

Risk Factors for Complications and Reoperations Following Surgery for Spinal Metastases: A Multicenter Prospective Study

Takaki Shimizu, Satoshi Kato, Noriaki Yokogawa, Yuji Ishino, Kazuhiro Nanpo, Narimichi Takino, Satoru Demura

INTRODUCTION:

With life-extending advances in the systemic treatment of cancer patients, the surgical procedures performed for spinal metastases will increase, and their related complications will increase unavoidably. Therefore, a better understanding of surgical complications that patients with spinal metastases may experience is necessary. This study aimed to evaluate the incidence of complications and reoperations after surgery for metastatic spinal tumors and their risk factors.

METHODS:

The subjects were 365 patients who received surgical treatment for spinal metastases. Preoperative and operative data were collected prospectively, and the incidence of postoperative complications within 6 months and reoperations within 1 year were investigated. Multiple logistic regression analysis was performed to identify independent risk factors for the complications and reoperations, with $p < 0.05$ as the significance threshold.

RESULTS:

The mean age of our cohort was 67 years, and 242 patients (66%) were male. The most common primary sites were kidney (22%) and lung (17%) in males and breast (27%) in females. 119 postoperative complications occurred in 101 patients (28%) including wound complications (wound infection or dehiscence) in 20 cases, loss of local tumor control in 20 cases, neurological deterioration in 17 cases, venous thromboembolism in 7 cases, epidural hematoma in 6 cases, cerebrospinal fluid leakage in 5 cases, and others in 44 cases. The following variables were independently associated with postoperative complications: preoperative radiation therapy (OR 2.1), emergency surgery (OR 2.0), male sex (OR 1.8), and prolonged surgical time (OR 1.4). Reoperations were performed in 35 cases (9.6%) due to loss of local control in 15 cases and wound infection in 5 cases. The risk factors for reoperation were preoperative radiation therapy (OR 2.8) and the risk-reducing factor was postoperative chemotherapy (OR 0.4).

DISCUSSION AND CONCLUSION:

The postoperative complication rate in spinal metastasis surgery was relatively high at approximately 30%. Avoiding emergency surgery through a multidisciplinary team assessment may be beneficial in reducing postoperative complications. Male sex was a risk factor for postoperative complications, possibly due to the higher malignancy of the primary tumor compared with female. The risk for complications and reoperations should be acknowledged and a multidisciplinary approach is crucial for the treatment of spinal metastases.