How Does Internal Fixation Compared to Arthroplasty Impact Quality of Life for Patients Who Have Suffered Femoral Neck Fractures?

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Purpose: A multicenter randomized controlled trial of 298 patients aged ≥60 years with a displaced subcapital hip fracture found that participants allocated to fixation experienced worse functional outcomes than those who underwent arthroplasty. Moreover, 39% of patients in the fixation group required reoperation, compared to 5% in the hemiarthroplasty (HA) group and 9% in the total hip arthroplasty (THA) group. Since the completion of that trial in 2005, there have been two larger, multicenter randomized controlled trials conducted to evaluate the success of internal fixation and arthroplasty methods, separately, for treatment of femoral neck fractures in patients ≥50 years. We aimed to compare functional outcomes among participants from these trials who did not undergo reoperation.

Methods: Participants from the trial treated with internal fixation were more likely to be younger and healthier than those in the trial who underwent arthroplasty. We built an inverse probability treatment weighting model to balance covariates among the participants from both trials. We then performed two propensity score weighted linear regression models, using the Western Ontario and McMaster University Osteoarthritis Index (WOMAC) and 12-item Short Form Health Survey (SF-12) physical component summary (PCS) scores measured at 24 months as dependent variables. Propensity score weights and the respective preinjury functional scores were included as adjustment variables in each model. A subgroup analysis was performed, including only those participants aged ≤70 years.

Results: Data from 716 arthroplasty and 549 internal fixation patients were included in our propensity score weighting model. Internal fixation patients had higher WOMAC stiffness scores, indicating worse stiffness, at 24 months, as compared to THA patients (adjusted mean difference [AMD] 0.42 points, 99% confidence interval [CI] 0.09 to 0.75; $P<0.001$) and HA patients (AMD 0.39 points, 99% CI 0.04 to 0.74; $P = 0.004$). However, this statistically significant difference did not cross the 7-point threshold for a minimal clinically important difference. No statistically significant differences were found in the other WOMAC scales, nor with the SF-12 PCS. In participants aged ≤70 years, no difference was found in any of the functional outcomes.

Conclusion: Our results show similar findings to the earlier trial, in that functional outcomes, particularly stiffness, may be worse in femoral neck fracture patients undergoing internal fixation versus arthroplasty. These results, however, may not be applicable to a younger, more active hip fracture population.