



Early Outcomes of Endoscopic Contralateral Foraminal and Lateral Recess Decompression via an Interlaminar Approach in Patients with Unilateral Radiculopathy from Unilateral Foraminal Stenosis

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■ **OBJECTIVE:** Percutaneous endoscopic contralateral interlaminar lumbar foraminotomy (PECILF) for lumbar degenerative spinal stenosis is an established procedure. Better preservation of contralateral facet joint compared with that of the approach side has been shown with uniportal bilateral decompression. The aim of this retrospective case series was to analyze the early clinical and radiologic outcomes of stand-alone contralateral foraminotomy and lateral recess decompression using PECILF.

■ **METHODS:** Twenty-six consecutive patients with unilateral lower limb radiculopathy underwent contralateral foraminotomy and lateral recess decompression using PECILF. Their clinical outcomes were evaluated with visual analog scale leg pain score, Oswestry Disability Index, and the MacNab criteria. Completeness of decompression was documented with a postoperative magnetic resonance imaging.

■ **RESULTS:** Mean age for the study group was 62.9 ± 9.2 years and the male/female ratio was 4:9. A total of 30 levels were decompressed, with 18 patients (60%) undergoing decompression at L4-L5, 9 at L5-S1 (30%), 2 at L3-L4 (6.7%), and 1 at L2-L3 (3.3%). Mean estimated blood loss was 27 ± 15 mL per level. Mean operative duration was 48 ± 12 minutes/level. Visual analog scale leg score improved from 7.7 ± 1 to 1.8 ± 0.8 ($P < 0.0001$). Oswestry Disability Index improved from 64.4 ± 5.8 to 21 ± 4.5

($P < 0.0001$). Mean follow-up of the study was 13.7 ± 2.7 months. According to the MacNab criteria, 10 patients (38.5%) had good results, 14 patients (53.8%) had excellent results, and 2 patients (7.7%) had fair results. One patient required revision surgery.

■ **CONCLUSIONS:** Facet-preserving contralateral foraminotomy and lateral recess decompression with PECILF is effective for treatment of lateral recess and foraminal stenosis. Thorough decompression with acceptable early clinical outcomes and minimal perioperative morbidity can be obtained with the contralateral endoscopic approach.

INTRODUCTION

Lumbar spinal stenosis is the most common indication for spinal surgery in patients older than 65 years.¹⁻⁴ The treatment of spinal stenosis has been evolving for more than a century. The first laminectomy, which was performed by Sir Victor Alexander Horsley in 1887, marked the beginning of a surgical evolution for the management of lumbar stenosis.⁵ Briggs and Krause introduced open laminotomy and foraminotomy to improve the clinical results.⁶ However, the open techniques were later criticized because of high failure rates secondary to increased postoperative instability and the need for subsequent fusion.^{7,8} The techniques were improved over time and the

Key words

- Contralateral decompression
- Endoscopy
- Foraminal stenosis
- Interlaminar
- Lateral recess stenosis
- Spine

Abbreviations and Acronyms

CT: Computed tomography

MRI: Magnetic resonance imaging

ODI: Oswestry Disability Index

PECILF: Percutaneous endoscopic contralateral interlaminar lumbar foraminotomy

VAS: Visual analog scale

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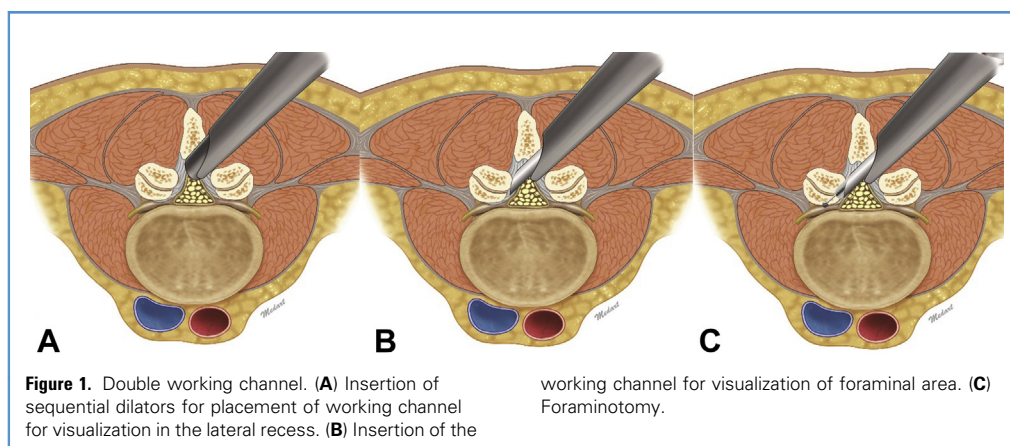
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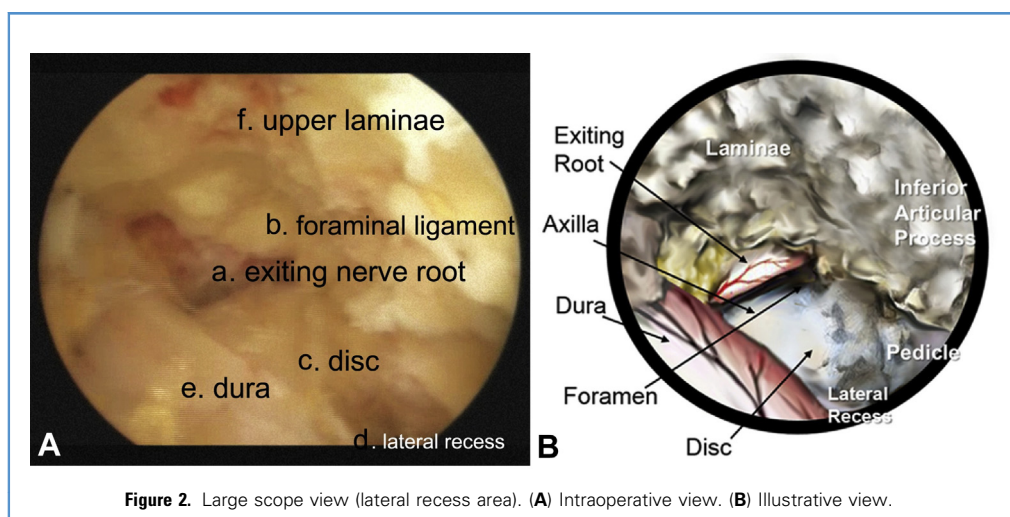
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concept of preservation of facets, and pars interarticularis gained impetus.⁹⁻¹² Microscopic laminotomy and foraminotomy became the gold standard decompression technique, with reported success rates as high as 90%.^{11,13,14} The development of tubular retractors in the late 1990s and subsequent development of endoscopic techniques led to a paradigm shift from open to minimally invasive surgeries.¹⁵⁻¹⁷ As a result of the evolution of techniques and instruments, endoscopic spine surgeries, which were initially restricted to discectomies, are now increasingly used for the treatment of spinal stenosis.¹⁸ These technological advances lead to minimal postoperative pain, smaller skin incision, lesser bone destruction, lesser blood loss, improved visualization, and early return to work for many patients with spinal stenosis.¹⁹⁻²¹ However, endoscopic spine surgical techniques are continuously evolving to further improve the clinical outcomes and reduce perioperative morbidity.

The main pathology in patients with lumbar canal stenosis is the compression of spinal nerve roots due to hypertrophied facets,

osteophyte formation, hypertrophied ligamentum flavum, or disc herniation.²² Surgical treatment is indicated if conservative treatment modalities fail in these patients. A spine surgeon has to make a choice between stand-alone decompression and decompression with fusion. Fusion, although is considered to be overaggressive compared to the gravity of symptoms, is inevitable in the presence of spinal instability.^{23,24} In the absence of instability, many endoscopic facet-sparing approaches such as interlaminar uniportal or biportal bilateral decompression, far-lateral intertransverse decompression, percutaneous foraminal decompression, and flexible microblade shaver techniques are used.^{18,20} A patient presenting with a unilateral lateral recess or foraminal stenosis is frequently addressed with an ipsilateral endoscopic approach. However, the excellent results of decompression on the opposite side with a uniportal bilateral decompression technique showed that stand-alone contralateral foraminotomy can be a better option.²⁵ Facet integrity can be better preserved and hence there may be better outcomes. Also,



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