

Administration of Prophylactic Enoxaparin on the Morning of Surgery Does Not Increase Risk of Blood Transfusion or Wound Drainage Following Internal Fixation of Geriatric Femur Fractures

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Purpose: Despite standard use of chemoprophylaxis, 30-day incidence of deep venous thrombosis (DVT) or pulmonary embolism (PE) following geriatric hip fracture surgery is reported as high as 7.5%. Missing even a single dose of enoxaparin has been proven to be an independent risk factor for developing DVT in trauma patients. At many institutions it is commonplace to hold preoperative chemoprophylaxis the morning of surgery due to concern for intraoperative bleeding. We sought to determine whether administration of enoxaparin on the morning of surgery resulted in increased rate of blood transfusion or wound drainage in geriatric femur fractures.

Methods: We retrospectively reviewed patients over age 60 years who underwent surgical treatment of an isolated femur fracture (femoral neck, intertrochanteric, femoral shaft, or distal femur) via internal fixation at 3 affiliated academic hospitals. Medical records, hospital billing data, and radiographs were reviewed to determine patient characteristics, Charlson Comorbidity Index (CCI), administration of enoxaparin on the morning of surgery, packed red blood cell (PRBC) transfusion, and utilization of closed incision negative pressure wound therapy (ciNPWT) for persistent drainage. 30-day mortality served as the secondary outcome measure.

Results: 602 patients were included in final analysis. 167 patients (27.7%) received enoxaparin on the morning of their surgery, whereas 435 (72.3%) of patients did not. Rate of blood transfusion was 29% in each group and was not affected by the administration of enoxaparin. Older age and fracture of the distal femur were statistically significantly associated with increased risk of transfusion. There was no significant difference in use of ciNPWT for wound drainage between groups. There was no difference in 30-day mortality between groups.

Conclusion: Administration of prophylactic enoxaparin on the morning of surgery for geriatric femur fractures does not appear to increase rate of postoperative blood transfusion or wound drainage.

Tables

Table 1: Demographic Data of Patient Population

	All Patients (n = 602)	AM Enoxaparin (n = 167)	No AM Enoxaparin (n = 435)	p
Age (years)	77.6 +/- 10.2	75.7 +/- 10.3	78.2 +/- 10.2	0.007
Percent Female	73%	72%	73%	ns
BMI	27.4 +/- 7.4	28.1 +/- 7.4	26.6 +/- 7.3	0.04
Charlson Comorbidity Index	5.92 +/- 2.8	5.4 +/- 2.6	6.1 +/- 2.9	0.005

Table 2: Administration of AM Enoxaparin by Fixation Type

Type of Fixation	Number of Patients	AM Enoxaparin	No AM Enoxaparin
Cephalomedullary Nail	385	98 (25%)	287 (75%)
Dynamic Hip Screw	58	12 (21%)	46 (79%)
Screws Alone	33	8 (24%)	25 (76%)
Distal Femoral Locking Plate	126	49 (39%)	77 (61%)
Total	602	167 (28%)	435 (72%)

Table 3: Need for PRBC transfusion by Fixation Type

Type of Fixation	All Enoxaparin requiring PRBC transfusion	No AM Enoxaparin requiring PRBC transfusion	p
Cephalomedullary Nail	24/98 (25%)	47/287 (16%)	0.05
Dynamic Hip Screw	1/12 (8%)	7/46 (15%)	0.42
Screws Alone	1/8 (13%)	8/25 (32%)	0.22
Distal Femoral Locking Plate	23/49 (47%)	43/77 (56%)	0.05
Total	49/167 (29%)	125/435 (29%)	0.88

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Table 4: Primary and Secondary Outcomes based on Administration of AM Enoxaparin Dose

	AM Enoxaparin (n = 167)	No AM Enoxaparin (n = 435)	p
Number requiring PRBC transfusion	49/167 (29%)	125/435 (29%)	0.88
Incisional Wound VAC placement for drainage	7 (4.2%)	12 (2.8%)	0.37
30-day Mortality	4 (2.4%)	12 (2.7%)	0.8

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The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.