Surgical Treatment of Cervical Disc Disorders

Steven J. Tresser, MD
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Educational Goals

• Participant should be able to:
  • Understand basic cervical spine anatomy and problems
  • Understand conservative and surgical treatment options
  • Appreciate the difference between surgical options
  • Understand common post-operative problems and their management
Disclosures

- Nuvasive – Consultant, Speaker, Royalties
- Centinel Spine – Consultant, Speaker
- K2M – Consultant, Royalties
Spine Surgery in a Nutshell

1. If it’s compressed; decompress it.
2. If it’s unstable; stabilize it.
3. If it’s not well aligned; realign it.
Anatomy of the Cervical Spine

• Seven vertebra
• Connections
  • Facet joints
  • Discs
    • Annulus fibrosis
      • Fibrocartilage
    • Nucleus pulposus
      • Water, collagen, proteoglycans
• Ligaments
• Spinal cord and nerve roots
Cervical Disc Pathology

- Disc disruption/annular tear
- Disc herniation
- Spondylosis/disc degeneration
- Infection
- Trauma/instability
Symptoms and Signs/ Radiculopathy

- Compressed nerve root
- Pain
- Numbness
- Tingling
- Weakness
Symptoms and Signs/ Myelopathy

- Compressed spinal cord
- Weakness
- Numbness
- Spasticity
- Urinary and/or bowel problems
- Gait problems
Conservative Treatment Options

- Time
- Medications
- Exercise/Stretching
- Chiropractic
- Physical Therapy
- Injections
- Pain Management
Indications for Cervical Surgery

- Neurologic Deficit that is not improving or worsening
- Pain
- Instability
- Risk of neurologic impairment if left untreated
Goals in Cervical Spine Surgery

- Decompression
- Stabilization
- Re-alignment
- Motion preservation
- Short surgery time
- Quick recovery time
- Minimal operative scarring
- Low complication rates
Approaches for Surgery

• Anterior
  • Discectomy and fusion
  • Discectomy and total disc arthroplasty
    • (aka total disc replacement or artificial disc)
  • Corpectomy and fusion

• Posterior
  • Laminotomy/foraminotomy
  • Laminectomies
  • Posterior fusion/instrumentation
Anterior Surgical Options

ACDF (Fusion)
- Plate + Interbody Spacer
- Standalone

Disc Replacement
(Motion Preservation)
ACD/F

- 60 year old operation
  - Continues to evolve
- Addresses pathology directly
- Highly successful
- Excellent fusion rates and stability
- Adjacent level issues
- Loss of motion
- Pseudoarthrosis
TDR

- Normal range of motion
- Reduced chance of future adjacent level surgery
- Faster overall recovery
- Faster return to work and normal activity
- Reduced activity restrictions
- Limited to 1 or 2 levels
- More limited indications vs ACD/F
- Reduced imaging capability
- ? Long-term implant wear/failure
Benefits of TDR’s Motion Preservation
Posterior Approach Indications

- Lateral disc herniation
- Posterior decompression for spondylosis
  - Primary procedure
    - With or without fusion
  - Adjunct to failed ACD/F
  - Multi-level pathology (laminectomies)
Post-op Issues

- Neck pain
- Paraspinous/trapezius spasm, tightness, pain
- Dysphagia
- Hoarseness
- Sub-mandibular numbness
- Neurologic symptoms
- Wound complications
  - Hematoma/seroma, infection, dehiscence
Rehab Considerations

- Normal movements of neck
- Generally no need for bracing
- Limited lifting (15-20 lbs.) and activity initially
- Advanced after two weeks for TDR
- Advanced after two months for ACD/F
- Physical therapy starting 2-4 weeks
  - Stretching, ROM exercises, and isometrics
  - No traction
- Low impact aerobic exercise and light resistance training
Thank you