

# Distal Biceps Tendon Repair

## Indications

Complete rupture of the distal bicep tendon at its insertion with contracture.

## Considerations

1. Repair should occur within the first three to six weeks post-rupture in order to restore the normal muscle/tendon unit length and avoid contracture.
2. An average loss of 40% supination strength and 30% flexion strength may occur if not repaired.
3. The repair technique will vary among surgeons, and the tendon may be reinserted using a single or two-incision approach. Sutures, an EndoButton, or screws may be used for reattachment, and generally there is a bone tunnel and anchoring to the bicipital tuberosity on the radius.

**You must know the surgical procedure before starting the rehabilitation protocol.**

## General Precautions for the Client

1. A posterior brace/cast with the elbow in 90 degrees of flexion, and wrist in neutral or supination, is to be worn for the first two weeks post-operatively.
2. No lifting for 6 weeks post-op with EndoButton, and for 8-9 weeks with sutures.
3. No active flexion or supination ROM for first 3-4 weeks post-op.
4. Avoid passive extension and end range extension for 4-6 weeks post-op.

## General Post-Operative Goals Weeks 1-4

1. Allow soft tissue healing while avoiding stress on the anchor fixation.
2. Gradually increase PROM flexion to full, and active extension to -30 degrees.
3. Reduce pain and inflammation.
4. Scar management.

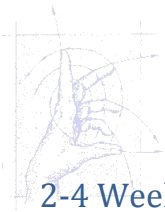
## Post-Operative Protocol

### 1-2 Weeks Post-Op

- Client is in an immobilizing cast with the elbow at 90 degrees of flexion, and the wrist neutral or supinated.

### 2-4 Weeks Post-Op

- Cast is generally removed 2-3 weeks post-op.
- Fabrication of a hinged elbow brace allowing full passive flexion and -30 degrees of extension (EndoButton), or a posterior/long arm splint with -40 degrees of extension (suture fixation). Splint should be worn full time (removed for self-care and exercises).
- Work towards full passive elbow flexion (do not push into overt pain).



### 2-4 Weeks Post-Op (Cont'd)

- Active elbow extension to -30 degrees (done in splint with straps removed).
- Active pronation to full, and passive supination.
- Active wrist flexion/extension exercises and a tendon gliding program for the fingers.
- All exercises can be done 3-5 times a day (2 sets of 10 repetitions).
- Teach client scar massage after suture removal, to be done 3-5 times a day.
- Education on elevation of arm for edema control; ice or heat as needed.
- Shoulder ROM exercises or pendulums should be performed to prevent stiffness and upper trapezius tightness.
- If available, may use elbow CPM for PROM within the ranges specified above.

### General Post-Operative Goals for Weeks 4-8

1. Continue to protect repair and allow healing.
2. Re-establish full AROM (6-8 weeks).
3. Begin light strengthening program (6-8 weeks).
4. Return to light ADL's.

### Post-Operative Protocol

#### 4-6 Weeks Post-Op

- Week 4: Elbow extension to -20 degrees.
  - Week 5: Progress to -10 degrees.
  - Week 6: May work towards full active extension and splint removal.
  - Remold extension splint or adjust hinge brace to allow for new extension requirements.
- May add active elbow flexion with EndoButton technique.
  - Start with active-assisted/gravity eliminated; may use TheraBall on inclined bench.
- **If EndoButton technique was NOT used, do NOT begin active flexion until 6 weeks post-op.**
- Begin active supination, continue active pronation.
- Therapist may perform passive mobilization to work towards full pronation/supination if incomplete.
- Continue with scar massage. May use ultrasound.

#### 6-8 Weeks Post-Op

- Work to full AROM in all ranges.
- Wean from splint.
- If ROM limitations exist, therapist should perform passive mobilization to help restore range. May also use a Mayo Clinic Turnbuckle or J.A.S. for prolonged static flexion and extension stretching. If pain is a limiting factor, consult surgeon and rule out heterotrophic ossification.
- EndoButton Repair: Begin isometric strength exercises for elbow flexion, extension, supination, and pronation at 6 weeks.
  - Wait until 8 weeks if any other surgical technique was performed.



### 6-8 Weeks Post-Op (Cont'd)

- Begin light free weight exercises (2-3 lb) for elbow flexion, extension, supination, and pronation at 8 weeks for EndoButton repair.
  - Wait until 10-12 weeks for other surgical techniques.
- Modalities: muscle stimulation to biceps, ultrasound to scar, and soft tissue massage as needed.

### General Post-Operative Goals for Weeks 8-12

1. Full AROM achieved.
2. Progress strength program.
3. Return to all ADL's.
4. Prepare for return to work.

### Post-Operative Protocol

#### 9-12 Weeks Post-Op

- Continue with the above program.
- Perform baseline strength testing with a digital dynamometer at 12 weeks post-op.
- Progress resistance exercises as appropriate. Consider the client's occupational demands and provide exercises to maximize function.

#### 12+ Weeks Post-Op

- Continue as above.
- Return to work for non-labour-intensive occupations; continue to progress for return to work in manual labour positions when appropriate.
- Discharge when ROM and strength gains have plateaued or the client has returned to normal ADL's and occupational demands have been met.

### Complications

1. Heterotrophic ossification (HO) may develop. Decreased and painful ROM or a block in forearm rotation may occur with HO. The client should then be referred back to the surgeon for reassessment.
2. Neuropraxia may occasionally occur, particularly to the posterior interosseous nerve.
3. Re-rupture can occur if repair loaded to failure; **client education and compliance is extremely important.**

### References

Spencer et al. Is therapy necessary after distal biceps tendon repair? *Hand* 2008(3):316-319.

Jerome, E. "Biceps Tenodesis Protocol" The Brigham and Women's Hospital, Inc. Department of Rehabilitation Services. 2007