Paper #15

Does Neuraxial Anesthesia Decrease the Rate of Postoperative Complications and Blood Transfusions? An Analysis of 29,452 Primary Total Hip Arthroplasty

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Introduction: The impact of neuraxial anesthesia on postoperative complications and perioperative blood loss in THA is limited to small studies with variable results. Using a national database, we compared complications following THA using neuraxial and general anesthesia, and determined the independent risk factors for blood transfusions.

Methods: The National Surgical Quality Improvement Database includes prospectively collected perioperative lab, comorbidity, and post-operative complications data. THAs from 2005-2012 were analyzed. A propensity score model incorporated preoperative and perioperative variables to assess the conditional probability of receiving neuraxial versus general anesthesia. Univariate analysis was performed evaluating postoperative complications between neuraxial and general anesthesia. A multivariate analysis, utilizing the propensity score to balance the probability of receiving neuraxial anesthesia, determined independent risk factors for blood transfusion following THA.

Results: 29,452 primary THA (11,420 neuraxial) were included in this study. Propensity score balancing showed no preoperative differences between groups ($p>0.05$). Neuraxial anesthesia cases demonstrated shorter operative time (88.2 vs. 101.4 minutes; $p<0.001$) and length of stay (3.3 vs. 3.5 days; $p=0.03$), lower rates of overall (4.1% vs 4.8%; $p=0.006$) and medical complications (2.7 vs 3.5%; $p<0.001$), deep infection (0.23% vs. 0.37%; $p=0.04$), pneumonia (0.23% vs. 0.37%; $p=0.04$), unplanned intubation (0.16% vs. 0.29%; $p=0.015$), ventilation over 48 hours (0.04% vs. 0.13%; $p=0.03$), stroke (0.08% vs. 0.20%; $p=0.013$), and death (0.12% vs. 0.24%; $p=0.025$). Multivariate analysis demonstrated decreased risk of postoperative transfusion (OR=0.79; CI:0.69-0.91) using neuraxial anesthesia. Independent risk factors for transfusion included female sex (OR=1.90; CI:1.66-2.18), operative time (OR=1.23 per 30 minutes; CI:1.18-1.29), and a history of hypertension (OR=1.33; CI:1.16-1.51).

Conclusion: We present the largest series to date evaluating neuraxial versus general anesthesia in THA. Neuraxial anesthesia demonstrated fewer complications, and following multivariate regression, was a protective factor for blood transfusion. Independent risk factors for transfusion included female gender, prolonged operative time, and hypertension.