



## RESEARCH ARTICLE

# EFFECTIVENESS OF CERVICAL TRACTION ON PAIN AND DISABILITY IN CERVICAL RADICULOPATHY

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### ABSTRACT

**Background:** Cervical radiculopathy is a common clinical diagnosis classified as a disorder of nerve root and is a pathologic process which has been defined as pain in the distribution of a specific cervical nerve root (Rai *et al.*, 2013). A multitude of physical therapy intervention has been proposed in the management of cervical radiculopathy, including mechanical cervical traction, manipulation, therapeutic exercises and modalities in which some says is effective and some say not effective. Therefore the aim of the study is to find out the effectiveness of cervical traction along with conventional therapy in the management of cervical radiculopathy.

**Methods:** 30 Patients were assigned randomly into two groups, each group consisting of 15 Patients. Group A received TENS and cervical neck exercises. Group B received TENS, cervical neck exercises and intermittent cervical traction. Assessment was done on Day0 and follow up at 2<sup>nd</sup> and 4<sup>th</sup> week by using Neck disability index (NDI) and Numeric Pain Rating Scale (NPRS)

**Results:** At 2<sup>nd</sup> week, evaluation showed that there is significance difference ( $P < 0.05$ ) between the two groups for all the variables measured. At 4<sup>th</sup> week evaluation of both groups showed a very high significance ( $P < 0.05$ ) within the group for all the outcome measurements. Comparison of measured variables between the groups showed that the Group B demonstrated a statistically significant ( $P < 0.05$ ) reduction in NPRS and NDI.

**Conclusion:** It is concluded that even though TENS and neck exercise are effective, the addition of intermittent cervical traction with TENS and exercise is even more effective in the management of cervical radiculopathy.

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### INTRODUCTION

Cervical radiculopathy is a common clinical diagnosis classified as a disorder of nerve root and is a pathologic process which has been defined as pain in the distribution of a specific cervical nerve root (Rai *et al.* 2013).

The average annual incidence of cervical radiculopathy is 83.2/100,000 persons, while the average prevalence is 3.5/1000 persons. Individuals are most commonly affected in the 5th and 6th decades of life (Rodine *et al.*, 2012).

Cervical radiculopathy primarily results from an inflammation of cervical nerve root induced by a lesion reducing the intervertebral foramen.

A multitude of physical therapy intervention has been proposed to be effective in the management of cervical radiculopathy. However, outcome studies using consistent treatment approaches on well-defined samples of patients are lacking (Cleland *et al.*, 2005). Although many studies (Young *et al.*, 2009, Cleland *et al.*, 2006 and Chatman *et al.*, 1997) have been

conducted to study the efficacy of cervical traction, yet the results of these studies are controversial. Despite its common use, clinical trials that have examined cervical traction have not found the intervention to be superior to other strategies (Clin *et al.*, 2013).

As there are many controversies and unclear results with the use of intermittent cervical traction in cervical radiculopathy, the purpose of this study was to see a clear result of the effectiveness of intermittent cervical traction on pain and disability in patients with cervical radiculopathy along with conventional Rehabilitation program with specific protocol.

### MATERIALS AND METHODS

The study was approved by Research and Ethical committee of University College of Physiotherapy, Faridkot. 30 Patients were included in the study with cervical Radiculopathy diagnosed by Department of Orthopedics, Guru Gobind Singh Medical College & Hospital, Faridkot who were referred to OPD of University college of Physiotherapy

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**Inclusion criteria**

- Both males and females were included.
- Age 45-65 years.
- Unilateral upper extremity pain, paresthesia or numbness.
- Neck disability index score of 10 or greater
- 3 of 4 tests of clinical prediction rule positive (Wainner et al. 2003).
- Spurling test
- Distraction test
- Upper limb tension test-1
- Ipsilateral cervical rotation less than 60<sup>0</sup>

**Exclusion Criteria**

- History of previous cervical or thoracic spine surgery
- Bilateral upper-extremity symptoms
- Cervical trauma
- Shoulder and elbow musculoskeletal problems
- Fracture of spine and upper limb
- Rheumatoid arthritis
- Osteoporosis
- Current use of steroidal medication prescribed for radiculopathy symptoms.

**Intervention**

30 Patients, both male and female who fulfilled the inclusion criteria were taken and were divided into two groups, Group A and Group B. Patients were assessed at Day 0 and follow up at 2<sup>nd</sup> week and 4<sup>th</sup> week with the help of Neck Disability Index (NDI) and Numeric Pain Rating Scale (NPRS).

**Group A. (Control Group)**

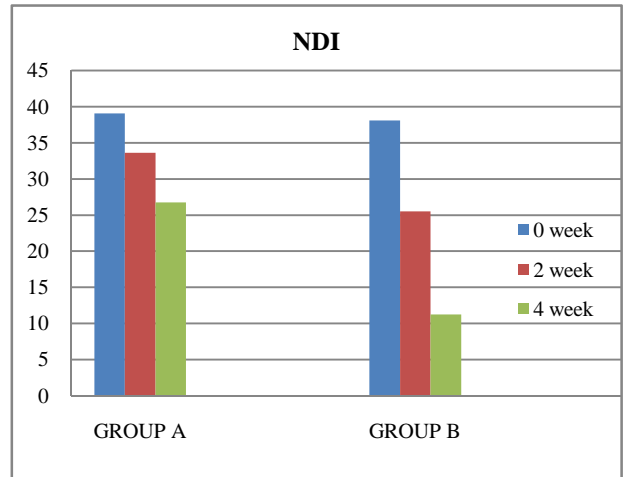
Patients in this group received a 4 weeks conventional rehabilitation program. Conventional rehabilitation program includes: Transcutaneous electrical nerve stimulation (TENS) and Exercise programs. An exercise program includes - Cervical retraction, cervical extension, deep cervical flexors strengthening and scapular strengthening Exercises (Young et al.2009).

**Group B (Experimental Group)**

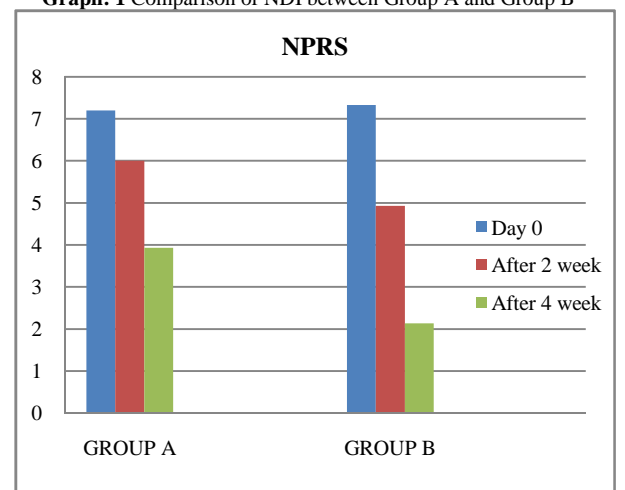
Patients in this group were also treated identically to that of the control group i.e. with a Conventional rehabilitation program which includes TENS and an exercise programs. But in addition to that, patients in this group received an Intermittent Cervical Traction (ICT). The patients were positioned supine with the cervical spine placed at an angle of 15 degree of flexion. The traction force given to the patients was 10% of patient’s body weight but an incrementally were adjusted according to patient’s tolerance. The hold/relax were set at 50 sec hold and 10 sec relax. Duration of traction given was 15 minutes. The frequency of treatment received by patients was 5 days per week for 4 weeks (Young et al. 2009)

The mean and the standard deviation (SD) of Day0, after 2<sup>nd</sup> week and after 4<sup>th</sup> week NDI scores for both, Group A and Group B are presented in Graph no.1.The intra group Day0, 2week and 4<sup>th</sup> week analysis of the NDI score shows a mean difference of 3.267 (t = 10.347, p= 0.00), which is highly significant statistically (p < 0.05).

The mean and the standard deviation (SD) of Day0, 2<sup>nd</sup>week and 4<sup>th</sup>week NPRS scores for both, Group A and Group B are presented in Graph no.2.The intra group comparison of NPRS score was 5.200 (p=.001), shows a statistically highly significant reduction (P<0.05) in reported rate of pain after 4 weeks of interventions.



**Graph: 1** Comparison of NDI between Group A and Group B



**Figure2** Comparison of NPRS between Group A and Group B

**DISCUSSION**

Physical therapy such as heat, ultrasound, TENS, exercises, and cervical collar, either alone or in combination constitutes the mainstay of the conservative management of chronic neck pain. There are little established guidelines or protocols available in the literature. Most of the literature concentrates on neck pain in general and very few are available targeting cervical radiculopathy specifically. One of the common protocols used for the management of cervical radiculopathy is a combination of TENS and neck exercises. Cervical traction has also been used increasingly, as the distraction achieved in the cervical vertebrae can probably reduce or remove the impingement on

the nerve roots by osteophytic spurs or herniated discs. The results of this study revealed that both groups demonstrated a highly significant improvement in reducing pain as measured by NPRS and decreasing neck disability and improving functional activities as measured by NDI. Further it showed that, the reduction in pain and neck disability is significantly more in the ICT combined with conventional physiotherapy group when compared against the conventional physiotherapy group. The effect of mechanical intermittent cervical traction on reducing neck and arm pain and neck disability in cervical radiculopathy is well documented in previous studies done by Joghataei *et al* 2004, Cleland *et al* 2005 but the possible reason for this conflicting result might be due to variation in the treatment parameters and flaws in the research designs. The study revealed that addition of intermittent cervical traction to TENS and strengthening exercises produces significant decrease in neck and arm pain and neck disability when compared to TENS and exercise alone.

## CONCLUSION

We conclude that, intermittent cervical traction have a place in the management of cervical radiculopathy along with TENS and neck exercises in reducing both neck and arm pain and neck disability and in improving activities of daily living.

## Limitations Of The Study

Sample size is too small. Time period of the study was small. Cervical range of motion was not checked in outcome measures.

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