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David Kim M.D. Advisor(s): Danielle Casagrande M.D.

Co-author(s): Vinay Bijoor, Michael Yeroushalmi, Max Detweiler, David H. Mai, Lauren Grossman, Jad Bou Monsef, Paul Pipitone, Colin Woon, Claude Scott, Daniel Caligiuri

Preoperative Transfusion is Associated with Higher Risk of Mortality Among Patients Undergoing Total Shoulder Arthroplasty

Medical optimization prior to surgery may involve preoperative blood transfusion, which could have associated complications. This study sought to assess the relationship between preoperative blood transfusion and 30-day mortality among total shoulder arthroplasty (TSA) patients.

Methods:

A retrospective cohort study was performed using the National Surgical Quality Improvement Program (NSQIP) database of TSA cases occurring between 2012-2021. Inclusion criteria was age >18 years. Preoperative transfusion, the primary exposure, was defined as transfusion of >1 unit of whole or packed red blood cells within 72 hours prior to operative start time. Two cohorts were made based on occurrence of preoperative transfusion. The primary outcome was 30-day mortality. Potential confounders included basic demographics (age, sex, race, ethnicity), baseline health status (functional status, ASA classification, BMI, smoking status within one year, history of diabetes), and procedure characteristics (admission origin, surgical setting, emergency procedure designation). Univariate analyses assessed differences between the two cohorts. Multivariable regression assessed the relationship between preoperative transfusion and 30-day mortality.

Results:

During the study period, 38,260 patients underwent TSA, of which 87 (0.2%) received preoperative transfusion. The highest proportion of patients were 70-79 years, female, White, non-Hispanic, independent, ASA class 3, obesity, no smoking history, and no diabetes. On multivariable regression analysis patients with preoperative transfusion had 7.93 times higher odds (95% CI 2.02 to 23.81; $p<0.001$) of 30-day mortality following TSA.

Conclusion:

Compared to patients without, those with preoperative blood transfusion who undergo TSA have a higher risk of 30-day mortality. Further studies characterizing reasons for requiring preoperative transfusion, as well as supportive strategies during perioperative period, may optimize patient outcomes.