

General Anesthesia Versus Spinal Anesthesia in Tibial Shaft Repair: An ACS NSQIP Analysis 2008-2016

Introduction: Tibial shaft repair procedures are often used to treat patients with complex fractures. Tibial shaft repair can be done under general or spinal anesthetic techniques. This study aims to identify postoperative outcomes in patients undergoing a tibial shaft repair and to provide support for one anesthetic technique over the other.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database between 2008 and 2016 was queried via CPT codes for tibia shaft fracture repairs, including intermedullary nailing and external fixation (CPT codes 27759, 20690). These were organized into isolated general or spinal anesthesia groups. A 1:1 propensity score match controlled for morbidity, age, and sex. Patient comorbidities and 30-day postoperative outcomes were collected. Univariate analysis and multivariate logistic regression models controlling for the above covariates were used to identify general or spinal anesthesia as risk factors for adverse outcomes.

Results: 3108 patients who underwent a tibia shaft repair between 2008 and 2016 were identified (84.0% general anesthesia, 5.5% spinal anesthesia). Using 1:1 propensity score matching, 129 patients having undergone general or spinal anesthesia were isolated. Compared to spinal anesthesia, the general anesthesia group experienced significantly higher rates of 30-day wound (12.4% vs. 4.7%, $p = 0.026$) and pulmonary complications (6.2% vs. 0.8%, $p=0.018$). General anesthesia was found to be an independent predictor of higher risk for postoperative complications (OR: 3.8 [1.6 – 9.0], $p=0.003$), specifically, bleeding requiring transfusion (OR: 4.1 [1.2 – 13.7], $p=0.021$).

Conclusion: Patients undergoing tibial shaft repair under general anesthesia were associated with a higher risk for bleeding that necessitated transfusion to treat. This risk may play a role when determining which type of anesthesia should be used for patients undergoing tibial shaft repairs.