Zahra Vafaei Naeini
L2
LSU Health Sciences Center, New Orleans, LA

Amit Bhandutia, M.D.
LSUHSC Department of Orthopedics

"Impact of Injury Region and Severity on Outcomes in Noncontiguous Spinal Fractures: A Retrospective Multivariable Analysis"

Introduction: Noncontiguous spinal fractures, defined as injuries separated by three or more intact vertebrae, are rare but clinically significant injuries often resulting from high-energy trauma such as motor vehicle collisions. These fractures are associated with instability, neurological compromise, and long-term deficits, yet diagnosis is frequently delayed in 23–28% of cases due to distracting injuries or compromised clinical exams. Despite existing classification systems, a unified framework for diagnosis and management is lacking, and institutional variability further complicates care. This study aims to evaluate the impact of injury region and severity on outcomes in adult patients with traumatic noncontiguous spinal fractures.

Methods: We are conducting a retrospective cohort study of blunt trauma patients aged ≥18 with noncontiguous spinal fractures treated at University Medical Center New Orleans between 2016–2024. Data collected include demographic characteristics, mechanism of injury, insurance status, injury region and severity, surgical details, and outcomes. Outcomes of interest include discharge disposition (home vs. non-home), intensive care unit (ICU) length of stay, total hospital length of stay, pneumonia, readmissions, and ambulatory status at discharge. Multivariable analyses will be performed using SAS 9.4, with ANCOVA as the primary method, controlling for demographic and clinical covariates. A sample size of 654 patients was estimated based on power analysis to detect differences in pneumonia rates between operative and non-operative management groups.

Results: We anticipate that greater injury severity and involvement of multiple regions will be associated with longer ICU stays, higher rates of pneumonia and other complications, and increased likelihood of non-home discharge. Prior literature suggests that delayed recognition and variability in surgical decision-making contribute to worse neurological and respiratory outcomes in this population.

Conclusion: By evaluating how spinal injury region and severity affect clinical outcomes, this study seeks to provide evidence to guide more standardized care pathways for noncontiguous spinal fractures. Improved understanding of outcome predictors may inform individualized treatment strategies, reduce complications, and optimize recovery for patients sustaining these rare but complex injuries.