Physical Function and Pain Trajectories Following Foot and Ankle Surgery in Rheumatoid Arthritis Patients: A Retrospective Observational Study

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INTRODUCTION: Rheumatoid arthritis (RA) is a chronic autoimmune disease affecting ~1.3 million adults in the United States [1]. Previous investigations have shown that > 90% of patients develop symptomatic foot and ankle disease and may require surgical intervention despite advances in medical management [2]. Although previous studies suggest that patients with inflammatory arthropathies like RA report meaningful improvements in pain and overall well-being after orthopaedic surgery, the recovery trajectory following foot and ankle procedures in RA is not as well-understood in relation to other common surgical indications [3]. We aimed to evaluate postoperative trends in patient-reported pain and physical function among patients with RA within two years of foot and ankle surgery, with patients with PTOA serving as a contextual comparison group.

METHODS: After obtaining IRB approval and using a retrospective cohort study design, we included patients ≥18 years with RA or PTOA who had a foot and ankle surgery and consented to the collection of patient-reported outcome measures (PROMs) via a third-party service. Patient Reported Outcome Measurement Information System (PROMIS) Pain Interference (0-100) and PROMIS Physical Function (0–100) were collected preoperatively and at 2 weeks, 6 weeks, 3 months, 6 months, 1 year, and 2 years postoperatively. Both measures have been previously validated to assess surgical interventions in foot and ankle populations. We first summarized patient demographics descriptively. We conducted several analyses to compare the two patient populations. We studied trends using parametric and non-parametric tests to compare mean and median PROM scores at each time point. We also compared achievement of the minimally clinically important difference (MCID) thresholds (Pain Interference ≤ –4.8, Physical Function ≥ 5.5) for these measures at 6 months [4]. Statistical significance was defined as $p<0.05$.

RESULTS SECTION: A total of 83 patients (RA, n=45, mean age 59.00 ± 13.6 years, 84.4% female; PTOA, n=38, mean age 56.0± 13.8 years, 78.9% female) were included in the analysis. Among the 50 procedures performed in the RA cohort, forefoot surgery (n=18, 36%) for hallux valgus, hallux rigidus, and lesser toe deformities was most common. At baseline, RA patients had significantly lower mean physical function (34.68±6.51 vs. 37.55±5.45, p=0.04) but similar pain interference (64.96±6.62 vs. 64.26±5.76, p=0.8) compared to PTOA patients. Physical function scores in RA patients improved above baseline between 6 weeks and 3 months postoperatively, while the greatest reduction in pain occurred between 2 and 6 weeks before plateauing at 3 months (**Figures 1 and 2**). By 6 months, 24.4% achieved MCID in physical function and 51.2% in pain reduction. Postoperative trends did not differ significantly between RA and PTOA cohorts.

DISCUSSION: Indicated foot and ankle surgery in RA patients was associated with early, statistically and clinically meaningful reductions in pain interference before 6 months and sustained improvements in physical function over two years. Additionally, the overall post-operative trajectories for patients with RA were not significantly different compared to patients with PTOA. Despite the systemic nature of this condition, these findings suggest that patients with RA, undergoing a range of indicated foot and ankle procedures, can expect notable improvement in pain and physical function up to 2 years post-operatively. Future studies among larger patient populations are needed to assess these trends further.

SIGNIFICANCE/CLINICAL RELEVANCE: Recent contributions to foot and ankle surgical literature have validated and encouraged the use of PROMs, particularly PROMIS scores, to further inform surgeon and patient expectations post-operatively. However, gaps remain in understanding how the postoperative trajectories of patients with systemic inflammatory arthropathies compare to patients with other common indications for surgery. The preliminary findings reported here support the utility of surgery in restoring mobility and quality of life in patients with RA, complementing continuous advances in medical therapy.

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IMAGES AND TABLES:

Figure 1. Postoperative Trajectories in Physical Function Among Patients with Rheumatoid Arthritis Following Foot and Ankle Surgery

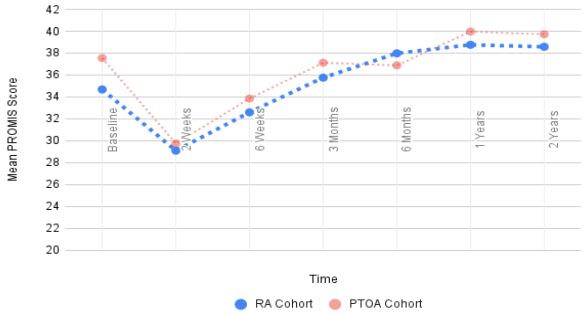

Figure 2. Postoperative Trajectories in Patient-Reported Pain Among Patients with Rheumatoid Arthritis Following Foot and Ankle Surgery