Risk Factors for Unplanned Reoperation After Open Fractures of the Distal Humerus

Zachary Wilhelm, BS; Phillip W. Lam, MD; Peter Mittwede, MD, PhD; Min Zhan, PhD; Raymond Pensy, MD

BACKGROUND: Due to their high complication risk, open distal humerus fractures represent a major challenge in orthopaedic trauma. This study aimed to identify risk factors for unplanned reoperation following definitive fixation of open distal humerus fractures.

METHODS: A retrospective cohort was conducted at a Level I trauma center including adult open distal humerus fracture (13A-C) patients requiring internal fixation between September 2009 and December 2020. Patients under 18 years, non-acute open fractures, and those who received definitive fixation at other institutions were excluded. Demographics, Orthopaedic Trauma Association Open Fracture Classification, Gustilo-Anderson classification, injury characteristics, and operative variables were collected. The primary outcome was unplanned reoperation for infection, nonunion, implant failure, stiffness, irritation, pain, or other.

RESULTS: 153 patients were included with 77% males and a mean age of 45 years (SD: 18 years). 34 of 153 patients (22.2%) required unplanned reoperation. The most common indications were infection in 14 patients (9.1%) and stiffness in 8 patients (5.2%). Following multivariate analysis, no single variable achieved statistical significance. Only intra-articular involvement (OR, 3.79; 95% CI, 0.97–14.87; $P = 0.06$) approached significance.

CONCLUSION: The complexity and relative rarity of this injury limit identification of individual factors influencing adverse outcomes. Indicators of greater overall injury severity, like intra-articular involvement, should raise caution as potential signs of increased complication risk. Use of olecranon osteotomy did not increase risk for unplanned reoperation, supporting its use in open injuries where greater injury complexity is expected at the joint surface.