

## Conservative Treatment for Fracture of the Proximal Femur with Complications

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We retrospectively compared two groups of patients with hip fractures and severe complications. One group had been treated surgically; the other group had been treated conservatively to prevent worsening of general status, with transfer to wheelchair as soon as possible. This study aimed to determine if early prognosis after conservative treatment would be worse than that following surgical treatment.

**Materials and Methods:** Subjects were patients (n=230) with hip fracture who had been admitted and treated at our hospital from 1993 through 2006. Patients' medical records were retroactively investigated to obtain information on age, sex, complications, type of fracture, and course of subsequent hospitalizations. Additional information for conservatively treated patients included reasons for avoiding surgery and time-to-transfer to wheelchair. In case of death, the cause and timing of death were investigated.

**Results:** Of the 230 patients, 22 (mean age, 83.5 years) were treated conservatively. Complications at admission included cardiac disease, respiratory disease, malignancy, renal disease, dementia, and other conditions. Multiple complications were commonly seen. The reasons for selecting conservative treatment were cardiac function disturbance in 13 cases and decision of patients' families in 9 cases. Almost all patients were able to transfer to wheelchair. A total of 9 patients died in the hospital: 8 were in the surgical treatment group and 1 was in the conservative treatment group. The patients who died in the surgical treatment group had a mean age of 80.3 years, and pneumonia was the main cause of death. The timing of death ranged from 12 to 129 days after surgery. The number of perioperative deaths was 3 (1.4%).

**Discussion and Conclusion:** This study showed that in patients with hip fractures, severe complications, and poor general conditions, early prognosis after conservative treatment aiming for early transfer to wheelchair is no worse than that following surgical treatment. Thus, conservative treatment should be considered for patients with poor ability for activities of daily living. (J Nippon Med Sch 2016; 83: 2–5)

**Key words:** hip fracture, conservative treatment, early prognosis

### Introduction

Recently, patients with poor general condition, with hip fractures and severe complications, are sometimes treated conservatively to avoid worsening of their status due to stress of surgery and anesthesia and to transfer them to wheelchairs as quickly as possible. However, many orthopaedic surgeons still cite previous studies describing that early prognosis in patients treated without surgery as poor and that surgery is necessary to save these patients' lives<sup>1,2</sup>. On the other hand, some recent studies

have found no differences in early prognosis between patients receiving conservative treatment and patients undergoing surgery<sup>3–5</sup>. These discrepancies between previous and recent studies suggest the lack of a clear agreement regarding the selection of treatment. Thus, the present study aimed to determine whether early prognosis in patients in poor general health who had been treated conservatively would be worse than that in patients who had undergone surgery.

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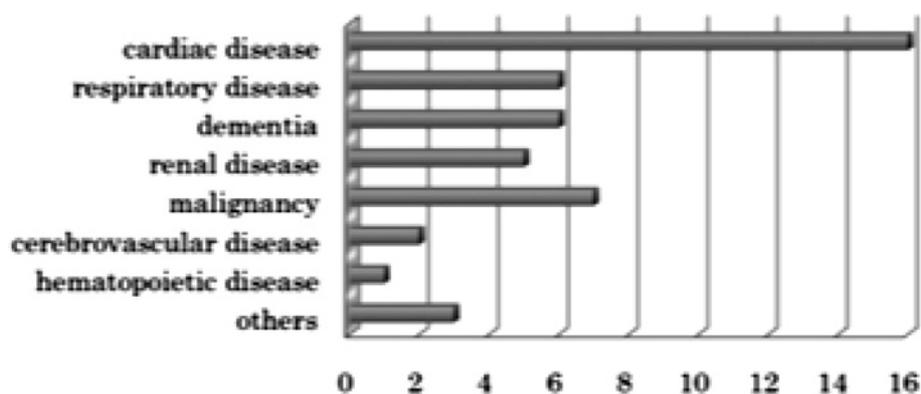


Fig. 1 Complications in conservatively treated patients

Cardiovascular diseases were the most often seen, then malignant tumors (especially in the terminal stage), followed by respiratory diseases and dementia. Almost all patients had multiple complications.

### Materials and Methods

Subjects were patients (n=230) with hip fractures who had been treated at Nippon Medical School Main Hospital from 1993 through 2006. Of these patients, the medical records and X-rays of those treated conservatively provided information on age, sex, complications, type of fracture, American Society of Anesthesiologists (ASA) physical status, reasons for avoiding surgery, and subsequent hospitalizations up to and including the period of transfer to wheelchair. Additional information on patients who had died included whether treatment had been surgical or conservative, cause of death, and postoperative day of death. A perioperative death was defined as a death that had occurred within 30 days after surgery.

### Results

A total of 230 patients were admitted and treated during the study period. Twenty-two patients (9.6%) had been treated conservatively and 208 (90.4%) had undergone surgery. One patient in the conservative treatment group, who was in the terminal stage of carcinoma and had presented with meningitis carcinomatosa at admission, suffered consciousness disturbance immediately after admission, and died 29 days later in spite of intensive treatment. Thus, this patient was excluded from the conservative treatment group, redefining the remaining 21 patients as the conservative treatment group.

The conservative treatment group which consisted of 4 men and 17 women (mean age, 81.9 years) presented with femoral neck fractures (n=12) and trochanteric fractures (n=9). Complications at admission were cardiac disease (n=16), respiratory disease (n=6), dementia (n=6), re-

nal disease (n=5), terminal stage carcinoma (n=6), cerebrovascular disease (n=2), and hematopoietic disease (n=1). Multiple complications were commonly seen in these patients (Fig. 1). Inoperable status due to marked decrease of cardiac function (n=13) was the most common reason for selecting conservative treatment. For all cardiac disease cases (n=16), we consulted cardiologists to evaluate cardiac function at admission. Poor cardiac function in 13 patients made them ineligible for surgical treatment, but eligible for conservative treatment (with the agreement of their families). Of these 13 patients, 9 were in ASA physical status class 4. Families selected conservative treatment for eight patients, which included the six patients with terminal stage carcinoma.

Of the conservative treatment group, 17 patients were able to transfer to wheelchair after spending 6 to 44 days in the hospital. Among the remaining 4 patients, 2 with significantly poor general condition were never transferred to wheelchair, and 2 moved to other hospitals on the second hospital day. Mean hospital stay was 7.5 weeks. Eight patients were discharged to home, 10 to another hospital, and 3 to other facilities.

Next, we investigated the cases of death. Deaths occurred in the hospital for 9 (3.9%) of 230 patients: 8 (3.8%) of 208 patients of the surgical treatment group and 1 (4.5%) of 22 patients of the conservative treatment group (Fig. 2). The 8 patients (4 men and 4 women) of the surgical treatment group who died had a mean age of 80.3 years (Table 1). Six patients had trochanteric fractures, and 2 had femoral neck fractures. Before having fractures the patients were able to walk unassisted (n=5) or able to walk only inside a house (n=3). Osteosynthesis

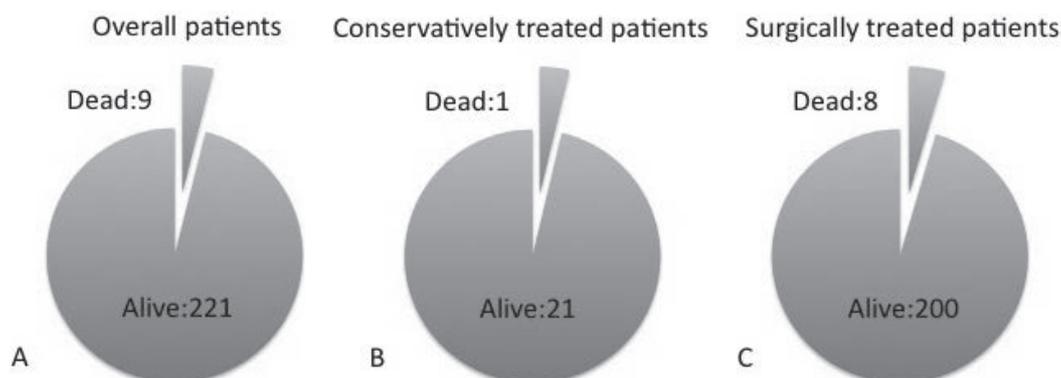


Fig. 2 Mortality in surgically treated and conservatively treated patients. Mortality rate was 3.9% (9/230 A) overall, 4.5% (1/22 B) in conservatively treated patients, and 3.8% (8/208 C) in patients who had undergone surgery. One patient in the conservative treatment group (n=22) with terminal stage malignancy and consciousness disturbance at admission was excluded from the discussion of prognosis in surgically treated and conservatively treated patients. The remaining 21 patients were included in the conservative treatment group. No patient in this group died.

Table 1 Postoperative death in the hospital (1)

Patient	Age	Gender	Walking ability before suffering fracture	Fracture type	Surgery
1	85	F	only inside the house	trochanteric	short femoral nail
2	86	M	unassisted	trochanteric	sliding hip screw
3	79	M	unassisted	neck	BHA
4	62	F	unassisted	neck	BHA
5	82	F	unassisted	trochanteric	short femoral nail
6	80	M	unassisted	trochanteric	sliding hip screw
7	84	F	only inside the house	trochanteric	sliding hip screw
8	84	M	only inside the house	trochanteric	short femoral nail

Table 2 Postoperative death in the hospital (2)

Patient	Complications	ASA	Cause of death	Day of death (postoperative)
1	severe dementia (conscious disturbance)	2	pneumonia	32
2	HT, right pleural effusion	2	pneumonia	105
3	emphysema, AF	2	pneumonia	56
4	hemiparesis due to traumatic SAH, HT	2	pulmonary embolism	115
5	thyroid cancer, DM, HT, ILBBB	2	thyroid cancer	129
6	gastric ulcer, CRBBB	2	pneumonia	12
7	combined valve failure, AF, HT, CHF, chronic renal dysfunction	4	worsening of CHF	24
8	asymptomatic cardiac ischemia, HT, CRBBB, emphysema, left bulla	4	myocardial infarction	20

HT: hypertension, AF: atrial fibrillation, SAH: subarachnoid hemorrhage, DM: diabetes mellitus, ILBBB: incomplete left bundle branch block

CRBBB: complete right bundle branch block, CHF: congestive heart failure

was performed using a short femoral nail (n=3) and a sliding hip screw (n=3). Bipolar hemiarthroplasty was performed in both of the 2 patients with a femoral neck fracture. The ASA physical status was class 4 in 2 pa-

tients and class 2 in the other 6 patients (Table 2). Perioperative death occurred in 3 patients (1.4%). One patient in ASA physical status class 4 died because of a repeat myocardial infarction on postoperative day 20, and

the other patient in class 4 died on postoperative day 24 due to worsening of cardiac failure, which had been diagnosed prior to surgery. In the ASA physical status class 2 group, one patient died on postoperative day 12. Pneumonia was the most common cause of death (n=4). One patient died of pulmonary embolism, and another died of carcinoma.

### Discussion

This study aimed to determine whether conservative treatment for the hip fracture would be a disadvantage for early prognosis when compared with surgical treatment. Of the 208 patients who had undergone surgery, 8 died in the hospital. Of the 22 patients in the conservative treatment group, the only 1 who died had been excluded from the discussion on the appropriateness of surgical or conservative treatment because that patient was in the terminal stage of carcinoma at admission. All the patients appropriately included in the conservative treatment group, except for two with poor general status prior to suffering from fractures and two others who moved to other hospitals on day 2 after admission, were discharged alive and in wheelchairs. Accordingly, we conclude that conservative treatment poses no disadvantage for early prognosis when compared with surgical treatment.

Therefore, determining which patient should be treated conservatively is the next question to be considered. The answer is to limit conservative treatment to patients with severely complicated conditions, such as difficulty walking before suffering from a fracture, being almost completely bedridden, or having no prospect of improvement in the activities of daily living because of dementia or other complications. However, it is important to decide whether to perform surgery for patients who had no difficulty walking before suffering from a fracture and who can likely return to normal activity after surgery. The ASA physical status is widely used in evaluating preoperative general status<sup>6</sup>. In this study, 9 of 21 conservatively treated patients corresponded to ASA physical status class 4 at admission. Moreover, considering that 2 of 3 cases of perioperative deaths were class 4 and that patients in class 4 or higher would reportedly have a poor clinical course, even with surgery<sup>7</sup>, class 4 should be considered the standard cutoff for selecting conservative treatment. Respiratory complications are reportedly the most likely causes of death among patients with femoral fracture<sup>8</sup>. Furthermore, preoperative complications are re-

portedly not an indicator of postoperative early prognosis<sup>9</sup>. Even in patients evaluated as class 3 or lower, perioperative bed rest or influence of anesthesia may lead to perioperative death. In patients with preoperative respiratory complications, clinicians should absolutely obtain informed consent.

The present study had several limitations. The first is that the data were obtained retrospective investigations. The second limitation is that because follow-up of the patients was disrupted at discharge in many cases, the long-term prognosis remained unclear.

### Conclusion

Conservative treatment was not found to be a disadvantage for early prognosis when compared with surgical treatment. Conservative treatment should be considered for patients whose ASA physical status evaluation suggests poor ability for activities of daily living before suffering from a fracture or severe dementia and little hope for postoperative activity improvement.

**Conflict of Interest:** The authors declare no conflict of interest.

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