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## En Bloc Resection in Combination with High Dose Radiation Improves Patient Survival in Mobile Spine Chordoma

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### BACKGROUND:

Surgical resection of the primary tumor is the mainstay treatment for chordoma of the mobile spine. However, control of local disease recurrence remains poor. Aggressive tumor resection in combination with high dose proton beam radiation has been proposed at our institution to improve disease-free survival by reducing recurrence rates. To evaluate the effect of this therapy, we conducted a retrospective study of 49 patients with chordoma, who were treated with combination high-dose radiation and surgical resection at the Massachusetts General Hospital during 1992-2013.

### METHODS:

49 patients who received surgery and high dose radiation (>70 Gy) were retrospectively assigned into two groups based on extent of resection. 15 patients had en bloc resection; mean age was 48 years old, mean follow-up time was 42 months. 34 patients had intralesional resection; mean age was 57 years old, mean follow-up time was 63 months. We documented resection margin pathology, disease recurrence, and/or presence of metastases. We used Kaplan-Meier analysis with LogRank significance test to calculate overall survival and disease-free survival. Recurrence rates were compared using two-tailed Wilcoxon rank sum test. Stratified Cox model was used to identify confounding factors.

### RESULTS:

Of the 49 patients in the series, 15 developed recurrent disease and 7 developed metastases. 15 patients had en bloc resection; 2 developed recurrent disease, and 2 developed metastases. Margins were negative in 6 patients; there were no mets or recurrences. 34 patients had intralesional resection; 13 developed recurrent disease, and 5 developed metastases. The mean overall survival was 108 ± 14 months; and 107 ± 16 months in the intralesional group. There were no deaths in the en bloc group. En bloc resection was associated with improved disease-free survival (P = 0.033) and overall survival (P = 0.020), but not the local recurrence (P = 0.588). Margin status did not significantly influence disease-free survival (P = 0.100) or rate of recurrence (P = 0.089).

### CONCLUSION:

En bloc resection in combination with high dose radiation significantly improved disease-free survival and overall survival in our series. The frequency of local disease recurrence was 30.6% despite positive resection margins, possibly attributable to high dose radiation therapy.

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