



## **Assessing the Differences in Outcomes Between General and Regional Anesthesia in Spine Surgery: Results from a National Registry**

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# Disclosures

- Nothing to Disclose

# Introduction

- Endotracheal/general anesthesia is one of the most commonly used anesthetic techniques when performing thoracic and lumbar surgeries.
- However, spinal and epidural anesthesia have been increasingly employed for lumbar decompressions (LD) and posterior lumbar fusion (PLF) recently.
- The objective of this study was to investigate the outcomes of general and non-general (spinal and epidural) anesthesia in patients undergoing PLF and LD using a national registry.

# Methods

- NSQIP database was queried to identify patients who underwent LD or PLF with general or non-general (spinal + epidural) anesthesia between 2011 and 2015
- Multivariable conditional regression was used to identify predictors of thirty-day readmission, any complication and length of stay (LOS)

# Results

- Using NSQIP, 60,222 LD patients
  - 59,876 received general anesthesia
  - 342 were given non-general anesthesia
    - 1000 and 342, after matching
- 31,419 PLF patients were identified
  - 31,377 were given general anesthesia
  - 42 were given non-general anesthesia
    - 126 and 42, after matching

# Results (LD)

Readmission				
Variable	Odds Ratio	P-Value	Lower 95%	Upper 95%
Non-General Anesthesia (vs. General)	0.90	0.79	0.40	2.00
Propensity Score	0.00	0.07	0.00	374.08
Smoker within 1 year	0.92	0.84	0.40	2.13
Operative Time	1.00	0.08	1.00	1.01
Any Complication				
Non-General Anesthesia (vs. General)	0.75	0.58	0.28	2.04
Propensity Score	0.00	0.003	0.00	0.00
Smoker within 1 year	2.23	0.06	0.97	5.15
Operative Time	1.00	0.97	0.99	1.01
Length of Stay (Linear Regression)				
Non-General Anesthesia (vs. General)	0.18	0.35	-0.20	0.57
Propensity Score	-118.91	<0.001	-153.62	-84.21
Smoker within 1 year	-0.21	0.31	-0.63	0.20
Operative Time	0.01	<0.001	0.00	0.01

# Results (PLF)

Readmission				
Variable	Odds Ratio	P-Value	Lower 95%	Upper 95%
Non-General Anesthesia (vs. General)	0.78	0.83	0.08	7.34
Propensity Score	4.53*10 <sup>77</sup>	0.72	0.00	.
male (vs. female)	1.05	0.96	0.17	6.52
Operative Time	1.01	0.08	1.00	1.01
Any Complication				
Non-General Anesthesia (vs. General)	0.50	0.39	0.11	2.38
Propensity Score	1.1*10 <sup>-160</sup>	0.40	0.00	3.1*10 <sup>209</sup>
male (vs. female)	0.92	0.89	0.27	3.08
Operative Time	1.00	0.40	1.00	1.01
Length of Stay (Linear Regression)				
Non-General Anesthesia (vs. General)	0.17	0.68	-0.65	0.99
Propensity Score	-162.42	0.47	-609.44	284.60
male (vs. female)	-0.52	0.18	-1.29	0.24
Operative Time	0.007	0.001	0.003	0.010

# Discussion

- Single-institution studies have shown how non-general anesthesia has several benefits over general anesthesia
  - Shorter length of stay, but our study showed no difference
  - Lower blood loss and better pain relief
- Literature on complication has been conflicting.
  - Several studies indicated similar outcomes between the two groups, as our study did
  - Others indicated overall complication rates, urinary retention and spinal headaches were significantly less in non-general anesthesia patients compared to general anesthesia patients
- Limitations
  - PACU and perioperative hemodynamics changes are not available in NSQIP
  - Retrospective data, 3-to-1 propensity score matching was done to reduce associated bias



# Summary Points

- Our analysis showed that non-general anesthesia had equivalent outcomes with respect to readmission, LOS and complication, when compared to general anesthesia in patients undergoing LD or PLF.
- While the choice of anesthesia type remains a matter of preference, our results show that non-general anesthesia may be practiced safely and is associated with equivalent outcomes.