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One-Year Incidence for Admission to a Critical Care Unit After Major Orthopedic Surgery

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Introduction: Unplanned admissions of postoperative patients to an intensive care unit (ICU) after discharge from a postanesthesia care unit (PACU) have a significant impact on surgical outcome. A few studies have documented an increase in length of hospital stay, medical costs, infection, and overall morbidity and mortality (M&M) for these patients. Preidentification of those patients at risk for postoperative ICU admissions and modification of their care might reduce these admissions and subsequent M&M. As a first step in this process, we identified the patients and reasons for admission to the ICU after major orthopedic surgery.

Methods: An institutional review board approved prospective descriptive analysis of patients ≥ 18 years old admitted to an ICU within 120 hours of discharge from a PACU after major orthopedic surgery. Data were collected by medical chart review and extraction of data from ClinCis (our computerized patient information system). Data were entered and analyzed in SPSS 17.0 for Windows.

Results: At one institution, from April 1, 2009, to March 31, 2010, a total of 12,229 patients underwent major orthopedic surgery: 3,469 had primary total hip arthroplasty (THA), 3,365 had primary total knee arthroplasty (TKA), 1,281 had spinal fusions, and 4,114 had other orthopedic procedures. Of these patients, 206 (1.68%) were admitted to an ICU within 120 hours of discharge from the PACU, including 57 with THA (1.6%), 60 with TKA (1.8%), and 43 with spinal fusions (3.4%). Cardiac complications was the major reason for an ICU admission (38%), followed by pulmonary (9.8%) and renal (7.9%) complications. Patients admitted to the ICU after surgery had multiple comorbidities: cardiac (40.3%), diabetes mellitus (18.4%), chronic renal insufficiency (14.1%), and pulmonary disease (12.6%); 8.7% had three or more comorbidities. This population was also older; the mean age of the surgical population was 61 years compared with 68 years for the ICU group. Patients admitted to the ICU were hospitalized for a mean of 32 hours longer.

Discussion: After major orthopedic surgery, older patients with multiple comorbidities are at risk for readmission to the ICU. Spinal fusion surgery carried a higher risk than arthroplasty, possibly related to length of surgery, type of anesthesia, blood loss, and postoperative pain. In contrast to published reports, in our orthopedic population, cardiac complications were more common than respiratory complications. Future studies will be directed to identifying a risk index for postoperative admission to the ICU and modification in our management to decrease the ICU admission incidence.