

EVIDENCE-BASED ORTHOPAEDICS

Hemiarthroplasty and Total Hip Replacement for Displaced Intracapsular Fracture in Active Elderly Patients Did Not Differ for Function at 12 Years After Surgery

Tol MC, van den Bekerom MP, Sierevelt IN, Hilverdink EF, Raaymakers EL, Goslings JC. Hemiarthroplasty or total hip arthroplasty for the treatment of a displaced intracapsular fracture in active elderly patients: 12-year follow-up of randomised trial. *Bone Joint J.* 2017 Feb;99-B(2):250-4.

Question: In active elderly patients with a displaced intracapsular fracture of the femoral neck, what are the 12-year functional outcomes of hemiarthroplasty versus total hip arthroplasty?

Design: Randomized (unclear allocation concealment), unblinded, controlled trial with follow-up at 12 years after index arthroplasty.

Setting: The Netherlands.

Patients: 252 patients (90% of 281 initially randomized patients*) ≥70 years of age (mean age, 81 years; 81% women) who had a displaced intracapsular femoral neck fracture, no known metastatic disease, and no anesthetic contraindications. All patients who were included in the study understood written Dutch and were able to give informed

consent. Patients were excluded if they had advanced radiographic osteoarthritis or rheumatoid arthritis in the fractured hip, suspected pathological fracture, or senile dementia or if they were bedridden or barely able to move from bed to chair. 50 patients (20%) were alive and completed 12 years of follow-up (mean age at fracture, 77.7 years; 94% women). *29 patients did not meet inclusion criteria or did not receive allocated treatment and were excluded.

Intervention: Patients were allocated to hemiarthroplasty with cement (n = 137) or total hip arthroplasty with cement (n = 115) with either a Weber Rotationsprothese (Sulzer) or a Müller Geradschaftprothese (Prote).

Main outcome measures: Primary outcome was modified Harris hip score (mHHS)

obtained by telephone interview. Secondary outcomes included mortality, revision rates (from total hip arthroplasty to total hip arthroplasty or from hemiarthroplasty to total hip arthroplasty), and prosthesis dislocation.

Main results: 202 patients died (77% in the hemiarthroplasty group versus 84% in the total hip arthroplasty group, p = 0.13). Hemiarthroplasty and total hip arthroplasty did not differ in terms of mHHS at 12 years (Table I). No patient in either group had revision surgery or prosthesis dislocation.

Conclusion: In active patients ≥70 years of age with a displaced intracapsular fracture of the femoral neck, hemiarthroplasty with cement and total hip replacement with cement did not differ in terms of modified Harris hip scores at 12 years after surgery.

Source of funding: Not stated.

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TABLE I Hemiarthroplasty versus total hip arthroplasty (THA) for displaced intracapsular femoral neck fracture in active patients ≥70 years of age

Outcomes	Hemiarthroplasty (n= 32)	THA (n= 18)	P value
Mean mHHS*	70.3	69.3	0.85

*mHHS = modified Harris hip score. Modified score was converted to allow for a maximum of 100 points (best possible outcome).

Commentary

The Level-I randomized controlled trial (RCT) by Tol and colleagues investigates the timely topic of hemiarthroplasty versus total hip arthroplasty for the treatment of displaced femoral neck fractures in active patients ≥70 years of age. At 12 years of follow-up, the authors found no difference between the groups in terms of the mHHS (primary outcome), mortality, complications, or rate of revision total hip arthroplasty.

Although the authors should be commended on performing a long-term follow-up of an RCT, the study had several limitations. First, the implants used in both groups are not commonly used in North America. Moreover, the acetabular fixation method with cement in the total hip arthroplasty group is rarely used by North American surgeons because of concerns about longevity. As such, the applicability of these findings to contemporary patients in North America is difficult. Second, with an elderly subset of patients, it can be expected that a substantial number of patients would have died by 12 years of follow-up. In the study by Tol and colleagues,

only 23% patients in the hemiarthroplasty group and 16% of patients in the total hip arthroplasty group were alive at the time of the most recent follow-up. As such, a competing risk analysis, with death as the risk, would have been helpful to account for the large number of deaths. Third, over the past decade, we have gained a greater understanding of physiological versus biological age, with an emphasis on activity level rather than biological age being the determinant for choosing hemiarthroplasty over total hip arthroplasty. Tol et al. did not report on pre-fracture activity level or antecedent hip pain. Finally, it is important to note that the mHHS may not be the best score with which to compare these groups. Future research accounting for these issues will help to shed light on the optimal treatment modality for truly active elderly patients with displaced femoral neck fractures.

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Disclosure: No external funds were received in support of this work. On the **Disclosure of Potential Conflicts of Interest** form, which is provided with the online version of the article, the author checked "yes" to indicate that he had a relevant financial relationship in the biomedical arena outside the submitted work (<http://links.lww.com/JBJS/E459>).