

Outcomes and Complications in Distal Biceps Repair

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Background

- Distal biceps ruptures are often fixed surgically
- Complication rates following surgical repair have been reported to range from 0-36%¹⁻³
- There is limited information regarding patient and surgical specific factors related to adverse events

Objective

- Identify incidence of complications stratified by:
 - Patient-specific risk factors
 - Surgical-specific risk factors
 - Emphasis on 1 vs 2 incision approach

Methods

- Between 2000-2012, a retrospective chart review identified patients with a diagnosis and surgical treatment of distal biceps rupture based upon CPT and ICD9/10 codes
- A chart review was performed to identify demographic data, perioperative, and postoperative data with focus on complications, and to identify risk factors for those complications

¹Beks RB, Claessen FM, Oh LS, Ring D, Chen NC. Factors associated with adverse events after distal biceps tendon repair or reconstruction. *J Shoulder Elbow Surg.* 2016;25(8):1229-1234.

²Bisson L, Moyer M, Lanighan K, Marzo J. Complications associated with repair of a distal biceps rupture using the modified two-incision technique. *J Shoulder Elbow Surg.* 2008;17.

³Cain RA, Nydick JA, Stein MI, Williams BD, Polikandriotis JA, Hess AV. Complications following distal biceps repair. *J Hand Surg Am.* 2012;37(10):2112-2117.

- 268 patients (258 males, 10 females)
 - Mean follow-up of 8.4 months
 - Mean age of 41 years
- There was *no significant* result in comparison of adverse event using either approach, to:
 - Age, sex, BMI, chronicity of injury, fixation technique, or tobacco use
- The anterior 1 incision approach was significant for:
 - Increased risk of *any complication (Table 1)*, *any heterotopic ossification (HO) formation (Table 2)*, and *any nerve injury (Table 3)* after distal biceps repair
- Overall complication rate of 32.8%
 - 11.2% major
 - 5.6% required reoperation
- Major Complications:** (Figure 1) symptomatic HO, hematoma/infection requiring I&D, re-tear requiring repair, unresolved nerve injury
- Minor Complications:** (Figure 2) transient nerve injury, superficial cellulitis or stitch abscess without intervention, asymptomatic HO

Results

Table 1. Any Complication after Repair

Risk Factor	N	Complication	Hazard Ratio (95% CI)	P-Value
Approach				
1 Incision	31	20	2.7 (1.70, 4.28)	0.01
2 Incision	237	68	1.0 (ref)	

Table 2. Any HO after Repair

Risk Factor	N	Complication	Hazard Ratio (95% CI)	P-Value
Approach				
1 Incision	22	9	2.0 (0.94, 4.29)	0.07
2 Incision	143	33	1.0 (ref)	

*Radiographs not obtained in 101 patients, adjusted appropriately
*Only 14.7% received postoperative Indocin prophylaxis for HO

Table 3. Any Nerve Injury after Repair

Risk Factor	N	Complication	Hazard Ratio (95% CI)	P-Value
Approach				
1 Incision	31	17	7.7 (3.48, 17.24)	0.01
2 Incision	236	32	1.0 (ref)	

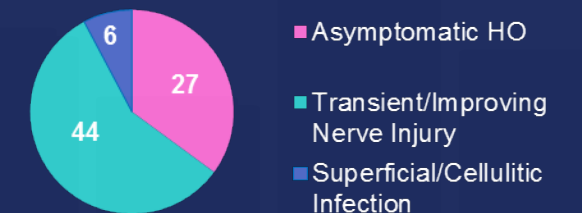
Table 4. Fixation Technique

Technique	1 Incision	2 Incision
Cortical button/screw (7.5%)	19	1
Cortical button only (1.5%)	4	0
Suture/bone tunnels (88.8%)	2	220
Achilles allograft (6.3%)	2	15
Suture anchor (0.7%)	1	1
Suture to brachialis (1.1%)	3	0

Figure 1. Major Complications



Figure 2. Minor Complications



Conclusions

- The anterior 1 incision approach was associated with a 2.7x higher complication risk
 - Significantly more transient nerve injury and overall HO formation
 - 5.6% required secondary surgery
- Nearly 1 out of 4 patients, regardless of approach, will have a minor or major complication