

Who, If Anyone, May Benefit From a Total Hip Arthroplasty After a Displaced Femoral Neck Fracture? A Subgroup Analysis of the HEALTH Trial

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Purpose: Guidelines recommend arthroplasty as the preferred treatment method for displaced femoral neck fractures in the elderly. A total hip arthroplasty (THA) is recommended typically for a healthier and younger subset of patients with longer life expectancy. In the National Institute for Health and Care Excellence guidelines, patients who are independent walkers, not cognitively impaired, and medically fit for the procedure should be considered for a THA. According to the American Academy of Orthopaedic Surgeons, there is a moderate recommendation to use THA in higher functioning patients. Other reviews and meta-analyses also recommend a select group of the fittest patients for THA. This recommendation is based on a few randomized trials showing a modest functional benefit and fewer reoperations after THA compared with hemiarthroplasty (HA). The Hip Fracture Evaluation with Alternatives of Total Hip Arthroplasty versus Hemi-Arthroplasty (HEALTH) multicenter randomized controlled trial of 1441 patients aged ≥ 50 years with a displaced femoral neck fracture found that there was a benefit, although not clinically meaningful, in function for THA measured by the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). Using data from the HEALTH trial, we aimed to compare health-related quality of life and functional outcomes between THA and HA in a subset of the fittest patients.

Methods: The fittest subgroup of the HEALTH trial was defined as those participants who were aged ≤ 70 years, with an American Society of Anesthesiologists I or II classification, not using assistive devices for ambulation prior to injury, and living independently prior to injury. We used multilevel models to separately estimate the effect of implant on function (WOMAC), quality of life (12-item Short Form Health Survey [SF-12]), EuroQol-5 Dimensions (EQ-5D), and mobility (Timed Up and Go [TUG]) in the fittest subgroup. Randomized treatment and visit were included as independent variables. We performed the same analysis on the remainder of participants who were not included as part of the fittest subgroup.

Results: 143 patients met the criteria to be included in the fittest subgroup. The overall WOMAC score and its subcomponents, the SF-12, EQ-5D, and TUG scores showed no statistically significant differences between the THA and HA groups in the fittest subgroup. Similarly, in participants who were not included in the fittest subgroup, no differences were found in any of the functional outcomes.

Conclusion: Our results show similar findings and strengthen the conclusions from the HEALTH trial. We were unable to identify a subgroup where THA should be the recommended treatment for displaced femoral neck fractures over HA in participants aged ≥ 50 years.