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Can Elevated International Normalized Ratio (INR) Predict Reoperation for Patients Undergoing Total Shoulder Arthroplasty?

Introduction:

Preoperative international normalized ratio (INR) is used to assess coagulation. Elevated INR has been linked to bleeding complications and major cardiovascular events. This study evaluates the relationship between preoperative INR and reoperation rates in patients undergoing total shoulder arthroplasty (TSA).

Methods:

A retrospective cohort study of TSA cases (2012-2021) was performed using the National Surgical Quality Improvement Program (NSQIP) database. Patients aged ≥ 18 years were grouped by preoperative INR: ≤ 1 , 1.01-1.24, 1.25-1.49, and ≥ 1.5 . Underweight patients (BMI < 18.5) were excluded due to insufficient sample size for confounding control. The primary outcome was reoperation within 30 days. Potential confounders included demographics (age, sex, race, ethnicity), baseline health status (functional status, ASA classification, BMI, smoking within one year, diabetes, recent immunosuppressive therapy), and procedure characteristics (admission origin, surgical setting, anesthesia modality, preoperative transfusion). Univariate and multivariable regression analyses with confounding adjustment assessed the relationship between INR and reoperation.

Results:

Among 15,397 TSA patients, INR cohorts contained 10,274 (≤ 1), 4,342 (1.01-1.24), 430 (1.25-1.49), and 351 (≥ 1.5) patients. Most were aged 70-79 years, White, non-Hispanic, independent in function, ASA class 3, obese, and without smoking, diabetes, or immunosuppressive therapy. The INR ≥ 1.5 cohort was predominantly male, while others were mostly female [Table 1]. On multivariable analysis, INR 1.01-1.24 had 1.50 times higher odds (95% CI 1.12-2.00; $p=0.006$) of reoperation compared to INR ≤ 1 [Table 2].

Conclusion:

Slightly elevated preoperative INR may increase reoperation risk in TSA. Further research on the link between preoperative INR and reoperation rates is needed, particularly in underweight patients. Future studies optimizing coagulation and perioperative strategies may improve outcomes.