Title:
Outcomes of Surgically and Non-Surgically Treated Distal Biceps Tears

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Conflict(s) of Interest:
The authors declare there are no conflict of interest to report

Introduction

The outcomes of surgically and non-surgically treated distal biceps tears are currently poorly understood. The purpose of this study was to evaluate midterm patient-reported outcomes of surgically and non-surgically treated partial and complete distal biceps tears and report the conversion-to-surgery rate for patients initially treated without surgery.

Methods

We identified patients with partial or complete distal biceps tears through an *International Classification of Disease* code query of our institution's database from January 1, 2018 to December 31, 2022. Records were reviewed to collect demographics and confirm distal biceps tear based on MRI. Patients were sent a survey on March 6, 2024 regarding treatment and outcome using the QuickDASH outcome measure. Outcomes including patient acceptable symptom state (PASS) achievement rate were compared between groups.

Results

Three hundred and sixty-six distal biceps tears were included in the study. There were 99 (27.0%) partial biceps tears and 267 (73.0%) complete biceps tears. Twenty-five (25.3%) partial tears were treated non-surgically, and 25 (9.4%) complete tears were treated non-surgically. Among those initially treated without surgery, 13/38 (34.2%) partial tears and 14/39 (35.9%) complete tears ultimately underwent surgery (overall conversion to surgery rate 35.1%). Using an as-treated analysis, mean (SD) QuickDASH score and PASS achievement rate were 11.8 (14.9) with 72.0% PASS for non-surgical partial tears, 8.8 (16.3) with 85.1% PASS for surgical partial tears, 10.1 (11.6) with 88.0% PASS for non-surgical complete tears, and 5.5 (10.6) with 92.6% PASS for surgical complete tears.

Discussion and Conclusion

There is a high rate of conversion to surgery for distal biceps tears initially treated non-surgically. Patients with non-surgically treated partial biceps tears report worse midterm outcomes than surgically-treated partial and complete tears and achieve an acceptable symptom state less frequently than surgically treated complete tears. Our findings support surgical treatment for distal biceps tears in most cases.

Figure 1. Demographics table of patient population

		Partial Tear		Complete Tear	
	Total Data N = 366	Non-Operative N = 25	Operative N = 74	Non-Operative N = 25	Operative N = 242
Age	53.5 (10.5)	56.4 (7.03)	55.6 (10.4)	58.1 (10.6)	52.0 (10.6)
Sex:					
Male	347 (94.8%)	22 (88.0%)	72 (97.3%)	23 (92.0%)	230 (95.0%)
Female	19 (5.19%)	3 (12.0%)	2 (2.70%)	2 (8.00%)	12 (4.96%)
BMI	30.8 (5.27)	30.7 (6.16)	29.9 (4.82)	33.5 (5.91)	30.9 (5.17)
Smoking:					
No	241 (72.2%)	18 (85.7%)	46 (65.7%)	14 (70.0%)	163 (73.1%)
Former	63 (18.9%)	3 (14.3%)	16 (22.9%)	5 (25.0%)	39 (17.5%)
Current	30 (8.98%)	0 (0.00%)	8 (11.4%)	1 (5.00%)	21 (9.42%)
Diabetes:					
No	335 (94.4%)	21 (84.0%)	67 (91.8%)	24 (100%)	223 (95.7%)
Yes	20 (5.63%)	4 (16.0%)	6 (8.22%)	0 (0.00%)	10 (4.29%)

Figure 2. QuickDASH scores and overall achievement of PASS rate

		Partial Tear		Complete Tear		P Value
	Total Data N = 366	Non-Operative N = 25	Operative N = 74	Non-Operative N = 25	Operative N = 242	
Quick DASH	6.88 (12.4)	11.8 (14.5)	8.75 (16.3)	10.1 (11.6)	5.47 (10.6)	**0.003 ***
Met PASS Rate:						**0.008 #**
No	39 (10.7%)	7 (28.0%)	11 (14.9%)	3 (12.0%)	18 (7.44%)	
Yes	327 (89.3%)	18 (72.0%)	63 (85.1%)	22 (88.0%)	224 (92.6%)	

*** Non-surgical partial and non-surgical complete tears had worse QuickDASH scores compared to surgical complete tears (p=0.02 for both)**

 # Patients with surgical complete tears were more likely to achieve PASS than patients with non-surgical tears (p=0.03).