

**Multicenter Comparison of Outcomes for Management of GSW Humerus Fractures**

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**Purpose:** Gunshot wounds (GSWs) are a major cause of injury and disability in the US. Although humerus fractures unrelated to ballistic injury have been successfully managed both operatively and nonoperatively, the outcomes of GSW-induced humerus fractures remain more uncertain. We aim to compare outcomes, both radiographic and clinical, between operative and nonoperatively treated GSW-induced humerus fractures.

**Methods:** We conducted a retrospective chart review of patients aged 18 or older who sustained a GSW-induced humerus fracture and presented at one of 9 university hospitals between January 2016 and October 2021. Data, including demographic and clinical details, GSW-related information, and outcomes, were extracted from medical charts. Patients were categorized based on surgical intervention (operative vs nonoperative), and the univariate association with various outcomes was analyzed using either a  $\chi^2$  test or a t-test.

**Results:** A total of 427 patients were included in the preliminary analysis (291 operative vs 146 nonoperative). No significant differences were observed between the 2 groups in age ( $P = 0.644$ ), gender ( $P = 0.174$ ), race ( $P = 0.310$ ), or insurance ( $P = 0.403$ ). The majority of patients were male (88.1%), African American (78.9%), and had Medicaid insurance (61.4%). Median age was 28 years old (range, 18-75). Operative patients had a higher prevalence of nerve (46.7% vs 22.1%,  $P < 0.001$ ) and vascular injury (17.5% vs 4.4%,  $P < 0.001$ ). 61.2% of operative patients and 42.7% of nonoperative patients had at least 1 follow-up 60 days or later after hospital discharge. Overall, operative treatment was associated with a higher infection rate (6.5% vs 0.7%,  $P = 0.006$ ) and observed nonunion rate (10.7% vs 4.4%,  $P = 0.033$ ), while observed union rates did not significantly differ (49.1% vs 44.4%,  $P = 0.093$ ).

**Conclusion:** Patients who underwent operative treatment were more likely to have preoperative nerve and vascular injury. Operative treatment of GSW-induced humerus fractures was associated with higher rates of infection and nonunion.