

What Predicts Health-Related Quality of Life for Patients With Displaced Femoral Neck Fractures Managed With Arthroplasty? A Secondary Analysis of the HEALTH Trial

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Purpose: Total hip arthroplasty (THA) has been argued to improve health-related quality of life (HRQoL) and function for patients suffering femoral neck fractures. In this secondary analysis of a multicenter randomized controlled trial, we aimed to determine factors associated with HRQoL and function.

Methods: We used the Short Form 12 (SF-12) physical component summary (PCS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) function score as parallel primary dependent variables. Available data from 6, 12, and 24-month follow-up post-fracture were evaluated. Using multi-level repeated measures regression, we estimated the association between HRQoL or function and 23 variables selected a priori that plausibly could influence the outcome. A threshold for clinical importance was set at 4 points for the PCS, and 7 points for the WOMAC.

Results: 1441 patients, mostly female (70.1%) and over 80 years (80.2%) are included in the analysis. SF-12 PCS scores at each interval were similar, dropping 1 point between 6-month and 24-month follow-up. WOMAC scores improved 1.5 points over the study period. Use of THA improved PCS scores, though not reaching thresholds for clinical importance (mean difference [MD] = 1.3 points, $P=0.03$). Use of the direct anterior approach predicted meaningful improvements when compared to patients treated with a lateral approach (MD = 4.6, $P<0.01$) but not posterior approach (MD = 2.8, $P=0.09$). Additionally, higher ASA (American Society of Anesthesiologists) score (MD = -4.7, $P<0.01$), preoperative use of an aid (MD = -7.1, $P<0.01$), and experiencing a serious adverse event (SAE) (MD = -34, $P<0.01$) all meaningfully reduced HRQoL. Use of THA improved WOMAC scores, but did not meet clinical importance thresholds (MD = -2.8, $P<0.01$). Similarly, treatment for depression (MD = 6.3, $P=0.02$) or heart disease (MD = 5.3, $P=0.03$), higher ASA scores (MD = 2.1, $P<0.01$), preoperative use of an aid (MD = 6.8, $P<0.01$), and experiencing an SAE (MD = 3.9, $P<0.01$) were associated with lower functional scores, but did not surpass clinical importance thresholds.

Conclusion: This analysis of prospectively followed patients following arthroplasty for displaced femoral neck fracture demonstrates that while utility may be associated with preoperative variables (ASA, use of aid), intraoperative variables (surgical approach), and postoperative complications (SAEs), changes in these variables do not meaningfully affect functional outcomes. Surgeons should consider these findings when prognosticating outcomes for those undergoing arthroplasty for femoral neck fractures.