General Anesthesia versus Spinal Anesthesia in Intertrochanteric Femur Fracture Treatments: An ACS NSQIP Analysis 2008-2016

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Purpose: Intertrochanteric fractures are common among the elderly, and typically result from ground-level falls. Because the majority of elderly patients who experience intertrochanteric fractures have more comorbidities, these fractures are associated with increased probabilities of morbidity and mortality. Therefore, it becomes important to determine whether general or spinal anesthesia used during treatment yields better postoperative outcomes.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database was retrospectively queried between 2008 and 2016 for patients undergoing operative treatment of intertrochanteric fractures with either a sliding hip screw or intramedullary nailing (CPT codes 27244, 27245), and grouped into general and spinal anesthesia cohorts. These groups were 1:1 propensity score-matched with respect to estimated probability of morbidity, body mass index, age, and gender. Patient demographics, comorbidities, and 30-day postoperative outcomes were collected and analyzed between both groups.

Results: 42,468 patients who had operative treatment of an intertrochanteric fracture between 2008 and 2016 were isolated (67.0% general anesthesia, 19.0% spinal anesthesia). 1:1 propensity score-matching yielded 2 groups of 4045 patients, who have been given either general or spinal anesthesia. Postoperatively, 3718 patients (46.0%) experienced adverse events and 3347 (41.4%) had postoperative complications. General anesthesia was associated with longer operative times (63.1 vs 57.7 min, P<0.001). Spinal anesthesia was associated with longer lengths of hospitalization (7.2 vs 6.3, P<0.001) (Table 1). Postoperatively, patients elected for general anesthesia experienced more adverse events (49.5% vs 42.4%, P<0.001) and complications (44.9% vs 37.8%, P<0.001), as compared to spinal anesthesia (Table 1). Multivariate logistic regression analysis determined general anesthesia to be an independent predictor for increased risk of adverse events (odds ratio [OR] 1.4 [1.2-1.5]; P<0.001), postoperative complications (OR 1.4 [1.2-1.5]; p< 0.001), wound complications (OR 1.5 [1.4-1.6]; p< 0.001), bleeding requiring transfusion (OR 1.5 [1.4-1.6]; P<0.001), failure to wean (OR 2.2 [1.2-4.0]; P = 0.010), cardiac complications (OR 1.3 [1.0-1.7]; P = 0.027), and thrombophlebitis (OR 1.7 [1.1-2.6]; P = 0.014).

Conclusion: General anesthesia was determined to be an independent predictor for increased risk of adverse events, postoperative complications, wound complications, bleeding requiring transfusion, failure to wean, cardiac complications, and thrombophlebitis, as compared to spinal anesthesia.

POSTER ABSTRACTS

Postoperative Outcomes	Univariate OR (95% CI)	P-value	Multivariate OR (95% CI)	P-value
Adverse Events	1.3 (1.2-1.4)	<0.001	1.4 (1.2-1.5)	<0.001
Any Postoperative Complication	1.3 (1.2-1.5)	<0.001	1.4 (1.2-1.5)	<0.001
Wound Complications	1.5 (1.3-1.6)	<0.001	1.5 (1.4-1.6)	<0.001
Superficial SSI	1.4 (0.8-2.4)	0.308	1.3 (0.7-2.4)	0.325
Deep SSI	0.7 (0.2-1.9)	0.441	0.7 (0.2-1.8)	0.416
Wound dehiscence	-	-	-	-
Bleeding requiring Transfusion	1.5 (1.3-1.6)	<0.001	1.5 (1.4-1.6)	<0.001
Pulmonary Complications	1.0 (0.9-1.3)	0.694	1.1 (0.9-1.3)	0.604
Pneumonia	1.0 (0.8-1.2)	0.776	1.0 (0.8-1.2)	0.873
Pulmonary Embolism	0.8(0.5-1.3)	0.317	0.8 (0.5-1.3)	0.317
Failure to wean (Ventilator > 48 hours)	2.1 (1.1-3.8)	0.017	2.2 (1.2-4.0)	0.010
Unplanned Intubation	1.3 (0.8-1.9)	0.267	1.3 (0.9-1.9)	0.216
Renal Complications	0.9 (0.7-1.1)	0.345	0.9 (0.7-1.1)	0.339
Progressive Renal Insufficiency	1.1 (0.5-2.2)	0.852	1.1 (0.5-2.2)	0.840
Acute renal failure	1.9 (0.7-4.7)	0.186	2.0 (0.8-5.1)	0.140
Urinary tract infection	0.9 (0.7-1.1)	0.298	0.9 (0.7-1.1)	0.288
Neuro Complications (CVA/Stroke)	1.1 (0.7- 1.9)	0.679	1.1 (0.6-1.9)	0.692
Cardiac Complications	1.3 (1.0-1.7)	0.030	1.3 (1.0-1.7)	0.027
Cardiac arrest	1.5 (0.9-2.5)	0.128	1.5 (0.9-2.5)	0.110
Myocardial Infarction	1.0 (0.7-1.4)	0.863	1.0 (0.7-1.5)	0.840
DVT/Thrombophlebitis	1.7 (1.1-2.6)	0.014	1.7 (1.1-2.6)	0.014
Sepsis-Related Complications	1.2 (0.8-1.6)	0.373	1.2 (0.8-1.6)	0.346
Sepsis	1.1 (0.7-1.6)	0.759	1.1 (0.7-1.6)	0.734
Septic Shock	1.3 (0.8-2.2)	0.285	1.4 (0.8-2.3)	0.267
Organ/Space SSI	6.0 (0.7-49.9)	0.097	6.2 (0.7-51.4)	0.092
Readmission	1.2 (1.0-1.4)	0.055	1.2 (1.0-1.4)	0.049
Reoperation	1.0 (0.7-1.3)	1.000	1.0 (0.7-1.3)	0.999
Mortality	1.1 (0.9-1.3)	0.368	1.1 (0.9-1.4)	0.281

Table 2. Odds Ratios of Postoperative Outcomes in General Anesthesia Cohort Compared to Spinal Anesthesia Cohort.