

1ST RIB REMOVAL/SCALENECTOMY THORACIC OUTLET SYNDROME PROTOCOL

Protective Phase (Post-Op Day 1- Week 3)

- 1) Monitor incision for wound healing
- 2) Postural education for anti-upper cross syndrome (decreased forward head/protracted shoulders position)
 - supine foam roll pectoralis stretch, upper trap/levator scapulae stretch, lacrosse ball on wall pec minor work, foam roll to teres major/latissimus, anterior chest and neck release
 - physical therapist/athletic trainer manual therapy work: upper trap/levator scapulae, pec minor, subclavius, suboccipitals, sternocleidomastoid, thoracic/lumbar paraspinals, quadratus lumborum, and latissimus. Maintenance PROM to involved shoulder elevation, ER(90), and IR(90) as tolerated.
 - active cervical AROM all directions WFL. Gentle scapular AROM. (limit excessive end range scapular elevation/depression work during early phase of rehab to allow decompression of thoracic outlet)
 - Deep cervical neck flexor training (longus colli)
- 3) Diaphragmatic respiratory and postural stability training exercises. Goal is to educate the patient on proper respiratory patterns to decrease overuse of secondary accessory muscle usage. Manual techniques to reposition rib cage and decrease postural asymmetries.
- 4) Nerve glides
- 5) Shoulder isometrics all directions
- 6) Modalities PRN

Early Mobility Phase (Post-Op Weeks 4-5)

- 1) After 3 weeks, initiate scar massage over incision. Anterior neck fascia stretching with active cervical rotation to restore full cervical AROM.
- 2) Continue with anti-upper cross syndrome postural work
- 3) Challenge patient with diaphragmatic breathing and stability patterns during different body positions
- 4) Introduction of limb weight scapular and posterior cuff work (exs: supine protraction, sideling ER, prone scap retraction, prone shoulder extension with simultaneous ER, scapular plane elevation to 90 degrees without hiking, IR/ER t-band at neutral etc.)
- 5) Stationary bike/elliptical trainer without increase in TOS symptoms. Limit secondary accessory muscle breathing patterns.
- 6) Modalities PRN



Home to the Texas Rangers

Strengthening Phase (Post-Op Weeks 6-8)

- 1) Continue with postural flexibility and diaphragmatic breathing training
- 2) Progression of "Thrower's Ten" type series of scapular/cuff/forearm/bicep/tricep resistive training exercises
- 3) Core stability training (exs. tandem kneeling chops/lifts, kneeling anti-rotation core, anti-extension, front planks/side planks, quadruped multifidus etc.)
- 4) Initiate and progress lower extremity strengthening (exs. lunges, mini band walks, clamshells, single leg glute bridge, step up variations, PB hamstring curl, single leg RDLs, etc.)
- 5) Modalities PRN

Plyometric/Proprioception Phase (Post-Op Weeks 9-11)

- 1) Continue with postural flexibility and diaphragmatic breathing training
- 2) "Thrower's Ten" type series of scapular/cuff/forearm/bicep/tricep resistive training exercises
- 3) Progress to manual shoulder/scapular strengthening and rhythmic stabilization patterns (exs. supine shoulder at 90 and 120 degrees rhythmic stabs, IR/ER at neutral stabs, side plank ER(0) stabs, D2 pattern, prone horizontal abduction 120 degrees manuals etc.)
- 4) Progress to Upper Extremity Rebounder Plyometrics: 2 hand chest pass, 2 hand overhead throws, standing diagonal chops, standing IR(neutral), standing ER(neutral), kneeling 90/90 progression
- 5) Progress co-contraction/stabilization exercises (exs. Ball on wall, ¼ clock wall dribbles, ball drops, decels etc.)
- 6) Bodyblade patterns (neutral IR/ER, horizontal abduction/adduction, and D2 patterns)
- 7) Legs/core work
- 8) Modalities PRN

Interval Throwing Phase (Post-Op Weeks 12-18)

- 1) Initiation of an interval long toss throwing program
- 2) Continue with maintenance shoulder/scapular/elbow strengthening program immediately after throwing days. Non throwing days dedicated to legs and core work.
- 3) Daily postural correction work
- 4) Modalities PRN

Interval Mound Phase (Post-Op Weeks 19-24)

- 1) Initiation of an interval pitching flat ground to mound program
- 2) Maintenance shoulder/scapular/elbow strengthening work immediately after throwing days. Non throwing days dedicated to legs and core work.
- 3) Daily postural correction work
- 4) Modalities PRN

Criteria for Return to Play:

- 1) Physician approval with satisfactory strength test, clinical exam, full non-painful ROM
- 2) Satisfactory completion of interval sports program