# General versus Regional Anesthesia in Open Reduction Internal Fixation of Metacarpal Shaft/Neck Fractures: A NSQIP Analysis between 2008 and 2016

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INTRODUCTION: Metacarpal shaft/neck fracture open reduction and internal fixation (ORIF) is commonly performed to fix displaced metacarpal shaft fractures, and patients undergoing these procedures tend to have comorbid conditions such as hypertension or smoking. This procedure is usually done utilizing general or regional anesthesia techniques, however there is a lack of data supporting either method over the other.

METHODS: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database was queried via CPT codes between 2008 and 2016 for all metacarpal shaft/neck fracture ORIF (CPT codes 26615). These were then categorized into isolated general or isolated regional anesthesia groups, and 1:1 propensity score match controlling for estimated probability of age and gender. Patient demographics, comorbidities, and 30-day post-operative outcomes were collected. Univariate analysis and multivariate logistic regression models controlling for the above covariates were used to identify general or regional anesthesia as risk factors for adverse postoperative outcomes.

RESULTS: A total of 3077 patients that underwent a metacarpal shaft/neck fracture ORIF between 2008 and 2016 were identified (69.6% general anesthesia, 6.2% regional anesthesia). Using 1:1 propensity score matching, 192 patients having undergone general or regional anesthesia each were isolated. Mean patient age was 39.38 years, 66.9% were male, and 77.1% were white. 14 (3.6%) of patients had diabetes, 67 (17.4%) had hypertension that required medication, 27 (7%) had anemia, and 107 (27.9%) were current smokers. 8 (2.1%) had an open wound with or without infection, and 34 (8.9%) patients were ASA 3 or higher. Post-operatively, 2 (0.5%) of patients experienced any kind of complication, with all of them being wound complications. 2 (0.5%) of patients required readmission, and 3 (0.8%) required reoperation. Regional anesthesia was found to be associated with a significantly shorter operative time (59.45 mins vs. 67.80 mins, $p=0.03$). Estimated probability of morbidity and mortality was not found to differ significantly (all, $p>0.058$). Age, BMI, and ASA class were not found to differ significantly (all, $p>0.679$). Comorbidities were not found to differ significantly (all, $p>0.156$). Compared to regional anesthesia, the general anesthesia group did not experience significantly higher rates of 30-day wound complications, readmission, and reoperation (all, $p>0.082$). Using multivariate logistic regression, general anesthesia was not found to be an independent predictor of higher risk for post-operative complications (all, $p>0.655$). There was no difference in readmission and reoperation between the two groups (all, $p>0.910$).

DISCUSSION AND CONCLUSION: There are no significant differences seen in comorbidities of patients undergoing each type of anesthesia. While there was no significant difference in risk of postoperative complications, regional anesthesia was associated with a shorter operative time. When determining what form of anesthesia to provide patients undergoing metacarpal shaft/neck fracture ORIF, operative time should be taken into consideration.