

No Change in Outcome Between 1 and 5 Years After Repair of Displaced Proximal Humerus Fractures

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Purpose: Proximal humerus fractures are common fragility fractures in the elderly and occur after high-energy fractures in younger patients. These serious injuries may affect a patient's quality of life long-term. This study aims to determine if greater than 1-year follow-up for patients treated with locking compression plates for proximal humerus fractures is clinically warranted.

Methods: Patients treated for proximal humerus fractures with a locking compression plate, by two of three orthopaedic trauma surgeons at our major academic center, prospectively enrolled in a database of 269 patients, were reviewed. Of the 269 patients enrolled in the database, 200 patients underwent surgical fixation greater than 5 years from date of query. After excluding for insufficient follow-up, incorrect patient contact information, and mortality, 75 patients (37.5%) met criteria for inclusion. For these 75 patients, mean long-term follow-up was 10.5 ± 3.2 years (range, 5.0-16.8 years). Clinical data collected included the Disabilities of the Arm, Shoulder and Hand (DASH) scores, complication rates, and shoulder range of motion at 1 and 5 years. Data were analyzed with paired t tests using IBM SPSS.

Results: Patient-reported functional outcome (DASH) scores between the 1-year and long-term follow-up did not differ (16.3 ± 17.4 vs 15.1 ± 18.2 , $P = 0.555$). There was no difference in shoulder forward flexion ($145.5 \pm 32.4^\circ$ vs $151.5 \pm 39.1^\circ$, $P = 0.186$), external rotation (48.4 ± 16.6 vs 57.9 ± 23.5 , $P = 0.074$), and internal rotation (T10 vs T9, $P = 0.204$) between 1 year and long-term follow-up. 18 patients experienced 26 complications within 1 year of initial fracture fixation. Of these, 9 patients underwent 13 reoperations. Complications included 11 screw penetrations, 7 cases of osteonecrosis, 3 infections, 3 malunions of the greater tuberosity, and 2 fracture nonunions. No patients experienced further complications related to the index surgery after one year follow up, and no patients developed osteonecrosis or infection following healing. Four patients underwent further shoulder surgery after 1-year follow-up, which included 1 removal of implant and soft-tissue mass excision, 1 patient who underwent removal of implant and revision fixation due to recurrent shoulder instability, 1 patient who underwent implant removal and rotator cuff repair due to a fall and dislocation, and 1 patient who underwent implant removal due to implant irritation without further complication.

Conclusion: Patient-reported functional outcome scores and shoulder range of motion both plateau after 1 year following proximal humerus fracture fixation, and outcomes do not deteriorate over 5 years. After 1 year, long-term follow-up of fixed proximal humerus fractures is unnecessary for those without symptoms.