

Patient-Reported Outcomes in Ankle Arthritis: Short-Term Benefits of Injections Versus Long-Term Improvements After Arthroplasty

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INTRODUCTION: Ankle arthritis is a chronic condition that significantly impairs patients' mobility, results in persistent pain, and reduces quality of life. Several treatment options for ankle arthritis exist, including both operative and nonoperative treatments. Corticosteroid injections are a form of nonoperative treatment that can provide temporary relief for patients, while total ankle arthroplasty is a surgical procedure that can offer a more long-term solution. However, there is a lack of data that compares the longitudinal outcomes for patients undergoing these treatment pathways. This study aims to compare the PROMIS T-scores (pain intensity, pain interference, physical function, and depression) in patients receiving ankle injections and total ankle arthroplasty. By accessing these patient-reported outcomes, providers can be better informed on the trajectory of patient recovery when recommending a treatment plan for ankle arthritis patients.

METHODS: Ankle Arthritis patients were identified by Dr. Latt and consented by a researcher at their initial visit. These patients then completed a RedCap survey that included the PROMIS validated questionnaires on Pain Intensity, Pain Interference, Physical Function, and Depression. These patients repeated the survey 3 months, 6 months, and 1 year after their initial visit. The patients were then split into two cohorts based on their treatment plan: those who underwent corticosteroid injections (n=25) and those who underwent total ankle arthroplasty (n=15). We then found the average value of each cohort's PROMIS T Scores and compared the difference between each time and baseline. We then compared the values across the different cohorts. 95% confidence intervals were calculated, and statistical significance was set to p<0.05. This study was approved by the University of Arizona Institutional Review Board under STUDYID:120000109.

RESULTS: Patients with ankle arthritis who elected to receive steroid injections had a statistically significant decrease in pain interference (D=-5.18; p=0.0047) and pain intensity (D=-4.17; p=0.0491) 3 months after baseline. These patients also had a significantly decreased pain interference (D=-5.93; p=0.0153), pain interference (D=-6.24; p=0.001), and an increase in physical function (D=8.20; p<0.001) at 6 months after baseline. At 1 year, these patients had an increase in pain interference, pain intensity, and depression, and a decrease in physical function; however, these values were not statistically significant. Ankle arthritis patients who underwent a total ankle arthroplasty had an increase in pain interference, pain intensity, and depression, with a decrease in physical function 3 months after baseline (not statistically significant). However, at 6 months and 1 year after baseline, their pain interference and pain intensity decreased. At baseline, those who underwent surgery had decreased pain interference, pain intensity, and depression and increased physical function compared to those who had injections. 3 months after baseline, they had increased pain interference, pain intensity, and depression, and decreased physical function compared to the injection cohort. 1 Year after baseline, they had decreased pain interference, pain intensity, and depression, and increased physical function.

DISCUSSION: Our findings suggest that patients with ankle arthritis who elect to receive ankle injections have a self-reported improvement in symptoms 3 months and 6 months after baseline. However, at 1 year, they no longer feel this improvement and began to have a worsening of symptoms. Patients who elected to undergo a total ankle arthroplasty had an initial 3-month increase in pain intensity and interference. However, at 6 months and 1 year, their pain interference and intensity decreased. Additionally, at baseline, patients who elected to undergo steroid injections had increased pain intensity, pain interference, and depression, and lower physical function than those who had surgery. This shows that ankle injections can provide patients with short-term relief; however, in the long term, surgical procedures are better suited. Furthermore, our study shows that patients who have worse initial symptoms tend to be more likely to elect for steroid injections. Our study is limited by a few factors. First, our questionnaire is subjective and is dependent on the patient's perspective of their pain. Additionally, we could not survey all of our patients at all 4 time intervals.

CLINICAL RELEVANCE: Our findings suggests that patients with ankle arthritis tend to find short term relief with ankle injections, and long-term relief with total ankle arthroplasty. Physicians should consider informing patients of the benefits of both injections and surgery when creating treatment plans.

Table 1: Ankle Arthritis Patients Undergoing Ankle Injection Time Point Differences

Ankle Injection Differences	Baseline vs 3 Month Average Difference	Baseline vs 6 Month Average Difference	Baseline vs 1 Year Average Difference
Pain Interference	-5.18 (-8.60, -1.76) p=0.0047	-5.93 (-10.30, -1.55) p=0.0153	0.96 (-1.66, 3.58) p=0.457
Pain Intensity	-4.17 (-8.31, -0.018) p=0.0491	-6.24 (-9.77, -2.71) p=0.00126	0.62 (-2.46, 3.70) p=0.679
Physical Function	4.06 (-2.59, 10.71) p=0.207	8.20 (4.38, 12.02) p<0.001	-1.84 (-4.78, 1.10) p=0.208
Depression	-0.40 (-6.84, 6.05) p=0.897	-2.42 (-11.66, 6.82) p=0.548	4.62 (-58.97, 68.20) p=0.605

- Values presented as Average Difference (95% CI) p value

Table 2: Ankle Arthritis Patients Undergoing Total Ankle Arthroplasty Time Point Differences

Total Ankle Differences	Baseline vs 3 Month Average Difference	Baseline vs 6 Month Average Difference	Baseline vs 1 Year Average Difference
Pain Interference	0.75 (-12.01, 13.52) p=0.892	-6.53 (-25.86, 12.81) p=0.426	-4.41 (-22.41, 13.60) p=0.560
Pain Intensity	2.74 (-9.03, 14.51) p=0.596	-0.94 (-18.19, 16.31) p=0.895	-2.26 (-18.33, 13.81) p=0.721
Physical Function	-2.28 (-10.44, 5.88) p=0.547	-0.40 (-13.48, 12.68) p=0.944	0.69 (-16.81, 18.19) p=0.916
Depression	1.94 (-4.57, 8.45) p=0.537	1.02 (-9.13, 11.17) p=0.821	-2.76 (-22.64, 17.12) p=0.715

- Values presented as Average Difference (95% CI) p value

PROMIS T Scores for Ankle Arthritis Patients by Treatment and Time

