

# FREQUENCY OF FEMORAL FRACTURES; COMPARISON IN PATIENTS LESS THAN AND MORE THAN 40 YEARS OF AGE

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**ABSTRACT... Background:** To compare the frequency of various types of fractures of femur in patients less than and more than 40 years of age in a tertiary care hospital. **Design:** Descriptive cross-sectional study. **Setting:** Emergency department. **Period:** January 2009 to April 2011. **Method:** A total of 1756 patients were divided into two groups with respect to age. Then they were further categorized according to the part of femur involved, and compared in both age groups. Results: The study was conducted on a total number of 1756 patients over a period of 2 years from 2009 to 2011. 51.1% patients were less than 40 years of age and 48.9% patients were more than 40 years of age. In patients more than 40 years of age, perthrochanteric fracture was most common (86.40%). In patients less than 40 years of age, mid shaft of femur was most common region involved (87.02%). **Conclusions:** The incidence of proximal femur fractures is high in elderly patients because of several factors like osteoporosis, visual impairment and cognitive disability. Whereas incidence of fractures of mid-shaft of femur is more common in young patients.

**Key words:** Femoral Fractures, Osteoporosis.

## INTRODUCTION

The femur is the longest, strongest, and heaviest tubular bone in the human body and one of the principal load bearing bones in the lower extremity<sup>1</sup>. Fractures of the femoral shaft often result from high energy forces such as motor vehicle collisions<sup>2</sup>.

The incidence of femoral fractures is reported as 1-1.33 fractures per 10,000 population per year (1 case per 10,000 population). In individuals younger than 25 years and those older than 65 years, the rate of femoral fractures is 3 fractures per 10,000 population annually. These injuries are most common in males younger than 30 years. Causes may include automobile, motorcycle, or recreational vehicle accidents or gunshot wounds. Eighty percent of patients 35 years of age or older with femur fractures due to moderate trauma had prior evidence of generalized osteopenia or a condition likely to cause localized osteopenia<sup>3</sup>. The average number of days lost from work or school from femoral fractures is 30<sup>4</sup>.

Incidence of femoral shaft fractures is increasing in Pakistan every year due to increased motor vehicle

accidents as a result of heavy traffic load. Patients involved in such accidents are mostly of younger age group (<40 years). Whereas femoral fractures in older patients are usually as a result of low energy trauma, and mostly involve the proximal femur and trochanteric and neck region. Consequently the management of these fractures also depends upon the part of bone involved. Therefore, data were collected retrospectively.

The aim of this study was to assess the effect of age on the incidence of femur fractures in different age groups. Such surveys enhance our knowledge of characteristics of fractures obviously, but perhaps of a more immediate and practical import is that the epidemiological approach to them enables us to gain an insight into their etiology and thereby forming the basis for their prevention<sup>5</sup>.

## PATIENTS AND METHODS

This was retrospective study from January 2009 to April 2011 carried out in the department of Orthopaedic surgery and Traumatology, Benazir Bhutto Hospital, Rawalpindi. Patients' data were collected from the record register of the accident and emergency department. All the patients who presented with closed fractures of femur

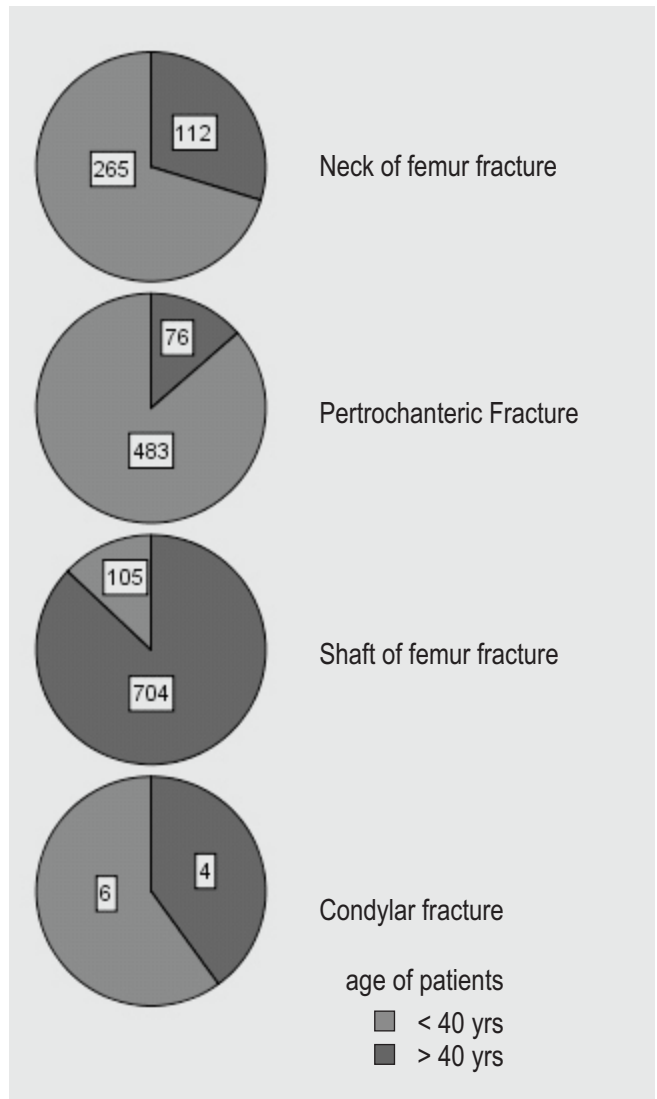
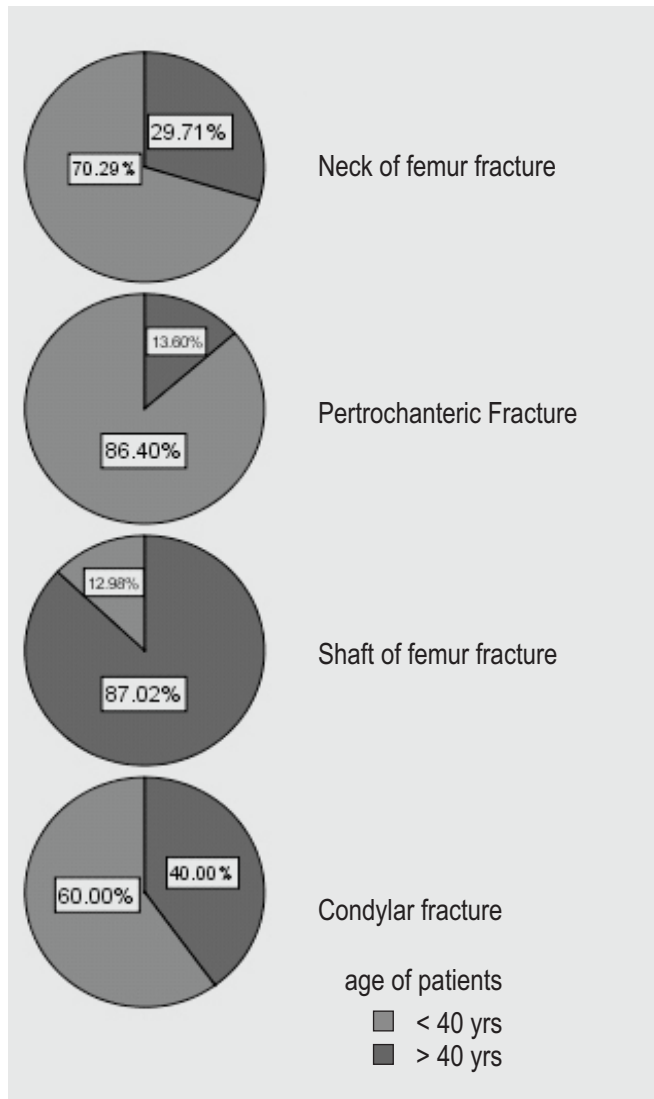
Involving neck, pertrochanteric region, shaft and condylar region were included, however those with open fractures, pathological fractures and multiple fractures were excluded.

Patients were divided into two groups with respect to their age. Those of age more than 40 years were taken as Group A. whereas patients younger than 40 years were taken as Group B. The data were then analyzed to assess the most frequently occurring fracture patterns in these age groups

**RESULTS**

The study was conducted on a total number of 1756 patients over a period of 2 years from 2007 to 2009. The

mechanism of injury in 1101(62.6%) patients was MVA and in 655(37.3%) patients there was history of fall from height. 897(51.1%) patients were less than 40 years of age and 859(48.9%) patients were more than 40 years of age . In patients more than 40 years of age 265 (70.29%) patients had fracture neck of femur, 483 (86.40%) patients had pertrochanteric fracture, 105 (12.98%) patients had mid shaft fractures and 6(60%) patients had condylar fractures .In patients less than 40 years of age 112 (29.71%) patients had fracture neck of femur, 76 (13.60%) patients had pertrochanteric fracture, 704 (87.02%) patients had mid shaft fractures and 4(40%) patients had condylar fractures.



## DISCUSSION

The risk of sustaining a femoral shaft fracture is thought to vary in different populations. The peak occurrence of femoral shaft fractures in males from 15-24 years of age is a well-known phenomenon, but the incidence figure reported vary considerably. The incidence in that age group, 39 per 100000 person-years in the epidemiologic study was found to be as high as 64.6 per 100000 person-years in Rochester, Minnesota (122 fractures during 20 years) (Amerson et al 1988). The incidence in male group from 20-29 years was 191 per 100000 inhabitants, and in a female group 26 per 100000 inhabitants in Netherlands (Kootstra 1973).

A few studies indicated that the incidence of diaphyseal femoral fractures increased with age in men and women. This was the case in the urban populations of Dundee and Oxford in UK (Knowelden, Buhr, Dunbar 1964), of Stockholm (Hedlund and Lindgren 1986) and Malmö (Bengner et al. 1990) in Sweden, and of Rochester, Minnesota (Arneson et al 1988). Of these only the Rochester data showed a clear increase in distal femoral fractures with age.

In the given study 1756 patients were included of different age groups. Patients were admitted through Accident and Emergency Department or through OPD. Mostly patients were referred from the primary and secondary health centers of the city. The study clearly showed an increase in incidence of peritrochanteric and neck of femur fracture in elderly age groups as many previous studies have shown. In younger age groups there was increased incidence of femoral shaft fracture as previously it had been shown in the study of Arneson et al 1988.

It has been shown through research studies in the past that the proximal shaft fractures in the elderly occur sometimes because of ineffective or suboptimal protective responses, along with age-assisted strength decreases, cognitive impairment and fear of falling, a serious disorder in older people may increase the risk of falling and fracturing the hip<sup>6</sup>. Decline in visual perception, proprioception and transient circulatory insufficiencies as well as impaired sensory motor integration functioning and unexpected perturbations are

additional determinants.

Similarly physically inactive patients are twice at risk of suffering from fracture than active adults<sup>7</sup>. Indeed due to its highly negative impact on bone health, muscle physiology, muscle mass, overall health status and on vitamin D exposure, physical inactivity is currently proffered as the most salient explanatory factor for the increasingly high hip fracture rates reported by developing countries as well as many first world countries<sup>8</sup>. So the prevention and recognition of these factors can help reduce the incidence of femur fractures in elderly. In younger age groups MVA, high velocity traumas or sport activities might result in fracture shaft of femur.

This heavy burden of fracture femur on a single tertiary hospital over a period of 2 years can be diminished if facilities like image intensifiers, trained staff and operational equipment is provided to the primary and secondary health centers.

## CONCLUSIONS

The frequency of fracture mid-shaft of femur is considerably large in patients less than 40 years of age and fractures of proximal shaft of femur like peritrochanteric and neck of femur fractures are fairly common in patients more than 40 years of age. The fractures in the young patients are mostly due to motor vehicle accidents, whereas the fractures in elderly are mostly a result of fall from standing height. These patients are referred to tertiary care hospital from remote areas, which add to a lot of bulk in the tertiary care hospital. This bulk can be reduced if facilities like Orthopaedic instruments, trained orthopaedic staff, image intensifier etc. are provided in the secondary care hospitals like THQs and DHQs.

Furthermore, the incidence in young patients may be decreased by strictly following the traffic rules. And in the elderly patients, the treatment of osteoporosis and other co-morbid conditions may prevent the incidence of fractures in this age group.

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