

Operative Versus Nonoperative Management of Humerus Fractures*Reza Firoozabadi, MD, MA¹; Edward Westrick, MD²; Benjamin Hamilton, MS³;**Bradford Henley, MD, MBA¹;**¹Harborview Medical Center/University of Washington, Seattle, Washington, USA;**²Allegheny General Hospital, Pittsburgh, Pennsylvania, USA;**³Case Western Reserve University, Cleveland, Ohio, USA*

Purpose: The ideal treatment of humeral shaft fractures remains controversial. Both operative and nonoperative interventions have limitations, although functional bracing is thought to result in a low rate of complications.

Methods: Patients with humeral shaft fractures (AO 12-A, B, C) from 2000-2011 were identified from our institution's prospective patient data registry. Patient characteristics, treatment type, consolidation period, injury mechanism, nerve palsy, nonunion and other injuries were retrieved from the electronic medical record. Data were analyzed using SPSS version 21.0 for Windows.

Results: A total of 505 patients with acute humeral shaft fractures were identified. 209 patients were excluded for the following reasons: pathologic fracture, age less than 16 years old or failure to follow up to radiographic union; 296 patients met inclusion criteria. A total of 227 fractures were treated operatively, and 69 treated with functional bracing. A high-energy mechanism was identified in 67% of nonoperative and 79% of operative patients. 44% of nonoperative fractures were isolated injuries compared with only 21% treated operatively. The nonunion rate was 9.7% in operative fractures and 23.2% with functional bracing. 12 nonunions resulted after intramedullary nail (54.5%), 9 after plate osteosynthesis (41%), and 1 after external fixation (4.5%). In the nonoperative nonunions, 44% were wedge (12-B2/3), 31% transverse (12-A3), 18.75% oblique (12-A2), and 6.25% comminuted (12-C3). Nerve palsies were identified in 84 operative patients (37%), with 82 palsies diagnosed preoperatively. 14 nonoperatively treated patients sustained nerve palsies (20%). One nonoperative and 10 operative palsies resulted in permanent dysfunction. Seven operatively treated arterial injuries (3%) were identified.

Conclusion: This study of mostly polytraumatized patients demonstrates a higher nerve palsy rate than previously reported for both operative and nonoperative treatment of humeral shaft fractures, likely resulting from high-energy trauma. The incidence of nonunion is higher than previously reported for nonoperative management.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.