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# Geriatric Physiotherapeutic Approach for Intertrochanteric Fracture- A Case Report

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***Authors' contributions***

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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***Case Study***

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## ABSTRACT

Hip fractures are a growing concern around the world as the geriatric population increases rapidly. The purpose of this study was to assess the impact of proximal femoral nailing on elderly. Despite the fact that intertrochanteric fracture fixation is generally successful, treatment is difficult when fixation fails. The purpose of this study was to assess the efficacy of an evidence-based protocol designed for the treatment of failed intertrochanteric fractures. When treating an unstable intertrochanteric fracture, there is a lesser risk of implant failure and reoperation, as well as a better postoperative functional recovery is seen. But in some rare cases some implant failures are major and requires a long-term treatment. Intertrochanteric femur fractures, particularly those with unstable patterns, are increasingly being treated with intramedullary implants. Despite the widespread use of nails in the treatment of these fractures, perspectives on the proper length of an intramedullary nail differ. Long nails were created to alleviate the risk of diaphyseal fracture that came with prior short nail designs. The main aim is to govern the unstable nail fixation of the intertrochanteric femoral fractures.

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## 1. INTRODUCTION

Hip joint is a synovial joint of ball and socket variety. It is the weight bearing joint of the body [1]. The iliofemoral, is chiofemoral, and pubofemoral ligaments of the hip joint play a major role in functional mobility and joint stability. Despite the fact that intertrochanteric fracture fixation is generally successful, treatment is difficult when fixation fails [2].When treating an unstable intertrochanteric fracture, there is a lesser risk of implant failure and reoperation, as well as a better postoperative functional recovery is seen [2]. Long nails were created to alleviate the risk of diaphyseal fracture that came with prior short nail designs [3,4]. Hip fractures are connected with higher mortality and cause severe morbidity. Women account for 80% of hip fractures, and people with hip fractures are on average more than 70 years old. A fall is the most common cause of hip fractures, although other risk factors include low bone mineral density, low exercise, and chronic medication usage [5]. Hip fracture patients have groin pain and are unable to bear weight on the affected limb. Displaced with external rotation and abduction are observed during the physical examination [6]. Hip fractures are common as the hip joint is main weight bearing joint. Trochanteric fractures are becoming more common as the number of elderly people with osteoporosis rises [7].Intracapsular and extracapsular hip fractures can be distinguished radiographically. Depending on the depth of the fracture and the presence or absence of displacement and comminution, these can be further categorized [8].Intertrochanteric fractures are defined as extracapsular fractures of the proximal femur that occurs between the greater and lesser trochanter. The intertrochanteric aspect of the femur is located between the greater and lesser trochanters and is composed of dense trabecular bone [9].

### 1.1 Patient Information

79 years old female resident of Borgaon Wardha, presented to Acharya Vinobha Bhave Rural Hospital with incidence of fall from bed and complaint of pain over hip joint of left side and inability in walking with generalized weakness of the respective limb along with inability to do daily activites normally. Patient is a known case of hypertension.

Patient was brought to casualty with injury to her left hip 6 months ago for which she was managed with proximal femoral nailing for fracture neck of femur of left side. Pain was sudden in onset and gradually progressive. Pain increases while moving the limb and decreases on taking rest. The pain does not radiate to any other part of the body. Pain is dull aching in nature. Pain does not have any diurinal or seasonal variation. She has been diagnosed with intertrochanteric fracture of left femur. For further management she was recommended for physiotherapy.

### 1.2 Clinical Findings

On physical examination the findings were found normal.

The general examination was normal.

**Table 1. Pulse, respiratory rate, blood pressure and temperature was also normal**

| | Decubitus | Normal |
|---|---|---|
| | Nutritional Status | NORMAL |
| | Higher Function | NORMAL |
| | Hairs | NORMAL |
| | Eyes & Sclera | NORMAL |
| | Ears | NORMAL |
| | Tongue | NORMAL |
| | Teeth | NORMAL |
| | Lymph Nodes: | |
| Cervical | | NOT PALPABLE |
| | Axillary | NOT PALPABLE |
| | External Iliac | NOT PALPABLE |
| | Inguinal | NOT PALPABLE |
| | Others | NOT PALPABLE |

**Table 2. Range of motion in pre and post condition with physiotherapy management**

| | Pre-Physiotherapy | Post-Physiotherapy |
|---|---|---|
| Hip Joint (left side) | | |
| Flexion | 0-23* | 0-60* |
| Extension | 0-20* | 0-55* |
| Abduction | 0-15* | 0-30* |
| Adduction | 0-15* | 0-30* |
| Internal Rotation | 0-10* | 0-25* |
| External Rotation | 0-10* | 0-25* |

**Table 3. Manual Muscle Testing Strength**

| Muscles | Right | Left |
|---|---|---|
| Hip Flexors | NORMAL | 3 |
| Hip Extensors | NORMAL | 3 |
| Hip Abductors | NORMAL | 3 |
| Hip Adductors | NORMAL | 3 |

**Table 4. Isometric strength evaluation**

| Muscles | Right | Left |
|---|---|---|
| Hip: | | |
| Flexors | NORMAL | Weak and Painless |
| Extensors | NORMAL | Weak and Painless |
| Abductors | NORMAL | Weak and Painless |
| Adductors | NORMAL | Weak and Painless |

**Fig. 1. Shows preoperative X-ray of Neck of femur fracture**

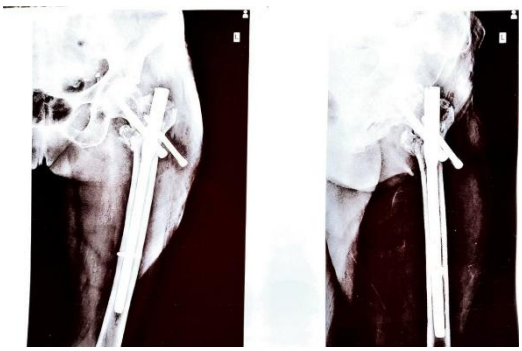

**Fig. 2. Post Operative X-ray**

## 2. TREATMENT

**Table 5. Therapeutic Management**

| Phase (week wise) | Therapeutic exercise |
|---|---|
| Phase I: Immediate postoperative phase (Week 1-2) | |
| Precaution | No active ROM of Hip joint.<br>Avoid activities of daily living.<br>No lifting of heavy objects.<br>Avoid prone and side lying |
| To reduce inflammation | Cryotherapy application for 8 to 10 minutes |
| To reduce pain and tenderness | Application of ice pack for 8 – 10 minute<br>Thermotherapy, Ultrasound, two times a day. |
| To improve range of motion | Hip and knee passive ROM exercises, 10 repetitions x 2<br>Isometric exercises – static quadriceps, hamstring, glutes ( 5sec hold ,10 sec relax, 10 repetitions ,2 sets)<br>Isotonic exercises – ankle pumps |
| Phase II: Protection phase (week 2-6) | |
| To reduce inflammation and pain | Cryotherapy continued for 8 to 10 min |
| To improve ROM | Progressive active assisted exercises for back, knee and ankle.<br>Progress to passive ROM until full pain free ROM is achieved.<br>Isometric exercises for hip, knee, and ankle ( 5sec hold,10 sec relax, 10 repetitions, 2 sets)<br>Ankle pumps to prevent deep vein thrombosis |
| To improve strength endurance and functional activities | Core stabilisation exercises.<br>Strengthening of uninvolved lower extremity.<br>Power conditioning in right lower extremity |
| Phase III: Intermediate phase (6-8 week) | |
| To improve ROM and muscle strength, endurance and functional activities | Active range of motion of lower limb and back<br>Started strengthening program to lower limb muscle with theraband(10×2)<br>Modality- continuous passive motion (CPM), Faradic current-electric muscle stimulation.<br>Exercises such as heel slides, bed side sitting, assisted and resisted exercises of back and lower limb. |
| Phase IV : Advanced strengthening exercises (week 8-10) | |
| To improve strength, endurance and functional activities | Active full range of motion and stretching exercises.<br>enhancing stability, balance, fitness and open-chain proprioceptive activities. Progressive strengthening exercises (10×2)<br>Resisted and dynamic exercises to quadriceps, hamstring, glutei and back muscles |

## 3. DISCUSSION

In this case report we are discussing a case of 79 year old with intertrochanteric fracture managed with intramedullary nail. Surgical approaches to manage depends upon the age and the mobility and stability requirement of the patient.

In this case, the primary goal of physiotherapy management was to educate the patient, prevent the deformities and other secondary complications. For the preventation of secondary complication ankle toe movements were initiated on the second day of the surgical process [10]. Ankle toe movement's helps in maintaining the peripheral circulation and to maintain the mobility of distal joint. Gabriel's study showed that physical therapy has an effect on maintaining the mobility and enhancing the gait of the patient. In gait training we start with non-weight bearing walking progress to partial weight bearing and

then to full weight bearing. For the gait training, training of unaffected limb plays an important. So, range of motion and strength training was provided to the unaffected leg, Home physiotherapy was given in order to maintain the strength and range of motion of the patient.

## 4. CONCLUSION

Intertrochanteric fractures are most common fractures among old age people. Proper management of such fractures plays important role in quality of life of the patient. Early physiotherapy rehabilitation helps in maintaining the range of motion and strength of the joint.

## CONSENT

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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