Lumbar Decompression Surgery: Does Chronic Steroid Use Increase the Risk of Postoperative Infectious Complications? – A Study of the National Surgical Quality Improvement Program (NSQIP) Database

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Introduction

- This study aims to determine differences in short-term postoperative infectious complications after undergoing lumbar decompression surgeries, comparing patients on chronic steroids VS those not on chronic steroids.
- While steroids have been linked to increased infection rates across several surgeries, little has been investigated looking at lumbar decompression surgeries predicting specific postoperative infections.

In total, 12,601 patients were included in the analysis looking at how chronic steroid use contributes to the rates of postoperative complications in lumbar decompression surgeries.

Data was obtained from the National Surgical Quality Improvement Project Database (NSQIP) years 2005-2014, with readmission/reoperation data beginning in 2011. Lumbar Decompression cases were selected out of the database using current procedural terminology (CPT) codes.

Using SPSS statistical software, Univariate chi-square analysis was first done to look at demographic differences, followed by differences in infection rates. Multivariate logistic regression analyses were then performed to determine if steroid use was an independent predictor of postoperative infection.

Methods

- In total, 12,601 patients were included in the analysis looking at how chronic steroid use contributes to the rates of postoperative complications in lumbar decompression surgeries.
- Data was obtained from the National Surgical Quality Improvement Project Database (NSQIP) years 2005-2014, with readmission/reoperation data beginning in 2011. Lumbar Decompression cases were selected out of the database using current procedural terminology (CPT) codes.

Results

- 372 out of 12,200 patients not on chronic steroids before surgery experienced some infectious complication postsurgically, for a rate of 3.05%.
- 25 out of the 401 patients on chronic steroids before surgery experienced some infectious complication postsurgically, for a rate of 6.23%.
- On multivariate analysis and after controlling for contributing comorbidities, chronic steroid use was not found to increase rates of surgical site infections.
- However, chronic steroid use was found to independently predict rates of pneumonia (OR: 3.06, p=0.030) and septic shock (OR: 3.79, p=0.008).

Discussion

- The advent of steroids offered superior anti-inflammatory control unprecedented in the medical community, but it wasn’t long before the vast side affects of steroids dismissed the miracle paradox. This is the first study to specifically define infection rate for lumbar decompression surgery in NSQIP.
- Infection has been demonstrated to be a significant risk for patients on chronic steroid therapy, and the added stress of surgery may act as a catalyst for this risk. In the present study, we identified chronic steroid therapy to be associated with a moderate increase in risk of pneumonia and septic shock, with no associated increase in surgical site infection (SSI).
- Identifying complications that can arise following a lumbar decompression surgery for a patient on chronic steroids is a critical first step in targeting precise perioperative modifications to improve surgical outcomes.
- Additional research is needed to determine optimal practices for stratifying and mitigating these risks for patients.

References