Hazel Dell Orthopedics and Sports Medicine

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Distal Biceps Repair

1. Defined
    a. Surgical procedure where the terminal biceps tendon is reattached to the radial tuberosity after a complete or high grade (>50%) avulsion.
    b. This procedure allows a patient to regain full supination and elbow flexion strength after this potentially functionally limiting injury.
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. Dependant 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
    d. Assistive device (crutch, cane, walker)

6. Rehabilitation
    a. 1-7 days; Soft tissue healing/protection
        i. Precautions/Limits:
            1. No resisted elbow flexion
            2. No resisted supination
            3. No passive extension
            4. No passive pronation
            5. Sling at all times
        ii. Rx/Clinical Expectations
            1. Maintain full wrist and finger flexion/extension
            2. Treat for inflammation, pain, swelling per tissue reactivity.
            3. Maintain core scapular strength and motion.
            4. Edema control techniques (ie. gentle retrograde massage, light compressive dressings)
        iii.
    b. Week 1-3; Protective ROM Phase
        i. Precautions/Limits:
            1. No resisted elbow flexion
            2. No resisted supination
            3. Sling for comfort; should be fully weaned from sling by 14-21 days

ii. Rx/Clinical Expectations
    1. Improve elbow ROM to gain a full arc of flexion/extension and pronosupination
        a. Gentle AAROM for extension and pronation within patients pain tolerance
        b. Gentle PROM for flexion and supination within patients pain tolerance
    2. Maintain full shoulder ROM, passive and active assisted.
    3. Treat for inflammation, pain, swelling per tissue reactivity.
    4. Maintain wrist and forearm function as well as core scapular strength.
    5. Scar and soft tissue mobilization if wound completely healed
    6. Edema control techniques (ie. gentle retrograde massage, light compressive dressings, gentle squeezing of soft foam sponge, ball, to pump edema out of hand.)

c. Week 4-6; Light Strengthening Phase
    i. Precaution/Limits
        1. Pain-free sub-maximal PREs
    ii. Rx/ClinicalExpectations
        1. Continue to improve elbow ROM to gain a full arc of flexion/extension and pronosupination
            a. AAROM for extension and pronation within patients pain tolerance
            b. PROM for flexion and supination within patients pain tolerance
        2.
        3. Resisted elbow flexion training beginning with isometrics week 4 and progressing to isotonic and theraband week 6 based on patient tolerance to activities
        4. Resistive wrist strengthening within pain tolerance
        5. Work deltoid and rotator cuff couple.
d. Week 7-12; Function Phase
    i. Precaution/Limits
        1. No heavy bicep work
    ii. Rx
        1. Return functional strength
        2. Use of involved extremity in light-moderate resistance ADL's
        3. Functional strength and endurance training addressing self care, work, and recreational goals. Sports specific needs may be addressed
        4. closed chain and plyometric progression
        5. Perform exercises in patients stable, pain free range
        6. Return to most functional activities by 12 weeks

e. 3-6 month
    i. Begin sports specific therapy with gradual return to full activities as long as asymptomatic