Femoral fractures in the extremely elderly

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Summary

At the Trauma Unit of Pisa we performed an observational study reviewing nineties that about 200 patients were treated and underwent surgery for femoral neck fracture from 1998 to 2005. The clinical and radiographic results obtained were discrete, with a mortality of 42.5%, the survivors are still having a good quality of life.

KEY WORDS: elderly; femoral neck fractures; osteoporosis; morbidity; mortality.

Introduction

Fractures of the femoral neck, both medial and lateral, in the elderly is a major cause of hospital admissions in industrialized countries. These factors are associated with increased mortality and morbidity (1) and a functional impairment that leads the patient not to be more independent at home (2).

Our study re-evaluated about 200 patients over ninety years of age who were treated at our Institution and who underwent surgery for femoral neck fractures from 1998 to 2005. The results obtained were discreet (fairly good) with a mortality rate of 42.5%, while the remaining survivors enjoy a good quality style of life.

Materials of study and Methods

In our work we re-evaluated elderly patients, over ninety years of age, hospitalized for fractures of the femoral neck in the 1st Orthopedic Clinic of the University of Pisa during the period ranging from January 1st 1998 to the first semester of 2005 and treated with various surgical techniques that included fixation with three cannulated screws for nondisplaced impacted fractures and endomedullary fixation or open reduction procedures for lateral fractures and total hip prostheses implants or bipolar endoprostheses for medial fractures.

We re-evaluated about 200 patients over ninety, of whom 32 were male and 168 were female, with 110 lateral fractures and 90 medial fractures. Of these 24 patients were treated with three screws, 95 with screw plates, 18 with endoprostheses, 52 with total hip prosthesis, 11 with endomedullary nail. The female sample was more numerous than the male because female life expectancy is superior to that of males. Italy is the country in which the rate of aging of the population is most intense and quick, as also confirmed by the WHO (World Health Organization). The most recent demographic data confirms the constant increase of the median life expectation of the Italian population which has characterized the last century and which has brought life expectancy at birth in 2001, to 76.7 years for men and 82.9 years for women (Istat data 2001).

The majority of patients suffered from other comorbidities, (such as cardiopathy, diabetes, COPD); most importantly though, during the period of hospitalization their BMD was evaluated with a bone densitometer device which showed that 80% of the women and 40% of the men were affected by osteoporosis.

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Discussion

Recent studies conducted in countries of northern Europe have demonstrated a significant increase in the incidence of fractures of the femoral neck in both genders in the last decade (3) while in the ex-
tremely elderly this incidence tends to remain constant or even to
decrease (4-8).
Various studies carried out in recent years (“Spina”, Rizzoli 2004,
Frandsen e Kruse, etc.) demonstrate that, at the moment, we cal-
culate about 500,000 new cases of proximal femur fractures in Eu-
rope every year; for an expense of 400 million Euro for hospital co-
sts only and we estimate that in 2030 and 2050 this data will increase
respectively to 750,000 and 1,000,000 Euro per year.
This fracture pattern, together with that of somatic vertebral frac-
tures and wrist fractures are caused by a traumatic event, often mild,
which occur on an pre-existing etiopathogenetic basis such as
osteoporosis. For this reason in our case record, and in accordance
with current literature, these patients are for the most part female
(rate 3:1). Of all the female patients taken into examination, only 10%
of them had a positive anamnesis for farmacological therapy for
osteoporosis.
The extremely elderly are also affected with a series of comorbid
conditions (such as cardiopaties, pneumopathologies, nephro-
pathologies, etc.) that influence both the choice of surgical procedure
and the post operative recovery period (9-12).

Many studies have demonstrated a considerable worsening of the
quality of life, both physical and psycho-social, in these patients (2,12-
21).
The most notable data is, in fact, represented by the post operati-
ve mortality rate which runs at about 15-20% in the first year after
the traumatic event as demonstrated by the review of the most re-
cent series of cases.
Parker et al. have demonstrated that, as opposed to conservative
treatment, surgical treatment of subcapital displaced fractures and
of extracapsular fractures of the proximal epiphysis of the femur has
a better cost-utility rate both in terms of quantity of life and in terms
of remaining quality of life of these patients.
According to Knee the mortality rate among patients with extracap-
sular fractures (and thus treated mostly with screw plates) is grea-
ter than that of patients with intracapsular fractures (treated with pro-
thesis). This mortality rate is also influenced by the different phy-
sotherapeutic program which provides for precocious vertical po-

cisioning in patients with hemiarthroplasty and a postponement of
the vertical positioning to about 5 weeks in patients treated with pla-

Figure 1 - The percentage of deaths in patients treated with 3 screws three
months after surgery is 91%.

Table 1 - Percentage of deaths after 3
months by category of surgical procedure:
(A) prosthesis surgery; (B) surgery with en-
domedullary nail or plate screw; (C) surgery
with three percutaneous screws.

![Figure 1](image-url)
Conclusions

The evaluation of the data of this study demonstrates that the outcome of femoral fractures in elderly patients is mainly influenced by the fracture site; the treatment of choice for medial fractures is total or partial hip replacement which allows for the patient’s early mobilization and an early return to an ambulatory status. The evaluations of our study also demonstrate that the outcome is not positively influenced by reduced surgical time (such as with the 3 screw fixation percutaneous procedure).

With the increase of median life expectancy both this type of patient as well as social costs are destined to inevitably increase. The female gender is the most statistically present and the most involved in this type of problematics, and thus requires a correct clinical diagnosis and a correct farmacological treatment of osteoporosis as a concurring risk factor in femoral neck fractures.

References