



## Surgical Management of Ewing’s Sarcoma of the Spine: Survival and Local Control Outcomes

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### Introduction

Treatment of primary Ewing’s sarcoma of the spine is complex and requires multiple treatment modalities. Ambiguity remains regarding the role and optimal type of surgery in the treatment of spinal Ewing’s sarcoma. The aim of this study was to quantify mortality and local recurrence rates after surgical treatment of spinal Ewing’s sarcoma and to determine whether an Enneking appropriate procedure (en bloc resection with wide/marginal margins) and surgical margins are associated with improved prognosis.

### Methods

The AOSpine Knowledge Forum Tumor developed a comprehensive multicenter database including demographics, diagnosis, treatment, mortality, and recurrence rate data for Ewing's sarcoma the spine. Patients were analyzed based on surgical margins and Enneking appropriateness. Survival and recurrence were analyzed using Kaplan-Meier curves and log-rank tests.

### Results

Fifty-eight patients diagnosed with primary Ewing’s sarcoma of the spine underwent surgery between 1981 and 2012. Enneking appropriateness of surgery was known for 55 patients; 24 (44%) treated Enneking appropriately (EA) and 31 (56%) treated Enneking inappropriately (EI). The 5-year survival was 75% (N = 18) for EA patients and 52% (N = 16) for EI patients. A statistically significant difference in favor of greater survival for EA-treated patients was found (p = 0.034). Neoadjuvant and postoperative chemotherapy was significantly associated with increased survival (p = 0.008). Local recurrence occurred in 22% (N = 5) of patients with an EA procedure versus 38% (N = 11) of patients with an EI procedure. Although, local control was not significantly different between Enneking cohorts (p = 0.140), surgical margins and previous spine tumor operation were associated with local recurrence (p = 0.025 and p = 0.018, respectively).

### Learning Objectives

-Treatment of spinal Ewing’s sarcoma is multimodal.

-When surgery is performed, an Enneking appropriate surgery (en bloc resection with wide/marginal margins) should be undertaken because it is associated with improved survival.

-Local recurrence is associated with intralesional margins and previous spine operation.

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### Conclusions

Primary spinal Ewing’s sarcoma requires multiple treatment modalities. Surgery should be undertaken when an en bloc resection with wide/marginal margins can be performed because an Enneking appropriate surgery is associated with improved survival. En bloc resection with wide/marginal margins is associated with local control.