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Original research article

A study on clinical profile of patients with fracture Neck of Femur admitted at a tertiary care hospital

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Abstract

A classical picture is of an elderly female lying with the injured leg shortened and externally rotated extremely painful on the slightest movement and unable to raise the leg from the bed. The patient complaints of pain in the groin often referred to the inner side of the thigh and knee. Movement of the leg and weight bearing are restricted by pain and muscle spasms or almost impossible. Patients above the age of 60 years who presented with fracture neck of femur and treated using cemented bipolar prosthesis in the Department of Orthopaedics, were included in the study. After obtaining approval from Hospital Ethics Committee and getting written informed consent from patients. Hypertension was the most common comorbidity with 45(44.1%) patients affected by it. This was followed by Diabetes mellitus (30.35%), COPD16 (15.68%), Coronary Artery disease and Cerebro Vascular Accident, 10(9.8%) each, Chronic Kidney Disease 3(2.94%). 39(38.22%) of our patients had more than one comorbidity. 18(17.64%) patients did not have any known medical comorbidities. Only displaced fractures who were treated with cemented bipolar prosthesis were taken up for the study. Majority of the cases were found to be having Garden type IV 53 (54.1%): Rest of them were Garden type III 45 (45.9%).

Keywords: Fracture neck of femur, displaced fractures, garden type

Introduction

Patients suffering from fracture neck of femur sustain it in trivial or minor injuries, only few injuries involve major trauma. Kocher suggested two mechanism of injury. First is a fall producing a direct blow over greater trochanter; second mechanism is lateral rotation of the extremity. Third recently suggested mechanism is cyclical loading which produces micro and macro fractures. In case of young patients the trauma is major, usually resulting in a direct force along the shaft of the femur with or without rotational component [1].

A structure will fail if it suffers from overloading. Such a situation would arise if the system is unable to absorb the energy applied to it. In the hip joint this overloading can occur as a result of number of independent but often inter related factors. Various classification have been proposed for fracture neck of femur. They can be broadly divided into intra capsular and extra capsular fractures. Such classifications are necessary for assessing prognosis, for treatment purposes and for complications specific for each type of fractures [2].

A classical picture is of an elderly female lying with the injured leg shortened and externally rotated extremely painful on the slightest movement and unable to raise the leg from the bed. The patient complaints of pain in the groin often referred to the inner side of the thigh and knee. Movement of the leg and weight bearing are restricted by pain and muscle spasms or almost impossible. In impacted fracture neck of femur sometime it is possible for the patient to move the hip or even to walk despite the injury [3, 4].

On examination, in an un-impacted fracture the patient is helpless, unable to lift the limb and the limb may be slightly shortened and externally rotated moderately. Tenderness is present in the groin. Greater trochanter is migrated upwards on moving the hip sometimes the crepitus is felt and pain in the groin increase.

Methodology

Patients above the age of 60 years who presented with fracture neck of femur and treated using cemented bipolar prosthesis in the Department of Orthopaedics, were included in the study. After obtaining approval from Hospital Ethics Committee and getting written informed consent from patients.

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Study design
This was a longitudinal study with retrospective data collection and prospective analysis included patients who were treated surgically based on inclusion and exclusion criteria.

Inclusion criteria
1. Patients with fracture neck of femur with displacement (GARDEN type (III, IV)).
2. Patients with age >60 years.
3. Patients who had given informed consent for operative care.
4. Patients with minimum follow up of 1 year.

Exclusion criteria
1. Patients with age < 60 years.
2. Patients medically unfit for anesthesia.
3. Patients with pathological fracture.
4. Patients with Ipsilateral lower limb fracture which interferes with functional outcome.
5. Bilateral cases.
6. Patients with preexisting inflammatory or degenerative arthritis of the injured hip.
7. Patients who have not given consent for study.
8. Patients who were lost to follow up during the study period.
9. Patients who underwent other modalities of treatment.

Cases were selected from the elderly patients with displaced fracture neck of femur who required hemiarthropalsty with cemented bipolar prothesis who satisfied the inclusion and exclusion criteria. After taking consent patients were evaluated clinically and radiologically. All patients selected for study were examined according to protocol. The Laboratory investigations were carried out in order to get fitness for surgery.

Results
The average age of the study patients who sustained fracture neck of femur was noted to be 74.8 years. There was a gradual increase in the number of our patients over the advancing age groups, with a peak in the age range of 80 to 85 years.

Table 1: Distribution based on age

Age Distribution	Number
60-65	11
65-70	14
70-75	20
75-80	15
80-85	22
85-90	13

Out of 98 patients in our study 68(69.4%) patients were female. Rest of them that is 30(30.6%) were males.

Table 2: Distribution based on Gender

Gender	n(%)	Mean Age	SD
Male	30(30.6)	75.70	9.43
Female	68(69.4)	74.52	8.50
Total	98(100)	74.88	8.76

95.92% of our patients sustained fracture neck of femur after trivial fall, 2 (2.04%) each were RTA and fall from height.

Table 3: Distribution based on Mode of injury Chart no. 3: Distribution based on Mode of injury

Mode of injury	n
Tripping/Trivial fall	94 (95.92%)
RTA	2(2.04%)
Fall from height	2(2.04%)

Left side was marginally more affected, 50 (51%) than Right side 48 (49%).

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Table 4: Distribution based on side

Side	N	%
Left	50	51.0
Right	48	49.0

Hypertension was the most common comorbidity with 45(44.1%) patients affected by it. This was followed by Diabetes mellites 31(30.35%), COPD 16(15.68%), Coronary Artery disease and Cerebro Vascular Accident, 10(9.8%) each, Chronic Kidney Disease 3(2.94%). 39(38.22%) of our patients had more than one comorbidity. 18(17.64%) patients did not have any known medical comorbidities.

Table 5: Distribution based on comorbidity

Comorbidity	n	%
CAD	10	10.2
CKD	3	3.06
COPD	16	16.32
CVA	10	10.2
DM	30	30.6
HTN	45	45.9
Absent	18	18.3
Polycythemia	1	1.02
Psoriasis	1	1.02

Only displaced fractures who were treated with cemented bipolar prothesis were taken up for the study. Majority of the cases were found to be having Garden type IV 53 (54.1%): rest of them were Garden type III 45 (45.9%).

Table 6: Distribution based on Fracture pattern

FP Garden type	N	%
III	45	45.9
IV	53	54.1

Discussion

We found that the average age of our patients was 74.8 years. Mean age of both males (75.7 years) and females (74.5 years) was similar.

Average age found in other similar studies like Kalantri A *et al*. (71.6), Saberi S *et al*. (71.4), Raghavendra *et al*. (75), Von Roth *et al*. (79), were comparable to our study [5, 6, 7, 8].

We found gradual increase in the number of patients over the advancing age's ranges. Since the number of people in the advancing age group in the population progressively declines because of mortality this distribution means that the incidence of the fracture disproportionately increases as age advances. But the rise in number may be due to increased referral to our center (Tertiary center) as the advancing age group have more comorbidities, another reason is that the physiologically younger people undergo either osteosynthesis or THR and hence will not come under the perview of this study.

Out of 98 patients in our study 68(69.4%) patients were female. Rest of them 30(30.6%) were males. Mean age for fracture in both males and females were similar.

There was significant female preponderance in our study patients 69.4% which is also seen in most other studies. It may be because higher life expectancy in women increases the gender gap towards elderly females as age advances. This was born out from the gender statistics of government of Kerala 2016-2017. Moreover the female gender is vulnerable to postmenopausal osteoporosis, resulting in inherent weakness of bone and fracture susceptibility.

Left side was more commonly affected side, 50 (51%) patients having their fracture on this side; the rest i.e. 48 (49%) had the fracture on right side.

All these studies also showed that Left sided fracture were more compared to Right side in our study majority of the fracture of the neck of femur occurred due to trivial fall or tripping at home 84.69%. Followed by RTA 12.25% and 3.06% patients had fall from height.

All of the similar studies showed tripping or trivial trauma as the most common cause. Our study was comparble to the study by D.Venkateswara Rao *et al*. The mean age of patients (74.8) in this study is probably the reason for more number of low velocity injury.

There was an expected significant incidence of major comorbidities in our patients. Hypertension being the most common 44%, 30% of our patients had diabetes mellites. 40% of our patients had multiple comorbidities. At the same time we found that 18% did not have any known associated diseases.

The comorbidities of patients in our study is found to be comparable to those found in other studies. Since the study group is that of old age, medical co morbidities are expected and inevitable.

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Conclusion

- Hypertension was the most common comorbidity with 45(44.1%) patients affected by it. This was followed by Diabetes mellites 31(30.35%), COPD16 (15.68%), Coronary Artery disease and Cerebro Vascular Accident, 10(9.8%) each, Chronic Kidney Disease 3(2.94%).39(38.22%) of our patients had more than one comorbidity. 18(17.64%) patients did not have any known medical comorbidities.
- Majority of the cases were found to be having Garden type IV 53 (54.1%): Rest of them were Garden type III 45 (45.9%).

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