

## RETROSPECTIVE ASSESSMENT OF CASES OF HIP FRACTURES AT A TERTIARY CARE CENTER

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### ABSTRACT

**Background:** Hip fracture has been recognized as the most serious consequence of osteoporosis because of its complications, which include chronic pain, disability, diminished quality of life, and premature death. **Material & Methods:** In the present hospital based retrospective study, 100 case files of patients were studied for various parameters including age, gender, place of residence, duration of trauma, mechanism of injury, comorbidities, interval between admission and surgery, operation notes. Radiographs were assessed for type of fracture, presence of osteoporosis (Singh's index) and type of implant used. **Results:** Hip fracture characteristics included intertrochanteric fractures (61%), followed by neck fractures (28%) and sub trochanteric fractures (11%). In the sub trochanteric fracture group, mostly patients were <60 years old and had a history of high energy trauma. About 6% fractures were pathological (excluding osteoporosis), mainly lytic lesions of proximal femur, primary and secondary malignancies. Prior hip fracture in the same or opposite limb was present in 12% of patients. >60 years old. **Conclusion:** With increased longevity, hip fractures are an increasing health care problem. Various preventive measures for osteoporosis and falls will decline the prevalence of these fractures.

**Key words:** Hip fractures, Epidemiology, Osteoporosis

### INTRODUCTION

The Osteoporosis represents a major public health problem because of its association with low-energy trauma or fragility fractures. Hip fracture has been recognized as the most serious consequence of osteoporosis because of its complications, which include chronic pain, disability, diminished quality of life, and premature death. Osteoporotic hip fracture is an established health problem in the West and is increasingly recognized as a growing problem in Asia as per the Asian Audit Report, 2009.<sup>1</sup> 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.<sup>2</sup>

Hip fractures are common injuries contributing to both morbidity and mortality in the elderly. With increasing longevity and urbanization, the number of hip fractures are expected to increase as per epidemiological studies. In spite of advances in the prevention and treatment of these injuries, hip fractures put-on serious problems for both the health care policy makers and health organizations. Moreover with increased life span, hip fractures will appear at accelerated rates leading to increased morbidity,

decreased quality of life, potential risk of further falls and subsequent fractures.<sup>4</sup> Due to immense monetary costs involved with these injuries including the operative, nursing, rehabilitative and disability costs, various preventive strategies against hip fractures have been developed.<sup>5</sup>

Hip fractures in elderly are mainly fragility fractures occurring due to osteoporosis and trivial falls. While in young adults, they usually occur due to high energy trauma such as motor vehicle accidents and falls from height. Various studied risk factors for hip fractures include increasing age, females, ethnicity, smoking, alcohol abuse, osteoporosis, steroid intake, low sunlight exposure and recreational activities.<sup>6,7</sup> India is the second largest populous country in the world but there are only few studies on the epidemiology of hip fractures.<sup>8,9</sup> About 80% patients with hip fractures in India are vitamin D deficient, a risk factor for osteoporosis. The purpose of our study is to determine the epidemiological analysis of hip fractures.

## MATERIALS & METHODS

The present hospital based retrospective study was conducted at department of orthopedics of our tertiary care hospital. The study duration was of one year from January 2017 to December 2017. A sample size of 100 was calculated at 95% confidence interval at 10% acceptable margin of error by epi info software version 7.2. Hip fractures included fractures of femoral neck, intertrochanteric and sub trochanteric area. From the MRD, we obtained the central registration (CR) numbers of the patients admitted with above fracture diagnosis. Clearance from Institutional Ethics Committee was taken before start of study. Case files of patient were studied for various parameters including age, gender, place of residence, duration of trauma, mechanism of injury, comorbidities, interval between admission and surgery, operation notes. Radiographs were assessed for type of fracture, presence of osteoporosis (Singh's index) and type of implant used.<sup>11</sup> Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05.

## RESULTS

In present study, out of 100 cases 56% were males and 44% were females. The mean age of patients was 58.3 years with a range of 8-79 years. Majority of patients with hip fractures were between 60- 75 years (42%) and lowest number were seen in patients aged <20 years (5%). In patients aged >60 years, low energy trauma with fall from standing height was the predominant mechanism for causing the fracture in >85% of patients while only 10% of fractures in this age group were caused by high energy mechanism such as road traffic accidents (RTA) and fall from height (FFH). While in patients <60 years old, high energy trauma due to RTA or FFH was the leading cause of fracture in majority of patients >90%. It was observed in our study that elderly patients >65 years old, reported to hospital at an average of 10 days after injury with many patients visiting local quacks initially. The mean interval from admission to surgery in operated cases was 6.7 days (3.8 days in patients <60 years old and 9.6 days in patients >60 years old). The overall in-hospital mortality rate in our study was 1% >60 years old. (Table 1)

**Table 1: Distribution of study participants according to age and gender**

Parameters		Number of patients (%)
<b>Gender</b>	<b>Males</b>	56
	<b>Females</b>	44
<b>Age (years)</b>	<b>&lt;20</b>	5
	<b>20-40</b>	18
	<b>40-60</b>	25
	<b>60-75</b>	42
	<b>&gt;75</b>	10

Hip fracture characteristics included intertrochanteric fractures (61%), followed by neck fractures (28%) and sub trochanteric fractures (11%). In the sub trochanteric fracture group, mostly patients were <60 years old and had a history of high energy trauma. About 6% fractures were pathological (excluding osteoporosis), mainly lytic lesions of proximal femur,

primary and secondary malignancies. Prior hip fracture in the same or opposite limb was present in 12% of patients. >60 years old. Smoking including cigarette, hukka and tobacco chewing was present in 78% of males and 36% of females. Alcohol consumption on a regular basis was present in 38% of patients. In patients >60 years old, diminished vision and neurological problems including old stroke, dementia, Parkinson disease (31%) were responsible for the trivial fall and subsequent fracture. (Table 2)

**Table 2: Distribution according to Fracture anatomy and Fracture location.**

Parameters		Number of patients (%)
Fracture anatomy	Intertrochanteric	61
	Neck of femur	28
	Sub trochanteric	11
Fracture location	Distal end radius	6
	Spine fractures	5
	Long bone fractures	5
	Other injuries	10

## DISCUSSION

Hip fractures as a result of osteoporosis are a major cause of disability and morbidity in the elderly population causing increased health expenditure and disability adjusted life years. Since life expectancy is increasing in India from 67.4 to 72.6 years, the number of hip fractures are going to increase in coming years, putting a huge burden on India's health resources. The bone mineral density (BMD) starts falling with increasing age especially in postmenopausal women due to loss of protective effect of Estrogen on bone mineralization.<sup>12</sup> Patients aged 85 years old and more, are 10 to 15 times more likely to sustain a hip fracture than are patients 60 years old, with female patients accounting for 80% of hip fractures.<sup>13</sup> Simple low energy falls account for 95% of hip fractures.<sup>14</sup> In our study, males predominated hip fractures as in Indian population osteoporosis is also common in males due to lack of awareness about bone health, nutritional factors, smoking, physical inactivity. There is earlier onset of osteoporosis in Indian men demonstrated in a

study by Nordin, who found maximum prevalence in age groups 30-39 years (25%) and 50-70- years (25%) as compared to Finnish men in which 56% of hip fractures occurred in 70-90 years group.<sup>15</sup> Similarly Wong from Singapore reviewed hip fracture prevalence among different races and found average age in Indians to be 58 years as compared to 63 years in Chinese people.<sup>16</sup> In our study also, there was 24.84% prevalence of hip fracture in age group of 40-60 years, probably due to low peak bone mass formed during adolescence as a result of low vitamin D and dietary calcium intake.<sup>17</sup>

There have been many studies on the various factors leading to falls and subsequent fractures in the elderly.<sup>18</sup> Most hip fractures are caused by stumbling and tripping indoors at a level ground. In the present study also, majority of fractures in elderly were caused by falls from standing height with direct impact on hip. There are a number of factors in elderly people which contribute to falls including neurological impairment, poor balance, diminished vision, multiple drug therapy. We noted a high prevalence of comorbidities including hypertension, diabetes, neurological impairment and diminished vision, which significantly contribute to the falls and fractures in elderly. These risk factors also hamper early surgical intervention thereby contributing to the morbidity and mortality in hip fractures. Rehabilitation after hip fractures play an important role in restoring premorbid functions, with patients mobilized as early as possible after surgery.

Ahuja et al in a retrospective study of risk factors and epidemiological profile of hip fractures in 41 patients concluded that simple measures like high friction bathroom tiles, bedside and wall side railings, trochanteric hip pads, adequate lighting play a significant role in reducing hip fractures.<sup>19</sup> Dhanwal et al described the first hip fracture incidence study from Rohtak district of India and found it to be same as of other Asian countries like china, Iran and South Korea.<sup>8</sup> Our study did not describe incidence rates as it is unlikely that all patients with hip fractures will visit our hospital for treatment.

In our study we did not do any objective test such as DEXA scan for quantifying osteoporosis as it was retrospective epidemiological study. We classified osteoporosis on the basis of Singh's grading on hip radiographs.<sup>11</sup> About 75% of hip fractures in elderly had Singh's grade 3 pattern of trabeculae in proximal femur meaning significant osteoporosis. It signifies the majority of hip fractures can be prevented if proper

precautions and treatment is taken for osteoporosis. The older adults should regularly take Calcium and Vitamin D supplements, do regular weight bearing and strengthening exercises, have regular eye checkups.

## CONCLUSION

Within the Indian subcontinent, fractures around hip region are ascending in numbers mainly due to factors specific to Indian population including under nutrition, low calcium and vitamin D intake, low physical activity, smoking, alcohol consumption, low acceptance of hormone replacement therapy for early osteoporosis. Various preventive measures to reduce the prevalence of osteoporosis combined with measures to decrease falls in elderly will in a long way decrease the osteoporotic hip fractures and reduce the burden of healthcare costs for treating these fractures. Also evidence based comprehensive rehabilitation program for hip fractures is needed to prevent the morbidity associated with these fractures.

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