

International Journal of Orthopaedics Sciences

E-ISSN: 2395-1958
P-ISSN: 2706-6630
IJOS 2021; 7(1): 219-221
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www.orthopaper.com
Received: 07-11-2020
Accepted: 09-12-2020

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A prospective study of the patients, commonly elderly people of complex proximal femur fractures, in North India tertiary teaching hospital

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DOI: <https://doi.org/10.22271/ortho.2021.v7.i1d.2483>

Abstract

Background: The incidence of this type of fracture with age, due mainly to the increase in the number of falls associated to a larger osteoporosis prevalence. It is more commonly related with senior females, resident in the urban areas and institutionalized. Femur fractures are devastating injuries that most commonly affect the elders and young population also. In young and healthy individuals, the injury results from high-energy trauma, whereas in the elder age group, most of the fractures are osteoporotic, resulting from a trivial fall.

Aim: To study of the patients, commonly elderly people of complex proximal femur fractures.

Material and Methods: In our study, we have studied 20 cases of adult patients with complex proximal femur fractures with comminution and osteoporosis. Clinical and demographic characteristics were studied, such as mode of injury, the side affected and associated injuries too.

Results: In our result section majority of the patients were in the age group of 41-60 years and 61-80 years i.e., 8 patients each (40% each). Most of the patients were male i.e., 12 (60%) and 8 (40%) were female. The most common mode of injury was road traffic accidents in 10 patients (50%), followed by falls from height in 7 (35%) patients. Both right and left side were equally affected.

Conclusion: Here we can conclude that as per recent studies so as in our study too complex proximal femur fractures were more common in old age and in females, which could be attributed by underlying osteoporosis prevalent more in females. The intra-hospital mortality, until the end of one month, three months, six months, one year and two years. Other decisive factors in the mortality, such as walking ability capacity previous to the fracture, ASA index, anemia, hypalbuminemia, lymphopenia and the existence of CVA were found in some isolated studies.

Keywords: femur fractures, complex proximal femur fractures, old age, trivial fall, road traffic accidents

Introduction

Femur fractures are devastating injuries that most commonly affect the elders and young population also. With the increase of the life expectancy and consequently with the largest proportion of seniors in the population, mainly the so-called "big" seniors (those with more than 80 years), the importance of this type of fracture has been increasing in the last years [1]. In England and Wales, in the biennium 1997/1998, sixty six thousand seniors were hospitalized with a fracture of the femur, while in the United States, it was considered that 350.000 fractures of the femur occurred annually, with a total cost of approximately 6 billion dollars a year, in medical care only. In young and healthy individuals, the injury results from high-energy trauma, whereas in the elder age group, most of the fractures are osteoporotic, resulting from a trivial fall. These fractures have a tremendous impact on both the health care system and society in general. Proximal femur fractures comprise, fractures of the intertrochanteric and subtrochanteric regions. Subtrochanteric fractures are complicated by delayed or non-union [2]. The factors responsible for these complications in subtrochanteric fractures are high-stress concentration, the predominance of cortical bone and difficulties in getting biomechanically sound reduction because of comminution and intense concentration of deforming forces. In inter-trochanteric fractures, which usually occur in the elderly, stabilization of the fracture and restoring the patient to his or her preinjury functional activity at the earliest possible time is essential to prevent complications of recumbency [3].

The present study was aimed to study the complex proximal femur fractures, mainly in elderly aged people.

Material and Methods

We have collected the data for this study in the Department of Orthopedics, District Hospital Basti, Alinagar Marg, Murlijot, Basti, Uttar Pradesh and Department of Orthopedics, King George's Medical University, Shah Mina Rd, Chowk, Lucknow, Uttar Pradesh over a period of two years. During the study period, 20 cases of adult patients with complex proximal femur fractures with comminution and osteoporosis were selected according to inclusion criteria. The fractures were classified according to Boyd and Griffin's classification [4] and Seinsheimer's classification [5].

Inclusion Criteria

- Patients aged
- > 18yrs Patients with complex proximal femur fractures
- with comminution and osteoporosis Patients willing and fit for surgery

Exclusion Criteria

- Any displacement of the femoral neck fracture
- Type 2 and 3 open fractures
 - Inability to walk independently prior to injury
 - Medically unfit for surgery
 - Pathological fractures other than due to
 - Osteoporosis At the arrival of the patient with a suspected proximal femur fracture, patients were resuscitated depending on their general condition. The fracture was stabilized using Thomas splint, alternatively with skin traction. Routine laboratory investigations were done including echocardiogram. X-rays of pelvis with both hips-AP view, hip with full femur length of involved side-AP and lateral views and Chest -PA view. In all the patients, Proximal femoral locking compression plate-implant were used for surgical management.

Results

In our study majority of the patients were in the age group of 41- 60 years and 61-80 years i.e., 8 patients each (40% each), followed by in the age group of 21-40 and 81-100 years were 10% each. Most of the patients were male i.e., 12 (60%) and 8 (40%) were female with the mean age being 60 years.

Table 1: Distribution of patients as per age and sex

Patient characteristics	No. of cases	Percentage
Age group (years)		
0-20	0	0
21-40	2	10
41-60	8	40
61-80	8	40
81-100	2	10
Sex		
Male	12	60
Female	8	40

The most common mode of injury was road traffic accidents in 10 patients (50%), followed by fall from height in 7 (35%) patients. Both right and left side were equally affected. Distal radial fractures was the commonest associated injury. Comminuted subtrochantric fracture constituted 15 cases and subtrochanteric fracture with proximal femur extension in 5 cases. Table-1 and Figure-1

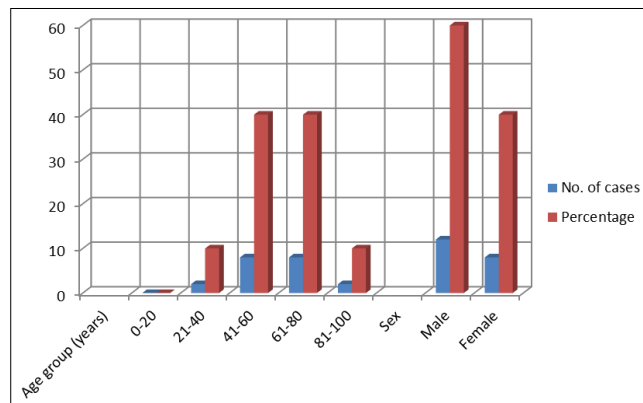


Fig 1: Patient distribution as per the Age and Gender

Table 2: Clinical characteristics of patients

Clinical characteristics	No. of cases	Percentage
Mode of injury		
Motor vehicle accident (RTA)	10	50
Fall from height	7	35
Slip and fall	3	15
Side affected		
Right	13	65
Left	7	35
Associated injuries		
Head injury	1	5
Tibial shaft fractures	1	5
Distal radius fractures	2	10

The majority of the patients were of Type IIIb 5 (25%); Type I was the least common type seen in only one patient.

Table 3: Type of fractures

Type	No. of cases	Percentage
I	1	5
II a	2	10
II b	3	15
III a	3	15
III b	5	25
IV	3	15
V	3	15

Discussion

Hip fractures in young adults are often the result of high-energy trauma, such as a motor vehicle accident or a fall from a height. In these instances, an assessment must be made of possible associated head, neck, chest, and abdominal injuries. In contrast, 90% of hip fractures in the elderly result from a simple fall [6]. In our study, the mean age at fracture was 60 years. The tendency to fall increases with age and is exacerbated by several factors, including poor vision, decreased muscle power, labile blood pressure, decreased reflexes, vascular disease, and coexisting musculoskeletal pathology. The age-related decline in muscle mass around the hip may help account for the increased incidence of hip fractures with aging. Although the muscles surrounding the hip can provide protection, contraction of these muscles during a fall may actually lead to increased rates of hip fracture. The mean age at fracture in our study was 60 years, which is lower compared to that quoted by authors in the literature Parker *et al.* [7]. (71 years), Boldin *et al.* [8]. (73 years) and Pavelka *et al.* (67 years) [9]. In our study, there were 12 male patients and 8 female patients. This could be the fact that in old age groups females are more prone for the osteoporosis as compared to males these findings are similar

to Bostrom *et al.* [10] Kesemenli C *et al.* [11] in 2001 studied 27 patients with an average age of 78 years. Amongst them 14 (51%) patients were females and 13 (49%) patients were males. Higher female preponderance was reported by Boldin *et al.* [26] and Pavelka *et al.* [50]. In our study, the common-mode Patient characteristics No. of cases Percentage Age group (years) 0-20 21-40 41-60 61-80 81-100 Sex Male Female 0 2 8 8 2 12 8 0 10 40 40 10 60 40 of injury being high velocity (RTA) and fall from height accounting for 75% of the cases. Boldin *et al.* [18] and Pavelka *et al.* [9] states low energy trauma due to fall being the commonest mode fractures in elderly. Fractures of the proximal femur occur by one of the three mechanisms. In the elderly, these fractures are usually due to low-energy trauma, typically a minor fall. Spiral fractures generally result perhaps with butterfly comminution. The second mechanism is that of the trivial trauma, with a fracture through a defect in the proximal femur due to neoplasia. Most commonly, metastatic carcinoma. Such pathological subtrochanteric fractures require assessment and management of the neoplastic process as well as of the fracture. The third mechanism is high-energy trauma, motor vehicle accident or falls from significant height. Comminution, soft tissue damage including possible open wound and presence of associated injuries are typical concerns [12]. From our study findings it can be concluded that the complex proximal femur fractures were more common in old age and in females, which could be attributed by underlying osteoporosis prevalent more in females.

Conclusion

In our study, complex proximal femur fractures were more common in old age and in females, which could be attributed by underlying osteoporosis prevalent more in females. The intra-hospital mortality, until the end of one month, three months, six months, one year and two years. Other decisive factors in the mortality, such as walking ability capacity previous to the fracture, ASA index, anemia, hypalbuminemia, lymphopenia and the existence of CVA were found in some isolated studies.

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