

Hip Pain after Interlocking Nail of Femur

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1. Abstract

1.1. Introduction: Femoral shaft fractures are characterized by increasing incidence and complexity and are still considered a challenging problem (high morbidity and mortality). No consensus on best surgical option has been achieved.

1.2. Objectives: To determine frequency of hip pain reduction of femur fractures using interlocking nail

1.3. Material and Methods: This Descriptive case series study was carried out in the Department of Orthopedics and trauma, Medical Teaching Institute Lady Reading Hospital Peshawar on 145 patient according to WHO calculator keeping 95% confidence interval, 8% absolute precision and 40% hip pain after interlocking nail in femur from March 2022 to September 2022. Non probability consecutive sampling technique was used. Patients aged 20 to 60 years with both gender having femur fracture undergoing interlocking nail reduction were included in the study while Patients with polytrauma and Mentally handicapped patients were excluded from the study. Demographic data was noted. All patients underwent interlocking nail reduction by consultant orthopedic surgeon. Hip pain was assessed at 8 weeks follow-up visit. Data was entered and analyzed using SPSS 22.

1.4. Results: In our study 145 patients were enrolled with mean age of 37.81±10.1 years. There were 57.2% males and 42.8% female patients. Mean duration of injury was 8.17±3.8 days. Hip pain was present in 27.6% patients. Hip pain was more common in elder patients (41-60 year), p-value 0.001. Hip pain was more common in penitents treated within 7 days of injury, p-value 0.001. There was no effect of gender on frequency of hip pain, p-value 0.679.

1.5. Conclusion: Hip pain after interlocking nail is not very uncommon in patients of femur fracture.
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2. Introduction

Femur is the principal weight bearing bone of the lower extremity and fracture of femur leads to considerable morbidity and mortality. Among the fractures of long bones femoral shaft fracture is the most common one with an annual incidence between 1.0 and 2.9 million worldwide [1, 2]. Femur fractures are mostly caused by high energy accidents and mostly associated with multiple systemic injuries. Femoral shaft fractures have bimodal distribution across different age groups with high velocity injuries, which are more common among adult males, while low energy injuries tend to be more common in children and elderly females [3]. The most frequently injured site of femur is the midshaft, particularly among adult population following road traffic collisions. The pattern, presentation, and management of femoral fractures are influenced by the demographic characteristics, severity and mechanism of injury, and site of fracture. The pattern of fracture varies owing to the direction of the force applied and the quantity of force absorbed during the trauma, and the aim of an early intervention is to get stable, anatomic fixation and to allow early mobilization [2].

Early fixation of femur shaft fracture may prevent grave complications like fat embolism and acute respiratory distress syndrome. It also allows early mobilization, reducing the risks of hip and knee stiffness as well as quadriceps and hamstring wasting [4]. There are various treatment options for femur fracture, such as conservative management, fixation with screw and plate, intramedullary nailing (IMN), open reduction and internal fixation (ORIF), and external fixation. IMN is the gold standard treatment for femoral shaft fractures in adult patients. Diaphyseal femur fractures are preferably treated with IMN, which helps to attain appropriate bone alignment; quicker bone healing that allows early mobiliza-

tion, and lower rate of complications [1, 5, 6]. Usage of femoral fixation devices, such as interlocking nails, for femoral fractures continue to rise since their introduction. The additional prevalence of these implants leads to an increased incidence of the associated complications, with little attention often paid to persistent pain after successful fracture union [7]. In previous study 40% of patients report pain after intramedullary interlocking nail placement, one of the most common being lateral hip pain over the greater trochanter [8]. The rationale of this study is to determine frequency of hip pain interlocking nail of femur because use of this technique is growing day by day but there is limited data on associated hip pain which increases morbidity after treatment of femur fracture

3. Materials and Methods

This Descriptive case series study was carried out in the Department of Orthopedics and trauma, Medical Teaching Institute Lady Reading Hospital Peshawar on 145 patient according to WHO calculator keeping 95% confidence interval, 8% absolute precision and 40% hip pain after interlocking nail in femur [7] from March 2022 to September 2022. Non probability consecutive sampling technique was used. Patients aged 20 to 60 years with both gender having femur fracture undergoing interlocking nail reduction were included in the study while Patients with polytrauma and Mentally handicapped patients were excluded from the study. After approval from hospital ethical board, patients fulfilling the inclusion criteria were enrolled from indoor of Orthopedic ward LRH. A written informed consent was taken after explaining the purpose of study.

Demographic data including age, gender, and duration of injury was noted. Complete history was taken and physical examination was done. Baseline labs including CBC, LFT, RFT, serum electrolyte and chest x ray was done for general anesthesia fitness.

All patients underwent interlocking nail reduction by consultant orthopedic surgeon having atleast five years of post-fellowship experience. All patients were given bed rest for 2 to 4 weeks followed by physiotherapy. Patients were called for final assessment after 8 weeks and hip pain was noted as per operational definition. Data was entered in specially designed proforma. Data was entered and analyzed by using SPSS version 22.0. Mean and standard deviation was calculated for quantitative variables like age and duration of injury. Frequency and percentage was calculated for categorical variables like gender and hip pain. Effect modifiers like age, gender and duration of injury was addressed through stratification of data. Post stratification chi square was applied. P value ≤ 0.05 was taken as statistical significant.

4. Results

In our study 145 patients were enrolled with mean age of 37.81 ± 10.1 years (Table 1). There were 57.2% males and 42.8% female patients (Table 2). Mean duration of injury was 8.17 ± 3.8 days (Table 3). Hip pain was present in 27.6% patients (Table 4). Hip pain was more common in elder patients (41-60 year), p-value 0.001 (Table 5). There was no effect of gender on frequency of hip pain, p-value 0.679 (Table 6). Hip pain was more common in penitents treated within 7 days of injury, p-value 0.001 (Table 7).

Table 1: Age of sampled population

	N	Minimum	Maximum	Mean	Std. Deviation
Age (years)	145	20	60	37.81	10.12

Table 2: Gender Distribution

Gender	Frequency	Percent
Male	83	57.2
Female	62	42.8
Total	145	100

Table 3: Mean duration of injury

	N	Minimum	Maximum	Mean	Std. Deviation
Duration of injury (days)	145	2	14	8.17	3.833

Table 4: Frequency of hip pain

		Frequency	Percent
Hip pain	Yes	40	27.6
	No	105	72.4
	Total	145	100

Table 5: Data stratification for frequency of hip pain and age groups

			Hip pain		Total
			Yes	No	
Age groups	20-40 years	Count	16	75	91
		% within Age groups	17.60%	82.40%	100.00%
	41-60 years	Count	24	30	54
		% within Age groups	44.40%	55.60%	100.00%
p-value 0.001					

Table 6: Data stratification for frequency of hip pain and gender

			Hip pain		Total
			Yes	No	
Gender	Male	Count	24	59	83
		% within Gender	28.90%	71.10%	100.00%
	Female	Count	16	46	62
		% within Gender	25.80%	74.20%	100.00%
p-value 0.679					

Table 7: Data stratification for frequency of hip pain and duration of injury

			Hip pain		Total
			Yes	No	
Duration of injury	Equal to or less than 7 days	Count	28	42	70
		% within Duration of injury	40.00%	60.00%	100.00%
	More than 7 days	Count	12	63	75
		% within Duration of injury	16.00%	84.00%	100.00%
p-value 0.001					

5. Discussion

Femoral shaft fractures currently comprise about 4-6% of all femur fractures. The incidence and complexity of these types of injury are increasing due to the increasing rate of high-energy trauma, particularly in young patients. Low energy fractures (on native or prosthetic knee) of osteoporotic bones are instead more characteristic in the elderly population [9]. There are a number of reasons for which these fractures remain a challenging problem, involving mainly high rates of morbidity and mortality and challenging operative fixation of osteoporotic bones or periprosthetic fractures. Recognized treatment goals are to restore axial alignment, achieve anatomic reduction of the joint surface, and minimize joint stiffness by allowing early mobilization, all with minimal soft tissue disruption [10]. Studies have shown that internal fixation devices provide superior outcomes if compared to closed methods by providing good stability which consequently allows early mobilization and good functional outcomes [11,12]. In particular intramedullary nails and plates have been both successful strategies, with a reduction in surgical blood loss, operating time, and hospitalization compared to other methods. However consensus about the best management option remains controversial with results that significantly vary from one study to others [11,12]. This study was done to determine frequency of hip pain after reduction of femur

fracture using interlocking nail.

In our study 145 patients were enrolled with mean age of 37.81±10.1 years. There were 57.2% males and 42.8% female patients. Mean duration of injury was 8.17±3.8 days. Hip pain was present in 27.6% patients. Hip pain was more common in elder patients (41-60 year), p-value 0.001. Hip pain was more common in patients treated within 7 days of injury, p-value 0.001. There was no effect of gender on frequency of hip pain, p-value 0.679. The frequency of hip pain varied among different centers and populations. In previous study 40% of patients report pain after intramedullary interlocking nail placement, one of the most common being lateral hip pain over the greater trochanter [7] in another study mean VAS was 2.3 (±0.7; range 0-4) on follow-up visit after interlocking nail reduction of femur fracture [13]. A study done in University of North Carolina found that hip pain was found in 19.23% patients after nailing in patients of femur fracture [14]. A study was conducted on a total of 309 cases—143 (46.3%) men and 166 (53.7%) women—aged between 23 and 95 between January 2018 and January 2021. The mean age of the patients was 77.34 ± 7.99 years. The average time between admission and surgery was 2.26 days. The average length of time between surgery and discharge was 4.95 days. The mean duration of surgery was 65.45 min. Hip pain was found in 25.56% patients after nailing [15].

6. Conclusion

Hip pain after interlocking nail is not very uncommon in patients of femur fracture. There are many causes of hip pain after interlocking nail but the most common is traction during reduction of the fracture.

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