



# Effects of Extension, SIJ and Secondary Segment Mobilization in a Chronic Disabling Lumbar Discogenic Pain

Pir Zada Khattak<sup>1</sup>, Keramat Ullah Keramat<sup>1</sup>, Ikram Ali<sup>1</sup>

## SUMMARY

Forty six years old female was assessed in physiotherapy OPD of Helping hand institute of rehabilitation Sciences Mansehra complaining of back pain. She had history of the same for 15 years. Her back pain aggravated 4 years ago after lifting a heavy weight. At that time she was treated by orthopedic surgeon through lumbar traction and pain medication. The severe pain resolved for more than two years. Her back pain recurred 3 months ago in an excruciating manner and disabling form. No remedy was relieving her pain. Key finding during objective examination were: Decrease SLR Right more than left; decrease range of motion of lumbar spine on all planes; severe pain on passive inter vertebral movement; decrease myotomal strength within the distribution of L<sub>5</sub> and decrease mobility. Findings on MRI were: grade 2 spondylolisthesis, multiple level disc herniation and bulges.

Out of the box and novel Physiotherapy interventions such as specific extension maneuver at L<sub>5</sub>/S<sub>1</sub> level, Mobilization of SIJ and segment above L<sub>5</sub> were useful in reduction of pain and restoration of her mobility. She received 24 physiotherapy sessions extended over 2 month's duration and became asymptomatic. The case was initially seen in April 2014 and last seen was June 2015.

1. Helping Hand Institute Of  
Rehabilitation Sciences  
Mansehra

**Corresponding Author:**

**Pir Zada Khattak**

(pirzadakhattak@yahoo.com)

## CASE PRESENTATION

A female patient age 46 presented in the physical therapy OPD of Helping Hand Institute of Rehabilitation Sciences with complain of severe low back pain radiating to her lower limbs for the previous 3 months.

She reported no history of trauma but continuous sitting for 15 days 3 months ago. She further reported that had a history of back pain for 15 years and 4 years ago her pain got worst after lifting a heavy weight. She was then treated by the orthopaedic surgeon with continuous lumbar traction. Her current pain is the worst ever and has seen various orthopaedic and neurosurgeons during the last 3 months but no joy. She was on pain medication such as diclofenac Sodium, piroxicam, Mecobalamin, and tizanidine.

The pain score on numeric rating scale was 0/10 indicating worst pain imaginable. The score on Roland Morris disability questionnaire was 23/24, indicating severe disability due to her back pain and needed assistance of two people in her functional activities and activities of daily living.

She was examined thoroughly in Physical therapy Department. The left shoulder was elevated than

the right shoulder. She was moderately overweight (BMI=28) and had left sided scoliosis in her thoracic spine. Forward flexion was limited and she was just able to touch her tibial tuberosity with fingers during flexion. Her left side flexion was 15° and right side flexion 30°. She was unable to stand on left leg toes. Active SLR at left side was less than 20 degree and on right side it was less than 40 degree. The passive SLR was minimally pain free with flex knee. The iliopsoas and quadriceps of left side were in grade 5/5 while the hamstrings, foot plantar flexors, ankle dorsiflexors, invertors and evertors were in grade 4/5. All the muscles of right leg were in grade 5/5.

The reflexes on both the side were hard to elicit owing to patient pain and body weight. On performing passive intervertebral movements there was stiffness at L<sub>2</sub>-L<sub>3</sub> levels and passive accessory movements of the spine were painful from L<sub>1</sub> to L<sub>5</sub> levels. The internal and external rotation and flexion of the hip were pain free. The FABER test was positive for left SIJ. The sustain pressure above the level of the disc herniation was easing the pain and improving her extension ROM.



## INVESTIGATION

The radiological findings revealed that grade 2 Spondylolisthesis and disc herniation at L<sub>5</sub>S<sub>1</sub> level causing moderate level of canal stenosis and severe bilateral intervertebral foramen stenosis and compression on the exiting nerve roots.

## TREATMENTS

Physiotherapy treatment was started on the first day. The interventions included specific mobilization of the lumbar spine from L<sub>1</sub> to L<sub>5</sub> level in side lying position and with the spine in rotation. The specific mobilization was as follows. Mild intensity forces were directly applied over the spinous process in opposite direction in such way as to maximize rotation during the first treatment session. The lower spinous process was stabilized during the mobilization through fingers while the upper spinous process was forced to bring the torsional effect in their natural direction of moment.

Indifferent maneuver was also administered during the prone lying position. An antero-posterior force was applied through the pisiform of one hand of therapist reinforced by the other hand at L<sub>5</sub>S<sub>1</sub> level while the patient was kept in a relatively extended position of the spine. The aim of this maneuver was to approximate the posterior margins of the vertebral bodies and distract the anterior margins so that to developed a negative pressure within the region of nucleus pulposus. Positive outcomes of this maneuver had been claimed before<sup>(1)</sup>. Five to ten repetitions were administered with sustained pressure of around 30 second during each push. The applied force was kept within the level of patient's tolerance of pain.

Sacroiliac joint of the left side was mobilized through assistance of another trained person. The patient was positioned on her right side. The therapist positioned one hand at the anterior superior iliac spine and the other on the left ischial tuberosity region. The assistant was asked to bring the left extended leg in flexion and the therapist tried to bring movement in a clockwise around the hip joint (as fulcrum) and rotation force through ASIS and ischial tuberosity. The maneuver was reversed during the passive flexion. Several repetitions were

administered. Self (active) mobilization of the sacroiliac joint were taught to the patient and advised to perform 15 times 3-4 times a day.

Other routine interventions were inclusive of treatment with TENS machine and superficial heat. Her general mobility was addressed as well during the intervention session. She practiced mobilization with Zimmer frame and assistance during the initial two weeks of treatment.

The patient was advised regarding certain posture. She was told to avoid flexed and low sitting. She was further advised to lie on her back with maximum support below the L<sub>5</sub>S<sub>1</sub> level and don't flex her back for weight lifting. She was also told to avoid long sitting and long journey for 3 months.

## OUTCOMES

Pharmacological interventions were relieving her pain temporarily. Symptoms were recurring and the resolution was not sustainable before the physiotherapy interventions. The outcomes of the first session were satisfactory and elevated patient trust. The patient felt improvement in her pain up to 1 cm on NRS after 1st session. The improvement in pain continued during the following sessions and was recorded as 15 % (1.5 cm) in two sessions, 25% (2.5cm) in three sessions, 45% in 9 sessions, 50% in 10 sessions, 90% in 20 sessions and 100% in 24 sessions. The score on Roland Morris disability questionnaire was 0/24 at the time of discharge as compare to the initial 23/24. The SLR improved more than 60 degree bilaterally, FABER for SIJ became negative after two weeks of treatment, forward and side flexions were in functional limits and there were no sensory and motor deficits at the time of discharge. However, ankle and patellar reflexes could not be elicited. She was reviewed after 3 months and 1 year with no report of recurrence.

Review MRI after 2 months of physical therapy confirmed the improvement. The disc herniation at L<sub>5</sub>S<sub>1</sub> level markedly regressed with restoration of the lumbar curve and no compression at the root level. Improvement in anterolisthesis was also noted. Improvement in mobility was noted subsequent to the improvement of pain and she became independent in all activities of daily living.



## DISCUSSION

Successful physiotherapy interventions in relation to disc prolapse reduction have been reported in the literature. Extension of the spine is emphasized among these intervention and benefits demonstrated <sup>(1, 2)</sup>. Conversely, repeated loading of the spine have been demonstrated as the cause of disc prolapsed <sup>(2, 3)</sup>. Major credit of success of disc regression in this case may be attributed to this extension maneuver. However, the maneuver in this case was modified so that to ensure the stability at L<sub>5</sub>/S<sub>1</sub> level, lumbar spine in extension posture and to produce localized extension at this level. It is believed that an extension movement causes distraction anteriorly and approximation posteriorly; thereby creating negative pressure and a push effect on the disc <sup>(1)</sup>.

Bed rest for more than 2 days is not recommended <sup>(2, 3, 4)</sup> because of its association with decondition and synovial joint stiffness which becomes secondary sources of pain <sup>(5, 6)</sup> and hinder recovery from the primary source of pain. Since the patient in this report was immobile for nearly 3 months' time, regardless of the objective finding, multiple level spinal mobility was deemed essential. Therefore segments above the level of L<sub>5</sub> and SIJ were mobilized along with general mobility practice.

Interventions were modified, added or withdrawn when needed based on the patient feedback and objective finding. Meticulous re-assessment during the treatment session is of utmost importance and guides the selection /withdrawal of intervention and its parameter.

Patient education with respect to back is highly recommended <sup>(7)</sup> and significant time was spent to educate the patient in relation to her condition.

Spontaneous regressions of herniated discs in lumbar spine region are reported <sup>(8, 10)</sup> and Majority of these regressions attributed to conservative treatment. It is further explored that the larger and sequestered discs have higher probability of regression than protruded discs <sup>(9)</sup>. Some radiological study <sup>(11)</sup> on the topic of spontaneous regression reveal that the patients receiving no treatment but physiotherapy.

Keeping the favorable outcome of this report and

others <sup>(1)</sup> in view, protocols and structure studies are needed for the management of disc herniation.

## CONCLUSION

The maneuvers used for the treatment of lumbar discogenic pain in this report provide preliminary evidence of their effectiveness in the treatment of lumbar disc herniation and the chronic changes associated with it. Studies of higher quality are needed to evaluate the effects of these maneuvers.

## REFERENCES

1. Keramat KU, Gaughran A. Safe physiotherapy interventions in large cervical disc herniations. *BMJ case reports*. 2012; 2012: bcr2012006864.
2. Scannell JP, McGill SM. Disc prolapse: evidence of reversal with repeated extension. *Spine*. 2009;34(4):344-50.
3. Balkovec C, McGill S. Extent of nucleus pulposus migration in the annulus of porcine intervertebral discs exposed to cyclic flexion only versus cyclic flexion and extension. *Clinical Biomechanics*. 2012;27(8):766-70.
4. Malmivaara A, Häkkinen U, Aro T, Heinrichs M-L, Koskeniemi L, Kuosma E, et al. The treatment of acute low back pain bed rest, exercises, or ordinary activity? *New England Journal of Medicine*. 1995;332(6):351-5.
5. Borenstein DG, Calin A. *Fast Facts: Low Back Pain*: Health Press; 2012.
6. Ploumis A, Michailidis N, Christodoulou P, Kalaitzoglou I, Gouvas G, Beris A. Ipsilateral atrophy of paraspinal and psoas muscle in unilateral back pain patients with monosegmental degenerative disc disease. *The British journal of radiology*. 2014.
7. Engers A, Jellema P, Wensing M, Van der Windt D, Grol R, van Tulder MW. Individual patient education for low back pain. *Cochrane Database Syst Rev*. 2008;1.
8. Slavin KV, Raja A, Thornton J, Wagner FC. Spontaneous regression of a large lumbar disc herniation:: report of an illustrative case. *Surgical neurology*. 2001;56(5):333-6.
9. Chiu C-C, Chuang T-Y, Chang K-H, Wu C-H, Lin P-W, Hsu W-Y. The probability of spontaneous regression of lumbar herniated disc: a systematic review. *Clinical rehabilitation*. 2015;29(2):184-95.
10. Tarukado K, Ikuta K, Fukutoku Y, Tono O, Doi T. Spontaneous regression of posterior epidural migrated lumbar disc fragments: case series. *The Spine Journal*. 2013.
11. Teplick JG, Haskin ME. Spontaneous regression of herniated nucleus pulposus. *American journal of neuroradiology*. 1985;6(3):331-5.