

Does timing of total elbow arthroplasty after distal humerus fracture affect 2-year complication rates?

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Abstract

Background: Open reduction internal fixation (ORIF) remains the gold standard for adult distal humerus fractures (DHF). However, indications for total elbow arthroplasty (TEA) continue to expand and the incidence of primary and salvage TEA for DHF has increased. The objective of this study was to compare complication and reoperation rate for acute versus delayed primary and salvage TEA performed for DHF.

Methods: Patients who underwent TEA for DHF were identified in the PearlDiver database. Patients were sorted into three cohorts: (1) acute TEA (within 2 weeks of diagnosis), (2) delayed TEA (between 2 weeks and 6 months after diagnosis), and (3) salvage TEA (after failed ORIF, malunion, nonunion, delayed treatment between 6 months-1 year or post-traumatic arthritis). Multivariate analysis was utilized to assess for confounding variables and covariates when identify differences in complications between cohorts.

Results: 788 patients underwent acute TEA, 213 patients underwent delayed TEA, and 422 patients underwent salvage TEA after DHF. The incidence of PJI (8.5% vs. 3.4%, odds ratio (OR) 2.60, $P=0.002$) and triceps injury (2.4% vs. 0.4%, OR 6.29, $P=0.012$) were higher in the delayed compared to acute cohort. The incidence of revision (8.5% vs. 2.1%, OR 3.76, $P<0.001$), periprosthetic fracture (4.3% vs. 1.1%, OR 3.64, $P=0.002$), PJI (14.7% vs 3.4%, OR

4.36, $P < 0.001$), triceps injury (2.6% vs. 0.4%, OR 5.70, $P = 0.008$), and wound complications (6.9% vs 2.9%, OR 2.33, $P = 0.002$) were higher in the salvage compared to acute cohort. There was an increased rate of revision (8.5% vs. 1.9%, OR 6.08, $P = 0.002$) in the salvage compared to delayed cohort.

Conclusion: Patients undergoing salvage TEA after DHF have increased rates of at 2-years postoperatively including revision, periprosthetic fracture, PJI, triceps injury, and wound complications. The salvage cohort also had an increased risk of revision when compared to the delayed cohort. However, other than revision rates, patients in the salvage and delayed cohorts have similar postoperative complication rates.