Cervical Corpectomy in the Management of Multilevel Cervical Stenosis: Principles of Therapy and Surgical Technique

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Introduction

Cervical stenosis is a progressive disease that may result in myelopathy and/or radiculopathy, involving one level or more. At the cervical level, corpectomy may be performed as an extension of diskectomy to resolve stenosis. It may involve two vertebral hemisomes, with the disk in between, or may extend to one or more contiguous bodies in patients with multilevel stenosis. If spinal cord compression is caused by two-disk herniations at two adjacent levels and by hypertrophy of the posterior longitudinal ligament between these disks, then one-level cervical corpectomy with removal of both disks above and below the resected vertebral body is indicated. The goal of management is to extensively decompress the spinal cord, restoring cervical lordosis and providing stability to the anterior spine. The anatomy of the cervical spine, which is inherently stable because of the presence of the lateral masses and the orientation of the facet joints, makes it possible to remove a vertebral body and replace it with Harms mesh without destabilization of the segment. The goal of this video is to show the surgical management of a severe cervical stenosis in a 58-year-old patient who underwent corpectomy of C5 and anterior C4 through C6 arthrodesis.

Materials and Methods

This video reviews a retrospective study. All patients who underwent one-stage cervical corpectomy and anterior arthrodesis for severe cervical stenosis at the institution of the authors of this video between January 2019 and July 2022 were included in the study. Patients were evaluated for neck pain and radiculopathy, alteration of reflexes, presence of the Hoffmann sign, difficulty in executing fine movements, and a wide-based gait. Cervical stenosis was managed via an anterior-only approach, which permitted a corpectomy with wide decompression of the cervical neural elements. All radiographic and clinical data from the patients were retrieved. All measures were obtained by two experienced spine surgeons.

Results

A total of seven patients (four females, three males), with a mean age of 54.5 years (range, 48 to 61 years) and a mean follow-up of 32.6 months (range, 12 to 43 months) were included in the study. A total of four C5, two C6, and one C4 corpectomies were performed. Mean C2 through C7 lordosis and the mean C2 through C7 sagittal vertical axis improved from 4.87° to 11.20° and from 29.8° to 34.5°, respectively. The mean Neck Disability Index, Numeric Rating Scale for Neck Pain, and Numeric Rating Scale for Arm Pain scores improved from 41.2 to 12.3, 6.1 to 1.2, and 6.4 to 1.8, respectively. Postoperative complications included cerebrospinal fluid leakage in one patient and an epidural hematoma in another patient. No dysphagia or infection was reported.

Discussion

This technique proved to be efficient in decompressing neural elements, improving cervical lordosis, and achieving solid bony fusion with an acceptable complication rate. The described technique is technically demanding, requiring an adequate learning curve. This video highlights all the elements of this complex surgical procedure, accurately describing the complex anatomy of the neck, with particular emphasis on the anatomic relationship between the cervical spine and the noble structures being an helpful tool for surgeons approaching this fascinating procedure.