

ORIGINAL ARTICLE

Maitland's Mobilization versus Mulligan's Mobilization Technique to Treat Anterior / Posterior Innominate DysfunctionsShakeel Ahmad¹, Shazia Ijaz², Thamer Altaim³, Sadaf Shafique⁴**ABSTRACT**

Objective: The objective of the study was to compare the efficacy of Maitland's mobilization Technique with Mulligan's mobilization Technique to treat Anterior & posterior Innominate Dysfunctions.

Study Design: It was a Randomized Controlled Trial (RCT).

Place and Duration of Study: The study was conducted in Women Institute of Rehabilitation Sciences (WIRS) Abbottabad from July 15, 2016 to January 10, 2017.

Materials and Methods: Total 48 patients with sacroiliac joint (SIJ) dysfunction of both genders, from 20-60 years were placed into two groups. Patients with sacroiliac joint dysfunction and mechanical low back pain and having 3 out of 5 tests (Distraction test, Compression test, thigh thrust test, Gaenslen's Test and Sacral thrust test) positive for sacroiliac joint were included in the study. The study participants were divided into two groups, Group A received Maitland's Mobilization treatment while group B were treated with Mulligan's Mobilization technique. Three sets of 10 repetitions for each session, 3 sessions per week for 4 weeks were given to both the groups. Pain, disability and lumbar Range of motion (ROM) was assessed before and after treatment through Numeric Pain Rating Scale (NPRS), Modified Oswestry Disability Index (MODI) and Goniometry respectively. SPSS 20.00 was used for data analysis.

Results: At the completion of 4 weeks, patients in Group A who received treatment with Maitland's Mobilization technique showed slightly more (6.181 ± 0.732 to 1.09 ± 1.108) reduction in pain, greater improvement in Modified Oswestry disability index (48.77 ± 14.48 to 10.59 ± 4.90), increase in Lumbar Flexion (43.409 ± 6.737 to 52.63 ± 4.44), and improvement in Lumbar side bending (12.40 ± 4.82 to 18.54 ± 3.93 , 14.5 ± 2.85 to 21.90 ± 3.04), increase in Lumbar Rotation (Rt. Rotation: 13.54 ± 4.055 to 21.6 ± 3.67 , Lt. Rotation: 14.27 ± 3.50 to 20.22 ± 4.04) than group B. Analysis of pre and post treatment for Lumbar extension revealed that Group B had more improvement (16.76 ± 4.194 to 21.76 ± 2.50) as compared to group A. Statistically there was no significant difference between two treatment regimens in the management of pain, to increase ROM, decrease functional disability in patients suffering with anterior and posterior innominate dysfunctions.

Conclusion: It is concluded that both the treatments are equally effective in decreasing pain, disability and increasing range of motion in patients with anterior and posterior innominate dysfunctions.

Key Words: Anterior Innominate, Mulligan's Mobilization, Maitland's Mobilization, Posterior Innominate, Sacroiliac joint dysfunctions.

Introduction

Sacroiliac joint dysfunction (SIJD) refers to any state that alter the range of movements of the sacroiliac

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Funding Source: NIL; Conflict of Interest: NIL

Received: December 03, 2018; Revised: May 01, 2019

Accepted: May 07, 2019

joint either unilaterally or bilaterally that leads to changes in the structural connection between the ilium and the sacrum.¹ Till date, debates continuous to exist over the relationship between the presence of SIJD and the development of new episode of low back pain (LBP).² LBP is considered one of the health conditions that have a huge economic burden. For instance, Dagenais et al³ Conducted a systematic review that examined direct and indirect cost of LBP in different countries. The systematic review suggested that direct costs (healthcare services) in Switzerland were estimated at €2.6 billion. Indirect costs (productivity losses) reached to more than €4.1 billion. The systematic review suggested that

movement limitations due to LBP represented more than two-third of the overall economic burden of LBP. Approximately 70% of people will experience at least one incidence of LBP in their life at any point and high percentage of people who suffer from LBP due to SIJD will seek medical attention.⁴ There are many treatment options for SIJD such as physical therapy, manipulation, laser and chiropractic.⁵

Physical therapy approaches helps in correcting sacroiliac joint dysfunctions manually by restoring the normal balance between muscles of lumbar spine and pelvic. This can be achieved using manual mobilization techniques such as Maitland and Mulligan's mobilization techniques, which are routinely used for SIJD.^{6,7}

Despite the huge number of researches conducted to examine the effect of various manual therapy techniques in the treatment of SIJD, there is an urgent need to compare between various treatments techniques to enable clinicians selects the best available option for patients. Hence the purpose of this study was to compare and determine the effect of Maitland's mobilization techniques and the Mulligan's mobilization technique in individuals with SIJD.

Materials and Methods

This randomized controlled Trial (RCT) was conducted in the clinical setting of Women Institute of Rehabilitation Sciences (WIRS) from July 15, 2016 to January 10, 2017. Ethical approval was taken from Research Ethical Committee of Riphah College of Rehabilitation Sciences. The inclusion criteria was age range from 20 to 60, participants with clinical diagnosis of sacroiliac joint dysfunction and mechanical low back pain, both male and females (except females having any gynecological issue), pain and tenderness at SIJ, participants having 3 out of 5 tests positive for sacroiliac joint dysfunction (Distraction test, Compression test, Posterior shear or thigh thrust test, Pelvic torsion test/ Gaenslen's Test and Sacral thrust test). Participants below 18 and above 60 years, those suffering from ankylosing spondylitis, vertebral fracture and nerve root irritation, inflammatory diseases of vertebral column, any systemic disease, and neoplasm, pregnancy, and bone tumors were excluded. Total 48 patients were screened as per inclusion criteria and randomly allocated to groups through lottery

method in to group A and group B. Group A received treatment with Maitland's mobilization technique in lying position and Group B received treatment with Mulligan's mobilization technique lying in prone position. Three sets of 10 repetitions for each session, 3 sessions per week for 4 weeks for both groups. Intensity of treatment increased as patient's tolerance level increased. Both groups received hot packs for 15 minutes prior to application of respective technique. Data was recorded at base line and after treatment by structured questionnaire which included demographics detail, duration of pain, radiation of pain, previous treatment or physiotherapy, investigations, pain radiation side or side involvement e.g. right/ left or bilateral. Modified Oswestry Disability Index, Numeric Pain Rating Scale and Goniometer were used as assessment tool for functional disability, pain and range of motion respectively. The data was analyzed by SPSS version 20 to draw the descriptive and statistical results. Mann-Whitney U test was applied for between the analyses of NPRS and MODI readings of both the groups and clinical results were made by subtracting the pre mean from post mean values of variables of respective groups.

Results

Total 48 patients met the inclusion criteria, 24 patients in Group A and 24 in Group B. Two patients from group A and 3 patients from group B were dropped because they were not willing to continue their sessions due to personal issues. Twenty two patients in group A and 21 in group B were analyzed for further study. Demographics variables like age and gender are reported in Table-I.

Table I: Participants' Demographic Data (N=43)

Demographics	Group A Maitland's Mobilization	Group B Mulligan's Mobilization
Male	8	5
Female	14	16
Age(years) Means±SD	39.45 ± 9.44	35.66 ± 7.05

Within the group difference showed significant results but when across the group analysis was done, Group A showed slightly more (6.181 ± 0.732 to 1.09 ± 1.108) reduction in pain than Group B Participants (6.047 ± 0.804 to 1.61 ± 1.160). Statistically there was no significant difference ($p=0.51$) between two

treatment protocols, both were equally effective in reducing pain as shown in Table II. The pre and post treatment interventional analysis showed that participants in group A showed greater improvement in modified Oswestry disability index (48.77 ± 14.48 to 10.59 ± 4.90) as compared to Group B (45.523 ± 14.225 to 8.85 ± 3.66), while there was no significant difference in both treatment regimens. Both were equally effective ($p=0.27$) for lowering the level of disability as shown in Table II.

Table II: Pre and Post Values of NPRS and MODI of both the Groups

Study Variables	Group	Pre	Post	P value
NPRS Mean±SD	Group A	6.18±0.73	1.09±1.108	0.51
	Group B	6.04±0.80	1.61±1.160	
MODI Mean±SD	Group A	48.77±14.48	10.59 ± 4.90	0.27
	Group B	45.52±14.22	8.85±3.66	

With regards to pain and disability, Lumbar ROM also showed within group improvement but on comparing the two treatment regimen there was no significant improvement as shown in Fig 1.

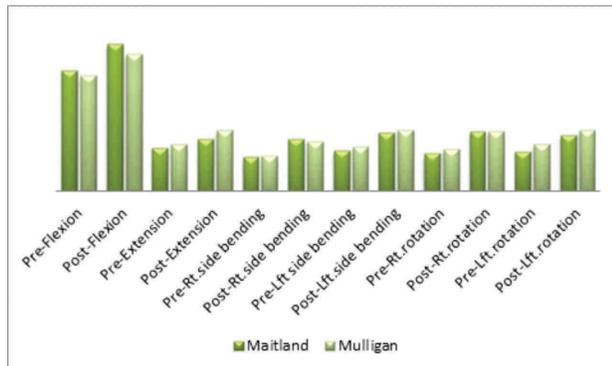


Fig 1: Lumbar ROM pre and post values of both treatment Groups.

Discussion

The purpose of this study was to compare the efficacy of Maitland's mobilization and Mulligan's mobilization for the treatment of anterior and posterior innominate dysfunction.

In the current study both Maitland's mobilization and Mulligan's Mobilization techniques have been used as an intervention for 4 weeks treatment regime to treat the patients with sacroiliac joint dysfunction. Generally results showed that participants in both the groups improved markedly. NPRS and MODI scores decreased while Lumbar ROM increases in both treatment groups.

Furthermore, after the completion of 4 weeks of manual therapy sessions, it was found that clinically Maitland's mobilization was more effective in reducing pain, functional disability, lumbar flexion, side bending and rotation while Mulligan's mobilization was found to be more effective in increasing lumbar extension but statistically no significant difference was found hence both Maitland's and Mulligan's mobilization were equally effective in treatment of sacroiliac joint dysfunctions.

A study by Kenkamph et al., showed that Sacroiliac joint mobilization increases the lumbar range of motion and decreases the pain in patients of mechanical low back pain associated with sacroiliac joint dysfunction⁷ and Kaushik Guha stated that Maitland's Mobilization was an effective treatment for increasing spinal flexibility, decreasing pain and disability in patients of sacroiliac joint dysfunction.⁸ Both these studies favor the finding of this study.

Post treatment score of numeric pain rating scale of this study revealed that both Maitland's mobilization and Mulligan's mobilization were equally effective in reducing pain intensity and the results of this study are supported by the study carried out by Fernandes S.⁹

McCollam et al., in their study found that both Maitland and Mulligan's mobilization techniques were effective in increasing lumbar flexion and extension and similar results were reported in our study.¹⁰

The results of current study revealed that post treatment range of lumbar side bending and rotation for both groups showed that Maitland's mobilization and Mulligan's mobilizations techniques were equally affective in increasing lumbar spine ROM. Samir et al¹¹ in their study found that there was no difference in both treatment protocols and concluded that both the treatment techniques were equally effective in improving lumbar ROM and pain in patients of chronic low back pain however a study by Javaherian et al.¹² Compared the immediate effects of Maitland's mobilization and Mulligan's mobilization techniques on lumber flexion and extension ROM and found that SNAGS improved flexion ROM while Maitland mobilization increased extension more. These results are consistent with the findings of this current study.

In a study Gautam et al compared the effects of Maitland's mobilization with Mulligan's mobilization in neck pain and they concluded that both the mobilization techniques were equally effective in reducing disability.¹³ In the current study score of Modified Oswestry Disability Index for both groups after treatment showed that Maitland's mobilization and Mulligan's mobilization were equally effective in reducing disability.

A study by Khan S et al.,¹⁴ suggested that both techniques SNAG and Maitland's mobilization improved the ROM, decreases the pain and disability of chronic low back pain. Based on these results SNAG and exercise should be the treatment of choice for chronic low back pain rather than Maitland's with exercise. These results are consistent with the findings of this current study.

Another study of Ganesh et al.,¹⁵ in which they compared the Maitland's mobilization and Mulligan's mobilization in mechanical neck pain and found non-significant results and concluded that both techniques were equally effective in treating neck pain no one is superior to another. A study by Khan, et al., was conducted to compare the effects of Maitland's and Mulligan's mobilizations techniques in treating cervicogenic headache, concluded that both the techniques were effective in reducing pain and disability.¹⁶

Conclusion

It is concluded that both the Maitland's mobilization and Mulligan's mobilization treatment techniques were equally effective in decreasing pain, disability and increasing range of motion in patients with anterior and posterior innominate dysfunctions.

Limitations of Study

This study was conducted in a single setting with limited sample size due to non-availability of patients. Lumbar ROM was measured by Goniometer as Inclinator was not available. There was no literature found providing the standard treatment force and time of sacroiliac joint mobilization for increasing lumbar flexibility. Pain pressure threshold for sacroiliac joint dysfunction was not measured due to non-availability of algometer.

Recommendations

Future studies on sacroiliac joint dysfunction should be conducted on larger scale and sample size and

ultimately will enhance the generalizability of results. Longitudinal cohort study design will be of great value as it provides more information about long-term effects of these interventions. Force and time of sacroiliac joint mobilization should be studied on the same population for more accurate findings.

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