

Results and Outcomes after Midshaft Clavicle Fracture: Matched Pair Analysis of Operative Versus Nonoperative Management

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Purpose: Traditional conservative treatment of midshaft clavicle fractures has recently transitioned toward an operative approach in many patients. However, this is not a consensus practice in the orthopaedic community. Prior studies have not well defined those patients who benefit most from surgery, maintaining acceptable risk of complications and reasonable cost of care. This study evaluates clinical results and functional outcomes of closed, midshaft clavicle fractures for patients treated surgically matched with patients treated nonoperatively.

Methods: Closed, midshaft clavicle fractures in skeletally mature patients were identified from a Level I trauma center registry between 2002 and 2013. Eighty patients were treated primarily with open reduction and internal fixation with plating (ORIF), and 491 patients were treated nonoperatively. 71 matched pairs were generated based on age, gender, and fracture pattern (OTA 15B-1,2,3). Seven patients had inadequate radiographic follow-up after ORIF; although they had no known adverse events, they were excluded, leaving 64 pairs. Charts and radiographs were reviewed, and the American Shoulder and Elbow Surgeons (ASES) survey was administered. A poor outcome was defined as a treatment complication or ASES score <60.

Results: The study group consisted of 106 men and 22 women with mean age of 38.5 years (range, 16 to 71) and fracture patterns of 15B-1 (n = 76), 15B-2 (n = 44), and 15B-3 (n = 8). 38% of patients were tobacco smokers, with 22 in the operative group and 26 in the nonoperative group. Ten (15.6%) initial nonoperative patients underwent ORIF at a mean of 26 weeks (range, 7 to 48) due to persistent pain and motion at the fracture site, and 2 of these had elective implant removal after healing following ORIF. 14 of the 64 patients (21.9%) treated acutely with ORIF had 15 complications including: 1 deep infection, 2 nonunions, 1 malunion, 8 painful implants, and 3 implant failures, resulting in secondary procedures in 10 patients (15.6%). 35 patients with acute ORIF completed ASES surveys with mean score 81.7, while 64 initial nonoperative patients had mean ASES of 80.8. Seven patients (20.0%) after ORIF had ASES <60 (mean 40.5), while the initial nonoperative group had 9 patients (14.1%) with ASES <60 (mean 43.1, P = 0.84). Overall, the rate of poor outcomes was 20 of 64 in the operative group (31.3%) and 18 of 64 (28.1%) in the nonoperative group. Unemployment (P = 0.023) was associated with poor outcome, irrespective of type of treatment, while smoking (P = 0.13) and alcohol abuse (P = 0.29) were not significant with the numbers available.

Conclusion: Patient selection is an important factor in achieving good surgical outcomes. For patients matched in age, gender, and fracture pattern, initial surgical versus nonsurgical treatment resulted in similar total complication rates and no difference in functional outcomes. Social factors may prove to be greater predictors of outcomes. We support consideration of initial nonoperative management in closed midshaft clavicle fractures in patients with social risk factors for poor outcome.