

## Weight-Based Dosing of Prophylactic Enoxaparin Does Not Reduce Venous Thromboembolism Events Following Open Reduction and Internal Fixation of Acetabular Fractures

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**Purpose:** The purpose of this study is to compare the venous thromboembolism (VTE) risk in patients undergoing acetabular open reduction and internal fixation (ORIF) who did and did not receive appropriate weight-based enoxaparin dosing.

**Methods:** A retrospective chart review from 2013 to 2020 was performed to identify patients who underwent acetabulum fracture ORIF at our Level I trauma center. Patients were subsequently categorized by weight-based dosing status of postoperative VTE prophylaxis. Patients were reported as appropriate if body mass index (BMI) and received enoxaparin dose matched our institution’s established protocol for dosing based on BMI tiers. Occurrence of VTE events was compared using Pearson’s chi-squared test. A post hoc multivariate binomial logistic regression was conducted to control for various risk factors of VTE.

**Results:** 20 VTE events (5.51%) were identified among a total sample of 363 patients. In the cohort of 165 patients (45.45%) who did not receive appropriate weight-based enoxaparin dosing, 7 VTE events (4.24%) were detected. 13 VTE events (6.57%) were detected among 198 patients (54.55%) who did receive appropriate weight-based enoxaparin dosing. The study demonstrated no difference in VTE risk between these 2 cohorts. Pearson’s chi-squared analyses showed no significant differences in the risk of any VTE events between the patient cohorts who did not and did receive appropriate weight-based dosing (4.24% vs 6.57%,  $P = 0.33$ ). A post hoc binomial logistic regression yielded no significant association between patient risk factors, including age, length of surgery, current smoking status, sepsis, myocardial infarction (MI), stroke, history of congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and peripheral vascular disease (PVD), with the risk of VTE events in patients who did not receive weight-based dosing.

**Conclusion:** In the present study there was no difference in VTE events in acetabular fracture patients who did and did not receive weight-based dosing of enoxaparin. This suggests that chemical VTE prophylaxis may be effective, regardless of weight-based calculations, and justifies a standard dosage for most acetabular fracture patients.

Table 1. Weight Based Dosing of Chemoprophylactic Enoxaparin

BMI Tier	Weight-Based Dosing Recommendation
BMI ≤ 19	30 mg SQ injection QD
19 < BMI < 30	30 mg SQ injection BID
30 ≤ BMI < 50	40 mg SQ injection BID
50 ≤ BMI	60 mg SQ injection BID

Table 2. Weight Based Dosing and Risk of VTE Event

	Weight-Based Dosing		p value
	No (n)	Yes (n)	
No VTE event	158	185	
Any VTE event	7	13	0.334
PE	2	2	0.854
DVT	3	8	0.219
PE and DVT	1	2	0.672

Table 3. Multivariate Analysis of Patient Factors and Risk of VTE event

	VTE Event without weight base dosing	
	Odds Ratio	95% Confidence Interval
Age (years)	1.555	0.601 – 4.022
Length of surgery (hrs)	1.475	0.564 – 3.857
Current smoker	1.522	0.582 – 3.976
Sepsis	1.134	0.406 – 3.165
MI	1.686	0.619 – 4.598
Stroke	1.427	0.548 – 3.713
CHF	1.386	0.532 – 3.610
COPD	1.503	0.571 – 3.961
PVD	1.436	0.552 – 3.737

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