

## Rehabilitation After Hip Fracture in Patients with Dementia

*Huusko TM, Karppi P, Avikainen V, et al. Randomised, clinically controlled trial of intensive geriatric rehabilitation in patients with hip fracture: subgroup analysis of patients with dementia. BMJ 2000;321:1107-11.*

### Study Overview

**Objective.** To determine whether cognitively impaired patients with hip fractures benefit from intensive geriatric rehabilitation.

**Design.** Randomized, controlled clinical trial.

**Setting and participants.** Hip fracture patients aged 65 years and older residing in the central Finland health care district, which provides care for 5% of Finland's total population. All study participants were living independently (not defined in the article) and had been able to walk unaided before their fracture. Patients were excluded who had pathologic fractures, multiple fractures, had serious early complications (not defined), were receiving calcitonin, or suffered from terminal illness. Of 608 patients screened, 348 did not participate in the study: 72 patients refused to participate, 15 could not sign consent, and 24 were excluded for unknown reasons. A total of 260 patients, predominantly women (70%) with a mean age of 80 years, were randomized. About one third of these patients suffered trochanteric fractures, which were treated with osteosynthesis; the remaining individuals had cervical fractures, treated mostly with complete or partial hip replacement. 41% of the study cohort had normal cognitive function (a mini-mental state examination [MMSE] score of 24 to 30), 32% had mild dementia (MMSE, 18 to 23), 16% had moderate dementia (MMSE, 12 to 17), and 12% had severe dementia (MMSE, 0 to 11).

**Intervention.** Patients randomized to the intervention group were sent to a geriatric ward in the district's central hospital after surgery. These patients received care from a multidisciplinary team including a geriatric internist, a specially trained general practitioner (training not described in the article), geriatric nurses, a social worker, a neuropsychologist, an occupational therapist, and physiotherapists. A consulting specialist in physical medicine, a neurologist, and a psychiatrist were available to work with the primary team. All patients discharged to independent living received 10 home visits by a physiotherapist. Control patients were discharged to local hospitals and received standard care (not defined).

**Main outcome measures.** Primary outcomes were length of hospital stay, mortality, and place of residence at 3 months and 1 year after surgery.

**Main results.** At baseline, the intervention group scored significantly lower on the MMSE and on measures of activities of daily living. Following randomization, a total of 22 patients were not evaluated, primarily because of protocol violations equally distributed between groups. Of these, 1 patient in the intervention group and 4 in the control group were excluded because they were not tested with the MMSE.

Among patients with normal MMSE scores or with severe dementia, median length of hospital stay did not vary between groups. Intervention patients with mild dementia stayed for a median of 29 days (range, 16 to 138) compared with 46 days (range, 10 to 365) in the control group ( $P = 0.002$ ). Similar results were observed for patients with moderate dementia (47 days [range, 10 to 365] versus 147 days [range, 18 to 365],  $P = 0.04$ ). Results for residence assessments followed the same pattern: at 3 months, more intervention patients with mild and moderate dementia were living independently compared with controls (91% versus 67% [ $P = 0.009$ ] and 63% versus 17% [ $P = 0.009$ ], respectively). At 1 year, no difference was seen between groups among patients with mild dementia, and the difference narrowed among patients with moderate dementia (62% of intervention patients versus 33% of controls,  $P = 0.1$ ).

### Conclusion

Intensive geriatric rehabilitation after a hip fracture may provide some short-term benefits for patients with mild to moderate dementia but not for other patients. Long-term benefits may be gained by patients with moderate dementia, but this study was underpowered to detect a statistically significant difference.

### Commentary

This study was reasonably well conducted; its principle shortcoming was the small size of subgroups. Originally, the study was designed and powered for an  $n$  of 250. Because randomization did not equally distribute patients with cognitive

impairments, subgroup analyses were appropriate: patient groups with severe and moderate dementia were quite small and unequally distributed. It is possible that type II errors occurred. The failure of randomization on some assessments also raises concerns that unmeasured but important factors may not have been equally distributed. Furthermore, the complete lack of any attempt at blinding is troublesome. Although blinding may not have been possible for most measures, the reasons why MMSE scores and most residence assessments could not have been blinded remain unclear. Nonetheless, this article adds some useful information to the literature. Several researchers have reported that impaired cognition is a risk factor for poor outcomes after hip fracture [1-3]. A moderately sized cohort study suggested that hip fracture patients did not benefit from specialized rehabilitation in terms of returning to the community [4]. Huusko and colleagues' study is the first to evaluate specialized rehabilitation services for cognitively impaired patients with hip fractures.

#### **Applications for Clinical Practice**

While it does not provide definitive information, this study

suggests that some cognitively impaired patients may benefit from an intensive interdisciplinary rehabilitation program after surgery for a hip fracture. At this time, the decision to refer patients to such programs should be made on a case-by-case basis. Hopefully, future research will identify which patients are the most appropriate candidates for these services.

#### **References**

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