

Ketorolac Use Decreases Complication and Bleeding Risk Following Posterior Lumbar Fusion: Results from an Institutional Database

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Introduction

- PLF is a common procedure used to treat spinal deformities and lumbar degenerative disorders.
- Ketorolac is a non-steroidal anti-inflammatory drug (NSAID) used for analgesia without significant respiratory depression in a wide variety of post-surgical scenarios, and can be given during a procedure for pain control.
- Like most NSAIDS, ketorolac is traditionally associated with gastrointestinal bleeding. However, the literature in a variety of surgical subspecialties has not found and increase in post-operative bleeding events.
- There is a paucity of literature that directly addresses the influence of ketorolac administration on bleeding and other adverse events following posterior lumbar fusion.
- The objective of this study is to determine if intraoperative ketorolac usage is a risk factor for bleeding, as well as other complications following PLF.

Methods

- An institutional database was utilized to identify patients undergoing posterior lumbar and fusion between 2006 and 2016.
- Univariate comparisons between groups were made using chi-squared tests for categorical variables and t-tests for continuous variables.
- Multivariate logistic regression was utilized to estimate odds ratios, and to determine whether ketorolac use is an independent risk factor for bleeding complications, as well as pulmonary, cardiac, renal, infectious, and other complications.

Results

- 3,253 patients met inclusion criteria.
- 2% of the cohort received ketorolac intraoperatively, and 98% of patients did not.
- Patients who received ketorolac had a statistically significantly lower age and ASA score than controls. Intraoperative ketorolac utilization was a negative predictor for bleeding complication (OR= 0.074 [CI: 0.010-0.534], P= 0.01), and any complication (OR= 0.119[CI: 0.29-0.489], P= 0.003).
- There was no difference between those who did and did not receive toradol with respect to airway complications, cerebrovascular accident, myocardial infarction, cardiac arrest, deep vein thrombosis, pulmonary embolism, pneumonia, renal failure, wound dehiscence, surgical site infection, sepsis, septic shock, urinary tract infection, and death.

Table 1. Multivariate Logistic Regression of Complications by Ketorolac Utilization Status			
Variable	Odds Ratio	95% Confidence Interval	P-value
Any Complication	0.119	0.290-0.489	0.003
Bleeding Complication	0.074	0.010-0.534	0.010

Conclusions

- Intraoperative ketorolac utilization was found to be a negative predictor of bleeding and any complication following posterior lumbar fusion.
- This is contrary to studies that have shown a small increase in bleeding risk in patients who were given ketorolac.
- Considering the small effect size found in this study, this is not conclusive evidence of the safety of ketorolac. As such, a large, prospective trial investigating this study is indicated to determine the accuracy of this result.

Learning Objectives

- By the conclusion of this session, participants should be able to describe the relationship between intraoperative utilization of ketorolac and bleeding complications following posterior lumbar fusion (PLF).

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