

Comparison of Mulligan Sustained Natural Apophyseal Glides Versus Mulligan Natural Apophyseal Glides in Mechanical Neck Pain

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Abstract:

Background: Mechanical neck pain is a discomfort that rises from posterior aspect of skull and travels towards the lower cervical spine and shoulders. In this discomfort, vertebral arrangements are disturbed and the joints of cervical spine and ribs fails to perform the proper biomechanical movements resulting in decreased mobility, which creates pain. In present study, Mulligan sustained natural apophyseal glides (SNAGS) and natural apophyseal glides (NAGS) were applied in mechanical neck pain subjects to reduce the immobility and pain.

Methodology: A randomized clinical trial with simple random sampling by random number table was conducted. A sample size of 50 (n=50) subjects were taken from physiotherapy department National Hospital Lahore, who fulfilled the selection criteria and were distributed into two equal groups of twenty-five each. The researchers took a prior informed consent from all participants before any inspection or examination. The base line treatment remained same for both groups, which was neck range of motion, strengthening exercises and short wave diathermy (SWD). Group A received Mulligan SNAGS while group B received NAGS. Treatment frequency was three times per week for two weeks⁽¹⁾. Subjects were assessed at the start of the management and at the completion of second week. Whole data were collected using Numeric pain rating scale (NPRS) to assess change in pain intensity and demographic data by constructed questionnaire. The data were analysed using SPSS version 22.

Results: The calculated mean value of pain on NPRS and standard deviation for both groups A & B before treatment was 3.72 ± 0.61373 and 3.84 ± 0.47258 respectively, while after 6 sessions the calculated mean value of pain on NPRS and standard deviation for group A & B was 1.28 ± 0.45826 and 1.92 ± 0.81240 respectively. The calculated “t” value was -3.431 and “p” value 0.001, which was an illustration of statistically significant difference between the mean values of NPRS pre and post treatment in terms of pain reduction.

Conclusion: The study concluded that Mulligan sustained natural apophyseal glides (SNAGS) are more effective than natural apophyseal glides (NAGS) in subjects with mechanical neck pain.

Keywords: *Sustained natural apophyseal glides (SNAGS), Neck strengthening exercises, natural apophyseal glides (NAGS) and short wave dia-thermy*

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Introduction

Mechanical neck pain is a discomfort that rises from posterior aspect of skull and travels towards the lower cervical spine and shoulders. In this discomfort, vertebral arrangements are disturbed and the joints of cervical spine and ribs fails to perform the proper bio-mechanical movements

resulting in decreased mobility, which creates pain. The frequency of neck pain in general population of USA is 20-30% due to faulty postures and work related bad bio-mechanics⁽²⁾.

While describing the reasons of mechanical neck pain (MNP), the excessive mechanical stresses with poor ergonomics, nervousness, sadness and some destructive games or leisure activities was seen⁽³⁾. The presenting signs and indications of neck discomfort includes muscular spasm, feelings of faintness and generalized pain in cervical region, shoulders and arms which leads towards restriction of mobility⁽⁴⁾.

The treatment protocols which are used for MNP are pain killers, muscle relaxants, anti-inflammatory drugs, muscle relaxation trainings (YOGA), manipulation techniques, dry needling, and physical therapy management like muscle energy techniques, stretching and muscle building exercises with physical agents application and posture correction⁽⁵⁾.

In 2016, S,I Hussain et al concluded that NAGS are more effective than Maitland grade I & II mobilizations⁽¹⁾. In 2015 Gross and his colleagues concluded that manual mobilizations with strengthening exercises are very effective for decreasing neck pain and changing their quality of life⁽⁶⁾. In 2014, Abid A. et al concluded that combination of SNAGS and isometric exercises are more beneficial than SNAGS alone for subjects of mechanical neck pain in terms of pain decreasing and improving their life style.⁽⁷⁾ In 2002, a study concluded that manual correction treatments are proven to be the best treatment protocol for management of mechanical neck discomfort⁽⁸⁾.

During literature search, not even a single study proves the effectiveness of Mulligan mobilizations in mechanical neck pain subjects, so it directs the need of future researches to be conducted on this topic.

The main aim of interest under selecting this topic is to find out the clinical effectiveness of mulligan SNAGS and NAGS for the treatment of

mechanical neck pain subjects in order to make them pain free and improves their quality of life.

Methods

This is a Randomized clinical trial(RCT). Simple random sampling technique was performed in Physiotherapy department National Hospital, Lahore. A sample size of 50 patients was obtained.

Subjects of MNP from both genders (male & female) having age 50 years were included in current study and subjects having any traumatic history or radicular pain s were excluded⁽⁹⁾. The concerned subjects were divided into two equal groups of twenty-five. The researchers took a prior well-informed consent from all participants before any inspection or examination. The base line treatment remained same for both groups, which was neck strengthening exercises (10 repetitions twice in a day) and short wave diathermy on continuous mode (SWD). Group A received Mulligan SNAGS while group B received NAGS. Treatment frequency was three times per week for next two weeks⁽¹⁾. Subjects were assessed at the start of the management and at the completion of second week. Data was collected using Numeric pain rating scale (NPRS) to asses change in pain intensity and demographic data by constructed questionnaire.

Data were analysed by using SPSS version 22. Age of the patients were presented in the form of mean and standard deviation. To see the change in pain on NPRS scale, Independent “t” sample test was applied.

Results

The calculated mean age of mechanical neck pain subjects was 44.19 ± 6.13 years and standard deviation was 8.9976. Among fifty subjects, 31(62%) were males and 19 (38%) females.

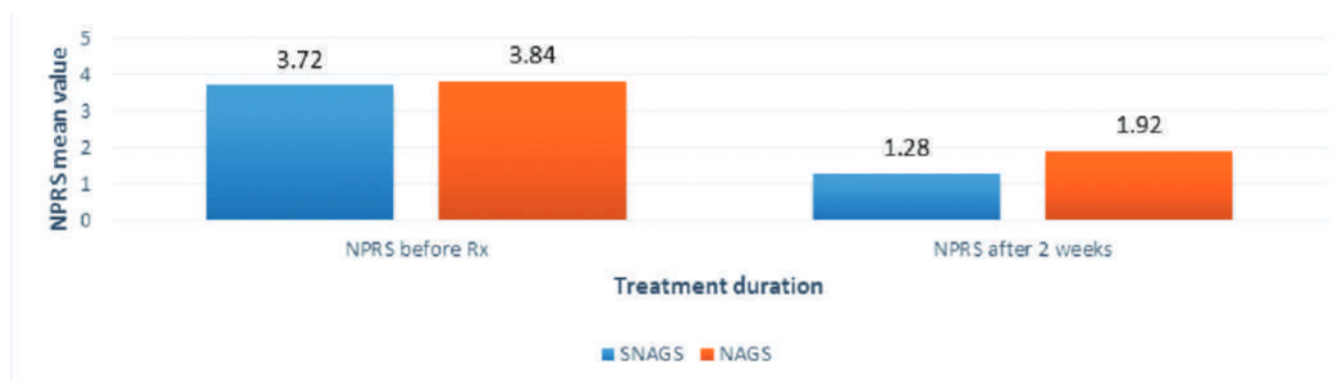
From all subjects, the calculated mean value of pain on numeric pain rating scale and standard deviation for both groups A & B before treatment was 3.72 ± 0.61373 and 3.84 ± 0.47258 respectively, while after 6 sessions the calculated mean value of

Table 1: *Group Statistics*

	Treatment groups	N	Mean	SD	SD Error Mean
NPRS before Rx	Group A (SNAGS)	25	3.7200	.61373	0.12275
	Group B (NAGS)	25	3.8400	.47258	0.09452
NPRS after 2 weeks	Group A (SNAGS)	25	1.2800	.45826	0.09165
	Group B (NAGS)	25	1.9200	.81240	0.16248

Table 2: *Independent Sample 't' test*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
NPRS before RX	Equal variances assumed	2.245	.141	-.775	48	.442	-.12000	.15492	-.43149	.19149
	Equal variances not assumed			-.775	45.057	.443	-.12000	.15492	-.43201	.19201
NPRS after 2 weeks	Equal variances assumed	6.895	.012	-3.431	48	.001	-.64000	.18655	-1.01508	-.26492
	Equal variances not assumed			-3.431	37.869	.001	-.64000	.18655	-1.01769	-.26231

**Fig1:** *Numeric Pain Rating Scale and Treatment Duration*

pain on NPRS and standard deviation for group A & B was 1.28 ± 0.45826 and 1.92 ± 0.81240 respectively. The calculated "t" value was -3.431 and "p" value 0.001, which was an illustration of statistically significant difference between the mean values of NPRS pre and post treatment in terms of pain reduction.

Discussion

Neck pain commonly occurs between 21 to 60 years and its occurrence rate is higher in 45-55 years. Males and females having almost equal tendency to be having neck pain⁽⁶⁾. Life styles are key elements in developing neck disorders with pain as sedentary life style has greater number of cases as compare to active life style⁽¹⁰⁾. The NPRS scale is used to assess the change in pain intensity which remained a helpful tool for collection and evaluating the results⁽¹¹⁾.

The Mulligan concept incorporates a number of mobilising treatment techniques that can be applied to the spine, these include 'NAGs' (natural apophyseal glides), 'SNAGs' (sustained natural apophyseal glides), and 'SMWLMs' (spinal mobilisations with limb movements)⁽¹²⁾.

McKenzie exercises were clinically slightly more effective in the management of pain and disability as compared with Mulligan SNAGs, while Mulligan SNAGs are more effective in the improvement of lumbar ROM as compared with Mechanize exercises in the management of chronic low back pain⁽¹³⁾.

A comparative study was done to find out the Effects of Stabilization Exercises and Manual Therapy in Nonspecific Mechanical Neck Pain. The results of this study suggest that stabilization exercises with manual therapy may be superior to stabilization exercises alone for improving disability, pain intensity at night, cervical rotation motion, and quality of life in patients with MNP⁽¹⁴⁾.

A randomized placebo-controlled trial was conducted to see the effects of Mulligan mobilization with movement on pain, disability among

nonspecific low back pain patients which proved lumbar spine SNAGs had a short-term favourable effect on pain and functions⁽¹⁵⁾.

Hence the current study proved that Mulligan mobilizations (SNAGS & NAGS) are both effective but SNAGS are more beneficial in management protocols of neck discomfort.

Conclusion

The study concluded that Mulligan sustained natural apophyseal glides (SNAGS) are more effective treatment approach than natural apophyseal glides (NAGS) in subjects with mechanical neck pain.

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