

Revision Total Elbow Arthroplasty: Indications and Outcomes at a Single Institution

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Introduction

Total elbow arthroplasty (TEA) has demonstrated improved pain and function for multiple diagnoses. However, it is associated with high failure and complicate rates, oftentimes requiring revision TEA. The long-term outcomes of revision TEA remain ill-defined. This study establishes the survival of revision TEA from a high-volume single institution.

Methods

Following institutional review board (IRB) approval, a retrospective review of all revision TEA performed at a tertiary referral center from Sep 1999 to Sep 2022 was performed. The following data was collected: patient demographics, comorbidities, and surgical history; revision implant parameters and linkage status; surgical details including bone loss, radiographic analysis, and cement quality; and indication for primary and revision TEA. Post-operatively, patients were followed for complications, re-operation, and revision. A historical primary TEA cohort was utilized for comparison. Statistical analysis was performed with SPSS (Version 29; IBM; Armonk, NY).

Results

53 elbows in 51 patients underwent revision TEA during the study period. Average patient age was 57.3 years (range: 32-86 years), 35/51 (68.6%) were female, and the mean follow-up was 12.7 years (range: 3-25 years). 42/53 (79%) of revised elbows were Stryker Latitude (Stryker; Kalamazoo, MI). The most common indication for revision was aseptic loosening (41/53, 77.4%) and mean time from primary TEA to first revision at this institution was 4.5 years (range: 7 days to 27 years). Nearly two-thirds of the elbows (32/53; 60.4%) underwent 97 re-operations and one-third (18/53; 33.9%) underwent re-revision TEA. Patients undergoing revision TEA were at substantially greater risk of re-operation (60.8% versus 41.1%; $p<0.05$) and subsequent revision (34% versus 18.3%; $p<0.05$) relative to primary TEA. The most common indication for re-operation was infection (62%) and the most common indication for re-revision was aseptic loosening (71%). 12/41 (29.3%) of elbows that underwent index revision for aseptic indications ultimately required subsequent surgery for infection. Following revision TEA, one-fifth of (10/53; 18.8%) were definitively explanted. Factors associated with re-operation were younger age, female gender, and post-operative draining wounds. Factors associated with re-revision were younger age and longer follow up.

Conclusion

Total elbow arthroplasty remains a viable option for treating numerous pathologies of the elbow. However, patients that require a revision TEA suffer a high re-operation rate and re-revision rate greater than that of primary TEA. Infection and aseptic loosening complicate a significant number of revision TEA. Continued efforts to improve long-term outcomes of TEA by optimizing implant design, surgical technique, and patient selection would have substantial benefit.