

## Does Physical Therapy Predict Outcomes after Ankle Fractures and Ankle Fracture-Dislocations?

*Chad Ferguson, MD<sup>1</sup>; Luke Harmer, MD, MPH, FRCSC<sup>1</sup>; Rachel Seymour, PhD<sup>1</sup>; J Kent Ellington, MD<sup>2</sup>; CAPT (ret) Michael Bosse, MD<sup>1</sup>;*

*<sup>1</sup>Carolinas Medical Center, Charlotte, North Carolina, USA;*

*<sup>2</sup>OrthoCarolina Foot and Ankle Institute, Charlotte, North Carolina, USA*

**Purpose:** Despite the widespread use of physical therapy for treatment of lower extremity injury and specifically for ankle fractures, its role in functional rehabilitation and patient outcomes is poorly understood. Although addressed by several authors, no definitive study has determined the treatment effect of postoperative physical therapy for this group. The purpose of this study is to determine the pragmatic effectiveness and outcomes associated with physical therapist-supervised rehabilitation (PT) compared to surgeon-directed rehabilitation (NoPT). We hypothesized that the long-term clinical outcomes for patients who receive supervised physical therapy-directed rehabilitation will have similar outcome to those receiving surgeon-directed rehabilitation.

**Methods:** After IRB approval, 80 patients with bimalleolar or trimalleolar ankle fractures with or without dislocation were enrolled in a prospective observational study. The study population included patients with displaced ankle fractures or fracture dislocations who were treated operatively. Injury characteristics, patient demographics, and pre / post fixation and follow-up radiographs were captured. Patient-reported outcome scores were assessed using FAAM (Foot and Ankle Ability Measure) and SFMA (Short Musculoskeletal Function Assessment) questionnaires at 6, 12, and 24 months. Patients were prescribed physical therapy at the discretion of their treating surgeon based upon their clinical judgement and patients' individual postoperative course between 6 weeks - 6 months. Patient reported outcome scores and complication rates for patients receiving therapist-directed rehabilitation (PT) were compared to those receiving physician-directed rehabilitation (NoPT).

**Results:** Of the 80 patients, 38 patients (47.5%) were prescribed supervised rehabilitation (PT) while the remaining received exercise instruction from the physician or ACP at a clinic visit (NoPT). 34 patients (89.5%) attended at least one PT session. Number of sessions attended by each patient ranged from 1 to 36 (average = 16). Whether or not a patient received a PT prescription did not differ by injury characteristics or demographics but did differ by insurance status. 37 (56%) of patients with insurance versus 1 (7%) patient without were prescribed PT ( $P < 0.001$ ). Patient-centered outcome scores collected at 6 months show mean FAAM score of 69.7 for PT compared to 70.9 for NoPT groups ( $P = 0.868$ ). Combination SMFA scores for PT cohort were 20.1 compared to 24.4 in NoPT group ( $P = 0.454$ ), and there were no significant differences on any of the subscale scores. Physician and practice-specific differences were observed between provider subset groups. Postoperative complications were rare and equivalent between the groups. Costs associated with the PT group were \$125.81 average per patient/session. The total cost of supervised rehabilitation was \$62,401 for our patient cohort.

**Conclusion:** The comparison of the outcomes between patients with operatively treated displaced ankle fractures or ankle fracture-dislocations with therapist-directed versus

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.

physician-directed rehabilitation showed no difference in validated SMFA and FAAM outcome scores. These findings would suggest that patients receiving supervised physical therapy produced a similar outcome to those under routine physician-directed rehabilitation at 6 months postoperatively. The cost related to the therapy averaged \$2012.96 per patient receiving PT.