Single Incision Distal Biceps Repair with Hemi-Krackow Suture Technique: Surgical Technique and Early Outcomes
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INTRODUCTION
Distal biceps tendon ruptures are relatively uncommon injuries Account for 3-10% of all biceps brachii injuries.
- Injury most often occurs in the dominant arm of males in their 5th and 6th decade of life.
- Rupture results from excessive eccentric load as elbow moves from flexion to extension
- Surgical fixation indicated in active patient
  Large variety in number of incisions or fixation method
- Non-operative treatment can lead to:
  40% loss of forearm supination strength
  30% loss of elbow flexion strength
  86% loss of supination endurance

METHODS
- Retrospective chart analysis
  - Any patient who underwent distal biceps repair by a single surgeon from 2011 – 2013
- Inclusion criteria
  - Primary repair
    - Single anterior incision approach and fixation with suture anchors and hemi-Krackow technique
- Exclusion
  - Use of alternate fixation technique
  - Revision surgery
  - Use of allograft or reconstruction
- Eligible patients were contacted by telephone and asked a series of questions regarding current functional status

SURGICAL TECHNIQUE
- Single anterior incision
- Two Mitek G2 anchors in decorticated bicipital tuberosity
- Hemi-Krackow suture with single strand from each anchor
- Free suture limb used as the post placed through central aspect of tendon stump and advanced bringing tendon down to bone
- Sliding locking knot tied on top of tendon

RESULTS
- 14 patients met inclusion criteria – All males
- Average age 51.3 years (27.8-66.4)
- Dominant arm injured 9/14 (64%)
- Average time from injury to surgery 6.7 weeks (1.1 to 21.6)
  8 of 14 (57%) had surgery greater than 4 weeks post injury, and were defined as chronic injuries
- Average follow-up 16.4 months (6.8 to 34.3)
- 10 workman’s compensation (WC) patients
- Elbow ROM was full (0 to >130°) in all patients
- Grip strength 101.5% of contralateral arm (70.6%-121.4%)
- Overall average QuickDASH score was 6.5 (0 – 36.5)
  Acute patients (n=6) average score 8.35 (0-36.4)
  Chronic patients (n=8) average score 5.11 (0-15.9)
  WC patients (n=10) average score 8.2 (0-36.4)
  Non-WC patients (n=4) average score 2.3 (0-9.1)
- All 14 were satisfied with surgical result
  1 patient not satisfied with cosmetic appearance
  11 of 14 reported full return to pre-injury function
  Remaining three patients reported only slight guarding of activities involving operative arm
  One patient with transient lateral antebrachial cutaneous nerve palsy

DISCUSSION
- Our single incision technique provides satisfactory fixation of distal biceps tendon rupture at early follow-up with good to excellent results
- All patients reported satisfaction with surgery, regardless of duration between injury and operation
- This method allows for primary repair of subacute and chronic ruptures allowing easier advancement of the tendon to its insertion with appropriate the tension on the footprint