

Prevalence of Intertrochanteric Fractures in Young Population with Hip Fractures Presented in Ghurki Trust Teaching Hospital Lahore

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ABSTRACT

Objective: The objective of this study was to determine prevalence of intertrochanteric fractures in young population with hip fractures presented in Ghurki Trust teaching hospital Lahore.

Methodology: A retrospective study was conducted at the Department of Orthopaedic & Spine Surgery from Jan, 2018 to April, 2022. About 295 patients presented in Ghurki teaching and trust hospital Lahore were taken as a part of this research out of which 94 patients were with intertrochanteric fractures. Those patients who had any kind of pathology or skeletal deformity were excluded from the study. Out of 94 patients, 60 were male while 34 patients were female. Fractures were treated surgically via DHS (dynamic hip screws).

Results: In 94 patients with intertrochanteric fractures, the mechanism of injury was usually due to slip and fall (n= 15), fall from height (n= 19) and RTA (road traffic accidents) (n=60). The most common associated injury and fracture was of head injury and pelvis fracture respectively. RTA is most common mechanism of injury usually occurring in males (n= 40). The fractures were classified according to the BOYD's classification. The intertrochanteric fractures showed complications like loosening of the nails or plates of DHS which occurred in patients having intertrochanteric fractures with SOF (shaft of femur) fractures.

Conclusion: The characteristics related to intertrochanteric fractures depends on the mechanism of injury. An in-depth knowledge of the fracture stability and various implants is necessary for decision-making in the therapy of intertrochanteric fractures. More data on functional outputs are required, particularly for people with high functioning.

Keywords: Intertrochanteric fracture, trochanters, Prevalence, trauma, surgery, DHS, ORIF, nails, mechanism of injury

INTRODUCTION

Intertrochanteric fractures are extracapsular in nature. They are proximal femur fracture that develops between the greater trochanter and lesser trochanter. The intertrochanteric region is located between these two trochanters and is made up of dense and trabecular bone. [1] Although these fractures occur in elders more commonly, but they can also occur in the young population. The reason for intertrochanteric fractures in the young population is mainly due to high energy traumas. [2] These fractures are linked to significant morbidity and death rates, including other hip fractures. Currently, there are 280,000 fractures each year, with intertrochanteric fractures accounting for roughly half of them. [3].

Because of the increased risk of complications and higher mortality and morbidity, closed techniques of treating these fractures have mostly been discontinued. Only a few situations require for non-operative Intertrochanteric fracture therapy. Medically unstable people, patients who are already immobilized, and those who have poor skin conditions are eligible for conservative management. Intertrochanteric fractures have been fixed using a number of procedures and implants throughout the years, but the DHS fixation technique has proven to be the most effective technique. Around the year 2040, it is predicted that the frequency of intertrochanteric fractures will be doubled. many varieties of implants were tested over time to fix these fractures internally. But, the dynamic hip screw remained the most common. However, the effectiveness of the DHS is being questioned in light of certain newer implants. [4]

Our understanding of the clinical picture of intertrochanteric fractures in young people is still quite restricted. We were unaware that a more severe impact on stronger bones caused the distribution of fracture patterns. High-energy traumas are more likely to cause associated injuries, and the blood supply is more severely disturbed. After these high-energy traumas, the fractures' rate of healing will be hindered. However, young people often have a stronger capacity for healing. [5]

Hence, the purpose of our research was to determine the prevalence rate of intertrochanteric fractures in the young population presented in Ghurki teaching trust hospital, Lahore.

METHODOLOGY

A retrospective study was conducted at the Department of Orthopaedic & Spine Surgery from Jan, 2018 to April 2022. About

295 patients that were presented in Ghurki teaching and trust hospital, Lahore were included in this research out of which 94 patients were with intertrochanteric fractures. Out of 94 patients, 60 were male while 34 patients were female. The age range was 15 to 45 years. 34/94 patients presented with right sided fractures while 60/94 patients presented with left sided fractures. All those patients that had pathological disorders or any skeletal deformities were excluded from the research. Many patients presented with pertrochanteric fractures which were more common on the right side. Few patients that had pertrochanteric fractures were with femoral shaft fracture and basicervical fracture. Some patients revealed comminuted subtrochanteric fractures, greater trochanteric fractures as well as tibial fractures.

As per the patient's condition allowance, surgery was undertaken to stabilize the intertrochanteric fracture under general or spinal anesthesia. fracture reduction was carried out under image intensifier TV fluoroscopy. Based on how stable the fracture was, a fixing technique was selected. We used DHS to treat stable intertrochanteric fractures.

Intertrochanteric fractures with subtrochanteric extension were fixed via PFN nails. A suction drain was introduced on a regular basis. Every patient got the usual perioperative antibiotic prophylaxis. The accompanying fractures received normal medical care. If the patient's conditions were allowed, early mobilization was recommended.

Patients were checked in on periodically. We recommended removing the crutches from individuals with stable fractures once the stage of soft callus bridging had passed the fracture region. Weight-bearing was only allowed for individuals with fractures that were unstable until the density on the radiographs resembled like non-fractured region. Once weight-bearing was introduced, both the intertrochanteric fractures as well as the concomitant injuries of lower limbs were taken into consideration. The fracture was considered in the healing stage when soft callus bridging crossed the fracture gap.

The fractures were analyzed before the treatment via radiographs and determined the prevalence of intertrochanteric fractures through collected data.

All the data were entered and analyzed using SPSS software version 23. Frequency and percentages were made for qualitative variables like gender, mechanism of injury and associated injuries.

RESULTS

Of 94 patients with intertrochanteric fractures, 60 patients were male while 34 patients were female. The mechanism of trauma in some patients were simple fall or fall from height and majority patients were with high impact RTA. About 79 patients were with high mechanism injury out of which 55 were males. 50 patients revealed associated injuries and 20 patients showed >2 associated injuries. The most common associated injury and fracture was of head injury and pelvis fracture respectively. Patients with history of simple fall (n= 15) did not show any kind of associated injuries. Patients with RTA (n=60) and fall from height (n=19) had associated injuries.

Table-I shows frequency of associated injuries in patients with intertrochanteric fractures.

Table-1: frequency of associated injuries

		Frequency	Percent	Valid percent	Cumulative percent
Valid	No associated injury	19	10.0	20.2	20.2
	Head injury	30	15.8	31.9	52.1
	Pelvis fracture	15	7.9	16.0	68.1
	Sof fracture	7	3.7	7.4	75.5
	Tibial fracture	7	3.7	7.4	83.0
	Ankle fracture	5	2.6	5.3	88.3
	Lacerations	11	5.8	11.7	100.0
	Total	94	49.5	100.0	
Missing	System	96	50.5		
Total		190	100.0		

According to table II, RTA is most common mechanism of injury usually occurring in males (n= 41).

Table-2: Mechanism of injuries in both genders

Count		Mechanism of injury			Total
		Simple fall	Fall from height	Rta	
Gender	Male	6	13	41	60
	Female	9	6	19	34
Total		15	19	60	94

In accordance with BOYD' classification (Table-III), 31 out of 94 were type-I fractures, 36 were type-II fractures, 19 were type-III fractures and 8 were type-IV fractures.(p value= <0.05).

Table-3: Mechanism of injury in accordance with BOYD classification

Count		Boyd classification				Total
		Type-i	Type-ii	Type-iii	Type-iv	
Mechanism of injury	Simple fall	6	9	0	0	15
	Fall from height	5	4	7	3	19
	Rta	20	23	12	5	60
Total		31	36	19	8	94

The average number of days for the healing of intertrochanteric fractures was 70 days approximately. Fractures resulting from RTA or fall from height showed slow progress towards healing. About 50 patients were with unstable intertrochanteric fractures while 44 patients were with stable intertrochanteric fractures. Out of 44 stable intertrochanteric fractures, 20 were due to RTA, 15 were due to simple falls while 9 were due to falls from height. Out of 50 unstable intertrochanteric fractures, 28 were due to RTA, 19 were due to falls from height while 3 were due to simple falls.

The intertrochanteric fractures showed complications like loosening of the nails or plates of DHS which occurred in patients having intertrochanteric fractures with SOF (shaft of the femur) fractures. Other complications include pressure ulcers, pneumonia, sepsis, and cortex reamed via gamma nailing. However, no mortality was observed in all 94 patients having intertrochanteric fractures.

DISCUSSION

Hip fracture prevalence rates differ from population to population. White women have a 16 to 18% risk of hip fracture, while white

males have a 5 to 6% risk. [6] Hip fractures will become more prevalent across the world, notably in Asia, and thus necessitates future-focused tactics, particularly in the emerging nations. [7]

Bone osteoporosis is less prevalent in young males. But, their increasingly active lifestyle increases exposure to accidents. The locations and ways that injuries occur reflect the impact of lifestyle. For the majority of young adults, fracturing the proximal femur takes more energy in contrast to a simple fall. [8].

In this study, patients who had any kind of disease or disorder were not included. The major cause of intertrochanteric fractures was found to be high energy traumas which were due to RTA. In this study, majority males were effected from RTA as compared to females. Head injury was common in our patients.

In contrast to femoral neck fractures, in which the blood supply is inadequate, fractures at the region of the intertrochanter have a remarkable ability to heal quickly due to an abundance of blood supply. [9]

Simple falls don't exert enough force to cause an injury, therefore none of the patients showed any kind of associated injuries. This is comparable to the elder population. It is not unexpected that almost half of the patients revealed a minimum of one associated injury and that almost a quarter experienced more than 2 because high-energy trauma was the primary cause of the majority of intertrochanteric fractures in young people. The variety of injuries that may result from the high energy was broad. Part of the causal energy had been shared by associated injuries. Many patients presented with pertrochantric fractures which were more common on the right side. Few patients that had pertrochantric fractures were with femoral shaft fracture and basicervical fracture. Some patients revealed communitated subtrochanteric fractures, greater trochanteric fractures as well as tibial fractures. Apart from this, ankle fractures, lacerations, head injuries as well as pelvic fractures were also present from which head injuries were the most common of all.

The only fractures identified in individuals injured in a simple fall were Boyd types I and II. When a person suffers a fracture from a road traffic accident or a high fall, high energy is more influential than bone stock. The distribution was significantly changed as a result. There were more fractures of Boyd types III or IV.

Bone made of cancellous material makes up the intertrochanteric region. It is typical for the fractures to unite. The non-union rate ranges from 1% to 2%. [10]

A stable intertrochanteric fracture occurs when the medial cortex of the femoral neck, as well as the shaft, are precisely in touch with one another, without the Lesser trochanter being compromised, fractured, or the posterior neck and shaft developing a compressive deformity. There is insufficient stable interaction between the medial section of the neck and the medial femoral shaft in the unstable intertrochanteric fracture. [11]

In this research, about 50 patients were with unstable intertrochanteric fractures while 44 patients were with stable intertrochanteric fractures. Each injury had a unique energy constitution, which made recovery times quite variable. Callus production was accelerated in individuals who experienced simple falls due to a young adult's greater capacity for healing. Since the blood supply and soft tissue were more severely disturbed in individuals who had an injury due to road traffic accidents or falls from a height, recovery time was delayed.

The mechanisms of the trauma and the healing were connected. Fixing the proximal fragment in intertrochanteric fractures totally relies on the integrity of the cancellous bone that is present. According to a study, Internal fixation is the most common form of treatment for intertrochanteric fractures. Extramedullary implants or intramedullary (IM) nailing techniques can be used to accomplish internal fixation. [12]. While IM nail fixation methods may be employed for both stable and unstable intertrochanteric fractures, extramedullary sliding hip screw systems are often advised for stable fractures. [13]. When fixed with IM nailing, unstable intertrochanteric fractures showed decreased failure and

reoperation risks. A failed or difficult primary fixation of an intertrochanteric fracture is often treated with arthroplasty. [14].

In this research, fractures were treated surgically via DHS (dynamic hip screws), PFN nails, The secret to success was adequate bone stock and effective management.

CONCLUSION

The characteristics related to intertrochanteric fractures depends on the mechanism of injury. An in-depth knowledge of the fracture stability and various implants is necessary for decision-making in the therapy of intertrochanteric fractures. More data on functional outputs are required, particularly for people with high functioning.

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