Case Report

Short-Term Improvement in Pain and Functional Disability Following Acupuncture and Therapeutic Massage in a Patient with L4–L5 Diffuse Disc Bulge: A Case Report

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ABSTRACT

Diffuse disc bulge at the L4–L5 level is a common cause of chronic mechanical low back pain, and evidence on short-duration integrative management combining acupuncture and massage remains limited. We report the case of a 66-year-old male with a one-month history of low back pain due to an MRI-confirmed diffuse disc bulge at L4–L5, managed with a combined protocol of acupuncture (points BL23, BL25, BL40, ST36, GB30, GV20, and GB20; 20-minute needle retention followed by a 10-minute rest period) and lumbar petrissage massage (15–20 minutes), administered once daily for seven consecutive days. Pain and functional disability were assessed daily using the Visual Analog Scale (VAS) and the Modified Oswestry Disability Index (ODI). Over the seven days, the VAS score decreased from 7/10 to 2/10, and the Modified ODI improved from 46% (moderate disability) to 18% (minimal disability), with parallel improvement in straight leg raise, lumbar flexion, and resolution of morning stiffness. No adverse effects were observed. A short-duration combined acupuncture and massage protocol was associated with meaningful improvement in pain and functional disability in this patient with L4–L5 diffuse disc bulge, and larger controlled studies are warranted to confirm these findings.

Key words: Low Back Pain. Acupuncture Therapy, Intervertebral Disc Displacement, Pain Measurement, Disability Evaluation

Low back pain (LBP) is one of the most common musculoskeletal complaints encountered in clinical practice and remains the single leading cause of years lived with disability worldwide [1]. Among the structural causes of chronic low back pain, degenerative changes of the lumbar intervertebral discs, including bulging, protrusion, and herniation, are frequently implicated, particularly at the L4–L5 and L5–S1 levels, which bear the greatest mechanical load during sitting, bending, and lifting [2]. A diffuse disc bulge occurs when the intervertebral disc extends symmetrically beyond the margins of the vertebral endplate, often accompanied by facet hypertrophy, and may cause indentation of the thecal sac and narrowing of the spinal canal and neural foramina, leading to mechanical and radicular pain. Such patients frequently report pain aggravated by prolonged sitting and travelling, with early-morning stiffness that improves with movement. Conventional management includes analgesics, physiotherapy, and, in refractory cases, surgical intervention; however, concerns regarding long-term analgesic use and the invasive nature of surgery have increased interest in conservative and integrative approaches.

Acupuncture, a key modality of Traditional Chinese Medicine, is believed to relieve pain by modulating nociceptive transmission at the spinal cord level through the gate-control mechanism and by stimulating the release of endogenous opioids such as beta-endorphins and enkephalins within the central nervous system [3, 4]. Randomized trials have demonstrated that acupuncture-based protocols, alone or combined with other conservative therapies, produce meaningful reductions in Visual Analog Scale (VAS) and Oswestry Disability Index (ODI) scores in patients with lumbar disc herniation-related low back pain [5,6,7,8].

Therapeutic massage, similarly, has shown short-term benefit for pain and function in nonspecific low back pain, particularly when the paraspinal soft tissue is involved [9,10,11]. However, documented case-level evidence describing the combined short-duration application of acupuncture and massage,

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specifically in a diffuse disc bulge at the L4–L5 level, remains limited. We therefore report the case of a patient with a diffuse disc bulge at L4–L5 managed with a seven-day combined protocol of acupuncture and therapeutic massage, with pain and functional disability assessed using validated outcome measures.

CASE PRESENTATION

A 66-year-old male, employed in business, presented with a one-month history of low back pain. He was a known case of L4–L5 disc bulge. The pain was insidious in onset, dull aching in character, and aggravated by prolonged sitting and long-distance travelling. The patient also reported wake-up pain each morning, with stiffness lasting approximately five minutes that improved gradually with movement. There was no history of trauma, fever, bowel or bladder disturbance, or radiation of pain below the knee suggestive of frank radiculopathy. The patient had no significant past medical or surgical history and was not on any regular medication at the time of presentation, and he had not received any prior treatment for the current episode of low back pain. Appetite and thirst were good, sleep was disturbed due to pain, bowel habits were regular, and sweat and urine were within normal limits. On general examination, the patient was conscious, oriented, and cooperative, with a well-nourished build. Vital parameters are presented in Table 1. Local examination of the lumbar spine revealed tenderness over the L4–L5 paraspinal region with mild paraspinal muscle spasm and restricted lumbar flexion.

Table 1 – Vital Data of the Patient

Sl. No.	Vital Parameter	Value
1	Blood Pressure	130/90 mmHg
2	Pulse Rate	78 bpm
3	Respiratory Rate	21 cpm
4	Temperature	Afebrile
5	Height	165 cm
6	Weight	75 kg
7	Body Mass Index (BMI)	27.5 kg/m²

A lumbosacral spine magnetic resonance imaging (MRI) performed before presentation had confirmed a diffuse disc bulge with facet thickening at the L4–L5 level, causing thecal sac indentation and narrowing of the spinal canal and neural foramina with impingement over the nerve roots. Based on the clinical presentation and this imaging finding, a diagnosis of mechanical low back pain secondary to diffuse disc bulge at L4–L5 was confirmed. Pain intensity was assessed daily using the VAS, on which the patient rated pain from 0 (no pain) to 10 (worst imaginable pain), a widely used and reliable instrument for musculoskeletal pain [12]. Functional disability was assessed using the ODI, a validated instrument for spinal disorders comprising ten domains, each scored 0–5 and expressed as a percentage of the maximum possible score; the domains are listed in Table 2 [13]. Straight leg raise, the modified Schober test, morning stiffness, and pain aggravation on sitting and travelling were also assessed at baseline and on Day 7.

Table 2 – Modified ODI Assessment Domains

No.	Domain
1	Pain intensity
2	Personal care
3	Lifting
4	Walking
5	Sitting
6	Standing
7	Sleeping
8	Social life
9	Travelling
10	Employment / household activities

INTERVENTION

The patient underwent a combined protocol of acupuncture and therapeutic massage administered once daily for seven consecutive days on an outpatient basis. Each session lasted approximately 40–45 minutes and was conducted in a quiet, well-ventilated treatment room with the patient positioned comfortably in prone posture. Acupuncture was performed using sterile, single-use stainless steel filiform needles. The points selected were the bilateral paravertebral points BL23 (Shenshu) and BL25 (Dachangshu), the distal points BL40 (Weizhong), ST36 (Zusanli), and GB30 (Huantiao), and the cranial points GV20 (Baihui) and GB20 (Fengchi). Needles were retained for 20 minutes with gentle manual stimulation, following which they were withdrawn, and the patient was allowed a 10-minute period of rest in the supine or prone position.

Following the 10-minute rest period, 15–20 minutes of lumbar petrissage massage was administered to the lumbar paraspinal and gluteal region, using rhythmic kneading (petrissage) technique to reduce paraspinal muscle spasm, improve local circulation, and promote soft-tissue relaxation. Massage pressure was adjusted according to patient tolerance,

and no oils or mechanical devices other than the therapist's hands were used. Figure1 shows the acupuncture interventions given to the patient.

Figure 1. a. Local Massage, b. Selected acupuncture points, c. Acupuncture needles inserted, d. Petrissage Massage



No pharmacological analgesics, spinal manipulation, or additional therapeutic modalities were administered during the seven-day treatment period, and the patient was advised to avoid prolonged sitting and heavy lifting throughout the course of treatment.

RESULTS

Following the seven-day combined acupuncture and massage protocol, the patient demonstrated a progressive reduction in pain intensity and functional disability, with a corresponding improvement in lumbar mobility and resolution of morning stiffness. Day-wise pre- and post-treatment VAS and Modified ODI scores are presented in Tables 3 and 4, additional clinical examination findings in Table 5, and the overall baseline-to-Day-7 comparison in Table 6. No adverse effects, bruising, or discomfort attributable to acupuncture or massage were noted during or after any session.

Table 3 – VAS: Daily Pre- and Post-Treatment Assessment

Day	Pre treatment VAS	Post treatment VAS	Same-day Change
Day 1	7/10	6/10	1-point reduction
Day 2	6/10	5/10	1-point reduction
Day 3	5/10	4/10	1-point reduction
Day 4	4/10	3/10	1-point reduction
Day 5	4/10	3/10	1-point reduction
Day 6	3/10	2/10	1-point reduction
Day 7	3/10	2/10	1-point reduction

Table 4 – Modified ODI: Daily Pre- and Post-Treatment Assessment

Day	Pre-treatment ODI	Post-treatment ODI	Same-day Change
Day 1	46%	42%	4 pp reduction
Day 2	42%	38%	4 pp reduction
Day 3	38%	34%	4 pp reduction
Day 4	34%	30%	4 pp reduction
Day 5	30%	26%	4 pp reduction
Day 6	26%	22%	4 pp reduction
Day 7	22%	18%	4 pp reduction

Table 5 – Additional Clinical Findings

Finding	Pre-intervention	Post Day 7	Change
Straight Leg Raise	Limited/painful	Improved range with less pain	Improved
Modified Schober Test	Reduced lumbar flexion	Improved lumbar flexion	Improved
Morning Stiffness	Present	Resolved	Resolved
Aggravation on Sitting	Present	Markedly reduced / absent	Improved
Aggravation during Travelling	Present	Markedly reduced / absent	Improved

Table 6 – Overall Pre- and Post-Intervention Comparison

Outcome Measure	Day 1 (Pre)	Day 7 (Post)	Change
VAS	7/10	2/10	5-point reduction
Modified ODI	46%	18%	28 percentage-point reduction

DISCUSSION

This case demonstrates that a seven-day combined protocol of acupuncture and therapeutic massage was associated with a marked reduction in pain intensity and functional disability in a patient with a diffuse disc bulge at the L4–L5 level, together with improvement in straight leg raise and lumbar flexion and

complete resolution of morning stiffness, without any adverse effects.

Acupuncture is thought to relieve musculoskeletal pain through modulation of nociceptive transmission at the spinal and supraspinal level and stimulation of endogenous opioid release [3,4], and randomized trials in patients with lumbar disc herniation-related low back pain have reported reductions in VAS and ODI scores of comparable magnitude following acupuncture-based protocols, whether used alone or combined with other conservative modalities [5,6,7,8]. The point selection in the present case, combining the paravertebral points BL23 and BL25 with the distal points BL40, ST36, and GB30, and the cranial points GV20 and GB20, reflects a commonly used strategy targeting both the local segmental level and the broader neuromuscular pathway. The additive benefit observed with therapeutic massage in this case is consistent with systematic review evidence of short-term benefit of massage for nonspecific low back pain [9,10,11], attributed to mechanical stimulation of cutaneous and muscular mechanoreceptors and reduction of muscular tension [14]. The absence of adverse effects observed in this case is consistent with large prospective surveys describing acupuncture as a comparatively low-risk intervention when performed by trained practitioners using sterile needles [15].

This report is limited by its single-case design, the short seven-day follow-up period without longer-term assessment of recurrence, and the absence of a comparator or control condition, which precludes attribution of the observed improvement solely to the intervention rather than the natural course of symptoms. Larger controlled studies with longer follow-up are recommended to validate the efficacy of combined acupuncture and massage protocols in patients with diffuse lumbar disc bulge.

CONCLUSION

A seven-day combined protocol of acupuncture and therapeutic massage was associated with meaningful short-term improvement in pain intensity and functional disability in a patient with a diffuse disc bulge at the L4–L5 level, without any adverse effects. Larger controlled studies are needed to confirm these findings and establish their generalizability.

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