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Original research

Hip fractures in patients older than 75 years old: Retrospective analysis for prognostic factors

Gökhan Karademir [a,*], Yücel Bilgin [a], Ali Erşen [a], Gökhan Polat [a], Mehmet I. Buget [b], Mehmet Demirel [a], Halil Ibrahim Balcı [a]

[a] Istanbul University, Istanbul Faculty of Medicine, Department of Orthopedics and Traumatology, Çapa Fatih, Istanbul, 34050, Turkey
[b] Istanbul University, Istanbul Faculty of Medicine, Department of Anesthesiology and Reanimation, Çapa Fatih, Istanbul, 34050, Turkey

HIGHLIGHTS

- Proximal femoral fractures are often seen in older patients.
- They are associated with high mortality.
- It is important to determine the factors that affect mortality especially in patients older than 75 to decrease the mortality rate.

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ABSTRACT

Background: Proximal femoral fractures are often seen in older patients and are associated with high mortality. Introduction to old age population is latening due to advancements in medical sciences and increasing life expectancy.
Objectives: The aim of the study was to evaluate factors affecting mortality in patients above 75 years of age who had been operated because of proximal femur fractures.
Patients and methods: Patients with age 75 and over who suffers from post-fall proximal femoral fracture who underwent surgery with one of following three methods (hemiarthroplasty, proximal femoral nail or total hip arthroplasty) were evaluated retrospectively. Effects on mortality were examined for factors such as type of surgery, type of anesthesia, preoperative ASA score (American Society of Anesthesiologists Score), need for intensive care, need for blood transfusion, operation waiting time and hospitalization duration. 115 patients who met inclusion criterion were included in the study out of 224 overall. 75 patients were women and 40 were males.
Results: Mortality rate after first year was found to be 40%. Patients over 85 years old had higher rates of mortality ($p = 0{,}0003$) than respectively younger patients (75–85). Sex was found to have no impact on mortality ($p = 0.5039$). There was no statistically significant difference in terms ASA score ($p = 0.1518$). Order of applied surgical methods with mortality risk rates was found to be total hip arthroplasty > hemiarthroplasty > proximal femoral nail ($p = 0.0003$). Type of anesthesia, the use of cement during arthroplasty, operation waiting time and hospitalization duration was not directly related with mortality rate (type of anesthesia $p = 0.63$, the use of cement during arthroplasty $p = 0.223$, operation waiting time $p = 0.5$ and hospitalization duration $p = 0.19$).
Conclusions: Age is the primary risk factor on first year mortality in patients older than 75 years old with hip fractures. Addition to older age, more need to blood transfusions, and arthroplasty are other risk factors for first year mortality. It should be kept in mind that after 75 years old first year mortality may be higher if the patient is treated with arthroplasty.

1. Introduction

Femur fractures, with its increasing incidence among elderly, have been occurring increasingly due to lengthened life expectancy of humans all over the world. Only in United States of America, annual

Abbreviations: ASA, American Society of Anesthesiologists Score.

* Corresponding author.
E-mail addresses: dr@gokhankarademir.com (G. Karademir), yucelbilgin70@hotmail.com (Y. Bilgin), ali_ersen@hotmail.com (A. Erşen), gokhanpolat7@gmail.com (G. Polat), mbuget@yahoo.com (M.I. Buget), dr88.mehmet.demirel@gmail.com (M. Demirel), balcihalili@gmail.com (H.I. Balcı).

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Table 1
Gender distribution of patients according to age groups.

Age	Women	Men	Total
75–85	52	25	77
>85	23	15	38
Total	75	40	115

reported number of cases is 350 000 [1]. Although most of the patients in this group survive at least one year, there are studies reporting high mortality rates in patients with proximal femoral fracture [2,3]. Many studies were conducted about hip fractures related mortality in patients above 65 years. Mortality rate after hip fracture in the first year varied between 26.9% and 35.7% in these studies [4,5]. However, factors affecting mortality in those studies are controversial. Those studies did not sufficiently analyze the relationship between mortality and factors such as type of surgery, type of anesthesia, ASA score (American Society of Anesthesiologists Score), gender, need for blood transfusion, time to operation, and hospitalization time.

Although elderly population was considered to be people older than 65 years in the present studies, introduction to old age population is latening due to advancements in medical sciences and increasing life expectancy. In the recent studies, elderly population deem to be accepted as 75 years and older; thus hip fractures mortality and effecting factors should be investigated in this age group [6].

In this study, factors affecting mortality and mortality after hip fracture were evaluated in patients above 75 years.

2. Patients and methods

In this retrospective study, geriatric patients who admitted to a tertiary health center between January 2009 and September 2013 with the complaint of proximal femoral fracture due to fall were evaluated. All patients underwent surgical operation by one of the 3 separate methods: proximal femoral nail, hemiarthroplasty, and total hip arthroplasty. Among the survived patients, those with at least 1-year follow up were included to the study. Exclusion criteria included pathological fractures, age below 75, fracture older than 1 week, and subtrochanteric fracture.

The data were recruited from hospital database and patient files. In addition, incomplete records were completed by telephone calls and outpatient clinic files.

Demographic data, surgery, anesthesia, preop ASA score (American Society of Anesthesiologists Score), need for intensive care, need for blood transfusion, time to operation, hospitalization, and time of death were recorded. The relationships between these parameters and mortality were analyzed.

Of the 224 patients operated between January 2009 and September 2013 because of proximal femoral fracture, 109 patients who can not be reached or who had pathologic fractures or had missing data were excluded from the study. Of the included patients, 66 had proximal femoral nail, 40 had hemiarthroplasty, and 9 had total hip arthroplasty. Of the 115 patients, 75 were females and 40 were males. [See Table 1 and 2] The mean age of female and male patients was 84.2 and 82.7 years, respectively. [See Table 3]. The mean duration of follow-up period was 18 months.

Survival analysis was made by Kaplan–Meier method. In order to evaluate the relationship of recorded parameters and mortality, cox regression model was used. Statistical analyses were conducted by MedCalc software. Mortality and survival analyses were based on the first date of hip surgery. Statistically significance level was adjusted to 0.05. Written informed consent was obtained from all participants in the study.

3. Results

46 of 115 patients who were included in the study were found to die within the first one year. 15.21% of the first year deaths were found to occur in the first month. 63.04% of the first year deaths were found to occur between 1 and 6 months, 21.73% were found to occur after 6 months.

When factors affecting mortality were examined, it was seen that the type of surgery was related to mortality ($p = 0.0003$). [See Table 4].

In proximal femoral nail group, mortality rate by the end of the first year was 24.24%, whereas it was 66.66% in the total hip arthroplasty group, and 60% in the hemiarthroplasty group. [See Table 5].

In patients treated with proximal femoral nail, the first-year mortality rate was significantly lower compared to patients treated with arthroplasty ($p = 0.0003$).

The use of cement during arthroplasty was determined to have no significant effect on mortality ($p = 0.223$).

Mortality rate was found to be significantly higher in patients who should be monitored in the intensive care unit postoperatively ($p = 0.002$).

When the patients were divided into two groups of above and less than 85 years old, analyzes show mortality was relatively higher in patients older than 85 compared to patients between 75 and 85 years old ($p = 0.02$). [See Table 4].

When examining the effects of sex on mortality, it was found to have no impact on mortality ($p = 0.5039$). The mortality rate in the first year was 38.66% in women, while was 42.5% in men.

Table 2
Patients included in the study and distribution of the patients according to the type of surgery.