

# **Posterior Cervical Foraminotomy**

**By**

**Unilateral Biportal Endoscopy**

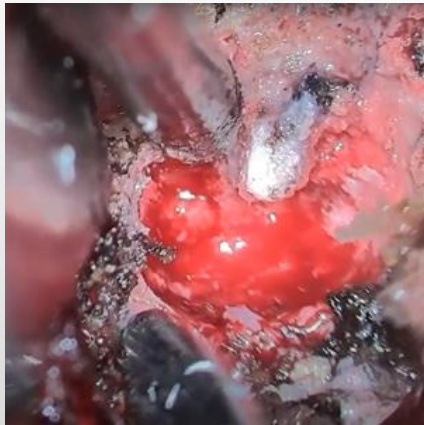
**(Dual portal endoscopy)**

**MAN KYU PARK**

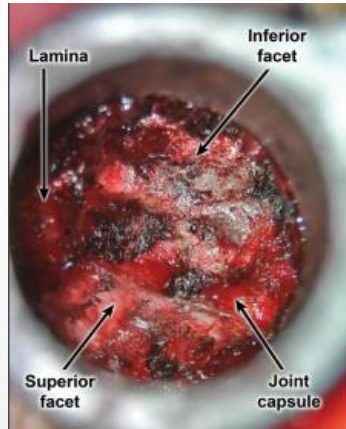
**HU HOSPITAL, BUSAN, SOUTH KOREA**



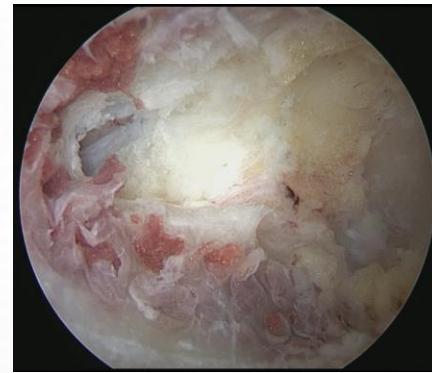
# The revolution of posterior cervical foraminotomy



**Open**



**Tubular**



**Endoscope**

- Posterior neck pain
- Muscle injury
- Postoperative kyphosis
- Facet violation
- Instability

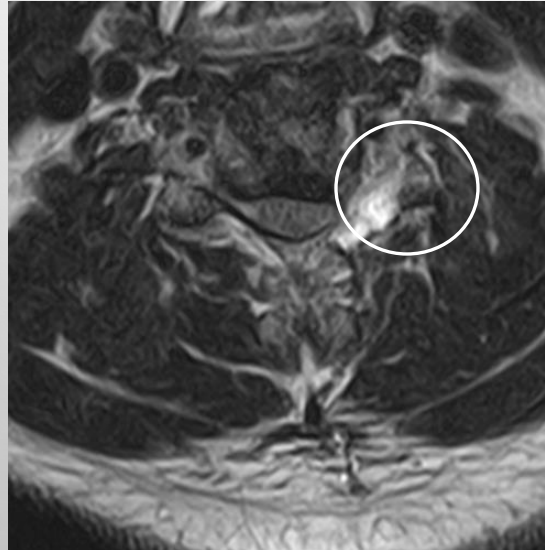
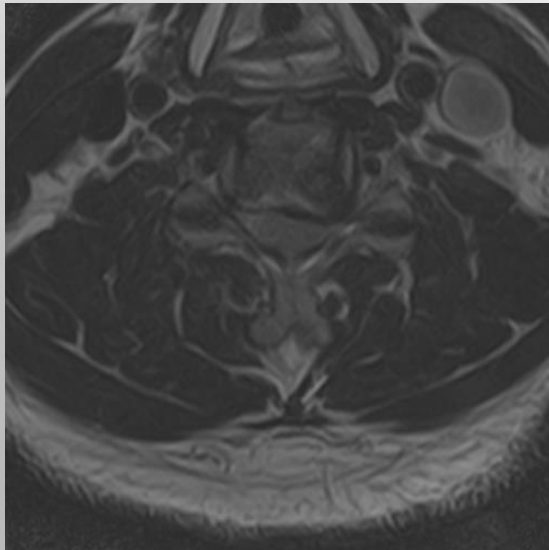
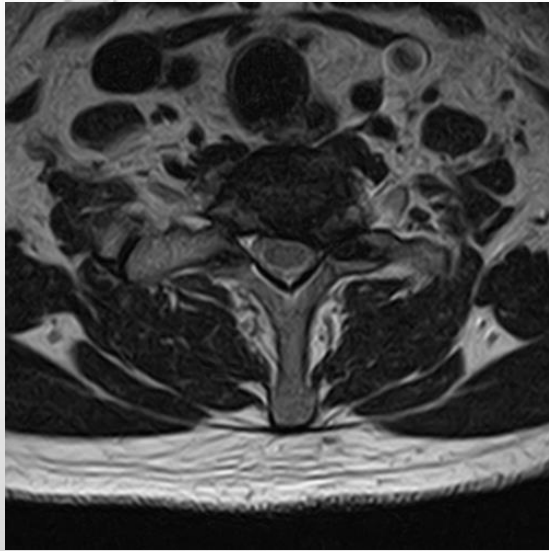
**Full-endoscopic decompression**

**Endoscopy-assisted decompression (UBE)**

# Posterior cervical foraminotomy by UBE

## Considerations

Incomplete decompression/ Facet joint violation



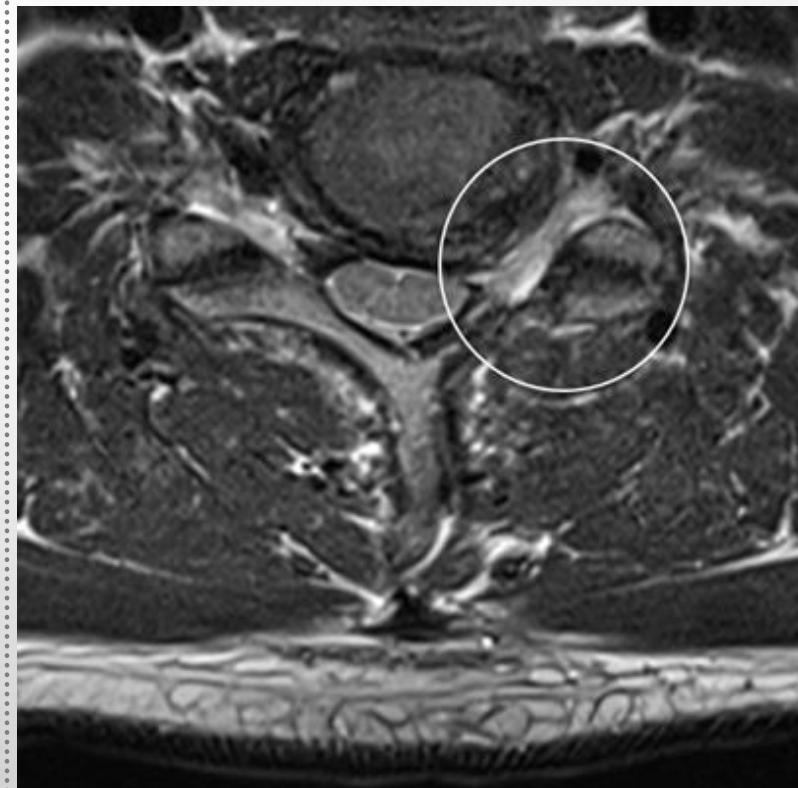
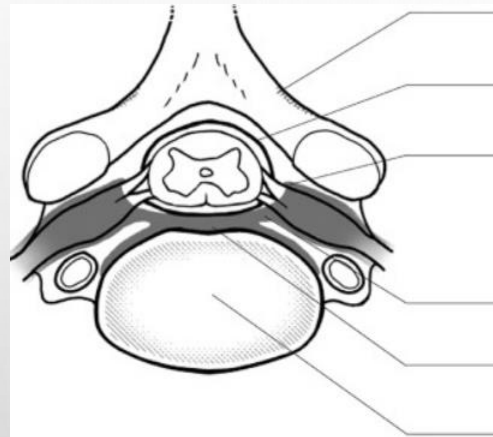


# Posterior cervical foraminotomy by UBE

## Cervical foraminotomy

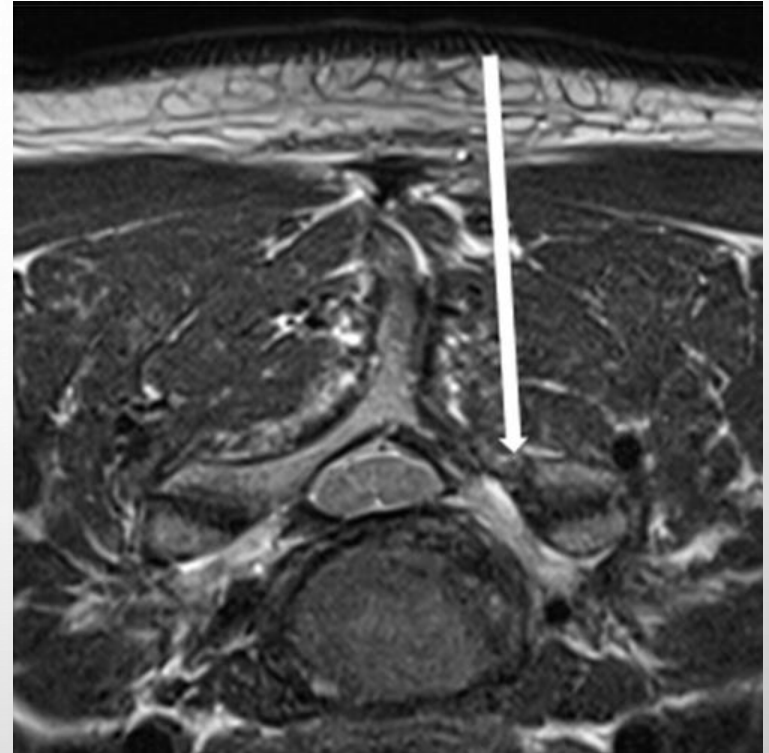
Periradicular fibrous sheath

Pathway of the nerve root



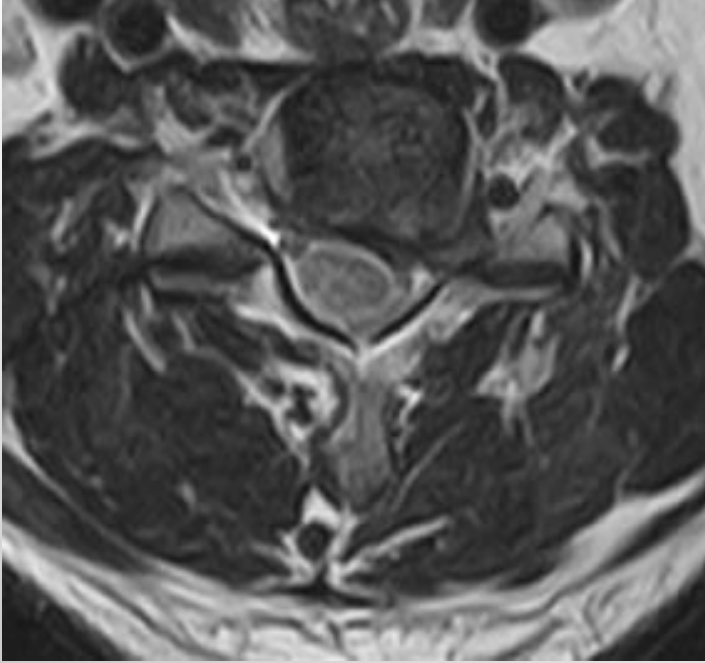
# Posterior cervical foraminotomy by UBE

## Making portals

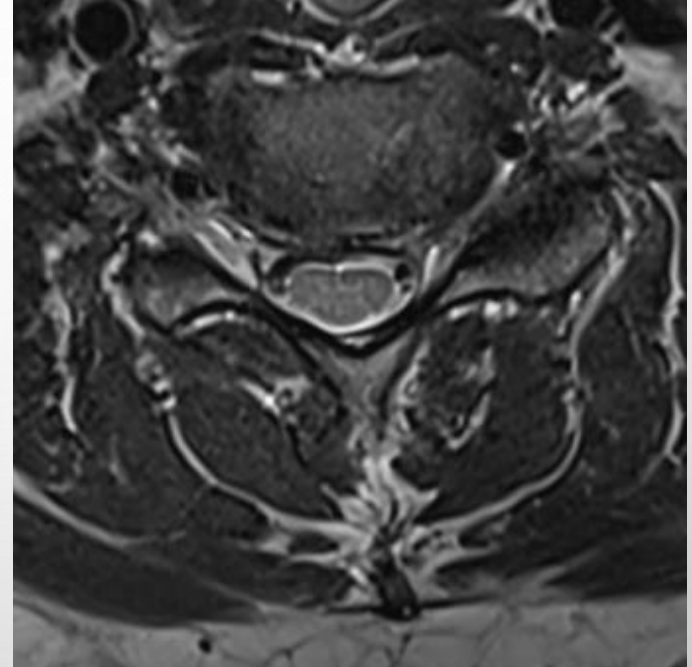


1. Two portal distance, at least 3 cm
2. Docking: cranial lamina
3. Do not create portals, too laterally

# Posterior cervical foraminotomy by UBE



**Cervical foraminal HNP**



**Cervical foraminal stenosis**



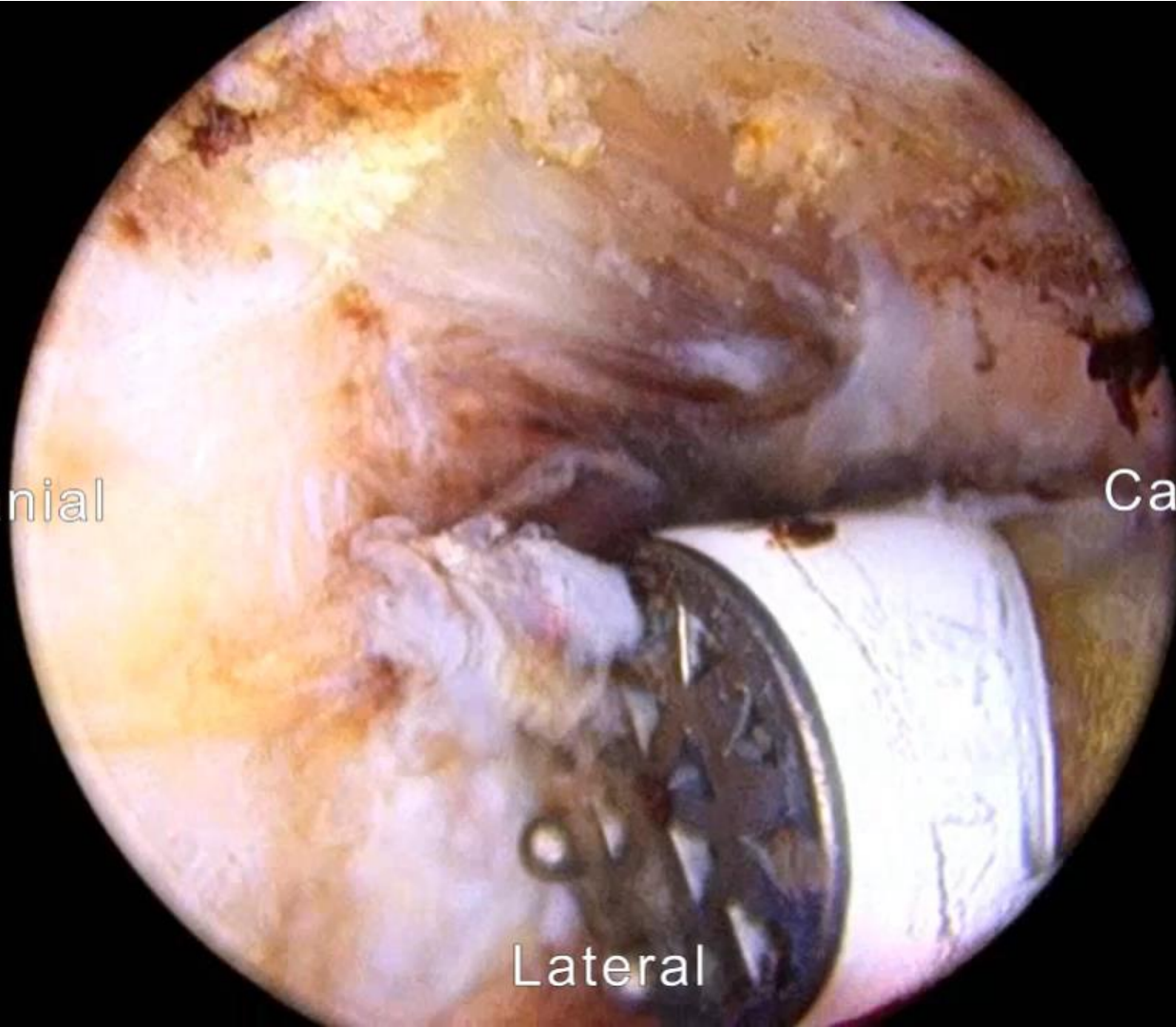
# Posterior cervical foraminotomy by UBE

Cervical foraminal HNP

Cranial

Caudal

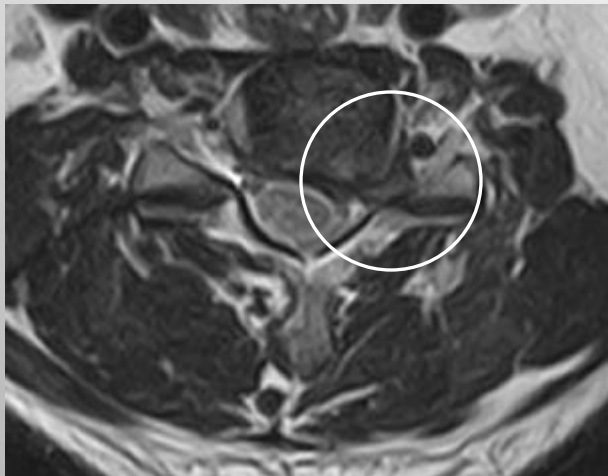
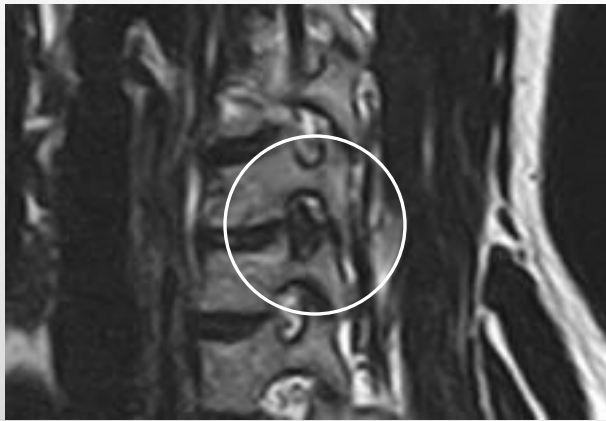
Lateral



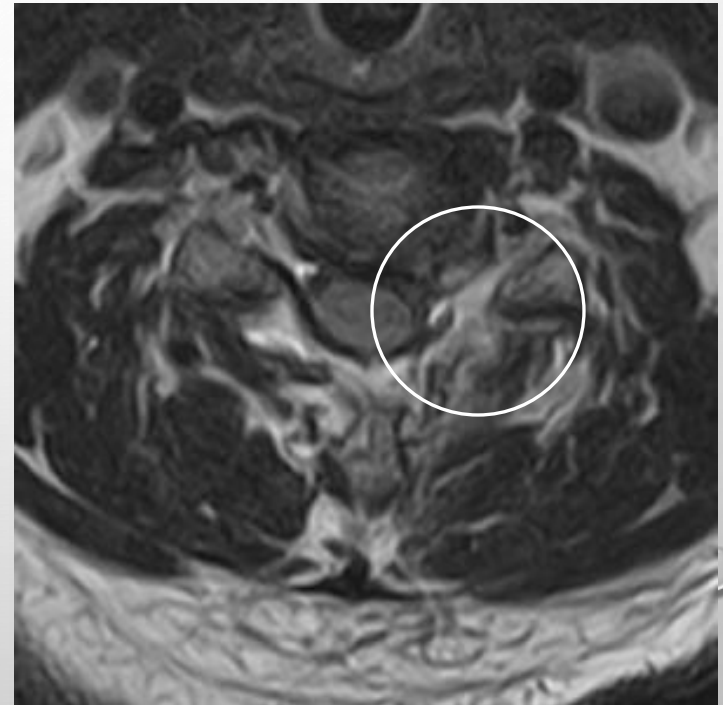
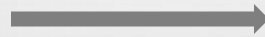
# Posterior cervical foraminotomy by UBE

Cases

Foraminal HNP on C6-7,Lt



postoperatively

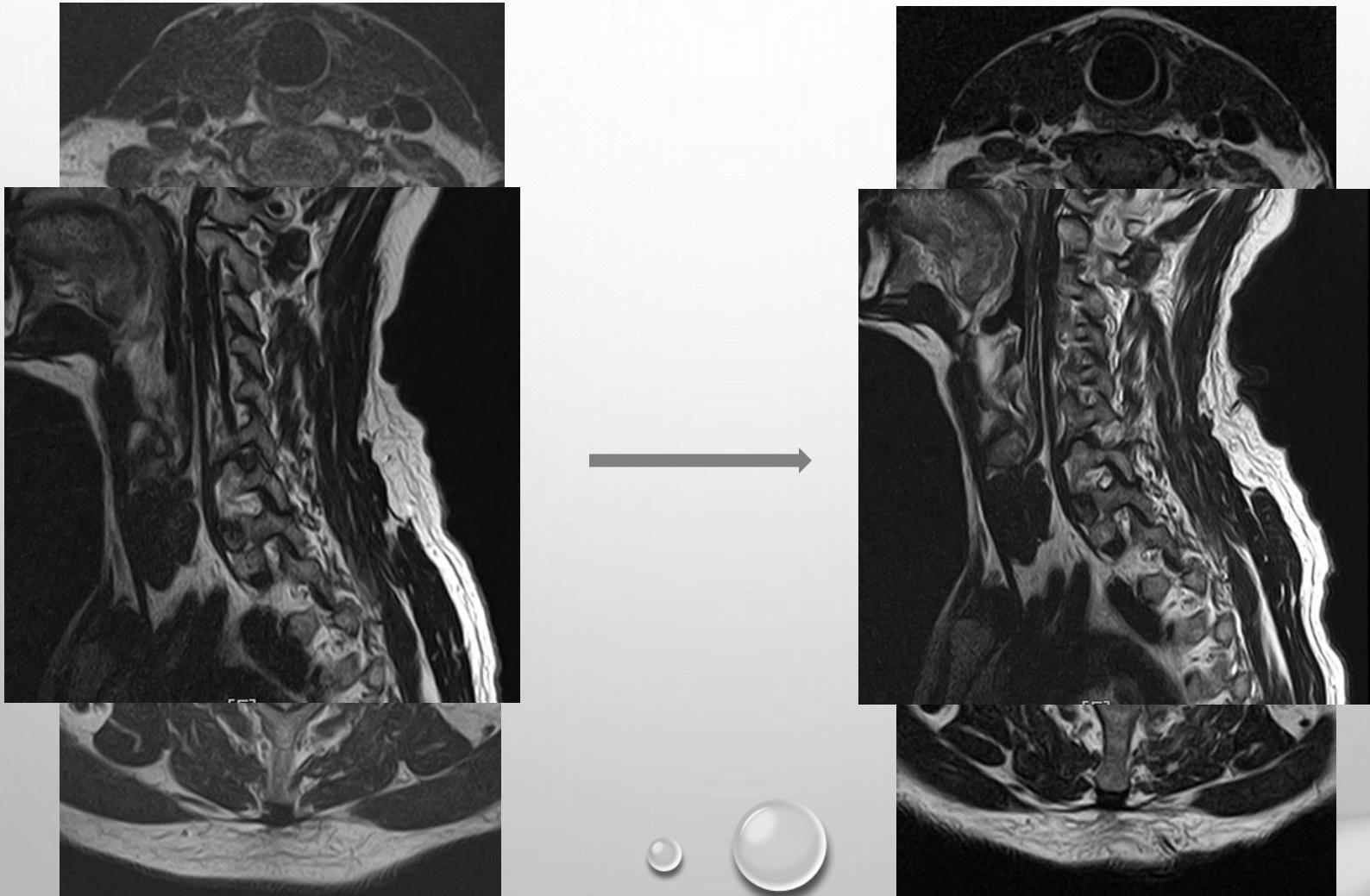




# Posterior cervical foraminotomy by UBE

Foraminal HNP on C5-6,Lt

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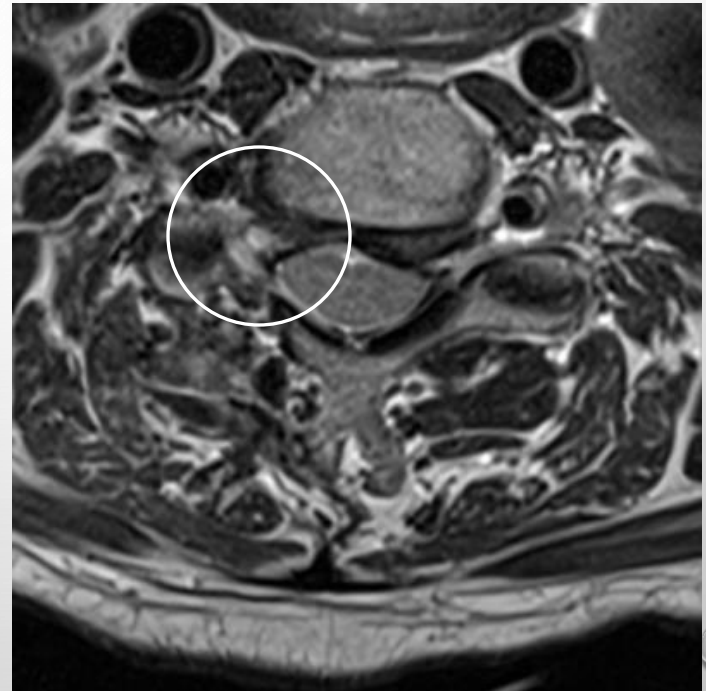
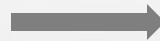
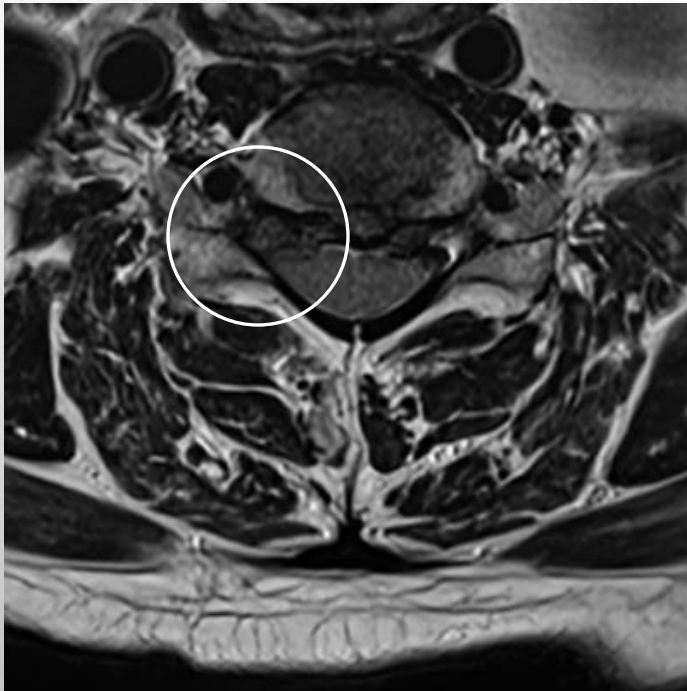


# Posterior cervical foraminotomy by UBE

Cases

Cervical foraminal HNP on C5-6,Rt

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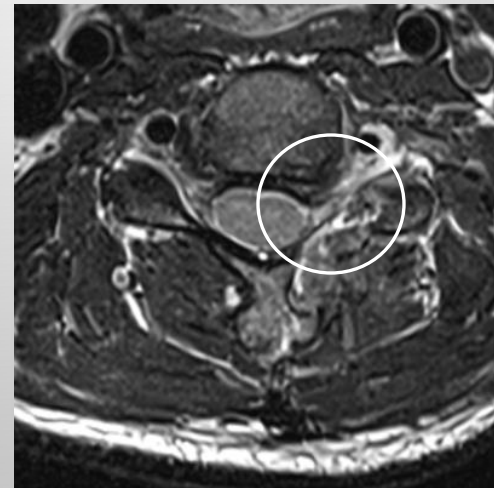
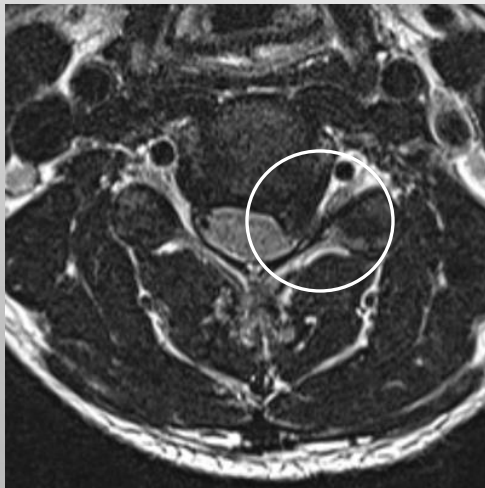
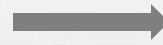


# Posterior cervical foraminotomy by UBE

Cases

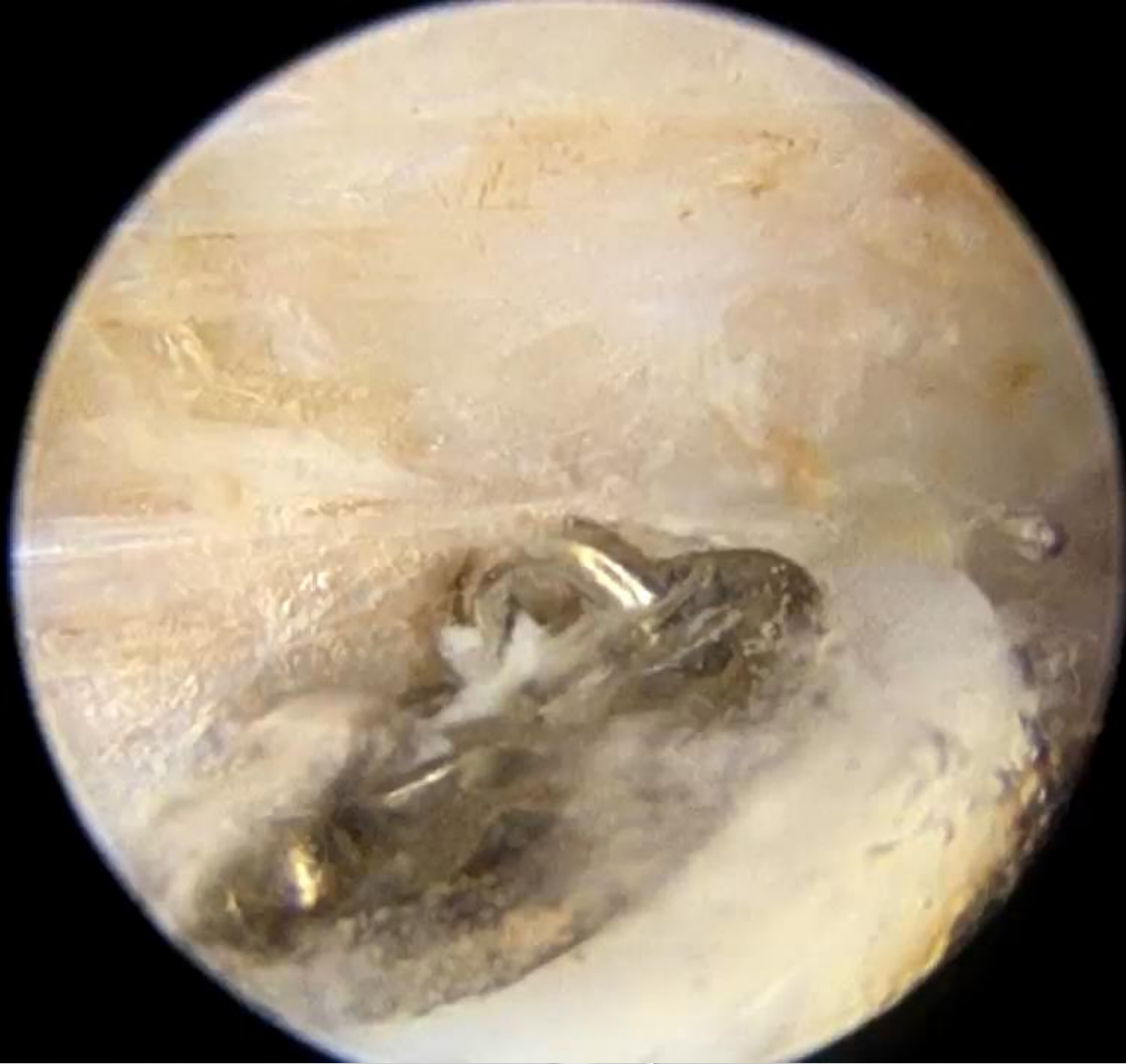
Cervical foraminal HNP on C4-5, Lt

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# Posterior cervical foraminotomy by UBE

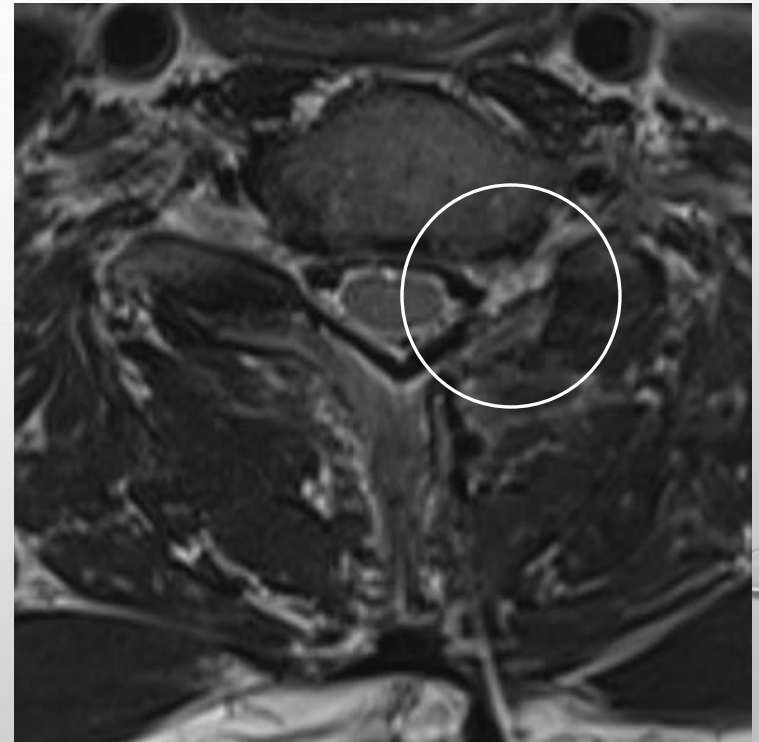
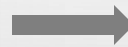
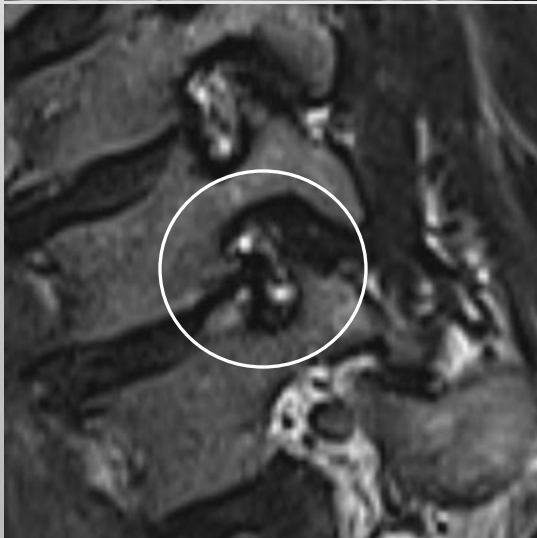
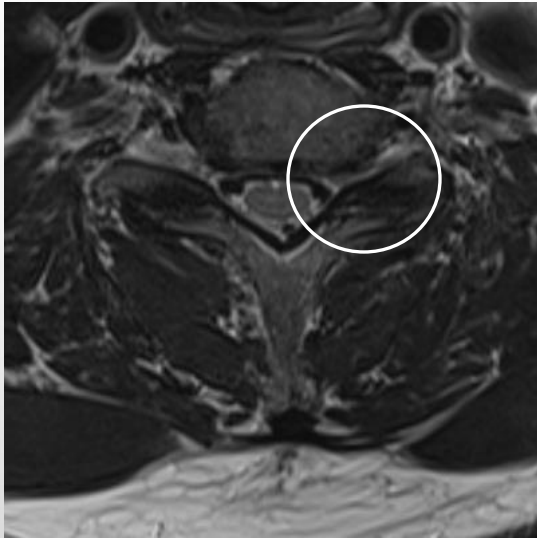


# Posterior cervical foraminotomy by UBE

Cases

Foraminal stenosis on C4-5, Lt

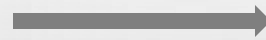
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# Posterior cervical foraminotomy by UBE

Cases

Foraminal stenosis on C6-7, Lt

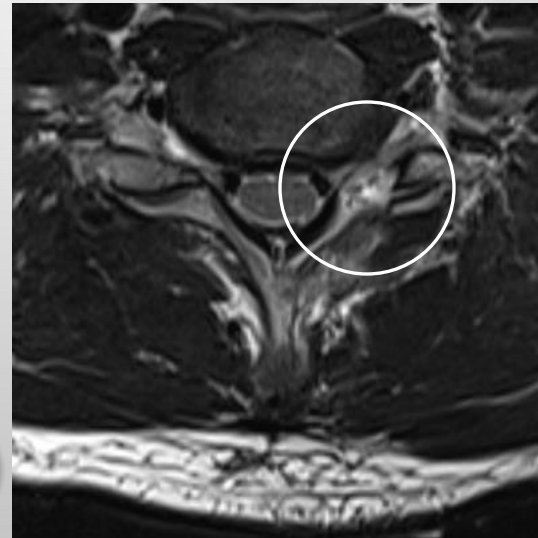
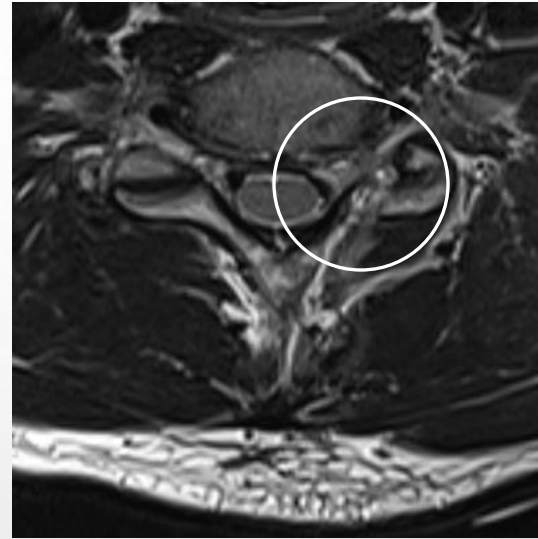
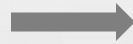
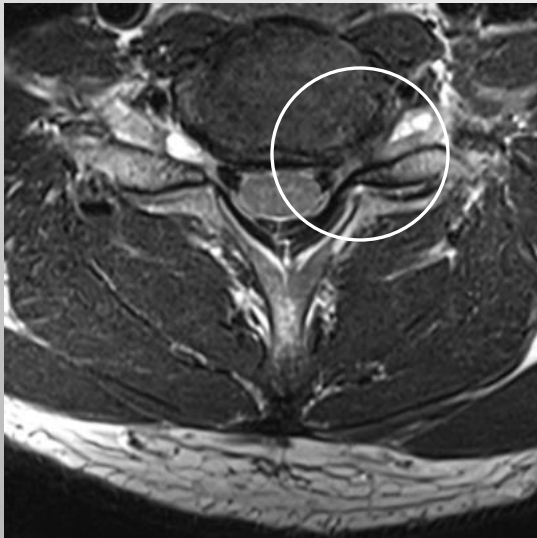
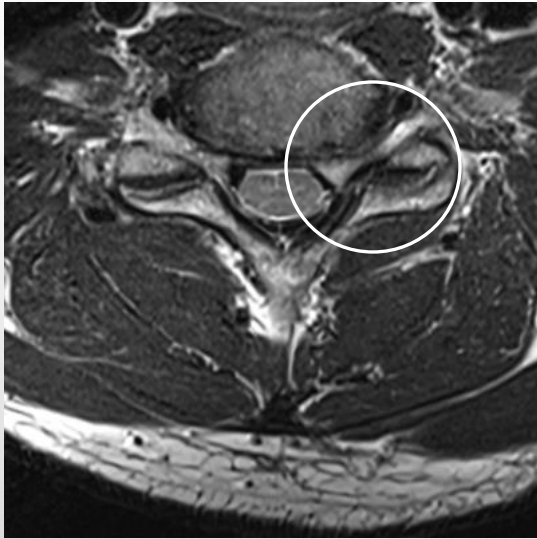




# Posterior cervical foraminotomy by UBE

Cases

Foraminal stenosis on C6-7, Lt



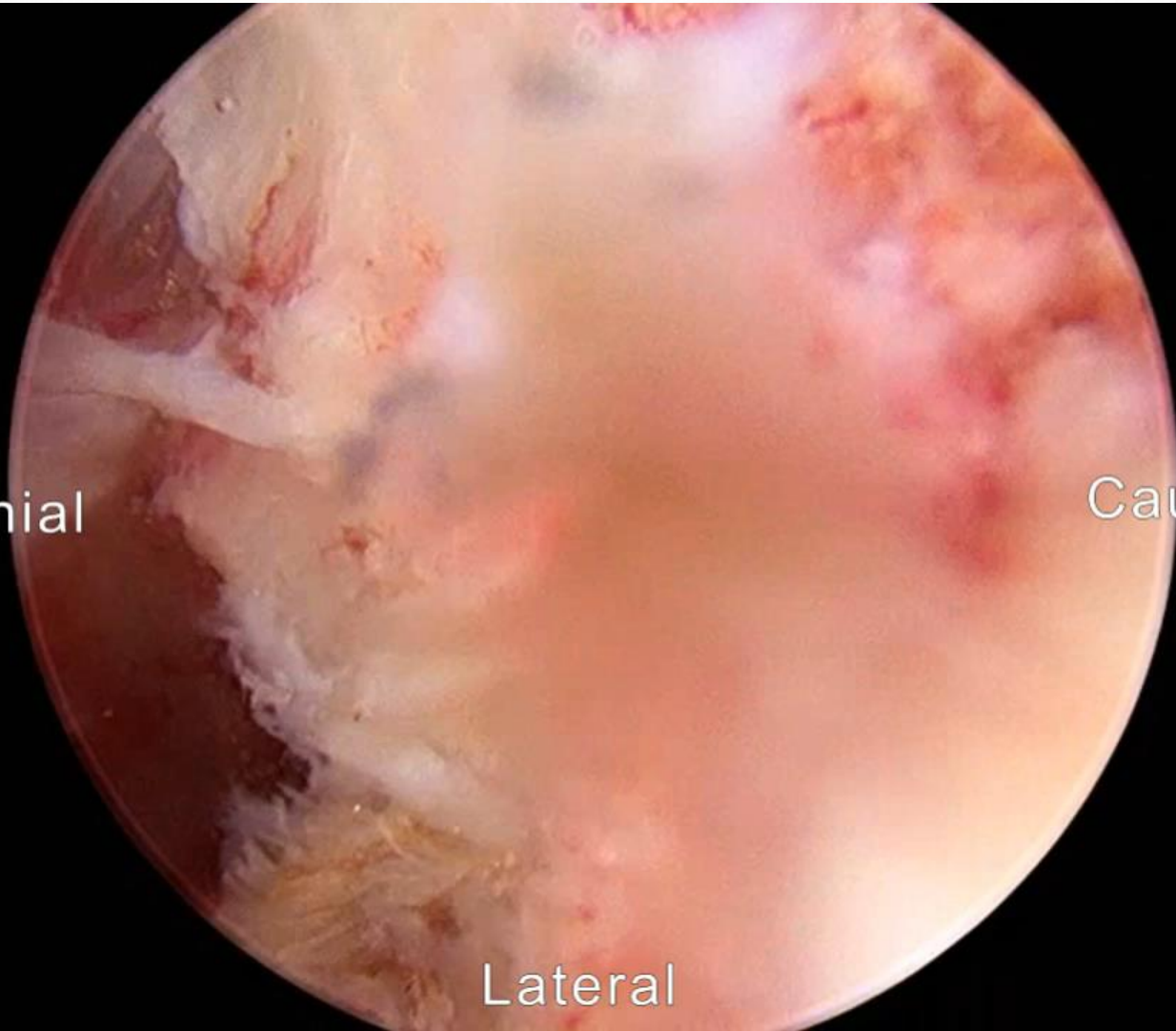
# Posterior cervical foraminotomy by UBE

2 level PCF with 2 skin incisions

Cranial

Caudal

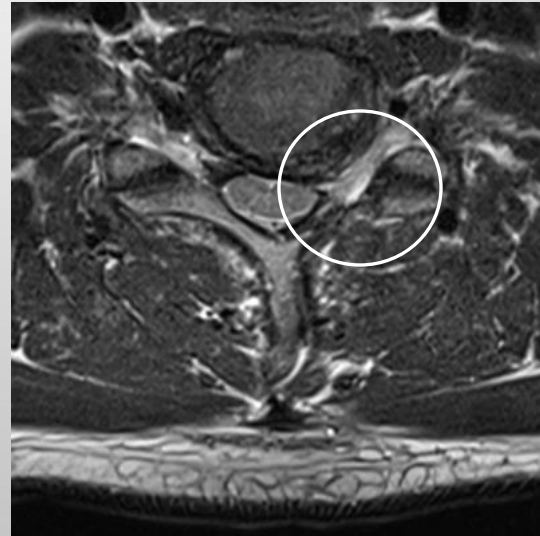
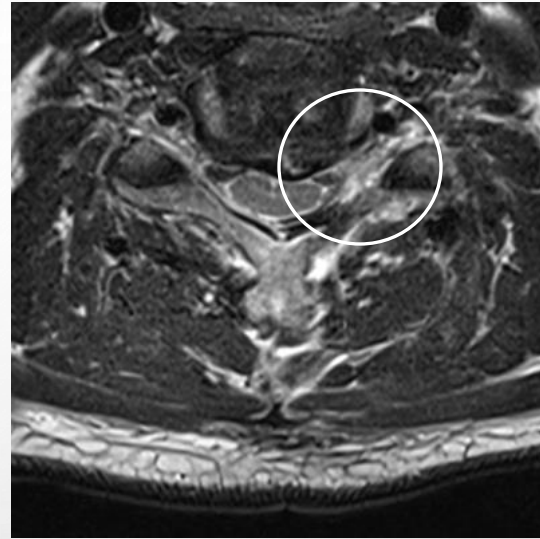
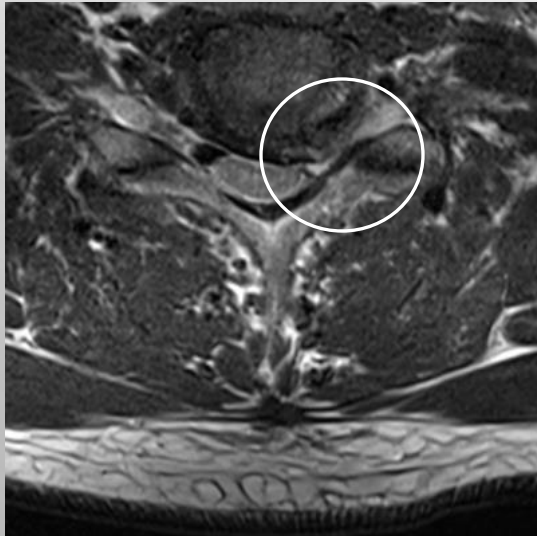
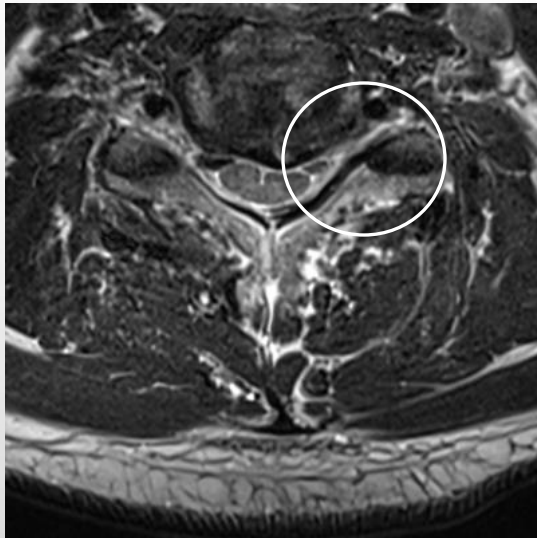
Lateral



# Posterior cervical foraminotomy by UBE

Cases

Foraminal stenosis on C5-6,C6-7,Lt

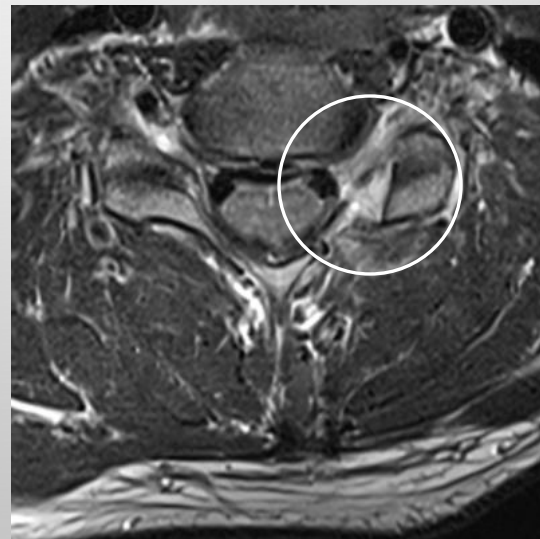
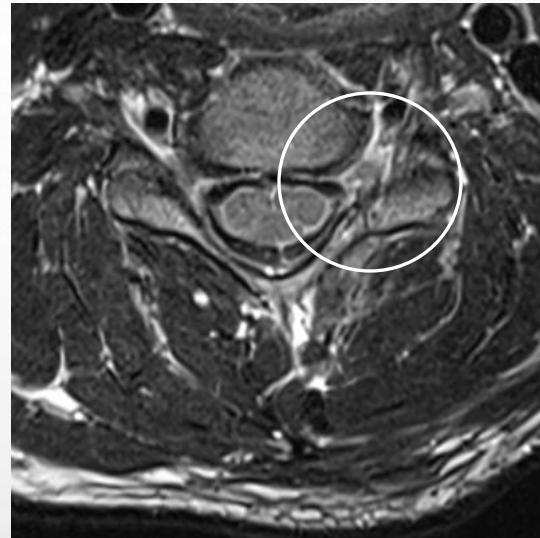
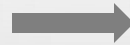
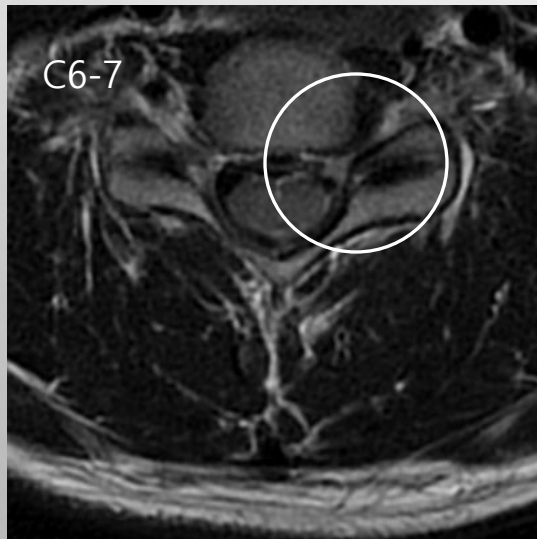
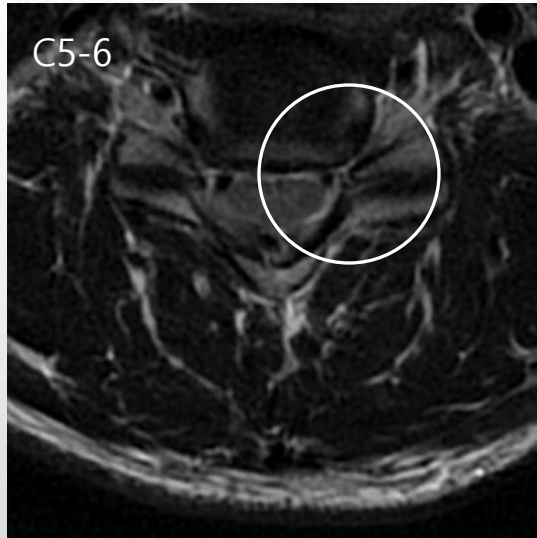




# Posterior cervical foraminotomy by UBE

Cases

Cervical foraminal stenosis on C5-6,C6-7,Lt

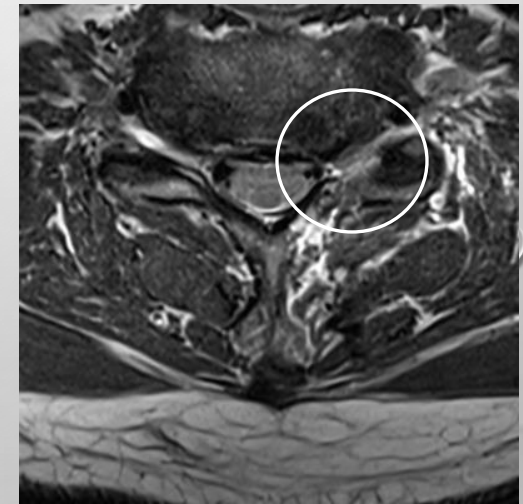
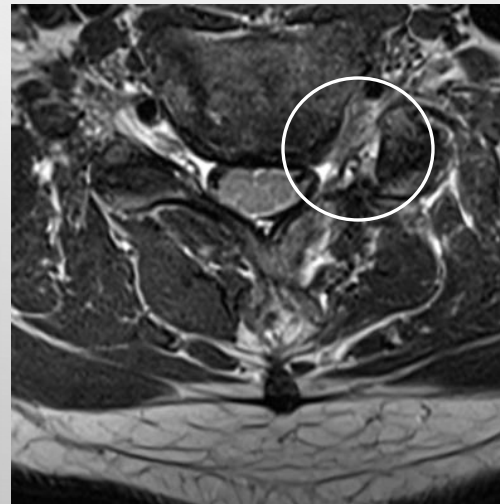
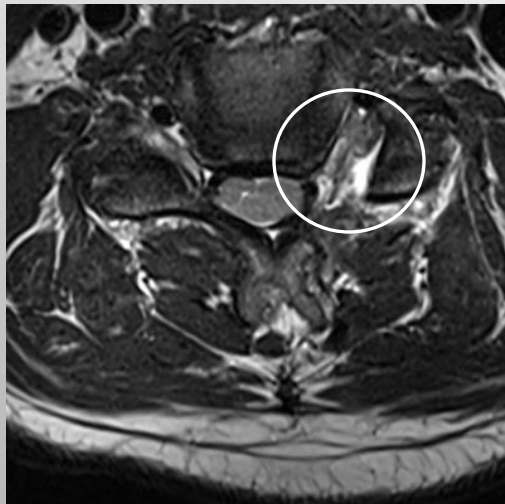
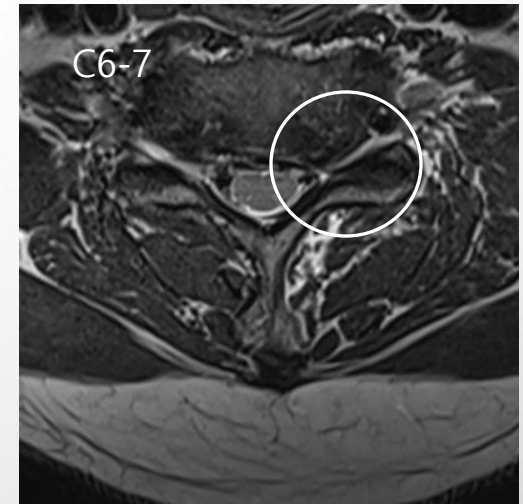
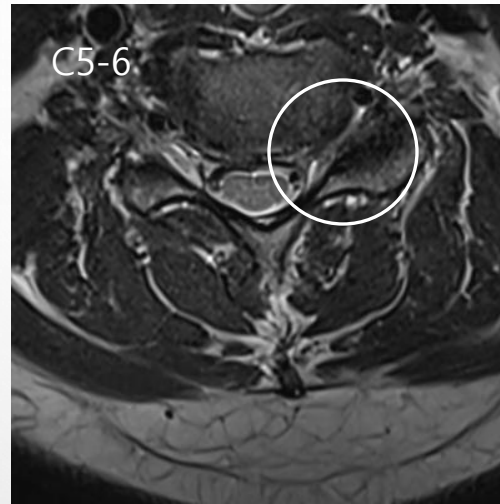
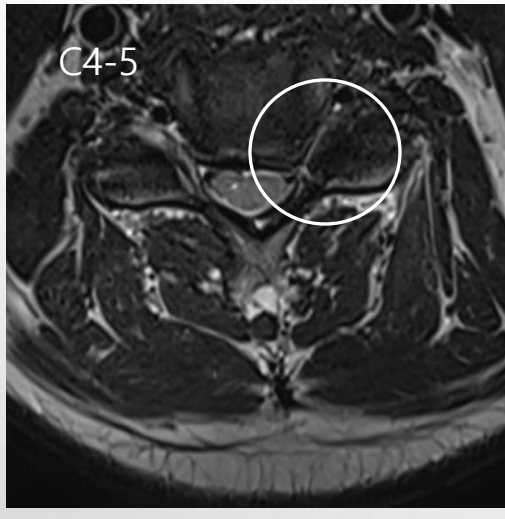


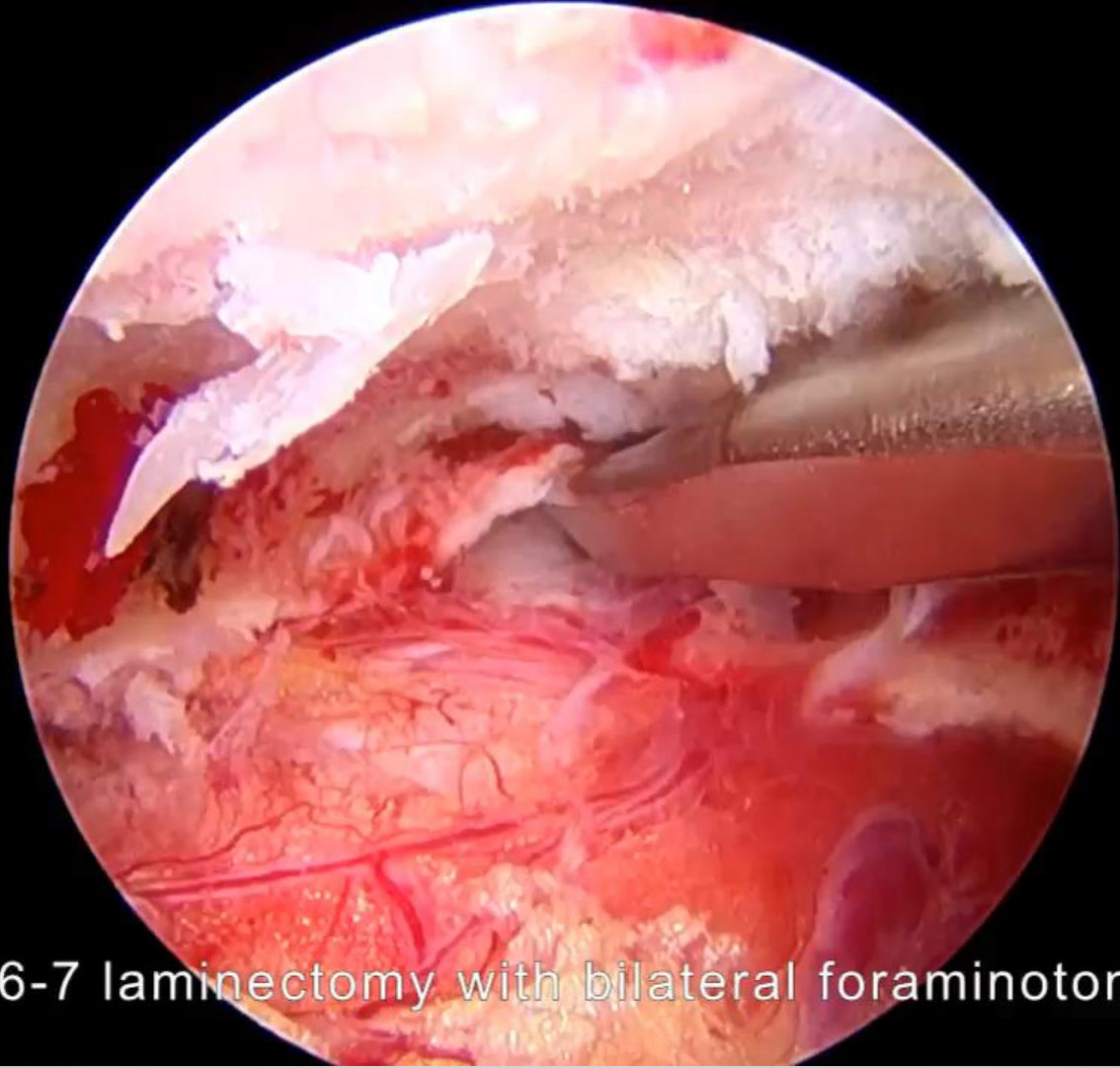
# Posterior cervical foraminotomy by UBE

Cases

Foraminal stenosis on C4-5, C5-6, C6-7, Lt

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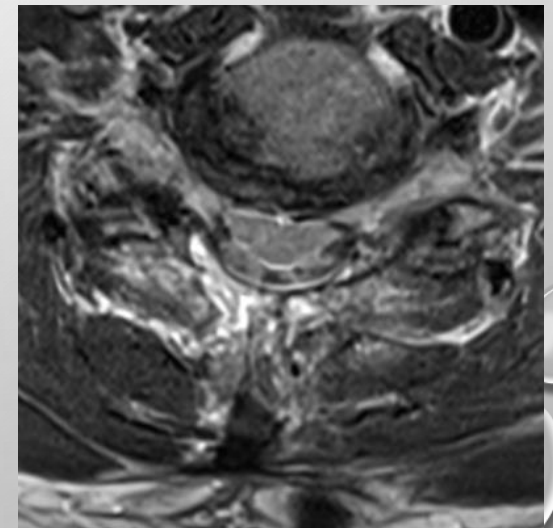
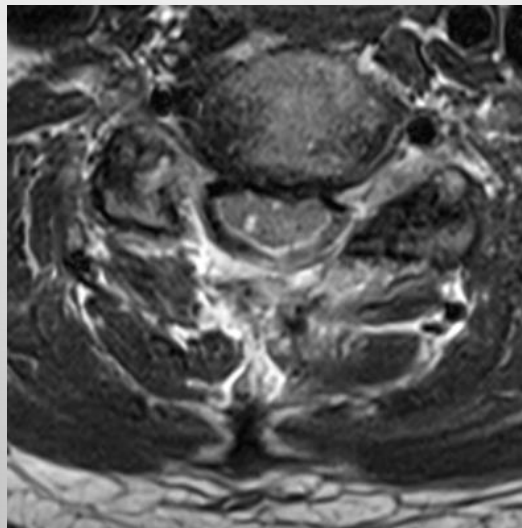
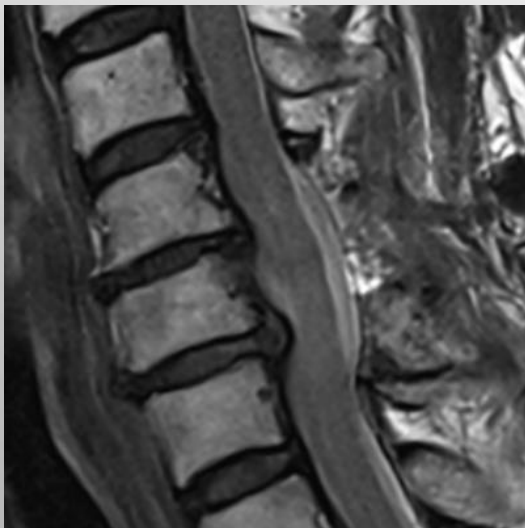
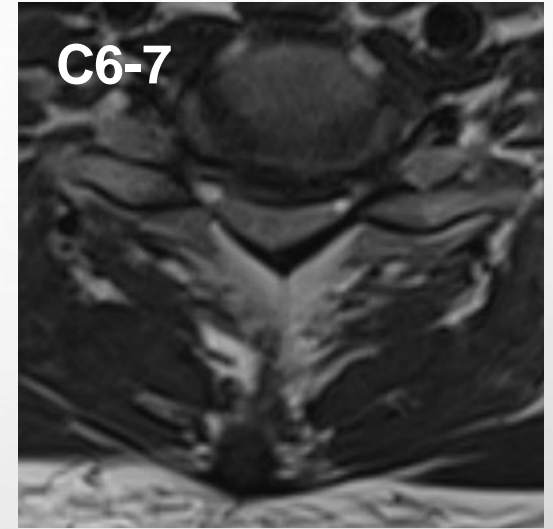
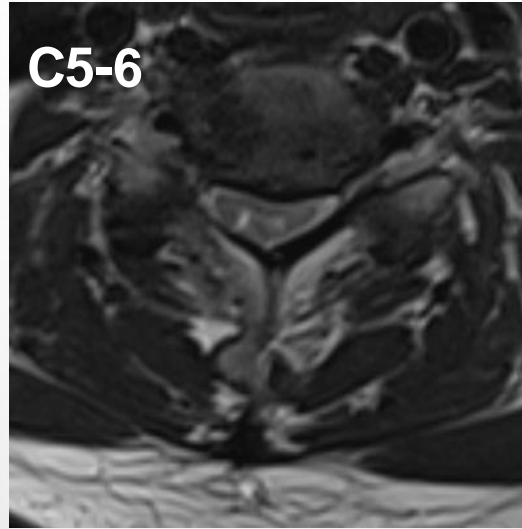
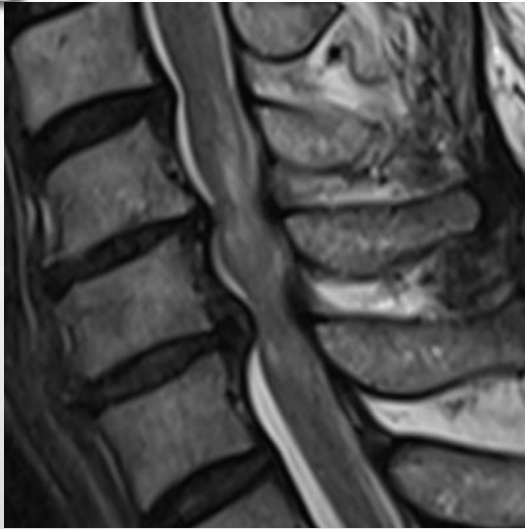




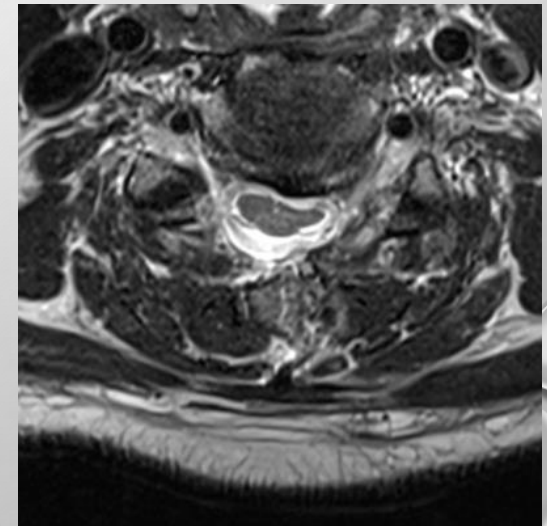
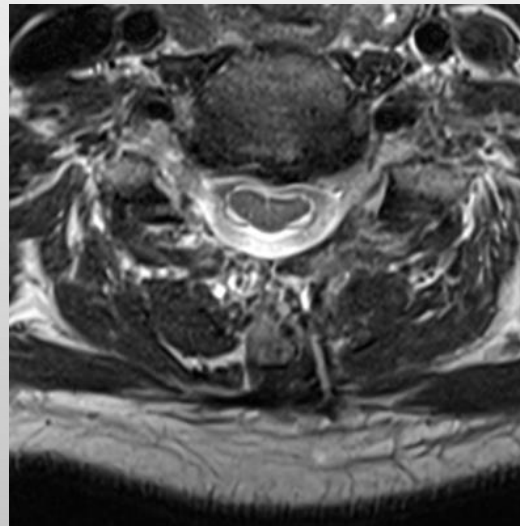
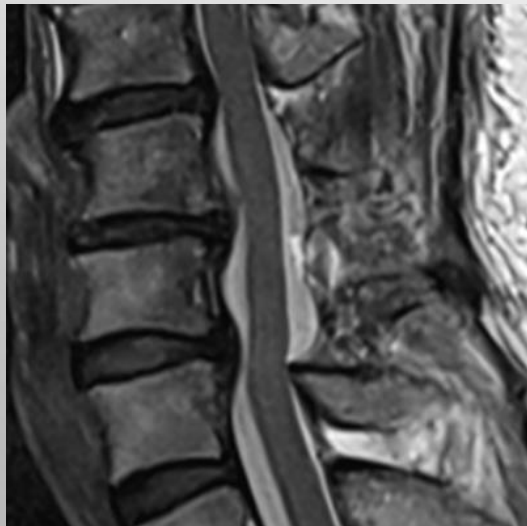
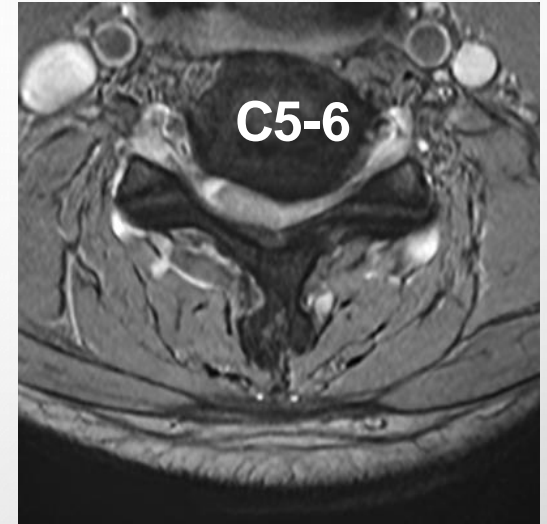
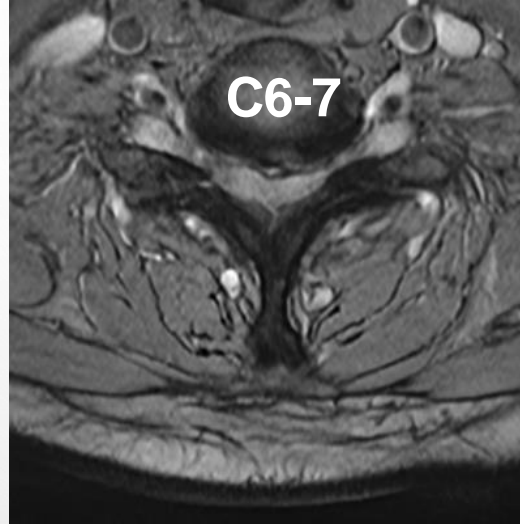
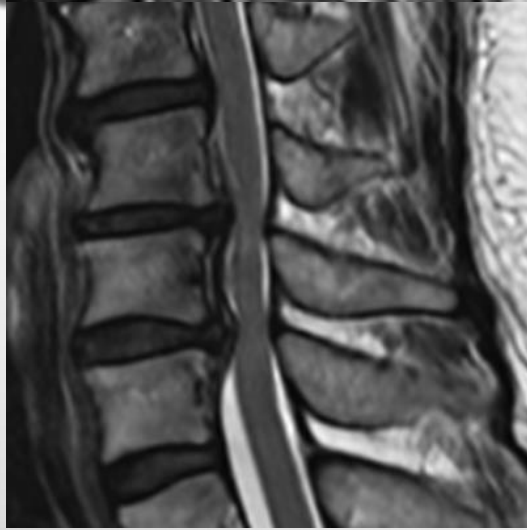
C6-7 laminectomy with bilateral foraminotomy



Cervical spondylosis with bilateral foraminal stenosis on C5-6, C6-7

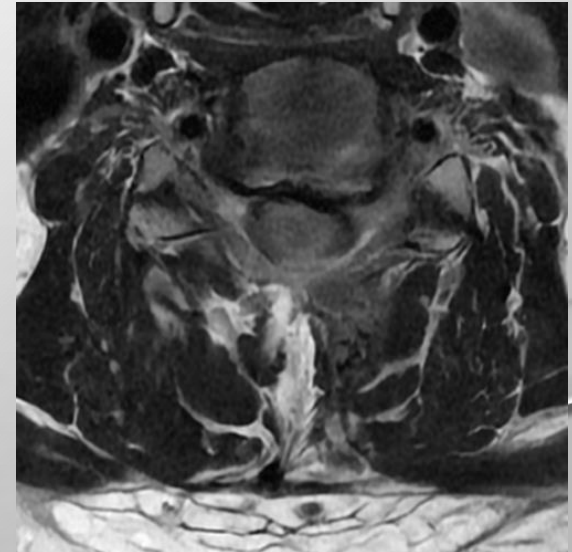
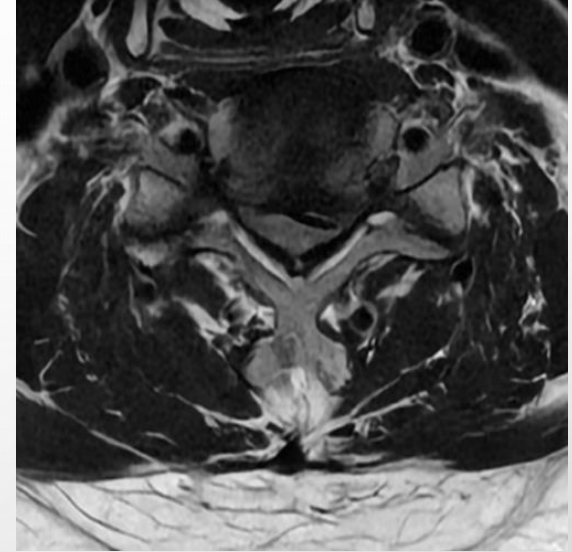
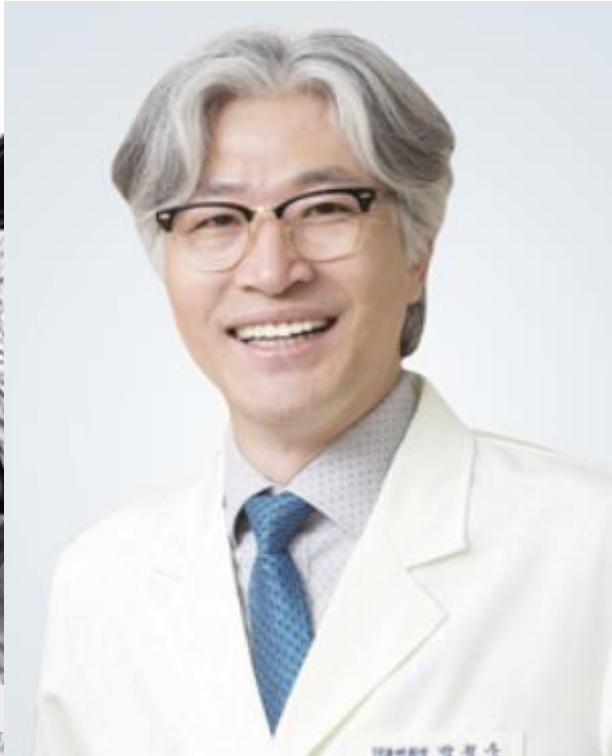


Cervical spondylosis with bilateral foraminal stenosis on C5-6, C6-7





# Cervical laminectomy with foraminotomy by UBE



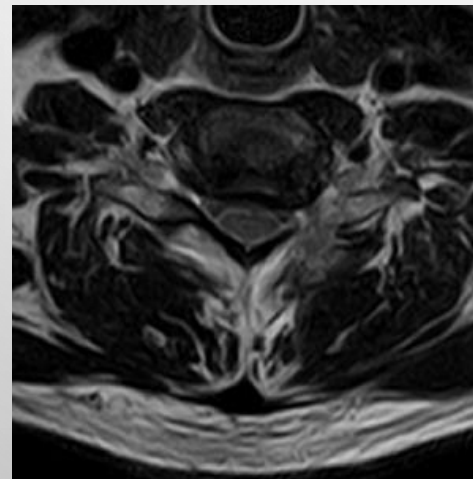
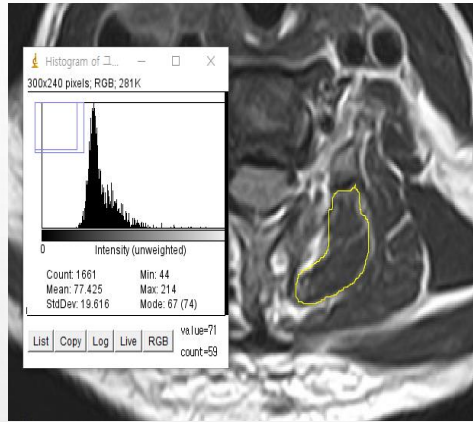


# Posterior cervical foraminotomy by UBE

## Minimal invasiveness

Characteristics	UBE-PCF (n=31)	M-PCF (n=34)	p value
Sex (M:F)	22:9	26:8	0.614
Age (years)	54.0 ± 8.2	51.8 ± 10.0	0.352
Symptom duration (months)	3.8 ± 2.5	4.9 ± 3.0	0.113
Diagnosis [n (%)]			0.394
Foraminal HNP	8	9	
Foraminal Stenosis	18	15	
Both	5	10	
Level [n (%)]			0.931
C4-5	3	2	
C5-6	13	15	
C6-7	13	14	
C7-T1	2	3	
Operation time (minutes)	63.9 ± 9.7	67.2 ± 10.5	0.197
Facet joint removal	30.7 ± 6.4	34.3 ± 8.3	0.054

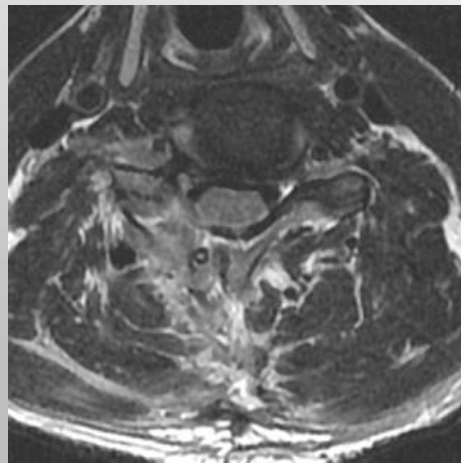
Variable	UBE - T2-SIR	M - T2-SIR	p value
<b>Preoperative</b>			
Multifidus	1.21 ± 0.12	1.20 ± 0.13	0.693
Semispinalis cervicis	1.13 ± 0.22	1.14 ± 0.13	0.892
Semispinalis capitis	1.16 ± 0.21	1.16 ± 0.13	0.991
Deep extensor muscle	1.17 ± 0.13	1.16 ± 0.13	0.569
<b>Postoperative</b>			
Multifidus	1.57 ± 0.28	1.60 ± 0.22	0.608
Semispinalis cervicis	1.35 ± 0.16	1.47 ± 0.16	0.003*
Semispinalis capitis	1.26 ± 0.19	1.34 ± 0.17	0.071
Deep extensor muscle	1.45 ± 0.21	1.57 ± 0.18	0.013*

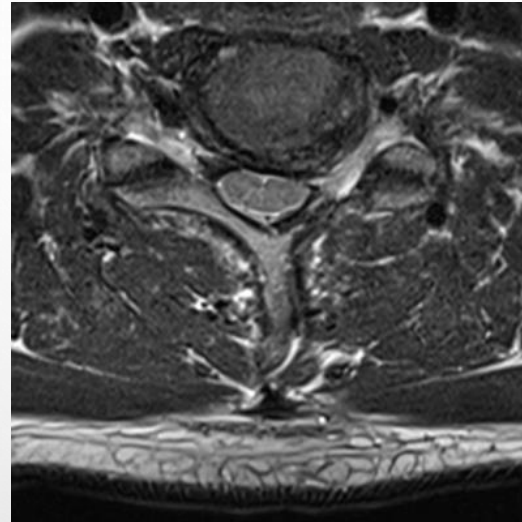
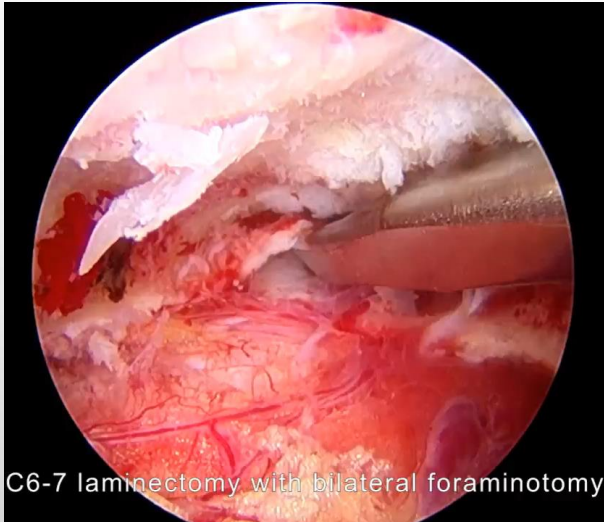


UBE-PCF



Microscopic-PCF





## Complete decompression

Central stenosis  
Foraminal stenosis

## Minimal invasiveness

minimal neck pain  
Postoperative kyphosis

## Instrument failure

ASD  
Plate and Screw failure  
Infection-related failure



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