



EFFECT OF POSITIONAL RELEASE TECHNIQUE VERSUS DEEP TRANSVERSE FRICTION MASSAGE ON GLUTEUS MEDIUS TRIGGER POINT IN MECHANICAL LOW BACK PAIN – A COMPARATIVE STUDY

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ABSTRACT

Background and Purpose: Myofascial trigger points are extremely common and Gluteus Medius is one of the muscle which undergoes shortening and reduces hip range of motion, cause pain and affects lumbo-pelvic stability. This study aims to compare the effect of Positional Release Technique and Deep Transverse Friction Massage on gluteus medius trigger point to see which technique is more effective in reducing mechanical low back pain.

Methods: 30 subjects were randomly divided into two treatment groups and were given Positional Release Technique (Group A) and Deep Transverse Friction Massage (Group B).

Results: Significant decrease in VAS, ODI and PPT (Pain Pressure Threshold) values ($p < 0.05$) in group A.

Conclusion: Positional Release Technique is better choice of treatment in relieving mechanical low back pain by treating gluteus medius trigger points.

KEYWORDS : Gluteus Medius muscle, Myofascial Trigger Points, Positional Release Technique, Deep Transverse Friction Massage.

INTRODUCTION

Low back pain is extremely common in general population and is defined as tiredness, discomfort or pain in low back region, with or without radiating symptoms to the leg or legs. It is characterized as acute, subacute and chronic low back pain. Back pain affects about 85% of population and is the most common disability in those under age of 45. It is the most expensive health problem a physiotherapist treats in daily basis^[1].

Mechanical Low Back Pain

Mechanical low back pain is defined as pain resulting from inherent susceptibility of the spine to static loads due to muscle and gravitational forces and to kinetic deviation from normal function.

Myofascial Trigger Points

Myofascial trigger points are extremely common and become a painful part of nearly everyone's life at one time or other. Travell and Simons define a myofascial trigger point as "A hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. The spot is painful on compression and can give rise to characteristic referred pain, referred tenderness, motor dysfunction and autonomic phenomenon"^[2].

Gluteus Medius Trigger point sites and patterns of pain referral

The trigger points in the muscle quadratus lumborum and gluteus medius are frequently found in low back pain^[2]. Trigger points in the gluteus medius muscle refer pain and tenderness along the posterior crest of the ilium, to the gluteal (posterior and lateral aspect) and sacral regions which is commonly identified as low back pain or lumbago^[2].

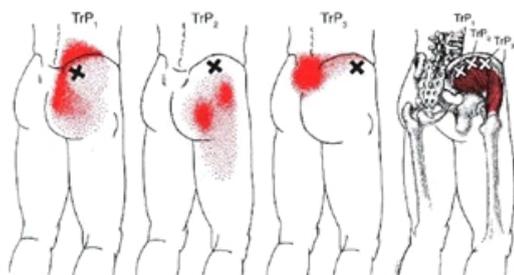


FIGURE 1: Gluteus medius trigger point sites and patterns of pain referral

Physiotherapy Management of Mechanical Low Back Pain

Physiotherapy plays a major role in the management of mechanical low back pain. The common treatment methods employed for the management of back pain is conventional physiotherapy having modalities to reduce the pain and the exercises to enhance the ADLs to treat the back pain purely of muscular origin various manual therapy techniques are applied.

Positional Release Technique (PRT) and Deep Transverse Friction Massage (DTFM) are such techniques which are individually applied to gluteus medius trigger points and significant difference in pain reduction is well obtained. Various studies are done using both the techniques for easing the low back pain and the results are surprisingly good enough. Hence as a part of modern manual physical therapy, both techniques are practised widely.

This study aims to compare the effect of Positional Release Technique and Deep Transverse Friction Massage on gluteus medius trigger point to find which technique is more effective in relieving mechanical low back pain.

METHOD

The participants from physiotherapy OPD, Dr. D. Y. Patil College of physiotherapy, Pimpri, Pune were approached and explained about the study. It was performed at the outpatient department and college during working hours from 9am to 5pm. Subjects fulfilling the inclusion and exclusion criteria were selected from target population by simple random sampling. 76 subjects were screened, out of which 30 subjects were included in the study. 2 subjects were excluded from the study. All 30 subjects willingly participated in the study and their written informed consent form was taken. Demographic data of the individual was recorded. Detailed assessment was taken from each individual. Instructions were given to the subjects regarding the techniques to be performed. Proper care was taken in terms of patient's privacy and physiotherapist's safety. The data was recorded in data recording sheets. After recording the demographic data, the following procedure was done.

PROCEDURE

Positional Release Technique Procedure - Subjects were asked to lie prone with the therapist standing on the same side of the trigger point. Once the trigger point is palpated on the gluteus medius, the therapist extend and abducts the hip and supports the patient's leg

on the therapist high until reported pain reduces by 70%. The hip is positioned in marked external rotation for trigger points located posterior to the mid axillary line and in internal rotation for those located anterior to mid axillary line. The position of comfort is held for 90 sec. After the release the subject is put back slowly and passively to the neutral position. The same procedure is repeated for 5 times.

Deep Transverse Friction Massage Procedure - Subjects were asked to lie prone with pillow placed under the thigh of the involved side. Treatment area is cleaned and dried before applying the technique. Treatment is applied by the therapist standing at the side of the patient and is given by thumb after the involved trigger point was palpated on the gluteus medius with the muscle in relaxed and shortened position (hip extension and abduction). Thumb is used by the therapist to apply friction across the fibre of the muscle. Transverse friction is applied with as much pressure as the patient tolerated and the therapist's thumb and the patient's skin is moved together as one. The treatment is applied for 10 minutes.

Patients in the first experimental group (group A) received positional release technique along with traditional physical therapy (stretching of gluteus medius) while the second (group B) received deep transverse friction massage along with traditional physical therapy (stretching of gluteus medius).

Pre intervention measurements of pressure pain threshold using pressure algometer and pelvic inclination using pelvic inclinometer were carried out for each patient. All the subjects received interventions in alternate days for 3 days. The readings were measured on 1st day prior to treatment and the final reading was taken on the last day of treatment. After completion of 3 sessions, outcome measures- Visual Analogue Scale, Oswestry Low Back Pain Disability Index Questionnaire, Pressure Algometer and Pelvic Inclinometer were documented again. Raw data was made on master chart and further analysis was done.

STATISTICAL ANALYSIS

Data was analyzed for its statistical significance using appropriate software. Paired and unpaired t test were used to calculate values for VAS, Oswestry Low Back Pain Disability Questionnaire, Pressure Algometer and Pelvic Inclinometer.

TABLE 1: Pre and Post Mean and p values of Group A

Group A			
Outcome Measures	Pre Mean	Post Mean	p value
VAS	6.27	2.33	< 0.001
ODI	39.233	21.333	< 0.001
Pressure Algometer	1.22	2.97	< 0.001
Pelvic Inclinometer	6.293	6.093	0.248

Table 1 shows mean and p values of VAS, ODI and Pelvic inclinometer were significantly decreased while the p value of pelvic inclinometer was insignificant.

TABLE 2: Pre and Post Mean and p values of Group B

Group B			
Outcome Measures	Pre Mean	Post Mean	p value
VAS	5.80	2.27	< 0.001
ODI	36.887	15.253	< 0.001
Pressure Algometer	1.378	1.695	0.140
Pelvic Inclinometer	6.193	6.233	0.867

Table 2 shows mean and p values of VAS and ODI were significantly decreased while the p values of pressure algometer and pelvic inclinometer were highly insignificant.

DISCUSSION

PRT is a passive and indirect therapy for tissue resistance using the

positioning of the body and sensitivity to identify and monitor the injury. By doing so, it improves the function, relieves the tension and eases the musculoskeletal pain. The fundamental principle of the PRT technique is to determine the ideal position of maximum comfort of articulation, lowering the sensitivity of the painful point. This study demonstrated that; the application of PRT promotes a decrease in pain and muscle tension in the gluteus medius muscle, confirming the assumptions that the PRT seems to relieve the muscle spasm and restore the appropriate painless movement and the tissue flexibility. Also it aids that the relaxation of tensioned muscle fibre promotes the normalization of local vascularization and decreased pain, caused by ischemia.

After comparing the pre and post treatment results of both Group A (PRT) and Group B (DTFM) with the outcome measure of manual pressure algometer, the pain sensitivity in the patients who had received positional release technique was reduced which means that; their pain tolerance capacity increased. Whereas on the other hand, the patients who had received deep transverse friction massage, the pain sensitivity increased and the capacity to tolerate pain was reduced. The reason behind increased pain sensitivity in patients who received deep transverse friction massage is the deep pressure applied to the area of trigger point in the involved region of gluteus medius muscle. This deep pressure caused soreness in that area following treatment session which increased their pain sensitivity. Transverse friction massage involves the application of friction and pressure at depth to the offending lesion which is considered to be the cause of pain or reduced function. As it involves a deep, firm and constant pressure onto the targeted trigger point of the gluteus medius muscle to be maintained for 90 seconds. So it predisposes to develop strain on therapist's thumb or elbow or hand. This is also one of the reasons to discard deep transverse friction massage over PRT.

The use of pelvic inclinometer as an outcome measure in the study did not yielded any specific result in both the groups. Thus it indicates that pelvic inclination does not affect or alter after treatment session in both the groups.

Results of the present study demonstrate that Group A (PRT) showed statistically significant improvement in pressure pain threshold when compared to Group B (DTFM). Positional release technique not only results in the resets of sarcomere lengthening but it also helps in the proliferation of the fibroblast which thereby not only improves the soft tissue healing but also realign the muscle fibres by offering the effective stretching and mobilization to the taut bands. This mechanism could be the reason for better result yielded in the PRT group.

CONCLUSION

This study demonstrates that both the techniques are effective in relieving pain in subjects with gluteus medius trigger point. However; on comparison, Positional Release Technique showed better results to alleviate pain and improve functional measures. Hence the Positional Release Technique is better choice of treatment in improving pain threshold in subjects with gluteus medius trigger point in mechanical low back pain.

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