

Factors Influencing Minimal Clinically Important Difference Attainment following Total Hip Arthroplasty: A Comparative Analysis of Patient-Reported Outcomes

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INTRODUCTION: Patient-Reported Outcome Measures (PROMS) are validated questionnaires that assess health outcomes from a patient perspective. This study aimed to explore the factors associated with achieving a Minimal Clinically Important Difference (MCID) after Total Hip Arthroplasty (THA), via PROMIS-Intensity and HOOS-Jr PROM questionnaires.

METHODS: A retrospective cohort study of 2,028 unilateral THA patients from a large academic center from 2018-2022 was conducted. A total of 1,750 patients completed both the HOOS-Jr and PROMIS-Intensity questionnaires. Scores were followed for 2 years, with higher HOOS-Jr scores indicating better joint health and higher PROMIS-Intensity scores indicating worse pain. MCID was established using the distribution method. Survival analysis and Cox regression modeled MCID attainment and associated factors. Variables significant at $p < .2$ were included in the multivariable analysis. Patients were further stratified by median baseline scores for each questionnaire.

RESULTS: MCID was achieved in a median of 22 days for both HOOS-Jr and PROMIS-Intensity, with median baseline scores of 49.9 and 54 respectively. Patients in groups scoring above the median baseline on HOOS-Jr and below the median on PROMIS-Intensity, also had a median of 22 days, however log-rank tests showed that the risk of attaining an MCID was significantly different for these groups for both questionnaires during the 2 year study period ($p < .0001$). The risks of not achieving an MCID increased by 48% [HR:0.52(0.46-0.59), $p < .001$] for HOOS-Jr and by 43% [HR:0.57(0.51-0.64), $p < .001$] for PROMIS-Intensity in these groups with favorable baselines. Each additional day of Length of Stay (LOS) beyond the median further increased the associated risk of not attaining an MCID by 14% [HR:0.86(0.82-0.91), $p < .001$] for HOOS-Jr and by 13% [HR:0.87(0.83-0.92), $p < .001$] for PROMIS-Intensity.

DISCUSSION AND CONCLUSION: MCID is typically achieved within the first postoperative month, reflecting rapid pain and functional improvement. Baseline scores and duration of hospital stay have emerged as key determinants of outcomes. Limitations of the distribution method for MCID calculation have been highlighted, as superior baseline health paradoxically reduces MCID attainment given the inherent challenge of further improvement from a high baseline. As such, this suggests such a method may better serve for evaluating at-risk patients.