

Complication and Outcome Analysis of Anterior Versus Posterior Corpectomy of the Thoracic and Lumbar Spine

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Introduction

Thoracic or lumbar corpectomy provides an effective surgical treatment for malignancy, trauma, and complex spinal pathologies. It can be performed from an anterior (including lateral) or posterior approach. There are few studies comparing approaches and there is no consensus on the optimal approach.

Methods

Multicenter, prospectively collected data from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database were used to compare 30-day outcomes for anterior versus posterior lumbar and thoracic corpectomy from 2012 to 2015. Univariate and multivariate logistic regression models were used to analyze the effect of patient factors on readmission, return to operating room (OR), and adverse events.

Results

The ACS NSQIP database included 1142 patients who had undergone lumbar or thoracic corpectomies. Of these, 533 underwent an anterior approach, 465 had a posterior approach, and 144 had a combined approach. The 30-day mortality rate was 1.69% in the anterior group, compared with 4.73% in the posterior group ($p = 0.006$). The return-to-OR rate was 6.19% in the anterior group, compared with 9.68% in the posterior group ($p = 0.041$). All categories of adverse events (major, minor, or any) were higher in the posterior group compared with the anterior group ($p < 0.001$). Multivariate analysis found independent patient characteristics significantly associated with increased mortality, major complications, and readmission in each group.

Conclusions

The 30-day outcomes measures of mortality and return-to-OR rate, as well as major and minor complications, were statistically significantly higher for patients undergoing a posterior corpectomy compared with an anterior corpectomy. Several patient characteristics associated with increased risk may be useful for guiding decision making. This ACS NSQIP database study indicates that further investigation, including long-term outcomes data, is warranted to determine the optimal approach for thoracic and lumbar corpectomies, but that an anterior approach may be associated with less morbidity and mortality.

Learning Objectives

By the conclusion of this session, participants should be able to:

1. Describe the rate of negative outcomes for anterior versus posterior approach for thoracic or lumbar corpectomies.
2. Describe the rate of adverse events related to anterior versus posterior approach for thoracic or lumbar corpectomies.
3. Identify pre-operative factors associated with negative outcomes and adverse events in the anterior and posterior corpectomy cohorts.