Role of Physiotherapy Treatment in Post Traumatic Fracture Stiff Knee Joint

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ABSTRACT:
The importance of physiotherapy treatment in the post fractured stiff knee joint has been emphasized. This is one of the frequent traumatic conditions in our country. In this study 12 patients (2 female and 10 male) between the ages of 18 to 55 years were investigated, in which 5 patients were treated conservatively (closed reduction) and 7 had an open reduction. After the orthopedic management, the physiotherapy treatment was incorporated with electrotherapy, isometric & isotonic exercises etc. Results were recorded as excellent, good and fair on the basis of improved range of motion. Out of 12 patients, 5 patients (41%) had an excellent result, 5 patients (41%) had good, and 2 patients (16%) had fair results.

Keywords: Range of motion, open reduction, Isometric and Isotonic Exercise

Introduction:
Severely restricted extensor mechanism is recognized as one of the chief complications of the trauma or operative procedures around the knee joint¹. A large proportion of these cases presented with adhesions around the knee joint and the management of these cases then becomes a challenge¹. Tibial plateau fractures involve the knee joint and usually result from axial loading in combination with varus/valgus stress forces². Most common causes are fall from a height and road traffic accident ³. Physical therapy treatment is very helpful in regaining the lost biomechanics of the knee joint after conservative and open reduction management and helps the patient to regain full functional status as soon as possible ⁴. Surgical measures are wide-ranging with significant possibility of morbidity, and often require post surgical immobilization which is contrary to the idea of early rehabilitation efforts. Some of the secondary complication of surgical procedures is deep wound infection, septic arthritis, sloughing of skin postoperatively, and decreased muscular strength, with decrease in ROM ⁵, ⁶, ⁷, ⁸, ⁹, ¹⁰, and ¹¹.

Post surgical stiff knees are characteristically observed because of prolonged immobilization of the joint, as immobilization is indispensable for the remedy of any fracture. Arthroscopic aided procedures simplify the diagnosis of deformity or stiff joints ¹², ¹³. Physiotherapy treatment is also helpful to holdup the post-traumatic degenerative changes and aims towards instant restoration of normal joint function. The aim of present study was not only to determine the role of physiotherapy in prevention of secondary complications osteoarthritis changes but also to minimize the possibilities of deformities.

Interventions:
During this study we implement a number of different therapeutic modalities like heating pad, therapeutic ultrasound, and infra red rays. These modalities are specialized to release contracture, muscles relaxation, stimulating sensation in the skin, thus increasing the flexibility and decreasing the painful stiffness.

Heating pad:
It is the easiest method to get the non-luminous infra red radiation used to manage pain and joint stiffness. Local application of heat causes the blood vessels in that area to expand or dilate, enhancing penetration to the focal tissue.

Therapeutic Ultrasound:
The efficacy of therapeutic ultrasound has been
proved not only by physiotherapist but also by orthopedic specialists in a research survey. Therapeutic ultrasound is mainly used to combat soft tissue inflammation, increased tissue extensibilities, enhance scar tissue remodeling, increase soft tissue healing, and to minimize pain.

**Infra Red Rays:**

Infra red rays (thermo-therapy) efficiently facilitate the blood flow without exerting over load on the heart and raises the level of oxygen and white blood cells in blood.

**Therapeutic Exercises:**

- Following exercises were practiced on the patient after electrotherapy sessions.
- PNF Stretching 10-15 mins are given to the patient in side lying position, prone lying position, and supine lying position.
- Isometric and isotonic exercises were given to quadriceps, hamstring and gluteal muscle groups.
- Isotonic exercises are heel slide, quadriceps drill, Short Arc Quads, ankle pumping, hamstring isotonic and cycling.
Outcome Measure:
The range of motion was assessed with the help of Goniometer.

Results:
Patients showed significant improvement after physiotherapy sessions. Five patients (41%) showed an excellent progress, 5 patients (41%) had a good end result, and 2 patients (16%) had fair results. The closed reduction treatment showed excellent outcomes as compared to other treatment measure. In case of open reduction (screw and internal fixation implantation) 5 patients had good results and 2 had fair results. Results also depended on the patient’s response during stretching, other exercises, and home program.

Discussion:
Prolonged immobilization (for several weeks or months) of the knee joint can cause inflexibility and decreased range of motion. Flexion contracture (loss of extension) is labelled more devastating as compared to flexion contracture. In extension deficits impeding normal walking. However restriction in flexion is a serious problem in our country as our social and religious get-together are composed by sitting on the ground as a usual obligation of everyday life. Regardless of advancement in orthopaedic for fracture management and non availability of expert medical help at the right time results in many people with stiff knees. Flexion loss is mostly due to intra-articular fibrosis and scarring in the extensor mechanism. For normal gait pattern 60-70 degree flexion is necessary and to get up from sitting position and 110 degree of flexion is necessary in both knees. The first aim of the
Physiotherapy treatment is to achieve the flexion ROM to 60 degrees so that the patient can ambulate, and later on to 110 to 120 degrees than further. Knee stiffness after surgery also results in weakness of hip musculature like hip flexors, hip extensors, hip internal rotators, and hip abductors due to disuse for several weeks and months. Stretching of external rotators also results in improve gait training and patient feeling much relaxed and confident as external rotators may get tight. Prolong immobilization causes marked decrease in muscle power for which physiotherapy treatment is of great importance. Quadriceps weakness is the major setback and this can be dealt with by the constructive physiotherapy and a motivated patient.

Conclusion:
Knee fracture is highly challenging for gaining range of motion. Early and complete recovery comprises of 15 to 20 days, for which physiotherapy is very helpful to regain range of motion and power of the muscles around the knee joint. Therapeutic exercises (stretching, isotonic and isometric) showed good results to regain range of motion. Those patients who do not take physical therapy treatment develop early degenerative changes.

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