Degenerative Spondylolisthesis of the Cervical Spine. Analysis of Fifty-Eight Patients with Two to Twenty-Four Year Follow-Up
Clayton L. Dean, MD, Cleveland, OH (n), Josue P. Gabriel, MD, Columbus, OH (n), Ezequiel MD Cassinelli, MD, Cleveland, OH (n), Michael J. Bolesta, MD, Dallas, TX (n), Henry H. Bohlman, MD, Cleveland, OH (n)

INTRODUCTION: Degenerative spondylolisthesis has been well described as a disorder of the lumbar spine. Few authors have suggested that a similar disorder occurs in the cervical spine. We hypothesize that a similar condition does occur within the cervical spine, sharing many of the same characteristics as its counterpart in the lumbar spine. The purpose of the current study was to establish degenerative spondylolisthesis of the cervical spine as a distinct entity, describing its clinical and radiographic features. We describe a series of fifty-eight patients with long-term follow-up.

METHODS: We reviewed the records of fifty-eight patients treated for degenerative cervical spondylolisthesis from 1974 to 2001. Fifty patients were followed for at least two years. Forty-five required operative treatment, while five were managed nonoperatively. The average follow-up was six years (range, two to twenty-four years). Thirty-eight patients presented with neck or occipital pain, eighteen with radiculopathy, and twenty were myelopathic. Patients presenting with myelopathy were classified according to the Nurick grading system. Seventy-one cervical levels demonstrated spondylolisthesis, with the mean degree being 4.03 mm (range, 2.0 to 7.0 mm). The most frequent level of involvement was between the fourth and fifth cervical vertebrae (Figure I and II). In all cases there was radiographic evidence of facet degeneration, including joint erosion, remodeling and subluxation.

RESULTS: Forty-two of forty-five patients achieved osseous fusion. All thirty-eight patients with neck pain reported improvement. At final follow-up, no patient had worsened neurologically. All twenty patients with myelopathy demonstrated improvement, with an average recovery of 1.5 Nurick grades. There was one reoperation for increased symptomatic spondylolisthesis at the cervicothoracic junction below a three-level fusion. Two additional patients required a second anterior procedure for symptomatic nonunion.

CONCLUSIONS: Degenerative spondylolisthesis of the cervical spine is a distinct entity. Neck pain, radiculopathy, and myelopathy are common presentations. Patients with mild symptoms can be successfully managed with conservative measures. In patients with more severe symptoms and/or evidence of neurological compression, anterior or posterior cervical decompression and ar-
throdesis appear to be effective ways to achieve neurological improvement and spinal stabilization. Complications and fusion rates are comparable to previously published reports on cervical spondylotic myelopathy.

We observed two distinct variants of this disorder. The first, and more common, type appears to occur adjacent to relatively stiffer, spondylotic segments. This type demonstrates a relative preservation of the disc space at the involved level. The second type occurs within spondylotic segments and is associated with more advanced disc space narrowing at the involved level. The distinction between the two types may be purely radiographic, however, as we did not observe a difference in the clinical presentation between the two types. Further prospective evaluation is warranted and ongoing.

Figure I. Lateral cervical radiograph demonstrating degenerative spondylolisthesis at the C4-C5 level above spondylotic cervical segments. This patient presented with Nurick Grade III myelopathy.
Figure II. Sagittal T2-weighted MRI demonstrating severe stenosis with anterior effacement of the spinal cord at the level of the C4-C5 spondylolisthesis. This patient was successfully treated with anterior cervical corpectomy and iliac strut fusion.

If noted the author indicates something of value received. The codes are identified as  a - research or institutional support; b - miscellaneous funding; c - royalties; d - stock options; e - consultant or employee; n - no conflicts disclosed and * disclosure not available at the time of printing. For full information, refer to inside cover.