CORRESPONDENCE

Cemented or Uncemented Hemiarthroplasty for Hip Fracture

TO THE EDITOR: The results of the World Hip Trauma Evaluation (WHiTE) 5 trial reported by Fernandez et al. (Feb. 10 issue)[1] showed a higher postoperative health-related quality of life and lower risk of periprosthetic fracture among elderly patients with hip fracture who underwent cemented hemiarthroplasty than among those who underwent uncemented hemiarthroplasty. A concern is that postoperative delirium may have influenced the assessment of quality of life in this population, particularly at early follow-up. On the basis of preoperative delirium 4AT scores of 1 to 3 or 4 or higher (Table S2 in the Supplementary Appendix, available with the full text of the article at NEJM.org), approximately half the trial patients were at risk for postoperative delirium, which is associated with reduced quality of life[2]; differences in the incidence of delirium between the two groups could have confounded results. In addition, we wonder about assessment of bone quality before hemiarthroplasty, because uncemented hemiarthroplasty is considered to be unsuitable for patients with poor bone quality.[3] Moreover, the use of bone-protective medication seems insufficient. Although oral or intravenous bisphosphonates or subcutaneous denosumab are recommended for secondary prevention of hip fracture,[4] only 10% of the patients received such medication.

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TO THE EDITOR: Fernandez et al. make important contributions to the cemented–cementless debate. However, it may not be appropriate to cluster cemented prostheses into a homogenous group vis-à-vis periprosthetic fracture. Among cemented stems, the risk of periprosthetic fracture varies by several orders of magnitude contingent on stem design.[1-5] "Polished tapered" cemented stems, such as Exeter and CPT stems, subside in the cement mantle. "Composite-beam" cemented designs are more static. National joint registries and large studies have aroused concern that the risk of periprosthetic fracture is considerably higher with polished tapered stems.[1-5] Such megadata show that the risk of periprosthetic fracture with Exeter stems is 2.3%, as compared to 0.7% with composite-beam designs.[1] Norwegian, Swedish, and U.K. joint registries show that the adjusted risk of periprosthetic fracture is higher with Exeter stems than with composite-beam designs by a factor to 2.5 to 10[2-4] and that the risk is higher with CPT stems than with Exeter stems by a factor of at least 4.[4,5] Furthermore, periprosthetic fractures often occur intraoperatively with cementless prostheses but postoperatively with cemented ones.[1-3] Thus, a 12-month postoperative window will disproportionately miss fractures associated with cemented stems. The range of periprosthetic-fracture risk across cemented stems is too broad for a meaningful composite comparison with cementless prostheses.

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THE AUTHORS REPLY: With regard to the points raised by Takahashi et al., we agree that perioperative delirium is important.[1] Furthermore, we recognize the growing evidence that delirium is associated with an increased risk of later permanent cognitive impairment[2] and hence reduction in quality of life. However, according to a recent Cochrane review, the limited existing evidence indicates little or no difference in the risk of delirium with cemented implants as compared with uncemented implants.[3] In the WHiTE 5 trial, the percentage of patients with postoperative delirium (4AT score of ≥4) was very similar in patients assigned to undergo cemented hemiarthroplasty (162 of 610 patients; 26.6%) and those assigned to undergo uncemented hemiarthroplasty (178 of 615 patients; 28.9%), so it is unlikely that delirium is a confounder in the analysis of quality of life within the trial.

Regarding bone quality, this is also an important issue for patients at risk for fragility fractures in general. However, we would respectfully point out that all patients 60 years of age or older with a hip fracture are considered to be suitable candidates for bone-protection medication (unless contraindicated). Adherence to bone-protection medication is indeed a problem[4] but was not a topic that we investigated in our trial.

With regard to the point raised by Uzoigwe and Symes, we agree that periprosthetic fracture is an important outcome for patients having hip-fracture surgery and that implant design may have an influence on the risk of fracture. The great majority of cemented implants that were used in our trial were of the polished-tapered design, which may carry a higher risk than other cemented implant designs. However, despite this potential risk in the cemented group, there was still a significantly higher incidence of periprosthetic fracture in the uncemented group (2.1%) than in the cemented group (0.5%) in the 12 months after surgery.

With regard to the risk of periprosthetic fracture after 12 months, our trial was not designed to address this issue. Our findings to 12 months are consistent with those in the recent Cochrane review that showed an increased risk of postoperative periprosthetic fracture with uncemented implants (relative risk with cemented vs. uncemented implants, 0.29; 95% confidence interval, 0.14 to 0.57).[3]

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Since publication of their article, the authors report no further potential conflict of interest.

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