

Perioperative Complications and Length of Stay in Patients with Diabetes Mellitus After Aseptic Revision Total Shoulder Arthroplasty

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INTRODUCTION: Total Shoulder Arthroplasty (TSA) is an effective treatment for shoulder osteoarthritis. As the number of elective TSAs continues to increase, so does the incidence of TSA failures and revisions. Diabetes Mellitus (DM) is known to heighten complications after orthopaedic procedures. Therefore, the purpose of this study was to explore the association between DM and the risk of 30-day complications and increased hospital length of stay beyond 7 days following one and two component aseptic revision TSA.

METHODS: The National Surgical Quality Improvement Program (NSQIP) database was queried to identify all one-component and two-component aseptic revision TSA cases from 2006 to 2021 and were categorized as DM or non-DM. Demographic variables, preoperative characteristics, and postoperative outcomes were recorded. Multivariate logistic regression was used to model the probability of major complications and prolonged hospital stay (>7 days).

RESULTS SECTION: We identified 1979 patients undergoing revision TSAs and categorized them as DM (n = 404) or non-DM (n=1575). The incidence of 30-day major complications after revision TSA was 1.73% in diabetics and 1.59% in non-diabetics (P < 0.001). Additionally, prolonged hospital stay (>7 days) rates were 3.47% and 1.52% (P < 0.001) for diabetics and non-diabetics, respectively. Multivariable analysis revealed that risk factors associated with increased major complications included hypertension (OR = 3.98) and history of severe COPD (OR = 2.63). Diabetes was neither a risk factor nor a protective factor against development of major complications. Risk factors for prolonged hospital stay included ASA greater than 2 (OR = 3.64), diagnosis of diabetes (OR = 1.81), and preoperative hematocrit <35% (OR = 4.30).

DISCUSSION: In our study, diabetes was associated with significantly longer hospital length of stay after aseptic revision TSA compared to non-diabetic patients. Factors associated with increased 30-day complications included severe COPD and hypertension. Although 30-day complication rates remain relatively equal between DM and non-DM patients, orthopaedic surgeons must consider the implications of diabetes on patient selection, preoperative risk stratification, and postoperative outcomes in patients undergoing aseptic revision TSA.

CLINICAL RELEVANCE: This research underscores the necessity for orthopedic surgeons to be mindful of diabetes in patients undergoing aseptic revision TSA. Although short-term complications may not differ significantly, the link between diabetes and prolonged hospitalization highlights the need for tailored preoperative assessment and postoperative care to optimize outcomes in this group.

Table 1. Postoperative Data

	Total n = 1979	No Diabetes n = 1575	Diabetes n = 404	p-value
Major Complications	1.62% (32)	1.59% (25)	1.73% (7)	NS
Minor Complications	2.93% (58)	3.24% (51)	1.73% (7)	NS
Major or Minor Complication	4.30% (85)	4.51% (71)	3.47% (14)	NS
Readmission	4.30% (85)	4.32% (68)	4.21% (17)	NS
Hospital Stay (days)	1.77 ± 1.91 (0.00, 26.00)	1.72 ± 1.82 (0.00, 26.00)	1.98 ± 2.20 (0.00, 19.00)	0.028
Hospital Stay >7 Days	1.92% (38)	1.52% (24)	3.47% (14)	0.023

Table 2. Multivariable logistic regression to assess risk factors for major complications or prolonged hospital stay (greater than 7 days).

	Major Complication	Prolonged Stay
Age > 75 years	NS	NS
BMI > 30	NS	NS
Female Sex	NS	NS
ASA > II	NS	3.64*
Two Components Replaced	NS	NS
Comorbidities		
Diabetes	NS	1.81*
Hypertension	3.98*	NS
Current Smoker	NS	NS
History of Severe COPD	2.63*	NS
Congestive Heart Failure	NS	NS
Bleeding Disorder	NS	NS
Hematocrit <35%	NS	4.30***

Data are presented as Odds Ratio. Statistical significance is displayed as *p<0.05. BMI, body mass index; ASA, American Society of Anesthesiologists; NS = not significant