



Biceps Tenodesis

1. Defined

- a. Surgical procedure where the long head of the biceps is cut from its attachment on the labrum and is reattached to the humerus.
- b. This procedure reduces tension on the labrum as well as allows for pathological tendon tissue to be removed.

2. Goals

- a. Protect healing tissue
- b. Control post-operative pain and swelling
- c. Improve post-operative range of motion
- d. Improve functional strength, stability, and neuromuscular control

3. Rehabilitation Principles

- a. Be aware of compromised and/or repaired tissue
- b. Healing tissue should never be overstressed but appropriate levels of stress are beneficial
 - i. Inflammatory phase days 1-3
 - ii. Tissue repair with proliferation phase days 3-20
 - iii. Scar tissue most responsive to remodeling 21-60 days but occurs from 1 to 8 weeks
 - iv. Final maturation taking as long as 360 days
- c. Tissue reactivity of the shoulder and tissue healing will dictate the rehabilitation process. Reactivity is determined by the clinical exam
 - i. Level I Reactivity
 1. Resting pain, pain before end range.
 2. Aggressive stretching is contraindicated.
 3. Grade I-II mobilization for neurophysiological effect
 - ii. Level II Reactivity
 1. Pain onset occurs with end range resistance
 2. Grade III and IV mobilization appropriate per patient tolerance
 - iii. Level III Reactivity
 1. Engagement of capsular end feel with little or no pain.
 2. Pain occurs after resistance.
 3. Grade III and IV mobilization and sustained stretching is appropriate
- d. Eliminate inflammation as the cause of pain and neuromuscular inhibition
- e. Ensure return of appropriate joint arthrokinematics

- f. Apply techniques in loose packed unidirectional and progress to close packed and multidirectional based on tissue healing and patient response
- g. Facilitate performance of complex skills with proprioceptive and kinesthetic techniques: Low to high, sagittal to frontal, bilateral to unilateral, stable to unstable, slow to fast, fixed to unfixed surface
- h. Encourage life-long activity modification shoulder safe zone
- i. Factors that affect the rehab process
 - i. Surgical approach
 - ii. Tissue quality
 - iii. Presence of concomitant pathology
 - iv. Age of patient
 - v. Comorbidities
 - vi. Pre and intra-operative range of motion
 - vii. Pain and sensitivity levels
 - viii. Cognitive abilities
- 4. Post op functional guidelines
 - a. Dependent on functional range and strength, and neuromuscular control
 - b. Drive
 - c. Work
 - d. Sport
- 5. Post op equipment guidelines
 - a. Sling
 - b. CPM
 - c. Brace

6. Rehabilitation Guidelines

- a. Week 1-3; Protective ROM Phase
 - i. Precautions/Limits:
 - 1. No resisted elbow flexion
 - 2. No resisted supination
 - 3. Sling for comfort
 - ii. Rx/Clinical Expectations
 - 1. Maintain full elbow and shoulder ROM, passive and active assisted.
 - 2. Treat for inflammation, pain, swelling per tissue reactivity.
 - 3. Maintain wrist and forearm function as well as core scapular strength.
- b. Week 4-6; Strengthening Phase
 - i. Precaution/Limits
 - 1. Pain-free sub-maximal PREs
 - ii. Rx/Clinical Expectations
 - 1. Resisted elbow flexion training beginning with isometrics week 4 and progressing to isotonic and theraband week 6
 - 2. Work deltoid and rotator cuff couple.
- c. Week 7+; Function Phase
 - i. Precaution/Limits
 - 1. No heavy bicep work
 - ii. Rx
 - 1. Return functional strength
 - 2. closed chain and plyometric progression