INTRODUCTION

Cervical arthroplasty

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THERE has been a steady evolution of devices for cervical total disc replacement (TDR) over the last decade that has resulted in a surgical technique that closely mimics that for anterior cervical discectomy and fusion (ACDF); disc designs now incorporate novel biomaterials and biomechanics that emphasize quality of motion. The efficacy of cervical arthroplasty has been established with a firm basis of evidence wrought through peer-reviewed published data reported in multiple prospective, randomized, controlled investigational device exemption (IDE) studies,^{2,5,6,12,18,19,21,27} a number of which now have long-term follow-up.^{7,23,29} For properly selected patients with 1- and 2-level cervical radiculopathy from C-3 to C-7, cervical arthroplasty is now a standard-of-care treatment, along with ACDF and posterior cervical foraminotomy. There is strong biomechanical and clinical evidence confirming that motion preservation decreases adjacent-level stresses and the rate of radiographic adjacent-level degeneration.^{1,3,4,8–10,16,20,22,24,28} There are also some data to suggest that arthroplasty positively affects the incidence of clinical adjacent-level reoperation,^{11,13,17,25,26} but adjacent-level disease is a multifactorial process that deserves continued study. Cervical arthroplasty continues to evolve, with expanded indications¹⁴ (there are 2 different FDA-approved devices for 2-level disease), increased adoption by surgeons and payers, and the introduction of new devices¹⁵ (2 next-generation devices are currently under IDE study).

This *Neurosurgical Focus* issue highlights some of the most current information regarding cervical arthroplasty from experienced surgeons not only in the US but from around the world.

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Disclosures

Dr. Coric reports being a consultant for Medtronic, Stryker, Globus Medical, and Spine Wave; owning stock in Spine Wave and Spinal Kinetics; and receiving royalties from Premia Spine, and RTI Surgical. Dr. Mummaneni reports being a consultant for DePuy Spine, Globus Spine, and Stryker; owning stock in Spinicity/ISD; receiving grants/honoraria from AOSpine; and receiving royalties from Thieme, Taylor and Francis Publishing, Springer, and DePuy Spine. Dr. Wang reports being on the board of directors of the North American Spine Society, AOSpine, and Cervical Spine Research Society and being on the editorial boards of *Spine*, *Journal of the American Academy of Orthopaedic Surgeons*, *The Spine Journal*, *Journal of Spinal Disorders and Techniques*, *Global Spine Journal*, and *Journal of Orthopaedic Trauma*.