Postoperative Treatment for Biceps Tenodesis—Dr. Trueblood

**Indications:** Patients with anterior shoulder pain secondary to long head of biceps tenosynovitis or unstable SLAP tears in patients >35yo that is refractory to anti-inflammatories, activity modification, and optimization of strength and shoulder mechanics may benefit from moving the origin of the biceps tendon from the superior pole of the glenoid to the proximal humerus.

**Technique:** The origin of the long head of the biceps is visualized arthroscopically and debrided back to healthy tissue using a full-radius shaver. The tendon is pinned intra-articulary with a spinal needle and then transected with arthroscopic scissors. A subacromial decompression is then performed and the spinal needle identified as it enters the rotator interval. The rotator interval is then opened with an electrocautery device the bicipital groove is opened to the leading edge of the pectoralis major insertion. The biceps is then externalized and a locked, racking stitch is placed within distal 2cm of the tendon. A unicortical pilot hole is then placed at the base of the bicipital groove and the tendon is inset then secured with a bioabsorbable tenodesis screw. Wounds are irrigated, closed, and the dressed. The patient is then placed into a sling, extubated, and transported to the recovery room. This procedure is typically performed on an outpatient basis.

**Phase I Rehabilitation – Protect Tenodesis/ Regain PROM**

**Postoperative Precautions:**
- Avoid shoulder AROM.
- No lifting of objects. Full time sling use to prevent inadvertent contraction of biceps.
- When reclining or lying supine, the patient is encouraged to keep a pillow or blanket behind their elbow, preventing extension through the shoulder, to reduce stress on the anterior shoulder and subcoracoid space. This hurts. As a rule of thumb, the patient should always be able to see their elbow.
- No excessive shoulder motion beyond side pocket, especially into internal rotation (IR)
- No excessive stretching or sudden movements (particularly external rotation (ER))
- No supporting of body weight by hand or elbow on involved side
- May remove dressing and shower at 4 days postop, letting water run over the skin and patting the wounds dry with a clean towel. No standing in a pool for 3 weeks. No swimming for 10 weeks.
- Recommend a clean t-shirt over the shoulder in lieu of band-aids after
- No driving for 4 weeks
- No active range of motion (AROM) of the elbow
Day 3-5 after surgery, PT/OT 1-2x/ week with HEP

- Patient education in:
  - Codman exercises
  - AROM/ PROM of wrist and hand
  - PROM of elbow and forearm. Patient instructed in performing PROM at home in reclining chair to support posterior humerus.
  - Shoulder PROM in all planes to tolerance. No manipulation.
  - Scapular “clock” exercises. Progress to scapular isometric exercises.
  - Modalities prn. Patient encouraged to continue using their cryotherapy device at home as needed.

- Work activity: may return to sedentary/ cognitive work.

1st clinic follow-up 2 weeks after surgery--
- Wound check, remove stitches and apply steri-strips
- Assess pain control, refill pain medications as needed.
- Physical Therapy Referral 1-2x/week x 6 weeks by protocol
- Work note:
  - No lifting, pushing, or pulling.
  - 1 pound weightlifting
  - May type and write
  - May drive at 4 weeks

- Expected return to work:
  - Cognitive/ Sedentary:1-2 weeks
  - Light/ Medium Manual: 6 weeks
  - Heavy Manual/ Overhead: 12 weeks

Physical Therapy 1-2x/ week x 6 weeks.

- Wean from sling as tolerated, starting at 4 weeks
- Continue with phase I exercises:
- Progress to phase II when:
  - Full PROM of shoulder and elbow
  - Easy completion of phase I activities and independent with HEP
  - usually at ~4 weeks postop

Phase 2- Protect Tenodesis/ Regain AROM
Start pulley exercises for AAROM of shoulder. When tolerated, add Lawn Chair Shoulder Motion Progression for AROM to tolerance.
Active elbow flexion/extension and forearm supination/pronation (No resistance)
Begin incorporating posterior capsular stretching as indicated
  - Side lying internal rotation stretch (sleeper stretch)
- Cross body adduction stretch
Glenohumeral and scapulothoracic mobilizations when ROM is significantly less than expected.
Modalities prn- emphasize cryotherapy for anti-inflammatory activity.
Scar Massage/ Management.

**HEP**
Advance to Phase 3 when (usually ~6-8 weeks):
- No pain or limitations with all Phase 2 exercises
- Full AROM of shoulder and elbow achieved with good scapular coordination and no substituting activities.

**2nd clinic visit 6 weeks after surgery**--
- Wound check
- Assess pain control/ medication needs. Refill prescriptions as needed.
- Assess range of motion (AROM/ PROM)
- Physical Therapy Prescription: Continue therapy per protocol, 1-2x/ week for 6 weeks.
- Work note: 20# weight lifting. No overhead lifting.
- Expected return to work:
  - Cognitive/ Sedentary: 1-2 weeks
  - Light/ Medium Manual: 6 weeks
  - Heavy Manual/ Overhead: 12 weeks

**Phase 3 - Strengthening/ Normalization of Activity (starts approx. post op week 6-8)**
Range of Motion: AROM/ PROM of shoulder, elbow, wrist, and hand. Emphasize pec minor stretching and scapular retraction posture.

Strengthening (low resistance and high repetitions):
- Rotator Cuff and Scapular Stabilization Strengthening
  - IR/ER in scapular plane
  - Start in low dynamic positions and advance as tolerated when there are no compensatory/ substitution patterns
    - sidelying ER with towel roll
    - theraband ER at 30° abduction
    - theraband IR at 0, 45, and 90° of abduction
  - Full-can scapular plane raises with good mechanics
    - advance to elevation in other planes when full elevation is achieved
      - flexion/ extension/ abduction/ adduction at increasing angles of elevation
    - Prone rowing at 30/45/90 degrees of abduction to neutral arm position
    - Pushup plus (wall→ counter→ knees on floor→ floor)
    - Forward punch
    - Cross body diagonals with theraband
Rhythmic stabilization drills
- Initiate bicep curls with light resistance, progress as tolerated
- Initiate resisted supination/pronation
- Modalities prn
- HEP

Advance to Phase 4 (Strengthening and Return to Vigorous Activity) when:
- All phase 3 exercises can be performed without pain and with good coordination.
- Chest height lifting, pushing, and pulling performed without limits

Phase 4 Strengthening (usually 10-12 weeks after surgery):
AROM/ PROM of shoulder, elbow, wrist, and hand as needed.
Strengthening:
- Progress isotonic strengthening as tolerated by pain and maintenance of mechanics
- Advance strengthening above 90° when strength is 5/5 below 90°
- Transition to sport/ work specific strength and conditioning program as tolerated. Add upper body weight lifting exercise as tolerated for low resistance and 20 repetitions per set.
  - Patients with heavy manual laboring jobs or jobs requiring extensive climbing may benefit from formal work conditioning/ hardening at this time. Please contact Dr. Trueblood’s office via Leslie Hedge, RN at (573)388-3026 to make the appropriate arrangements.
- Reassure patient that, with consistent effort, their strength and endurance should continue to improve noticeably for the next 6-8 months.

Modalities prn
- HEP

Next clinic visit at 12 weeks after surgery--
- Assess ROM and Strength
- DASH and ASES Scores
- Return to Work: No limitations.
- For patients with unusually high demand occupations, advance to work conditioning/ hardening as needed. Follow-up visit in 4 weeks if this is ordered.
- Follow-up prn for majority of patients.

Return to Sport:
- Golf
  - chip and putt: 8 weeks
  - driving: 12 weeks
- Tennis: 12 weeks