

EFFECTS OF LUMBAR SNAG AND MECHANICAL TRACTION IN PATIENTS WITH DISCOGENIC LUMBOSACRAL RADICULOPATHY

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ABSTRACT

Objective: To compare the effects of lumbar sustained natural apophyseal glide and Mechanical Traction in patients with discogenic lumbosacral radiculopathy.

Study Design: Quasi experimental study.

Place and Duration of Study: Kanaan Physiotherapy and Spine Clinic, from Mar to Sep 2020.

Methodology: A total of 44 patients were included in study in 2 groups of 22 each. Patients between ages 30-60 years having chronic radiating pain in one or both legs, patients with minimum of 25 score out of 100, on low back pain index and patients having radiculopathy were included. Exclusion criteria were history of low back pain treatment in last 90. Complications such as cancer, spine pathology and joint disease. Dice roll method was used for group allocation. Group classification was as group 1, sustained natural apophyseal glide group, and group 2, mechanical traction group. NPRS and Oswestry disability index were used. Data analysis was done with SPSS version 21.

Results: There is statistically significant improvement in pain as mean post treatment value for sustained natural apophyseal glide group is 2.55 ± 1.503 and for mechanical traction group is 4.05 ± 1.864 , Oswestry disability index and shober test results in sustained natural apophyseal glide group were also significant as compared to mechanical traction with p -value <0.05 . Although pain was also decreased in mechanical traction group patients but overall sustained natural apophyseal glides were more effective.

Conclusion: Sustained natural apophyseal glide are more effective in the treatment of lumbar radiculopathy patients as compared to mechanical traction. Further studies can be carried out to see the combination of these techniques to have better effects.

Keywords: Discogenic, Lumbar, Radiculopathy, Traction.

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INTRODUCTION

Lumbosacral radiculopathy is common form of lower back pain and hip and it moves from backside of thigh and goes downward into leg^{1,2}. Lower back pain is affecting many people from general population but lumbar radiculopathy affect 3-5% of population³. The compression of nerve roots can cause numbness, tingling, downward going pain and sometimes sharp shooting pain⁴. Radiculopathy is different from nerve root pain or radicular pain⁵.

Mulligan mobilization techniques are quite helpful in treating lumbar radiculopathy. Lumbar Sustained natural apophyseal glide (SNAG's) are very useful to relieve back pain^{6,7}. Positional SNAG's can alleviate symptoms in a single session as compared to other treatment options⁸. Mechanical traction is an effective way to alleviate the radiating pain in legs because of lumbar radiculopathy⁹. Sustained Mechanical traction is more effective than manual traction as it is easy to

apply for long time¹⁰.

Due to advance researches and evidence, role of physiotherapy has been proven the most effective one for long term and short-term effects. It is the question of importance to find out best technique among different manual therapy approaches. This study was an effort in to see if mechanical traction or SNAGs have any advantage over each other in treating lumbar radiculopathy in patients of low back pain.

METHODOLOGY

This quasi-experimental study was conducted at Kanaan Physiotherapy and Sine Clinic, from March to September 2020. Non probability convenience sampling was used. Sample size was calculated through Epitool software by taking mean values (group A mean: 6.3 & group B: 8.2) from previous study⁹. A total of 44 Patients were included in study in 2 groups of 22 each. Participants were included fulfilling following criteria. Both male and female patients between ages 30-60 years having chronic radiating pain in one or both legs were included. Patients having history of low back ache for 30 days in last six months. Minimum of 25 score out of 100, on low back pain index. Radiculo-

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pathy will be basis for inclusion or further screening. Participants were excluded in case of history of low back pain treatment in last 90 days or having contra-indication to spinal manipulative therapy. Complications such as cancer, spine pathology, joint disease (inflammatory), disorders of autoimmune nature, neurodegenerative diseases, organic referred pain, pregnancy, and disability compensation. Patients were evenly distributed to two groups by using dice roll method of randomization. Group classification was as group 1, SNAG group, and group 2, mechanical traction group. It was a single blinded study. Only assessors were blinded. The physiotherapist and the patients were not blinded. Ethics approval was taken from Kanaan Physiotherapy and Spine Clinic Lahore, Pakistan. Outcome measure were Oswestry Disability Index¹², Back pain through NPRS. Schober tests¹³, PSS windows software, version 21 was used for the analysis of data. Statistical significance was set at $p=0.05$. Following statistics were applied. Descriptive statistics (frequency distribution, mean and standard deviation) was used for the summary of measurements of groups and represented by frequency tables, histogram and bar charts. To compare mean difference of the outcome variables between two groups, Independent sample t-test was applied. To see difference at pre and post level among two group separately, paired sample t-test was applied. $p \leq 0.05$ was considered significant. Data was normally distributed. QQ plots were used to assess the normality of all variables. QQ plots showed that pre and post variables were normally distributed with p -value > 0.05 .

RESULTS

Baseline values of socio-demographic data of both groups were comparable on the basis of mean and

standard deviation shown in the tables of demographic data of the participants which showed that baseline values for both groups are not different. The mean age of SNAG group was 47.86 ± 9.829 years while mean age for Mechanical traction group was 47.09 ± 9.566 years. The mean height of SNAG group was 163.64 ± 13.482 m while mean height of mechanical traction group was 166.45 ± 10.070 m. The mean weight of SNAG group was 82.32 ± 16.255 kg while mean weight of mechanical traction group was 76.91 ± 14.826 kg. The mean NPRS pre-treatment value for SNAG group was 6.64 ± 1.590 and for mechanical traction group was 5.32 ± 1.673 while post treatment value for SNAG group was 2.55 ± 1.503 and for mechanical traction group was 4.05 ± 1.864 (table-I). The mean ODI pre-treatment value for SNAG group was 68.68 ± 14.548 and for mechanical traction group was 57.73 ± 18.749 while post treatment value for SNAG group was 26.05 ± 14.411 and for mechanical traction group was 45.64 ± 19.8769 (table-II). The mean shober test score pre-treatment value for SNAG group was 4.164 ± 0.6359 and for mechanical traction group was 5.036 ± 0.6138 while post treatment value for SNAG group was 5.34 ± 0.501 and for mechanical traction group was 5.232 ± 0.3859 (table-III).

DISCUSSION

The study compares the efficacy of SNAGs and mechanical traction in patients with lumber radiculopathy. The results of the study showed that there is significant improvement in pain, Oswestry disability index and shober test results in SNAG group as compared to mechanical traction. Although pain was also decreased in mechanical traction group patients but overall SNAGs were more effective.

Table-I: Across group comparison of numeric pain rating scale (NPRS).

		Treatment Groups		p-value
		Sustained Natural Apophyseal Glide (SNAG)	Mechanical Traction	
Pain At numeric pain rating scale	Pre Treatment (Mean \pm SD)	6.64 ± 1.590	5.32 ± 1.673	0.011
	Post Treatment (Mean \pm SD)	2.55 ± 1.503	4.05 ± 1.864	0.005

Table-II: Across group comparison of oswestry disability index score.

		Treatment Groups		p-value
		Sustained Natural Apophyseal Glide (SNAG)	Mechanical Traction	
Oswestry disability index score (ODI) score	Pre Treatment (Mean \pm SD)	68.68 ± 14.548	57.73 ± 18.749	0.01
	Post Treatment (Mean \pm SD)	26.05 ± 14.411	45.64 ± 19.769	0.005

Table-III: Across group comparison of shober test score.

		Treatment Groups		p-value
		Sustained Natural Apophyseal Glide (SNAG)	Mechanical Traction	
Shober Test Score	Pre Treatment (Mean \pm SD)	4.164 ± 0.6359	5.036 ± 0.6138	0.02
	Post Treatment (Mean \pm SD)	5.341 ± 0.5011	5.232 ± 0.3859	0.004

The current study demonstrated the relief of pain was achieved in patients who underwent SNAG treatment with significant difference in pretreatment mean and post treatment mean. Moreover, patients who received mechanical traction showed improvement in pretreatment mean and post treatment mean. The improvement in pain was seen in both groups but there was more improvement in SNAG group. The results of this study are in accordance with the study done by Bhat *et al.* They saw the effects of spinal mobilization in lumbar radiculopathy and results were in accordance with our study. There was significant improvement in pain with p -value $<0.05^{14}$.

Another study was conducted by Filiz *et al.* Both groups improved significantly in the NPRS, Oswestry Disability Index and modified lumbar Schober test as in current study. SNAG was found to be more effective as far as mean value is concerned¹⁵. It was found that if the lumbar traction is added to other treatments in back pain patients then it can improve pain, disability and functional independence and studies show that traction applied in prone position can be of more value for relieving the symptoms. Although more studies are required to see the long term effects of lumbar traction in prone position. There was no additional treatment given to the subjects in this study¹⁶.

A study conducted by Kumar *et al* finds out the combined effect of lumbar traction, SNAGS and Neurodynamics in radiculopathy patients to improve pain and disability. Significant early improvements were noted in pain, range of motion and functional abilities in patients who received combined treatment. NPRS value decreased as in current study¹⁷.

The results of this study showed that the SNAG treatment is an effective means to reduce disability in patients with lumbar radiculopathy. Minor effectiveness of mechanical traction can also be noted. The results of this study are supported by another study done by Hidalgo *et al*, which showed that lumbar spine SNAGs had a short-term favorable effect on pain, disability and function in patients with nonspecific low back pain¹⁸.

The results of this study showed significant improvement in Shober test scores. Minimum improvement was seen in mechanical traction group and marked improvement was seen in SNAG group. The studies in support of this result cannot be found in literature specifically in lumbar radiculopathy. A lot of work is being done in cervical region. SNAG treatment is an effective way to improve lumbar ranges. These results

were supported by another study done by which concluded that adding SNAG to routine physical therapy programs while treating chronic non-specific LBP may help out in early improvement of pain, positioning error and function¹⁹.

CONCLUSION

Sustained natural apophyseal glides are more affecting in treatment of pain and disability in lumbar radiculopathy patients. Both groups showed improvement but these were more noteworthy in SNAG group.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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