

A Study on Effectiveness of Low Level Laser Therapy and McConnell Taping in Subjects with Infrapatellar Bursitis

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Abstract:-

➤ Background :

Infrapatellar bursa, is located just below the kneecap to essentially reduce the friction between structures such as muscle, tendon, and skin to slide over bony surface without catching, during the weight bearing activity. Infrapatellar bursitis is one the common bursitis seen in the knee joint due to repetitive strain and irritation to the patella tendon, often from jumping activities. This condition mainly interferes with daily activities like walking, and long standing.

➤ Aim:

To find out the combined therapeutic effects of low level laser therapy and McConnell taping in improving pain reduction and range of motion (functional activity) in subjects with Infrapatellar bursitis.

➤ Methodology:

A Convenient sample of subjects with Infrapatellar bursitis was taken from Saveetha medical college and hospital and the subjects were divided into two groups, Group-1(control group) who were diagnosed with Infrapatellar bursitis and were subjected to ultrasonic therapy for 15 minutes along with McConnell taping, Group-2(Experimental group) who were diagnosed with Infrapatellar bursitis and were subjected to low level laser therapy for 15 minutes along with McConnell taping to reduce the pain more effectively. Post-test NPRS were taken and documented for statistical analysis.

➤ Outcome measures:

Numerical pain rating scale for knee pain.

➤ Results:

Statistical analysis was done to identify the difference between pre and post test measurements by paired t-test analysis. The two-tailed p-value is less than 0.0001 by this difference it is considered to be statistically significant.

➤ Conclusion:

The combination of low level laser therapy and along with McConnell taping was effective in pain reduction in subjects with Infrapatellar bursitis.

Keywords:- Knee Bursitis, NPRS, Low Level Laser Therapy, McConnell Taping.

I. INTRODUCTION

Knee osteoarthritis is one of a common entity in every occupational groups. Among that, knee bursitis is found to show some demanding quality of symptoms found only on the people who perform activities related to kneeling. A bursa is a thin sack filled with synovial fluid, which reduces the friction between the structures by lubrication. ^{1,2}

Infrapatellar bursae of the knee is most commonly subjected to inflammation due to repetitive strain and irritation to the patella tendon, often from jumping activities. It can occur conjunctively with a condition called jumpers knee. Bursitis being an inflammatory condition is due to the constant irritation of the weight of the body in a smaller area of kneeling posture. Classically found in people attaining frequent and sustained kneeling postures. Squatting activities also contribute to the bursitis of knee in addition to kneeling where inflammation is accompanied by swelling. ³

Kneeling is one of the fundamental position where the person is exerting pressure over a small area of the knee. When weight is transferred over the reduced cross-sectional area there is no place as such to bring about the activities of synovial fluid, leading to synovial effusion. When the position is maintained for hours together example in carpet workers; ⁴ causes collection of synovial fluid in the membrane which in turn causes pain. KB is mainly due to micro trauma in the bursa of the knee in strenuous activities in the work related environment. The prevalence of knee bursitis as a cause among every osteoarthritis patient's is 1:4. One in every four patients develop bursitis of the knee. ⁵⁻⁷

Normally for reducing the symptoms and improving the functional activity ultrasound is used as an effective

treatment in Infrapatellar bursitis.^{8,9} .Now recently Infrapatellar taping techniques are designed to unload and support the infrapatellar fat pad of the knee, correct abnormal patella alignment and subsequently reduce stress in the knees fat pad during activity this can be used both for the treatment and prevention of knee injuries, particularly those associated with an irritable fat pad or abnormal patella tracking causing impingement.^{10,11} McConnell, taping creates an active medial patella stabilizer, The vastus medialis oblique (VMO) muscle, could be activated through taping, thereby stabilizing the joint in opposition to the lateral pull of the remainder of the quadriceps muscle.¹²⁻¹⁴

Also Low level laser therapy was found to be very useful treatment for the knee bursitis. Its is applied to the injured areas, inflamed tissue for promoting cellular repair by energizing the body cell's. Treatment with Low level laser therapy breaks down inflammation in the bursae and soft tissue surrounding joints. Laser therapy for bursitis works by improving circulation, influencing healing factors and reducing inflammation at the cellular level. For this therapeutic purpose Class IV (cold lasers) are specifically designed to heal the pain and irritation. This type of lasers have Anti-inflammatory effects, helps in repairing connective tissues, and also release pain-relieving endorphins. Usually low intensity lasers are used therapeutically for their non thermal effects.

The main properties of laser is to reduce pain by temporary inhibition of nerve conduction in nerve fibres. To Promote tissue repair by increasing tissues proliferation to improve healing process. The aim is to conservatively reduce inflammation which contributes to pain in the bursae and soft tissues surrounding in subjects with infrapatellar bursitis. So Laser therapy is found to have an effect on prostaglandin synthesis which helps to increase Resolution of inflammation and thus leading to lasting pain relief.¹⁵⁻¹⁹

II. OBJECTIVE OF THE STUDY

To find out the therapeutic effects of low level laser therapy and McConnell taping and to reduce pain and inflammation in subjects with Infrapatellar bursitis.

III. METHODOLOGY

A convenient sample of subjects were solicited from the Saveetha College of Medical and Technical Sciences on a randomized control trial. The study was to investigate the therapeutic effects of low level laser on knee bursitis where the pain and joint effusion causes further functional limitations. The study comprises of two groups, Experimental and control group with 15 patients in each group. Pain and swelling of the joint must be quantifying to decide the mode of treatment to each patient. The change in pain level after the intervention was noted and recorded by Numerical pain rating scale.

IV. PROCEDURE

A total of 30 subjects will be selected using convenient sampling technique based on inclusion and exclusion criteria. The study will be explained to the patients and written consent will be obtained from the subjects. Subjects will be allocated in two groups, control group (group A- 15) and Experimental group (group B- 15).

Group-1 (Control group) who were diagnosed with infrapatellar bursitis of knee were given McConnell taping and Ultrasound therapy (Conventional Treatment). Experimental group will be treated with low level laser along with conventional treatment (McConnell taping with Ultrasound therapy). Low level laser which has been found to give better healing in patients with inflammation, the post test NPRS and Functional outcome measures were documented for statistical analysis.

❖ Selection Criteria:

➤ Inclusion Criteria

- Age – from 40 to 60 years
- Gender– male
- Pain with a borderline score of 6
- Pain lasting for 6 weeks

➤ Exclusion Criteria:

- Patellofemoral pain syndrome
- Plica syndrome
- Knee deformities and bursitis
- Intra-articular pathology (Osteoarthritis, Rheumatoid arthritis)
- Traumatic injuries (Injured ligaments, Meniscal tears, Patellar fractures/ luxations)

V. RESULTS AND DISCUSSION:

The result of the study confirms the hypothesis that gluteal strengthening was beneficial in reducing pain and improving functional activities in patients with knee osteoarthritis.

Some of the local factors such as altered mechanics of the knee joint and impaired quadriceps function may be the contributing factors for improper loading and improper weight transfer in the knee joint and surrounding tissues leading to discomfort. Even altered mechanics of the proximal and distal joints leads to increased pain and instability.

The study Found to reduced knee joint pain due to osteoarthritis substantially where all the subject experienced a relief in pain and improve in their functional activities. Their limitations were reduced thereby increasing the joint mobility.

In this study the NPRS values were found to reduce largely and healing was also faster than other modalities. Low level laser being a modality which induces faster healing within

the cells when given regularly, had been another finding in the study.

Many studies proved that low level laser helped in the models to both reduced the pain and improve healing, which had a combined effect on the osteoarthritis knee. Being one important measure of self healing it induced the granular tissue proliferation.

Thus this study was done to evaluate the effects low level laser on patients with osteoarthritis aged between 40 to 60 years. This study showed that 2 weeks of intervention on the Group B significantly reduced the pain and improves the functional ability when compared with the conventional group.

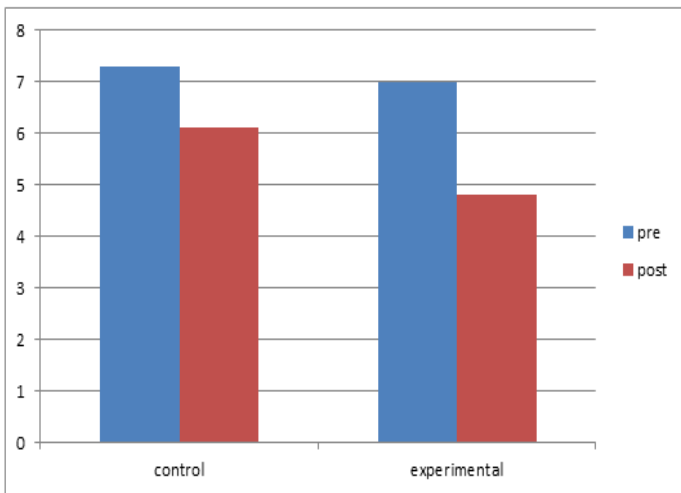


Table 1:

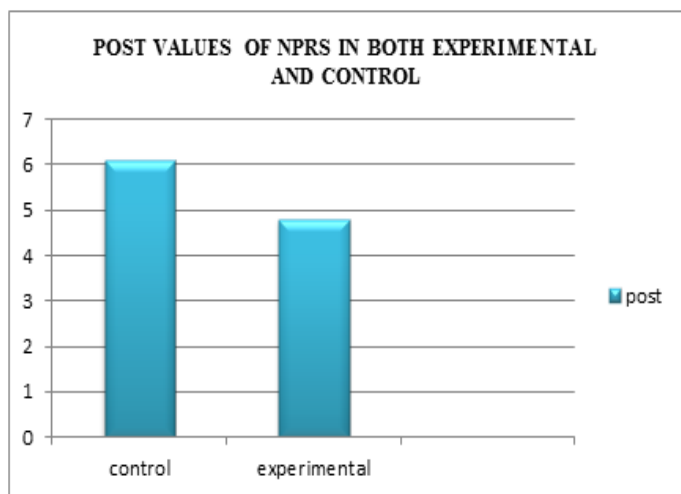


Table 2:

VI. CONCLUSION

In this study it is therefore concluded that the combined effects of low level laser therapy and McConnell taping is useful in improving pain reduction in subjects with Infrapatellar bursitis.

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