Preoperative anemia does not predict complications after single-level lumbar fusion: a propensity score-matched multi-center study

Bobby D Kim, MS, Adam I Edelstein, MD, Alpesh A Patel, MD, Francis Lovecchio, BA, John Y Kim, MD, FACS
Rosalind Franklin University, North Chicago, IL and Northwestern University, Evanston, IL

INTRODUCTION: Anemia has been widely implicated as a risk factor in various surgical procedures including elective spine surgery. No large-scale study has been performed to examine this relationship in single-level lumbar fusion surgery.

METHODS: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database was retrospectively reviewed to identify all patients who underwent single-level lumbar fusion procedures during 2006-2011. A propensity score matching algorithm was used to match anemic patients with non-anemic patients. Multivariate logistic regression analysis of unadjusted and propensity-matched cohorts was performed to examine the effect of preoperative anemia on 30-day postoperative complication rates and length of hospital stay.

RESULTS: A total of 2,960 patients met inclusion criteria. The propensity score matching procedure yielded 491 pairs of well-matched cohorts. Unadjusted overall complication rates and length of hospital stay.

CONCLUSIONS: For patients undergoing single level lumbar fusion, preoperative anemia is not associated with increased risk of 30-day complications or increased length of stay. Further studies are needed to independently validate this relationship in other spine surgeries.

Predicting poor outcomes in elective orthopaedic surgery patients with liver disease

Robert J Avino, BA, Jennifer Keller, MS, Heidi Israel, PhD, FNP, Lisa Cannada, MD, Dirk H Alander, MD, FACS
Saint Louis University Medical Center, Saint Louis, MO

INTRODUCTION: The treatment of patients with orthopaedic injury and liver disease has not been well studied. The Model for End-Stage Liver Disease (MELD) is a scoring system developed to assess preoperative liver dysfunction and to predict outcomes following surgery. We propose that the MELD score can be applied to orthopaedic patients with liver disease undergoing surgery to predict poor outcomes.

METHODS: Patients having orthopaedic surgical procedures (elective and nonelective) at Saint Louis University Medical Center within the past 10 years were identified, using ICD-9 codes for hepatitis and cirrhosis. Patient demographics, orthopaedic injury, and complications were recorded. A MELD score was computed for each patient using preoperative laboratory data. A poor outcome was defined as hospital stay >14 days, intraoperative blood transfusion, or readmission. Chi-squared and t-test were employed for analysis.

RESULTS: 204 patients met study criteria. The 69 patients with complete data represented our study group. Poor outcomes occurred in 36 (52%) patients. These patients had a significantly higher (p=0.05) mean MELD score, 12.0±7.5, than patients without poor outcomes, 7.6±6.2. Of the 38 elective patients, 23 (61%) had a poor outcome. These patients had a mean MELD score of 12.5±8.4 and a mean INR of 1.5±.43, which were not significantly higher than patients without poor outcomes.

CONCLUSIONS: Operating on patients with concurrent liver disease is challenging. The MELD score is a systematic way to assess patients with liver disease. However, the MELD score was not a significant predictor of poor outcomes in elective orthopaedic surgery as it is in other surgical specialties.

Prehospital risk stratification improves safety for elective hip and knee arthroplasty

Eric L Hume, MD, Finnah L Pio, MS, Laura M Koseim, MD, Craig L Israelite, MD
University of Pennsylvania School of Medicine and Penn Presbyterian Medical Center, Philadelphia, PA

INTRODUCTION: Kamath described our Risk Stratification Tool (RST) based on consecutive hip procedure case-control analysis. The risk factors most predictive for unplanned ICU admission were (1) age greater than 75; (2) creatinine clearance less than 60; (3) myocardial infarction; (4) Body Mass Index (BMI) greater than 35; (5) revision surgery. Two factors was the threshold for planned SICU admission. The threshold was set to be sensitive for patient safety.

METHODS: Study group is 2,853 hip or knee arthroplasty in 2012 and 2013. The study group includes 2,294 patients who were RSTed and 559 patients who were Not RSTed including readmissions, urgent admissions or insufficient data to stratify. The control group is 2,308 in 2010 and 2011.

RESULTS: There were no deaths among 2,294 RSTed during the index admission. There were three deaths in the full study group of 2,853 patients including readmission and urgent admissions for mortality rate of 0.11%. The control group mortality rate was 0.35%, eight deaths out of 2,308. Fisher exact two-tailed p = 0.072.

CONCLUSIONS: Because there were no deaths among our RSTed patients, we believe that stratification has been effective. Comparing all consecutive patients, there is a trend (p= 0.072) towards lower mortality rate.