Early Walking, Lasting Benefits: Postoperative Day 1 Ambulation Distance Predicts One-Year Functional Outcomes After Total Hip Arthroplasty

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INTRODUCTION: Total Hip Arthroplasty (THA) post-operative ambulation plays a critical role in regaining functionality in patients as well as reducing the risk of short-term complications. However, despite its potential benefits, the impact of early ambulation on long-term functional outcomes, such as the Hip Disability and Osteoarthritis Outcome Score, Joint Replacement (HOOS-JR), has not been thoroughly investigated.

METHODS: We retrospectively reviewed 322 primary THA patients at the same academic institution from January 2018 to January 2024, and 273 patients including 132 males and 190 females, having valid HOOS JR scores preoperatively and at one year. A multivariable linear regression was conducted to evaluate the associations between post-operative day 1 (POD1) ambulation distance and one-year HOOS-JR, adjusting for preoperative HOOS-JR, age, sex, body mass index (BMI), and American Society of Anesthesiologists (ASA) physical status classification.

RESULTS SECTION: The mean distance ambulated on POD1 was approximately 104.67 meters and on average the preoperative HOOS-JR score was 45.58, which improved to 85.25 at one year postoperatively. Utilizing a multivariable linear regression model of postoperative HOOS-JR scores, preoperative HOOS-JR scores were found to be a significant positive predictor ($\beta = 0.33$, SE = 0.09, $t = 3.75$, $p = 0.001$), while POD1 ambulation distance was also a significant positive predictor ($\beta = 0.10$, SE = 0.04, $t = 2.67$, $p = 0.008$).

DISCUSSION: Our results indicated that every 10 meters ambulated on POD1 was associated with a one-point increase in the HOOS-JR score at one year. Although this increase may appear modest on a per-10-meter basis, it compounds over greater distances, highlighting how incremental improvements in early ambulation can meaningfully enhance long-term patient outcomes. There is currently a lack of literature examining the impact of POD1 ambulation on PROMs at one year post-operatively. Surgeons, physicians, and physical therapists can utilize POD1 ambulation distances as an early prognostic tool to measure and identify patients at risk of not meeting short-term post-operative functional thresholds. However, further prospective studies are warranted to confirm these findings in larger patient populations.

SIGNIFICANCE/CLINICAL RELEVANCE: Early postoperative ambulation is a simple measurable intervention that can be utilized by the orthopaedic care team and strongly predicts long term functionality after THA. Incorporating ambulation distance into early recovery protocols may allow surgeons and therapist to identify at-risk patients and optimize rehabilitation strategies.

IMAGES AND TABLES:

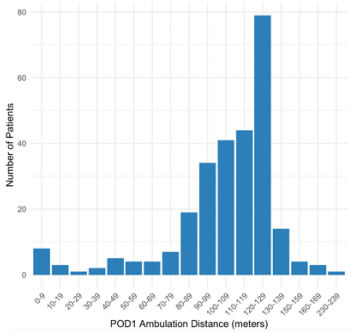

Figure 1. Distribution of Post-operative Day 1 (POD1) Ambulation Distance per Patient.

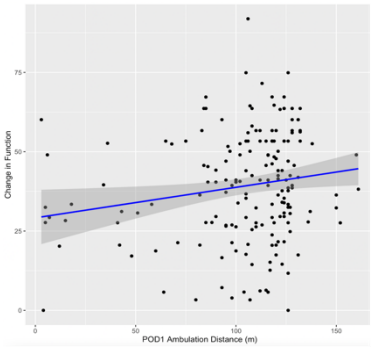

Figure 2. Scatter plot demonstrating the relationship between postoperative day 1 (POD1) ambulation distance (meters) and change in HOOS-JR score from preoperative to 1-year postoperatively.