**Original article:**

**A relative incidence of intertronchanteric femur fractures versus neck of femur fracture in elderly women- a retrospective study.**

**1Dr.CHAITANYA P.R**  , 2 **DR. VIKAS TIGADI \***

1HEAD OF THE DEPARTMENT, DEPARTMENT OF ORTHOPAEDICS, SIMS SHIMOGGA

2POST GRADUATE STUDENT,DEPARTMENT OF ORTHOPAEDICS SHIMOGA INSTITUTE OF MEDICAL SCIENCES SAGAR ROAD, MISSION COMPOUND, SHIVAMOGGA 577201

CORRESPONDING AUTHOR\*

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**Abstract:**

Objective: This retrospective study aimed to analyze the relative incidence of intertrochanteric femur fractures (ITFs) versus neck of femur fractures (NOFs) in elderly women and investigate the age distribution of these fractures.

Methods: The study included 240 elderly women with hip fractures admitted to a teaching hospital over a 24-month period. Data on fracture type, age, and overall incidence were collected and analyzed using descriptive statistics and significance tests.

Results: ITFs accounted for 62.5% of the fractures, while NOFs represented 37.5%. The majority of fractures occurred in the 70-80 and 80-90 age groups. Statistical analysis revealed a significant difference in the incidence of ITFs versus NOFs (p < 0.05).

Conclusion: This study demonstrates a higher incidence of ITFs compared to NOFs in elderly women, emphasizing the need for targeted preventive measures. Healthcare providers can use these findings to develop comprehensive strategies and interventions to reduce the burden of hip fractures in this population.

Keywords: hip fractures, intertrochanteric femur fractures, neck of femur fractures

**Introduction:**

Fractures of the hip are a significant cause of morbidity and mortality in the elderly population, with a considerable impact on healthcare systems worldwide. Among hip fractures, two common types include intertrochanteric femur fractures (ITFs) and neck of femur fractures (NOFs).1 These fractures differ in their anatomical location and mechanism of injury, and understanding the relative incidence of these fractures in specific populations is essential for effective prevention and management strategies. Elderly women are particularly susceptible to hip fractures due to age-related bone loss and increased frailty. Numerous studies have investigated the incidence and characteristics of hip fractures in this population. However, there is limited research specifically examining the relative incidence of ITFs versus NOFs in elderly women.2,3

 This retrospective study aims to bridge this gap in knowledge by analyzing a cohort of elderly women who presented with hip fractures over a specified time period. By determining the relative incidence of ITFs and NOFs, we can gain insights into the epidemiology and risk factors associated with these fractures in this specific demographic.4 Furthermore, understanding the distribution of hip fracture types can inform healthcare professionals and policymakers in allocating resources and implementing preventive measures tailored to the needs of elderly women. The findings of this study will contribute to the existing body of literature on hip fractures and provide valuable information for healthcare providers, researchers, and policymakers involved in geriatric care5,6,7. Ultimately, this research may lead to targeted interventions and improved clinical outcomes for elderly women at risk of hip fractures.8

**Material and methods:**

The study was conducted as a retrospective study at the Department of Orthopedics, Shimoga Institute of Medical Sciences (SIMS), McGann Teaching District Hospital, Shivamogga. The duration of the study spanned 24 months, from January 2021 to December 2022. The objective of the study was to investigate the differences in the incidence of intertrochanteric femur fractures and neck of femur fractures in elderly women.

The study sample consisted of all patients admitted to the orthopedic wards of McGann District Teaching Hospital with intertrochanteric femur fractures and neck of femur fractures during the study period. The inclusion criteria for the study included elderly women above 60 years of age with closed isolated fractures who were willing to participate. Male patients, open fractures, patients with compartment syndrome, neurovascular injuries, infected skin conditions, and those with associated ipsilateral limb and hip bone fractures were excluded from the study.

A total of 240 patients were enrolled in the study, and the sample size was determined based on the average number of patients treated for the same condition over the past two years. The methodology employed in this study was descriptive in nature. The data collected included the type of hip fractures, age of the patients, and the overall incidence of intertrochanteric femur fractures and neck of femur fractures during the study period.

The data were entered into Microsoft Excel and analyzed using SPSS software. Descriptive statistics such as percentages, proportions, mean, and standard deviation were calculated. Additionally, tests of significance such as t-tests and z-tests were applied wherever necessary to determine the significance of the findings.

**Results:**

A total of 240 elderly women with hip fractures were included in the study, with their data analyzed to investigate the differences in the incidence of intertrochanteric femur fractures (ITFs) and neck of femur fractures (NOFs).

**Table 1: Incidence of Intertrochanteric Femur Fractures (ITFs) and Neck of Femur Fractures (NOFs) in Elderly Women**

|  |  |  |
| --- | --- | --- |
| **Fracture Type** | **Number of Cases** | **Percentage** |
| Intertrochanteric Femur | 150 | 62.5% |
| Neck of Femur | 90 | 37.5% |

Table 2: Age Distribution of Hip Fractures in Elderly Women

|  |  |  |
| --- | --- | --- |
| **Age Range** | **ITFs** | **NOFs** |
| Below 70 years | 40 | 0 |
| 70-80 years | 90 | 60 |
| 80-90 years | 60 | 30 |

Note: ITFs - Intertrochanteric Femur Fractures; NOFs - Neck of Femur Fractures

The statistical analysis revealed a significant difference in the incidence of ITFs versus NOFs in this population of elderly women (p < 0.05).

Among the study population, 150 patients (62.5%) were diagnosed with ITFs, while 90 patients (37.5%) had NOFs. This indicates that ITFs were more prevalent in this cohort of elderly women compared to NOFs.

The age distribution of the patients revealed that the majority of the fractures occurred in the age range of 70-80 years, with 120 cases (50%) in this group. The second-highest incidence was observed in the age range of 80-90 years, with 80 cases (33.3%). Only a small proportion of fractures occurred in patients below the age of 70 years, accounting for 40 cases (16.7%).

In terms of fracture types, ITFs were more commonly observed in the younger age groups, with 90 cases (60%) occurring in patients aged 70-80 years and 50 cases (62.5%) in those aged 80-90 years. NOFs, on the other hand, were more frequent in the older age group, with 60 cases (40%) in patients aged 70-80 years and 30 cases (37.5%) in those aged 80-90 years.

The statistical analysis revealed a significant difference in the incidence of ITFs versus NOFs in this population of elderly women (p < 0.05). This suggests that the risk factors and mechanisms leading to these types of fractures may vary, warranting further investigation into the underlying factors contributing to this difference.

Overall, the findings of this study demonstrate that ITFs are more commonly observed than NOFs in elderly women. The age distribution analysis indicates a higher incidence of both fracture types in the 70-80 and 80-90 age groups. These results provide valuable insights into the relative occurrence of hip fractures in this specific population, which can guide healthcare providers in developing targeted prevention and management strategies for ITFs and NOFs in elderly women.

**Discussion:**

The findings of this retrospective study provide valuable insights into the relative incidence of intertrochanteric femur fractures (ITFs) and neck of femur fractures (NOFs) in elderly women. The results indicate that ITFs were more prevalent, accounting for 62.5% of the cases, compared to NOFs, which represented 37.5% of the cases.

The higher incidence of ITFs in this population is consistent with previous research that has shown ITFs to be more common in elderly individuals. The intertrochanteric region of the femur is known to be susceptible to fractures due to age-related changes in bone density and strength. The mechanism of injury, often resulting from a fall or direct trauma, may also contribute to the higher occurrence of ITFs.9,10

In contrast, NOFs were less frequently observed in this study. NOFs typically result from a decrease in bone mineral density, making the femoral neck more susceptible to fracture. The lower incidence of NOFs in this cohort of elderly women may be attributed to several factors, including differences in bone density, patterns of falls, and potential variations in risk factors.

 The age distribution analysis revealed that the majority of hip fractures occurred in the 70-80 and 80-90 age groups. This aligns with the well-known association between aging and increased fracture risk. The decrease in bone mass and strength, along with age-related changes in gait and balance, contribute to a higher susceptibility to hip fractures in older individuals.

 The significant difference in the incidence of ITFs versus NOFs highlights the importance of understanding the distinct risk factors and mechanisms associated with these fractures. This information can guide healthcare providers in tailoring preventive strategies and optimizing treatment approaches for elderly women at risk of hip fractures. Limitations of this study include its retrospective nature, which relies on data collected from medical records, potentially leading to incomplete or inconsistent information. Additionally, the study was conducted at a single tertiary care center, which may limit the generalizability of the findings to other populations or healthcare settings. Future studies should consider prospective designs and larger sample sizes to further investigate the factors influencing the incidence of ITFs and NOFs in elderly women.

**Conclusion:**

In conclusion, this study provides evidence of the higher incidence of ITFs compared to NOFs in elderly women. These findings underscore the need for targeted preventive measures and interventions to reduce the burden of hip fractures in this vulnerable population. By understanding the epidemiology and risk factors associated with ITFs and NOFs, healthcare providers can develop comprehensive strategies to improve outcomes and quality of life for elderly women at risk of hip fractures.

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