

To Determine the Potency of Mulligan Mobilisation and Muscle Energy Technique in Sacroiliac Joint Dysfunction: A Solitary Blinded, Arbitrary Scientific Trial

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Abstract:- The Sacroiliac Joint Dysfunction may lead to hypermobility or hypomobility at the joint, resulting in pain and irritation. Patient complains of dull aching pain on the affected side. The pain increases during the activities while turning, sitting, bending or acquired standing posture. The pain gets referred to either groin, gluteal region or the posterior aspect of the thigh. With or without associated numbness, in groin region and pain on one side is more common than bilateral. This Sacroiliac joint dysfunction can be managed conservatively using physical agent modalities such as electrotherapy, laser therapy, ultrasound, longwave, rest, exercises, or using manual mobilisation.

➤ **Purpose of the Study:**

To determine the effectiveness of Mulligan Mobilisation and Muscle Energy Technique in Sacroiliac Joint Dysfunction.

➤ **Material and Method used:**

700 subjects were screened to include 72 subjects with diagnosis of sacroiliac joint dysfunction and further were haphazardly divided into two groups viz. Muscle Energy Technique therapy group and Mobilisation group via block randomization, depending on severity of pain (mild, moderate, severe) using lottery method.

➤ **Results:**

The values of Visual Analogue Scale, Modified Oswestry Disability Questionnaire and Pain Pressure threshold within the group were analysed using Paired t-test and among the groups were analysed using independent t-test.

➤ **Conclusion:**

MET and Mobilisation both techniques are operative in treatment of Sacroiliac Joint Dysfunction.

Keywords: MET (Muscle Energy Technique); VAS (Visual Analogue Scale); MODI (Modified Oswestry Disability Questionnaire); SIJD (Sacroiliac Joint Dysfunction).

I. INTRODUCTION

The sacroiliac joints are part synovial joint and part syndesmosis. The pelvic girdle transfers force from the head, arms, and trunk to the lower extremities while supporting and shielding the abdominal organs. Seven joints are formed by the pelvic bones: lumbosacral, sacroiliac, sacrococcygeal, symphysis pubis, and the hip. (29)

The ability to have movement at these joints is very important. The sacrum is a complex bone formed by the parts of the sacral vertebrae: body, vertebral arches, and costal elements called ala. The sacrum has six articulating surfaces: superiorly with the body and the two articular processes of the fifth lumbar vertebra to form the lumbosacral junction, bilaterally with the two ilia at the sacroiliac joints, and inferiorly with the coccyx. The sacroiliac joints and symphysis pubis have no muscles that control their movements but the muscles do provide the pelvic stability. The symphysis pubis is a cartilaginous joint. The sacrococcygeal joint is a fused line united by a fibrocartilaginous disc. The most efficient manipulation technique, aimed at correcting the dysfunction results in joint improvement as well as periarticular muscle inhibition. (3) In SIJD, numbness, groin pain can occur. Pain on unilateral side is more common. (4) Sacroiliac joint pain is more common in pregnant women (4) SIJD is treated conservatively (electrotherapy, laser therapy, ultrasound, longwave, rest, exercises, and manual mobilisation) (6)

II. METHOD

➤ **Muscle Energy Technique Application:**

The METCp group underwent the MET combined with conformist physical therapy MET was applied for anterior and posterior innominate rotation.

➤ **Mobilisation Application**

The MTCp group received MT combined with conformist physical therapy.

➤ **Objective:**

- To determine the efficiency of mulligan mobilization in SIJD.

- To determine the efficiency of muscle energy technique in SIJD.

➤ *Methodology:*

Sample size - 72 subjects having clinical diagnosis of SIJD were randomly allocated to two groups.

➤ *Study Design:*

Quasi experimental control design.

• *Inclusion Criteria:*

- ✓ participants with medical diagnosis SIJD (posterior innominate and anterior innominate)
- ✓ pain and tenderness at PSIS, Sacral Sulcus, Iliac
- ✓ pain in the paraspinal muscles, gluteal or groin region, and radiating to either leg
- ✓ age between 30-50 years
- ✓ both male and female
- ✓ pain lasting for less than 1 year
- ✓ positive special test for SIJD
- ✓ those willing to participate in the study

• *Exclusion Criteria:*

- ✓ subjects with clinical disorder where therapeutic ultrasound is contraindicated
- ✓ subjects with clinical disorder where therapeutic longwave diathermy is contraindicated
- ✓ dermatitis
- ✓ neoplasm
- ✓ pregnancy
- ✓ acute tuberculosis
- ✓ patients having pre-existing medical conditions such as fractures, inflammatory diseases, pregnancy, inflammatory bowel disease and malignancy.

➤ *Research Design and Ethics:*

The study uses a parallel (non-crossover) design with two groups that are each blinded to the other. In accordance with the degree of pain, i.e., mild, moderate, and severe, a total of 72 suitable participants were randomly assigned via block randomization to the MET and conformist physical therapy group (METCp group), the controlled group, and the mobilisation and conformist physical therapy group (MTCp group), the experimental group. wedges contained odd numbers, indicating a total of three wedges with 12 rows each, according to the 3 ×12 (72) grid. Additionally, each wedge's distribution of subjects was carried out using a computerised sequential randomization procedure. Subjects

were then assigned using an opaque sealed envelope to the control group (METCp) and the experimental group (MTCp).

➤ *Outcome Measures:*

- Visual analog scale
- Modified Oswestry Disability Index
- Calibrated pain pressure algometer

➤ *Arithmetical Examination:*

Statistics was performed using the software IBM SPSS version 29.0.0.0(241)

➤ *Procedure:*

The intervention was carried out once all assessments were finished and baseline measurements were obtained. The METCp and MTCp groups were randomly assigned to participants. Each participant attended three sessions each week for four weeks. We collected demographic information (name, weight, height, and BMI). It was examined for tenderness and ROM. The lumbar ROM was measured using Schober's technique. Manual muscle testing was used to assess both muscle strength and flexibility. To diagnose SIJD, patients completed seated flexion and standing flexion tests, the Gillet test, and the long sitting test. The modified Oswestry Disability Questionnaire was used to measure quality of life and the Visual Analogue Scale was used to quantify pain severity. Using a calibrated digital pain pressure algometer, pain intensity was assessed.

III. RESULT

The VAS, MODI and Pain Pressure threshold within the group were analysed using Paired t-test and among the groups were analysed using independent t-test.

The mean + SD of Group A for VAS variable (baseline) is 5.6 + 2.8 and post treatment is 3.4 + 2.4. The mean + SD of Group A for MODI variable (Starting point) is 24.9 + 11.2 and post treatment is 15.7 + 8.1. The mean + SD of Group A for Pain Pressure variable (Starting point) is 24.1 + 14.5 and post treatment is 32.1 + 18.2. The mean + SD of Group B for VAS variable (Starting point) is 5.4 + 2.5 and post treatment is 3.9 + 2.8. The mean + SD of Group B for MODI variable (Starting point) is 25.6 + 10.3 and post treatment is 20.3 + 11.0. The mean + SD of Group B for Pain Pressure variable (Starting point) is 23.2 + 10.9 and post treatment is 27.3 + 13.0.

Table 1 Data analysis within the Group A

Within Group A						
Variable	Baseline	4 Weeks	S.E. Mean	95% % CI of Difference	t	p Value
	Mean+SD	Mean+SD				
A	5.6 + 2.8	3.4 + 2.4	0.2	1.9 to 2.7	11.3	<.001
B	24.9 + 11.2	15.7 + 8.1	1.3	6.6 to 11.9	7.1	<.001
C	24.1 + 14.5	32.1 + 18.2	1.0	-10.1 to -6.1	-8.3	<.001

Table 2 Data analysis within the Group B

Within Group B										
Variable	Baseline		4 Weeks		S.E.	95% % CI of			t	p Value
	Mean	SD	Mean	SD	Mean	Difference	Lower	Upper		
A	5.4	2.5	3.9	2.8	.2	1.2	to	1.8	9.7	<.001
B	25.6	10.3	20.3	11.0	.6	4.1	to	6.6	8.5	<.001
C	23.2	10.9	27.3	13.0	1.0	-6.1	to	-2.1	-4.2	<.001

Table 3 Data Analysis among the Group A and Group B

Between The Groups											
Variable	Timeline	Group A		Group B		S.E.	95% % CI of Difference			t	p Value
		Mean	SD	Mean	SD	Mean	Lower	Upper			
VAS	Baseline	5.6	2.8	5.3	2.4	0.6	-0.9	to	1.400	0.4	0.691
VAS	4 weeks	3.3	2.4	3.9	2.8	0.6	-1.7	to	0.6	-0.9	0.374
MODI	Baseline	24.9	11.2	25.6	10.3	2.5	-5.7	to	4.4	-0.3	0.794
MODI	4 weeks	15.6	8.1	20.2	11	2.2	-9.1	to	-0.004	-2.0	0.05
Pain pressure	Baseline	24	14.5	23.1	10.8	3	-5.1	to	6.8	0.3	0.777
Pain pressure	4 weeks	32.1	18.1	27.3	13	3.7	-2.5	to	12.2	1.3	0.199

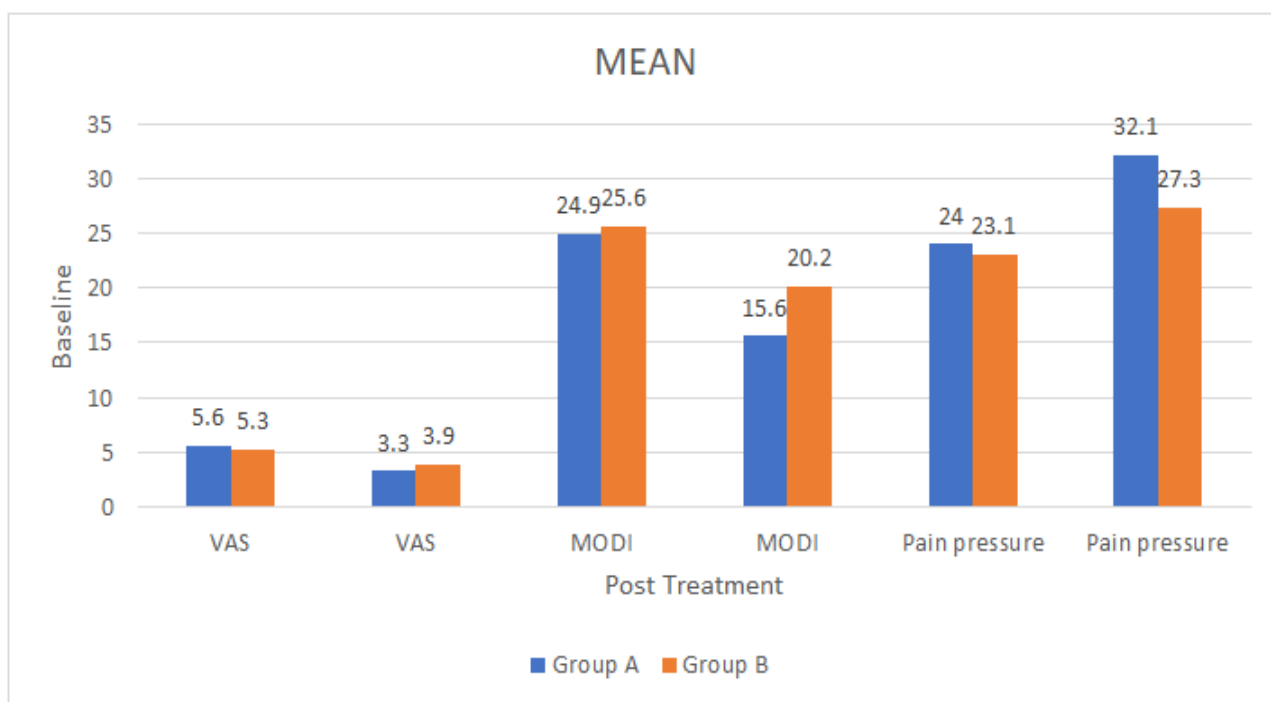


Fig 1 Comparison of Mean Starting Point and Post Treatment among Group A and group B

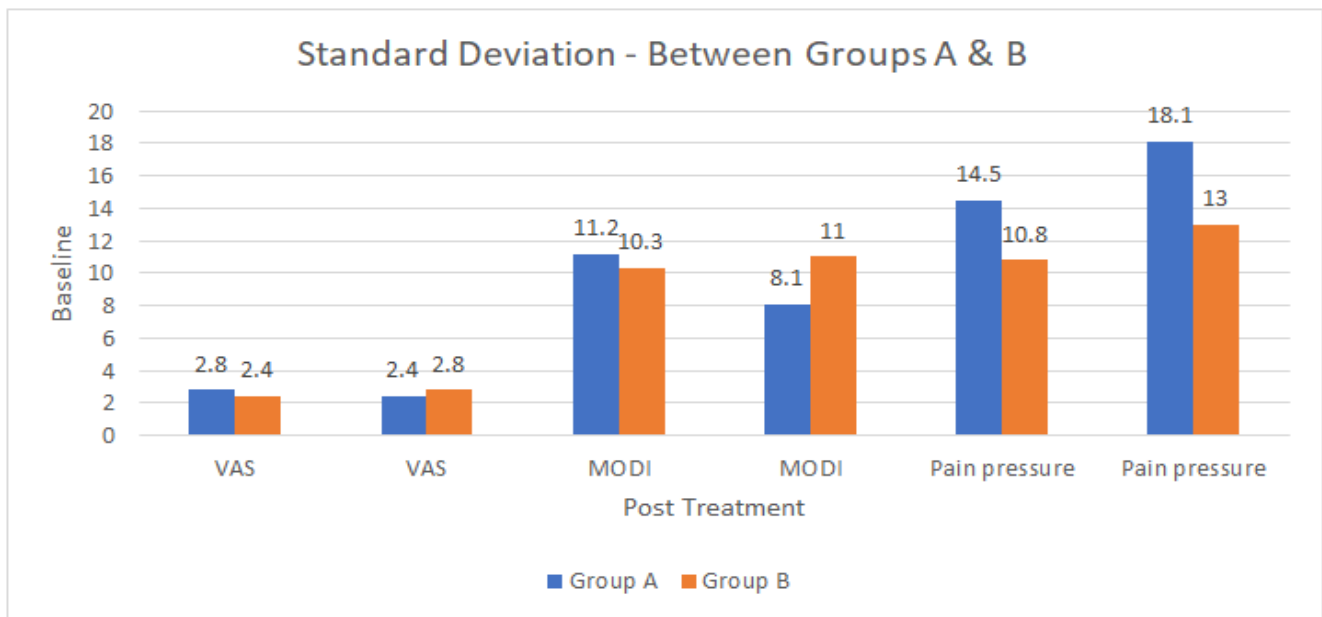


Fig 2 Comparison of Standard Deviation Starting Point and Post Treatment among Group A and Group B

IV. DISCUSSION

In this study, we looked at how pain and disability were affected by MET and MT in patients with SIJ dysfunction. Pre-intervention and post-intervention VAS, MODI, and Pain Pressure thresholds were used to evaluate the subjects twice. The differences found during the study are significant because, while there was a statistically insignificant difference between the readings between Group A and Group B from the first to the tenth day of the intervention, the intragroup evaluation of pain and disability showed a significant improvement in Group A compared to Group B.

V. CONCLUSION

With a high likelihood of being seen in lumbar pain cases, SIJD is an important pathology. Patients with lumbar pain should be evaluated for SIJD, especially if there is no neurological disability, and treatment choices for intervertebral disc diseases should be cautious. MET and Mobilisation both techniques are effective in treatment of SIJD. The single-center clinical trial described here compares the effects of MET and MT in addition to traditional physical therapy on reducing pain and enhancing quality of life in patients with mechanical SIJD.

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- *Source of Funding:* Self Funded
- *Ethical Clearance:* We certify this research was in agreement with the principles stated by ethical committee of Singhanian University.

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