High Rate of Osteonecrosis But Excellent Patient-Reported Outcomes After Open Reduction and Internal Fixation of Proximal Humerus Fracture Dislocations

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Purpose: Proximal humerus fracture dislocations are rare. Outcomes after open reduction and internal fixation (ORIF) of these injuries have not been well described in the literature. The purpose of this study was to report the radiographic and functional outcomes of patients who underwent ORIF of a proximal humerus fracture dislocation.

Methods: All skeletally mature patients who underwent ORIF of a proximal humerus fracture dislocation at 2 institutions between 2011 and 2020 were identified. Patients with isolated greater tuberosity fracture dislocations were excluded. The primary outcome was development of osteonecrosis (ON). Secondary outcomes were American Shoulder and Elbow Surgeons (ASES) scores at a minimum of 2 years, and reoperation rate.

Results: 26 patients met the inclusion criteria, with a mean radiographic follow-up of 3.5 years (range, 0.5-11) and mean clinical follow-up of 5 years (range, 1-11). The mean age was 45 years (standard deviation 16; range, 17-80). 77% were men. Median time to reduction and surgery was 1 day (interquartile range [IQR], 1-5). There were 2 (8%) Neer 2-part fractures, 7 (27%) 3-part, and 17 (65%) 4-part fractures. 54% involved the anatomic neck and 31% included a head-split component. 39% were anterior dislocations. The rate of ON was 19%. The reoperation rate was 19%. Reoperations included removal of hardware (2), subscapularis repair and removal of hardware (1), manipulation under anesthesia (1), and axillary nerve neurolysis with radial nerve transfer to the axillary nerve for a persistent axillary nerve deficit (1). No patients went on to arthroplasty. ASES scores were available for 22 patients (85%) including 4 of 5 patients with ON. The median ASES score at a mean of 5 years postoperatively was 98.3 (IQR, 86.7-100; range, 63.3-100), and was not different in those with or without ON (median 98.3 vs 92.0, P = 0.175). Only the presence of medial comminution and nonanatomic head shaft alignment on postoperative radiographs were associated with increased risk of ON.

Conclusion: Rate of ON (19%) and rate of reoperation (19%) were high in this series of patients undergoing ORIF of proximal humerus fracture dislocations. Despite this, none of the patients required arthroplasty and patient reported outcome scores at an average of 5 years postinjury were excellent. Based on these results, ORIF rather than arthroplasty is warranted in most patients.