Neurosurgical Forum
LETTERS TO THE EDITOR

Cervical spondylotic myelopathy

TO THE EDITOR: We read the article by Chen et al.¹ with interest (Chen YC, Kuo CH, Cheng CM, et al: Recent advances in the management of cervical spondylotic myelopathy: bibliometric analysis and surgical perspectives. JNSPG 75th Anniversary Invited Review Article. *J Neurosurg Spine* 31:299–309, September 2019). The title of the article states that the authors have evaluated the recent advances in the management of cervical spondylotic myelopathy (CSM). Unfortunately, the authors have preferred to entirely ignore the alternative concepts of surgical treatment of CSM proposed by us in several articles indexed in the PubMed database.^{2,3,5–7}

In the year 2011, our publication in *Journal of Neurosurgery: Spine* proposed facet distraction–arthrodesis as treatment of single- or multiple-level cervical spondylotic radiculopathy or myelopathy and for lumbar spinal canal stenosis.⁷ For the first time in the literature our articles did not recommend any direct decompression of neural structures by removal of bone, ligament, disc, or osteophyte. This concept was based on an alternative hypothesis of the pathogenesis of degenerative spondylosis that identified that it was not the disc space reduction related to loss of water content of the disc that was the cause. Rather, it was telescoping of the spinal segments and listhesis of the inferior facet of the rostral vertebra over the superior facet of the caudal vertebra due to vertical spinal instability related to abuse, disuse, or injury of muscles responsible for the human standing position that was the nodal point of pathogenesis of the entire cascade spinal degeneration.⁷ The theory also suggested that buckling of the intervertebral ligaments that included posterior longitudinal ligament and ligamentum flavum, osteophyte formation, and reduction of spinal and neural canal dimensions were not primary processes but were secondary to reduction in the vertical height of the spinal segment or segments.³ We identified that facet distraction resulted in reversal of all the described “pathological” entities related to spondylotic disease.⁷ Restoration of the disc space height, reduction in the posterior disc bulge and in the size of the osteophytes, stretching of the buckled ligamentum flavum, and increase in the spinal and neural canal dimensions resulted in an immediate postoperative relief from symptoms.

As our understanding further matured, we realized that instability of the spine is the primary point of pathogen-

esis and that stabilization of the involved spinal segments is the treatment. We identified “only fixation” without any primary or secondary decompression as treatment for both lumbar and cervical spondylotic disease.³ Trans-articular fixation of the facets provided a firm and solid fixation at the site of the fulcrum of all spinal movements and was an ideal method of stabilization, for both lumbar and cervical spines.³ We identified the futility of any kind of bone, soft-tissue, disc, or osteophyte resection for decompression of the cord. We identified that the entity of “central” or “axial” atlantoaxial instability is frequently associated in cases with multiple-level cervical spondylosis and that the atlantoaxial joint needs to be fixated for successful outcome.⁴ We also identified that the pathogenesis of myelopathy related to both spondylotic disease and ossification of posterior longitudinal ligament was similar and that both of these clinical entities need “only fixation” that includes the atlantoaxial joint in a number of cases—and decompression as a form of treatment can be entirely avoided.⁵

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Disclosures

The author reports no conflict of interest.

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Response

We thank Professor Goel for his interesting comments on our paper regarding the management of CSM. He emphasized that surgical reduction and fixation without decompression could improve cervical myelopathy in some settings of atlantoaxial subluxation and basilar invagination. We agree with the importance of atlantoaxial fixation in the management of disorders of the craniovertebral junction.^{1,4,9,10} For patients whose myelopathy is caused by a congenital or acquired anomaly that involves malalignment of vertebral segments, realignment and fixation by surgery certainly would work out perfectly. However, the current paper focused on CSM—myelopathy that is caused by cervical spondylosis, a progressive degenerative process affecting both the cervical vertebral bodies and intervertebral discs that frequently develops into a narrowing of the spinal canal. The subsequent spinal cord compression thus requires surgical decompression. For these patients with degenerative spinal stenosis, adequate decompression is the fundamental element of surgery that must be achieved via various surgical approaches, including laminoplasty, discectomy, laminectomy, or corpectomy.^{6,8} After decompressive procedures, stabilization of the vertebral segments becomes pivotal, and it can be achieved anteriorly or posteriorly. Nevertheless, to date there is no evidence to support the necessity of cervical fusion in the management of CSM. This can be corroborated by numerous publications on cervical laminoplasty.

In the past decade there has been an emerging popularity in the technology of cervical disc arthroplasty, which aims at preservation of spinal motion after anterior discectomy.^{5,7} Although large-scale prospective randomized control trials did not exclude patients with cervical myelopathy, there has not been sufficient evidence on the effectiveness of cervical disc arthroplasty in comparison to fusion for patients with CSM.^{2,3} The current paper has evidence to indicate that surgical management for CSM is evolving continuously toward early and anterior approaches. Future investigations on the optimal timing and choices of surgery for CSM are warranted.

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