

**Introduction:** Orthopedic costs associated with gunshot wounds (GSW) were found to have totaled approximately \$510 million from 2005 to 2014. Previous studies have introduced differences in injuries associated with self-inflicted (SI) GSW injuries, however, there remains a gap in understanding specific injury patterns. The goal of this study is to expand upon the current literature and shed light on the differences in injury patterns and clinical outcomes associated with SI vs. NSI GSW injuries.

**Methods:** A retrospective cohort analysis of GSW to the upper extremity from January 2012 to December 2022. Statistical analysis consisted of 2-tailed *t* tests and ANOVA logistic regression analysis.

**Results:** The SI group had more high-velocity GSWs compared to the NSI group ( $p=0.0014$ ) and had a higher proportion of SI GSW to the distal locations compared to NSI GSWs ( $p<.0001$ ). The NSI group had more patients with multiple injury locations and more cases of polytraumas than did the SI group ( $p<.0001$ ). SI GSWs demonstrated higher Gustilo-Anderson (GA) and Tscherne classifications ( $p=<.0001$  and  $p=0.0048$  respectively) and were associated with more extensive neurovascular damage ( $p=0.0048$ ), but had no difference in fracture rate or need for operative intervention between the groups. GA and Tscherne classification predicted need for and type of surgery ( $p<0.0001$ ) with a higher classification being associated with more intricate operations, however, GSW velocity did not predict operative need ( $p=0.4166$ ).

**Conclusion:** High velocity GSW resulted in higher GA and Tscherne classification and worse neurovascular damage, but found no difference in predicting surgery or the type of surgical intervention when compared to low velocity GSW. Additionally, a higher GA and Tscherne classification was associated with the need for and more intricate types of surgical interventions. Our findings support the idea that velocity, wound grading systems, and other factors can help accurately predict injury patterns and necessary surgical intervention.