

Anterior Cervical Corpectomy Rehabilitation Guidelines

Phase 1 (POD 1 – 6 weeks)

- + C-Collar x 6 weeks
- Typically, will wait to start PT until > 6 weeks

Phase 2 (6weeks – 3months)

- Begin regimented PT program (2-3x/wk) as needed
- These patients should maintain collar during PT.
- No overhead lifting/weights
- No cervical ROM exercises or prone exercises
- Focus on:
 - Basic mobilization & correctly performing ADL
 - Walking (goal of 30 minutes twice per day)
 - Strengthening ability to perform self-care activities
 - Using assisted devices correctly (walker/cane/etc) for those who suffered severe myelopathy issues
 - Endurance (walking on treadmill/track/pool or recumbent bike)
 - Balance; Posture, Proprioception, and Gait training
 - Fine motor function with hands for those with myelopathy
 - +/- Pool Therapy
 - Can begin light strengthening exercises
 - Weight limit of < 20 lbs until 3 months post op
 - Can incorporate light weights or resistant bands
- **Suggested Interventions**
 - UBE (upper body ergometer)
 - Bilateral stretching – 3 x 30sec
 - e.g. pec. major/minor, lats, etc.
 - Teach chin tuck and VC for volitional deep cervical muscle contraction
 - Cranio-cervical flexion with visual biofeedback (pressure cuff stabilizer) – constant feedback
 - Inflate to 20 mmHg and place behind neck at suboccipital level while supine → increase pressure by 10 mmHg with upper cervical nod
 - UE strengthening exercises (maintain chin tuck): progress c resistance
 - elbow flex/ext
 - wrist flex/ext
 - grip/hand intrinsics



- dexterity
 - Scapular stabilization exercises (dumbbells):
 - sidelying: ER
 - supine: punches
 - Shoulder shrugs & rolls, scapula retraction/depression
 - Soft tissue mobilization for hypertonic paraspinal muscles
 - Postural education and cueing (shoulders back, chest out and up)
 - Scar mobility/cross friction massage at (10-12 weeks)
 - Ice/modalities for pain/inflammation (no U/S)
 - Computer/desk ergonomic workstation
 - arm's length away
 - top of screen in line with forehead
 - elbows and hips at 90°
 - wrists neutral/keyboard downward slope
 - mouse same height as keyboard
 - sit in swivel chair to avoid twisting
 - Education: review precautions, anatomy/biomechanics, surgical procedure, prognosis, etc.
- **Avoid:**
 - Overhead activity until after 2 months post op
 - Cervical ROM exercises
 - **Considerations**
 - Consult doctor for return to driving
 - Avoid lotions/creams or submerging incision under water until fully healed
 - Consult doctor for return to work
 - Shorter for sedentary jobs
 - **Goals:**
 - ↓ pain, 0-2/10 pain at rest
 - Improve scar mobility
 - Reestablish neuromuscular control of deep cervical stabilizers
 - Volitional contraction of deep neck flexors for 5 x 5 sec
 - Improve UE strength/mobility



- Verbalize proper workstation set-up
- Progressive walking program
- Independent with HEP
- Progress exercises once patient demonstrates proper form/technique and control of neutral spine with each repetition
- D/C collar/brace per surgeon's orders

Phase 3 (3months – 6 months)

- Continue to progress strength & endurance with goal to return to baseline standing/walking duration & distance
 - Typically, most post op patients at this time will be totally out of c-collar
 - Weight limit lifted.
 - Progress by 5 lbs every other week as tolerable.
 - Can begin to perform overhead activities at 3 months, but progress slowly
 - May be appropriate for home regimen instructions
 - May start using elliptical/stationary bike for more cardio exercises
 - Jogging/running should be avoided until 6 months post op

- ***Suggested Interventions***
 - UBE (forward & backward)
 - Gentle Cervical AROM (all directions), shoulder shrugs & rolls, scapula retraction/depression
 - Cranio-cervical flexion with pressure cuff stabilizer
 - Inflate to 20 mmHg and place behind neck at suboccipital level while supine → increase pressure by 10 mmHg with upper cervical nod
 - Cervical isometrics
 - flexion
 - extension
 - side-bending
 - rotation
 - Scapular stabilization exercises:
 - standing: rows, extension, hor. abd, ER (Theraband or cable column)
 - prone (on stability ball): Y, T, W (dumbbells)
 - standing (facing wall): push-up plus
 - standing (back to wall): arm slide for low trap activation



- standing: PNF D1/D2 patterns (Theraband or cable column)
- rhythmic stabilization/perturbations (Theraband or BodyBlade)
- wall circles (medicine ball)
- Light progressing to Full work simulation activities
- **Goals:**
 - Volitional contraction of deep neck flexors for 10 x 10 sec
 - 0/10 pain with all or most activities
 - Able to tolerate work simulation activities without increase in symptoms
 - Verbally understands the return-to-work progression
 - Complete progressive walking program
 - Independent with HEP
 - Achieve *Neck Disability Index* MCID

Phase 4 (6months +)

- Progress to baseline with activity
- May take NSAIDs at this time

Progressive walking program – begin post-op Day 1

Distance	Time
1 mile	20min at 6 weeks
2 miles	30min at 9 weeks
3 miles	45min at 12 weeks

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References

Abbott A, Halvorsen M, Dederig A. Is there a need for cervical collar usage post anterior cervical decompression and fusion using interbody cages? A randomized controlled pilot trial. *Physiotherapy Theory & Practice*. 2013;29(4):290-300.

Dolan P, Greenfield K, Nelson RJ, Nelson IW. Can exercise therapy improve the outcome of microdiscectomy? *SPINE*. 2000;25:1523-32.

Ducker TB. Restriction of cervical spine motion by cervical collars. Abstract. John Hopkins University, 1990.



Engquist M, Löfgren H, Öberg B, Holtz A, Peolsson A, Söderlund A, Vavruch L, Lind B. Surgery Versus Nonsurgical Treatment of Cervical Radiculopathy: A Prospective, Randomized Study Comparing Surgery Plus Physiotherapy With Physiotherapy Alone With a 2-Year Follow-up. *SPINE*. 2013;38(20):1715-1722.

Erdogmus CB, Resch KL, Sabitzer R, Muller H, Nuhr M, Schoggl A, et al. Physiotherapy-based rehabilitation following disc herniations operation. Results of a randomized clinical trial. *SPINE*. 2007;32:2041-9.

Graaf MT, Schmitt MA. The Effect of Training the Deep Cervical Flexors on Neck Pain, Neck Mobility, and Dizziness in a Patient With Chronic Nonspecific Neck Pain After Prolonged Bed Rest: A Case Report. *Journal of Orthopaedic & Sports Physical Therapy*. 2012;42(10):853-860.

Hanney WJ, Kolber MJ. Improving Muscle Performance of the Deep Neck Flexors. *Strength & Conditioning Journal*. 2007;29(3):78-83.

Hermansen AMK, Cleland JA, Kammerlind AC, Peolsson ALC. Evaluation of Physical Function in Individuals 11 to 14 Years After Anterior Cervical Decompression and Fusion Surgery – A Comparison Between Patients and Healthy Reference Samples and Between 2 Surgical Techniques. *Journal of Manipulative and Physiological Therapeutics*. 2014;37(2):87-96.

Iqbal ZA, Rajan R, Khan SA, Alghadir AH. Effect of Deep Cervical Flexor Muscles Training Using Pressure Biofeedback on Pain and Disability of School Teachers with Neck Pain. *Journal of Physical Therapy Science*. 2013;25(6):657-661.

Kalfas, I. (2001). Principles of bone healing. *Neurosurgical Focus*, 10(4), 1-4.

Landers MR, Addis KA, Longhurst JK, Vom Steeg BL, Puentedura EJ, Daubs MD. Anterior cervical decompression and fusion on neck range of motion, pain, and function: a prospective analysis. *The Spine Journal*. 2013;13(11):1650-1658.

Kasliwal, M. K., Witiw, C. D., & Traynelis, V. C. (2016). Neck range of motion following cervical spinal fusion: A comparison of patient-centered and objective assessments. *Clinical Neurology and Neurosurgery*, 151, 1-5. doi:10.1016/J.CLINEURO.2016.09.020

Cody, J. P., Kang, D. G., Tracey, R. W., Wagner, S. C., Rosner, M. K., & Lehman, R. A., Jr. (2014). Outcomes following cervical disc arthroplasty: A retrospective review. *Journal of Clinical Neuroscience*, 21(11), 1901-1904. doi:10.1016/J.JOCN.2014.05.008

McGarvey AC, Osmotherly PG, Hoffman GR, Chiarelli PE. Scapular Muscle Exercises Following Neck Dissection Surgery for Head and Neck Cancer: A Comparative Electromyography Study. *Physical Therapy*. 2013;93(6):786-797.

McGregor AH, Dore CJ, Morris TP, Jamrozik K. Function after spinal treatment, exercise and rehabilitation (FASTER): improving the functional outcome of spinal surgery. *BMC Musculoskeletal Disorders*. 2010;11.

Miller CP, et al. Soft and rigid collars provide similar restriction in cervical range of motion during fifteen activities of daily living. *SPINE*. 2010;35:1271-1278.

Peolsson A, Söderlund A, Engquist M, Lind B, Löfgren H, Vavruch L, Holtz A, Winström-Christersson A, Isaksson I, Öberg B. Physical Function Outcome in Cervical Radiculopathy Patients After Physiotherapy Alone Compared With Anterior Surgery Followed by Physiotherapy. *SPINE*. 2013;38(4):300-307.



Peolsson; M. Peolsson; G. Jull; T. Lofstedt; et al. Preliminary evaluation of dorsal muscle activity during resisted cervical extension in patients with longstanding pain and disability following anterior cervical decompression and fusion surgery. *Physiotherapy*. 2015;(1):69. doi:10.1016/j.physio.2014.04.010.

Young IA, Michener LA, Cleland JA, Aguilera AJ, Snyder AR. Manual therapy, exercise and traction for patients with cervical radiculopathy: A randomized clinical trial. *Physical Therapy*. 2009;89(7):632-642.



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