Treatment of Humeral Shaft Fractures (OTA Type 12):
What the Patient Needs to Know for Shared Decisionmaking

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Purpose: The purpose of this study is to determine differences in functional outcomes, return to work, and complications, in operative versus nonoperatively treated diaphyseal humeral shaft fractures to facilitate shared decisionmaking.

Methods: 241 consecutive patients with 241 humerus shaft fractures (OTA type 12) who presented to our trauma system were retrospectively reviewed. Data collected included patient demographics, initial injury and surgical information, and follow-up information including: elbow and shoulder range of motion (ROM), healing complications, and time to radiographic healing. Patients were seen at 2 weeks, 6 weeks, 3 months, 6 months, 12 months, and subsequent encounters. Outcomes were analyzed using univariate and multivariate regression tests to determine differences in outcomes based on treatment option.

Results: 150 patients with mean age of 52.7 years (range, 19 to 94) who had 24.4 months (6 to 60 months) follow-up and complete radiographic and functional data were included for analysis. 83 patients (55.3%) were treated with nonoperative care in a functional brace. The rest were treated surgically with either a plate and screw construct or an intramedullary nail. The mean time to healing did not differ between the operative and nonoperative cohorts (5.8 ± 3.8 months vs 5.1 ± 2.4 months, $P>0.05$). Patients treated operatively recovered faster with regard to elbow ROM by 6 weeks ($P = 0.039$), were more likely to be back at work by 8 weeks after injury ($P = 0.001$), and demonstrated earlier mean time to return to daily activities ($P = 0.005$). Incidence of nonunion was higher in the nonoperative cohort (10.48% vs 0%, $P = 0.031$) Three patients (4.5%) in the operative group developed iatrogenic, postoperative nerve palsy, from which 2 (66.6%) resolved and 1 required secondary operation to address function. Two patients in the operative group (4%) had a postoperative infection; both resolved with antibiotics and no subsequent surgery.

Conclusion: All patients recovered clinically and functionally in both cohorts. Time to recovery was 6 weeks faster in the surgically treated group of humeral diaphyseal fractures. Functional gains should be weighed by the patient and surgeon against risk of surgery, nonunion, nerve injury, and infection when considering various treatment options to better accommodate patients' needs.