

CASE SERIES – SURGICAL VIDEO

Surgical video of corpectomy and fusion

Swarjith Nimmakayala[†], Srishti Dixit[†], J. Anantha Chaitanya[†], Ved Prakash Maurya^{*†} and Arun Kumar Srivastava[†]

Department of Neurosurgery, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India

***Correspondence:**

Ved Prakash Maurya,
vpmsurgery@gmail.com

†ORCID:

Swarjith Nimmakayala
[0009-0005-5299-9973](https://orcid.org/0009-0005-5299-9973)
Srishti Dixit
[0000-0002-4534-0880](https://orcid.org/0000-0002-4534-0880)
J. Anantha Chaitanya
[0009-0002-0494-6402](https://orcid.org/0009-0002-0494-6402)
Ved Prakash Maurya
[0000-0001-7570-1176](https://orcid.org/0000-0001-7570-1176)
Arun Kumar Srivastava
[0009-0006-3633-6106](https://orcid.org/0009-0006-3633-6106)

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Degenerative cervical myelopathy (DCM), earlier referred to as cervical spondylotic myelopathy, involves spinal cord dysfunction from compression in the neck. The prevalence of DCM is expected to rise with age, making the optimization of treatment strategies crucial. Pharmacological treatments, including non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, and corticosteroids, are commonly prescribed for symptomatic relief. The primary objective of surgery is to decompress the spinal cord, restore cervical alignment, and stabilize the spine. Corpectomy plays a pivotal role in cases of multilevel ventral compression, extensive ossification of the posterior longitudinal ligament, or when deformity correction is required. Corpectomy is technically demanding and associated with higher risks of graft subsidence. Corpectomy continues to be indispensable in the surgical management of cervical myelopathy. In the present video article, we present the case of a 32-year-old gentleman who presented with neck pain and progressive weakness in the extremities. His symptoms were resolved after cervical corpectomy and fusion.

Keywords: cervical spondylotic myelopathy, degenerative, corpectomy, anterior approach, discectomy

Introduction

Degenerative disc disease is a medical umbrella term commonly used to describe osteoarthritis of the spine. Compression by degenerative disc-disease (DDD) a common pathology that can progress to cervical spondylotic myelopathy (CSM). It can result from progressive degeneration or from ossification of the posterior longitudinal ligament (OPLL). Degenerative cervical myelopathy (DCM), earlier referred to as CSM, involves spinal cord dysfunction from compression in the neck (1).

The vertebral column of the neck is particularly prone to degenerative changes such as disc herniation, ligament hypertrophy or ossification, and osteophyte formation. These changes are more common with age.

The prevalence of DCM is expected to rise with age, making the optimization of treatment strategies crucial. Pharmacological treatments, including non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, and corticosteroids, are commonly prescribed for symptomatic relief, yet their effectiveness in treating myelopathy-specific symptoms has not been established (2). According to current

guidelines, patients with a modified Japanese Orthopedic Association (mJOA) score of 15 or higher are considered suitable candidates for conservative management.

In the present surgical video, we would like to emphasize the crucial steps of corpectomy in detail, with surgical nuances, in order to prevent dreadful iatrogenic injury to the neurovascular structures during this surgical procedure.

VIDEO 1 | Cervical corpectomy and fusion.
<https://youtu.be/rDuyzvQ5exM>

Case summary

A 32-year-old gentleman, a software engineer, presented with neck pain of 2 weeks' duration, followed by progressive numbness in the bilateral lower limbs and subsequently in the upper limbs over 15 days. He developed weakness in the left lower limb with gait disturbance for 10 days, accompanied by constipation and urinary retention.

Neurological examination revealed stable vital signs and intact cranial nerves. Muscle tone was increased in all four limbs (Modified Ashworth Scale grade 2). Motor power was as follows:

- Right upper limb: shoulder/elbow/wrist 4/5, handgrip 70%
- Left upper limb: shoulder/elbow/wrist 3/5, handgrip 50%
- Bilateral lower limbs: hip/knee/ankle/extensor hallucis longus 3/5

Deep tendon reflexes were brisk (+3) in triceps, supinator, knee, and ankle. Plantar responses were extensor bilaterally. Sensory examination demonstrated reduced sensation below the C4 dermatome (30–40%). These findings were consistent with **cervical myelopathy at the C5–6 level**. Magnetic resonance imaging (MRI) revealed prolapsed intervertebral discs at C4–C5 and C5–C6, with spinal cord compression and a T2WI sequence suggestive of cord signal intensity changes in the form of hyperintensity.

Surgical intervention

Following intubation, the patient was positioned supine with application of a shoulder wedge in midline to achieve neck extension. Skeletal traction was applied using Gardner-Wells tongs in line with the external auditory meatus and placed at four finger widths above the pinna. The C5 level was localized under C-arm guidance. A right-sided anterior cervical approach was performed:

- The skin incision was applied parallel to the medial border of the sternocleidomastoid after infiltrating with 2% inj. lignocaine.
- The platysma was divided, and the subplatysmal plane was developed.
- The carotid sheath was retracted laterally, while the trachea and esophagus were mobilized medially and secured under handheld dynamic retractors to expose the prevertebral space.
- The surgical level was reconfirmed under fluoroscopic guidance.
- The longus colli muscles were dissected, and static retractors in the form of Cloward's were placed.
- The C4–C5 and C5–C6 discs were excised using a surgical blade of No. 15. The endplates of adjacent vertebral bodies were identified.
- The C5 corpectomy was performed using a diamond drill and Kerrison punch. During corpectomy, all attempts must be made to avoid any mechanical compression on the cord. The high-speed drill with a diamond burr should be used to drill the posterior half of the vertebral body.
- The drilling must be carried out in a paint-brush motion till the posterior longitudinal ligament (PLL) is identified. The PLL must be excised completely by using an up-cut, and attempts should be made not to puncture the dura.
- A curved ball probe should be used to find out the presence of any lateral portion of the disc material lying beneath the posterior margin of the vertebral body.
- The drill should not be used beyond the middle 3/5th of the vertebral body, and it could lead to the risk of injury to the vertebral artery on either side.
- The end plates of the vertebral bodies need to be prepared using a diamond drill, which would enhance the fusion with the implant.
- A cage filled with the harvested bone graft should be placed, followed by fixation with a titanium plate of appropriate size and cortical screws of appropriate length (16 mm/18 mm).
- The wound was irrigated with saline, hemostasis was achieved, one gram of vancomycin powder was instilled in the surgical cavity, and the wound was closed in layers with a subplatysmal 8 Fr Romovac drain. A sterile dressing was applied.

Postoperative course

The patient was extubated with neurological status unchanged immediately postoperatively. Gradual improvement was noted over the following weeks. After a period of 6 weeks, he was ambulating independently, and by 3 months, he had resumed routine occupational activities.

Discussion

Cervical spondylotic myelopathy is the most prevalent cause of spinal cord dysfunction in adults, and surgical intervention remains the cornerstone of management in progressive cases (3). Early cases of spondylosis without myelopathy can be treated with medical management. Gabapentin & pregabalin are commonly utilized for managing neuropathic pain seen in CSM, based on their ability to treat other forms of neuropathy. Pregabalin is efficacious in the alleviation of pain symptoms related to spondylotic radiculopathy as a first-line single agent. However, vigilant monitoring of patients for the development of side effects, especially somnolence, is needed.

The primary objective of surgery is to decompress the spinal cord, restore cervical alignment, and stabilize the spine (4). While conservative measures may be considered in mild, non-progressive disease, they rarely prevent neurological decline, underscoring the importance of timely surgical treatment (1). Anterior approaches, such as anterior cervical discectomy and fusion (ACDF), are effective for one- or two-level ventral compressions. They allow direct removal of disc herniations and osteophytes, with reliable fusion rates. Posterior decompression techniques, including laminectomy with or without fusion and laminoplasty, are particularly useful in multilevel dorsal compression or when cervical lordosis is preserved. Laminoplasty offers the advantage of motion preservation, especially in OPLL. However, posterior approaches are less effective in kyphotic spines or when ventral compression predominates.

Corpectomy plays a pivotal role in cases of multilevel ventral compression, extensive OPLL, or when deformity correction is required. By removing one or more vertebral bodies, corpectomy provides wide decompression and facilitates sagittal realignment. Clinical studies have demonstrated favorable neurological outcomes, particularly in patients with multilevel disease. Nonetheless, corpectomy is technically demanding and associated with higher risks of graft subsidence, pseudoarthrosis, and instrumentation failure compared to discectomy-based techniques. Supplemental posterior fixation may be required in selected cases to enhance stability. Comparative analyses suggest that ACDF is preferable for limited disease, while corpectomy offers superior decompression in complex, multilevel pathology (4, 5). Although posterior approaches are less effective in kyphotic spines or when ventral compression predominates (6).

Posterior approaches remain valuable for extensive dorsal compression or when anterior surgery is contraindicated. Ultimately, the choice of procedure should be individualized,

considering the number of affected levels, spinal alignment, and the location of compressive pathology.

Conclusion

Corpectomy continues to be indispensable in the surgical management of cervical myelopathy, particularly in multilevel ventral compression and deformity correction. Despite its higher complication profile, it remains a cornerstone technique in achieving adequate decompression and alignment restoration in appropriately selected patients.

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Conflict of interest

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References

1. Fehlings MG, Tetreault LA, Riew KD, Middleton JW, Aarabi B, Arnold PM, et al. A clinical practice guideline for the management of patients with degenerative cervical myelopathy: recommendations for patients with mild, moderate, and severe disease and nonmyelopathic patients with evidence of cord compression. *Global Spine J.* (2017) 7(3 Suppl):70S–83S.
2. Ghogawala Z, Ilyas E. Surgical treatment of cervical spondylotic myelopathy. In: Fu KG, Wang MY, Virk MS, Dimar JR II, Mummaneni PV editors. *Treatment of Spine Disease in the Elderly*. Cham: Springer (2023). p. 121–34. doi: 10.1007/978-3-031-12345-6_9
3. Bakhsheshian J, Mehta VA, Liu JC. Current diagnosis and management of cervical spondylotic myelopathy. *Global Spine J.* (2017) 7(6):572–86.
4. Emery SE. Anterior cervical corpectomy and fusion for cervical spondylotic myelopathy. *Clin Orthop Relat Res.* (1999) 359:86–93.
5. Kato S, Fehlings MG. Degenerative cervical myelopathy. *Curr Rev Musculoskelet Med.* (2016) 9(3):263–71.
6. Ratliff JK, Cooper PR. Cervical laminoplasty: a critical review. *J Neurosurg.* (2003) 98(3 Suppl):230–8.