

## Assessing Recovery of a Patient with Grade Iii Knee Osteoarthritis to Grade I a following Advanced Physiotherapy Machine (P.E.M.F), Dry Needling and Conventional Physiotherapy Exercises

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**DOI:** 10.31080/ASOR.2023.06.0775

**Received:** May 22, 2023

**Published:** June 21, 2023

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### Abstract

One of the main causes of disability and a prevalent disease among the elderly is osteoarthritis (OA). The prevalence of knee OA is growing as the general population's average age rises [2].

**Keywords:** P.E.M.F; OA Knee; Knee Pain; Advanced Physiotherapy

### Introduction

OA knee not only affects the underlying cartilage but may progress gradually to involve the entire joint including the subchondral bone, capsules, ligaments, synovial membrane, and periarticular joint.

In Grade III OA Knee, knee joint completely loses its cartilage and soft tissue structure. This may present with joint pain, swelling and disability in walking.

### Case Presentation

This is a case study of a 56 year old female Mrs. Dipti Mehta with history of Diabetes (HbA1C- 9.5) presenting with complaints of knee stiffness, knee swelling, knee pain, inability to walk and decreased knee flexion. X-ray showed grade III degeneration of both knee joints (R > L).

### Discussion

#### Definition

Grade I OA knee symptoms include very slight bone spur development. There may be a small amount of cartilage loss. [3] Whereas, Grade III OA Knee is defined as chronic disorder of synovial joints in which there is progressive softening and disintegration of articular cartilage and bone at joint margins (osteophytes), cyst

**Figure 1:** X-ray report of grade III OA of Rt. & Lt. Knee of the patient before starting the physiotherapy treatment line (08/10/2021).

formation and subchondral sclerosis, mild synovitis, and capsular fibrosis.

#### Types of OA

- **Primary OA:** It occurs in the joint in old age mainly in weight bearing joint. It is more common than secondary OA.
- **Secondary OA:** There is an underlying primary disease of joints such as Rheumatoid arthritis, fibromyalgia, or any other autoimmune disorder.

- **Investigations:** X-ray and MRI showing degenerative changes in the joint.

### Treatment

The patient was given

- Advanced physiotherapy machine P.E.M.F - 25 sessions [1]
- Pulsed Electro Magnetic Field therapy, or PEMF, involves applying strong, pulsed energy waves to regions of the patient's body that have been hurt or damaged. PEMF therapy works by increasing oxygen pressure and blood flow, which activates and regenerates cells. PEMF promotes calcium transport for greater calcium absorption in bones, which speeds up the healing of fractures and strengthens joint cartilage, both of which reduce pain. Because they reduce inflammatory reactions at the level of the cell membrane, magnetic fields may be helpful in the treatment of osteoarthritis [1].
- Conventional physiotherapy knee exercises - 20 sessions
- The primary muscle groups of the body should be stretched and/or strengthened as part of standard exercises used in traditional physiotherapy [4]. The patient was being treated with quadriceps statics, hamstring stretch, strengthening exercises like Vastus Medialis Oblique muscle (VMO) exercises, dynamic quadriceps strengthening, etc.
- Dry needling - 3 sessions
- Myofascial trigger points cause discomfort and mobility problems that can be treated by dry needling [5]. In this case, dry needling was performed in and around knee joint areas for pain relief and to improve range of motion (ROM).
- Manual therapy glides - 10 sessions
- For OA knee, manual therapy is frequently utilised as a form of physical therapy. Mulligan mobilisation and Maitland mobilisation are two manual therapy techniques used to treat OA. Additionally, manual treatment has a role in restoring or maximizing ROM improvement for patients with range of motion (ROM) impairment. [6] Here, Mulligan mobilization was used on the patient.

### Conclusion

After the patient was placed on

- Advanced physiotherapy machine P.E.M.F (Pulse Electromagnetic Fields)- helped in reducing inflammation, relieving pain, regeneration of cartilage, and increasing joint space.
- Dry needling- resulted in decreasing inflammation, swelling and pain.
- Conventional physiotherapy exercises- helped in strengthening the muscles of knee joint.
- Mulligan glides- resulted in increased range of motion.

This physiotherapy treatment line resulted in improvement in medical symptoms related to OA knee. Within 45 days, patient was relieved of symptoms such as knee pain, knee stiffness, and increased knee flexion ROM (range of motion). She was also able to walk without support for longer distances. X-ray showed phenomenal changes in joint space in 45 days.

### Comparison of X-rays of pre- and post- physiotherapy treatment line

**Figure 2:** X-ray report of grade III OA of Rt. & Lt. Knee of the patient before starting the physiotherapy treatment line (08/10/2021).

**Figure 3:** Report of grade III OA of Rt. & Lt. Knee of the patient before starting the physiotherapy treatment line (08/10/2021).

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