

Spinal anesthesia for lumbar spine surgery: decreased medication use, need for hemodynamic support and total cost of care, a single center experience

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Introduction

We commonly administer spinal anesthesia for routine lumbar spine surgeries. Compared to general anesthesia, anecdotal impressions suggested that patients received fewer anesthesia –administered medications, including vasopressors, during spinal anesthesia. We hypothesized that data review would confirm these impressions. This case-control study compared specific elements of spinal versus general anesthesia for 1-2 level lumbar spine procedures. We performed a cost analysis to compare the cost of spinal and general anesthesia in a large cohort of patients.

Methods

With IRB approval, we electronically identified all patients undergoing lumbar foraminotomy, discectomy, or simple decompression by a single surgeon over 8 years. An automatic structured query of our electronic record extracted pre-specified data elements.

Results

Searching found 144 spinal anesthesia (median age 69.5, 67 women) and 619 (median age 65.0, 240 women) general anesthesia cases. The total number of drugs administered by the anesthesiologist was 10 ± 2 for general and 5 ± 2 for spinal anesthetics ($p < 0.001$, negative binomial model). Multivariate analysis supported this finding (spinal anesthesia -4.37, 95% CI -4.75 to -4.00). Spinal anesthesia patients were less likely to receive ephedrine, or phenylephrine (bolus or infusion) ($p < 0.001$, Chi Square analysis). No neurologic injuries were attributed to, or masked by, spinal anesthesia. Three spinal anesthetics failed. Spinal anesthesia was associated with 6.5% reduction in total hospital cost (95% CI 0.7% - 12.3%, $P = 0.028$ log-transformed two independent sample t-test).

Conclusions

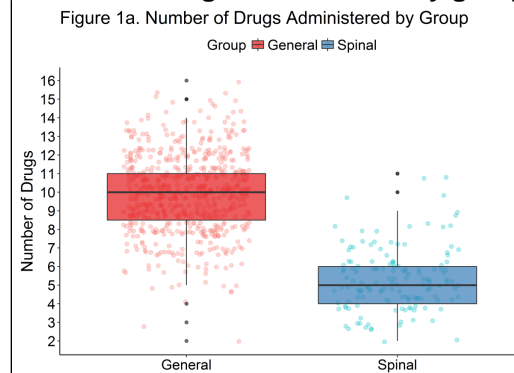
For routine lumbar surgery in our cohort, spinal compared to general anesthesia was associated with significantly fewer drugs administered during a case and less frequent use of vasopressors. Total costs of care were significantly lower. For selected cases/patients, spinal anesthesia may be a useful, less costly alternative for lumbar

Relative cost of hospitalization spinal anesthesia (blue) versus general anesthesia (red)



Patients undergoing spinal anesthesia had significantly lower total cost of hospitalization compared with patients undergoing general anesthesia

Number of drugs administered by group



The patients undergoing spinal anesthesia received significantly fewer intraoperative medications than patients undergoing general anesthesia

Learning Objectives

- 1) Understanding the advantages and shortcomings of spinal anesthesia for spinal surgery.
- 2) Understanding how anesthetic choice impacts hospital cost in spinal surgery patients.
- 3) Understanding the hemodynamic effects of different anesthetics

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