The Effect of Preoperative Intra-Articular Corticosteroid Injections on Periprosthetic Joint Infection in Total Ankle Arthroplasty

Andrew Ni, Alexander Nguyen, Coltin Gerhart, Tyler Kade Williamson, Eric Cal, Victor H Martinez, Boris A Zelle

INTRODUCTION: Intra-articular corticosteroid steroid injections (CSI) of the ankle are frequently used to relieve pain for osteoarthritis of the ankle. While previous studies have demonstrated an increased risk of prosthetic joint infection (PJI) following intra-articular CSI of other joints prior to arthroplasty, there have not been any studies evaluating the effects on total ankle arthroplasty (TAA). This study aims to determine the relationship between preoperative timing of CSI to PJI and wound complication rate.

METHODS: We conducted a retrospective cohort study using data from the TriNetX Registry to examine the relationship between PJI and preoperative CSI. We identifed patients who underwent a TAA procedure between the years 2005 to 2025. We then reviewed presence of prior ankle CSI and categorized patients into groups of “no injection”, “0 - 3 months”, “3 - 6 months”, and “6 - 12 months”, and “> 12 months”. The primary outcome was PJI after TAA surgery and secondary outcomes were wound complications and reoperation. Cox proportional hazard models were used to determine hazard ratios (HRs).

RESULTS: A total of 7,159 TAA patients were identified and 1,411 (19.7%) received an intra-articular ankle steroid injection prior to TAA. The overall rate of PJI in TAA patients was 3.6% (255/7,159) with 36.9% (94/255) of PJI’s occurring within 90 days after surgery. Age at time of procedure and male sex were independent risk factors for PJI, but there was no statistically significant difference in PJI rates between any time points following CSI of the ankle (HR = 1.10; 95% CI, 0.82 - 1.47; p = 0.52). Diabetes, obesity, and prior CSI all independently increased risk of wound complication and reoperation.

DISCUSSION AND CONCLUSION: While consensus opinion recommends a waiting period of at least 3 months following CSI for TAA, no evidence has shown that CSI increases rates of PJI in TAA patients. Our study is the first of its kind to investigate the relationship between CSI and PJI in TAA patients. In patients undergoing TAA for osteoarthritis of the ankle, there was no statistically significant difference in rates of PJI following intraarticular CSI, suggesting that a waiting period for TAA following an ankle CSI may not be necessary. Further research is needed to guide treatment plans and determine what, if any, waiting period should be recommended for TAA after CSI.

Variables	Hazard Ratio	95% CI	P-value
Injection timing (versus no injection)			
Injection < 3 months before TAA	1.23	0.87 - 2.26	0.51
Injection 3-6 months before TAA	1.19	0.73 - 1.94	0.49
Injection 6-12 months before TAA	0.81	0.30 - 1.24	0.17
Injection > 12 months before TAA	1.26	0.81 - 1.97	0.31
All steroid injections	1.1	0.82 - 1.47	0.52
Overweight or Obese	1.29	0.97 - 1.63	0.08
Diabetes	1.21	0.86 - 1.72	0.27
Age	**1.01**	**1.00 - 1.02**	**0.001**
Male vs Female	**1.53**	**1.18 - 1.98**	**0.001**

Multivariate cox regression analysis with risk factors for PJI

	All	Control (no steroid injections)	0-3 months	3-6 months	6-12 months	> 12 months	All steroid injections
PJI	255	133	18	8	19	42	71
No PJI	6904	5601	209	98	335	462	1340
Total	7159	5734	227	106	354	504	1411
% PJI	3.56%	2.29%	4.85%	1.27%	2.96%	4.33%	3.76%

Variables	Hazard Ratio	95% CI	P-value
Injection timing (versus no injection)			
Injection < 3 months before TAA	1.21	0.84 - 1.74	0.31
Injection 3-6 months before TAA	**1.48**	**1.13 - 1.94**	**0.004**
Injection 6-12 months before TAA	**1.40**	**1.12 - 1.74**	**0.003**
Injection > 12 months before TAA	**1.56**	**1.24 - 2.01**	**<0.001**
All steroid injections	**1.40**	**1.19 - 1.64**	**< 0.001**
Overweight or Obese	**1.20**	**1.01-1.41**	**0.036**
Diabetes	**1.23**	**1.00 -1.51**	**0.047**
Age	1.00	0.99 - 1.00	0.49
Sex	0.97	0.84 - 1.12	0.71

Multivariate cox regression analysis with risk factors for wound complications