Inclusion of Olecranon Osteotomy With the Posterior Approach for Fixation of Distal Humerus Fractures (OTA/AO 13) Does Not Increase Surgical Complications

***Erin S Wilson BS**; Joseph A Buckwalter MD; Grant Douglas Henning BA; John Davison MPH; Ignacio Garcia Fleury MD; Michael C Willey MD*
University of Iowa, Iowa City, IA, United States

Purpose: Operative fixation of distal humerus fractures carries a significant risk of postoperative complications, including: ulnar neuropathy (UN), nonunion, and surgical site infection (SSI). The posterior paratricipital approach to the elbow can be performed with or without an olecranon osteotomy for additional articular exposure. The purpose of this study was to determine if inclusion of an olecranon osteotomy significantly impacts surgical complication rates following open reduction and internal fixation (ORIF) of distal humerus fractures (OTA/AO 13).

Methods: Subjects at a single Level-I trauma center who underwent operative fixation of a distal humerus fracture between 2007 and 2017 were identified by CPT code. Injury radiographs and operative notes were reviewed to confirm fracture classification and surgical approach. The criteria for inclusion were skeletally mature patients aged 15 years and older; OTA/AO fracture type 13A, B, or C; and posterior paratricipital surgical approach with or without olecranon osteotomy. Patients with documented postoperative complications including nonunion, postoperative UN, and SSI were identified. We defined postoperative UN as either sensory and/or motor deficits following operative fixation. The Charlson comorbidity index (CCI) was also obtained.

Results: 134 individuals who underwent distal humerus fixation met inclusion criteria, either with (n = 64) or without (n = 70) an olecranon osteotomy. Of subjects with no preoperative ulnar nerve symptoms (n = 119), 21 patients (33.3%) who underwent paratricipital approach without olecranon osteotomy and 15 patients (26.8%) who underwent olecranon osteotomy approach reported postoperative UN. There was no significant difference in postoperative UN rate between the 2 approaches (P = 0.438). Additionally, there was no significant difference in rates of SSI (P = 0.418) or fracture site nonunion (P = 0.263) between approaches at minimum 6-month follow-up. Subjects with CCI ≥2 were more likely to not undergo an olecranon ostotomy (P = 0.01) whereas subjects with more complex fractures by OTA/AO classification were more likely to have an olecranon osteotomy approach (P = 0.001).

Conclusion: The paratricipital and olecranon osteotomy approaches for ORIF of distal humerus fractures have similar rates of postoperative UN, nonunion, and SSI. Despite more complex fracture patterns in subjects with olecranon osteotomy there was no difference in ulnar nerve neuropathy postoperatively. Based on this investigation, we cannot recommend favoring one approach over the other as a way to minimize these postoperative complications.