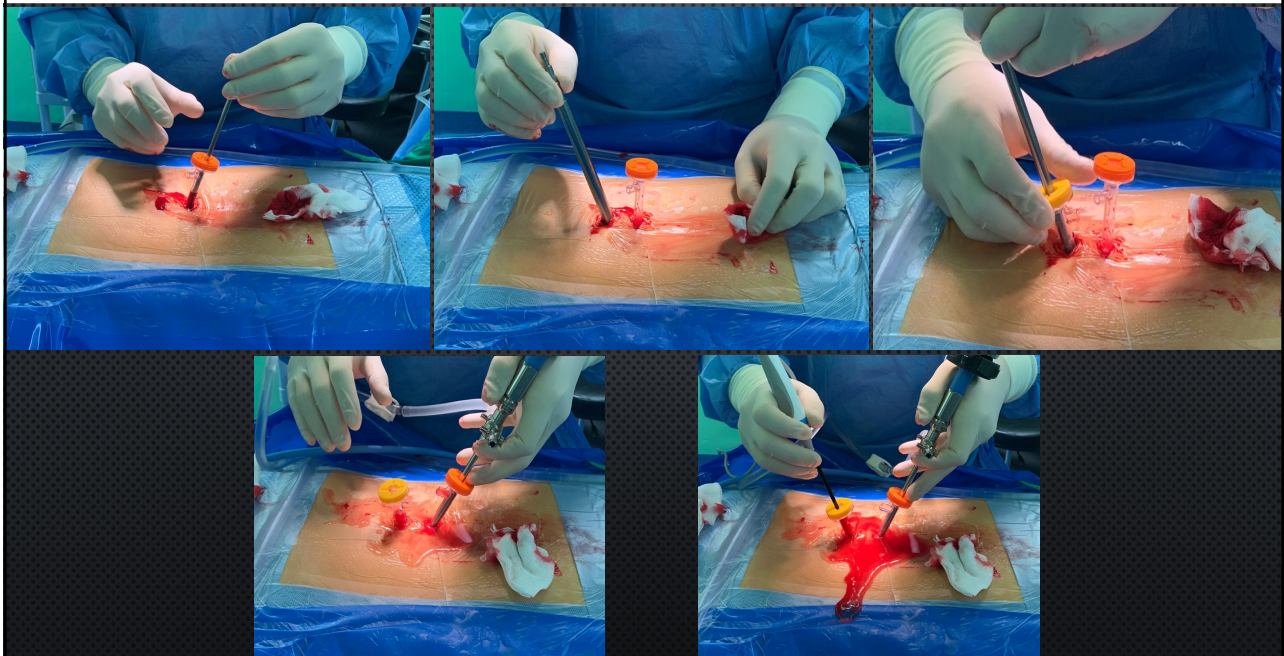
## Muscle detach & portal insertion



- Muscle detach:  
**Interlaminar space**  
→ **sup. surface of lamina**
- Make a tunnel  
→ hit two sticks

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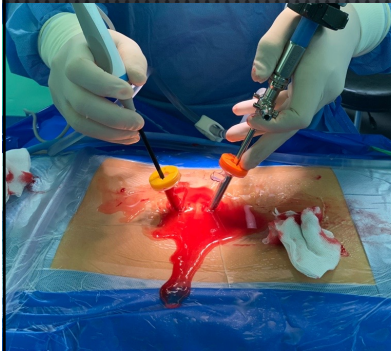
## Muscle detach & portal insertion



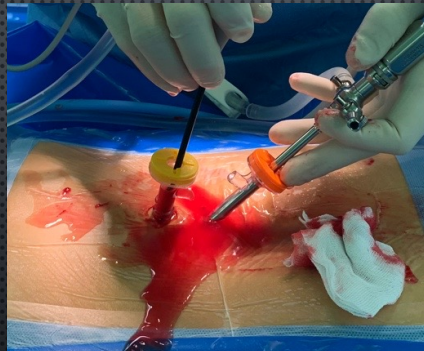
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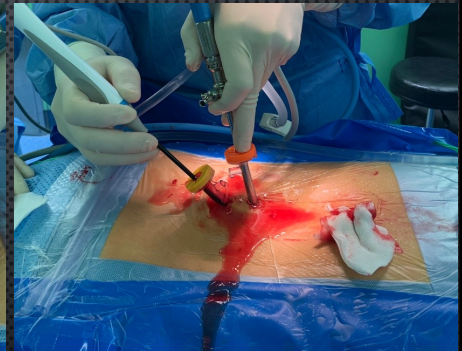
## Muscle detach & portal insertion



(O)



(X)



(X)

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## Initial Approach

### ◆ Working portal

#### ◆ Various instrument

- ◆ Punch, knife....
- ◆ RF instrument
- ◆ Retractor
- ◆ 2<sup>nd</sup> scope
- ◆ Saline output



### ◆ View portal

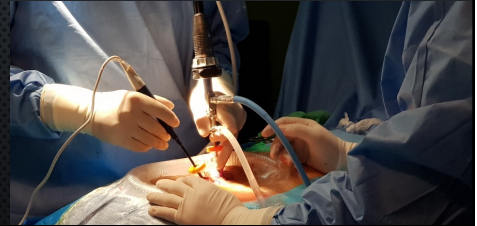
- ◆ 0° 4mm scope
- ◆ 30° 4mm scope
- ◆ Scope sheath
  - ◆ View retractor
- ◆ Saline Input

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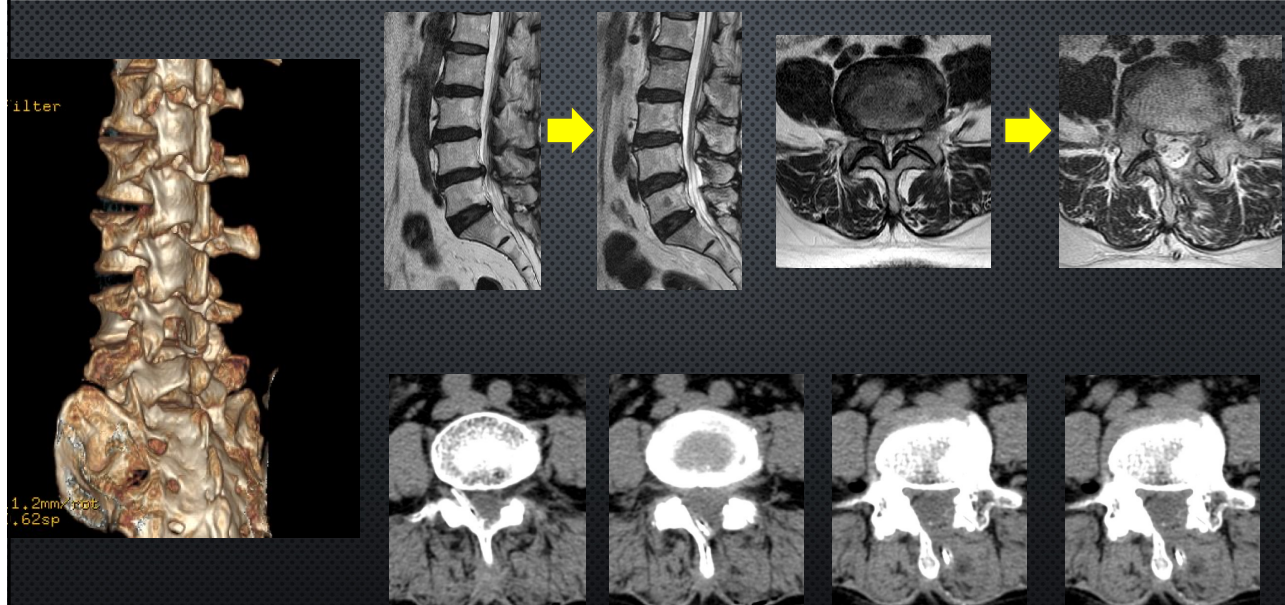
## Portals

- ◆ Making proper portals is very important
- ◆ It creat the continuous outflow which is necessary to obtain;
  - ◆ Optimum visual field / visibility
  - ◆ Bleeding control
  - ◆ Constant hydrostatic pressure within the limit of safety



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## Concepts of ULBD(Unilateral Laminotomy Bilateral Decom.)

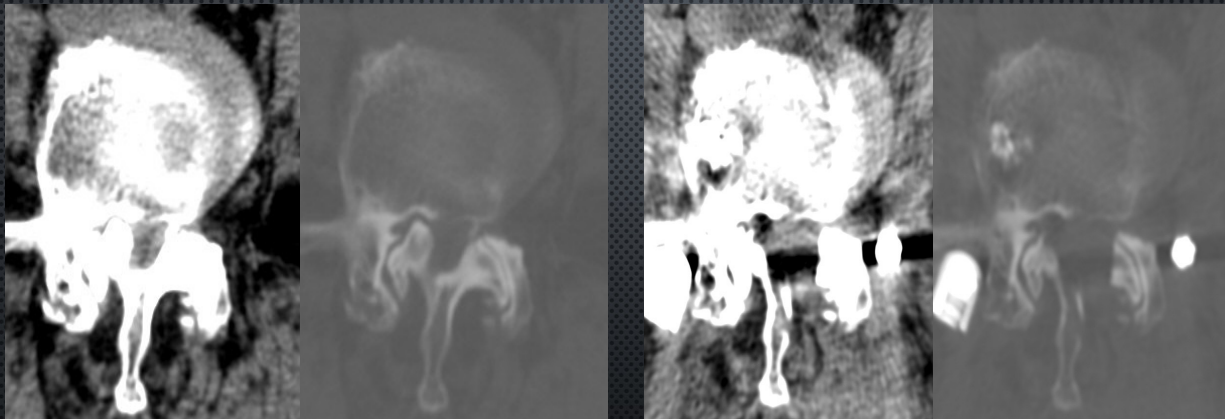


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## Asymmetric spinal stenosis (Facet cysts & OLF, etc)

Case2 – Female/69



Pre-OP

Post-OP

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## Asymmetric spinal stenosis (Facet cyst & OLF, etc)

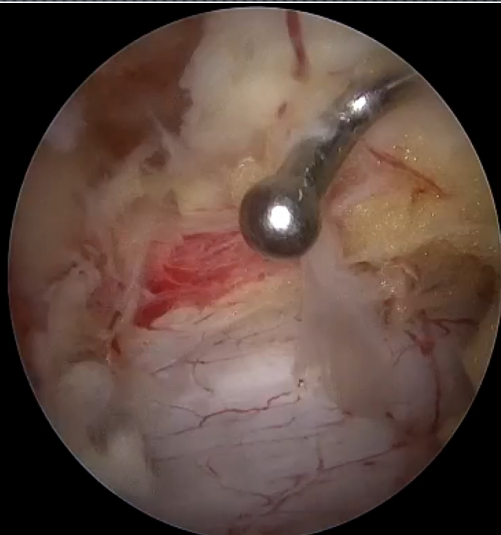
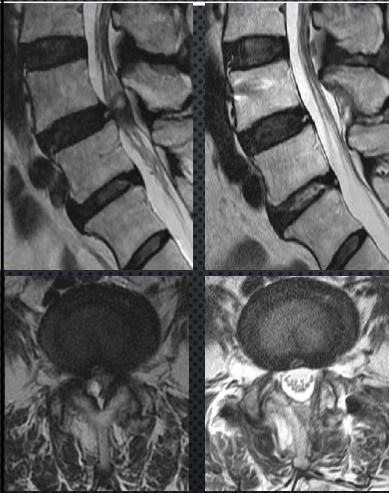
CASE F/69



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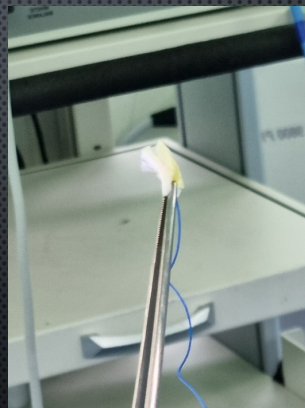
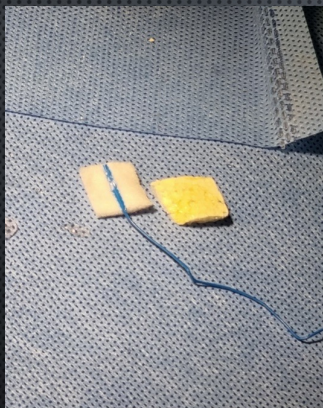


### Case review (facet cyst & dura repair)



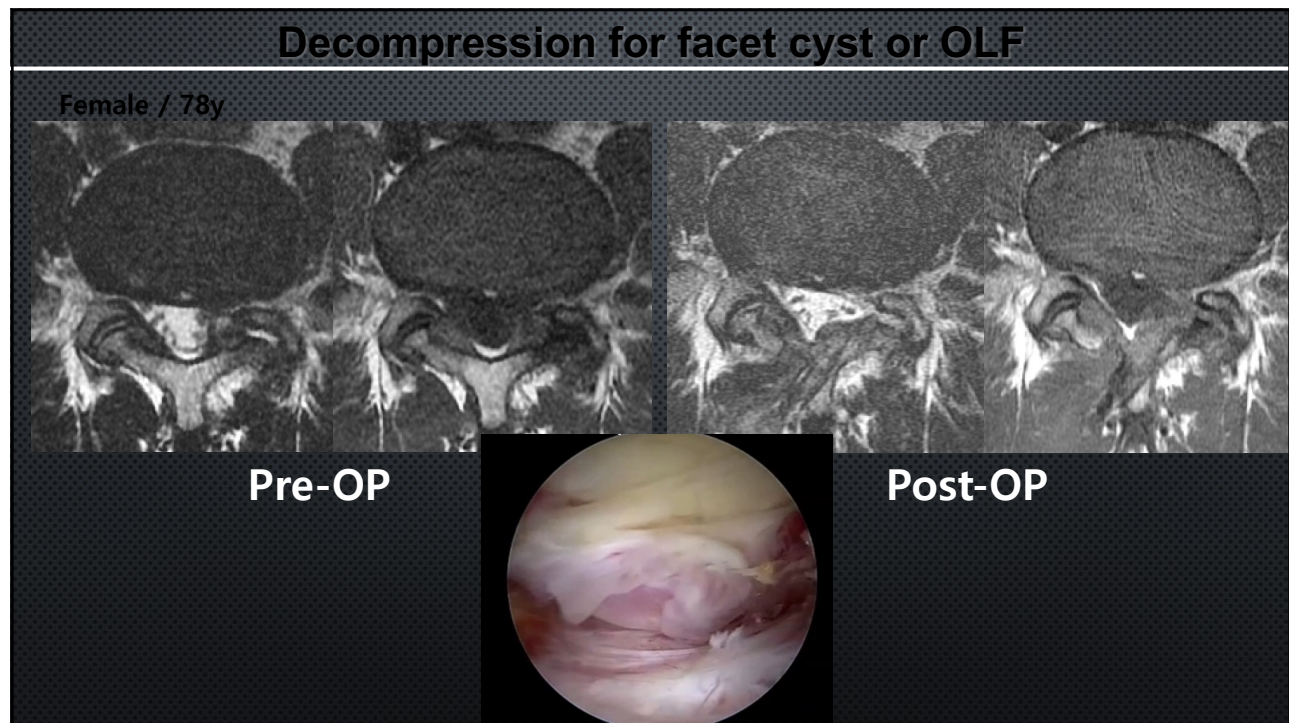
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### Case review (facet cyst & dura repair)

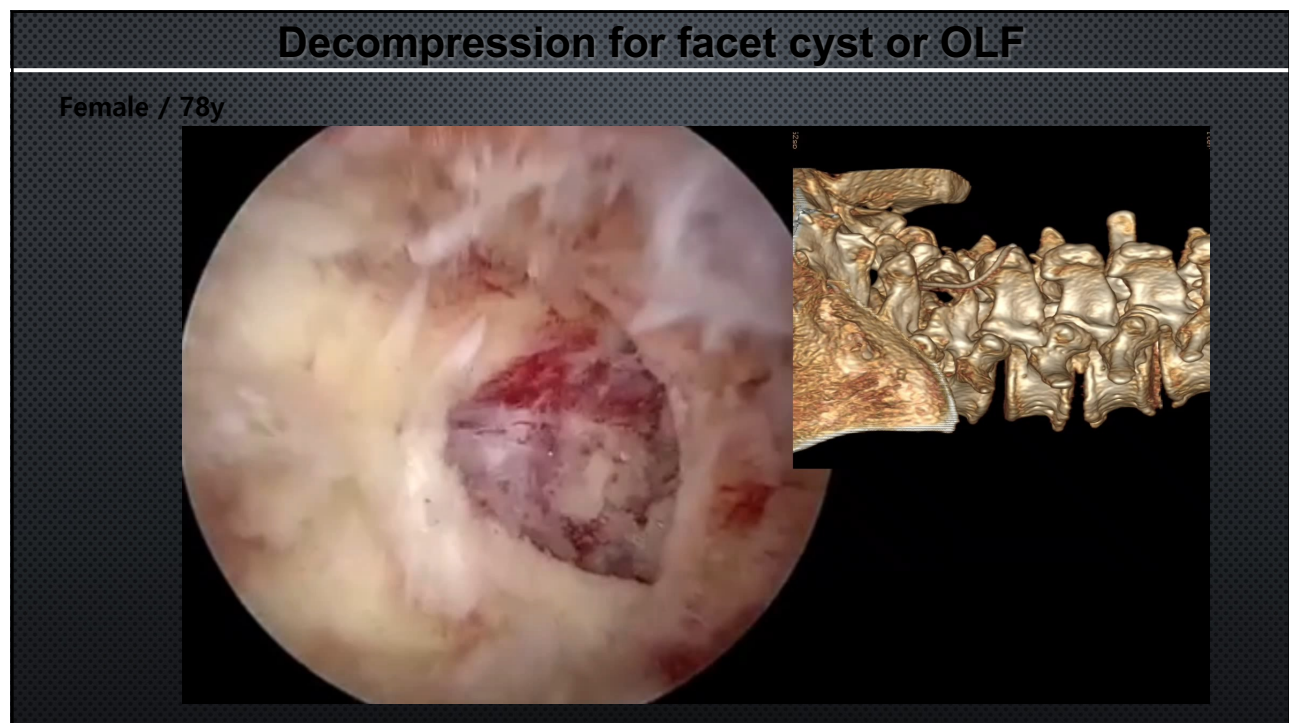


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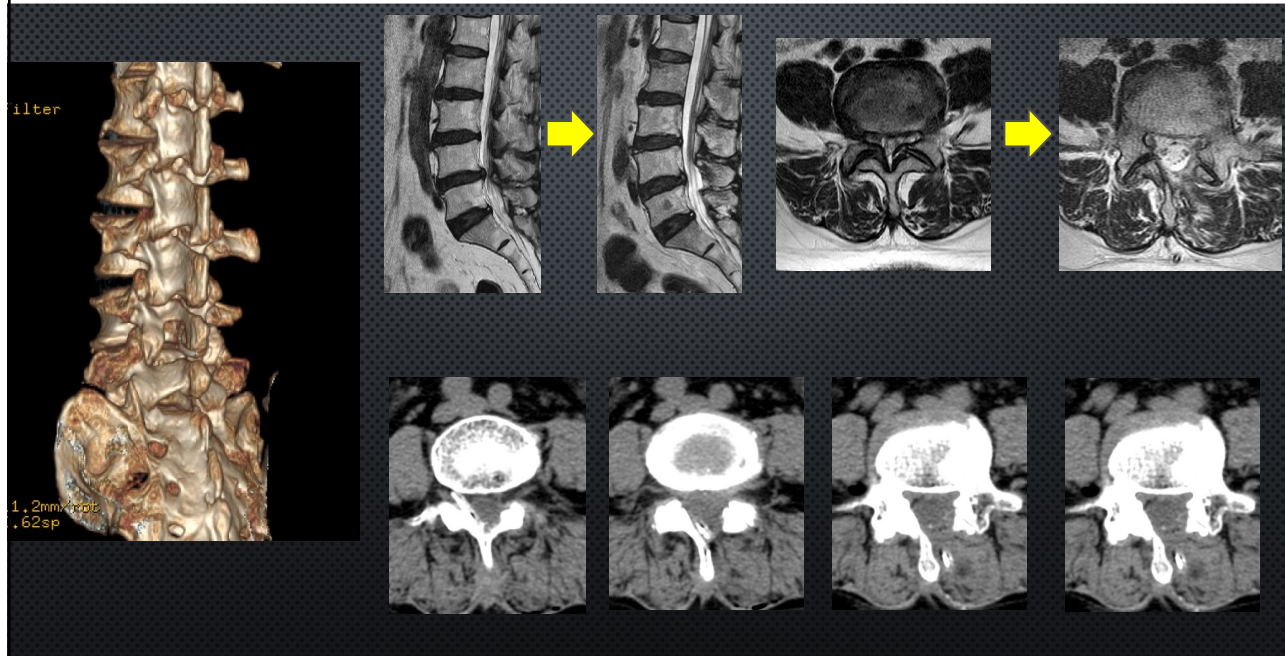
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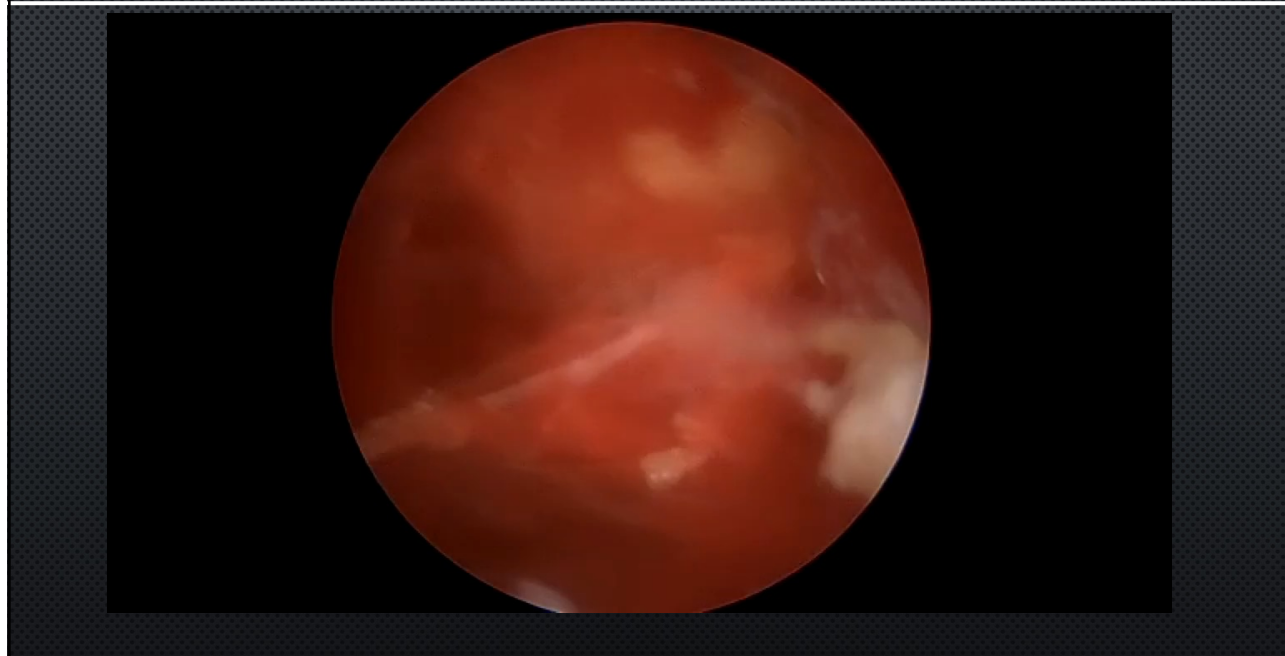


### Case review (61/F)



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### Case review (revision)



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## CASE 1

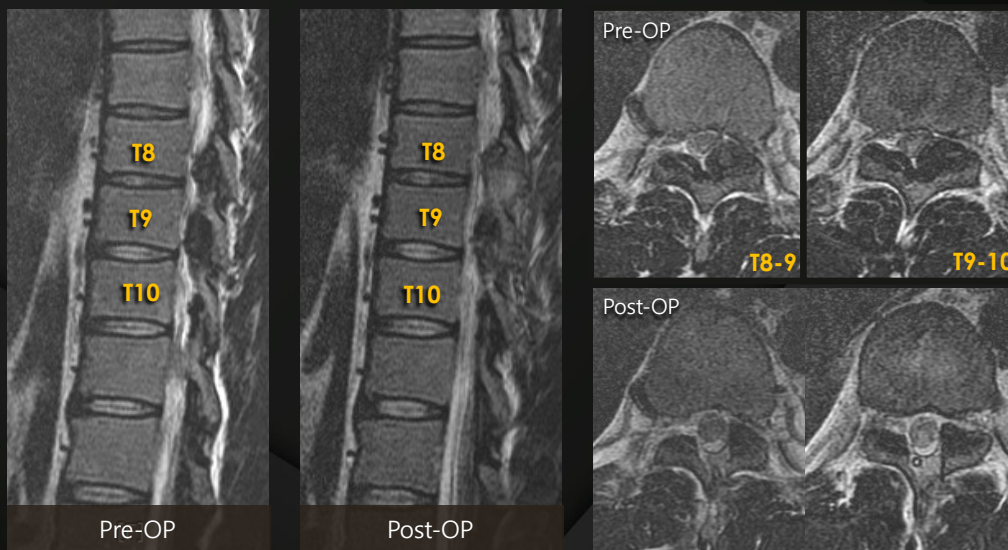
- 2016.04.11 Thoracic OP (UBF T8-9-10 Lt) : Microscope
- 2019.06.12 Thoracic OP (UBE T7-8-9-10 Lt) : Bi-portal Endoscope
- 2019.06.19 Lumbar OP (UBF L4-5 Lt) : Bi-portal Endoscope



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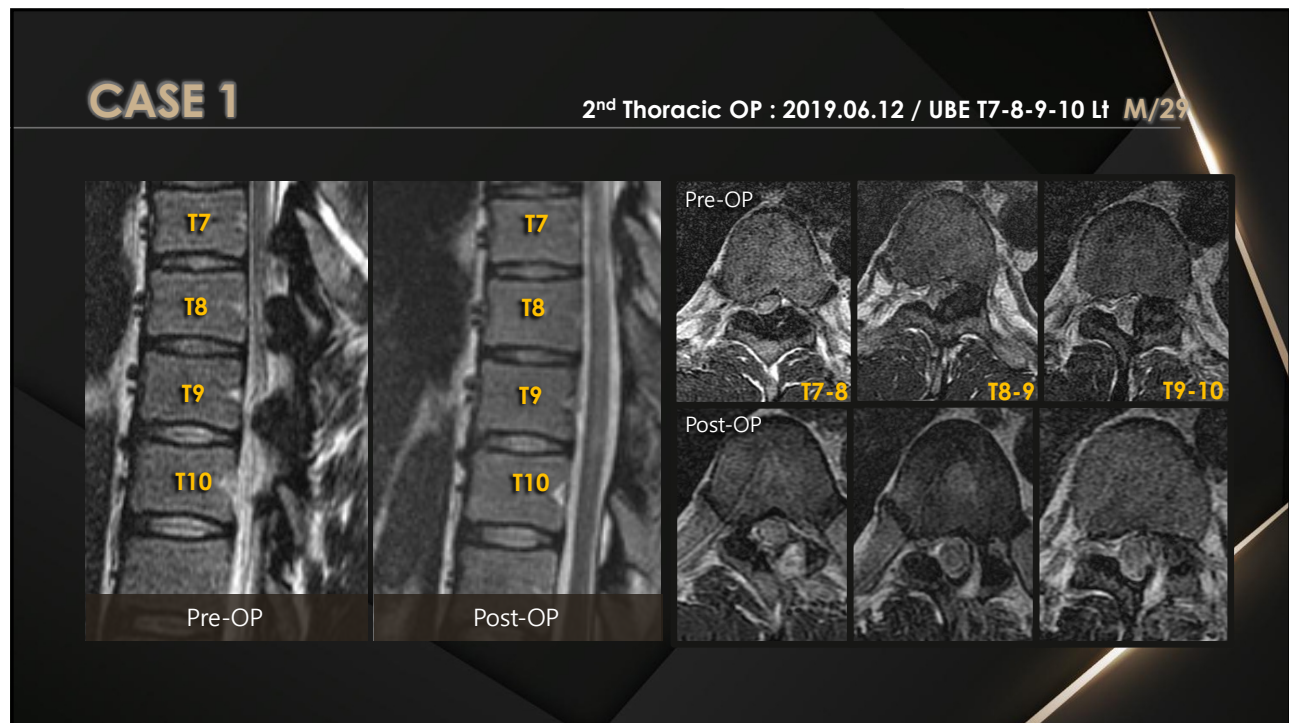
## CASE 1

1<sup>st</sup> Thoracic OP : 2016.06.11 / UBF T8-9-10 Lt M/26

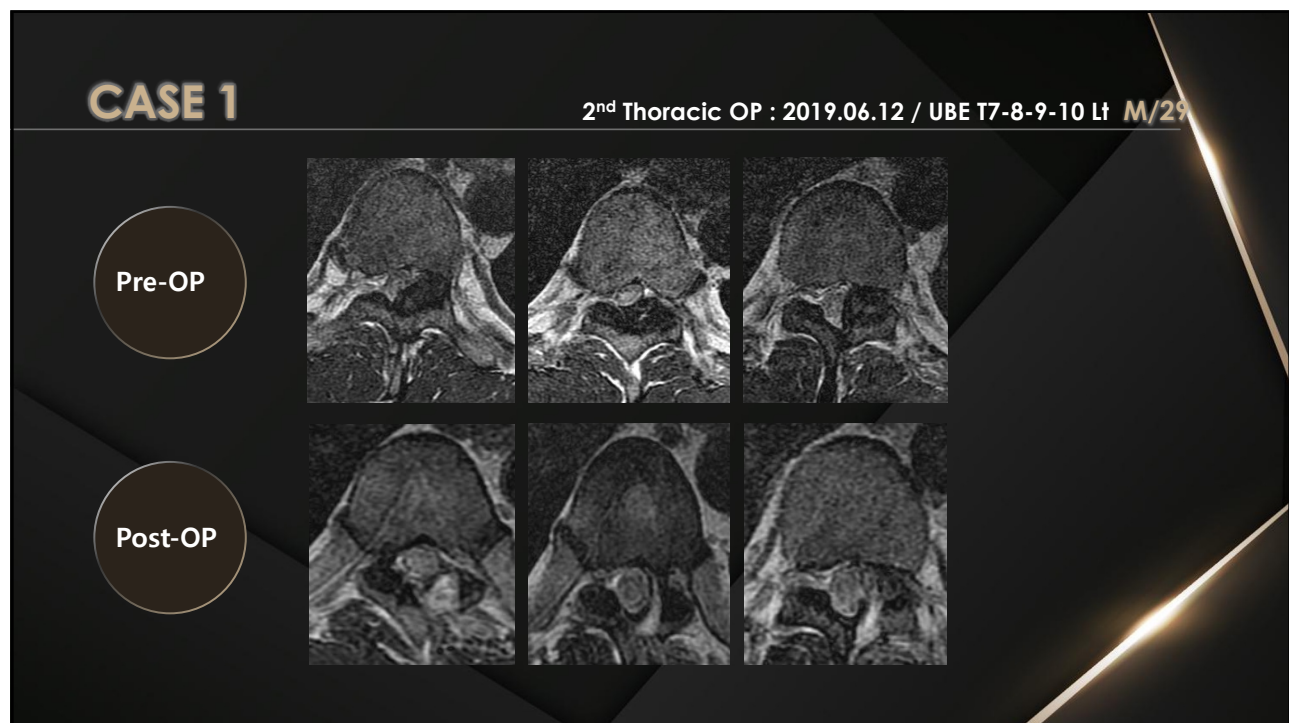


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## Comparison of Surgical Procedures

	Open Micro.	Biportal (UBE)	Uniportal (Full Endoscope)
Indication	No limitation	Wide indication (except: Cervical Ant. App)	Expanding indication (Disc -> Stenosis)
<b>Familiarity</b>	↑	↑	~ or ↓
Visual field	~	Very Good	Good
Bleeding	↑	↓↓	↓
Postop. Back pain	↑	↓	↓↓
<b>Infection</b>	↑	↓	↓
Hospital stay	↑	↓	↓
Muscular Injury	↑	~ or ↓	↓↓
Adhesion	↑	↑	↓↑
Skin incision	1	2	1
Cost effectiveness	—	↑	↓
Availability of general spinal operation instruments	—	↑	↓

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## Advantages

- ◆ Good visibility
- ◆ Similar to open
- ◆ Familiar anatomy
- ◆ Cost effective
- ◆ No special instruments
- ◆ Low infection rate

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## Possible Complications

- ◆ Hematoma
- ◆ Dural tear (difficult to repair)
- ◆ Increased ICP (Especially, in case of dura tear)
- ◆ Etc.

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## Conclusions

1. **Most powerful weapon for spinal canal decompression surgery**
2. Choose the right surgical method for the patient condition

- Recurred disc herniation
- Simple disc with low migrator  
→ Easy for T-PELD (L/A)
- Stenosis with or without disc herniation  
→ Biportal

2. Pursuit the MISS

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**Thank you for your attention**



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