Is ASA Score a Predictor of 30 Day Perioperative Readmission in Adults Undergoing Posterior Lumbar Fusion?

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Introduction

With the healthcare system moving towards stricter policies that do not reimburse for readmissions within 30 days of surgical intervention, it is imperative that spine surgeons be able to properly risk stratify patients with increased risk of readmission. Increased ASA scores have been shown in other orthopaedic subspecialties to be a predictor of readmission; however, it has yet to be studied in patients undergoing posterior lumbar fusion.

Methods

Patients were identified by CPT (Current Procedural Terminology) code in the American College of Surgeon's National Surgical Quality Improvement Program (ACS-NSQIP) database. Patients were separated into two cohorts: those with and without readmission. Univariate analysis was performed to compare demographics, comorbidities and operative variables in patients undergoing posterior lumbar fusion. Multivariate step-wise logistic regression was performed to see which ASA score was associated with 30-day readmission. Only perioperative variables with P<0.2 were included in the multivariate analyses. ASA class 1 was used as reference.

Results

ASA class 3 patient were more likely to be 65-79 years of age (47.69%) which was a trend that was also followed in ASA class 4 patients with most patients found to be in the same age range (54.47%) (p<0.0001). In general, ASA class 3 and 4 patients had a greater incidence of peripheral vascular disease, pulmonary and cardiac comorbidities, and history of dialysis. The greater the ASA the more likely the operative time would be greater than 4 hours (21.05%, 32.65%, 35.49%, 39.135; ASA 1-4)(p=0.034). ASA class 4 had 3.3 times the patients experiencing Length of Stay (LOS)>5 days than patients classified as ASA 1(p<0.0001). When examining those patients that were readmitted without assessing ASA, a significantly greater percentages had insulin dependent diabetes mellitus (p=0.002) and were on dialysis (p<0.0001). When analyzing ASA class for risk of 30-day readmission, ASA was not shown to be an accurate predictor of readmission in patients undergoing posterior lumbar fusion. However, total LOS >5 was found to be an independent predictor of readmission (Odds Ratio=1.65, 95% CI 1.09-2.51, p=0.019)

Conclusions

LOS >5 days is a more accurate predictor of 30-day readmission than ASA in patients undergoing posterior lumbar fusion.

Multivariate Analysis

Table 3. Multivariate Logistic Regression for ASA 2, 3, and 4 vs. ASA 1, N = 2596

Variable	Adjusted OR	95 CI		P value
ASA Class 1	Reference			
ASA Class 2	1.023	0.312	3.358	0.1318
ASA Class 3	1.306	0.4	4.267	0.7346
ASA Class 4/5	2.866	0.726	11.317	**0.0261**
Dialysis	10.362	1.333	80.535	**0.0254**
Total Length of Stay > 5 Days	1.651	1.087	2.507	**0.0187**

Learning Objectives

To assess relationship between ASA scores and 30-day readmission in patients undergoing posterior lumbar fusion.