Comparison of MIS Trans-Spinous and Open Approaches for Thoracolumbar Intradural-Extramedullary Spinal Tumors

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Introduction

Spinal tumor resection has historically been performed via open approaches, though minimally invasive approaches have recently been found to be effective in small cohort series. We compare surgical characteristics and clinical outcomes of patients undergoing MIS and open approaches for intradural-extramedullary tumor resection.

Methods

The authors retrospectively reviewed 63 consecutive intradural-extramedullary tumor resections performed at their institution from 2007 to 2014. Patients with cervical tumors or pathology demonstrating neurofibroma were excluded (n=13). Student's t-test and Pearson's chi-square were used to compare continuous and categorical variables, respectively. Statistical analyses were performed using SPSS (IBM), with significance set at $p < 0.05$.

Results

Fifty thoracolumbar intradural-extramedullary tumor resections were included; 50% were performed via the MIS trans-spinous approach. There were no statistically significant differences in age, gender, BMI, pre-operative symptom duration, tumor size, tumor location, tumor grade, or tumor pathology. The most common pathologies in each group were schwannoma (40% of MIS resections vs. 38% of open resections), meningioma (24% vs. 23%), and ependymoma (20% vs. 23%). Operative characteristics including operative duration and extent of resection were not statistically significantly different; however, the MIS cohort had lower mean estimated blood loss (142 mL vs. 320 mL, $p < 0.01$). There were no statistically significant differences in length of hospitalization, American Spinal Injury Association scale score improvement, complication rate, or recurrence rate. Mean follow-up was 2 and 1.6 years for the MIS and open groups, respectively ($p > 0.05$).

Conclusions

This is the largest comparison of minimally-invasive and open approaches to the resection of thoracolumbar intradural-extramedullary tumors. With well-matched cohorts, the MIS trans-spinous approach appears to be as safe and effective as the open technique, with the advantage of significantly reduced intraoperative blood loss.

Learning Objectives

By the conclusion of this session, participants should be able to 1) describe the MIS trans-spinous approach to intradural spinal tumor resection, 2) discuss its utility in thoracolumbar, extramedullary tumors, and 3) identify further areas of inquiry regarding the superiority of the two approaches.

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