

# Clinical Outcomes of Total En Bloc Spondylectomy for Irradiated Spinal Metastases: A Retrospective Propensity Score-Matched Comparative Study

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## INTRODUCTION:

With the recent improvement in the prognosis of cancer patients, long-term local control of spinal metastases have become highly important. Total en bloc spondylectomy (TES) is expected not only to provide long-term local control of spinal metastases but also to prolong the prognosis of some carcinomas. Meanwhile, radiotherapy (RT) is widely used as the standard treatment for spinal metastases, and its effectiveness is indisputable. However, the duration of its efficacy is often limited, and in long-term survivors, tumors may recur after RT, requiring TES. Perioperative complications are generally more likely to occur during surgery at irradiated sites. Furthermore, TES at irradiated sites has been reported to be prone to local recurrence in the peridural region. Thus, there is a concern that TES for irradiated spinal metastases may not only increase postoperative complications but also increase local recurrence with a potential effect on survival. This study aimed to compare the postoperative complications, local recurrence, and overall survival rates after TES in patients with spinal metastasis with and without RT history, with background adjustment by propensity score matching.

## METHODS:

A total of 154 patients underwent total en bloc spondylectomy as spinal metastasectomy at our institution between 2005 and 2018; 142 patients were followed up and retrospectively examined for at least 2 years after surgery. Patients were divided into two groups based on having a history of RT. The postoperative complication rate, local recurrence-free survival, and overall survival were compared between the groups after background adjustment using propensity scores. Postoperative local recurrence-free survival and overall survival were determined using Kaplan–Meier curves. In addition, for all patients, independent factors associated with overall survival were detected using Cox proportional hazards model.

## RESULTS:

Of the 142 patients, 46 (32%) had a history of RT and 96 (68%) had no such history. Forty-two pairs of patients were selected by propensity score matching. There were no significant differences among the groups in patients and surgical characteristics. The incidence of postoperative complications was significantly higher in the group with RT history than in the group without RT history (57.1% vs. 35.7%, respectively). The group with RT history had a higher local recurrence rate than the group without RT history (1-year: 17.5% vs. 0%; 2-year: 20.8% vs. 2.9%; 5-year: 24.4% vs. 6.9%) (Figure 1). The overall postoperative survival tended to be lower in the group with RT history; however, there was no significant difference between the two groups (2-year: 64.3% vs. 66.7%; 5-year: 47.3% vs. 57.1%) (Figure 2). The Cox proportional hazards model revealed that only the revised Tokuhashi score was a significant prognostic factor and that a history of RT and prognosis were not significantly associated.

## DISCUSSION AND CONCLUSION:

TES for spinal metastases in patients with RT history significantly increases the postoperative complication and local recurrence rates than in those without RT history. Although there was no significant difference in overall survival after TES between patients with and without RT history, the risk of postoperative complications and local recurrence should be fully considered when planning TES for irradiated spinal metastases.

