

Prophylactic Fixation Of Impending Pathologic Fractures: In-Hospital Cost And Complication Analysis As Compared To Acute Fracture Fixation

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Background: Skeletal metastasis is a significant contributor to morbidity and mortality in patients suffering from metastatic cancer and puts patients at risk for skeletal-related events (SRE) such as pathologic fractures. Prophylactic fixation of impending pathologic fractures has been suggested as a way to lessen the complications and cost associated with SRE's from metastatic disease.

Purpose: This study aims to compare in-hospital costs and complications between prophylactic fixation and acute surgical treatment after pathologic fracture.

Patients and Methods: The Nationwide Inpatient Sample (NIS) database was queried from 2002-2010 for patients with a diagnosis of pathologic fracture of the extremities in combination with cancers that most commonly metastasize to bone (breast, prostate, thyroid, lung, renal). Identified patients were separated into two groups: prophylactic fixation vs. any other procedure code for fracture fixation. We compared demographics, hospital characteristics, hospital length of stay and charges, comorbidities and complications by bivariate analysis. Multivariate analysis with logistic regression evaluated complications in patients with fracture as compared to those who underwent prophylactic fixation.

Results: Patients who did not receive prophylactic fixation had higher likelihood of blood transfusions ($p < 0.001$), hemorrhage/hematoma ($p = 0.003$), acute postoperative anemia ($p < 0.001$), acute renal failure ($p < 0.001$), acute MI ($p < 0.001$), and mortality ($p < 0.001$). There was no difference in length of stay ($p = 0.805$) or hospital charges ($p = 0.522$) between the groups. In multivariate analysis, treatment after fracture put patients at higher risk of blood transfusion ($p < 0.001$), hemorrhage/hematoma ($p = 0.002$), acute postoperative anemia ($p < 0.001$), and mortality ($p < 0.001$).

Conclusions: The decrease in postoperative complications and mortality seen with prophylactic fixation of impending fractures supports treatment with prophylactic fixation. The lack of differences in length of inpatient stay or cost highlights the need to identify cost-reduction methods associated with treatment of pathologic fractures. **Keywords:** skeletal metastases, pathologic fracture, orthopaedic, skeletal-related events, prophylactic fixation, cost, complication