Return to Golf Following Anterior Cervical Discectomy and Fusion: Retrospective Case Report
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Introduction
- Anterior cervical discectomy and fusion (ACDF) is used for patients with radiculopathy and myelopathy.
- Average recommendation given by surgeons of 2-3 months.
- Range of motion (ROM) and stability is a necessity when performing the golf swing.
- Purpose: To investigate potential complications, limitations, and treatment for returning to golf following ACDF.

Patient History
- 27-year old male, golf professional, underwent a C4-C5 ACDF.
- Return to golf 8 weeks post-operatively.
- Left sided neck pain radiating into the mid-back, left shoulder, and halfway down the arm at 10 weeks.
- Unable to continue golf activity due to pain.
- Physician assured no complications and referred to PT.
- PT Eval & Treat began 1 week after symptoms began.

Neck Disability Index (NDI): 34/50
- Posture: Upper Crossed Syndrome
- Thoracic ROM: Hypomobile
- MMT: L UE weakness, deep cervical flexor weakness
- Upper Limb Tension Testing (ULTT) 1: Positive
- Spurling’s A: Positive
- Cervical Distraction: Positive
- Golf: Unable ADLs: Able (painful)
- Pain: 8/10

Clinical Impression
- Cervical Radiculopathy: Case fits the PT CPG & Wainner Cluster of Cervical Radiculopathy.
- Pain, Guarding, Limited Range of Motion: Pain followed cervical facet and radiculopathy patterns. Regional mobility restrictions created compensation in the golf swing.
- Posture: Upper Crossed Syndrome (UCS) is correlated to altered mechanics and strength of the Rotator Cuff (RTC) and Scapulo-thoracic (ST) musculature. Forward head posture increases force to C-Spine and is correlated to Adjacent Segment Disease (ASD).

Intervention
- 16 weeks, 3 visits per week.
  - Determined by patient presentation at each visit
  - Exercise modified to reflect the golf swing.
- Progression in phases via: added resistance, time under tension, increasing coordination demand, or speed of movement.
- Phases of tx:
  - Weeks 0-4: Reduce pain, improve ROM, begin postural control exercise, begin deep flexor endurance
  - Weeks 4-8: Begin ST/RTC strength, progress deep flexor endurance, progress postural control, improve T-Spine mobility, begin trunk stability
  - Weeks 8-16: Begin total body exercises, advanced UE & trunk stabilization drills, focus on rotary exercises, advanced postural control exercises.

Radiculopathy
- Postural re-education
- Proprioceptive awareness
- Cervical PROM
- Cervical traction
- Deep flexor endurance
- Peripheral nerve mobilizations
- T-Spine HVLA thrust manipulation.

Acute Pain and Mobility
- Soft tissue mobilization
- Grade 1-2 mobilizations
- Mulligan mobilizations
- PNF techniques
- Manual traction
- Thoracic mobilization
- Thoroacic rotational exercise.

Weakness & Neuromotor Control
- PNF patterns
- Open & closed-chain UE exercise
- ST & GH stabilization exercise
- RNT techniques
- Deep flexor endurance exercise.

Intervention List (Weeks 0-4)
- Grade 1 & 2 Cervical Mobilizations
- Mulligan Mobilizations
- Cervical PNF Isometrics / MET
- Manual Cervical Traction
- Manual Cervical PROM
- Thoracic HVLA Thrust Manipulation
- Cervical Deep Flexor Endurance Supine
- Median Nerve Mobilization
- Chin Tucks in Quadruped
- Dead Bug Series
- Blackburn’s Series Prone
- Rhythmic Stabilizations Manual
- Rotator Cuff Series- TheraBand
- Book Opener T-Spine Rotation
- D1/D2 UE PNF- TheraBand
- Anti-Rotation Press

Intervention List (Weeks 4-8)
- Cable Push/Pull
- Lunge with TheraBand Rotation
- 1/2 Kneeling Cable Chops
- 1/2 Kneeling Cable Lifts
- Bird Dog Series
- Body Blade Stabilizations
- Airplane Rotations

Intervention List (Weeks 8-16)

Outcomes
- NDI: 4/50
- Pain: Upper Crossed Syndrome
- Cervical ROM:
  - Flexion: 50 deg
  - Extension: 75 deg
  - R SB: 35 deg
  - L SB: 35 deg
  - R Rot: 80 deg
  - L Rot: 80 deg
- Thoracic ROM:
  - R Rotation: 45 deg
  - L Rotation: 45 deg
- MMT: 4/5 or 5/5 all motions
- ULTT 1: Negative
- Spurling’s A: Negative
- Cervical Distraction: Negative
- Golf: Return to prior level pain free
- ADLs: No longer painful
- Pain: 2/10

Clinical Implications
- The C-Spine is in relative motion while the head stays fixated during the swing.
- Average tour players:
  - 73 degrees of L cervical rotation
  - 61 degrees of R cervical rotation
  - 14 degrees of flexion to 47 degrees
  - 25 degrees of L side bend
  - 25 degrees of R side bend
- Impression: By addressing mobility, postural, strength, and stability impairments that are required for the golf swing, it is possible to return to a prior level of play without pain or injury following ACDF.

References: See Handout with Reference List