Risk of Hip Surgery, Rapidly Progressive Osteoarthritis, and Avascular Necrosis Following Intra-Articular Corticosteroid Injection: A Retrospective Review of 349 Patients

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INTRODUCTION:
Intra-articular corticosteroid injections are frequently used to manage symptomatic hip osteoarthritis, as they have been shown to alleviate pain and delay surgical intervention. However, data on their long-term efficacy and risks—particularly regarding progression to total hip arthroplasty (THA), rapidly progressive osteoarthritis (RPOA), and avascular necrosis (AVN)—remain limited. We conducted a retrospective cohort study to assess the prevalence and risk factors associated with progression to hip surgery, RPOA, and AVN following intra-articular hip corticosteroid injection.
METHODS:
We conducted a retrospective cohort study of 349 adults with symptomatic hip osteoarthritis who underwent image-guided intra-articular corticosteroid injection between January 2015 and March 2020 at a single academic center. Patients were included if they had clinical and radiographic evidence of OA and ≥1 follow-up visit within six months post-injection. Demographic, clinical, radiographic, and procedural data were collected. The primary outcome was progression to hip surgery; secondary outcomes included prevalence and risk factors for RPOA and AVN. Kaplan-Meier and Cox proportional hazards models were used to analyze mean time to surgery and risk factors for surgery, respectively. Single-predictor logistic regression modeling was used to identify predictors of RPOA. Analyses were performed using R v4.2.1 with $p < 0.05$ considered significant.
RESULTS: Of the 349 patients included in the analysis, 100 (28.7%) went on to have hip surgery, (97 had total hip arthroplasty). The mean and median time from injection to hip surgery were 1.03 years (SD = 1.14 years) and 1.74 years (95% CI = 1.25 to 2.57), respectively. Patients who were older, male, white, had a history of hip injections, or worse Tonnis grades were more likely to have hip surgery. The prevalence of RPOA after hip injection was 4.0% (14 of 349). Risk factors for RPOA were a history of a hip injection (OR 4.67, 95% CI: 1.45 to 13.68, p=0.012) and Tonnis grade 3 (OR 11.87, 95% CI: 2.76 to 110.82, p<0.001). There were zero cases of avascular necrosis in our cohort.

DISCUSSION AND CONCLUSION:
In this large cohort study, 29% of patients who received intra-articular hip corticosteroid injections progressed to surgery within a median of 1.75 years. Prior hip injection and advanced radiographic osteoarthritis were associated with both surgical progression and development of RPOA, which occurred in 4% of patients. No cases of AVN were observed. These findings suggest that while the risk of RPOA and AVN is low, corticosteroid injections may be associated with disease progression in select patients with more advanced disease.