Does Timing of Previous Intra-Articular Steroid Injection Affect the Post-Operative Rate of Infection in Total Ankle Replacement?

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INTRODUCTION:
Intra-articular corticosteroid (IACS) injections are commonly used for symptomatic relief of ankle osteoarthritis. Conflicting evidence exists regarding the association of preoperative intra-articular steroid injection and relative risk of postoperative PJI following joint replacement surgeries. However, this association in the context of ankle replacements has not been well documented, with current expectations being extrapolated from total hip and knee literature. This study aims to determine if there is an association between preoperative intra-articular ankle injection at various time intervals prior to ipsilateral total ankle replacement (TAR) and peri-prosthetic joint infection (PJI) rates.

METHODS:
The PearlDiver database was used to identify patients who underwent elective, primary TAR between 2011 and 2012. Patients who received IACS injections into the ipsilateral ankle within 1.5 years before their primary TAR were identified using current procedural terminology (CPT) codes. Patients who received an injection prior to TAR were divided into four separate cohorts based on the timing of the injections: 0 to 3 months prior, 3 to 6 months prior, 6 to 12 months prior, and 12 to 18 months prior. A matched control cohort of patients who did not receive injections prior to TAR was created with propensity-score matching based on age, gender, obesity, tobacco use, and diabetes. The outcome of interest was incidence of PJI at 6 months and 1 year postoperatively.
RESULTS:
There were a total of 6217 patients who underwent primary TAR included in the study, with 1715 patients who received a steroid injection prior to TAR and 4502 match control patients. There were 195 patients who had an injection within 0 to 3 months prior, 305 patients who had an injection 3 to 6 months prior, 529 patients who had an injection 6 to 12 months prior, and 686 patients who had an injection 12 to 18 months prior to TAR. There was a significantly higher incidence of postoperative PJI in all four injection cohorts compared to the control TAR cohort at both 6 months and 1 year postoperatively. Incidence of PJI was highest in patients who underwent TAR within 3 to 6 months after steroid injection, with PJI rates of 1.6% at 6 months (OR = 5.76, $p = 0.001$) and 2.6% at 1 year postoperatively (OR = 5.03, $p < 0.001$). Risk of infection at 6 months and 1 year postoperatively decreased in patients who underwent TAR within 6 to 12 months (OR = 4.63, OR = 3.60) and 12 to 18 months (OR = 4.07, OR = 3.04) after steroid injections but still remained significantly elevated compared to the control cohort.
DISCUSSION AND CONCLUSION:
Corticosteroid injections administered at any time within 18 months prior to TAR demonstrated a significantly elevated risk of developing postoperative periprosthetic joint infection. Patients who received a steroid injection within 0 to 6 months prior to undergoing TAR demonstrated the greatest risk of developing PJI. These findings correlate with previous outcomes reporting increased incidence of PJI in patients who received a steroid injection prior to surgery published in total hip and knee replacement literature. While current recommendations in foot and ankle recommend a waiting period of at least 3 months between injection and surgery, these findings suggest that a longer waiting period may be necessary to better mitigate risk of infection.