

Does Anesthesia Type Influence Risk of Perioperative Complications in Hip Fracture Surgery?

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Purpose: Several recent studies have advocated the use of regional anesthesia (spinal and regional nerve blocks) over general anesthesia as a means of reducing the risk of perioperative complications associated with geriatric hip fracture surgery. However, conclusive evidence demonstrating clinically significant differences in complication rates between regional and general anesthesia in this patient population does not exist. We sought to explore further the impact of anesthesia type on perioperative complications in hip fracture surgery using the recently expanded American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database—a large, multicenter, prospective cohort of hip fracture patients.

Methods: Four CPT codes (27235, 27236, 27244, and 27245) representing the spectrum of hip fracture surgery were used to identify a prospective cohort of 7808 hip fracture patients from 2005-2011 in the ACS-NSQIP database. Only patients who were administered general anesthesia or regional anesthesia (spinal or nerve blocks) were included in the analysis ($n = 7764$). Perioperative complications were recorded and categorized as minor (wound dehiscence, superficial surgical site infection, pneumonia, and urinary tract infection) or major (death, deep wound infection, myocardial infarction, deep venous thrombosis, pulmonary embolism, peripheral nerve injury, sepsis and septic shock). Using a multivariate logistic regression analysis controlling for age, medical comorbidities, American Society of Anesthesiologists (ASA) status, operative time, and baseline functional status, perioperative complications were compared between patients receiving general anesthesia and patients receiving regional anesthesia. A χ^2 analysis was then used to compare complication rates between the two groups.

Results: 7764 patients with hip fractures were included in the final analysis. Rates of minor, major, and total complications by anesthesia type are displayed in Table 1. Patients undergoing surgical treatment for hip fractures who received regional anesthesia had a significantly higher risk of total complications (odds ratio [OR]: 1.05, $P = 0.025$) and minor complications (OR: 1.09, $P = 0.001$) compared with patients who were administered general anesthesia. There was no significant difference in risk of major complications between the two groups (OR: 0.99, $P = 0.720$) (Table).

Anesthesia Type	Minor Complication Rate	Major Complication Rate	Overall Complication Rate
General	9.0% (527/5840)	12.2% (714/5840)	17.9% (1,044/5840)
Regional nerve blocks	7.2% (8/111)	8.1% (9/111)	12.6% (14/111)
Spinal	11.6% (211/1813)	11.6% (211/1813)	19.6% (356/1813)
Total	9.6% (746/7764)	12.0% (934/7764)	18.2% (1414/7764)
OR, confidence interval (CI), <i>P</i> value	OR: 1.09, 95% CI: 1.035-1.150, <i>P</i> = 0.001	OR: 0.99, 95% CI: 0.940-1.043, <i>P</i> = 0.72	OR: 1.05, 95% CI: 1.006-1.094, <i>P</i> = 0.025

Conclusion: In this large prospective cohort of patients with hip fractures, regional anesthesia was associated with a small (OR = 1.05) but statistically significant increase in the risk of perioperative complications compared with general anesthesia. This increased risk is driven by a higher risk of minor complications in the regional anesthesia group (OR = 1.09). Considering the small odds ratios, the clinical significance of these findings remains unclear. Nonetheless, our results do not support the conclusions of several recent studies, which suggest decreased rates of perioperative complications with regional as compared to general anesthesia.

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