Outcomes of Total Shoulder Arthroplasty for Inflammatory Arthritis Versus Osteoarthritis: A Nationwide Matched Cohort Analysis from 2016-2020

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INTRODUCTION: Inflammatory arthritis (IA) represents a less common indication for total shoulder arthroplasty (TSA) than osteoarthritis (OA). The safety and efficacy of TSA in this population has not been as well studied compared to OA. We analyzed the differences in outcomes between IA and OA patients undergoing TSA.

METHODS: Patients who underwent primary anatomic total shoulder arthroplasty (aTSA) and reverse total shoulder arthroplasty (rTSA) from 2016-2020 were identified in a large healthcare database. Inflammatory arthritis (IA) patients were identified using ICD-10 diagnosis codes and compared to osteoarthritis controls. Patients were matched in a 1:8 fashion by age (+/- 3 years), sex, race, and presence of pertinent comorbidities. Patient demographics, hospital factors, patient comorbidities, and 90-day complications were compared between the two cohorts. Descriptive statistics and regression analysis were employed with significance set at $p<0.05$.

RESULTS: Prior to matching, 5,885 IA cases and 96,998 OA controls were identified. Patients with IA were more likely to be female, have prolonged length-of-stay, and increased total costs ($p<0.0001$). After matching, 4,732 IA cases and 37,856 controls remained. IA patients were at increased risk of periprosthetic fracture (OR 2.27, 95%-CI 1.56-3.30, p=<0.0001), dislocation (OR 2.50, 95%-CI 1.23-5.10,p=0.015), deep wound infection (OR 2.50, 95%-CI 1.23-5.10,p=0.009), and postoperative rotator cuff tear (OR 8.00, 95%-CI 1.13-56.83, p=0.013). IA patients were at higher risk of pneumonia (OR 1.43, 95%-CI 1.00-2.04,p=0.048), acute blood loss anemia (OR 1.45, 95%-CI 1.32-1.61, $p<0.0001$), urinary tract infection (OR 1.33, 95%-CI 1.03-1.71, p=0.03), and sepsis (OR 1.86, 95%-CI 1.27-2.74, p=0.0001).

DISCUSSION AND CONCLUSION: Inflammatory arthritis represents a distinctly morbid risk profile compared to osteoarthritis patients with multiple increased surgical and postoperative medical complications. A multidisciplinary approach in preoperative risk stratification of IA undergoing shoulder replacement is recommended.