

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.

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).
- **Muscular Weakness:** Deep flexor weakness reduces stability during dynamic movement. ST & UE muscular weakness creates compensatory swing mechanics.

Outcomes

- **NDI:** 4/50
- **Posture:** 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

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	Acute Pain and Mobility	Weakness & Neuromotor Control
• Postural re-education	• Soft tissue mobilization	• PNF patterns
• Proprioceptive awareness	• Grade 1-2 mobilizations	• Open & closed-chain UE exercise
• Cervical PROM	• Mulligan mobilizations	• ST & GH stabilization exercise
• Cervical traction	• PNF techniques	• RNT techniques
• Deep flexor endurance	• Manual traction	• Deep flexor endurance exercise.
• Peripheral nerve mobilizations	• Thoracic mobilization	
• T-Spine HVLA thrust manipulation.	• Thoracic rotational exercise.	

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.

Examination

- **Neck Disability Index (NDI):** 34/50
- **Posture:** Upper Crossed Syndrome
- **Cervical ROM:** Hypomobile all directions
- **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

Intervention List (Weeks 0-4)	Intervention List (Weeks 4-8)	Intervention List (Weeks 8-16)
Grade 1 & 2 Cervical Mobilizations	Chin Tucks in Quadruped	Cable Push/Pull
Mulligan Mobilizations	Dead Bug Series	Lunge with TheraBand Rotation
Cervical PNF Isometrics / MET	Blackburn's Series Prone	1/2 Kneeling Cable Chops
Manual Cervical Traction	Rhythmic Stabilizations Manual	1/2 Kneeling Cable Lifts
Manual Cervical PROM	Rotator Cuff Series- TheraBand	Bird Dog Series
Thoracic HVLA Thrust Manipulation	Book Opener T-Spine Rotation	Body Blade Stabilizations
Cervical Deep Flexor Endurance Supine	D1/D2 UE PNF- TheraBand	Airplane Rotations
Median Nerve Mobilization	Anti-Rotation Press	Golf Swing Stabilizations



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.