

Hospital Volume Dose Not Predict PROMs and Satisfaction Following Primary THA If Surgery Performed Within the Same Healthcare System

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INTRODUCTION: The Centers for Medicare & Medicaid Services (CMS) has mandated the collection of patient-reported outcome measures (PROMs) as a part of the Patient-Reported Outcome Performance Measure (PRO-PM) policy and the Transforming Episode Accountability Model (TEAM). However, little is known about the impact of hospital volume on PROMs following primary total hip arthroplasty (THA). We aimed to investigate clinically meaningful improvements in 1-year PROMs after THA between high and low volume hospitals within the same healthcare systems.

METHODS: We conducted a prospective cohort analysis of 4962 Medicare patients who underwent primary THA between 2016-2023 within a single healthcare system. The study included 13 hospitals, which were stratified by procedural volume into low-volume (<500 THAs) and high-volume (\geq 500 THAs) centers. Of the procedures, 1,396 THAs were performed at low-volume hospitals, while 3,566 were performed at high-volume hospitals. Multivariable logistic regression models were used to compare 1-year PROMs using odds ratio (OR) and 95% confidence interval (CI). The included PROMs were the Hip disability and Osteoarthritis Outcome Score (HOOS) Pain, Physical function Shortform (PS), Joint Replacement (JR), and Veterans RAND 12-Item Health Survey (VR-12). Clinically relevant improvements were assessed through minimal clinically important difference (MCID), substantial clinical benefit (SCB), and Patient Acceptable Symptom State (PASS) threshold achievement. The models were controlled for pre-specified demographics, baseline PROMS, and surgical confounding variables. Failure to reach the threshold was modeled and considered as the event of interest in all the models. Additionally, 1-year satisfaction using the PASS questions was compared. A p-value <0.05 was considered statistically significant.

RESULTS: At 1-year, high- and low-volume hospitals had similar improvements in HOOS-pain (95 vs. 95, $p=0.43$), HOOS-PS (95.4 vs. 95.4, $p=0.67$), HOOS-JR (85.3 vs 85.3, $p=0.533$), and VR-12 MCS (56.3 vs. 56.3, $p=0.6$). Upon multivariate analyses, high- and low-volume hospitals had similar risk of not achieving MCID-pain ($p=0.92$), MCID-PS ($p=0.72$), and MCID-JR ($p=0.32$). Similarly, high- and low-volume hospitals had similar risks of not achieving PASS-pain ($p=0.57$), PASS-PS ($p=0.78$), and PASS-JR ($p=0.61$). The risk of achieving SCB for HOOS-JR was also similar between high- and low-volume hospitals ($p=0.47$). Furthermore, 1-year satisfaction was similar among patients who underwent THA in high- and low-volume hospitals ($p=0.57$).

DISCUSSION AND CONCLUSION:

In this large prospective cohort of Medicare patients undergoing primary THA within a single healthcare system, no significant differences were found in 1-year PROMs, MCID, PASS, SCB thresholds, or satisfaction between high- and low-volume hospitals. These findings underscore the potential for consistent, high-quality patient-reported outcomes across hospitals regardless of surgical volume, when performed within a unified system. As CMS expands mandatory PROMs collection under PRO-PM and TEAM initiatives, these results highlight that intra-system standardization may mitigate volume-related disparities and support equitable, value-based care delivery.