Risk Factors for Readmission Following Posterior Lumbar Fusions

Parth Kothari BS; Dante Leven DO; Samuel K Cho MD; Nathan John Lee BS; John I Shin BS; Branko Skovrlj MD; Jeremy Steinberger MD; Javier Z Guzman BS

Icahn School of Medicine at Mount Sinai

Introduction

Posterior lumbar fusion is a common surgical procedure with growing utilization and good long-term outcomes reported. Hospital readmissions post-operatively are associated with increased morbidity and costs. Consistent risk factors have not been identified using a large nationwide database. The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) provides a large multicenter database and allows for the analysis of potential risk factors.

Methods

This was a retrospective analysis of prospectively collected data from the NSQIP database. Patients > 18 years old undergoing PLF, PLIF, TLIF or PLF with PLIF or TLIF between 2011 and 2012 were included. Patient baseline factors, perioperative data, preoperative labs, American Society of Anesthesiologists (ASA) scores and postoperative events were recorded. Patients were either 1) readmitted, or 2) not readmitted and the two cohorts were compared using multivariate logistic regression analysis with significance defined as p < 0.05. Odds ratio (OR) was calculated with a 95% confidence interval.

Results

During the study period 2,596 patients met inclusion criteria. Rate of readmission was 5.2% (129/2596). Higher rates of readmission were associated with a history of insulin dependent diabetes (p=0.002), dialysis (p<0.0001), recent weight loss (p=0.02) and bleeding disorders (p=0.013). The operative factor associated with readmission was multilevel fusions compared with single level fusion (p=0.02). Readmissions were significantly associated with all complications, major complications, graft failure and sepsis (p<0.0001). Independent predictors of readmission were insulin dependent diabetes (OR 2.3,1.3-4.0), bleeding disorder (OR 2.6, 1.0 -7.0), recent weight loss (OR 8.1, 0.7-91.6), multilevel fusion (OR 1.5, 1.0-2.2), peripheral vascular disease (PVD) (OR 2.3, 0.7-8.3) and pulmonary comorbidity (OR 1.8, 1.0-3.4).

Learning Objectives

By the conclusion of this session, participants should be able to understand risk factors for readmission following posterior lumbar fusion.

Conclusions

This study demonstrated that patient comorbidities and multilevel fusions were predictive of readmissions in patients undergoing posterior lumbar fusion. As expected, readmission was associated with higher rates of all complications and reoperations. These factors should be considered during perioperative care in patients undergoing various types of elective lumbar fusions.

Independent Predictors for Readmission				
Variable	Adjusted Odds Ratio	95% CI		P
Insulin Dependent Diabetes vs. None	2.256	1.272	4.002	**0.004**
Insulin Independent Diabetes vs. None	0.875	0.489	1.563	0.1257
Bleeding Disorder	2.579	0.954	6.975	0.062
Recent Weight Loss	8.104	0.717	91.591	0.091
Length of Stay Greater than 5 Days	1.558	1.02	2.382	**0.040**
Multilevel Fusion vs. Single	1.498	1.032	2.175	**0.034**
Total RVU	0.994	0.985	1.002	0.1271
Smoker	0.672	0.409	1.106	0.1178
Pulmonary Comorbidity	1.752	0.898	3.418	0.1002
Peripheral Vascular Disease	2.341	0.659	8.314	0.1882