



## **Rehabilitation in Operated Case of Neck of Femur 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**

Femoral neck fracture is a common and hazardous condition of the elderly, whose morbidity is constantly increasing with population ageing and has become a serious social burden. Prosthetic joint replacement can successfully relieve pain and restore joint function. As a result, an increasing number of doctors consider it a primary treatment option for displaced femoral neck fractures in the elderly. Patients and society, however, are burdened by the lengthy procedure and hefty cost. The surgery technique for femur fracture neck fractures should be redefined as medical technology advances. Individual therapy options should be determined by the therapeutic indication and the clinical status of the patient. Personalized therapy techniques for elderly patients with femoral neck fractures should be established. The fractures causes radiating pain to the knee. Inability to bear weight. Shortening or sideways rotation of affected leg. It causes external rotation deformity, shortening, unable to ambulate, echymosis, restricted movements. The main cause of femoral neck fracture is a medical condition called osteoporosis which causes the bones to become thin and weak due to loss to bone mass. A femoral neck fracture can tear the blood vessels and cut off the blood supply to the femoral head. If the blood supply to the femoral head is lost, in bone tissue avascular necrosis may occur, leading to the eventual collapse of the bone.

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## 1. INTRODUCTION

Hip fractures are common injuries, especially seen in the elderly in the emergency setting. It is also seen in young patients who perform in athletics or high energy trauma. Immediate diagnosis and management are required to prevent threatening joint complications [1]. With femoral neck fractures are a specific type of intracapsular hip fracture. The femoral neck connects the femoral shaft with the femoral shafts with the femoral head. The hip joint is the articulation of femoral head with the acetabulum. The junctional location makes the femoral neck prone to fracture. The blood supply of the femoral head is essential consideration in displaced fractures as it runs along the femoral neck [2]. The risk factors are screw fixation with a triangle configuration a displaced fracture and poor reduction are risk factors for non union in intracapsular femoral neck fractured treated with fixation and multiple screws [3]. Methods of surgery with computerized navigation improve the accuracy of cannulated screw placement in the internal fixation of femoral neck fractures. It may provide better mechanical stability and improved fracture outcome. Physiotherapy management can be given for fracture of neck of femur i.e. Treadmills gait retraining, a new joint mobilization and good ROM after management [4]. While in hospital a therapist will teach the patient how to use a walking aid to allow them to mobilize depending on their weight bearing status. The patient should be taught basic range of movement and strengthening exercises to maintain a degree of strength and reduce the risk of blood clots [5]. Mobility exercises for hip will be flexion, extension, abduction, and adduction. Muscle strength improving is necessary to enhance post operative walking capacity for rehab and to diminish the risks of falls. It will help preventing other fractures, increasing gait speed and balance, increasing ADLs performance, regaining walk capacity. Home rehabilitation training leads towards better rehabilitation and better performance on daily activities. The femur is the only bone in the thigh, it serves as an attachment point for all the muscles that exert their force over the hip and knee joints, like the gastrocnemius and plantaris muscles, also originate from the femur.

## 2. PATIENT INFORMATION

A 47 yr old male met with an accident in his house, while walking he fell as his leg slipped

due to water. He came to the department with the chief complains of pain in the left hip, swelling over the left hip region, inability to move left limb, difficulty in walking since 22\09\2021. After that incidence he was not able to wake up and there was no movement in hip. The patient visited AVBRH hospital on 05\10\21 and after consulting with orthopedic surgeon, X-ray was done. After examination of x-ray he was diagnosed with fracture of femur, left hip in K\O alcoholic liver disease. On 05\10\21, He was operated with Open Reduction Internal Fixation (ORIF) with CC screw fixation left hip. Post operative patient was treated with antibiotics, drugs, anesthesia, and other medications were given. And patient has past history of alcoholic liver disease.

### 2.1 Pain History

NRS -7\10 at rest and 9\10 on movement

### 2.2 Timeline

Date of admission: 25\07\21

Date of Operation 5\08\21

Date of physiotherapy: 7\08\21

## 3. CLINICAL FINDINGS

### 3.1 On Inspection

Patient was observed on supine lying with hip in neutral, knees extended and ankle plantar flexed. The suture site was covered with bandage swelling present at left ankle. Patient posture was assessed in bed side sitting, lateral view shows forward head, protracted shoulders, anterior view right shoulder depressed.

### 3.2 On Palpation

Grade II tenderness at the site of suture, mild warmth present, pitting oedema present at left ankle.

### 3.3 Range of Motion

Both upper limb strength full and functional, right hip knee and ankle strength full and functional.

### 3.4 Manual Muscle Testing

Bilateral upper limb strength is full and functional right lower limb strength is full and functional.

**Table 1. Different joints and their movement range**

| Joint | Movement       | Range |
|-------|----------------|-------|
| Hip   | Flexion        | 0-30* |
|       | Abduction      | 0-25* |
|       | Extension      | 0-10* |
| Knee  | Flexion        | 0-45* |
|       | Extension      | 45-0* |
| Ankle | Plantarflexion | 0-45* |
|       | Dorsiflexion   | 0-30* |

**Table 2. Different joints and their movement strength**

| Joint | Movement       | Strength |
|-------|----------------|----------|
| Hip   | Flexors        | 3+       |
|       | Extensors      | 3+       |
|       | Abductors      | 3+       |
| Knee  | Flexors        | 4        |
|       | Extensors      | 4        |
| Ankle | Plantarflexors | 4        |
|       | Dorsiflexors   | 4        |

**3.5 Tightness**

Mild pectorals tightness mild tightness of bilateral tendoachillis and moderate tightness of right sided hamstrings.

**3.6 Management**

Patient education regarding the operative procedure, and its prognosis and the importance of the physical therapy interventions.

**Table 3. Therapeutic exercise**

| Phase (week wise )  | Therapeutic exercise  |
|---|---|
| <b>Phase I: Immediate postoperative phase ( Week 1-2)</b>               |   |
| Precaution  | No active ROM of Hip joint.<br>Avoid prone and side lying   |
| To reduce inflammation  | Cryotherapy application for 8 to 10 minutes   |
| To reduce pain and tenderness   | Ultrasound, two times a day.  |
| To improve range of motion  | 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   |
| <b>Phase II: Protection phase(week 2-6)</b>                             |   |
| To improve ROM  | Progressive active assisted exercises for back, knee and ankle.<br>Isometric exercises for hip, knee, and ankle ( 5sec hold,10 sec relax, 10 repetitions, 2 sets)   |
| To improve strength endurance and functional activities                 | Ankle pumps to prevent deep vein thrombosis<br>Core stabilisation exercises.<br>Strengthening of uninvolved lower extremity.<br>Strengthening of upper limb muscles for crutch training   |
| <b>Phase III: Intermediate phase ( 6-8 week)</b>                        |   |
| 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 weight cuffs of 1 kg (10x2)<br>Modality- continuous passive motion (CPM), Faradic current-electric muscle stimulation.<br>Exercises such as heel slides, bed side sitting. |

#### 4. DISCUSSION

Inter-trochanteric fractures are common in the elderly due to weak eyesight, poor muscle coordination and associated co-morbidities like osteoporosis. Surgical treatment of these fractures significantly reduces the morbidity and mortality by allowing early mobilization, hence preventing the complications arising out of prolonged bed rest [6].

Initially cryotherapy is required to reduce pain and swelling. Passive movements are initiated to reduce joint contracture [6,7]. Progressive mobilization was shown to be effective in raising the ROM during recovery and reducing the chance of vascular disease and various methods such as incremental range of motion exercises, soft tissue mobilization, isometric exercises, open and close chain muscle training, muscle strengthening, stretching, body position training have been established [8,9]. Muscle energy technique also used to increase ROM explain by Kucusen et al. [10] Gabriel's study showed that physical therapy training had a beneficial effect on morale building, enhancing gait in post-operative physical therapy [8]. Dynamic equilibrium and care quality mobility are enhanced by neuromuscular stimulation and adjustment of parameters, gait efficiency and patient ambulation [11,12]. Movement therapy is helpful to restore normal movement of all joints followed by immobilization [13]. Resistive conditioning can be innovative in order to boost muscular endurance. Preventive treatment has been established to increase disability, comorbidity and facilitate therapeutic recovery [14].

The recovery process will concentrate on enhancing life expectancy. Gradual activity including appropriate pain management are the main priorities of care and home installation to program the need for stairs, handrails, better ventilation, elimination of slippery sheets. Related mobility assistance must also be provided. A fall reduction rehabilitation program can be effective [13]. The patient was directed to conduct all of the activities as part of the home regimen and was presented with a prescribed checklist and recommended for follow-up visits [15]. The objectives of this studies was to focus on the importance of timely surgical treatment and necessary physiotherapy recovery to meet the functional capacity and prognostic objectives.

#### 5. CONCLUSION

An Inter-trochanteric fractures of femur are one of the commonest fractures encountered in orthopedic practice. It is mostly seen in the older age groups. An increased incidence of these fractures is noted these days owing to the increased life expectancy. The clinical study shows that the classical surgical approach and the accelerated organized recovery of physiotherapy contributed to the enhancement of functional objectives i.e. decreased pain and tenderness, enhanced ROM, muscle speed and agility, which helped the patient regain physical function.

#### CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

#### 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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