

Original article

The cause of failure to return to the pre-fracture place of residence and solution to continue medical treatment for osteoporosis following an operation for hip fracture – Periodic observation of single center

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Abstract

The purpose of this study was to investigate the causes of failure to return to the pre-fracture place of residence at hospital discharge following an operation for a hip fracture and to continue medical treatment for osteoporosis. Herein, we discuss methods for improving discharge protocols for these patients.

We examined patients who sustained osteoporotic fractures and were operated on for a hip fracture between 2001 and 2003 (83 males and 386 females; 81.2 ± 9.0 years old) and between 2011 and 2013 (121 males and 462 females; 83.1 ± 9.3 years old). In a follow-up study, we examined patients who moved into our related rehabilitation institution over a 3-year period, from 2011 to 2013.

The incidence of hip fractures had increased from 2001–2003 to 2011–2013 in both genders, and it tended to increase in patients greater than 80 years of age in male and 90 years of age in female. The most common destination residence after discharge from the rehabilitation institution was the pre-fracture place of residence. The Barthel Index at discharge from the rehabilitation institution was significantly larger in patients who returned to the pre-fracture place of residence compared to those who returned to nursing home and our hospital. These results suggest improved mobility and ADL level of patients enable them to return to the pre-fracture place of residence.

We propose the construction of a feedback system that aids in a medical pass to increase the ambulant consultation rate for orthopedics and prevent fragile fractures.

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Keywords: Osteoporosis; Hip fracture; Hospital discharge

1. Introduction

Osteoporosis increases the risk of fragile fractures, most notably in the proximal femur, vertebrae and wrist, and it is a major social problem. It was estimated that as many as 9 million fragile fractures occurred through the world in 2000 [1]. Due to increased life span and with the presumption of a

constant age-specific rate of fracture in both men and women, the incidence of hip fractures is estimated to increase to 6.3 million in 2050 [2]. When surgery is applied, the incidence of postoperative complications is so high that the reported 1-year mortality rate during the rehabilitation period is 30% [3,4]. Furthermore, hip fracture is associated with high morbidity (20% death) and mortality (50% institutionalization) within the first year following the injury [1]. Considering that an incidence of clinical fracture recurrence within 2 years after any clinical fracture is 10.8% [5], the goal of fragile fracture therapy should be treatment of osteoporosis to prevent future fractures, with elimination of bone loss and maintenance of

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bone strength. However, the barriers to care, including age, dementia, medical co-morbidities, polypharmacy, lack of adherence to therapy, delirium, economical situation, ignorance and incuriosity about osteoporosis, discourage effective osteoporosis management [6]. Therefore, ambulant consultation for orthopedics after hospital discharge is indispensable for these patients, especially for patients who were operated on for a hip fracture. Nevertheless, regional alliances to provide outpatient care for these patients are lacking in Japan. In North America, Europe and Oceania, the incidence of hip fractures has plateaued in the last two decades, and age-adjusted decreases in the incidence of these fractures have been reported in some centers. In contrast, age-adjusted hip fracture rates continue to rise in Japan and some other countries [7]. The purpose of the present study was to investigate the causes of failure to return to the pre-fracture place of residence at hospital discharge following an operation for a hip fracture and to continue medical treatment of osteoporosis. Herein, we also discuss methods for improving the discharge protocols for these patients.

2. Materials and methods

We examined patients who sustained hip fractures and were treated operatively at our hospital and reeducated at our rehabilitation institution between January 2001 and December 2003 and between January 2011 and December 2013. A flow sheet of examination items analyzed in this study is shown as Table 1.

2.1. Examination of patients who sustained hip fractures and were treated operatively at Kawakita general hospital

Unstable femoral neck fractures were treated by hemiarthroplasty, and stable femoral neck fractures were fixed with cannulated cancellous hip screws or Hansson's pins. Trochanteric fractures were treated with internal fixation using a gamma-fractures nail type device and, in some cases, a compression hip screw. All procedures in this study were in accordance with the ethical standards of the responsible committee on human experimentation of the authors' institution and with the Helsinki Declaration of 1975, as revised in 2008. Informed written consent was obtained from all patients who were treated operatively.

The numbers and percentages of hip fractures and other fragile fractures, and the age distribution of hip fractures that occurred over two 3-year periods, from 2001 to 2003 and from 2011 to 2013, were compared between genders. Based on place of residence following discharge from our hospital, patients treated for hip fractures were divided into four groups: pre-fracture place of residence (home of their own, including persons living alone and living together), our affiliated rehabilitation institution, a nursing home (nursing and personal care facility), and hospital mortality. When the patients from a nursing home returned there, they were counted to return to a nursing home. The place of residence following discharge

Table 1

A flow sheet of examination items analyzed in this study.

I. Examination of patients who sustained hip fractures and were treated operatively at Kawakita general hospital. Over two 3-year periods, from 2001 to 2003 and from 2011 to 2013.
1. The numbers and percentages of hip fractures and other fragile fractures
2. The age distribution of hip fractures that occurred over two 3-year periods
3. The residences of patients treated for hip fractures after discharge.
4. The residences of patients under and over 80 years of age who were after discharge.
From 2011 to 2013.
1. The destination residence of the patients compared based on fracture site: femoral neck fractures (FNFs) and trochanteric fractures
II. Examination of patients who were treated for fractures of the proximal femur at Kawakita general hospital and moved into the related rehabilitation institution over a 3-year period, from 2011 to 2013.
1. The destination residence of the patients after discharge from the rehabilitation institution.
2. The number of patients who returned to the pre-fracture place of residence following discharge and visited the orthopedics department at Kawakita general hospital and their ambulant consultation rate.
3. The destination residences following discharge from the rehabilitation institution compared in every decade.
4. the Barthel Index at admission and at hospital discharge from the rehabilitation institution

from our hospital was decided by deliberation of medical doctors, physical therapists, medical social workers, patients' family and patients themselves if possible. The numbers and percentages of patients in each group were compared between genders over two 3-year periods. The patients under and over 80 years of age were also compared. Furthermore, the destination residence of patients treated for hip fractures at our hospital from 2011 to 2013 was compared based on fracture site: femoral neck fractures (FNFs) treated operatively, mainly with hemiarthroplasty, and trochanteric fractures treated with fixation using a gamma-nail type device.

2.2. Examination of patients who were treated for fractures of the proximal femur at Kawakita general hospital and moved into the related rehabilitation institution

In a follow-up study, we examined patients who were treated for fractures of the proximal femur at our hospital and moved into our related rehabilitation institution over a 3-year period, from 2011 to 2013. These patients were divided into three groups based on place of residence following discharge from the rehabilitation institution: pre-fracture place of residence, a nursing home, and return to our hospital for treatment for other diseases. The number of patients in each group and the age distribution of these groups were compared. Level of mobility and activity of daily living (ADL) were evaluated using the Barthel Index at admission and at hospital discharge from our related rehabilitation institution. The ambulant consultation rate of patients who returned to the pre-fracture place of residence from the rehabilitation institution and visited the orthopedics department at our hospital from 2011 to 2013 was calculated.

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