Diagnosis and Management of Cervical Radiculopathy and Myelopathy

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DISCLOSURES

No financial disclosures

Radiculopathy

- Most common reason for referral
- Generally associated with pain but rarely may not
- Pain and weakness are the driving factors toward surgery, not numbness or reflex loss.
- The most critical radiculopathy from a likelihood of loss of function is the C5
  - Severe loss of deltoid strength may be permanent

What is Cervical Radiculopathy/Myelopathy

- Cervical Radiculopathy is dysfunction of a cervical spinal nerve root.
- Cervical Myelopathy is dysfunction of the cervical spinal cord.

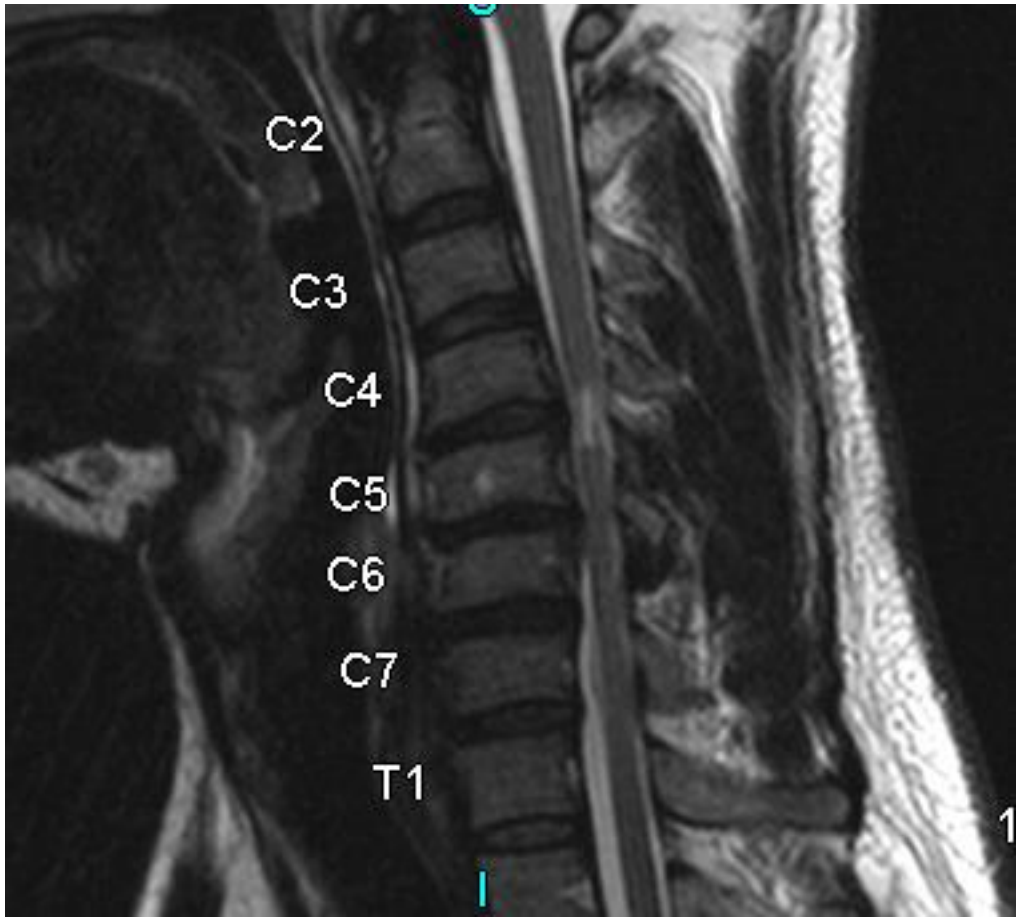
- Differential etiologies includes degenerative, congenital, neoplastic, inflammatory/autoimmune, idiopathic, circulatory, and metabolic
- Primary conditions in the differential diagnosis of myelopathy are ALS, MS, syringomyelia, and spinal tumors.

Key Points

Cervical degenerative disc disease is chronic condition but can present as acute.

Magnetic resonance imaging (MRI) is the modality of choice for diagnosis

Radicular and axial neck **pain** may be treated conservatively, but myelopathy or worsening neurologic function generally requires surgical intervention.



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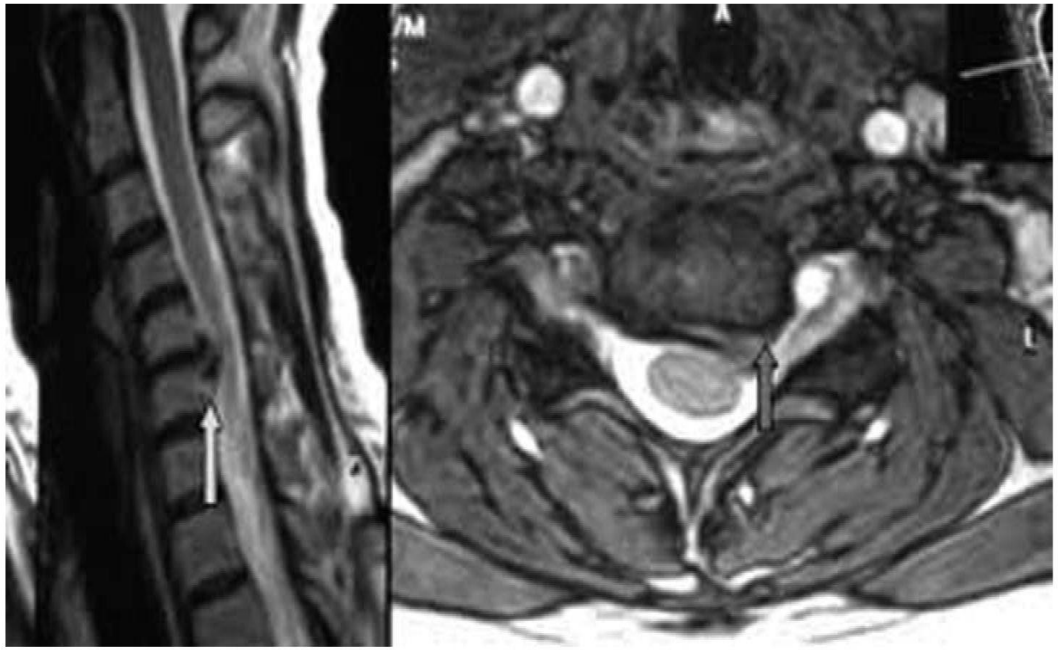
Cervical Disc Herniation

- Through injury and normal degeneration, discs dehydrate and fragmentation of the nucleus pulposis occurs
- The annulus and posterior longitudinal ligament lose their elasticity and develop tears allowing the nucleus to herniate out of the disc space.
- Acute disc rupture occurs more often laterally in the spinal canal due to the relative weakness of the PLL. As a result, root compression occurs more often than cord compression.



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Cervical Disc Herniation

- Infarction of the cord and root may occur if compression and ischemia are severe, although rare

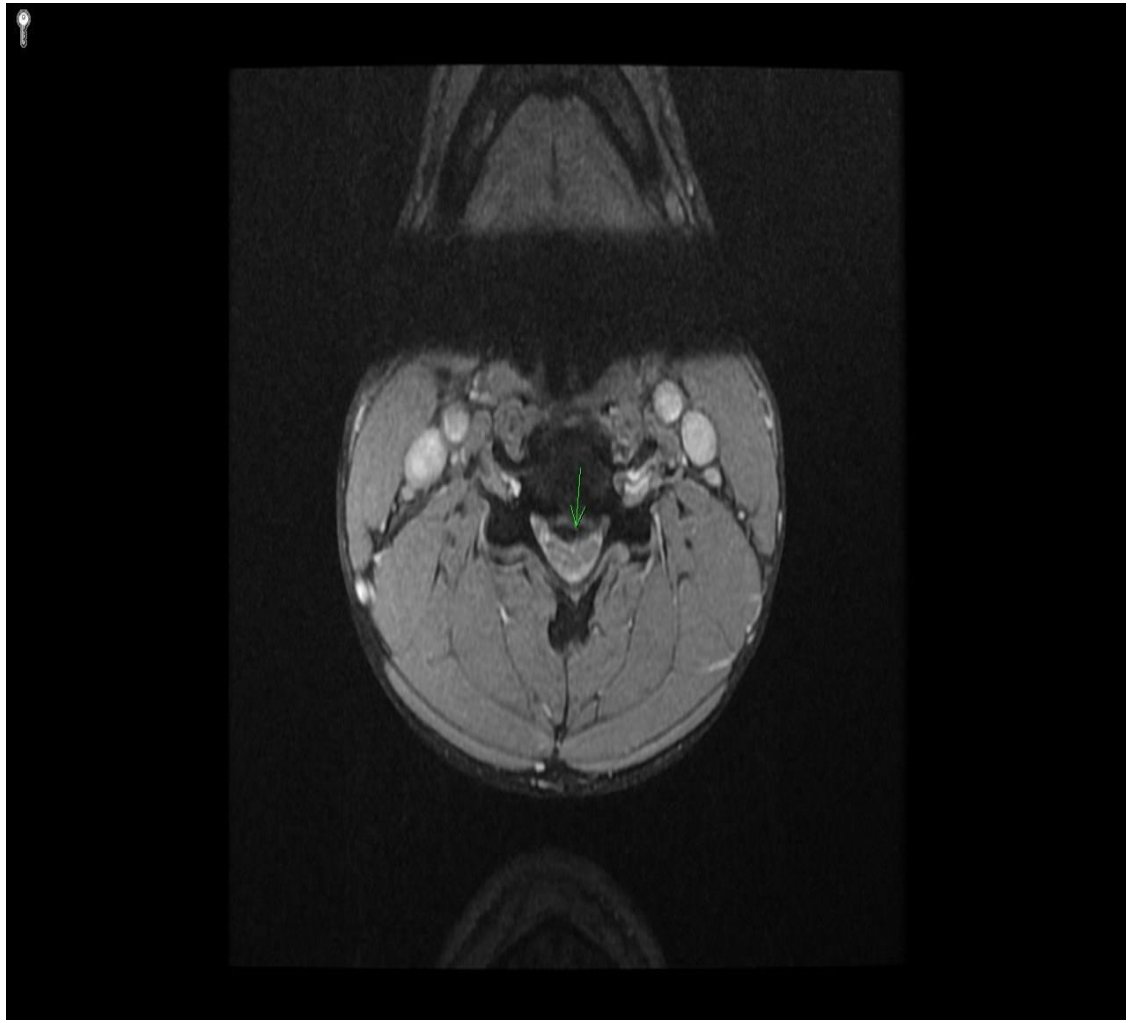
Signs and Symptoms

- Lateral disc herniations cause pain that radiates from the neck to the shoulder/arm and into the hand
- The disc usually impinges on a nerve exiting from the neural foramen at the level of the herniation (e.g, a C6-7 HNP is associated with a C7 radiculopathy)

- C4-5 (C5 root)
  - shoulder abduction weakness
  - shoulder paresthesias
  - deltoid reflex diminished
- C5-6 (C6 root)
  - Elbow flexion weakness (biceps)
  - upper arm, thumb, and radial forearm sensory alteration
  - biceps and brachioradialis reflex diminished
- C6-7 (C7 root)
  - Elbow extension (triceps) weakness
  - 2^{nd} and 3^{rd} digit sensory alteration
  - Triceps reflex diminished
- C7-T1 (C8 root)
  - Hand intrinsic muscle weakness
  - 4^{th} and 5^{th} digit sensory alteration
  - Finger jerk reflex diminished

Central Disc Herniation

- Central disc herniation can cause myelopathy and central cord syndrome (CCS)
  - CCS – most common form of cervical cord injury
    - Characterized by loss of motion and sensation in the arms and hands with lesser or no effect in the lower exts.
    - More common with degenerative spondylotic stenosis than acute HNP



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Prognosis of Acute Cervical HNP

- Over 90% of patients with acute cervical radiculopathy due to acute HNP can improve without surgery
- Surgery is indicated for those who fail to improve adequately or those with progressive neurologic deficit
- Clinical findings of myelopathy and cord compression should be treated surgically

Surgical Decompression Approaches

- Anterior Cervical Discectomy and Interbody Fusion
  - Historically the most successful spine surgery
- Posterior laminectomy
  - Best for posterior short segment pathology with no kyphosis
- Posterior Foraminotomy / microdiscetomy
  - Lateral HNP or foraminal posterior spur
  - Avoids fusion
- Posterior open door laminoplasty
  - Allows multi-level central decompression without fusion
  - Best with straight or lordotic neck
- Posterior decompression and fusion
- Anterior Cervical Discectomy and Arthroplasty
  - The new “best” when appropriate

Radiculopathy vs. Myelopathy

- Either may be associated with pain
- They may exist together
- Radiculopathy typically will have localizing features pain, numbness, or weakness pattern specific to the level of compression.
- Myelopathy, until advanced, may be more difficult to localize on exam

Management of Cervical Radiculopathy

- NSAIDS, Muscle relaxants, short coarse of pain meds
- PT
- Traction
- Chiropractic
- Therapeutic injections
- Accupuncture
- Surgical decompression

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Surgical Approaches

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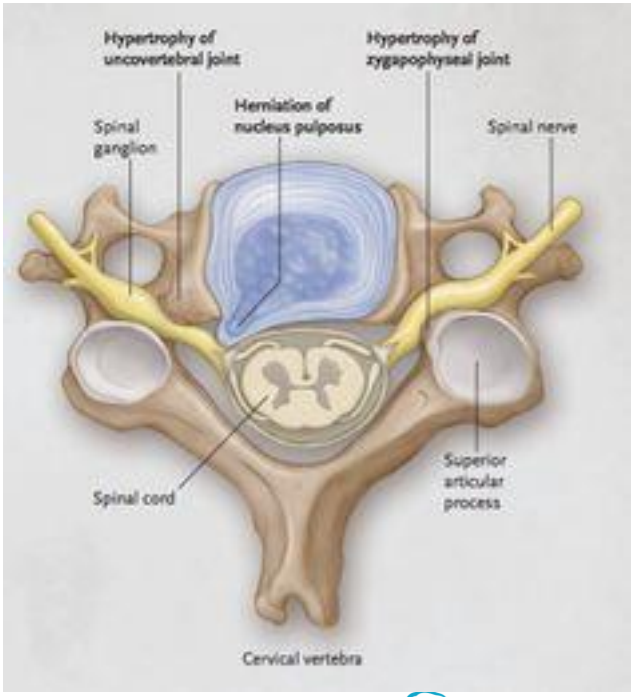

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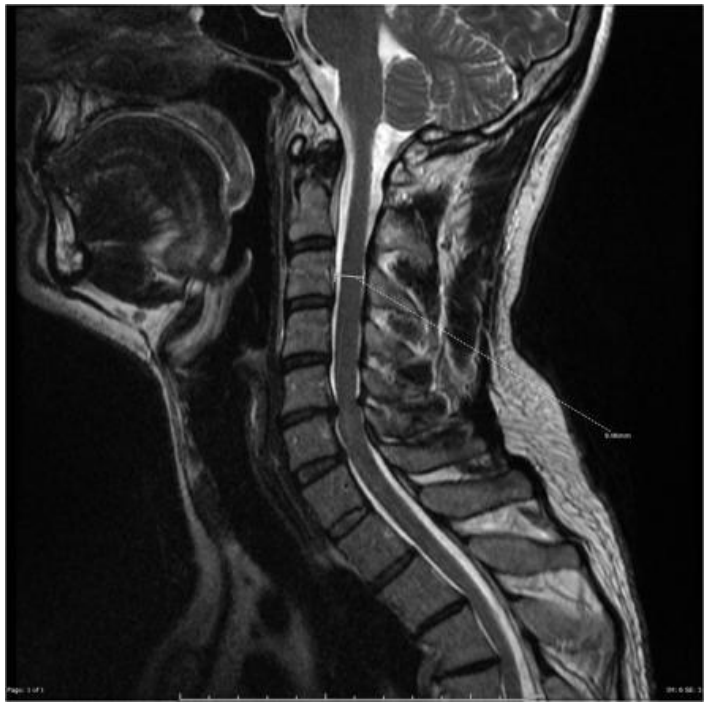
Surgical Approaches

Posterior Cervical Decompressive Laminectomies and Instrumented Fusion

Posterior Open-Door Laminoplasty



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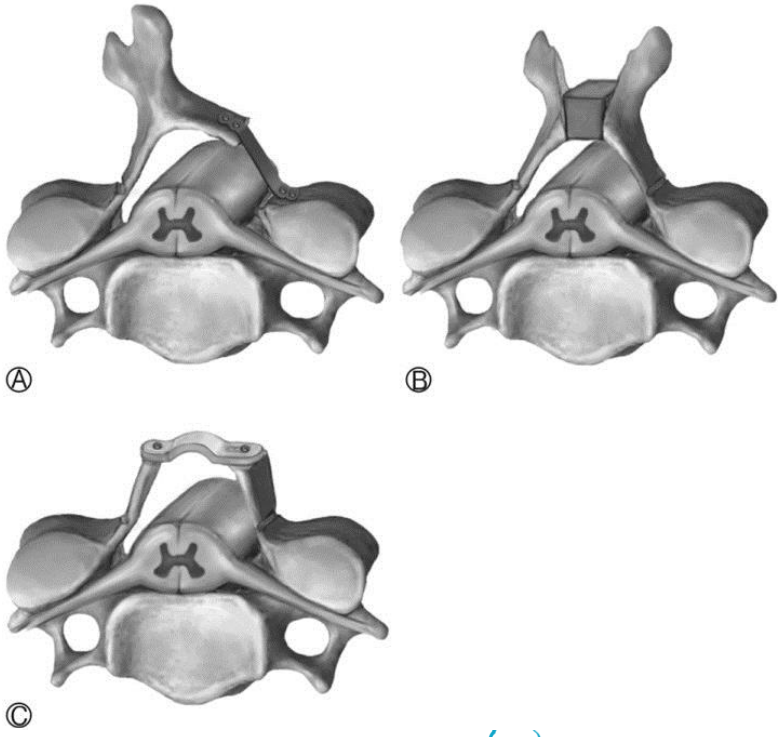
Surgical Techniques

Posterior instrumented fusion

Laminoplasty



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Surgical Approaches

- Anterior Cervical Disc Arthroplasty

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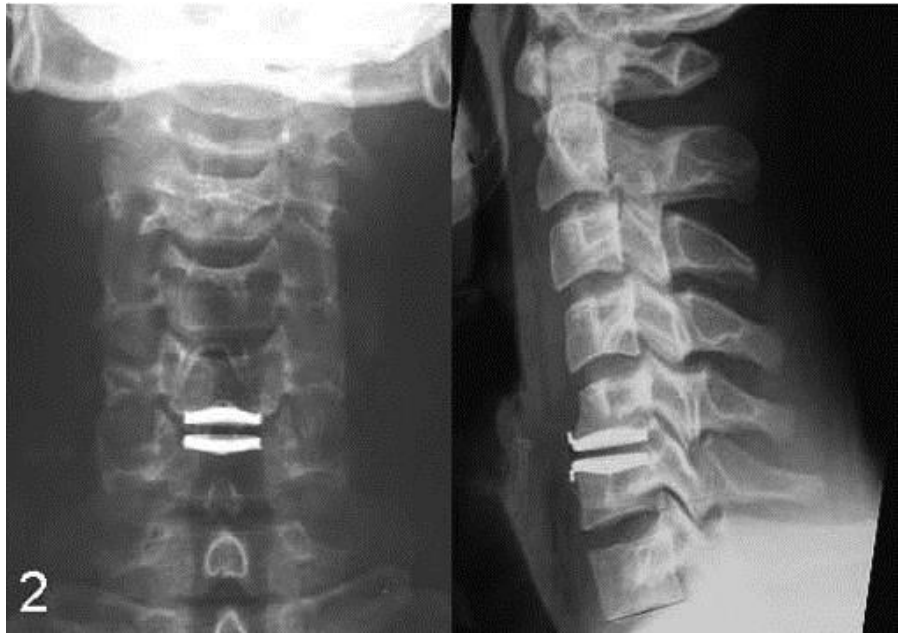
Surgical Techniques

Disc Arthroplasty



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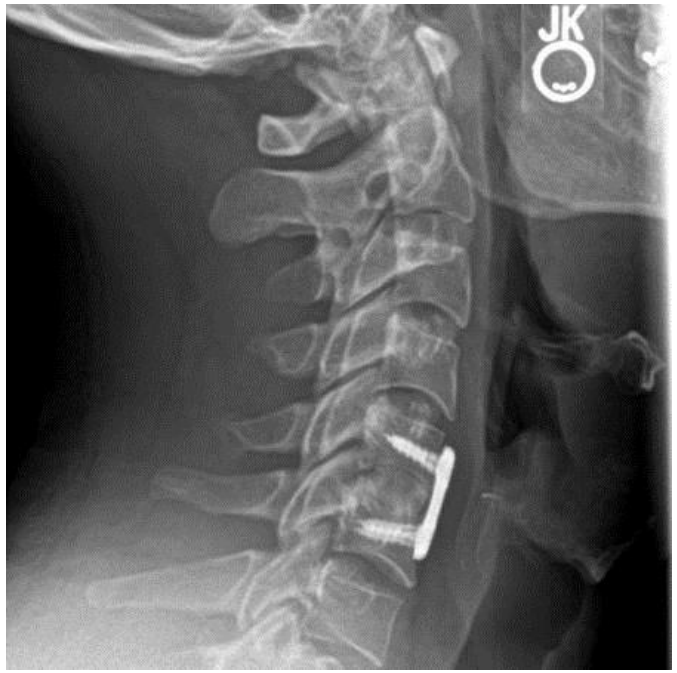

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