

Cervical spondyloses

Cx Spondylosis

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- 1. Independent prevalence rates of rotator cuff tearing and cervical radiculopathy indicates that these are both common problems
- 2. The information in the literature on coexisting lesions is sparse and describes only occasional cases.
- 3. The diagnosis of the presence of both lesions is important for proper treatment planning and guidance of the patient.
- 4. If surgical treatment of the radiculopathy is indicated, this surgery should take priority, followed by rotator cuff repair after recovery from the cervical surgery.

Cervical radicular disease

- 1. Degenerative disk disease is age related. [Beginning in the III decade of life]
- 2. Subtle instability can result, followed by development of osteophytes in the facet joints
- 3. A prevalence of cervical radiculopathy of 3.5 per 1,000 individuals.
- 4. Natural course: At long-term 10 to 25 years [Gore et al27]Lees 38 Nonop :
 - complete symptom resolution in 43% of patients
 - Partial resolution in 25%,
 - Moderate to severe pain in the remaining 32%.
- Surgical treatment for cervical radiculopathy is typically 70% to 90% of patients

- Relief of arm pain and paresthesia were achieved in 96% of patients and resolution of the motor deficit in 98%. .
- After anterior surgery[Lundsford et al]
 - 77% of patients had complete relief of symptoms
 - 38% had recurrent symptoms[during the 1 to 7 years]

Pathoanatomy

- 1. Compression of the exiting nerve root as it enters the neuroforamen
 - a. Nuclear material arising from acute "soft" disk herniations can impinge the exiting nerve root posterolaterally at its takeoff from the spinal cord or intraforaminally as it traverses the neuroforamen.
 - b. Chronic disk degeneration with resultant disk height loss can lead to so-called "hard" disk pathology from either a combination of annular bulging without frank herniation or the formation of degenerative osteophytes that typically arise from the unciniate regions of the posterolateral vertebral body (uncovertebral osteophytes).
- 2. Disk height loss leading to subsequent foraminal root compression
- 3. Hypertrophy of the facet joints
- 4. Stimulation of the nerve root by chemical pain mediators
- 5. Herniated disk materials can incite the production of various inflammatory cytokines such as interleukin-1 (IL-1) and IL-6, substance P, brady-kinin, tumor necrosis factor α , and prostaglandins.

Spurlings test

- The Spurling maneuver is performed by maximally extending and rotating the neck toward the involved side. This narrows the neuroforamen and may reproduce the symptoms.
- When positive, this test is particularly useful for differentiating cervical radiculopathy from other etiologies of upper extremity pain, such as peripheral nerve entrapment disorders, because the maneuver stresses only the structures within the cervical spine.

CERVICAL MYELOPATHY EBM

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- More than 50% of middle-aged patients show radiographic evidence of cervical disease, but only 10% have clinically significant root or cord compression.
- Cervical spondylotic myelopathy (CSM) in 55 years old.
- Lower extremities are affected first, and patients can complain of gait disturbance, with degeneration of the spinocerebellar and corticospinal tracts.
- The upper extremities can then become affected with loss of coordination and difficulty with fine motor tasks. A progressive broad-based gait.
- The current controversial topics that surround CSM are:
(1) natural history of mild CSM; (2) surgical approach: anterior versus posterior;
- (3) laminoplasty or laminectomy; and (4) cervical arthroplasty for CSM.

NATURAL HISTORY

- Historically surgical treatment has been the mainstay for progressive CSM.
- There have been several series studying patients treated conservatively, and 26% to 50% of patients may deteriorate neurologically over time.
- Robinson found that 5% of patients deteriorate quickly, 20% have a gradual but steady decline in function, and 70% have a stepwise progression in their symptoms with variable periods of quiescent disease.⁴
- These patients are also at increased risk of sustaining severe neurologic injuries with even minor trauma.⁸ Minor trauma can result in a central cord syndrome or in quadriplegia without fracture or dislocation.
- Early treatment has also been shown to alter the prognosis in patients.^{9–11} treated within 1 year of onset of symptoms.
- The Cochrane review searched the literature in 2002 and found only 1 randomized controlled trial from 2000 with a 2-year follow-up that specifically addressed the conservative versus operative management of mild CSM.^{13,14} They were unable to draw any conclusions based on that study

- Most investigators suggest that there are multiple factors that play a role in the success of operative or nonoperative management of CSM.
- Several papers have provided multivariate analysis on the successful operative and nonoperative patients.^{19,20}
- Patients may be successfully treated conservatively if they have lower mJOA scores, minimal neurologic findings
- (normal central motor conduction times), spinal transverse area greater than 70 mm², and are older patients.
- Surgery was successful for patients with more severe neurologic symptoms, a hyperintense signal on MRI with localized disease and who had canal expansion greater than 40% postoperatively, and were of younger age.
- The author's approach to these patients follows the literature closely.
- I place a great deal of emphasis on the clinical examination and on the patient's function. If the disease is mild and the symptoms are mild, I prefer to watch these patients closely with regular scheduled visits.
- If the patient has significant symptoms of myelopathy, including walking and balance difficulty, poor hand coordination, or progressive neurologic decline, I favor early surgical decompression.

Surgical approach

- 1. Cervical sagittal alignment is an important consideration. **In kyphotic spines, posterior decompression will not allow** the spinal cord to drift posteriorly and may increase the tension on the spinal cord if the kyphosis progresses. It is not always possible to correct the sagittal alignment through a posterior approach
- 2. Fusion of the spine in a kyphotic position increases the abnormal forces on the vertebral column and may lead to increased degeneration and further disk disease.
- If the cervical spine is neutral to lordosis then the laminoplasty procedure for multilevel disease is preferred. If there is
- focal kyphosis, then an ACDF for focal correction followed by laminoplasty may also be considered.
- 3. Decisions regarding approach
- Discrete ventral disease with anterior osteophytes and disk herniations [1or 2 level] should be approached ventrally for adequate decompression and preservation of the neural elements.
- Dorsal compression with ligamentum flavum hypertrophy should be approached dorsally. This allows for direct decompression. Often CSM is diffuse without an obvious single level of disease, and for these cases a dorsal approach can better decompress multiple levels.

- 3. laminoplasty with its ability to address multiple levels, and limited short- and long-term morbidity, despite neck pain, is the author's procedure of choice.
- 4. Sekhon^{35–37} has also published several case series where he followed 11 patients with 15 Bryan artificial disk replacements. However, only 5 were followed for 18 months.³⁶ He found that the patients' NDI improved 45%, and by 1 Nurick grade. He had 1 spontaneous fusion at 17 months and 1 patient who developed focal kyphosis and transient worsening of their symptoms. He concluded that cervical arthroplasty may be a reasonable alternative to fusion for limited CSM.

Cervical radicular disease

- 1. Similar to rotator cuff disease, degenerative disk disease is age related. **Beginning in the third decade of life**, the hydration of the nucleus starts to diminish, accompanied by fissuring of the annulus.
- 2. a prevalence of cervical radiculopathy of **3.5 per 1,000** individuals.
- 4. Natural course: At long-term follow-up of 10 to 25 years, Gore et al²⁷ reported that nonoperative management was associated with complete symptom resolution in 43% of patients, partial resolution in 25%, and continued moderate to severe pain in the remaining 32%.
- In another long-term study, by Lees and Turner,³⁸ of 51 patients followed up for 2 to 19 years, 43% of the patients had only a single episode of radicular pain, 29% had mild symptoms, and the remaining 27% had more substantial symptoms.
- Surgical treatment: Rapid improvement of symptoms is typical, and prolonged relief of symptoms can be expected in approximately 70% to 90% of patients after either anterior or posterior surgery.
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- Relief of arm pain and paresthesia were achieved in 96% of patients and resolution of the motor deficit in 98%.
- Arnasson et al⁴ found that axial neck pain persisted in roughly one-half of patients irrespective of conservative or surgical treatment, but radicular symptoms responded substantially better to surgery, with over 70% of patients having improved.
- After anterior surgery, Lundsford et al⁴⁰ found that 77% of patients had complete relief of symptoms initially, yet 38% had recurrent symptoms at some time during the 1 to 7 years of follow-up. At a mean follow-up of 6 years after anterior discectomy and fusion
- Bohlman et al.⁷ found that all patients had improvement or resolution of their preoperative motor deficit.
- Sensory deficits resolved in 71 of 77 patients.
- Only 6 of the 122 total patients had persistent radicular pain to any degree, but neck pain was present in 37.

Leg symptoms following neck pathology

Cervical blocks were successful in identifying the cause of funicular pain in our cases and this may pave the way for further studies to establish the role of cervical blocks as a diagnostic tool for funicular pain caused by cord compression.

Theory: 1. Interruption of spinothalamic tract
2. Interruption of pain modulation tracts

Cases which present with sciatica-like leg pain, but in a non-radicular classical pattern, should always alert a suspicion to a possible cause of cord compression at a higher level. This case report also highlighted the success of cervical epidural blocks in identifying the cause of pain in both our cases