

A study on clinical profile of patients with intertrochanteric fractures at a tertiary care hospital

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Abstract

Intertrochanteric fractures are commonly seen in elderly people. Fracture is often caused by trivial trauma (Domestic fall). Elderly people are prone to these fractures mostly because of some of the following risk factors like advancing age osteoporosis, visual impairment, malnutrition, neurological impairment, reduced physical activity, reduced muscle power, reduced protective reflexes. This study was carried out to compare the results of intertrochanteric fractures treated with DHS and PFN. All the 60 patients were asked to follow up at regular intervals. Most of our patients were 50 years and above. In them domestic fall (fall at home) and trivial trauma was main reason behind fracture while in road traffic accident (RTA) young patients were affected. Amongst the 30 cases operated by PFN, 12(40%) patients were found to have proximal femoral fractures on the left side while 18(60%) patients were having fracture on the right side. Amongst the 30 cases operated by DHS, 16(%) patients were found to have proximal femoral fractures on the left side while 14 (47%) patients were having fracture on the right side.

Keywords: Intertrochanteric fractures, DHS, RTA

Introduction

The femur is the longest and strongest bone of the body and like all long bones consists of a shaft and two ends. Its upper end consists of head, neck, & greater & lesser trochanters at junction of the neck with the body; develops from 4 separate ossification centers; head forms roughly two-thirds of sphere whose surface is articular except for fovea capitis femoris where ligament of head is attached; greater trochanter is large prominence projecting upward from shaft on lateral aspect of junction of neck & body of femur, lesser trochanter is protuberance on posteromedial side. Intertrochanteric crest, extends between two trochanters, wide and rough, Intertrochanteric line stretches from greater to lesser trochanter on the anterior side of the femur ^[1, 2].

Clinical attention has been given to number, size, shape, location & displacement of fracture fragments. Comminution when involves the postero medial cortex of bone acts as a major

contributing factor for complication of fixation.

Multiple fragments with postero medial cortex comminution are likely to displace in varus & retroversion therefore considered as unstable fractures [3].

Fractures in whom there is no postero medial cortex comminution & anatomical reduction is possible are considered as stable fractures.

Intertrochanteric fractures are commonly seen in elderly people. Fracture is often caused by trivial trauma (Domestic fall). Elderly people are prone to these fractures mostly because of some of the following risk factors like advancing age osteoporosis, visual impairment, malnutrition, neurological impairment, reduced physical activity, reduced muscle power, reduced protective reflexes [4].

In young patients, intertrochanteric & subtrochanteric fractures often results due to high energy trauma like road traffic accident, fall from height etc. but pathological fractures, fractures following penetrating injures or gunshot injuries are seen in young patients.

Methodology

The present study consists of 60 adult patients with intertrochanteric fractures of femur who were treated with either DHS and PFN.

Cases were selected by simple random sampling, each individual is chosen randomly and entirely by chance.

This study was carried out to compare the results of intertrochanteric fractures treated with DHS and PFN. All the 60 patients were asked to follow up at regular intervals.

Data collection

After the patient with intertrochanteric fracture was admitted to hospital all the necessary clinical details were recorded in proforma prepared for this study. After the completion of the hospital treatment, patients were discharged and called for follow up at outpatient level, at regular intervals for serial clinical and radiological evaluation.

Inclusion criteria

- Type I, II, III (Boyd and Griffin's classification).
- Age >18 years.
- Both sexes.
- Fresh IT fractures in adults.

Exclusion criteria

- Patients with Type IV, Boyd and Griffin's classification.
- Patients who are medically unfit for surgery.
- Polytrauma patients.
- Patients with other associated fractures (multiple fractures).
- Pathological fractures.
- Old neglected fractures.
- Age less than 18 years.

Results

In our study maximum age was 86 years and minimum age was 33 years. Most of the patients were between 61-80 years. Mean age was 72.18 years.

Table 1: Age Distribution

Age group	Number of cases		Percentage	
	PFN	DHS	PFN	DHS
0-20	0	0	0%	0%
21-40	0	1	0%	1.67%
41-60	4	3	6.67%	5%
61-80	20	21	33.33%	35%
81-100	6	5	10%	8.33%
Total	30	30	50%	50%

Table 2: Sex Distribution

Gender	Surgery		Total
	PFN	DHS	
Female	20	15	35
Male	10	15	25
Total	30	30	60

Chi square test Value 1.7; P value=0.19.

There is statistical importance since p value is more than .05

According to type of fracture We have included patients with type I, II and III fracture pattern as per Boyd & Griffins classification.

Table 3: Fracture Classification

Type of fracture	Surgery		Total
	PFN	DHS	
Type I	8	8	16
Type II	15	16	31
Type III	7	6	13
Total	30	30	60

Table 4: Stability of Fracture

Stability	Surgery		Total
	PFN	DHS	
Stable	23	24	47
Unstable	7	6	13
Total	30	30	60

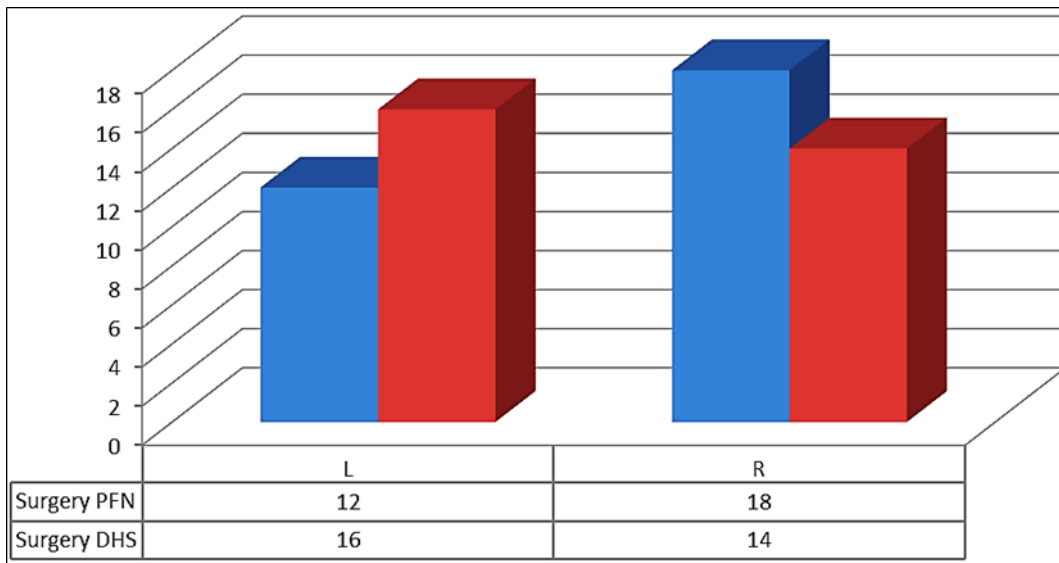


Chart 1: Predominance of side of fracture

Most of our patients were 50 years and above. In them domestic fall (fall at home) and trivial trauma was main reason behind fracture while in road traffic accident (RTA) young patients were affected.

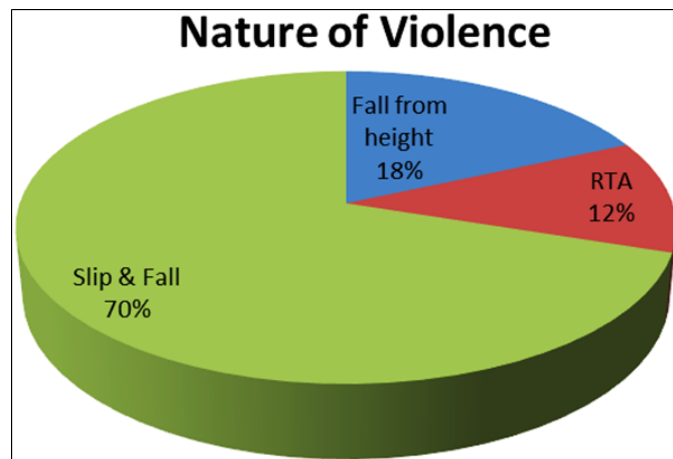


Chart 2: Nature of Violence

Chi square test Value .329; P value = .848.

There is Stastical Sinificance since p value is more than .05.

Discussion

Most of patients in present study were from age group of 6th to 8th decade of life. Mean age in years both groups combined = 72.18. This signifies the fact that patients from these age groups are involved in low energy trauma like domestic fall (fall at home) [7, 86, 94, 105, 125].

H.B. Boyd and L.L. Griffin [5] in their study of 300 cases found a marked sex difference. 226 (75.8%) of the patients were females and 74 (24.2%) were males.

Helfenstein (1947) suggested that, by stimulation of osteoclasts due to post-menopausal deficiency of steroid hormones is responsible for greater osteoporosis.

St. Urnier K.M., Dresing K. (1995) [6] suggested that pertrochanteric fractures ordinarily appears to women 10-15 years later than to men.

In this series of 28 patients, 67.85 % of patients were male and 32.15% were females. Males

were affected more because of their exposure to trauma during their day-to-day life was greater.

B.B. Ohari and Hatim Shaikh from Indore (1957) also found males predominantly affected in their series

Gallagher *et al.* (1980) reported an eight-fold increase in trochanteric fractures in men over 80 years and women over 50 years of age 186.

Most of patients from present study were females. There was a female preponderance in our patient. Amongst them majority were in 6th-7th decade of life and female to male ratio is 1.4:1.

David G. Lovelle found trochanteric fractures more common in women than men by a margin of three to one. Melton J.L., Ilistrup DM, Riggs BL *et al.* (1982) released a study titled 'fifty years trend in Hip fracture incidence' and reported a female to male ratio of 1.8:155.

H. B. Boyd and L. L. Griffin^[5] in their study of 300 cases found a marked sex difference. 226 (75.8%) of the patients were females and 74 (24.2%) were males.

Most of our patients were 50 years and above in them domestic fall (fall at home) and trivial trauma was main reason behind fracture while in road traffic accident (RTA) young patients were affected. IIN the cases treated by PFN there were 20 cases (67%) due to domestic fall while there were 4 cases (136%) due to Road traffic accident (RTA) 6case (20%), it was due to fall from height. While those patients treated by DHS, there were 22 cases (7%) where the mode of injury was due to domestic fall, while 3 cases (10%) was due to Road traffic accident (RTA). 5case (17%), it was due to fall from height. This may be attributed to the following factors as enumerated by Cummings and Nevitt in 1994^[7]. Inadequate protective reflexes, to reduce energy of fall below a certain critical threshold. Inadequate local shock absorbers e.g. muscle and fat around hip. inadequate bone strength at the hip on account of osteoporosis or osteomalacia. Young patients with intertrochanteric subtrochanteric fractures sustained trauma either as a result of road traffic accident or fall from height, there by reflecting the requirement of high velocity trauma to cause fracture in the young. Keneth J. Koval and Joseph D. Zuckerman (1996) observed that 90% of hip fractures in the elderly result from a simple fall. Hip fractures in young adults were observed to result most often with high energy trauma such as motor vehicular accidents or a fall from height. Horn & Wang stated that mechanism of injury is not direct but due to failure of Stress resisting forces during sudden bending or twisting. A direct blow on the lateral side of thigh would result in contusion, comminution on the lateral surface of the greater trochanter and cause valgus deformity All these studies are in correlation with our study.

Out of 30 intertrochanteric fractures treated by PFN 23 cases were of stable Type I and II fracture pattern and 7 unstable (type III). While 30 intertrochanteric fractures treated by DHS 6 were unstable and the rest stable. of According to Mervyn Evans, the Inter trochanteric fractures are considered as stable or unstable depending upon integrity of posteromedial cortex. Fractures with intact posteromedial cortex are considered as stable fractures while fractures with loss of posteromedial cortex are considered as unstable fractures. Postero medial cortex constitutes mainly the lesser trochanter^[8, 9, 10].

We have studied 60 cases of different types of intertrochanteric fractures in our present study. Amongst the 30 cases operated by PFN, 12(40%) patients were found to have proximal femoral fractures on the left side while 18(60%) patients were having fracture on the right side.

Amongst the 30 cases operated by DHS, 16(%) patients were found to have proximal femoral fractures on the left side while 14 (47%) patients were having fracture on the right side.

Conclusion

Out of 30 intertrochanteric fractures treated by PFN 23 cases were of stable Type I and II

fracture pattern and 7 unstable (typeIII). While 30 intertrochanteric fractures treated by DHS 6 were unstable and the rest stable.

References

1. Sadowski CAL, Saudan M, Riand N, Stern R, Hoffmeyer P. Treatment of reverse oblique and transverse intertrochanteric fractures with use of an intramedullary nail or a 95° Screw-Plate: A Prospective, Randomized Study. *J Bone Joint Surg Amrt.* 2002;84:372-81.
2. Sarmiento A, Mullis DL, Latta ILL, Tarr RR, Alvarez R. A quantitative comparative analysis of fracture healing under the influence of compression plating vs. closed weight-bearing treatment. *Clin Orthop.* 1980;149:232-9.
3. Schatzker J, Waddell JP. Subtrochanteric fractures of the femur. *Orthop Clin North Am.* 1980;11:539.
4. Cooper AP. *A Treatise on dislocations and fractures of the joints.* London, England: Longman, Hurst, Rees, Orme and Brown, 1822.
5. Griffin JB. The Calcar Femorale Redefined. *Clin. Orthop.* 1982;164:221-214.
6. St. Urmer KM, Drring K Petrochanteric Fractures: *Zentralbl Chir.* 1995;120(11):862-72.
7. Cummings SR, Nevitt MC. Non-skeletal determinants of fractures: the potential importance of mechanics of falls. *Osteoporosis Int.,* 1994, S67-70.
8. Jacobs RR, McClain O, Armstrong HJ. Internal fixation of intertrochanteric hip fractures, *Clin Orthop Related Res,* 146, 62.
9. Schmpelick W, Jantzen PM. A new principle in the operative treatment of trochanteric fractures of the femur, *JBJS.* 1955;37A:693.
10. Wolfgang GL, Bryant MH, O'Neil JP. Treatment of intertrochanteric fractures of the femur using sliding screw plate fixation *Clin Orthop.* 1982;163:148-58.