

Underweight Patients Experience Higher Inpatient Complication and Mortality Rates Following Acetabular Fracture

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Introduction: Underweight patients experience poor outcomes after elective orthopaedic procedures. The effect of underweight body mass index (BMI) on complications after acetabular fracture is not well-described. We evaluate if underweight status is associated with inpatient complications after acetabular fractures.

Methods: This study was IRB exempt as data were deidentified. Adult patients (≥18 years) presenting with acetabular fracture between 2015-2019 were identified from Trauma Quality Program data. Potential confounding covariables including demographic, comorbidity, injury, admitting hospital, and treatment characteristics were collected by chart review. Adjusted odds (aOR) of any inpatient complication or mortality were compared between patients with underweight BMI (<18.5 kg/m²) and normal BMI (18.5-25 kg/m²) using multivariable logistic regression and stratifying by age ≥65 years.

Results: The 1,299 underweight patients aged ≥65 years compared to 11,629 normal weight patients experienced a 1.2-times and 2.7-times greater aOR of any complication (38.6% vs. 36.6%, p=0.010) and inpatient mortality (7.9% vs. 4.2%, p<0.001), respectively. The 1,688 underweight patients aged 18-64 years compared to 24,762 normal weight patients experienced a 1.2-times and 1.5-times greater aOR of any inpatient complication (38.9% vs. 34.8%, aOR p=0.006) and inpatient mortality (4.1% vs. 2.5%, p<0.001), respectively.

Discussion: Underweight adult patients with acetabular fracture are at increased risk for inpatient complications and mortality, particularly those ≥65 years old. Future studies are needed to determine whether early multidisciplinary nutritional and medical optimization can improve the poor outcomes experienced by underweight patients with acetabular fracture.

Clinical Significance: Our study may inform the counseling of patients and caregivers about short term risks to life and health after acetabular fracture, particularly for underweight and older adults.

Table 1. Bivariable and Multivariable Logistic Regression Analyses on Odds of Inpatient Complications

Patients Aged ≥65 Years	Underweight N= 1,299	Normal weight N= 10,330	Bivariable Logistic Regression		Multivariable Logistic Regression	
Complication	N (%)	N (%)	OR (95% CI)	P-Value	aOR (95% CI)	P-Value
Any Complication	502 (38.6%)	3,781 (36.6%)	1.1 (1.0-1.2)	0.150	1.2 (1.0-1.4)	0.010
Infectious Complication	138 (10.6%)	1,152 (11.2%)	0.9 (0.8-1.1)	0.568	1.0 (0.8-1.2)	0.683
Inpatient Mortality	103 (7.9%)	431 (4.2%)	2.0 (1.6-2.5)	<0.001	2.7 (2.0-3.6)	<0.001
AKI	15 (1.2%)	191 (1.8%)	0.6 (0.4-1.1)	0.077	0.6 (0.4-1.1)	0.083
Cardiac Complication	76 (5.9%)	331 (3.2%)	1.9 (1.5-2.4)	<0.001	2.1 (1.6-2.7)	<0.001
Pulmonary Complication	45 (3.5%)	259 (2.5%)	1.3 (1.0-1.6)	0.059	1.4 (1.1-1.8)	0.009
VTE	115 (8.9%)	973 (9.4%)	0.9 (0.8-1.1)	0.509	0.9 (0.7-1.1)	0.348
Patients Aged 18-64 Years	Underweight N= 1,688	Normal weight N= 23,074	Bivariable Logistic Regression		Multivariable Logistic Regression	
Complication	N (%)	N (%)	OR (95%-CI)	P-Value	aOR (95%-CI)	P-Value
Any Complication	657 (38.9%)	8,037 (34.8%)	1.2 (1.1-1.3)	0.001	1.2 (1.1-1.4)	0.006
Infectious Complication	222 (13.2%)	2,583 (11.2%)	1.2 (1.0-1.4)	0.014	1.1 (1.0-1.3)	0.155
Inpatient Mortality	69 (4.1%)	567 (2.5%)	1.7 (1.3-2.2)	<0.001	1.5 (1.1-2.2)	0.026
AKI	33 (2.0%)	372 (1.6%)	1.2 (0.8-1.7)	0.285	1.2 (0.9-1.8)	0.244
Cardiac Complication	58 (3.4%)	671 (2.9%)	1.2 (0.9-1.6)	0.216	1.1 (0.9-1.5)	0.348
Pulmonary Complication	52 (3.1%)	533 (2.3%)	1.18 (1.0-1.4)	0.087	1.2 (0.9-1.4)	0.161
VTE	143 (8.5%)	2,079 (9.0%)	0.9 (0.8-1.1)	0.455	0.9 (0.8-1.1)	0.430

Abbreviations: aOR= Adjusted Odds Ratio, AKI=Acute Kidney Injury, OR=Odds Ratio, VTE=Venous Thromboembolism.