

A Retrospective Evaluation of the Etiological Factors and Preventive Measures of Second Hip Fractures

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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to assess the etiological factors and preventive measures of second hip fractures.

Methods: The study analysis include patients attended our out-patient Orthopaedics Department, Netaji Subhas medical college and Hospital, Bihta, Patna, Bihar, India. We verified all the records of the patients during these 8 Months.

Results: During our 3 years retrospective study, total 680 hip fractures were admitted. Second hip fractures are 100 i.e., 14.70%. Males were 30, Females were 70. The average age of persons of first hip fractures was 55-65 yrs, and average age of persons with second hip fracture 60-80 yrs. The average mean time of duration from injury to time of surgery was 6 days. The duration of hospitalization is from 15-28 days, Mean: 21 days. The etiological factors are evaluated in these patients. Older age was associated with an increased risk of second hip fractures after adjusting for sex, Low BMI, and high functional status were also associated with increased risk of second hip fractures in the age and sex adjust analysis. High functioning persons have more than twice the risk for second hip fractures compared with moderate functioning persons. The sex, falls, stroke, BMI, dementia, and old-age home residence were not associated with the risk of second hip fracture in the age and sex associated models.

Conclusion: Treatment with vitamin-D is recommended for all the persons with hip fractures in an effort to improve the bone mineral density and to reduce the risk of fractures during falls. Clinicians should give special attention to age and functional status at the time of first hip fractures, when determining whether additional therapies are appropriate in an effort to reduce second hip fracture.

Keywords: Osteoporosis, second hip fractures, preventive measures

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Introduction

For many years hip fracture injuries have been identified as one of the most serious health care problems affecting older people. Much attention has consequently been placed on comprehensive efforts to reduce the incidence and severity of this condition. Indeed, some recent evidence suggests these efforts have met with some degree of success. [1,2] However, the literature is unequivocal in this regard. Moreover, several current reports confirm hip fractures remain a leading cause of excessive morbidity, and premature mortality among older people. [3,4] Thus, despite some positive downward trends in hip fracture incidence rates, [5] these may not be occurring universally or rapidly enough to offset the immense human and social costs projected to persist over the next several decades. [6]

That is, given that hip fracture incidence rates rise exponentially with age, and that age specific hip fracture rates are rising for subsequent cohorts, [7] as longevity increases across the globe, [8] along with sedentary lifestyles that correlate with several key hip fracture determinants, it seems reasonable to speculate hip fractures will remain a serious worldwide public health problem as proposed by Wehren and Magaziner in 2003. [6] To this end, this paper explores if there is sufficient current support for this premise, and if so, whether concerted efforts towards prevention are desirable. By analogy it also explores whether long-term costs of this health problem of nearly US\$9 billion dollars in 19956 are also likely to rise, first, because an increasing body of older people survive after hip fracture injuries as a result of better acute care. Second, because these survivors commonly encounter various degrees of

progressive disability that require long-term care and extensive ongoing services. [6] Third, as more adults reach the age of 85 years, these adults who are commonly in precarious health or recover more slowly when injured than younger adults, are 10–15 times more likely than those younger than 85 years to fracture a hip. [9] It is the author’s view that hip fractures will continue to be of substantive importance to public health planners, particularly if as predicted, a vast majority of these injuries in the 21st century will occur in developing countries. [10]

The aim of the present study was to assess the etiological factors and preventive measures of second hip fractures.

Materials and Methods

The study analysis include patients attended our out-patient Orthopaedic Department, Netaji Subhas medical college and Hospital, Bihta, Patna, Bihar, India. We verified all the records of the patients during these 8 months. The various etiological

factors and risk factors, problems faced by patients during first hip post treatment period are recorded.

The exclusion criteria are pathological fractures, high energy fractures, concomitant bilateral hip fractures and fractures secondary to malignancy and metabolic bone disease.

Methodology

The age, sex and type of fracture, Singh’s index [11,12], duration from first hip fracture to surgery, length of hospitalization are recorded.

The presence of co morbidities includes malignancy, renal failure, neurological, cardiac, pulmonary and endocrinological conditions are examined. The assessment of BMD-Bone Mineral Density is gold standard method to assess the grading of osteoporosis. We did not measure the BMD for our patients due to non-availability of the machine locally.

Results

Table 1: Baseline Patient characteristics for the Study of recurrent HIP fractures

Sex	Women	Men
Age-years	50-60: 22% 60-70: 28% >70: 50%	50-60:15% 60-70:325% >70:60%
Co-morbidities	Diabetes: 58%, Hypertension:45% Dementia:15%	Diabetes:53%, hypertension:59% Dementia:9%
Medications Use	Anti-Diabetic:49% Anti-Hypertensive:37% NSAIDS:32% Anxiolytics:20%	Anti-Diabetic: 38% Anti-Hypertensive: 42% NSAIDS: 39% Anxiolytics: 6%
Personal habits	Tobacco chewing:42%	Alcohol: 45%, smoking: 34% tobacco chewing: 30%
Functional activities: Rosow- Breslui Scale and Katz scale	Highly functional: 62% Moderately Functional: 28% Low Functional: 10%	Highly functional: 54% Moderately Functional: 26% Low Functional: 20%

During our 3 years retrospective study, total 680 hip fractures were admitted. Second hip fractures are 100 i.e., 14.70%. Males were 30, Females were 70. The average age of persons of first hip fractures was 55-65 yrs, and average age of persons with second hip fracture 60-80 yrs. The average mean time of duration from injury to time of surgery was 6 days. The duration of hospitalization is from 15-28 days, Mean: 21 days. The etiological factors are evaluated in these patients. Older age was associated with an

increased risk of second hip fractures after adjusting for sex, Low BMI, and high functional status were also associated with increased risk of second hip fractures in the age and sex adjust analysis. High functioning persons have more than twice the risk for second hip fractures compared with moderate functioning persons. The sex, falls, stroke, BMI, dementia, and old-age home residence were not associated with the risk of second hip fracture in the age and sex associated models.



Figure 1: Right PFN fixation done for patient



Figure 2: Left PFN fixation done for patient

Discussion

Hip fractures have been recognized as most serious consequence of elderly patients with osteoporosis. The complications are chronic pain, disability, diminished quality of life and premature death. The osteoporotic hip fractures are growing problem in Asian countries like India due to increased life expectancy. Published studies [13-15] over the last few decades have demonstrated that by 2030 more than 50% of all osteoporotic fractures will occur in Asian countries because three quarters of world's population lives in Asia. India is the largest populous country in the world; about 80% of hip fractures are due to osteoporosis, malnutrition, sedentary life and Vitamin-D deficiency. The genetic and environmental factors also play a role in etiology of hip fractures.

During our 3 years retrospective study, total 680 hip fractures were admitted. Second hip fractures are 100 i.e., 14.70%. Males were 30, Females were 70.

The average age of persons of first hip fractures was 55-65 yrs, and average age of persons with second hip fracture 60-80 yrs. The average mean time of duration from injury to time of surgery was 6 days. The duration of hospitalization is from 15-28 days, Mean: 21 days. The etiological factors are evaluated in these patients. The functional status was measured by observing the modified KATZ [16] activities of daily living like ability to eat, dress, bathe, and transfer independently. The other things were 3 items-ROSOW-BRASLAU SCALE [17], ability to perform heavy house hold works, climbing stairs, walk for one-half to one kilometer independently. All the patients are assessed whether living a high functional status, moderate functional status, low functional status. We observed an increase in incidence of fall related fractures in very high and very low functioning persons and a low incidence of fractures in moderate functional status.

Older age was associated with an increased risk of second hip fractures after adjusting for sex, Low

BMI, and high functional status were also associated with increased risk of second hip fractures in the age and sex adjust analysis. High functioning persons have more than twice the risk for second hip fractures compared with moderate functioning persons. The sex, falls, stroke, BMI, dementia, and old-age home residence were not associated with the risk of second hip fracture in the age and sex associated models. In a systematic review, Egan et al [18] reported that female gender was not a consistent risk factor for subsequent hip fractures following the first fractures, and they indicated that men and women may be at similar risk of suffering second hip fractures. Dretakis et al¹⁹ demonstrated that a higher number of patients with second hip fractures were older with reduced mobility, and they postulated that a progressive decrease in bone mass might cause more unstable second fractures.

Conclusion

Treatment with vitamin-D is recommended for all the persons with hip fractures in an effort to improve the bone mineral density and to reduce the risk of fractures during falls. Clinicians should give special attention to age and functional status at the time of first hip fractures, when determining whether additional therapies are appropriate in an effort to reduce second hip fracture.

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