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REHABILITATION PROTOCOL: Biceps Tenodesis

This protocol is intended to guide clinicians and patients through the post-operative course for biceps tenodesis. This protocol is time based (dependent on tissue healing) as well as criterion based. Specific intervention should be based on the needs of the individual and should consider exam findings and clinical decision making. If you have questions, contact the referring physician.

The interventions included within this protocol are not intended to be an inclusive list of exercises. Therapeutic interventions should be included and modified based on the progress of the patient and under the discretion of the clinician.

Considerations for the Post-Operative Biceps Tenodesis

Many different factors influence the post-operative biceps tenodesis rehabilitation outcome, including rotator cuff tear size, type of repair, tissue quality, number of tendons involved, and individual patient factors like age and co-morbidities including increased BMI and diabetes. Consider taking a more conservative approach for more complex tears, including large/massive tears (>3 cm) and >1 tendon involvement

Post-Operative Complications:

If the patient develops a fever, unresolving numbness/tingling, excessive drainage from the incision, uncontrolled pain or any other symptoms you have concerns about, you should contact the referring physician.

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PHASE I: IMMEDIATE POST-OP: Passive Range of Motion (WEEKS 0-4 WEEKS AFTER SURGERY)

Rehab Goals	<ul style="list-style-type: none"> ▪ Protect biceps tenodesis. ▪ Minimize shoulder pain and inflammatory response. ▪ Keep incisions clean and dry. ▪ Restore passive range of motion (PROM) of shoulder and elbow. ▪ Adequate scapular function.
Sling	<ul style="list-style-type: none"> ▪ Wear sling as directed by surgeon. ▪ 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 laying supine to avoid shoulder extension ▪ No lifting objects. ▪ No friction massage to the proximal biceps/tenodesis site.
Interventions	<p>Range of motion/Mobility</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>Strengthening</p> <ul style="list-style-type: none"> ▪ Scapular retractions and mobility exercises ▪ Ball squeeze
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: Active Range of Motion (4-6 WEEKS AFTER SURGERY)

Rehab 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. ▪ No running. ▪ Avoid over stressing repaired tissue with stretching or manual therapy
Interventions	Range of Motion/Mobility

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*Continue with Phase I interventions	<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>Strengthening</p> <ul style="list-style-type: none"> ▪ Shoulder Isometrics <ul style="list-style-type: none"> ○ Flexion, extension, ER, IR, abduction <p>Manual Therapy</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>Cardiovascular Exercises</p> <ul style="list-style-type: none"> ▪ Walking or stationary bike - avoid excessive weight bearing through affected arm. No distractive forces on shoulder
	<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: Initial Strengthening (6-8 WEEKS AFTER SURGERY)

Rehab 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.
Additional Interventions	<p>Strengthening</p> <ul style="list-style-type: none"> ▪ Continue shoulder and elbow PROM and AROM

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*Continue with Phase I-II Interventions	<ul style="list-style-type: none"> ▪ Initiate Resisted Biceps curls ▪ 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)

Rehab 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.
Additional Interventions *Continue with Phase I-III interventions	<p>Strengthening</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 <ul style="list-style-type: none"> ○ 30/45/90 degrees abduction ▪ Push up plus progression (wall, counter, knees on floor, floor) ▪ Resisted PNF Diagonals <p>Cardiovascular Exercise</p> <ul style="list-style-type: none"> ▪ Can initiate return to running ▪ No swimming
Criteria to Progress	<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.

PHASE V: Return-to-Sport (12-16 WEEKS AFTER SURGERY)

Rehab Goals	<ul style="list-style-type: none"> ▪ Restore full PROM and AROM ▪ Enhance functional use of upper extremity
Additional Interventions *Continue with	<p>Range of motion/mobility</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

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Phase II-IV interventions	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
Criteria to Progress	<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).

**Acknowledgement: This rehab protocol was largely adopted from the protocols at MGH Sports Medicine Physical Therapy, which can be found at <https://www.massgeneral.org/orthopaedics/sports-medicine/physical-therapy/sports-rehab-protocols>*