

Analysis of the Outcome of Fracture Femur Surgeries among Adult Population – A Prospective Study

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ABSTRACT

Introduction: Femur fractures have become more common because of ageing process and road traffic accidents among adults which causes significant morbidity and mortality, its trend is also predicted to increase in future. This trend and its complications of femur fracture were not studied widely in India. Objectives: The investigator showed immense interest in investigating the burden, types and surgical complications of femur fractures in a tertiary care hospital.

Material and Methods: The study was done in a tertiary care hospital among adults admitted with fracture femur for a period of five years after getting the informed consent. The outcomes measured were types of fractures, types of surgeries, follow up examination and complications. The data were entered in MS excel sheet and analysis was done using SPSS software.

Results: The study was carried out on 68 patients of which majority 71% were males, 80% were age above 50 years and the most common site of femur fracture was neck of femur and trochanteric fractures then followed by sub-trochanteric fractures. The surgeries preferred in this population were Dynamic Hip Screw, Hip Screw fixation, intramedullary nailing, hemiarthroplasty and total hip arthroplasty.

Conclusion: This study has concluded that the most common fractures were fracture neck of femur and trochanteric fractures with the moderately higher complication rates.

Keywords: Fracture Femur, Fracture neck of femur, Trochanteric fracture, Total Hip Arthroplasty, Hemiarthroplasty, IM nailing, DHS

INTRODUCTION

The **FEMUR** is the longest and the strongest bone in the human body. Its length on average is 26.74% of a person's height¹ a ratio found in both men and women and most ethnic groups with only restricted variation. The anatomy of femur is categorised as a long bone and comprises a diaphysis, the shaft (or body) and two epiphysis or extremities that articulate with adjacent bones in the hip and knee.²

One of the most important and common orthopaedic injury. It is one of the major public health issue due to its association with fragile nature and osteoporosis. Diaphyseal fractures result from significant force transmitted from a direct blow or from indirect force transmitted at the knee.³ Pathologic fractures may occur with relatively little force.⁴ These may be the result of bone weakness from osteoporosis or lytic lesions. With rising life expectancy throughout the globe, the number of elderly individuals is increasing in every geographical region, and it is estimated that the incidence of hip fracture will rise from 1.66 million in 1990 to 6.26 million by 2050.⁵ Primary arthroplasty or open reduction and internal fixation (IF) with nails or screws are the two main options for the treatment of displaced fractures of the neck of the femur.⁶ Some of the factors associated with

femur fracture are obesity, physical activity, calcium deficiency and frequency of falls by the elderly.

Many researchers have explored to demonstrate the geographical variation in prevalence of femur fractures in different parts of the country. This article is discussed with intent to analyse the outcome of fracture femur and its surgical complications.

Present study was undertaken to describe the different types of fracture femurs according to socio demographic variables, to describe the surgical complications associated with fracture femurs among adult population, and to analyze the relationship between the factors causing surgical complications for fracture femurs.

MATERIAL AND METHODS

The present study was a two year prospective study that evaluated 68 patients during 2013 – 2016. These patients were advised for a surgical intervention and were followed for a period of two years. The patients were followed every 3 months and the follow up details were recorded. The patients were interviewed using direct questionnaire method. The study was conducted after getting proper informed consent from the patients and obtaining ethical approval from the Institutional Ethical Board.

Inclusion criteria

All adults with femur fractures were included for the study

Exclusion criteria

Patients associated with psychiatric illness.

Patients who were lost during follow-up or refused to continue in the study

Follow up: The patients were followed up for every 3 months and the patients were clinically assessed for local swelling, movement restriction, abnormal mobility and any deformity. X ray examination follow up was done for assessing the position of implant, wound infection, bone loosening, nailing and screw loosening. Most of the patients showed interest in the study, so the response rate was almost 95%.

STATISTICAL ANALYSIS

The data were entered in the MS excel sheet and analysed using SPSS software 17 version. The data were expressed in percentages and the analysis was done for appropriate

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statistical tests.

RESULTS

The study was carried out on 68 patients of which majority 71% were males, 80% were age above 50 years and the most common site of femur fracture was neck of femur and trochanteric fractures then followed by sub-trochanteric fractures (Table-1). The least common type was fracture shaft of femur which constituted 7.4% of the study population. The fracture shaft of femur and the fracture neck of femur were more common among females than males whereas the sub-trochanteric, trochanteric and intertrochanteric fractures were more common among males. (Table-2) The surgeries preferred in this population were Dynamic Hip Screw, Hip Screw fixation, intramedullary nailing, hemiarthroplasty and total hip arthroplasty (Figure-1 and 2). The post-operative complications rate was more among females than males and it was not statistically significant. The common post-operative complications were perineal tissue injury and rotational deformity followed by malalignment. Only one patient developed angular deformity and three patients developed shortening of the limb. Statistics: The risk factors

like gender, aging and site of surgery were not statistically significant in this study (P > 0.05).

DISCUSSION

Femoral bone fractures are significant cause of morbidity and mortality and the loss of quality of life if it happens during the economically productive age group. The morbidities and mortalities have been reduced as the result of changes in fracture immobilization with early mobilization after surgery thus reducing the risk of complication due to prolonged bed rest. Proximal femur fractures are treated based upon fracture pattern.

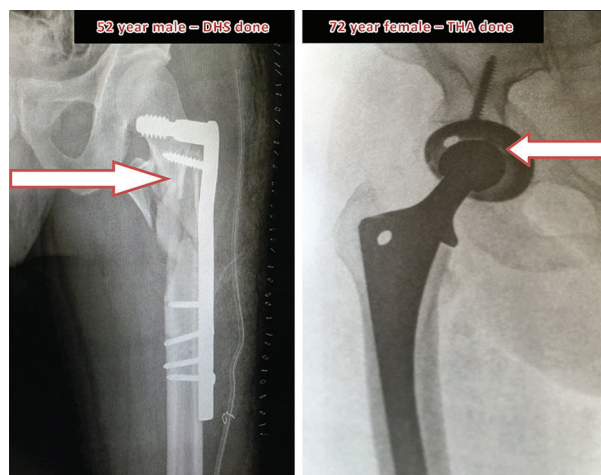


Figure-1: X ray left hip – antero posterior view showing intertrochanteric fracture – dynamic hip screw done in a 52 year male patient and next showing x ray of right hip joint of a 72 year female with total hip arthroplasty done for fracture neck of femur

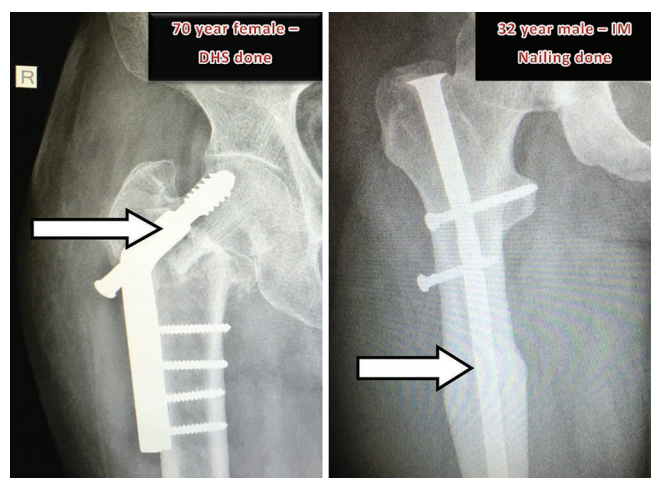


Figure-2: X ray right hip joint in a 70 year old female showing trochanteric fracture with surgical correction done by dhs and showing x ray - right femur shaft fracture with im nailing in a 32 year male

Gender	
Male	48 (71%)
Female	20 (29%)
Age group	
Below 50	14 (20.6%)
Above 50	54(79.4%)
Type of Fracture	
Neck of femur	22(32.3%)
Shaft of femur	5(7.4%)
Sub trochanteric	11(16.2%)
Inter trochanteric	8(11.8%)
Trochanteric	22(32.3%)
Type of Treatments	
DHS – Dynamain Hip screw	31(45.4%)
Hemiarthroplasty	1(1.5%)
Hip screw fixation	13(19.1%)
Im nailing	14(20.6%)
ORIF	4(5.9%)
Proximal femoral nailing	2(2.9%)
THR	3(4.4%)
Complication	
Present	24(35.3%)
Absent	44(64.7%)

Table – 1 – Study population and its distribution in relation to femur fracture

Variable	Male	Female
Age group		
Below 50	14(20.6%)	0(0%)
Above 50	34(50%)	20(29.4%)
Type of fracture		
NOF	10(14.7%)	12(17.6%)
Shaft of femur	0(0%)	5(7.3%)
Sub trochanteric	8(11.8%)	3(4.4%)
Inter trochanteric	7(10.3%)	1(1.5%)
Trochanteric	18(26.5%)	4(5.9%)
Treatment		
DHS	25(36.8%)	6(8.8%)
Hemiarthroplasty	0(0%)	1(1.5%)
Hip screw fixation	5(7.3%)	8(11.8%)
IM nailing	11(16.2%)	3(4.4%)
ORIF	4(5.9%)	0(0%)
Proximal femoral nailing	2(2.9%)	0(0%)
Total Hip Replacement	1(1.5%)	2(2.9%)
Complication		
Present	19(27.9%)	29(42.7%)
Absent	5(7.3%)	15(22.1%)

Table-2: Gender distribution and its relation to type of fractures and treatment

Femoral neck fractures are typically treated with percutaneous pinning, a sliding hip screw or arthroplasty in elderly patients. Peritrochanteric fractures are typically treated with a sliding hip screw or a cephalomedullary nail. Subtrochanteric fractures are typically treated with an intramedullary nail or a fixed angle device. It has been shown by many studies the socioeconomic burden of the hip fractures involving femur fractures will cross 3.85 billion euro by the year 2030.⁷ Of course this study has not included the economic loss and quality of life lost by the patients suffered from femur fractures but the practical complications of traction table during surgeries were taken into account which seemed to be much high compared to other studies. (Table 1 and 2) This study also showed that females showed more complication than males which are supported by many studies conducted in developed countries which may be due the fact that the women are more prone to osteoporosis and hormonal changes.⁸⁻¹² Similarly a large prospective study on outcome of fracture femurs and its surgical complications by Lars Kolmert et al¹¹ showed two thirds of the surgical and non-surgical treatments were satisfactory. Our study also accepts with the same results but in fact little lesser complications with greater satisfaction to the patients and the surgeons. The mean follow up of our patients in this study was only 1.5 years whereas many studies suggested more than 5 years follow up. The results of this study cannot be directly compared with other studies because the study participants belonged to all age groups and the risk factors were not classified.

Conclusion: To conclude, this study had explored the gender distribution of type of femur fractures, different surgical procedures adapted and the post-operative complications with the follow up of 3 years. There was no statistical association found in this study as far as the factors concerned.

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