

Original Research Article

Study of the peri-operative mortality in trochanteric fractures in elderly patients (60 years and above) visiting department of orthopedics at Dr. RPGMC Tanda

Sarvesh Kumar Singh, Bhanu Awasthi, Devinder Kumar, Sunil Rana, Atul Singh, Sunny Dua*

Department of Orthopedics, Dr. RPGMC, Kangra, Tanda, Himachal Pradesh, India

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*Correspondence:

Dr. Sunny Dua,

E-mail: sunnydua64@gmail.com

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ABSTRACT

Background: Trochanteric fractures are one of the commonest fractures seen in elderly people. We conducted a study association between socio-demographic profile and difficulties encountered during fixation of trochanteric fractures with proximal femoral nailing (PFN) operated in the department of orthopedics at Dr RPGMC Kangra at Tanda.

Methods: This study was conducted on patients presenting to the department of orthopedics at Dr RPGMC Tanda with trochanteric fractures and fulfilling the criteria and studied for a period of one year starting from the date of study. The patients were clinically evaluated at the time of admission. Demographic data of the patients such as age, sex, pre-operative mobility status, pre-existing co-morbidities, type of fracture/fracture classification, degree of osteoporosis (measured by Singh's index) were noted.

Results: Comparison of age of the patients in which difficulties encountered was comparable to the patients in which no difficulties encountered ($p=0.562$) 57% ($n=33/58$) of the patients in which no difficulties encountered were males. Sex-based distribution was not found to be statistically significant ($p=0.480$). 93% ($n=54/58$) of the patients in which no difficulties encountered belonged to rural areas. Residence-based distribution was not found to be statistically significant ($p=0.506$).

Conclusions: In this study, we observed that technical difficulty in PFN can arise in any patient irrespective of their age, sex and socioeconomic status.

Keywords: Age, Sex, PFN, Difficulty

INTRODUCTION

Trochanteric fractures are one of the commonest fractures seen in elderly people.^{1,2} With the increase in life expectancy, these fractures are more common in our practice today.³ These elderly people have many associated co-morbid conditions like hypertension, poor cardio-pulmonary reserve and the quality of life of these patients will be poor until they are mobilizing elderly.

However, with the increase in motor vehicle accidents or occupations like climbing on trees or hillocks in the rural

set up, trochanteric fractures are also being seen with increased frequency in younger where these injuries are following a high velocity trauma resulting in unstable fracture pattern, these younger group of patients also require stabilization of these fractures, so that, they can be mobilized early to avoid the complications associated with prolonged recumbency like deep vein thrombosis (DVT), pulmonary oedema etc.

Quality of life becomes poor unless stabilized and mobilized early and hence many fixation devices were developed. With the aim of mobilizing these patients early

from the bed, surgical stabilization of these fractures is favoured.^{3,4} The sliding hip screw device with a slide plate remained the gold standard but is associated with blood loss, increased time of surgery and anaesthesia.^{3,5} Although it produces acceptable reduction and healing, results are not at paring unstable fractures. Approximately only half of them can reach the preinjury activity status. Though union is not an issue, many of them will remain confined to home and have significant shortening due to excessive collapse in unstable fractures. To overcome these difficulties, a biomechanically more stable, intramedullary device have become popular.

We conducted a study association between socio-demographic profile and difficulties encountered during fixation of trochanteric fractures with Proximal femoral Nailing operated in the department of orthopedics at Dr RPGMC Kangra at Tanda.

METHODS

This study was conducted on patients presenting to the department of orthopedics at Dr RPGMC Tanda with trochanteric fractures and fulfilling the criteria and studied for a period of one year (June 2018 to July 2019) starting from the date of study.

The patients were clinically evaluated at the time of admission. Demographic data of the patients such as age, sex, pre-operative mobility status, pre-existing comorbidities, type of fracture/fracture classification, degree of osteoporosis (measured by Singh's index) were noted.

Study design was hospital based prospective study and sample size included all patients during study duration were included. The study was approved by the institutional ethics committee.

To establish the diagnosis, all these relevant investigations like X-ray, CT scan (if required) were performed.

Inclusion criteria included patients of trochanteric fractures planned for operative procedure with PFN.

Exclusion criteria excluded patients with associated fracture of neck of femur, shaft of femur of same side, patients with polytrauma, patients with multiple fractures, pathological fractures and patients who are unwilling to participate in study.

Statistical analysis

Data were presented as frequency, percentages, mean, and standard deviation. Student t test was used to compare quantitative variables between 2 groups. Categorical variables were compared using Chi square test. P value <0.05 was considered significant. Statistical analysis was performed using SPSS v21.

RESULTS

The present study was aimed to evaluate intraoperative difficulties encountered during fixation of trochanteric fractures with PFN. A total of 200 patients were included in the study over the period of one year at department of orthopedics at Dr RPGMC Tanda. Results of the study have been described below:

Table 1: Sociodemographic characteristics of the study participants (n=200).

Socio-demographic characteristics	N	%
Age (years)	≤30	5
	31-40	6
	41-50	9.5
	51-60	9
	>60	70.5
Sex	Male	53.0
	Female	47.0
Residence	Rural	91.0
	Urban	9.0
Kuppuswamy scale	Lower middle class	22.22
	Middle class	27.78
	Upper middle class	50.00
Udai Pareekh scale	Lower class	0.55
	Lower middle class	28.02
	Middle class	58.24
	Upper middle class	13.19

Age-based distribution of patients has been shown in Table 1. Study observed that majority of the patients (70.5%; n=141) aged more than 60 years followed by 9.5% (n=19) patients aged 41-50 years. 9% (n=18) patients aged 51-60 years and only 5% (n=10) patients aged less than 30 years. Mean age of our study population was 68.35±18.15 years with median age of 72.0 years. Sex-based distribution of patients has been shown in Table 1. 53% (n=106) of the patients were males while 47% (n=94) of the patients were females. Residence-based distribution of patients has been shown in Table 1. 91% (n=182) of the patients were from rural region while 9% (n=18) of the patients were from urban region. Socioeconomic status among urban population was evaluated using Kuppuswamy scale. Majority 50% (n=9) were from upper middle class. Only 27.78 and 22.22% patients were from middle and lower middle class respectively.

Our study observed that comparison of age of the patients in which difficulties encountered was comparable to the patients in which no difficulties encountered (p=0.562). Our study observed that 57% (n=33) of the patients in which no difficulties encountered were males. Sex-based distribution was not found to be statistically significant (p=0.480). Our study observed that 93% (n=54) of the patients in which no difficulties encountered belonged to rural areas. Residence-based distribution was not found to be statistically significant (p=0.506). Our study observed that 50% (n=2) of the patients in which no difficulties

encountered belonged to lower middle class and remaining 50% (n=2) belonged to upper middle class. Kuppuswamy

scale-based distribution was not found to be statistically insignificant (p=0.371).

Table 2: Distribution of sociodemographic characteristics on the basis of difficulty encountered (n=200).

Variables		No difficulty encountered (n=58)	Difficulty encountered (n=142)	P
Age (years)		69.52±18.02	67.87±18.25	0.562
Sex	Male	33	73	0.480
	Female	25	69	
Residence	Rural	54	128	0.506
	Urban	4	14	
Kuppuswamy scale	Lower middle class	2	2	0.371
	Middle class	2	5	
	Upper middle class	0	7	
Udai Pareekh scale	Lower class	0	1	0.808
	Lower middle class	13	38	
	Middle class	34	72	
	Upper middle class	7	17	

DISCUSSION

This study was conducted on patients presenting to the department of orthopedics at Dr RPGMC Tanda with trochanteric fractures and fulfilling the criteria and studied for assessment of difficulties during fixation of trochanteric fractures with PFN.

PFN is an intramedullary device and has all advantages of intramedullary biomechanics, such as decreasing the moment arm, can be performed by closed technique, which preserve the fracture hematoma and it's an important consideration in fracture healing, it also decrease blood loss, infection risk, minimizes soft tissue dissection and wound related complications.⁶ The PFN system offers some major biomechanical innovations.⁷ Axial loading in A1 and A2 fractures leads to fracture impaction, whereas in A3 fractures such impaction doesn't occur, and medial displacement of the distal fragment of the fracture is common due to the instability. PFN for A3 type unstable fracture has superior results; PFN has been shown to prevent the fractures of the femoral shaft by having a smaller distal shaft diameter which reduces stress concentration at the tip.⁸

Due to its position close to the weight-bearing axis the stress generated on the intramedullary implants is negligible. The PFN implant also acts as a buttress in preventing the medialization of the shaft. The entry portal of the PFN through the trochanter limits the surgical insult to the tendinous hip abductor musculature, only unlike those nails which require entry through the piriformis fossa.⁹ The stabilizing and the compression screws of the PFN adequately compress the fracture, leaving between them a bone block for further revision should the need arise.⁸

Our study observed that comparison of age of the patients in which difficulties encountered was comparable to the patients in which no difficulties encountered (p=0.562). Our study observed that 57% (n=33) of the patients in which no difficulties encountered were males. Sex-based distribution was not found to be statistically significant (p=0.480). Our study observed that 93% (n=54) of the patients in which no difficulties encountered belonged to rural areas. Residence-based distribution was not found to be statistically significant (p=0.506). Our study observed that 50% (n=2) of the patients in which no difficulties encountered belonged to lower middle class and remaining 50% (n=2) belonged to upper middle class. Kuppuswamy scale-based distribution was not found to be statistically insignificant (p=0.371).

Since no study was conducted in past so we cannot compare it.

Limitations

Limitations of the study were less time duration and study were single center study.

CONCLUSION

A sour study observed that reduction, entry point, and guide wire passage were the most common difficulties faced intraoperatively and we solved them at the fracture table immediately. In this study, we observed that technical difficulty in PFN can arise in any patient irrespective of their age, sex and socioeconomic status.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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