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Venous Thromboembolism in Musculoskeletal Tumor Resection

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Introduction: Patients undergoing resection for musculoskeletal tumors are at high risk for venous thromboembolism. Placement of an inferior vena cava filter prior to tumor resection may be beneficial to prevent pulmonary embolism in these patients.

Purpose: We describe thromboembolic outcomes in patients undergoing major resections for musculoskeletal tumors.

Methods: A single center retrospective review was performed of all cases from 2011 – 2014 in which inferior vena cava filters were placed prior to major musculoskeletal tumor resections.

Results: Seventy-two patients met criteria for inclusion. The mean age of patients was 61 years, and 56% were female. After a median follow up of 7 months, 14 patients (19%) developed DVT, and 5 patients (7%) developed pulmonary embolism. The patients who developed DVT were older (mean 69 ± 15 yrs vs. 59 ± 18 yrs, $p=0.054$). Gender, obesity, and presence of a pathologic fracture were not associated with risk for DVT or PE. The rate of DVT was not higher based on the anatomic location of the tumor, but was significantly higher in patients with soft tissue sarcoma compared to other tumor types (42% vs. 9%, $p=0.036$). There was no difference in the rate of PE in patients with osteosarcoma, chondrosarcoma, soft tissue sarcoma, or metastatic resection. Compared to patients undergoing musculoskeletal tumor resection alone, patients requiring both vascular mobilization/reconstruction and major plastic reconstruction had higher rates of postoperative DVT (19% vs. 44%, $p=0.065$). There were five mortalities, none from pulmonary embolism.

Conclusion: Patients undergoing resection of musculoskeletal tumors are at high risk for venous thromboembolism, particularly when patients are older, have soft tissue sarcomas, and require major vascular mobilization and plastic reconstruction for large tumors. Prophylactic inferior vena cava filter use can prevent fatal pulmonary embolism in these patients and should be considered.