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Rehabilitation Protocol for Shoulder - Biceps Tenodesis

PHASE I: IMMEDIATE POST-OP (0-4 WEEKS AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> ● Protect surgical repair ● Reduce swelling, minimize pain ● Restore passive range of motion (PROM) of shoulder and elbow ● Adequate scapular function ● Patient education
Sling	<ul style="list-style-type: none"> ● Wear at all times except when doing exercises ● Wean out of sling starting 3 weeks post op
Precautions	<ul style="list-style-type: none"> ● No active range of motion (AROM) of the elbow or shoulder ● No shoulder external rotation beyond 40 degrees ● No shoulder extension or horizontal abduction past neutral ● Place a towel roll or pillow under elbow while lying supine to avoid shoulder extension ● No lifting objects ● No friction massage to the proximal biceps/tenodesis site
Intervention	<p><i>Range of motion/Mobility</i></p> <ul style="list-style-type: none"> ● PROM of elbow for flexion/extension, supination/pronation ● AROM of wrist/hand ● Shoulder PROM: avoid shoulder ER past 40 degrees and no shoulder extension beyond neutral <p><i>Strengthening</i></p> <ul style="list-style-type: none"> ● Scapular retractions and mobility exercises ● Ball squeezes
Criteria to Progress	<ul style="list-style-type: none"> ● Appropriate healing of surgical incision ● Adequate pain control ● Full PROM of shoulder and elbow.

PHASE II: INTERMEDIATE POST-OP (4-6 WEEKS AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> ● Minimize shoulder pain and inflammatory response ● Achieve gradual restoration of shoulder and elbow AROM ● Begin light waist-level functional activities ● Initial submaximal shoulder isometrics ● Return to light computer or desk work
Precautions	<ul style="list-style-type: none"> ● No lifting with affected upper extremity ● No loading to biceps, elbow flexors, supinators ● No friction massage to the proximal biceps tendon/tenodesis site

	<ul style="list-style-type: none"> No running Avoid over stressing repaired tissue with stretching or manual therapy
Intervention -Continue with Phase I interventions	<p><i>Range of motion/Mobility</i></p> <ul style="list-style-type: none"> Shoulder AAROM <ul style="list-style-type: none"> Lawn chair AAROM Shoulder ER Rail slides Wall slides Shoulder AROM <ul style="list-style-type: none"> Supine shoulder flexion Standing scaption Shoulder ER in neutral Shoulder ER @ 90 degrees supported on table Elbow AROM <ul style="list-style-type: none"> Active elbow flexion Active elbow extension Forearm supination Forearm pronation <p><i>Strengthening</i></p> <ul style="list-style-type: none"> Shoulder Isometrics <ul style="list-style-type: none"> Flexion, extension, ER, IR, abduction <p><i>Manual Therapy</i></p> <ul style="list-style-type: none"> Glenohumeral, scapulothoracic, and trunk joint mobilizations as indicated (Grade I-IV) Posterior capsule stretching <ul style="list-style-type: none"> Cross body stretching Sleeper Stretch <p><i>Cardiovascular Exercise</i></p> <ul style="list-style-type: none"> Walking or stationary bike - avoid excessive weight bearing through the affected arm. No distractive forces on shoulder
Criteria to Progress	<ul style="list-style-type: none"> Full AROM of shoulder and elbow Proper scapular mechanics with ROM and functional activities Adequate pain control.

PHASE III: LATE POST-OP (6-8 WEEKS AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> Normalize strength, endurance, neuromuscular control Return to chest-level activities
Precautions	<ul style="list-style-type: none"> No strengthening or functional activities until near full ROM is achieved Avoid long-lever arm resistance for elbow flexion and supination
Intervention -Continue with Phase I-II interventions	<p><i>Strengthening</i></p> <ul style="list-style-type: none"> Continue shoulder and elbow PROM and AROM Initiate Resisted Biceps curls

	<ul style="list-style-type: none"> ● Initiate Resisted supination ● Resisted Triceps extension ● Resisted wrist extension/Resisted wrist flexion ● Continue shoulder isometrics <ul style="list-style-type: none"> ○ Progress resistance as tolerated ● Rhythmic stabilizations
Criteria to Progress	<ul style="list-style-type: none"> ● Full shoulder and elbow AROM ● Good tolerance to initial strengthening without increase in symptoms

PHASE IV: ADVANCED STRENGTHENING (8-12 WEEKS AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> ● Maintain full pain-free shoulder and elbow AROM. ● Progress shoulder and elbow strength. Focus on low load, high repetitions (30-50). Open and closed chain strengthening
Intervention -Continue with Phase II-III interventions	<p><i>Strengthening</i></p> <ul style="list-style-type: none"> ● Resisted IR in neutral ● Resisted ER in neutral ● Resisted shoulder IR in elevation ● Resisted shoulder ER in elevation ● Full can scapular plane arm elevation ● Side-lying ER ● Prone Rowing o 30/45/90 degrees abduction ● Push up plus progression (wall, counter, knees on floor, floor) ● Resisted PNF Diagonals <p><i>Cardiovascular Exercise</i></p> <ul style="list-style-type: none"> ● Can initiate return to running ● No swimming
Criteria to Progress	<ul style="list-style-type: none"> ● 5/5 shoulder and elbow strength ● Full shoulder AROM in all planes ● Good tolerance to strengthening exercise without increase in symptoms

PHASE V: EARLY RETURN-TO-SPORT (12-16 WEEKS AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> ● Progress strength and function of involved upper extremity ● Return to normal sport or work activities ● Maintain pain-free ROM ● Avoid excessive anterior capsule stress
Intervention -Continue with Phase II-VI interventions	<p><i>Strengthening/Sport-Specific Training</i></p> <ul style="list-style-type: none"> ● Initiate plyometric training starting with below shoulder level and progressing to overhead: Weighted ball drop/catch in standing, chest pass, overhead ball dribble against wall, prone 90/90 ball drop/catch, prone Y ball drop/catch, prone T ball drop/catch

	<ul style="list-style-type: none"> • Multi joint/compound strengthening • Interval return to sport specific training
Return to Sport	<ul style="list-style-type: none"> • No pain with progressive strengthening • 90% strength of involved extremity compared to uninvolved side with dynamometry testing • Within normal limits with field testing if applicable (e.g. closed kinetic chain upper extremity stability test, single arm seated shot-put test, ASH test/Modified ASH test) • Low level to no disability with patient reported outcome measure (e.g. Quick DASH)

Protocol adapted from Mass General Sports Medicine Physical Therapy Rehabilitation Protocols. See <https://www.massgeneral.org/orthopaedics/sports-medicine/physical-therapy/sports-rehab-protocols>