



Case Report

Importance of early rehabilitation on range and mobility of post-operative schatzker type VI tibial plateau fracture

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ABSTRACT

According to the Schatzker-developed method, tibial plateau fractures are usually graded. Schatzker fractures of type VI are high-energy fractures often accompanied by other accidents and complications, such as post-operative inflammation, injuries, infections, and recovery. Physical therapy is a very necessary part of the recovery of patients on their path to return to or as close as possible to their pre-injury activity rate of Schatzker type VI fractures. This case of 60 years old male patient complains pain and swelling over the anterior part below the knee came to AVBRH, DMIMS (DU) Sawangi Meghe, Wardha, Maharashtra. He then diagnosed with Schatzker type VI tibial plateau fracture. Investigation of CBC, LFT, KFT, RBS, RT-PCR Chest X Ray PA view was done as an early intervention. Proximal tibia fracture right side without neurovascular deficit. (Schatzker type 6), Patient was managed with Open reduction internal fixation with bicondylar plate osteosynthesis right tibia was done under spinal + epidural anaesthesia. Therapeutic intervention mainly focused on range of motion and early rehabilitation. This severe commuted fracture and tibial shaft fracture were successfully reduced and got satisfactory recovery of knee joint function after 6 weeks. Thus, we would like to conclude that early rehabilitation by focussing on range of motion gives faster results.

Keywords: Schatzker type VI fracture, Tibial Plateau Fracture, Physiotherapy; Rehabilitation; Weight Bearing Exercises.

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INTRODUCTION

1-2% of all fractures and about 8% of fractures in older people are attributed to tibial plateau fractures. A danger to the functional integrity of the knee is tibial plateau fractures. They are the product of axial compressive forces alone or coupled with stress on the knee joint by varus or valgus ^[1]. The fracture's geometry and deviation depend on several factors, including the degree and direction of the force applied, these fractures include multiple and varying fracture configurations affecting the medial condyle, lateral condyle or both with various degrees of articular depression and displacement. These fractures can lead to the development of premature osteoarthritis, ligament damage, as well as lifelong pain and disability in the event of improper reconstruction of the plateau surface and leg axis. Tibial plateau fractures may also be accompanied by meniscal and ligamentous knee injuries ^[2]. The mechanism that causes tibial plateau fractures is complex in high-energy wounds, likely to coexist with axial, Varus, valgus, and rotational stress. The present case report is of a 60-year-old male suffered with road traffic accident fractured right tibia, Open reduction and internal fixation was done and Physiotherapy

treatment was given to him for 6 weeks. There was improvement in strength range of motion and pain perceiving levels.

Case presentation

A 60 years old male with right hand dominance travelling from market to his home at was hit by the vehicle from back and he fall on the road side, he was sent to a private clinic for first aid. Later after two days he developed pain and swelling below the knee joint. It was sudden in onset and gradually progressive in nature. Pain was increasing on movements. Then he was referred to the AVBRH, DMIMS (DU) Sawangi Meghe, Wardha, Maharashtra. Patient has the history of Myocardial infarction 10 year ago and patient was managed with medication on atorvastatin 20mg clopidogrel 75mg, aspirin 75 mg. Also known case of HTN on treatment telmisartan 40mg metoprolol 25mg for 4 years.

Clinical Findings

He showed the symptoms of pain while walking, oedema over right knee joint and inflammation We analysed both the clinical and radiological findings and the complications. A visual analogue scale (VAS), the American Knee Society function score and the range

of motion of the knee joint were tested for clinical outcomes. Patient was examined in supine lying position with both knee joint at same level. On inspection, patient keeps right leg flexed and slightly knee flexed with open knee immobilizer on, ankle in neutral. Presence of swelling on right knee and operative site. On palpation the local temperature was raised and oedema was non-pitting type. No loss of superficial sensations (light touch, pin prick and temperature) at right lower extremity was found.

Patient Diagnosis and Medical Management:

X RAY Confirmed the diagnosis as Schatzker type VI tibial plateau fracture. He was operated with Open reduction and internal fixation with plate osteosynthesis for fracture proximal tibia right side. Under all aseptic precautions painting and draping of right leg done. Above knee slab was given and patient shifted to ward. On post-operative physiotherapy assessment there was decreased range of motion, strength and pain while performing knee movements on right side.

Figure 1: Timeline

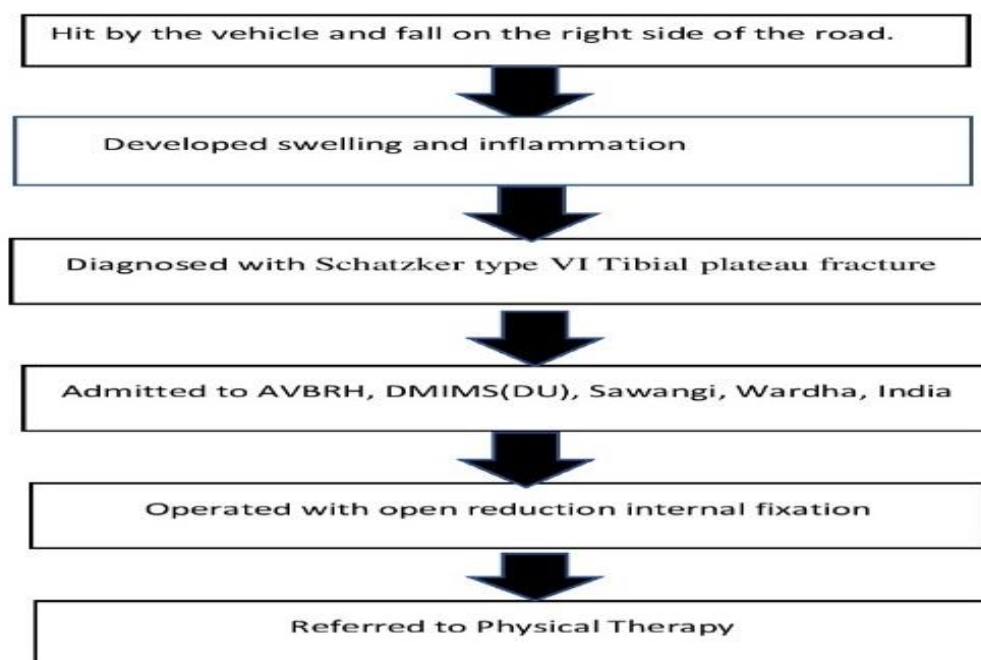


Figure 1 and 2 post-operative cast



Figure 3 and 4: Plates and screws fixed over knees



Table 1: Pre rehabilitation and post rehabilitation scores

Pre-Rehabilitation:	Post-Rehabilitation:
NPRS; 5/10 at rest, 8/10 on slight movement.	NPRS; 1/10 at rest, 2/10 on activity
Dynamic Gait Index: 4/24 Berg Balance Scale; 3/56	Dynamic Gait Index: 16/24 Berg Balance scale: 47/56

Physiotherapy Management (1-3 weeks)

In the early stages of recovery, objectives are aimed at reducing pain and swelling, improving independence, increasing ROM, enhancing muscle strength, improving muscle control and improving the mobility of the patella. Therefore, non-weight bearing at this point will seek to boost the weight bearing capacity as tolerated. Cryotherapy (Ice)

- Compression and protection using a form of knee brace or immobiliser
- Gentle patella mobilisations as tolerated
- Non weight bearing exercises
- Passive range of movement exercises.

(3-6 weeks)

The physiotherapy program will strive to advance the weight bearing during the second and third months, from non-weight bearing to partial weight bearing, while still maintaining prior exercises such as stretching and strengthening exercises.

Continuation of modalities for pain control (ice, medication etc)

- Patella mobilisations
- Progression of passive range of movement exercises
- Introduction of active (unassisted) range of movement exercises
- Continuation of strengthening and stretching exercises for quadriceps and hamstrings
- Progression of weight bearing exercises to partial weight bearing

Home programme

As patient got discharged after 6 weeks, later stage rehabilitation was suggested to him to perform at home. Both resisted exercises, gait training exercises and partial to complete weight bearing walking with walkers were requested to continue to avoid recurrence of fall due to weakness and loss of balance. We advised to perform the exercises in presence of a physiotherapist to avoid any complications.

DISCUSSION

The present case can be treated as one of the most typical cases where age and type of fracture played a major role in rehabilitation. Recent systematic review suggests that early physiotherapy and range of motion exercises plays a major role in the recovery of the patient with tibial plateau type V and VI injuries [3]. Early rehabilitation is even proved to be beneficial in other conditions related to tibial conditions [4]. Previous study done on type 5 Schatzker Tibial plateau fracture suggests that classic surgical approach with goal based physiotherapy improves functional capabilities of patient [5].

Some studies also states that long term follow up is required in tibial plateau fractures to achieve functional mobility [6]. Studies also indicates that physiotherapy is important for early getting back to sports related activities in patients affected with knee related injuries [7]. Our study went in line with all these previous studies where our focus was on early recovery and pain free joint range of motion. NPRS, Balance and dynamic gait index scores pre and post rehabilitation [8].

CONCLUSION

We would like to conclude by saying that accurate diagnosis with appropriate surgical intervention followed with planned exercise protocol focussing on long term benefits helped our patient to achieve early pain free mobility in lower limbs in non-weight bearing position.

Conflict of interest

The authors declare that they have no conflict of interest.

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