

59. THE EFFECT OF INTRAOPERATIVE REGIONAL ANESTHESIA ON ANTICIPATED ADMISSION TO THE INTENSIVE CARE UNIT

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Background and Objectives: Intensive care unit (ICU) beds are a limited resource. The criteria for and decision regarding ICU admission postoperatively is complex and may be affected by the patient's intraoperative course. The use of intraoperative regional anesthesia, in part by attenuating perioperative pathophysiology such as the surgical stress response, may result in a more stable intraoperative course and reduce the need for an ICU admission postoperatively. Therefore, we sought to evaluate whether the use of regional anesthesia would be effective at reducing the need for ICU admission.

Methods: A retrospective review of all patients undergoing elective total knee and hip replacements from January 1, 1999 to September 30, 2000 and who were preoperatively scheduled for ICU admission following surgery was conducted. Demographic data, presence of comorbidities (including presence of cardiovascular, pulmonary and renal disease), intraoperative data (including type of anesthesia, surgical and anesthesia times, surgical procedure, blood loss, fluids administered), and location of postoperative recovery (ICU versus recovery room) were recorded. Only data between the general anesthesia and regional anesthesia groups were analyzed.

Results: Of the 361 patients scheduled for undergoing elective total knee and hip replacements during the specified period, 88 patients were preoperatively scheduled for ICU admission following surgery. Forty-five patients underwent regional (epidural or spinal) anesthesia, 38 patients received general anesthesia, and 5 patients received a combination of both regional and general anesthesia. There were no differences in demographic data, presence of comorbidities, or ASA status. There were no differences with regard to the proportion of patients receiving regional anesthesia or being admitted to the ICU for each surgeon. Patients who received regional anesthesia had shorter anesthesia and surgical times when compared to those who received general anesthesia. Patients preoperatively scheduled for ICU admission who received intraoperative regional anesthesia had a significantly lower rate of actual ICU admission when compared to those who received intraoperative general anesthesia (11/45 or 24% vs. 22/38 or 58%, respectively; $p = 0.002$). When compared to those who received regional anesthesia, patients who received general anesthesia and were sent to the recovery room were more likely to require ICU admission subsequently in their hospitalization. Multivariate logistic analysis revealed that only total surgical time (odds ratio 1.015 per minute increase, 1.005-1.024; 95% confidence intervals) and general anesthesia (odds ratio 1.74, 1.22-2.27; 95% confidence intervals) were independently associated with a greater probability of going to and ICU postoperatively.

Discussion: The issue of whether regional anesthesia may optimize resource utilization through improvements in hospital efficiency or decrease in health care costs (e.g., such as altering the location of postoperative recovery), has not been examined to a great extent. Through attenuation of intraoperative and postoperative pathophysiology, regional anesthesia may result in improvements in clinically-oriented patient outcomes (1,2). When compared to general anesthesia, the use of intraoperative regional anesthesia may provide many benefits to a patient's intraoperative status, which may influence a clinician's decision of the location of postoperative recovery (ICU versus recovery room). Improvement in ICU resource utilization is important in light of the increasing demand on and costs associated with ICU services (3,4). Our data suggests that use of intraoperative regional anesthesia in high-risk patients undergoing elective hip and knee replacement surgery is associated with a decrease in anticipated intensive care unit admission postoperatively.

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Type of Anesthesia	Number of patients assigned a preoperative ICU bed	Actual number of patients (%) requiring an ICU bed
General Anesthesia	38	22 (58%)
Regional Anesthesia	45	11 (24%)
Combined General and Regional Anesthesia	5	2 (40%)
Totals	88	35 (40%)