Comparison of Complication Rates in Reverse Total Shoulder Arthroplasty Performed for Degenerative Conditions Versus Proximal Humerus Fractures: A National Database Study

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INTRODUCTION: Indications for reverse total shoulder arthroplasty (RTSA) have been expanding. In addition to degenerative joint disease (DJD), RTSA is now being utilized to treat a variety of conditions, including proximal humerus fracture (PHF). The purpose of this study was to compare clinical outcomes in RTSA performed for DJD versus PHF.

METHODS: A retrospective analysis of the PearlDiver National Database was performed. ICD10 codes were utilized to identify RTSA patients from 2015-2018 and separate them into DJD and PHF cohorts. Demographics, comorbidities, hospital data were identified and compared using two sample t-test and chi-square test. Systemic complications at 90 days and surgical complications at 90 days, 1 year, and 2 years were compared using multivariable logistic regression.

RESULTS: 15,678 patients (92.6% DJD, 7.4% PHF) were identified. PHF patients were more likely to be older (70.3 vs. 69.7 years p =.026), female (83.5% vs 62.2%, p<0.001), and have more medical comorbidities (CCI 3.42 vs. 3.17, p=0.006) than DJD patients. After controlling for patient factors, PHF patients were more likely to develop UTI (OR 1.65, p<0.001), DVT (OR 1.76, p=0.024), and hematoma (OR 3.83, p<0.001) within 90 days of RTSA than DJD patients (Table 1). At 90 days, 1 year and 2 years postoperatively, RTSA for PHF was also more likely to be complicated by periprosthetic fracture (OR 2.57, p<0.001) and instability (OR 2.02, p<0.001) than RTSA for DJD (Table 2).

DISCUSSION AND CONCLUSION: Patients with DJD and PHF undergoing RTSA represent different patient populations with distinct postoperative clinical outcomes. RTSA for PHF is more likely to have postoperative complications than for DJD, which is significant in an era of bundled payments.

Table 1. Systemic Complications at 90 Days

	DJD N (%)	PHF N (%)	OR (95% CI)	p-value
Cardiac Arrest	5 (0.03)	1 (0.1)	3.63 (0.18-24.1)	0.251
Pneumonia	279 (1.9)	33 (2.8)	1.45 (0.98-2.08)	**0.051**
UTI	604 (4.2)	90 (7.7)	1.65 (1.29-2.08)	**<0.001**
Sepsis	109 (0.8)	14 (1.2)	1.58 (0.85-2.7)	0.119
Reintubation	17 (0.1)	3 (0.3)	1.96 (0.45-6.02)	0.291
DVT	145 (1)	19 (1.6)	1.76 (1.04-2.82)	**0.024**
PE	9 (0.06)	0	N/A	N/A
Wound Disruption	53 (0.4)	4 (0.3)	1.49 (0.57-3.25)	0.365
Hematoma	88 (0.6)	18 (1.6)	3.83 (2.18-6.41)	**<0.001**
Transfusion	106 (0.7)	14 (1.2)	1.36 (0.74-2.32)	0.289

DVT = deep vein thrombosis; PE = pulmonary embolism; UTI = urinary tract infection

Table 2. Surgical Complications at 2 Years

	DJD N (%)	PHF N (%)	OR (95% CI)	p-value
PPFX	135 (0.9)	27 (2.3)	2.57 (1.64-3.88)	**<0.001**
PJI	55 (0.4)	4 (0.3)	1.09 (0.23-1.39)	0.99
Stiffness	2009 (13.8)	184 (15.8)	0.18 (0.08-2.08)	**0.038**
Instability	504 (3.5)	68 (5.9)	2.02 (1.53-2.62)	**<0.001**
Aseptic Loosening	11 (0.1)	0	N/A	N/A

PPFX = periprosthetic fracture; PJI = prosthetic joint infection