

Clinical Study

Poor Prognosis in Elderly Patients Receiving Nonoperative Treatment for Hip Fracture: A Study of 224 Cases at Kofu National Hospital

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Abstract: Among 224 patients aged 60 years of older with hip fractures, 30 underwent nonoperative treatment. The functional and survival prognoses of these patients were investigated and compared with patients who underwent surgery. The operated and nonoperated groups did not differ in age on injury, dementia status and in-hospital mortality. However, the nonoperated patients had a higher risk on admission and poorer functional prognosis than did the operated patients. Furthermore, within the nonoperated group, patients with dementia had significantly poorer walking ability than those without.

Key words: Hip fracture, Nonoperative treatment, Elderly

INTRODUCTION

Proximal femoral fracture commonly occurs in the elderly, and the treatment is in principle early surgery, early mobilization, and rehabilitation. With recent advances in medicine, surgery is performed even though there are considerable systemic problems. However, for unavoidable reasons such as the presence of severe comorbidity, nonoperative treatment is sometimes chosen. There are few reports on the indications and functional prognosis of nonoperative treatment for proximal femoral fracture. In this study, we investigated the functional and survival prognoses of elderly patients with proximal femoral fractures who underwent nonoperative treatment, and compared these findings with those of operative cases.

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PATIENTS AND METHODS

A total of 224 patients composed of 30 males and 194 females aged 60 years or more who were admitted to Kofu National Hospital, which is an acute care hospital, between January 1997 and July 2002 for the treatment of proximal femoral fracture were recruited as subjects. Their ages on injury ranged from 60 to 100 years with a mean of 83.2 years. The fracture types were femoral neck fracture in 77 cases and intertrochanteric fracture in 147 cases. The fracture was on the right femur in 111 cases and the left femur in 113 cases.

Of 224 patients, 30 were given nonoperative treatment (*nonoperated group*) for reasons of severe comorbidity on admission (12 cases), patient's or family's choice (11 cases) and dementia (7 cases). The remaining 194 patients underwent operative treatment (*operated group*).

The surgical procedure included open reduction and internal fixation using compression hip screws in 121 cases, cannulated cancellous hip screws in 19 cases, gamma nail in 9 cases, and hemiarthroplasty with a noncemented prosthesis in 36 cases.

The functional and survival prognoses of these patients were investigated. The *operated group* and *nonoperated group* were compared with respect to age, status of dementia, number of deaths, and physical status on admission. Furthermore, the two groups were compared in terms of walking ability on discharge for those who were able to walk alone or with a cane before injury. The physical status on admission was assessed based on 10 parameters including age, status of anemia, liver function and renal function, and each case was classified into *Risk 1* to *5* using a previously reported classification system¹⁾ (Fig. 1).

RESULTS

The ages on injury were 82.8 years in the *nonoperated group* and 83.2 years in the *operated*

group, with no significant difference between the two groups. On comparing the fracture type, the *nonoperated group* had 15 cases (50%) of femoral neck fracture and 15 cases (50%) of intertrochanteric fracture, while the *operated group* had 62 cases (32%) of femoral neck fracture and 132 cases (68%) of intertrochanteric fracture, with no significant differences between the two groups. Regarding dementia status, 16 of 30 patients (53.3%) in the *nonoperated group* had dementia compared with 81 of 194 (41.8%) in the *operated group*, with no significant difference between the two groups. Regarding survival prognosis, the rate of hospital mortality was 10% (3 cases) in the *nonoperated group* compared with 4.1% (8 cases) in the *operated group*, also with no significant difference between the two groups (Table 1). Next, for the comparison of risk level on admission, *Risk 1* to *5* was converted into scores of 1 to 5, respectively. The mean risk score was 3.7 ± 0.7 in the *nonoperated group* and 3.2 ± 0.8 in the *operated group*, showing significantly worse physical status in the *nonoperated group* (Fig. 2). Before injury, 20 patients in the *nonoperated group* and 167 patients in the

1. Age: 85 years or above.
2. Anemia: Hemoglobin 12 g/dl or below for males, 11 g/dl or below for females
3. Liver function: GOT 40 IU/l or above, GPT 35 IU/l or above
4. Renal function: BUN 20 mg/dl or above
5. Abnormal electrolytes
6. Inflammation status: CRP 0.5 mg/dl or above
7. Pancreatic function: Urinary glucose (+)
8. Abnormal chest X ray, with a known medical diagnosis
9. Abnormal electrocardiogram (such as arrhythmia and ischemic changes)
10. Physical status: Presence of comorbidity

<p><i>Risk 1</i> : Meets none of the above 10 items <i>2</i> : Meets 1-2 items <i>3</i> : Meets 3-4 items <i>4</i> : Meets 5-6 items <i>5</i> : Meets 7 or more items</p>

Fig. 1. Classification of risk on admission (modified from reference 1).

Table 1. Characteristics of the study population (n=224)

	<i>nonoperated group</i>	<i>operated group</i>	P
	n(%)	n(%)	
Number of patients	30 (13.4)	194 (86.6)	—
Mean age (years)	82.8 ± 9.4	83.2 ± 7.3	N.S. ^a
Fracture type			
Femoral neck	15 (50)	62 (32)	N.S. ^b
Intertrochanteric	15 (50)	132 (68)	
Dementia	16 (53.3)	81 (41.8)	N.S. ^b
In hospital death	3 (10.0)	8 (4.1)	N.S. ^c

N.S.: Not significant.
a: Mann-Whitney’s U test.
b: Chi-square test for independence.
c: Fisher’s exact probability test.

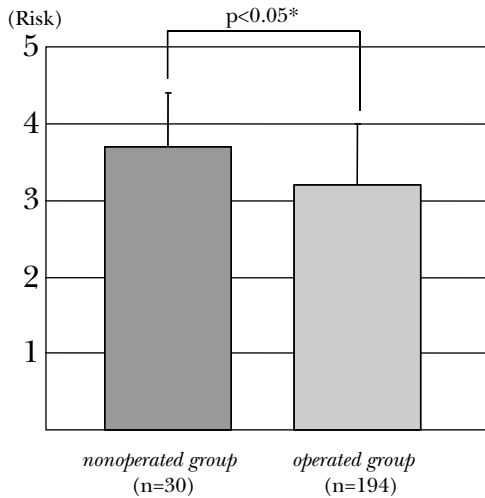


Fig. 2. Comparison of physical status on admission.
*: Mann-Whitney’s U test

operated group were able to walk alone or with a cane. Eight of the 20 patients (40%) in the *non-operated group* and 115 of the 167 patients (68.9%) in the *operated group* regained their ability to walk on discharge, showing a significantly lower walking ability in the *nonoperated group* (Fig. 3). Moreover, in the *nonoperated group*, patients with dementia had significantly lower walking abilities than did those without dementia (Fig. 4).

DISCUSSION

There are few reports on nonoperative treatment for hip fracture. Jain *et al.*⁶⁾ studied 50,235 patients above the age of 65 years each with a diagnosis of hip fracture and reported that 10.6% were nonoperatively treated. Also, Ions and Stevens⁵⁾ reported that among 158 patients with femoral neck fracture, 23 (14.6%) with severe medical comorbidity were nonoperatively treated. Although we consider operative treatment to be the first choice for hip fracture in the elderly, 30 among 224 patients (13.4%) with hip fractures were nonoperatively treated in the present study. Based on the above finding, one may assume that nonoperative treatment is chosen for 10 to 15% of elderly patients with hip fractures, while the majority of these patients receive operative treatment.

In the present study, since most of the patients who underwent nonoperative treatment were inoperable cases due to comorbid medical conditions or dementia, they had a mean risk score of 3.7 ± 0.7 on admission, which was significantly higher compared with the operated patients. Consequently, the functional prognosis was poorer compared to the

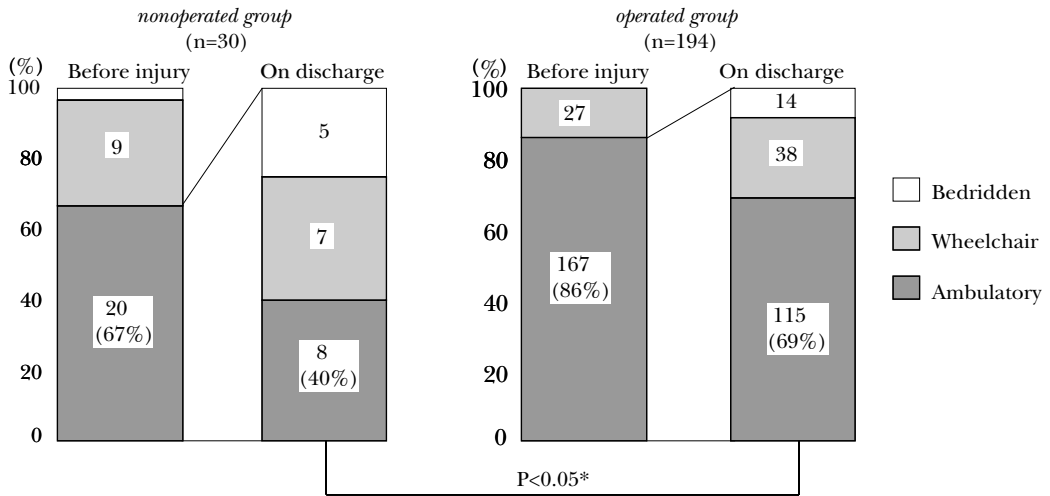


Fig. 3. Changes in walking ability.
*: Chi-square test for independence

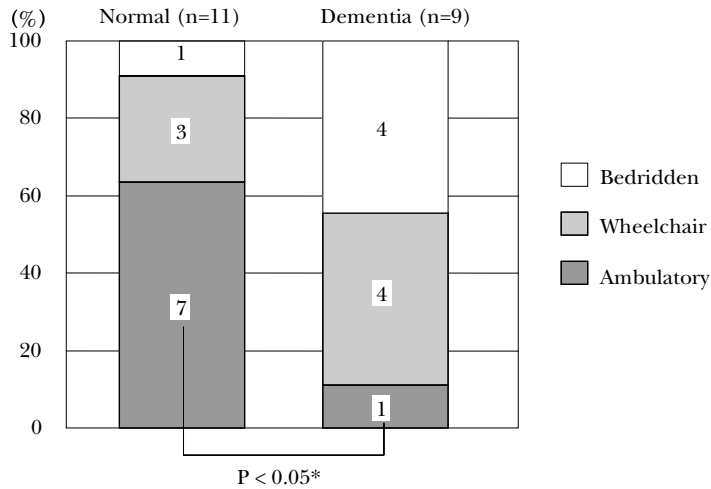


Fig. 4. Walking ability on discharge in the nonoperative group.
*: Fisher's exact probability test

operated group. Moreover, within the *nonoperated group*, the patients with dementia had significantly lower walking abilities compared to those without dementia. Jain *et al.*⁶⁾ reported that the thirty-day mortality rate in the nonoperatively treated patients (18.8%) was higher than the rate in operatively treated patients. Ions and

Stevens⁵⁾ also reported a 60.8% mortality rate at 6 months in nonoperatively treated patients with hip fractures and severe medical comorbidity. In the present study as well, the hospital mortality was 10% (3 cases) in the *nonoperated group* compared with 4.1% (8 cases) in the *operated group*, showing a higher rate in the *nonoper-*

ated group although there was no significant difference. Although the above results indicate poor functional and survival prognoses in inoperable cases treated by nonoperatively, Hornby *et al.*⁴⁾ and Hamanishi³⁾ reported on the usefulness of conservative treatment. Hornby *et al.*⁴⁾ randomly assigned 106 patients with extracapsular hip fractures to internal fixation or traction treatment. At the end of 6 months, no statistical difference in mortality, pain or complications was noted. Hamanishi³⁾ used direct traction and rehabilitation in bed as conservative treatment for peritrochanteric fractures and reported that this low-cost approach achieved acceptable results. Therefore, nonoperative treatment may be one option for the treatment of hip fractures in patients without dementia and with good physical status. However, continuation of traction therapy is expected to be difficult in patients with severe dementia or severe medical comorbidity. Since surgery is not a direct cause of death in the elderly²⁾, even in those with hip fractures efforts should be made to regain their preoperative physical status by actively performing surgery as soon as possible to achieve better functional prognosis.

Although the results of the present study clearly showed a poor prognosis in patients who did not undergo surgery, 19 of 30 who were treated by nonoperative modalities did not choose conservative treatment. Rather, surgery

was not possible due to comorbidity or dementia on admission. To clearly show that the prognosis is affected by the treatment modality, a randomized prospective study is necessary, but such a study is difficult at present and will be considered in the future. Finally, the treatment method for patients with dementia or severe medical comorbidity is a topic for future investigation.

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