



ORIGINAL RESEARCH PAPER

Physiotherapy

COMPARATIVE STUDY BETWEEN EFFECTIVENESS OF INTERMITTENT LUMBAR TRACTION WITH LS BELT AND INTERMITTENT LUMBAR TRACTION WITH LS BELT ALONG WITH EXTENSION EXERCISES IN PIVD LUMBAR SPINE L4-L5, L5-S1 TO REDUCE PAIN AND IMPROVE FUNCTIONAL

KEY WORDS: Prolapsed Intervertebral Disc (pivd), Intermittentlumber Traction, Intervertebral Disc.

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ABSTRACT

The W.H.O. defining of prolapsed intervertebral disc (PIVD) is a condition that occurs when the material inside a spinal disc bulges or ruptures through its outer layer. The clinical manifestations of PIVD are broad and may include pain and Difficulty bending. incidence of a herniated disc is about 5 to 20 Concept of cases per 1000 adults annually with a man-woman ratio of 2:1 prevalence is higher in men as compared to women Comparative study between effectiveness of Intermittent lumbar traction with LS Belt and Intermittent Lumbar traction with LS Belt and Extension Exercises in PIVD lumbar spine L4-L5, L5-S1 to reduce pain and improve functional ability. The 50 IVD patients were randomized to two group as follow Intermittent lumbar traction and LS belt (group A n=25) and intermittent lumbar traction and LS belt along with extension exercise (group B n=25). The patients were evaluated with V.A.S. and O.D.I. Both experimental or control group demonstrate significant improvement in group B is more effective with intermittent lumbar traction and LS belt along with extension exercise as compare to group A. **CONCLUSION:** This study demonstrate the ls belt and intermittent lumbar traction with extension exercise could be an effective intervention for decreasing pain, disability and improving quality of life in patient with lumbar PIVD..

INTRODUCTION:

Prolapsed intervertebral disc (PIVD) is shift of nucleus pulposus outside the space of the intervertebral disc and it is one of the widespread and expensive health conditions in India,. Most commonly seen in heavy weight lifting, twisting and trauma, about 52-60% and most prevalent between the ages of 30 to 50 years, with male to female ratio of 2:1, and related to repetitive mechanical forces^[1,2]. It may occur at any level, but in 95% of the cases it occurs at L4/5 or L5/S1^[3]. The clinical characteristics of the PIVD are pain and numbness radiating due to nerve root compression radiating to the buttocks and lower extremities^[1]. There is sensory loss or weakness in the leg, which results in multiple findings depending on a variety of factors, including the extent and degree disc prolapse to which the spinal nerve is squeezed by it^[4] when the nucleus pulposus reaches into the retaining ring of the disc without necessarily fracturing it, disc protrusion occurs. PIVD t is closely linked with functional disability of trunk muscles, such as back extensors and abdominal muscles Disc herniation, as back pain, which significant affect the work, of everyday life and quality of life of people, even persistent neurological disorders.

concept of traction

Lumbar traction is the application of a mechanical force to the body in a way that separates the joint surfaces and elongates the surrounding soft tissues. PIVD is a set of symptoms including pain that may be caused by general compression or irritation of one of five nerve roots that give rise to the sciatic nerve or by compression or irritation of the sciatic nerve their influence on decreasing pain due to sciatica, it was the aim of this study to determine the use of lumbar traction to decrease pain due to PIVD.

Benefits of lumbar belts, psychological, neuromuscular, and biomechanical mechanisms have been proposed to give mechanical support generated by the lumbar belt, and neuromuscular benefits may include mechanisms that affect lumbar stability, such as lumbar proprioception, trunk muscle feed forward, and reflex activity. Biomechanical benefits are related to the mechanical stiffness of the lumbar belt, such as a reduction in lumbar range of motion, a reduction in the stress of the posterior lumbar passive tissue, and a potential reduction in the compressive load of the lumbar spine.

CONCEPT OF EXTENSION EXERCISE

It stresses self-treatment through posture correction and repeated exercise movements at End-range performed with high frequency. The hallmark of the McKenzie method for back pain involves the identification and classification of nonspecific spinal pain into Homogenous subgroups. McKenzie exercises for low back pain beneficial treatment for increasing flexibility of spine and improving the pain with better results in pain relief.

Spondylosis - leading to stenosis or bony spurs more common in older patients and PIVD -more common in younger patients. Mechanical compression from spondylosis can affect the neuroforamen from all directions, which limits nerve root excursion. Cytokines released from damaged intervertebral discs can also cause this disorder.^[5]

LEVEL OF COMPRESION

- L1-L2 = pain in lower back and groin area and/or pain that radiate to upper front and inside of thigh.^[6]
- L3-L4 = pain in lower back and/or pain that radiates to the quadriceps in the front of the thigh^[7]
- L4-L5= inflammation and irritation, sharp, burning or radiating pain.^[8]
- L5-S1 = pain, numbness, and weakness. Bowel or bladder control loss, paralysis, or difficulty in walking (severe compression such as herniated disc)^[9]

CAUSES OF PIVD--Disc herniation, Incorrect posture, Tumor, Fracture, Infection, Degenerative changes, incorrect lifting technique, Obesity, Pregnancy, Injury

SPECIAL TEST - Lower limb tension tests (LLTT), also known as neural tension tests, are used to evaluates the length and mobility of the components of the nervous system^[10]

SLR- Also called the Lasegue test. The examiner gently raises the patient's leg by flexing the hip with the knee in extension, and the test is considered positive when the patient feel pain along the lower limb through lower radicular nerve roots (usually L5 or S1).

The **slump test** is a neural tension test to aid in the diagnosis of **disc protusion** or **radiculopathy** originating from the **lumbar spine**^[11] The Slump Test is a neural tension test used to detect altered neurodynamics or neural tissue sensitivity^[12]

NEED OF STUDY - The main purpose of this study is to evaluate the effect of LS BELT with INTERMITTENT LUMBER TRACTION AND EXTENSION EXERCISE in chronic low back pain patient with PIVD. To improve quality of life.

AIMS OF STUDY

To study of Effect Of LS BELT AND INTERMITTENT LUMBER TRACSION ALONG WITH EXTENTION EXERCISE in chronic low back pain patient with lumber PIVD to decrease pain, improve mobility and quality of life.

OBJECTIVES- To evaluate the LS BELT WITH INTERMITENT LUMBER TRACTION AND EXTENTION exercise in chronic back pain.

Material and methodology

1. STUDY OF DESING -- A COMPARATIVE study design

2. STUDY OF DURATION - 1 year.

3. SAMPLE SIZE- Fifty (50) patient with lumber PIVD, 25 patients in each group

4. SAMPLING TECHNIQUE- simple random sampling.

DATA COLLECTION-SSMC&H Jabalpur (opd).

INCLUSIVE CRITERIA-

age- 30-70 year,. Gender- both male and female, No radiculopathy ,No osteopathy PIVD (Posterior Disk bulge).

EXCLUSIVE CRITERIA-- spinal tumour, SCITICA, spondylosis listhesis. Acute traumatic spinal injury, Spinal canal stenosis, Nerve root compression

OUTCOME MEASURE- VAS (visual analog sca DI (Oswestry disability index).le),

VAS SCORE:0- NO PAIN and 10-- SEVERE PAIN

ODI-- The Oswestry disability index (ODI) a patient-completed questionnaire which gives a subjective percentage score of level of function (disability) in activities of daily living in those rehabilitating from low back pain. It was developed by Jeremy Fairbank and Graham in Oswestry, England in 1980 and considered one of the best accepted tools for assessment of low back pain.⁽⁶³⁾

SCORING THE ODI - 0 - 4 -No disability, 5 - 14--mild disability, 15 - 24--moderate disability, 25 - 34--severe disability, 35 - 50--completely disabled

PROCEDURE-

The 50 subjects with low back pain were participated in the study, after taking Informed consent from the patients. Before start of treatment,. The special test done for confirming lumber radiculopathy are SLR and SLUM TEST.

Group -A is treated with LS belt and intermittent lumber traction.

Group -B is treated with LS belt with intermittent lumber traction and extention exercises.

OBSERVATION-

TABLE-1- showing group comparison between control group and case group with their mean with SD,,t and P value

Group		N	Mean	SD	t value	p value
Pre_VAS	Control	25	7.60	0.87	.816	.418
	Case	25	7.40	0.87		
Post_VAS	Control	25	4.96	1.02	9.260	.001
	Case	25	2.60	0.76		
Pre_ODI	Control	25	13.40	1.08	.980	.332
	Case	25	13.00	1.73		

Post_ODI	Control	25	8.20	1.98	8.822	.001
	Case	25	4.00	1.32		

Table-2- Paired Samples Statistics^a In group-A and group B with their mean with SD, t and P value

Control		Mean	SD	t value	p value
Group -A VAS Score	Pre	7.600	0.866	15.3	0.001
	Post	4.960	1.020		
Group -A ODI	Pre	13.400	1.080	13.8	0.001
	Post	8.200	1.979		
Group -B VAS Score	Pre	7.400	.8660	27.71	0.001
	Post	2.600	.7638		
Group -B ODI	Pre	13.000	1.7321	31.17	0.001
	Post	4.000	1.3229		

In this table- Pre and post treatment means of ODI of group-A in pre and post treatment means of pain(vas) of group-B,. t value is 27.71 and p value is 0.001, so it is considered extremely significant.

DISCUSSION

In this study, totally 50 subjects were selected and assigned randomly to two groups of 25 subjects each who received LS BELT AND INTERMITTENT LUMBER TRACTION (Group-A) and LS BELT AND INTERMITTENT LUMBER TRACTION WITH EXTENTION exercise (Group-B) respectively.

The result of the study also shows that there is a significantly reduced symptom of radiating pain in lumber radiculopathy by improvement in the back strength following LS BELT AND INTERMITTENT LUMBER TRACTION WITH EXTENTION exercise in group-B.

The comparison of post mean scores of pain over the groups shows significant difference in the effectiveness to relieve pain, more in group -B than group -A.

The mean post test scores of ODI group-B, comparatively more than group-A, shows that improve ADL and mobility increased more by LS BELT and intermittent lumber traction with extension exercise comparing to 1st belt and intermittent lumber traction. Our observation are similar to observation of [Aliaa M Elabd](#) et al and [Tadano S et al](#)^[13,14]

CONCLUSION

The purpose of study is to find out the effective treatment for the patients with chronic low back pain. After analyzing the results, it had been found that LS BELT AND INTERMITTENT LUMBER TRACTION WITH EXTENTION exercise significantly reduced symptoms of radiating pain by minimizing the pain and increases the back strength. The parallel treatment observed by comparison of LS belt and intermittent lumber traction was also shown the significance in controlling the pain and shown the significance in enhancing the back strength.

When comparing the ODI of group-B and group-A, we found that post mean score of ODI administered by ls belt and intermittent lumber traction with extension exercise shows significant difference with the post mean score of ODI by administering ls belt and intermittent lumber traction. comparing the pain (vas score) of group-A and group-B, we found that post mean score group-B administered by ls belt and intermittent lumber traction with extension exercise shows significant difference(reduce pain) with the post mean score of group-A by administration ls belt and intermittent lumber traction.

This can be given to the physiotherapist to plan the treatment programme for the patients with low back pain. This can help us to reduce the treatment duration and to reduce the symptoms of low back pain, improving back strength effectively decreasing pain, disability and improving quality of life .

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