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Original Research Article.

Study of Clinical Presentation of Patients with Intertrochanteric Fractures At a Tertiary Care Centre: A Prospective Descriptive Study

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ABSTRACT

Introduction: The clinical presentation of patients who have sustained intertrochanteric fractures can vary widely depending on type, severity and etiology. Displaced fractures are clearly symptomatic, such patients usually cannot stand and Patient with undisplaced fractures experience minimal pain. Thus, here is an effort to study the clinical factors and presentation of patients with intertrochanteric fractures.

Materials and Methods: The current study was carried among 30 adult patients diagnosed with intertrochanteric fracture Patients were examined and investigated with X-ray pelvis with both hips AP and Lateral view (whenever possible) and also effected side hip with femur, full length AP and Lateral. Performa specially made for the study was used. Data collected at the end of the study was statistically compared and analyzed with the similar studies done before.

Results: The average age of the patients were 65 years. Out of 30 patients, 56% male and 43% female. The most common mode of injury in our study are fall or slip in the older age group, while the high velocity trauma are more common in younger age group A total of 17 patients sustained injury in the right side while 13 patients sustained injury on the left side out of 30 patients of our study group. As per A.O classification 66% were unstable trochanteric fracture and 33% were stable trochanteric fractures.

Conclusion: Females in the study group were usually of menopausal age. Hence, the present study concludes that age and gender are non-modifiable risk factors whereas the modifiable risk factors for hip fracture include falls and decreased bone mineral density.

Keywords: Intertrochanteric Fractures; Osteoporosis, Traumatic Fractures.

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INTRODUCTION

Intertrochanteric fractures are common in old age, but not uncommon in younger age group. These fractures are one of the commonest fractures, specially in elderly with osteoporotic bone usually due to low energy trauma like simple fall. Frequency of these fractures has increased primarily due to increasing life span and more sedentary life style, brought by urbanization. Traumatic fractures occur in younger population due to high velocity trauma whereas in elderly people it is most often due to trivial trauma. With an ageing population, an even larger proportion of our resources will be dedicated to treating these fractures in the coming years. There studies available among Indian population where vitamin D deficiency is estimated to be 96.7% (with cutoff 20 ng/ml) and 100% (with cutoff 30ng/ml.[1]

Although the fall or slip from erect position are responsible for large number of cases but studies show that only 5% to 7% fall or slip results in fracture. It implies that the mechanics of fall is important in determining whether fracture will occur or not.[2] According to Cumming[3], four factors contribute in determining whether a particular fall results in a fracture of the hip, first is the fall must be oriented so that person lands on or near the hip, second is protective reflexes must be inadequate to reduce the energy of the fall, third is local shock absorbers (muscles and fat around the hip) must be inadequate and last is bone strength at hip must be insufficient. The clinical presentation of patients who have sustained intertrochanteric fractures can vary widely depending on type, severity and etiology. Displaced fractures are clearly symptomatic, such patients usually cannot stand and Patient with undisplaced fractures experience minimal pain. Thus, here is an effort to study the clinical factors and presentation of patients with intertrochanteric fractures.

MATERIALS AND METHODS

The current prospective descriptive study was conducted in department of Orthopaedics, Hindurao Hospital, Delhi among 30 adult cases of either sex who was diagnosed with intertrochanteric fracture who were more than 20 years of age.

The patients in study group were randomly selected and were informed about the study in all respect and informed consent was obtained from all patients. After the patients with intertrochanteric fractures were admitted to hospital, all necessary clinical details were recorded in performa which was prepared for this study.

The required information was gathered through interview, clinical examination and analyzing case papers. Skeletally immature individuals, patients with compound fractures and pathological fractures, patients admitted for re operation and patient who did not gave written consent for surgery were excluded from the study.

Patients admitted with Intertrochanteric fracture were examined and investigated with X-ray pelvis with both hips AP and Lateral view (whenever possible) and also effected side hip with femur, full length AP and Lateral. Skin traction or skeletal traction was applied to all cases. Investigations were carried out as per requirement. Physician opinions were taken as to the fitness of patient before surgery as and when necessary. X-ray were reviewed again and classified with using Orthopaedic Trauma Association (OTA)/A.O classification. All fractures were treated using a proximal femoral nail. Performa specially made for the study was used. Data collected at the end of the study was statistically compared and analyzed with the similar studies done before.

Table 1: Distribution of cases according to age in years

Age	n	%
31-40	2	6
41-50	4	13
51-60	4	13
61-70	13	43
71-80	4	13
81-90	3	10

Table 2: Distribution of cases according to gender

Gender	n	%
Male	17	56
Female	13	43

Table 3: Distribution of cases according to Side distribution

SIDE	n	%
Right	17	56
Left	13	43

Table 4: Mode of Injury

Mode of injury	n	%
Domestic fall	23	76
Road traffic accident	7	23

Table 5: Associated Medical Conditions

Associated Medical illness	n	%
Hypertension	6	20
D.M.	3	10
Osteoarthritis Knee	3	10
COPD	3	10

Table 6: Distribution of cases according to Singh's index

Grade	n	%
I	0	0
II	8	26
III	13	43
IV	5	16
V	2	6
VI	2	6

Table 7: Boyd's and Griffin classification

Type of fracture	n	%
Type I	3	10
Type II	5	16
Type III	17	56
Type IV	5	16

RESULTS

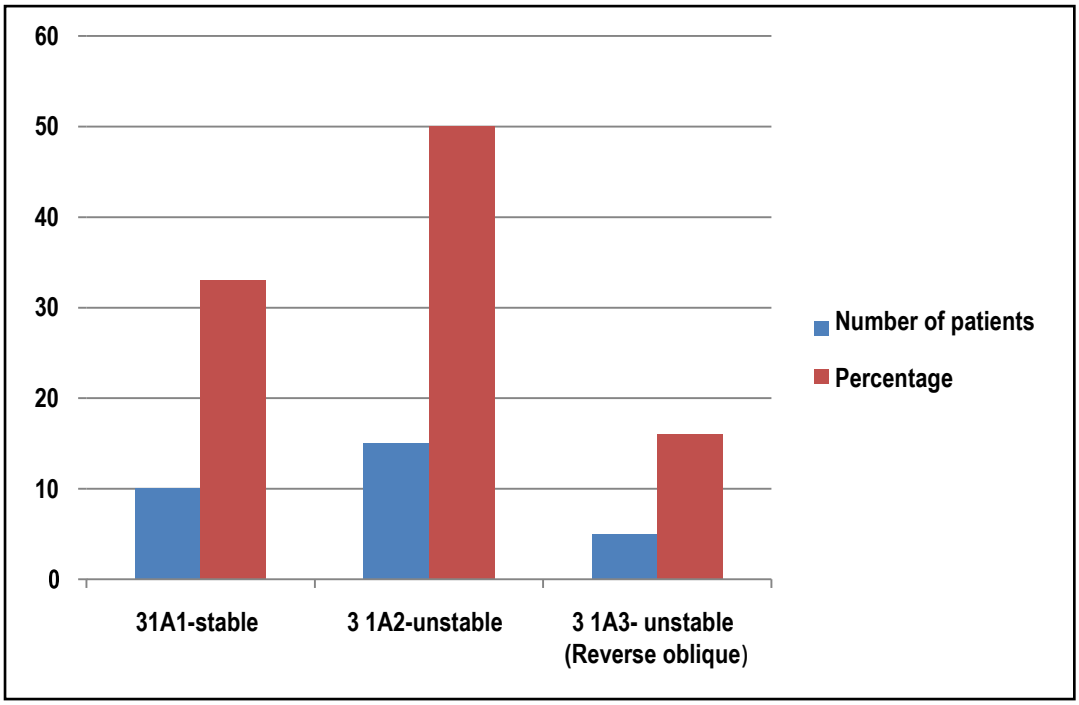
The study involved patients above 30 years of age. The age distribution was from 30 to 85 years (table 1). The average age of the patients in our study group was 65 years. The largest numbers of patients were from age group 61 -70 years. (43%) and the minimum number of patients were from the age group 31-40 years (6%). There were 13 (43%) females and 17 (56%) males in the study (table 2). We had no female patient younger than 50 years of age. Most of the female patients were usually menopausal. Out of 13 female patients, 4 were older than 70 years. Out of 17 male patients, 2 were from age group 31– 40 years, 3 were from 41-50 years, 2 were from 51-60 years, 7 were from 61-70 years, 2 were from 71-80 years and 1 male patient from 81-90 years age group. A total of 17 (56 %) patients from the entire population sustained injury on the right side, while 13 (43%) patients from the entire population sustain injury on the left side (table 3). Domestic fall and road traffic accident (RTA) were the mode of injury in all the patients (table 4). Most of the patients with domestic fall were older in age or had osteoporosis. Road traffic accident (high energy trauma) as a mode of injury, was more common in male patients and younger age group. 23 patients (76%) sustained the injury due to domestic fall and 7 patients (23%) sustained injury due to road traffic accident (RTA). Regarding associated medical conditions, 6 (20%) patients were suffering from hypertension 3 (10%) from diabetes mellitus, 3 (10%) from osteoarthritis Knee and 3 (10%) from chronic obstructive pulmonary disease (COPD) (table 5).

The presence and severity of osteoporosis in our study population was assessed with the help of Singh's index. This index is based on degree of osteoporosis by considering the pattern of proximal femoral trabecular lines. It is divided into 6 categories, grade 1

being most severe osteoporotic condition and grade 6 being normal. More osteoporosis was present in older age group and post-menopausal females. In our study, 13 (43%) out of 30 had grade 3 osteoporosis (table 6). In our study, all the fractures were classified as per A.O/Orthopaedic Trauma Association (OTA) classification. In which 31A1 were considered stable fractures. 31A2 and 31A3 were unstable fractures. In our study, 10 (33%) patients had stable fractures (31A1) as per A.O/ Orthopaedic trauma association classification (OTA), 20(66%) patients sustain unstable inter trochanteric fracture (graph 1). Out of 20 unstable fractures 15 (50%) patient had 31A2 type and 5 (16%) had 31A3 type that is reverse oblique type.

We have also classified the fracture in our study group as per BOYD and GRIFFIN'S classification. According to this classification, in our study group, maximum number of cases that is 17 (56%) patients had type 3 fracture pattern (table 7).

Graph 1: Bar graph showing fracture patterns as per A.O Classification



DISCUSSION

Intertrochanteric fractures are one of the commonest fractures, especially in elderly with osteoporotic bone usually due to trivial trauma but they are not uncommon in younger group. Though there is improvement in conservative line of treatment, the ideal result could not be achieved. The basic problem in conservative line of treatment is not of union, but of complications like cardiac, pulmonary and renal which were aggravated by recumbence and immobility. At present it is generally believed that all Intertrochanteric fractures should be internally fixed to reduce the morbidity and the mortality of the patient. But the appropriate method and the ideal implant by which to fix the Intertrochanteric fracture is still in a debate, because each method having its own advantages and the disadvantages.

The successful treatment of Intertrochanteric fractures depends on many factors such as age, general health, time from fracture to treatment, adequacy of treatment, concurrent medical illness as well as stability of the fixation.[4]

In our study, the average age of the patients in the study group is around 65 years which is comparable to Indian as well as western authors with similar study.[5] We had a male predominance in the Indian authors when compares to female, among 30 patients we studied 17 were male and 13 were female patients. Female were usually of post-menopausal age.

The most common mode of injury in our study was domestic fall (76 %) which is comparable to most of the Indian study. This was also affected by age as the older patients more likely getting the fracture by domestic fall, suggesting osteoporosis may be the reason for IT fractures in older age groups. Among the patients with history of RTA, most of the patients were in younger age group, who suffered high energy trauma. High risk taking and aggressive behaviour of young patients may be accountable for the above observation.

As per A.O[6] classification which we have used in the patients of our study group, 66% were unstable Intertrochanteric fractures and 33% were stable fractures. According to Boyd and Griffin's[7] classification, maximum number of cases (56%) were of type III. Osteoporosis was measured by Singh's index; more osteoporosis was present in older patients and postmenopausal females. In our study 43% had grade 3 osteoporosis. After primary care given to the patients, they were admitted and observed in ward with upper tibial skeletal traction over Bohler–Braun splint and all the required investigations done to get fitness for the surgery.

Regarding treatment options, Kulkarni GS et al[5] reviewed the current concepts of treatment of Intertrochanteric fractures. They concluded that unstable Intertrochantenc fractures can be helped by medullary fixation as there is more failure of Dynamic hip screw. Proximal femoral nail developed by A.O. has two sliding screws. Advantages of their screws are more stable fixation and Prevention of rotational deformity. Martyn J parker[8] in a study evaluated the proximal femoral nail system and its ability to prevent excessive fracture impaction and hence shortening. Gotze et al[9] compared the loadability of osteosynthesis of trochanteric fractures and found that P.F.N. could bear the highest load of all

other devices. Simmermacher RK et a1[10] reviewed 191 patients having proximal femoral fractures treated with proximal femoral nail in one year. After a follow up period of 4 months technical failures were seen in just 4.6% of the cases. They concluded that the result of this new implant compare favourably to the currently available implants for the treatment of the unstable pertrochanteric femoral fractures. Christian Boldin, Franz J. Seibert et al[11] carried a prospective study 55 patients having proximal femoral fractures treated with the proximal femoral nail. They achieved good results in most of the patients with very less complications at 12 month follow up. They concluded that proximal femoral nail is a good minimal invasive implant for unstable proximal femoral fractures. Herrera et al[12] compared trochantreic fractures treated with gamma nail or the P.F.N. and concluded that shaft fractures and cutting out phenomenon were more common with gamma nail while secondary varus was more with P.F.N. Donsa et al[13] concluded in a study that P.F.N. is a method of choice in trochanteric fracture, namely in high subtrochanteric fractures.

Periodic radiography should be performed following surgery as displaced fractures have an increased risk of avascular necrosis. Depending on the health of the patient, the frequency of imaging should be individualized and discussed with the orthopedic surgeon.[14]

CONCLUSION

The average age of the patients was 65 years. Out of 30 patients, 56% male and 43% female. Females in the study group were usually of menopausal age. The most common mode of injury in our study are fall or slip in the older age group, while the high velocity trauma are more common in younger age group. As per A.O classification 66% were unstable trochanteric fracture and 33% were stable trochanteric fractures. Hence, the present study concludes that age and gender are non-modifiable risk factors whereas the modifiable risk factors for hip fracture include falls and decreased bone mineral density.

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