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Trends In Total Elbow Arthroplasty

Introduction: Total elbow arthroplasty (TEA) is indicated in severe cases of rheumatoid arthritis (RA), osteoarthritis (OA), and elbow trauma. TEA utilization is limited by concerns related to postoperative limitations, perioperative complications, and the need for revision surgery. The purpose of this study was to evaluate recent trends in TEA incidence in the United States and assess changes in overall incidence, preoperative diagnosis, demographics, and comorbidities among patients undergoing TEA.

Methods: Patients with a diagnosis of RA, OA, or elbow trauma who underwent primary TEA from 2010 through 2021 were identified within the PearlDiver Mariner Patient Claims Database using CPT, ICD-9, and ICD-10 codes. Logistic regression models were used to compare the incidence of TEA overall and by preoperative diagnosis. One-way ANOVA followed by Tukey's HSD assessed the mean change in age and Charleston Comorbidity Index (CCI) in TEA patients.

Results: Within the 11-year period, a total of 7,918 patients underwent TEA. There was a 42% decrease in the total number of TEA performed - from 823 in 2010 to 484 in 2021. In total, 51% of TEAs were performed for trauma, 18% for OA, 15% for RA, and 16% for an unspecified cause. There was a decrease in the annual number of TEA during the study period for all three indications, with the greatest decrease in incidence for the unspecified cohort (59%), followed by RA (57%), followed by OA (38%), and then trauma (32%). The mean age of patients undergoing TEA increased from 62 years (SD=0.4) in 2010 to 69 (SD=0.7) in 2021 ($p < 0.05$). The mean CCI of patients undergoing a TEA increased from 1.3 (SD=0.1) in 2010 to 2.5 (SD=0.1) in 2021 ($p < 0.05$).

Discussion: The incidence of TEA in the U.S. is decreasing for RA, OA, and trauma cases. Patients undergoing TEA are older and have more comorbidities in recent years. These findings are likely a reflection of stricter operative indications for TEA.