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

Ilexa Rae Flagstad, BS; Lauren MacCormick, MD; Melissa White, BA; Austin Heare, MD; Harsh Rajesh Parikh; Jerald Westberg, BA; Tegan Schmidt, BA, BS; Natasha Simske, BS; Alexander Suy, BS; Reuben C. Lufraf, MD; Nichole Shaw, MD; Jason Nadeau, MS; Patrick Taylor Davis, BS; Daniel Connelly, BS; Jared Atchison, BS; Andres F. Rodriguez-Buitrago, MD; Joseph T. Labrum IV, MD; Erik A. Lund, MD; Cyril Mauffrey, MD, MRCS; David J. Hak, MD; Paul S. Whiting, MD; Hassan Riaz Mir, MD, MBA, FACS; Andrew H. Schmidt, MD; Emily Wagstrom, MD; William T. Obremskey, MD, MPH; Robert V. O’Toole, MD; Heather A. Vallier, MD; Brian Cunningham, MD

University of Minnesota & HealthPartners, St. Paul, MN, United States

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 create a standardized care pathway for patients with these injuries.