

Paper #54

A Meta-Analytic Review of En Bloc Spondylectomy for Primary Tumors of the Cervical Spine

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Introduction: Although en bloc spondylectomy remains the most oncologically sound and hence ideal treatment for primary spinal tumors of the thoracolumbar spine, the unique anatomy of the cervical spine makes en bloc resection of cervical spinal tumors challenging and often impossible. Few cases have been published in the literature to date making specific conclusions difficult. The purpose of this study was to perform a meta-analysis of the existing literature on en bloc spondylectomy for primary tumors of the cervical spine in order to determine the overall incidence of disease-free survival and investigate potential prognostic factors.

Methods: A complete MEDLINE search for all articles reporting survival data for en bloc spondylectomy of malignant cervical spinal tumors was undertaken. Exclusion criteria included non-English articles, lack of explicit mention or description of en bloc technique, age less than 18, no demographic or survival information reported and follow-up less than 1 month. A total of 9 articles were identified. Kaplan-Meier analysis was performed and Cox proportional hazards calculated with $\alpha=0.05$.

Results: From the 9 articles, a total of 14 cases met all inclusion criteria (Table 1). There were 9 cases of chordoma, 2 chondrosarcoma, and 1 each of giant cell tumor, malignant peripheral nerve sheath tumor, and mesenchymal hamartoma. Mean age was 48.8 years (range 20-81). There were 4 cases of local recurrence (mean 58.2, range 32.4-112.8 months postoperatively) and one case of distant metastasis (12 months postoperatively). Mean length of time between recurrence and death was 26.5 months (range 10-36). Kaplan Meier analysis indicated 1 and 5 year survival rates of 92.3% and 54.7%, respectively (Figure 1). Age, tumor type, # levels, margin status and date of surgery were not significantly associated with recurrence.

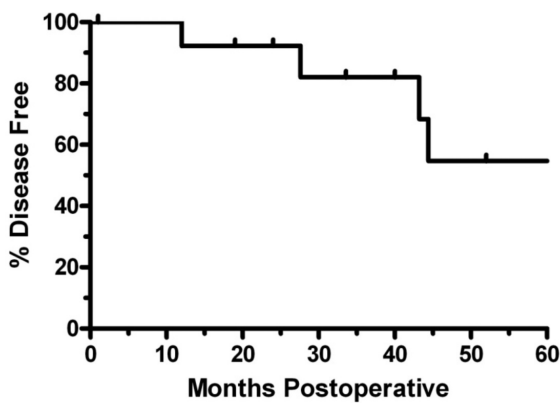
Conclusions: Previous studies have shown that en bloc resection of primary tumors of the spine is the ideal treatment to allow for long term disease-free survival. Although the sample size is small owing to the rarity of tumors in the cervical spine, the current study gives the most accurate description of survival after en bloc resection of malignant cervical spinal tumors to date. 1 and 5 year survival rates were calculated to be 92.3% and 54.7%, respectively. With the numbers available, no factors were found to be predictive of disease recurrence. Other investigators should be encouraged to publish their results even with intermediate length follow-up so that meta-analyses like this may be performed with larger sample sizes.

If noted, the author indicates something of value received. The codes are identified as a-research or institutional support; b-miscellaneous non-income support/miscellaneous funding; c-royalties; d-stock or stock options; e-consultant or employee; n-nothing of value received, and *disclosure not available at time of printing. For full information refer to inside back cover.

Table 1

Author	Age	Tumor	# Levels	Margins	Status	Follow-up (mo)
Currier, 2007	51	Chordoma	1	Wide	NED	108
Bailey, 2006	50	Chordoma	3	Marginal	NED	24
Fisher, 2005	36	MPNST	4	Wide	DOD	22
Fisher, 2005	20	Mesenchymal Hamartoma	3	Intralesional	NED	52
Fisher, 2005	50	Giant Cell Tumor	1	Intralesional	NED	111
Fisher, 2005	50	Chordoma	1	Wide	NED	19
Rhines, 2005	54	Chordoma	3	Marginal	NED	12
Bergh, 2000	62	Chordoma	1	Marginal	AWD	149
Bergh, 2000	25	Chordoma	2	Intralesional	NED	33.6
Bergh, 2000	81	Chordoma	1	Intralesional	DOC	1
Bergh, 2000	62	Chordoma	1	Intralesional	DOD	79.2
Bergh, 2000	57	Chordoma	2	Intralesional	AWD	55.2
Boriani, 2000	31	Chondrosarcoma	3	Wide	NED	40
York, 1999	54	Chondrosarcoma	1	Wide	AWD	67.2

MPNST, malignant peripheral nerve sheath tumor; NED, no evidence of disease; DOD, died of disease; AWD, alive with disease; DOC, died of other causes

Figure 1

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