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**Mortality and Morbidity following Surgical Treatment for Sarcoma in the Pelvis and Limbs**

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**Background:** Resection of malignant pelvic tumors has long been considered to be associated with poorer outcomes and higher morbidity than resection of malignant limb tumors. Although recent advances in perioperative management may have improved outcomes in pelvic tumor surgery, the availability of up-to-date data on mortality and morbidity is limited because these tumors are relatively rare. Data in previous studies were based on small sample sizes of fewer than 100 or obtained retrospectively over decades

**Purposes:** In the present study, we used a national inpatient database to compare in-hospital mortality and postoperative complications between primary malignant pelvic tumor surgery and primary malignant limb tumor surgery.

**Patients and Methods:** We identified patients who underwent surgery for primary musculoskeletal malignant tumors of the pelvis or limbs between July and December in 2007–2010 using the Japanese Diagnosis Procedure Combination inpatient database. We calculated the risk-adjusted odds ratio for the occurrence of postoperative complications following pelvic tumor surgery with reference to limb tumor surgery using a multivariable logistic regression analysis.

**Results:** We identified 3,255 eligible patients (1,740 men and 1,515 women; mean age ( $\pm$  standard deviation), 59.5 $\pm$ 18.8 years), consisting of 3,116 patients with primary malignant limb tumor surgery and 139 patients with primary malignant pelvic tumor surgery. Sixty-three patients were excluded from the logistic regression analysis owing to lack of data about duration of anesthesia. Patients with pelvic tumors were more likely to receive blood transfusion (54.7%) than those with limb tumors (13.8%) ( $p < 0.001$ ). More patients undergoing pelvic tumor surgery required longer duration of anesthesia ( $>480$  min) than patients undergoing limb tumor surgery (34.5% vs 9.1%). In-hospital mortality for pelvic tumor surgery was comparable to that for limb tumor surgery (0.6% vs 0.7%,  $p = 0.830$ ). The incidence of postoperative complications following pelvic tumor surgery was two-fold higher than that following limb tumor surgery. Duration of anesthesia, use of blood transfusion, and volume of blood transfusion were associated with higher in-hospital mortality and postoperative complication rate. Patients who required blood transfusion of more than 2,500 ml were more likely to have postoperative complications than those who did not (44.6% vs 8.1%,  $p < 0.001$ ). Similarly, patients with duration of anesthesia over 480 min were more likely to have postoperative complications than those who did not (25.0% vs 6.6%,  $p < 0.001$ ).

Pelvic tumor surgery showed no significant differences for postoperative complications compared with primary limb tumor surgery (odds ratio 1.18, 95% confidence interval 0.73–1.88,  $p = 0.502$ ). A higher complication rate was significantly associated with higher volume of blood transfusion, greater age, distant metastasis, and longer duration of anesthesia. In particular, patients with blood transfusion volumes greater than 2,500 ml and those with duration of anesthesia longer than 480 min showed high odds ratios for postoperative complications ( $\geq 2,500$  ml: 3.68;  $\geq 480$ : 6.59).

**Conclusions:** Our data demonstrated that tumor localization was not an independent risk factor for the occurrence of in-hospital mortality and postoperative complications in patients undergoing surgery for primary malignant musculoskeletal tumors in the pelvis or limbs. A larger volume of blood transfusion and longer operative time were significantly associated with worse outcomes. We need to decide carefully whether to carry out surgical treatment with consideration of the risk and benefit of each candidate treatment plan, in cases with expectations of larger volume of blood transfusion and longer operative time.