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Epidemiological study of a cohort of patients with intertrochanteric fractures attending the outpatient department of Raichur Institute of Medical Sciences, Raichur

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Abstract
Introduction: Hip fractures are the most common fractures in the elderly of which 34% constitute the per trochanteric fractures. Intertrochanteric fractures are the most commonly operated fractures with the highest postoperative fatality of fractures treated surgically. It puts a serious burden over the healthcare resource. Future incidence of hip fractures is estimated to double by 2025 and quadruple by 2050. Hence, it is important to understand the epidemiology of intertrochanteric fractures.
Objective of the study: To study the epidemiology of proximal femoral fractures attending Raichur Institute of Medical Sciences (RIMS) from the district of Raichur, Karnataka.
Materials and methods: Over a period of 6 months patients diagnosed with proximal femoral fractures attending our out patient department were included in the study and were assessed for distribution with respect to age, sex, occupation, the mode of injury and classification of the # type as stable or unstable.
Results: Amongst a total of 40 patients, 50% were men and 50% women. The peak incidence was in the age group of 41 to 50 years which amounted to about 40% of the cases. 65% of cases had a trivial fall while 35% had a history of a high energy trauma. Occupations were divided into physically demanding hard labour and non physically demanding; the distribution among them was 52.5% of injuries occured in patients involved in physically demanding labour. 70% sustained stable and 30% were classified as unstable kinds.
Summary: Our study found equal incidence of intertrochanteric fractures irrespective of sex with a peak in the fifth decade involving a trivial trauma in most of the cases, while there was prominent involvement of females in ages over 60, with about the similar incidence in those performing physically demanding and non demanding jobs with most of them being of the stable variant at post reduction classification in a cohort of patients attending orthopedic OPD at RIMS over a period of 6 months.

Keywords: Septic arthritis, hip joint, children

Introduction
Intertrochanteric fractures are those fractures occurring in the extracapsular region of the proximal femur. They occur in elderly people mostly in their seventh decade [1] It is more common in females, (2.8: 1) [2] with varying estimates (2-8:1), likely because of postmenopausal metabolic changes in the bone[3]. It is sustained with a sideway fall or blow over the greater trochanter in elderly whereas in young it occurs with high energy violent trauma.[4] Hip fractures are the fractures related to the most healthcare expenditure and mortality in people > 50 yrs old [5-8]; of which 34% - 50% [9] constitute the per trochanteric fractures [10]. Intertrochanteric fractures are the most commonly operated fractures with the highest postoperative fatality of fractures treated surgically [11] It puts a serious burden over the healthcare resource. Future incidence of hip fractures is estimated to double by 2025 and quadruple by 2050. [12] Hence, it is important to understand the epidemiology of intertrochanteric fractures.

Objective of the study
To study the epidemiology of extracapsular proximal femoral (intertrochanteric or per trochanteric) fractures attending outpatient orthopedic setup at Raichur Institute of Medical

Sciences (RIMS) from the district of Raichur, Karnataka.

Materials and methods

Over a period of 6 months, March 2018 to October 2018, patients diagnosed with extracapsular proximal femoral fractures involving intertrochantric and pertrochanteric fractures attending our outpatient department were included in the study and were assessed for distribution with respect to age, grouped according to each decade eg: 0-10, 11 - 20 and so on; sex as males and females; occupation grouped as, physically demanding and non-demanding labour; the mode of injury grouped as trivial trauma (fall from a standing height or less, slip and fall; mechanical stress fractures etc.) and high energy trauma (Road traffic accidents, fall from high height etc.) and classification of the fracture type as stable or unstable post reduction in the operative theatre based on Evan's classification were used.

Evan's classification [13]:

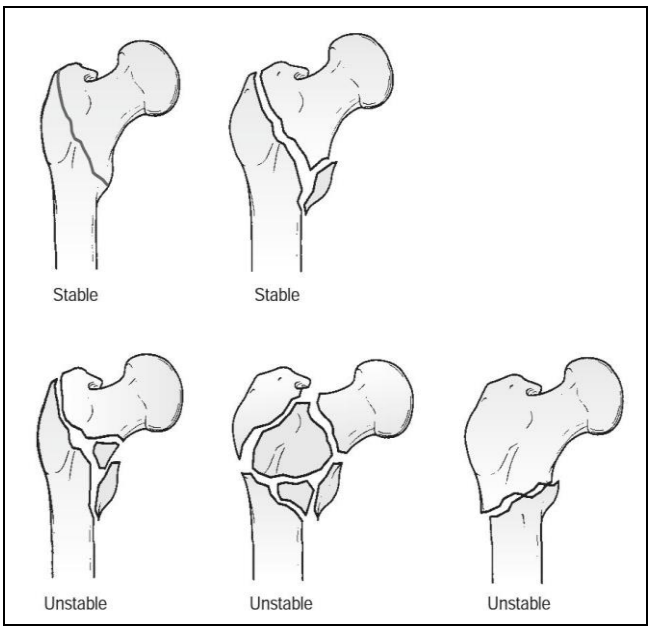

Fig 1: Evan's classification

- *Stable fractures*: Posteromedial cortex is intact or has minimal comminution
- *Unstable fractures*: Greater comminution of Posteromedial cortex or the reverse oblique type fractures.

Inclusion criteria

- All cases, who consented to be included in the study, from within the district of Raichur, attending Orthopedic OPD at RIMS with Intertrochanteric fractures irrespective of age, sex, occupation, type of fracture, mode of injury, medical comorbidities or fitness for surgery.

Exclusion criteria

- Cases outside of the district of Raichur.
- Other proximal femoral fractures like fractures involving the head of femur, neck of femur, subtrochanteric fractures, shaft of femur fractures.
- Patients diagnosed with other fractures or with polytrauma.
- Patients unwilling to consent to be included in the study.

Results

Over the period of 6 months of the study we documented forty patients that were diagnosed with intertrochanteric fractures who hailed from within the district of Raichur and attended orthopedic OPD at Raichur institute of Medical Sciences (RIMS), Raichur.

There was equal distribution among the sexes with 50% incidence in men and women.

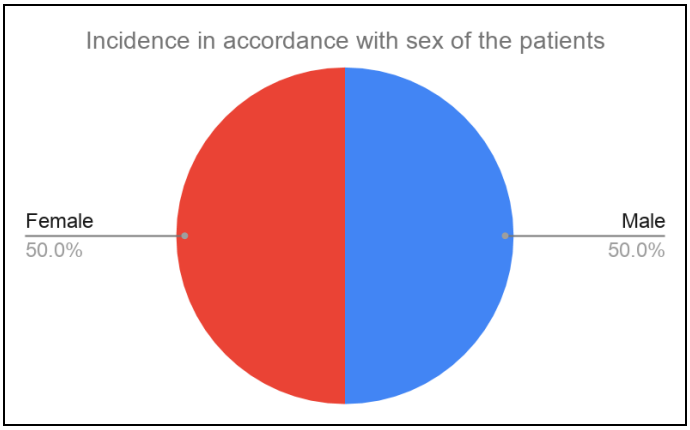

Fig 2: Incidence as per sex of the patients

However, when sex wise distribution is measured in perspective of age ie when male female ratio is considered in patients above 60yrs; the picture is as below:

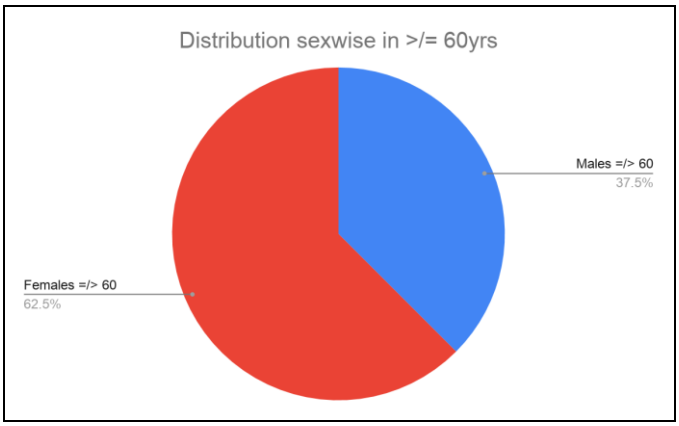

Fig 3: Distribution stepwise in >/= 60 yrs

The peak incidence was in the age group of 51 to 60 years which amounted to about 40% of the cases. Age group above 60 accounted for 35% cases.

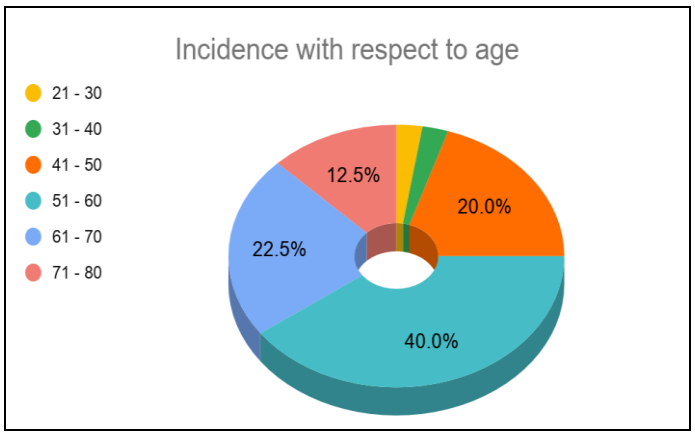

Fig 4: Incidence with respect to age

When evaluated for the mode of injury we found that 65% of cases had a trivial fall, which mainly included falling from standing height, while 35% had a history of a high energy trauma, some of which were road traffic accidents and falls from height.

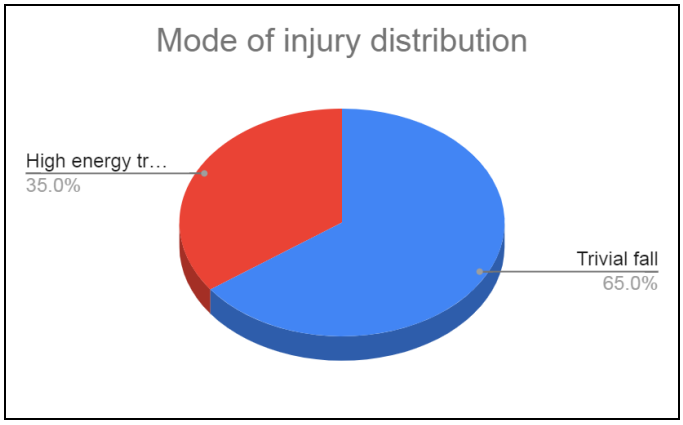

Fig 5: Distribution as per mode of injury

Based on the occupation cases were divided into physically demanding hard labour and non-physically demanding jobs; the distribution among them was 52.5% of injuries occured in patients involved in physically demanding labour.

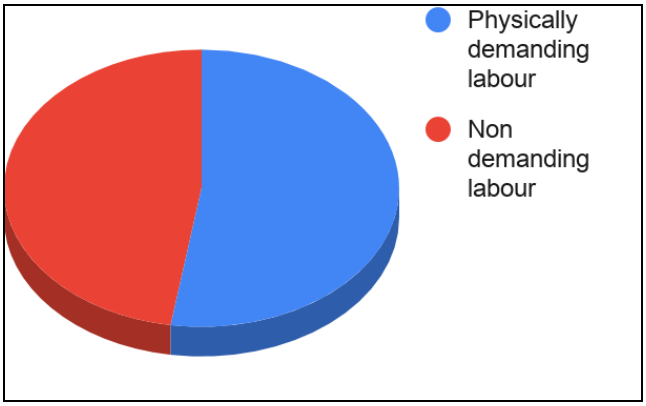

Fig 6: Distribution based on the type of occupation

When classified on the basis of post reduction fracture types; 70% were categorized as stable types while 30% were classified as the unstable kinds based on Evan's classification.

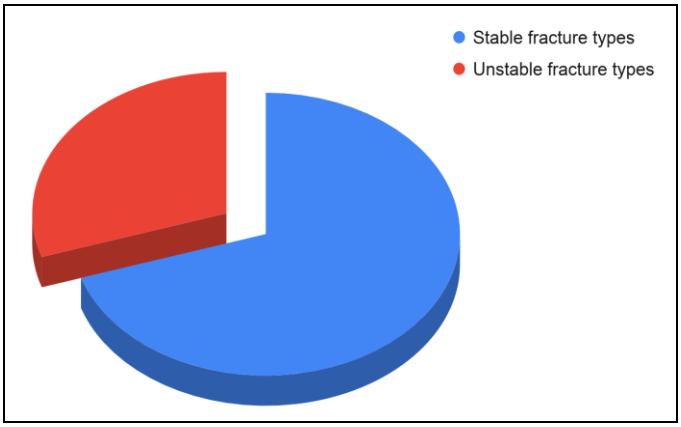

Fig 7: Distribution based on type of fracture

Discussion

Our study had a cohort of 40 patients attending orthopedic OPD at RIMS, Raichur and included only those patients who resided in the district of Raichur. It is a retrospective study aiming on depicting epidemiology of intertrochanteric fractures in the district of Raichur. We observed that in general the distribution in accordance to sex distribution was 50% among the sexes whereas when considered in ages 60 and above a female predominance was noted with 62.5% constitution of females. However, when compared to worldwide age standardized distribution hip fractures were noted twice more in females in comparison to males [14]. This may be an indication towards the poor nutritional status leading to a generalized osteoporosis irrespective of the sex in this region. There are also studies that have not found any differences in sex distribution in China and one done at Rothak which found that the difference was not significant [15-17].

We distributed our cases into age groups constituting every decade for example 1 - 10 to 91 -100. The majority of our cases were clustered in the fifth decade (51 - 60), which accounted to forty percent of our cases. The cases above 60 yrs of age constituted 35% of cases. This is in accordance to a study by A K Gupta *et al.* in 1967 which concluded that the average age of occurance of hip fractures among Indian population is 10 years lower than that of the Western population.[18] Similarly the mean age of incidence of hip fracture in a study by Dhanwal D *et al.* was relatively lower, at 58.2 years, as compared to Western population [19]

We divided the modes of injury into Trivial injuries and High energy injuries. Fall from standing height or less or stress fractures were classified as trivial injuries which made up 65% of our cases while road traffic accidents, falls from high heights were considered as high energy injuries which consisted of 35% of the cases. In comparison to study by Wang *et al.* only 19% of their cases were due to high energy injuries while about 81% were due to trivial injuries [20]. This difference may be attributed to our hospital being the only government trauma referral center for the district.

In accordance to the type of occupation the cases were involved in they were grouped into physically demanding and physically non demanding labourers. We did not find a significant difference in the fracture incidence and type of occupation as 52.5% and 48.5% were noted to be involved in physically demanding and non demanding labours respectively.

The fractures were classified based on Evan's fracture types into stable and unstable fractures as per the postreduction images. Evan's types 1 & 2 were considered to be stable while types 3,4 & 5 were classified as unstable. We had, in this study, 70 % cases which were found to be of the stable configuration while 30% cases belonged to the unstable variants. This was consistent with Evan's original findings of 72% and 28% distribution of stable and unstable fractures in his original paper [21]

Summary

Our study found equal incidence of intertrochanteric fractures irrespective of sex with a peak in the fifth decade involving a trivial trauma in most of the cases, while there was prominent involvement of females in ages over 60, with about the similar incidence in those performing physically demanding and non demanding jobs with most of them being of the stable variant at post reduction classification in a cohort of patients attending orthopedic OPD at RIMS over a period of 6 months.

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