

Comparative-effectiveness of Anterior Versus Posterior Approach for Patients with Cervical Myelopathy: Analysis from Quality Outcome Database

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Introduction

Cervical spondylotic myelopathy (CSM) is a progressive, degenerative spine disease that is often treated surgically. The choice of anterior versus posterior approach for disease that spans multiple segments remains controversial. In this analysis, we set out to determine the comparative-effectiveness of the two approaches for patients undergoing elective surgery for CSM.

Methods

We queried the Quality Outcomes Database (QOD) for patients undergoing surgical intervention of 3 or more operative levels for a primary diagnosis of CSM from April 2013 through July 2015 . We recorded baseline and 12-months patient reported outcomes (PROs), i.e. neck disability index (NDI), EQ-5D, numeric rating scale (NRS)-neck pain (NP) and -arm pain (AP), and modified Japanese Orthopedic Association score for myelopathy (mJOA). Multivariable regression models were fitted for length of hospital stay (LOS), 90-day readmission, 90-day return to work (RTW) and 12-month PROs and satisfaction (NASS satisfaction questionnaire). An array of preoperative and surgical variables (including anterior vs. posterior approach) were included in the model.

Results

A total of 257 patients (163-anterior, 94-posterior) were identified in the QOD registry that have underwent 3 or more levels of surgery for CSM. Baseline patient demographics, comorbidities and clinical characteristics were similarly distributed between the two cohorts. In risk-adjusted multivariable analysis, patients undergoing an anterior approach had significantly lower LOS (OR 0.12, 95% C.I. 0.07-0.22, $p < 0.001$) and higher 12-month mJOA scores (OR 2.38, 95% C.I. 1.38-4.2 , $p = 0.002$). The effect of anterior vs. posterior approach was not significant for 90-day readmission, 90-day RTW as well as 12-month NDI, EQ-5D, NRS-NP, NRS-AP and satisfaction.

Conclusions

Patients undergoing anterior approach for CSM had significantly lower hospital LOS and better myelopathy scores; however no difference was detected with regards to PROs, readmission and RTW. Further studies are needed to provide insight into the long-term reoperation rates and cost-effectiveness of these procedures.

Learning Objectives

To discuss comparative-effectiveness of the two approaches for patients undergoing elective surgery for CSM.

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