

Factors Impacting Time from Initial Corticosteroid Injection to Total Shoulder Arthroplasty

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INTRODUCTION: Prior to undergoing total shoulder arthroplasty (TSA), patients with shoulder osteoarthritis (OA) typically first attempt conservative management. Corticosteroid injection may act as a temporizing measure for patients, delaying the need for surgical intervention. The purpose of this study was to measure the time from initial corticosteroid injection to primary anatomic or reverse TSA in patients being treated for a primary diagnosis of glenohumeral OA or rotator cuff (RTC) arthropathy as well as identify any factors impacting the duration of this time.

METHODS: A retrospective review of patients who underwent both corticosteroid injection in the shoulder and subsequent TSA from 2010 to 2021 was performed. Patients were included if they had a clinical diagnosis of glenohumeral OA or RTC arthropathy with corresponding radiologic findings, corticosteroid injection for OA, and subsequent anatomic or reverse TSA at the institution where the initial injection was given. Recorded measures included time between initial CS injection and TSA, number of corticosteroid injections, patient demographics, clinical findings, and radiologic findings. Kaplan-Meier method to compare median time to TSA (i.e. median survival time) between primary OA and RTC arthropathy patients. Cox proportional-hazards model stratified by primary diagnosis was used to identify significant predictors of time to TSA. Statistical significance was set at $p < 0.05$.

RESULTS: A total of 277 patients were included in the cohort, 139 of whom had primary OA and 138 of whom had RTC arthropathy. Kellgren-Lawrence (KL) grade of glenohumeral OA was more severe in the primary OA group (< 0.001). Average number of steroid injections given was 1.8 (range: 0-17). Mean time from initial injection to arthroplasty was 25 months (range 1-101). Mean time to TSA was the same for both primary OA and RTC arthropathy patients ($p = 0.43$). Median time to TSA was also similar between both groups ($p = 0.98$). Significant predictors of shorter time to TSA included older age ($p < 0.001$) and male sex ($p = 0.02$) while predictors of longer time to TSA included greater number of injections ($p < 0.001$) and presence of inferior humeral head osteophytes on radiography ($p = 0.03$).

DISCUSSION AND CONCLUSION: The findings of the current study indicate that primary glenohumeral OA and RTC arthropathy patients who receive corticosteroid injections have a mean time to TSA of about 2 years. Mean time from initial corticosteroid injection to TSA was the same for both primary glenohumeral OA and RTC arthropathy patients. Rate of OA symptom progression as extrapolated from median survival time was also similar between both groups. Older age and male sex were associated with shorter time to TSA whereas increased number of injections and presence of inferior osteophytes was associated with longer time to TSA. Knowledge of these predictors may assist orthopaedic surgeons with counseling shoulder OA patients about the timeline for their eventual TSA following their first steroid injection.