



Limiting fusion levels by combining anterior cervical decompression and fusion with posterior laminectomy: Technical note

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ABSTRACT

Background: Authors aim to report on the outcomes of combining selective anterior cervical decompression and fusion (ACDF) with laminectomy in patients with cervical spondylotic radiculomyelopathy (CSR).

Methods: 10 patients with ACDF and posterior laminectomy reviewed.

Results: 60% female population, mean age 61 ± 3 years, mean BMI 24.7 ± 3.4 kg/m². VAS and NDI showed significant improvement, $p < 0.001$, $p = 0.02$ respectively. Mean PCS 31.9 ± 2.7 , MCS 38.9 ± 3.4 improved to mean PCS 42.2 ± 5.1 , MCS 51.0 ± 4.7 , $p = 0.09$ and 0.06 respectively. At final follow up fusion rate was 90% and all patients had Nurick Grade 0.

Conclusion: In this pilot study, procedure shown to be safe with improved symptoms.

1. Introduction

Surgical decision-making can be challenging for patients with multilevel cervical spondylotic radiculomyelopathy (CSR).¹ Through anterior, posterior or a combination of both approaches, surgery can maintain mechanical stability and achieve adequate decompression.^{2–6} Anterior approaches include anterior cervical decompression and fusion (ACDF), corpectomies, or both, while posterior approaches include laminectomies with lateral mass fusion or laminoplasty.^{7,8} When there is substantial axial neck pain and/or kyphosis, anterior fusion or posterior laminectomies, or a combination thereof are recommended and laminoplasty is contraindicated.⁹

We examined the feasibility and outcomes of combining ACDF with limited posterior laminectomy to treat patients with axial neck pain, diminished lordosis and canal stenosis. To our knowledge this is the first paper to detail this approach.

2. Materials and methods

We reviewed the medical records of 10 consecutive patients, with clinical and radiographic evidence of CSR due to multilevel spinal and

foraminal stenosis (Fig. 1), in which ACDF with multilevel laminectomy was performed. Outcome measures included Visual Analogue Scale (VAS) scores for neck and arm pain, Nurick grade, Neck Disability Index (NDI) and Physical and Mental Composite Scores (PCS and MCS) of the Short Form 12 (SF-12) health survey. Patients failed at least six months of conservative therapy and preoperative narcotics were discontinued.¹⁰ IRB approval was obtained for the study as part of a cohort population. This was a multicenter, multisurgeon study that had experience in performing each procedure separately and combined. The follow up period for this study was two years.

2.1. Less exposure surgery method

2.1.1. Anterior cervical discectomy and fusion

2.1.1.1. Positioning. Patient is placed supine on operative table. A bolster was placed beneath the shoulders and the neck was allowed to assume a natural lordotic position. The head was supported to prevent over extension. The patient's arms were then pulled on the side and tucked.

2.1.1.2. Incision. A transverse midline skin incision approximately

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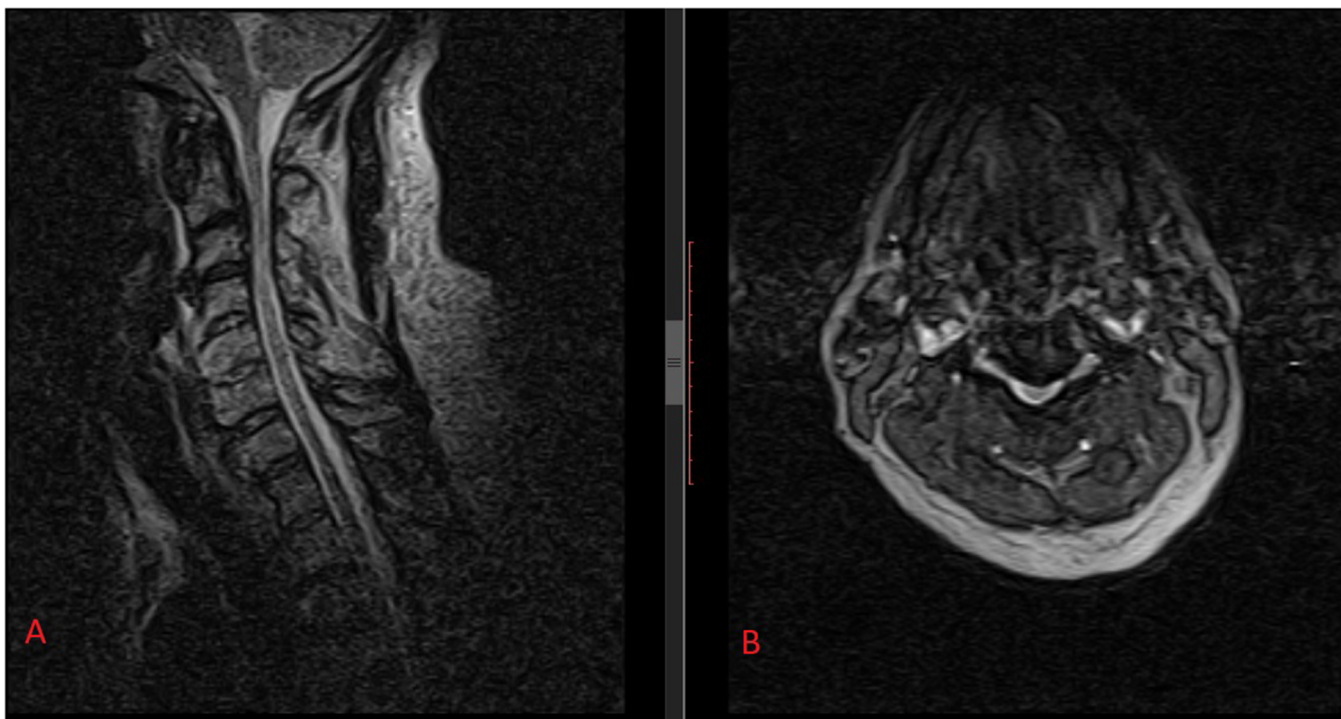


Fig. 1. MRI demonstrating cervical spondylotic radiculomyelopathy A: Sagittal, B Axial.

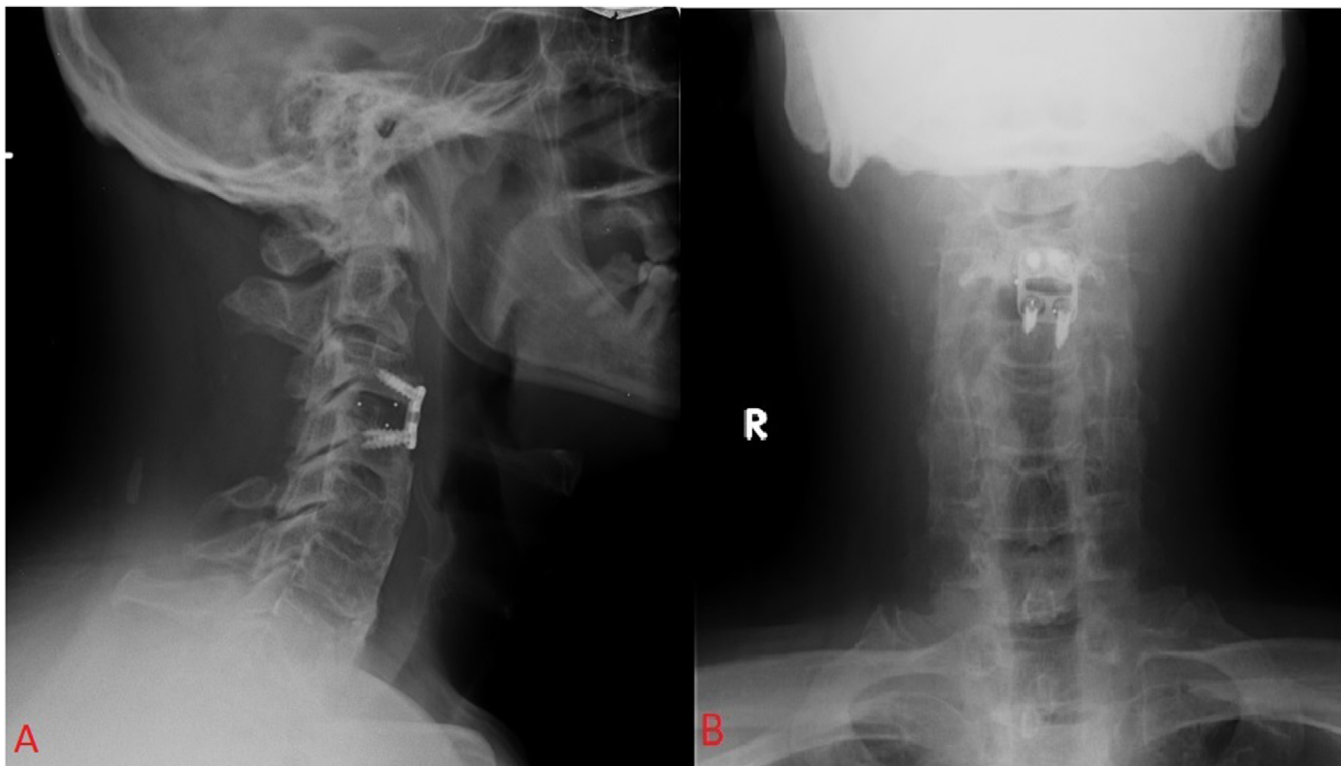


Fig. 2. X-ray showing postoperative ACDF and laminectomy A: AP, B lateral.

1–1.5 inches long is made.

2.1.1.3. Exposure. Dissection was carried in a cephalad and caudal direction to allow sufficient mobility to the skin. The platysma was preserved and dissected around the lateral edge. Exposure performed through an avascular space to prevertebral fascia. Once the spine was palpable, a bent 18-gauge spinal needle used to identify correct disc

space. Lateral fluoroscopic views were used to confirm location.

2.1.1.4. Discectomy. Discectomy is performed using various instruments. High speed burr and Kerrison ronguers are used to perform total discectomy and bilateral foraminotomies. Bone wax is placed to all bony defects for hemostasis. The endplates are prepared and an adequately sized PEEK interbody device (Arena-C, SpineFrontier

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