Case study

Rehabilitation in Operated Case of Neck of Femur Fracture: A Case Report

Abstract:

Femoral neck fracture is a frequently occurring and dangerous disease of elderly patient, whose morbidity is increasing gradually with the aging of population and has become a serious social problem. Prosthetic joint replacement can relief pain and restore joint function effectively. So that more and more doctors consider it a main option for the treatment of displaced femoral neck fractures in the elderly. However, the extensive operation and high cost are burdens for patients and society. As medical technology development, the surgery strategy for fracture neck of femur should be redefined. The choice of treatment should be varied individually depend on therapeutic indication and patients clinical condition. The treatment of aged patients with femoral neck fractures should be developed into personalized therapeutic strategies. 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.

Keywords: Fracture, Physical Therapy, Rehabilitation.

Introduction:

Hip fractures are common injures, especially seen in the elderly in the emergence setting. It is also seen in young patients who perform in athletics pr high energy trauma. Immediate diagnosis and management are requires 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 cloths (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.

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\C\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.

Pain History:

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

Timeline

Date of admission: 25\07\21

Date of Operation 5\08\21

Date of physiotherapy: 7\08\21

Clinical Findings:

On Inspection:

Patient was observed on supine lying with hip in neutral, knees extended and ankle planter 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.

On Palpation:

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

Range of Motion

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

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*

Manual Muscle testing

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

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

Tightness:

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

Management:

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

Phase (week wise)	**Therapeutic exercise**
Phase I: Immediate postoperative phase (Week 1-2)	
Precaution	No active ROM of Hip joint. 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 Isometric exercises – static quadriceps, hamstring, glutes (5sec hold ,10 sec relax, 10 repetitions ,2 sets) Isotonic exercises – ankle pumps
Phase II: Protection phase(week 2-6)	
To improve ROM	Progressive active assisted exercises for back, knee and ankle. Isometric exercises for hip, knee, and ankle (5sec hold,10 sec relax, 10 repetitions, 2 sets) Ankle pumps to prevent deep vein thrombosis
To improve strength endurance and functional activities	Core stabilisation exercises. Strengthening of uninvolved lower extremity. Strengthening of upper limb muscles for crutch training

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 Started strengthening program to lower limb muscle with weight cuffs of 1 kg (10×2) Modality- continuous passive motion (CPM), Faradic current-electric muscle stimulation. Exercises such as heel slides, bed side sitting.

Discussion:

Inter-trochanteric fractures are common in the elderly due to weak eyesight, poor muscle co-ordination 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 initated 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 Kucuksen *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.

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.

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