Spondylectomy in the treatment of neoplastic spinal lesions – a retrospective outcome analysis of 582 patients using a patient-level meta-analysis.

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Background: En-bloc spondylectomy is applied in the treatment of primary spinal tumors, however there is a potential for major complications.

Objective: This study aims at identifying predictors of postoperative complications, lesion recurrence and overall survival.

Methods: A systematic review of the literature was conducted, and patient-level data extracted from the included studies. Multiple linear regression models were calculated to predict postoperative complications, lesion recurrence and overall survival based on age, tumor etiology, surgical approach, resection mode and tumor size.

Results: 582 patients were included: 45% female, median age of 46 years (range 5-78); most common etiologies were: sarcoma (46%), metastases (31%) and chondroma (11%). Surgical approach was: anterior (2.5%), combined (45%) and posterior (52.4%); 68.5% were en-bloc resections; average levels resected were 1.6 (1-6); 65% of patients had neurologic deficits at presentation, average survival was 2.6 years; Postoperative complications were observed in 17.7%.

For postoperative complications, recurrence and 5-year survival significant regression equations were found. Odds ratio for predicted complications was 1.35 for en-bloc resection and 1.25 for more than one level treated. Odds ratio for tumor recurrence was 0.78 for en-bloc resection. And finally, odds ratio for 5 year survival were 0.79 for increased patient age, 0.65 for increasing tumor grade, 0.79 for tumor dissemination at diagnosis and 1.68 for en-bloc resection.

Conclusion: En-bloc resection of tumorous lesions was confirmed to provide improved survival rates, lower recurrence rates but also higher operative complication rates. Interestingly the complication rate was not influenced by tumor extension (WBB scale) and tumor etiology.

Figure 1: Algorithm for TES based on tumor extension according to the WBB classification system. Dark grey areas indicate tumor extension within a vertebral body, light grey areas indicate areas resected in a piecemeal fashion, while the remaining vertebral body is resected en-bloc. Latin numerals indicate distinct surgical steps, green: posterior resection, purple: anterior resection, blue: lateral retroperitoneal resection; * indicated areas of the vertebral body which are dissected and separated from surrounding structures.