



# 2020 Annual Meeting

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MIDWEST SURGICAL ASSOCIATION

## 19. GERIATRIC RIB FRACTURE MORTALITY: ARE THERE CLUES IN THE CORE?

Presenter: Kathrine Kelly-Schuette DO | Spectrum Health Hospitals

KA Kelly-Schuette, A Prentice, A Orr, A Levine, A Zarnke, E Pardington, S Ponders, M Lypka, G Iskander, E Steensma, AJ Chapman, CJ Gibson, L Durling

**Background:** Sarcopenia is associated with frailty which may lead to increased morbidity and mortality in the trauma patient. This study uses the cross-sectional area (CSA) of the psoas muscle to assess for sarcopenia. The primary objective of the study was to determine the impact of muscle size on hospital mortality in patients with rib fractures over the age of 55 years.

**Methods:** A retrospective study was performed utilizing the trauma registry at a Level I trauma center between 1/1/2002 and 1/31/2019. Psoas CSA was measured at L4 using a polygonal tracing tool. The area was calculated, and the value of both sides were summed for a total value in cm<sup>2</sup>. Patients were stratified into four quartiles (Q1-Q4) based on sex-specific values.

**Results:** A total of 1223 patients were included. There was increased hospital mortality for patients with a lower psoas CSA (10.4 &#37; in Q1, 7.87&#37; in Q2, 5.88&#37; in Q3, and 4.26 &#37; in Q4; p=0.020). Significant differences in comorbidities and Injury Severity Score (ISS) >20 were also identified across all four quartiles. Length of stay, acute respiratory distress syndrome, pneumonia, and tracheostomy were not significantly different across quartiles. Patients who died (n=87) had a significantly lower psoas CSA when compared to all other patients (16.8 vs. 18.4 cm<sup>2</sup>; p=0.012). For every increase in psoas CSA by 1 cm<sup>2</sup> the odds of hospital mortality decreased by 4.2&#37; (OR 0.958 95&#37; CI 0.925-0.933; p=0.016).

**Conclusion:** Core muscle size measured by the psoas CSA may help predict mortality in trauma patients with rib fractures over the age of 55. A lower psoas CSA was found to increase the odds of hospital mortality in this patient population. Although mortality remains multifactorial, psoas CSA may provide one clue in predicting adverse outcomes after traumatic rib fractures in patients over the age of 55 years.

Characteristics and Outcomes	Q1	Q2	Q3	Q4	p-value
Core Muscle Size (cm <sup>2</sup> )	13.8 [9.39;16.2]	18.9 [12.2;20.4]	22.8 [14.7;24.2]	26.6 [18.4;29.3]	<0.001
Injury Severity Score					<b>0.011</b>
<20	228 (74.3%)	189 (62.0%)	201 (65.7%)	205 (67.2%)	
>=20	79 (25.7%)	116 (38.0%)	105 (34.3%)	100 (32.8%)	
Hospital Mortality	32 (10.4%)	24 (7.87%)	18 (5.88%)	13 (4.26%)	<b>0.02</b>
ICU LOS	1.00 [0.00;3.00]	1.00 [0.00;5.00]	1.00 [0.00;4.00]	1.00 [0.00;4.00]	0.575
Hospital LOS	4.00 [3.00;8.00]	5.00 [3.00;9.00]	5.00 [2.25;9.00]	4.00 [3.00;8.00]	0.6
Pneumonia	28 (9.15%)	46 (15.2%)	30 (9.80%)	30 (9.87%)	0.062
ARDS	16 (5.23%)	20 (6.58%)	18 (5.88%)	12 (3.96%)	0.531
Tracheostomy	24 (7.82%)	35 (11.5%)	27 (8.82%)	31 (10.2%)	0.442
COPD	40 (13.0%)	37 (12.1%)	23 (7.52%)	25 (8.20%)	0.054
CAD	82 (26.7%)	65 (21.3%)	46 (15.0%)	39 (12.8%)	<0.001
CHF	42 (13.7%)	25 (8.20%)	12 (3.92%)	11 (3.61%)	<0.001
CKD	38 (12.4%)	12 (3.93%)	10 (3.27%)	15 (4.92%)	<0.001
Current Smoker	43 (14.0%)	48 (15.7%)	45 (14.7%)	41 (13.4%)	0.868