Outcomes after Acute Versus Delayed Total Elbow Arthroplasty for the Treatment of Distal Humerus Fractures

Christina Liu, Brandon Elizabeth Earp[1], Dafang Zhang, Philip E Blazar[1]
[1]Brigham and Women's Hospital

INTRODUCTION: Our purpose is to compare outcomes of acute versus delayed total elbow arthroplasty (TEA) following distal humerus fractures.

METHODS: This retrospective study included 39 patients who underwent primary TEA surgeries with semi-constrained implants for distal humerus fractures, either within 4 weeks of their injury or after failing initial open reduction and internal fixation (ORIF) or nonoperative management, between June 1, 2003 and February 1, 2018 with minimum 1-year follow up. Our outcome measures included QuickDASH score, complications, reoperations, and range of motion (ROM). Demographics, clinical variables, and outcomes were compared using the Student's t-test, Mann-Whitney U test, and Fisher's exact test as appropriate. Kaplan-Meier curves for mortality, implant survivorship, and reoperation were created.

RESULTS: Our patients were categorized into acute TEA (n=22), ORIF to TEA (n=10), and nonoperative to TEA (n=7) treatment groups. Additional analysis was performed comparing acute TEA to delayed TEA, which combined data from both failed ORIF and nonoperative cohorts. The median follow up, average age, and median Charlson Comorbitity index (CCI) were similar between groups. The most common fracture pattern was AO 13C. At median follow up of 5.8 years, QuickDASH differed between cohorts: mean of 31 (SD 19) in acute TEA and 52 (SD 27) in delayed TEA, which further subdivided to 44.2 (SD 25) in failed ORIF and 76 (SD 23) in failed nonoperative. Poorer QuickDASH scores at final follow up were associated with delayed TEA, initial nonoperative management, and depression. Surgical complications were associated with delayed TEA. Higher CCI was associated with death. No variables were significantly associated with ROM, revision, or reoperation.

DISCUSSION AND CONCLUSION: Comminuted distal humerus fractures are difficult to treat in the elderly with high rates of complication and poor function after surgery. Our study suggests TEA performed acutely for these injuries result in satisfactory outcomes and should be a consideration for patients at high risk of failing ORIF or nonsurgical management.