IMPACT OF LUMBAR TRACTION USING PELVIC BELT IN PATIENTS WITH PROLAPSED INTERVERTEBRAL DISC – A NOVEL CASE REPORT

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Abstract Background: Low back pain is the most frequent problem in the world; about 80% of people in modern industrial civilization will suffer from it at some point in their lives. A herniated disc in the spine has been discovered to be a common cause of low back discomfort. It also demonstrates that people aged 25 to 55 had a 95 percent likelihood of developing a herniated disc at either the L4-L5 or L5-S1 level. The excessive anterior pelvic tilt is not a distinct clinical illness or pathology, but it is thought to be a contributing factor in low back pain, as well as pelvic girdle pain, which causes excessive lordosis. The anterior pelvic tilt is seen in 85 percent of males and 75 percent of females. This pain is thought to be because of the muscle imbalance where the pelvis tilts forward and lumbar lordosis increases. We can give lumbar traction by employing a pelvic belt in patients with herniated discs and pelvic tilt. This study examines the use of a pelvic belt for Lumbar traction and Pelvic tilt correction in order to reduce back pain and disability.

Case Description: A 58 years old male presented with low back pain radiating to right lower limb for the last 4 months, and responded poorly to medications and previous physiotherapy interventions. His pain was intermittent in nature, aggravated during lumbar flexion which affected her functional activities for which he was referred to take physiotherapy treatment.

Procedure: Lumbar traction with correction of pelvic tilt using a pelvic belt was used to reduce pain and neck disability which is a less well-known procedure.

Result: The results were calculated using the NPRS and ODI, which revealed significant changes in pain intensity and disability scores between pre-and post-treatment sessions. Prior

to treatment, the NPRS score for pain intensity was 8, which dropped to 3 after three sessions of treatment. ODI scores varied from 57% pre-treatment to 20% post-treatment.

Conclusion: There is the effect of lumbar traction using a pelvic belt in a patient with prolapsed intervertebral disc which aids in pain relief, leading to improved functional activities of daily living and speeding up positive physical therapy outcomes.

Limitations: Since this is a case report, it cannot be generalized to a large group population. Further research may be required to fully comprehend the usage of the pelvic belt for Lumbar traction and correction of pelvic tilt, and its efficacy might be monitored over time to provide a better understanding of the treatment parameters.

Keywords: Low back pain, lumbar traction, pelvic belt, case report.

INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. When this pain localizes itself around the lower back due to faulty posture, a history of lifting, or bending activities it causes discomfort throughout the movement of a person, and when this pain is below the anatomical costal margins and above the inferior gluteal folds with or without leg pain then this is purely categorized as Low Back Pain or LBP. ⁽¹⁾ As a person's low back pain is considered the most common problem globally due to ergonomically changes several types of research have shown almost 80% of people in modern industrial society will experience low back pain at some time during their life. Fortunately, in 70% of the cases, it subsides within a month, or in these 70% population, the pain can recur. In 2% of the cases, the backache is a chief complaint presented voluntarily in the general practitioner's clinic. The causes of LBP may be congenital, traumatic, inflammatory, degenerative, neoplastic, metabolic, visceral pain, etc. ⁽²⁾

A herniated disc in the spine is a condition during which a nucleus pulposus is displaced from intervertebral space. It is a common cause of low back pain. Research is done by Alexander M. Dydyk; et.al. shows the incidence of the herniated disc is about 5-20 cases per 1000 adults annually and mostly the people are suffering from this in the third to fifth decade of their life with the estimated prevalence of symptomatic herniated disc of the lumbar spine is about 1-3 percent of patients in 30s to 50s. It also shows that the patients between 25-55 years old have an approximately 95 percent chance of herniated discs occurring either at L4-L5 or L5-S1. ⁽³⁾ Low back consists of the lumbar spine and its complex anatomy with lumbar vertebrae as L1-L5 linked by joint capsules, ligaments, tendons, and muscles, with extensive innervation. Ligaments aid in joint stability during rest and movement, preventing injury from hyperextension and hyper-flexion. The spinal cord is a structure running through this lumbar vertebral canal which ends just at the L5 level and branches into remaining nerve roots called Cauda Equina. While the lumbar spine is study and resilient and subjected to external high-degree stressors and loads causing problems resulting in pain. ⁽⁴⁾

In this Case report for the patients with low back pain keeping in mind all the above factors, we are using traction as a main therapeutic interventional tool assisted by the help of a

traction belt. Traction is a decompressed force that separates vertebral bodies and reduces compressive forces on the disks, decreases nerve root compression by enlarging the intervertebral foramen, and helps return herniated discs to their original position by producing tension on spinal ligaments. ^{(5), (6)} Pelvic tilt (PT) is a position-dependent measure defined as the angle formed by a line drawn from the middle of the sacral endplate to the center of the bifemoral heads, as well as the vertical axis. ⁽⁷⁾ Excessive anterior pelvic tilt is not an isolated clinical disorder or pathology but it is suspected as an unspecific cause of low back pain followed by the pelvic girdle pain which also causes hyperlordosis. ⁽⁸⁾ It is estimated that 85% of males and 75% of females present anterior pelvic tilt. ⁽⁹⁾ This pain is thought to be because of the muscle imbalance where the pelvis tilts forward and lumbar lordosis increases. When the thoracic spine compensates for this malposition of anterior pelvic tilt, an increase in thoracic-kyphosis and typical posture of weakness is developed in the patients. ⁽¹⁰⁾ In patients with low back pain and prolapsed intervertebral discs, a pelvic belt is applied for lumbar traction and anterior pelvic tilt. There are two points on this belt: a fixation hook and a free end to attach to the fixation hook.

Patient Information -

A 58-year-old male, farmer, presented with a chief complaint of low back pain radiating to right lower limb for the last 4 months. Patient-reported low back pain which was intermittent in nature with an intensity of 8 on 10 NPRS on activity and 6 on 10 NPRS at rest. The pain aggravated during the lumbar movements; lumbar flexion was more painful as compared to a lumbar extension. He received analgesics as well as physical therapy for the same and had a poor response to previous interventions.

Clinical finding

Physical examination was done and all the vital parameters including temperature, pulse rate, SPO2, and blood pressure were within the normal limits. Patient-reported pain which was 8 on NPRS.The patient showed marked postural deviations which involved increased lumbar lordosis. On palpation, grade 1 tenderness was found in erector spinae and iliocostalis muscle at L-4, and L-5 levels. The lumbar range of motion was incomplete and painful for flexion. The range of motion for cervical extension was pain-free and complete. Lumbar side flexion was pain-free and complete.

Diagnostic Assessment

There was radiological diagnostic testing done. The diagnosis of the Prolapse intervertebral disc was determined based on radiological testing and subjective and objective examination.

Therapeutic Intervention

Lumbar traction was done using a Pelvic belt in which the patient was in a standing position, the pelvic belt was circled around the pelvic at iliac crest level, the knot is created posteriorly at L-4 level than both the ends of the belt is tangled posterior to anteriorly around the pelvis in Y fashion and is fixed posteriorly at L-4 level using fixation hook with pressure which is needed to correct the anterior pelvic tilt of patient. Then the patient is asked to be supine lying with hip knee 90° flexed, another belt is used which is attached to the belt around the pelvic and the traction force is applied depending upon the patient's weight. The belt was applied 3 days a week for 20 minutes followed consecutive for 3 weeks.





Fig No 1: Traction with Pelvic Belt Pelvic Belt

Fig No 2: Traction with

Items of Oswestry Disability Index (ODI)	Pre-test score (Before 1 st session)	Post-test score (After 3 sessions)
Pain Intensity	4	1
Personal care	2	0
Lifting	3	1
Walking	3	1
Sitting	4	2
Standing	3	1
Sleeping	1	0
Sex Life	-	-
Social life	2	1
Traveling	4	2
TOTAL SCORE	36/45	9/45
ODI SCORE	57%	20%

Table 1 – Difference in ODI Scores

Follow-up and Outcome Measures

Outcome measures that were used consisted of Numerical Pain Rating Scale (NPRS) and Oswestry Low Back Pain Disability Questionnaire (ODI). There was a significant effect of lumbar traction using the Pelvic belt in reducing the pain. There was a change in the score of the Oswestry Low Back Pain Disability Questionnaire (ODI) as well. Pre-test the score was 8 on NPRS which was reduced to 3 on NPRS after 3 sessions of Lumbar traction using a Pelvic belt.



Intervention Adherence and Patient Tolerability

The patient was co-operative and adhered well to the treatment.

Adverse and Unanticipated Events

There is no presence of any adverse and unanticipated events.

Discussion

This case report, to the best of our knowledge, is unusual among previous research projects in that it attempts to illustrate lumbar traction using the pelvic belt for prolapse intervertebral disc pain. In the prolapse intervertebral disc, the nucleus pulposus get displaced out of the intervertebral disc leads to reduce disc space between the vertebras. With this, there are marked postural abnormalities, commonly seen that are reduced lumbar lordosis which creates marked anterior pelvic tilt due to muscle imbalance around the pelvis and lumbar spine. In order to correct the tilting and to increase the space between the vertebras, the pelvic belt can be used. One belt around the pelvic at an iliac level in order to correct the pelvic tilt and reducing lumbar lordosis while another belt to create the traction in the lumbar spine in a hip-knee 90% flexed position. The combined effect of both helps in reducing the muscle imbalance, correcting the anterior pelvic tilt, and increasing the space within the vertebra leading to reduce pain.

Conclusion

These Shows effects of lumbar traction in a patient with prolapse intervertebral disc and found that it helps with pain relief, activities of daily living, and overall quality of life. As a result of this case study, individuals with prolapse intervertebral disc may benefit from lumbar traction using the Pelvic belt to speed up good physical therapy outcomes.

Limitations and Recommendations -

The findings cannot be generalized to a wider sample size because this is a case study. More research is required to better understand the use of pelvic belts for Lumbar traction in prolapse intervertebral disc patients and its efficacy might be examined over time to offer a better knowledge of the treatment parameters.

Patient Perspective The patient found a significant amount of pain relief after 3 sessions of treatment.

Informed Consent Informed consent was taken from the patient. **Conflict of Interest: Nil**.

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List of Abbreviations -ROM - Range of Motion NPRS - Numerical Pain Rating Scale ODI - Oswestry Disability Index PIVD -Prolapsed Intervertebral Disc LBP - Low back pain SI joint - Sacroiliac joint