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Declan Tozzi M.D.

Advisor(s): Danielle Casagrande M.D.

Co-author(s): Vinay Bijoor , Tymon Krzywinski , David Kim, David H. Mai, Jules David Hip-Flores, Jad Bou Monsef, Paul Pipitone , Daniel Wilen, Daniel Caligiuri, Clifford Voigt

Elevated Preoperative International Normalized Ratio (INR) May Predict Bleeding Transfusion Among Patients Undergoing Total Shoulder Arthroplasty.

Introduction: Preoperative international normalized ratio (INR) is used to assess coagulation function. Previous studies cite elevated INR as a predictor of bleeding complications and major cardiovascular events. This study assessed preoperative INR and the need for bleeding transfusion among patients undergoing total shoulder arthroplasty (TSA).

Methods: A retrospective cohort study was performed using the National Surgical Quality Improvement Program (NSQIP) database of TSA from 2012-2021. Patients were divided into four cohorts based on preoperative INR value. The primary outcome of study was bleeding transfusion. Potential confounders were basic demographics, baseline health status, and procedure characteristics. Univariate analyses assessed differences between the four cohorts. Multivariable regression assessed the relationship between preoperative INR and bleeding transfusion.

Results: In the study period, 15,397 patients had TSA. The INR ≤ 1 , 1.01-1.24, 1.25-1.49, and ≥ 1.5 cohorts contained 10,274, 4,342, 430, and 351 patients, respectively [Table 1].

On multivariable regression analysis adjusted for potential confounding factors, patients with preoperative INR 1.01-1.24 (OR 1.77, 95% CI: 1.43, 2.18; $p < 0.001$), INR 1.25-1.49 (OR 3.25, 95% CI: 2.19, 4.72; $p < 0.001$), and INR ≥ 1.5 (OR 2.09, 95% CI: 1.23, 3.37; $p = 0.004$) had increased risk of bleeding transfusion following TSA compared to patients with INR ≤ 1 [Table 2].

Conclusion: Patients with elevated preoperative INR undergoing TSA have increased risk of intra- or post-operative bleeding transfusion, indicating possible application of INR as a preoperative predictor of bleeding complications in TSA. Further studies characterizing management of coagulation function and supportive perioperative strategies for patients with impaired function may optimize outcomes.