Rehabilitation Protocol for Distal Biceps Tendon Repair

This guideline is intended to assist clinicians in managing the post-operative care of patients who have undergone distal biceps tendon repair. The protocol is both time-based, corresponding with tissue healing, and criterion-based. Interventions should be tailored to the individual, taking into account examination results and clinical judgment. The timelines for achieving expected outcomes may vary depending on the surgeon's preferences, any additional procedures that were performed, and potential complications. Clinicians who require support in managing a post-operative patient should seek guidance from the referring surgeon.

The exercises and interventions outlined in this protocol are not exhaustive. Therapeutic strategies should be adapted according to the patient's progress and at the clinician's discretion.

Key Considerations for Post-operative Distal Biceps Tendon Repair
Several factors can affect rehabilitation outcomes following distal biceps tendon repair, including postoperative pain, swelling, and the specific suture materials used by the surgeon. It is recommended that clinicians work closely with the referring physician to understand the type of repair performed and to adhere to any necessary precautions regarding range of motion and lifting restrictions.

If the patient experiences symptoms such as fever, persistent numbness or tingling, excessive drainage from the incision site, uncontrolled pain, or any other concerning symptoms, they should immediately contact the referring physician.

PHASE I: IMMEDIATE POST-OP
(DAYS 0-1 AFTER SURGERY)

Rehabilitation Goals	• Reduce post-operative pain • Reduce post-operative edema • Protect surgical repair • Patient education of surgical precautions and expectations of progression • Optimize tissue healing environment
Precautions	• Non-weight bearing on repaired upper extremity. • AVOID active elbow flexion and forearm supination until Week 4 • NO LIFTING with repaired upper extremity until Week 8
Brace	• Initial immobilization: posterior elbow orthosis with elbow in 90 degrees flexion with forearm in 0 degrees of pronation/supination for 5-7 days (unless otherwise indicated by surgeon) • Hinged elbow brace: with brace set locked from 90 degrees of flexion to full flexion, initiate elbow flexion and forearm pronation/supination passive range of motion (PROM) at 5-7 days post-operative
Interventions	• Modalities to reduce post-operative edema and pain control • Grip strengthening with forearm/wrist in neutral position • Scar massage
Criteria to Progress	• Adequate maintenance of post-operative pain and edema control • Progression of elbow passive range of PROM in elbow flexion and forearm pronation/supination within confines of hinged elbow orthosis is based upon referring surgeon's assessment of surgical repair.

PHASE II: INTERMEDIATE POST-OP
(WEEKS 2-6 AFTER SURGERY)

Rehabilitation Goals	• Reduce post-operative pain • Reduce post-operative edema • Protect surgical repair • Patient education of surgical precautions and expectations of progression • Optimize tissue healing environment (avoid nicotine and caffeine) • Improve elbow flexion and forearm pronation/supination PRROM in hinged brace • Initiate elbow flexion and forearm pronation/supination active-assisted range of motion (AAROM) and active range of motion (AROM) in hinged brace
Precautions	• Non-weight bearing on repaired upper extremity • No lifting with repaired upper extremity
Brace	*Hinged Elbow Brace (set locked to allow restricted extension ROM):* • 2nd week: 90 degrees to full flexion • 3rd week: 45 degrees to full flexion • 4th week: 30 degrees to full flexion • 5th week: 20 degrees to full flexion • 6th week: discharge hinged elbow brace
Additional Intervention *Continue with Phase I interventions	*Swelling Management* • Ice, compression, elevation (check with MD re: cold therapy) • Retrograde massage *Range of Motion* *Week 2* • Elbow flexion/extension PROM within confines of hinged elbow brace • Forearm pronation/supination PROM with elbow at 90 degrees, in hinged elbow brace • Shoulder AROM as needed, avoiding hyper-extension • Wrist and hand AROM *Week 3* • Elbow flexion/extension PROM within confines of hinged brace • Forearm pronation/supination PROM with elbow at 90 degrees flexion in hinged elbow brace *Week 4* • Elbow flexion/extension AROM in gravity-eliminated plane in hinged elbow brace • Forearm pronation/supination AROM with elbow at 90 degrees flexion and forearm supported *Week 5* • Elbow flexion AROM in gravity-eliminated plane in hinged elbow brace, progressing to against gravity in hinged elbow brace, with removal of brace for AROM if full and painless against gravity • Forearm pronation/supination AROM with elbow at 90 degrees flexion without support
Criteria to Progress	• Adequate maintenance of post-operative pain and edema control • Full elbow flexion AROM and forearm pronation/supination AROM against gravity, without brace, and without increased pain or swelling

PHASE III: LATE POST-OP
(WEEKS 7-10 AFTER SURGERY)

Rehabilitation Goals	• Protect surgical repair • Prevent muscle inhibition • Improve cardiovascular endurance • Maintain scapulothoracic endurance
Precautions	• Non-weight bearing to repaired upper extremity until Week 8 • Begin gradual weight bearing with elbow flexed at Week 8, progress to extended elbow by Week 10 • No lifting with repaired upper extremity until Week 8
Additional Intervention *Continue with Phase I-II interventions	*Range of Motion:* • Begin combined/composite motions (i.e. extension with pronation). If significant ROM deficits present at week 8, discuss progression to more aggressive PROM with referring orthopedic surgeon *Weight-Bearing Progression:* • Wall push ups • Push ups on elevated table • Modified forearm plank (elbows bent) • Quadruped progression with elbows extended: *Scapulothoracic Strength/Endurance:* • Prone scapular slides with shoulder extension to neutral • Serratus wall slides • Seated scapular retraction • Wall scapular protraction/retraction with elbows extended at Week 10 *Conditioning:* • Treadmill walking and running • Stationary bike (gradually progress weight bearing on involved upper extremity over Weeks 7-10 beginning with elbow flexed and progressing to elbow extended
Criteria to Progress	• Full, pain-free ROM of shoulder, elbow, wrist, and hand • Proper scapulothoracic mechanics • Full A/PROM to repaired elbow and forearm with normal grip strength

PHASE IV: TRANSITIONAL
(WEEKS 11-15 AFTER SURGERY)

Rehabilitation Goals	• Increase functional strength of operated upper extremity • Initiate strengthening at Week 10
Additional Intervention *Continue with Phase II-III interventions	*Range of Motion:* • Continue with combined/composite range of motion, focusing on proper mechanics of shoulder, elbow, wrist, and hand *Strengthening:* • At Week 10, initiate submaximal isometrics of elbow flexors, extensors, supinators, and pronators at Week 10. • Over Weeks 10-12, progress from submaximal isometrics to submaximal isotonics: o Resisted bicep curl (pronated, neutral, and supinated grip) o Resisted pronation and supination o Resisted tricep extension

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PHASE IV: TRANSITIONAL
(WEEKS 11-15 AFTER SURGERY) CONTINUED

Additional Intervention *Continue with Phase II-III interventions	• Progress shoulder strengthening program with light upper extremity weight training: o Standing resisted shoulder elevation o Standing shoulder PNF diagonals o Resisted Prone I, Prone Y, Prone T o Rows o Resisted shoulder ER, Resisted shoulder IR o Supine shoulder protraction o Wall push ups o Quadruped stability progression
Criteria to Progress	• Full, pain-free ROM of shoulder, elbow, wrist, and hand • Proper scapulothoracic mechanics

PHASE V: EARLY RETURN TO SPORT
(MONTHS 4-6 AFTER SURGERY)

Rehabilitation Goals	• Increase strength and endurance of repaired upper extremity
Additional Intervention *Continue with Phase II-IV interventions	*Advanced Strengthening:* • Continue Phase IV exercises • Rhythmic stabilizations • High plank stability progression • Bilateral upper extremity plyometrics after Week 16 (based on control and response) • Single arm plyometrics after Week 20-22 (based on control and response)
Criteria to Progress	• Full, pain-free ROM of shoulder, elbow, wrist, and hand • Proper scapulothoracic mechanics • Full A/PROM to repaired elbow and forearm with normal grip strength

PHASE VI: UNRESTRICTED RETURN TO SPORT
(MONTHS +6 AFTER SURGERY)

Rehabilitation Goals	• Increase strength of operated upper extremity • Return to sport
Additional Intervention *Continue with Phase II-V interventions	• Focus on progression of sport-specific movements • Graded participation in practice, with full, pain-free practice prior to participation in competition
Criteria to Discharge	• Full, painless elbow/wrist ROM • Shoulder total ROM within 5° of non-throwing shoulder • > 40° horizontal adduction of throwing shoulder • < 15° Glenohumeral IR deficit. • Elbow, shoulder and wrist strength with MMT, HHD or isokinetic: o ER/IR ratio: 72-76% o ER/ABD ratio: 68-73% o Throwing shoulder IR: > 115% of non-throwing shoulder o Throwing shoulder ER: > 95% of non-throwing shoulder o Elbow flexion/extension: 100-115% of non-throwing shoulder o Wrist flexion/extension: 100-115% of non-throwing shoulder

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PHASE VI: UNRESTRICTED RETURN TO SPORT

(MONTHS +6 AFTER SURGERY) CONTINUED

Criteria to Discharge	• Functional test Scores: o Prone Drop ball test – 110% of non-throwing side o 1-arm balls against wall @ 90/90: • 2lb ball • 30 seconds with no pain • 115% of throwing side o Single arm step down test: • 8-inch • 30 seconds • Satisfactory score on Kerlan-Jobe Orthopedic Clinic shoulder and elbow score (KJOC) throwers assessment • Physician Clearance • Independent with HEP
Return-to-Sport	• For the recreational or competitive athlete, return-to-sport decision making should be individualized and based upon factors including but not limited to previous injury history, the level of demand on the upper extremity, contact vs non-contact, and frequency of participation. Close discussion with the referring surgeon is strongly recommended prior to advancing to a return-to-sport rehabilitation program.

For further assistance or to schedule an appointment, please contact **iOrtho - The Orthopedic Institute** at **833-464-6784** or visit our website at **iorthomd.com** to text/email us. Our team is dedicated to providing personalized care and guidance throughout your rehabilitation journey.