Factors Influencing Management of Bilateral Femur Fractures:
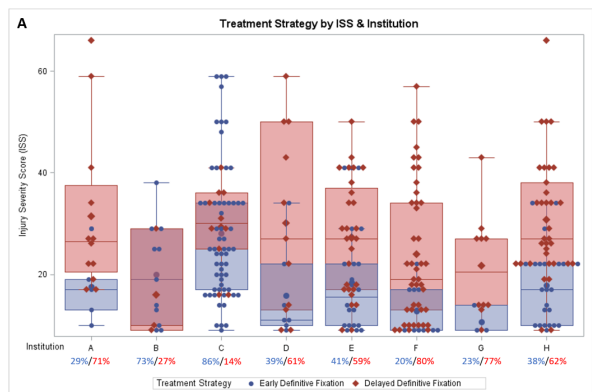**A Multicenter Retrospective Cohort of Early versus Delayed Definitive Fixation**

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Purpose: This study was conducted to evaluate institutional differences in management of bilateral femur fractures.

Methods: Patients with bilateral femur fractures treated between 1998 and 2018 at 9 Level-I trauma centers were retrospectively reviewed. Patients were grouped into early definitive fixation (DF) or delayed DF, based on whether definitive fixation of both femurs was accomplished before or after 24 hours from injury. Analysis consisted of parametric score selection for reversed logistic regression in predicting utilized treatment strategy.

Results: A total of 313 patients were included; 167 patients were classified as delayed DF and 146 as early DF. Age (P = 0.49) and gender (P = 0.71) were comparable between groups. Patients receiving delayed DF had a higher ISS, lower Glasgow coma scale (GCS), and higher admission lactate (P <0.01); however, treatment strategy differed significantly by institution (P <0.01, Fig. 1). Independent logistic odds models for predicting utilized treatment modality identified institution as most reliable influencer (c-statistics: ISS, 0.63; lactate, 0.64; GCS, 0.63; institution, 0.76). When all variables were evaluated in conjunction, institution remained the strongest contributor (χ2 statistic: institution, 44.8; ISS, 10.2; lactate, 5.8; GCS, 0.2.

Conclusion: In this study, institution was the strongest predictor of treatment strategy in patients with bilateral femur fractures. This study demonstrates an opportunity to a create standardized care pathway for patients with these injuries.

A. Treatment Strategy by ISS & Institution

Institution	A	B	C	D	E	F	G	H
	29%/71%	73%/27%	86%/14%	39%/61%	41%/59%	20%/80%	23%/77%	38%/62%

Treatment Strategy ● Early Definitive Fixation ◆ Delayed Definitive Fixation

B. Study population characteristics between 1998-2018, stratified by the fixation strategy (N=313).

	Delayed Definitive Fixation (n = 167)	Early Definitive Fixation (n = 146)	*P-value*
Age	38.0 ± 16.7 [35.4, 40.6]	36.6 ± 18.3 [33.6, 39.6]	0.49[1]
Gender	Male: 102 (63.7%) Female: 58 (36.3%)	Male: 96 (65.7%) Female: 50 (34.3%)	0.71
Injury Severity Scale (ISS)	27.1 ± 13.2 [25.0, 29.3]	21.8 ± 12.0 [19.8, 23.8]	<0.01[1]
Glascow Coma Scale (GCS)	10.7 ± 5.2 [9.9, 11.6]	13.0 ± 4.0 [12.4, 13.7]	<0.01[1]
Admission Lactate	4.4 ± 3.9 [3.9, 4.9]	3.0 ± 1.4 [2.7, 3.3]	<0.01[1]
Hospital Length of Stay	25.8 ± 33.9 [20.0, 30.5]	13.3 ± 15.9 [10.6, 15.9]	<0.01[1]
ICU Length of Stay	11.4 ± 11.6 [9.6, 13.2]	5.8 ± 6.9 [4.6, 6.9]	<0.01[1]

A summary of study population characteristics relating to samples' demographics and injury patterns.
[1]Resulting *p*-value from a student's two-sample *t*-test.
[2]Resulting *p*-value from a chi-square test between the two fixation groups.

See the meeting app for complete listing of authors' disclosure information.