Early Fixation is associated with Forty percent risk reduction in early mortality among patients with Distal Femur Fractures

Muhammad Umar Jawad¹, Leeann Qubain, Haroon Kisana, Joseph Brock Walker, Andrew Adamczyk, Niloofar Dehghan, Michael D McKee²

¹University of Arizona Phoenix, ²Banner - University Medical Center Phoenix

INTRODUCTION:

Conflicting evidence regarding time to surgery and its impact on outcomes for distal femoral fractures exists in the literature. We hypothesize increased mortality among patients with distal femur fractures with delay in surgical fixation.

METHODS: This is a retrospective review of American College of Surgeon's (ACS) National Surgical Quality Improvement Project (NSQIP[®]) database. NSQIP[®] database collects sample data from 680 hospitals across the United States. NSQIP[®] database was queried from 2010-2021. CPT codes for surgical fixation of distal femur (ORIF DF), total knee arthroplasty (TKA) and revision knee arthroplasty (Rev TKA) were used in conjunction with ICD-9 & ICD-10 codes for native distal femoral fractures and periprosthetic distal femur fractures. Pre-operative, operative and post-operative factors were compared for patients undergoing surgery on hospital day 0 or 1 (HD≤1) to surgery after hospital day 1(HD>1).Chi-square and logistic regression were used for univariable and multivariable analyses, respectively, to determine the factors impacting 30-day mortality.

RESULTS:

A total of 6,857 cases were identified. Table 1 shows the results of univariable analysis comparing patients undergoing surgery on HD≤1 to HD>1. Surgical fixation of distal femoral fracture on or before HD 1 (1.37%) resulted in 40% risk reduction compared to fixation after HD 1 (3.25%) (HR 0.587; p=0.031). Presence of dyspnea (HR 4.338, p=0.005), preoperative blood transfusion (HR 2.32, p=0.001) and bleeding disorder (HR 1.727, p=0.03) were associated with increased mortality at 30-days in our multivariable analysis. Younger age (HR 0.216; p=0.001) had a protective effect.

DISCUSSION AND CONCLUSION:

Delayed surgical fixation is associated with 30-day mortality for patients with distal femoral fractures. Further studies will help determine if the increased mortality is caused by the delay itself or by other confounding variables not identified in this study that may be associated with the reason for the delay.

study	that	may	be	associated		with
Aultivariable An	alysis Pre-opera	tive Factors				
Logistic Regression			n	Hazard Ratio	95% CI	p-value
30 Day Mortality		Dependent Variable				
		Alive	5550		Reference Category	
		Dead	106			
Ge	ender					
		Male	1212	0.508	0.274-0.942	0.032
		Female	4444		Reference Category	
Dys	spnea					
		At rest	59	3.115	1.145-8.475	0.026
		At moderate exertion	371	2.301	1.320-4.009	0.003
		No Dyspnea	5226		Reference Category	
CC	OPD					
		Yes	504	1.659	0.973-2.828	0.063
		No	5152		Reference Category	
C	HF					
		Yes	177	2.049	1.016-4.133	0.045
		No	5479		Reference Category	
н	ITN					
		Yes	3803	1.687	1.009-2.823	0.046
		No	1853		Reference Category	
≥10% loss o	of body weight					
		Yes	50	3.304	0.963-11.333	0.057
		No	5606		Reference Category	
Bleeding	g Disorder					
		Yes	740	1.53	0.947-2.474	0.082
		No	4916		Reference Category	
Pre-Operation	ve Transfusion					
		Yes	563	1.892	1.155-3.099	0.011
		No	5093		Reference Category	
Pre-Operati	ve Pneumonia					
		Yes	23	4.846	1.433-16.385	0.011
		No	5633		Reference Category	
Time from Adm	ission to Surgery					
		Hospital Day 1 or less	4779	0.563	0.359-0.884	0.013
		Hospital Day 1 or more	877		Reference Category	