

Importance of Sagittal Alignment of the Cervical Spine in the Management of Degenerative Cervical Myelopathy



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KEYWORDS

• Cervical myelopathy • Sagittal alignment • Kyphosis • Scoliosis • Deformity

KEY POINTS

- Cervical spine sagittal malalignment may be associated with worse clinical symptoms and poor outcomes in patients with degenerative cervical myelopathy (DCM).
- DCM may cause progressive neurologic deficits; therefore, there is little evidence to support nonsurgical management, especially in the setting of moderate or severe myelopathy.
- Clinical improvement following surgical management of DCM has been demonstrated using both anterior-only and posterior-only approaches, with cervical sagittal alignment (lordosis vs kyphosis) often cited as a primary factor in surgical approach planning.
- Surgical approach may not significantly impact outcomes in patients with preoperative lordotic alignment, and these patients generally have greater clinical improvement compared with those with preoperative kyphotic alignment.
- Although there is no clear consensus, most studies suggest that patients with DCM with kyphotic cervical deformity have improved outcomes when adequate correction of local sagittal alignment is obtained through an anterior or a combined anterior-posterior approach.

INTRODUCTION

Cervical spondylotic myelopathy, or degenerative cervical myelopathy (DCM), is often a progressive disease and is the most common cause of spinal cord dysfunction in patients older than

55 years.¹⁻³ The etiology of DCM has been primarily attributed to multilevel spondylosis involving disc degeneration and osteophyte formation.^{2,3} However, DCM may also be associated with and potentially exacerbated by loss of normal

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sagittal alignment of the cervical spine as a result of primary cervical disease or related to changes in subjacent spinal regions.³ As a result of the growing recognition of the importance of sagittal alignment as a contributor to DCM, there has been increasing emphasis on the importance of cervical sagittal malalignment in the management of DCM.³

Kyphotic alignment of the cervical spine may contribute to myelopathy development by forced draping of the spinal cord against the vertebral bodies and disc-osteophyte complexes, inducing anterior cord pathology and increasing the longitudinal cord tension from tethering by the dentate ligaments and cervical nerve roots (Fig. 1).^{3,4} As

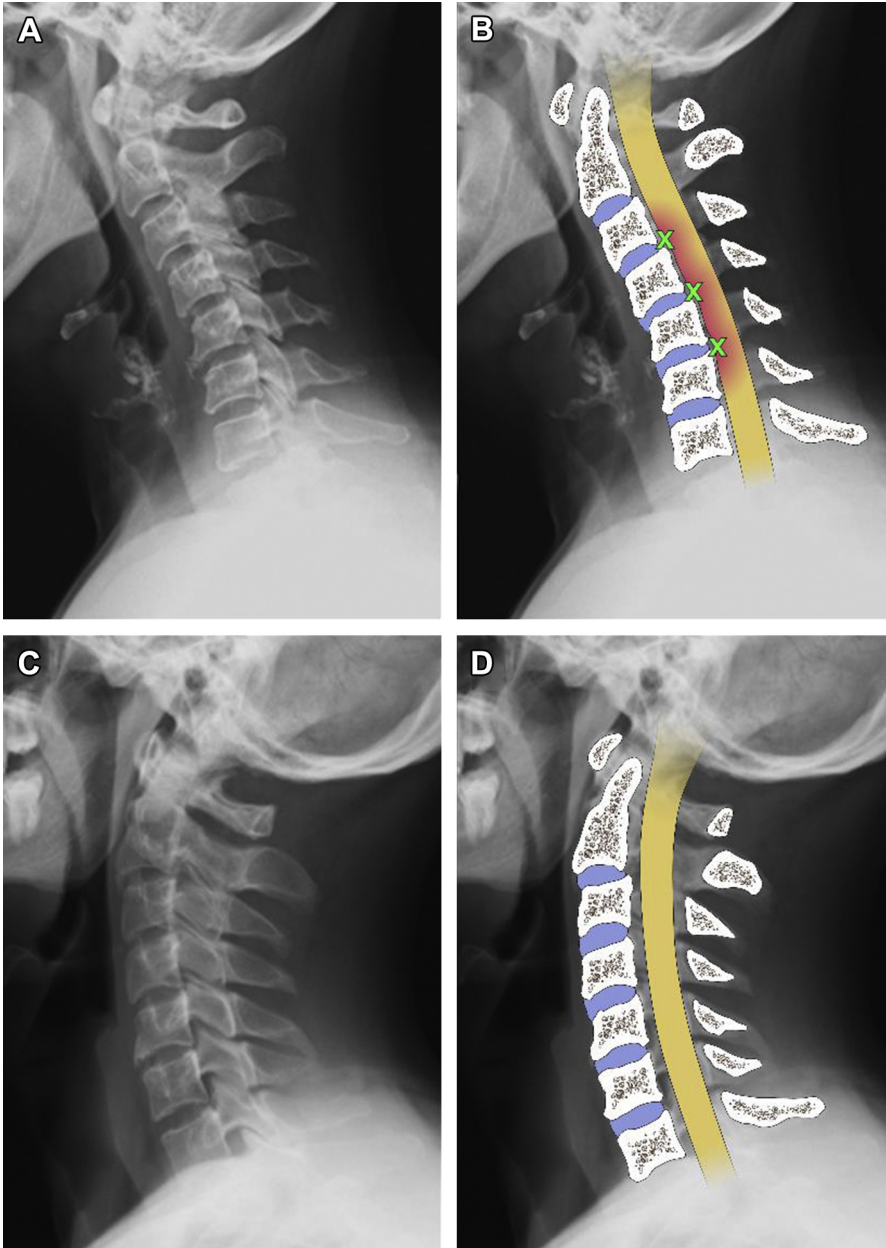


Fig. 1. In kyphotic alignment of the cervical spine, the spinal cord may be “draped” over the anterior vertebral bodies and disc-osteophyte complexes (x) (A, B). A mechanism for myelopathy development results from this kyphosis draping the spinal cord against the vertebral bodies inducing anterior cord pathology and increasing the longitudinal cord tension. The objective of surgery, in addition to direct decompression, is stabilization in lordosis of the operated segment to allow the posterior shifting and relaxation of the spinal cord (C, D). (Courtesy of Emma C. Vought, MS, CMI, Department of Neurosurgery, Medical University of South Carolina, Charleston.)

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