

# PHYSIOTHERAPY MANAGEMENT OF POST-OPERATIVE KNEE STIFFNESS WITH KALTENBORN MOBILIZATION TECHNIQUE WITHOUT CONTINUOUS PASSIVE MACHINE

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## ABSTRACT

**Background:** There are three main factors of causing this mid shaft fracture of femur which are motor vehicle accidents, industrial accidents or falls from height. These traumatic injuries needs surgical fixation. Due to surgical management it limits patient's functional mobility and decreases patient return to previous level of work. Soft tissue limitations include hip abductor weakness, anterior knee pain and decreased function with respect to gait. **Objective:** To manage post op knee stiffness with kaltenborn mobilization without continuous passive machine

**Key words:** Keltanborn mobilization, postop knee stiffness, continuous passive motion machine.

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## INTRODUCTION

During road side traumatic injuries, fracture shaft of femur is very common. Almost 60.000 people suffered from fracture shaft of femur each year in United State of America.<sup>1</sup>

There are three main factors of causing this mid shaft fracture of femur which are motor vehicle accidents, industrial accidents or falls from height. These traumatic injuries needs surgical fixation.<sup>2</sup> Due to surgical management it limits patient's functional mobility and decreases patient return to previous level of work.<sup>3,5.</sup>

Soft tissue limitations include hip abductor weakness, anterior knee pain and decreased function with respect to gait.<sup>6,8</sup> Mobility restrictions are very frequent and can be partially related to lack of strength and muscle power. The fractured leg is 20% weaker than the non-functional leg.<sup>4</sup>

## CASE HISTORY

Our case is a 28 year old young boy who had

history of road side traumatic accident. Right Femur shaft fracture with comminution and distal femur medial condyle fracture were shown on x-rays. The proximal and distal joints were unremarkable. ORIF (open reduction internal fixation) of right femoral shaft and medial condyle was performed by orthopedic surgeon. He reported to Physiotherapy department of STH (Shalamar teaching hospital) after a week of surgical management. At this time, knee flexion was limited. Goniometric assessment was performed to measure limited active and passive range of motion.

## TREATMENT

Initially Infra-Red Rays (IRR) and Electrical Muscle Stimulation (EMS) were used to the affected muscles along Knee isometric exercises. Enraf Nonius Endo Laser 422 was used to the affected muscles as a major intervention which accelerated healing and repair in early stages by absorbing hematoma and remodeling of bone. Following parameters were used for the semimembranosis with frequency 10.000Hz,

dose=3J/cm<sup>2</sup> for 2 minutes for the tibial tendon repair frequency was 2,000Hz, dose=0.65J/cm<sup>2</sup> for 2 minutes. The treatment was continued for 4 weeks. After this knee ranges were measured. (Table 1).

The treatment was continued for 4 weeks with non-weight bearing on effected leg. After this knee ranges were measured. (Table1). It will improve circulation by increasing blood flow to the area, reduce stiffness and relief pain.

After 8 weeks of following treatment with patellar

| Knee Flexion | Base line | 4 weeks | 8 weeks | 12 weeks |
|--------------|-----------|---------|---------|----------|
| AROM         | 30        | 50      | 70      | 110      |
| PROM         | 40        | 60      | 85      | 125      |

| Intervention | IRR/EMS | Joint mobilization | Therapeutic exercise |
|--------------|---------|--------------------|----------------------|
| 1-4 weeks    | ✓       |                    |                      |
| 5-8 weeks    | ✓       | ✓                  |                      |
| 9-12 weeks   |         |                    | ✓                    |

mobilizations having grade 1 and 2, knee isometric exercises along partial weight bearing, the patient was re-evaluated on Goniometer. Significant progress was noted in knee flexion range of motion. Grade I - Activates Type I mechanoreceptors at a very low threshold that respond to a small increase in tension. It also activates skin receptors. It will also selectively activate the other receptors i.e., Meissonier's and Pacinian Corpuscles by providing specialized information to central nervous system.

It will improve range of motion by increasing muscle capability and increase in tone .Following treatment along stretching of flexor muscles of right knee were given for 12 weeks and patient progressed from walker to stick towards full weight bearing. Both Active and Passive knee flexion ranges were remarkable improved with manual therapy technique without Continuous passive machine (CPM for knee joint. (Table 2).CPM Machine (CPM) is one of the primary methods for decreasing the effects of immobility,

it provide circulatory effects and prevent physiological and functional deficits.

**DISCUSSION**

Manual mobilization techniques along modalities seemed benefited for the patient suffering from fracture shaft of femur resulting stiffness at knee joint. It took 3 months for the improvement of patient to return his work place. It has been shown that both IRR and EMS were effective treatment in improving muscle strength and relieving pain and stiffness. Surgical management of this kind of fracture affects the patient both physically and mentally. Results showed that a skilled manual physiotherapist can manage post fracture stiffness of knee joint. It took 2 to 3 months. It's of first kind of study nationally and internationally. No literature is available yet.

It will be very useful in outskirts of Pakistan where all necessary equipment for physiotherapy is not available but patients can be treated by manual physiotherapy techniques successfully as shown in results of above mentioned case.

Both Active and Passive knee flexion ranges were remarkable improved with manual therapy technique without Continuous passive machine (CPM for knee joint) and with the use of low level laser therapy it improve circulation ,reduce inflammation, fight with body natural pain killers endorphins and beta enkephalins and relief pain.

**CONCLUSION**

Manual mobilization techniques along modalities infra red ems and low level laser therapy seemed benefited for the patient suffering from fracture shaft of femur resulting stiffness at knee joint.

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**AUTHORSHIP AND CONTRIBUTION DECLARATION**

| Sr. # | Author-s Full Name | Contribution to the paper   | Author=s Signature |
|-------|--------------------|---|--------------------|
| 1     | Farah Shaheen      | Conception, design, collection and assembly of data, statistical analysis, interpretation and drafting of article |                    |
| 2     | Nabira Izhar       | Critical revision and statistical expertise   |                    |