KSSS 2026
The 43rd International Congress of Korean Society of Spine Surgery
May 20 (Wed) - 22 (Fri), 2026
Lotte Hotel Seoul (Sogong-dong), Seoul, Korea

Biportal Endoscopic Spinal Surgery via Interlaminar Approach for Symptomatic Conjoined Nerve Root

Doheon Kim[1] · GeonJung Kim[1] · WanSoo Park[2] · HyungRae Lee[3] · InHee Kim[1]*

[1] Department of Orthopaedic Surgery, National Police Hospital, Seoul, Republic of Korea

[2] Department of Orthopaedic Surgery, Asan Medical Center

[3] Department of Orthopaedic Surgery, Korea University Anam Hospital

Introduction

Conjoined Nerve Root (CNR)

Congenital lumbosacral anomaly (1.9–17.3%)

Risks

Unrecognized CNR preoperatively or insufficient decompression leads to inadvertent nerve damage or poor surgical outcomes

MIS Limits

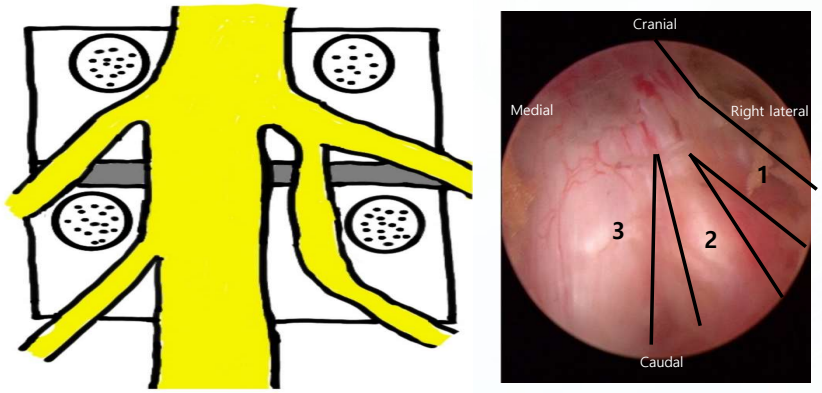
Challenging due to restricted view & tethered root

BESS Pros

Panoramic view & independent portals overcome prior limits

Purpose

To report the successful management of lumbar disc herniation with CNR using BESS, emphasizing a wide decompression technique to ensure surgical safety



CNR anatomy & endoscopic visualization

BESS biportal setup (OUT/IN)

Materials & Methods

Case 1 — Male / 54

C/C Right sciatica

History Refractory to long-term conservative care with recent acute ADL impairment

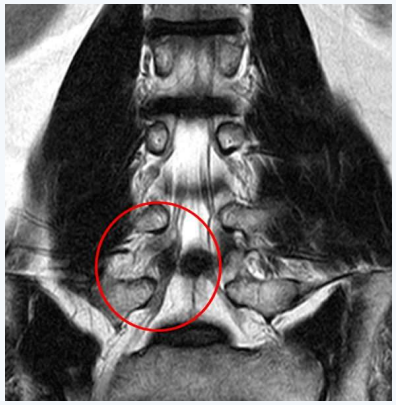
Imaging Pre-op MRI — CNR at Right L4-5

Case 2 — Female / 23

C/C Intractable Left sciatica

History Refractory to prolonged conservative care with severe walking limitation

Imaging Pre-op MRI — CNR at Left L5-S1



Coronal T2 MRI
Case 1

Parallel sign
Case 1

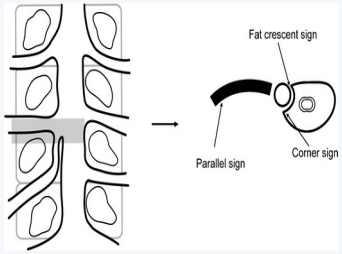
Parallel sign
Case 2

Key MRI Indicators for CNR

Parallel sign : angulated nerve roots

Coronal T2 MRI : direct visualization of the anomaly

Corner sign / Fat crescent sign : dural asymmetry / atypical fat



Schematic of MRI signs

Technical Note — Medial-to-Lateral Inclination Approach

1. Approach & Findings

Standard interlaminar approach via BESS

A broad, bifid CNR was identified after partial-laminectomy

2. The Challenge

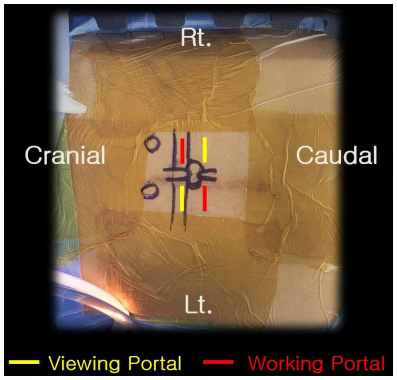
Manual retraction of the tethered CNR was highly dangerous due to neural overcrowding

3. Key Strategy — Wide Decompression

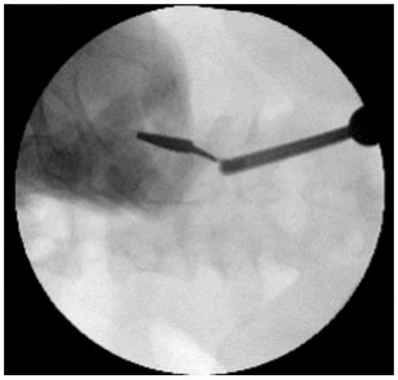
Using a high-speed burr, the medial facet was undercut to the me dial half of the pedicle, maximally preserving the facet joint

4. Key Surgical Tip

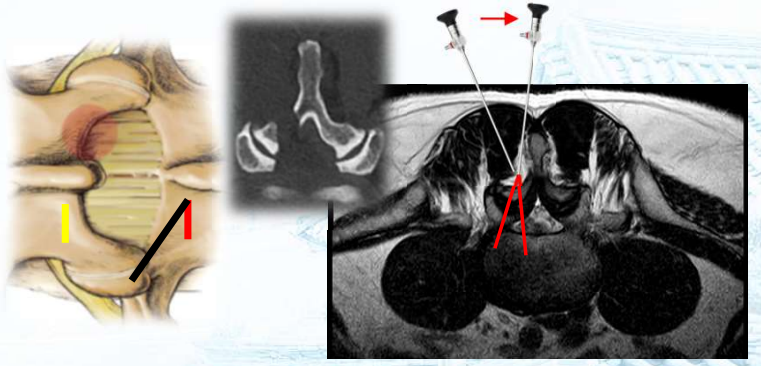
A transverse incision is highly recommended allowing the greater ***medial-to-lateral inclination*** required for **wide decompression**



Portal placement (transverse)



Intra-op C-arm



Schematic of medial-to-lateral inclination

Results

VAS Score

8 → 1

Remarkable symptom relief, ODI improved

1-Year Follow-up

No Instability

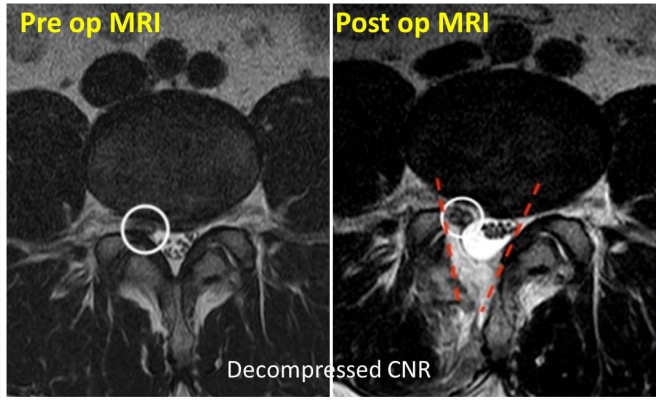
Dynamic X-rays confirm no iatrogenic instability

Clinical

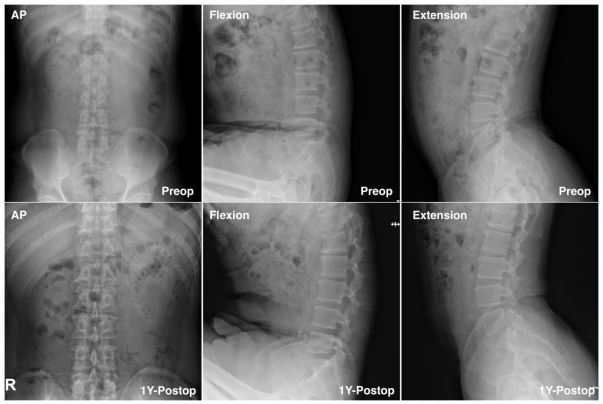
Significant VAS & ODI improvement

Radiological

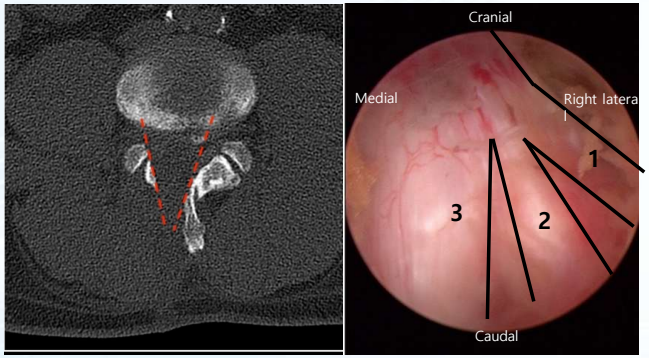
Adequate decompression on post-op MRI

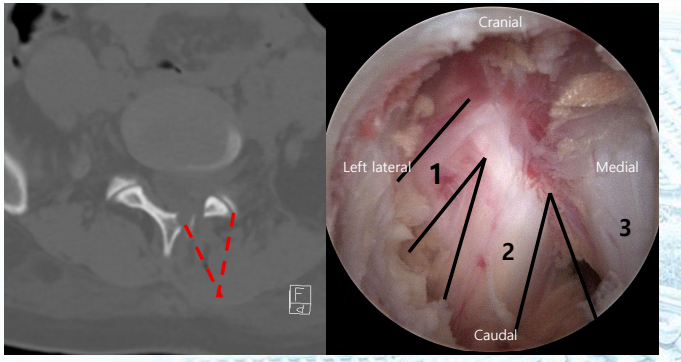


Pre vs Post-op MRI — decompressed CNR
Case 1



Dynamic X-rays at 1-year follow-up no iatrogenic instability (case 1)





Post-op CT — wide decompression
Intra-op - decompressed CNR
Case 1 & 2

Discussion & Conclusion

1

Superior Visualization & Flexibility

BESS overcomes conventional MIS limitations by providing a panoramic view and independent portals for unrestricted instrument use

2

Safe Decompression Strategy

Wide lateral decompression ("unroofing," undercutting the medial facet) creates a safe zone for the CNR, avoiding dangerous forceful retraction

3

Preservation of Stability

Achieves aggressive targeted decompression while preserving dorsal ligaments and contralateral structures, minimizing iatrogenic instability

Conclusion : BESS via the interlaminar approach with medial-to-lateral inclination offers a ***safe and effective*** wide-decompression strategy for symptomatic CNR