

# Clinical Observation on the Analgesic Effect of Motor Acupuncture in the Acute Phase of Lumbar Disc Herniation

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**Abstract:** *Objective:* To investigate the efficacy of motor acupuncture in patients with lumbar disc herniation (LDH) during the acute phase. *Methods:* This was a controlled study involving 98 patients with acute LDH admitted to the Traditional Chinese Medicine Hospital of Changji Hui Autonomous Prefecture from November 2023 to June 2024. The patients were divided into two groups using the envelope method. The control group received conventional acupuncture treatment, while the observation group received conventional acupuncture combined with motor acupuncture. After one week of continuous treatment, the pain symptoms, lumbar spine function, and overall treatment efficacy were compared between the two groups. *Results:* After one week of treatment, the observation group had lower pain symptom scores compared to the control group ( $P < 0.05$ ) and higher lumbar spine function scores ( $P < 0.05$ ). The overall treatment efficacy rate in the observation group was 97.96%, which was significantly higher than 85.71% in the control group ( $P < 0.05$ ). *Conclusion:* Conventional acupuncture combined with motor acupuncture is effective in treating LDH, providing ideal analgesic effects during the acute phase and significantly improving lumbar spine function.

**Keywords:** Lumbar disc herniation; Conventional acupuncture; Motor acupuncture

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## 1. Introduction

Lumbar disc herniation (LDH) is a common condition that can occur at any age, particularly among middle-aged and elderly individuals<sup>[1]</sup>. Some scholars<sup>[2]</sup> have observed an increasing prevalence of LDH, reaching as high as 0.85%. This disease often triggers a clinical syndrome due to degenerative changes in the lumbar intervertebral discs, leading to symptoms such as lumbocentral pain and lower limb numbness, which significantly impact physical health and daily life<sup>[3]</sup>. Therefore, early diagnosis and timely, effective treatment of LDH are essential. Currently, conservative therapy and surgical treatment are the primary approaches for managing this

condition. However, surgery can cause significant trauma to the body and is prone to recurrence postoperatively, limiting its widespread clinical application<sup>[4]</sup>. Conservative therapy encompasses various modalities, including anti-inflammatory drugs, percutaneous foraminal nerve block, and physical therapy, which can rapidly alleviate symptoms and signs. Nevertheless, different conservative treatments have varying protocols, and their therapeutic effects remain unclear. Prolonged use may lead to safety concerns or drug resistance issues. Traditional Chinese medicine classifies LDH under the category of “Bi Syndrome” and attributes its occurrence to obstructed meridians, qi stagnation, and blood stasis. Consequently, treatment should focus on promoting blood circulation to remove blood stasis and facilitating the flow of qi and meridians. Motor acupuncture represents an effective integration of kinesiotherapy and acupuncture, offering benefits such as relieving pain by promoting blood circulation and facilitating the flow of qi and meridians. This study selected 98 patients with LDH to analyze the implementation effects of motor acupuncture.

## 2. Materials and methods

### 2.1. General information

A total of 98 subjects were selected and admitted to the Traditional Chinese Medicine Hospital of Changji Hui Autonomous Prefecture from November 2023 to June 2024. They were grouped using the envelope method in a 1:1 ratio, resulting in two groups of 49 subjects each. Control group: 28 males and 21 females; aged 30–60 years, with an average age of  $45.17 \pm 4.47$  years; disease duration of 1–6 days, with an average of  $3.65 \pm 0.66$  days; body mass index (BMI) ranging from 18.21–28.76 kg/m<sup>2</sup>, with an average of  $23.48 \pm 1.29$  kg/m<sup>2</sup>; lesion sites included 12 cases at lumbar vertebra L2–3, 17 cases at lumbar vertebra L4–5, and 20 cases at lumbar vertebra L5-sacral vertebra S1. Observation group: 29 males and 20 females; aged 30–59 years, with an average age of  $44.82 \pm 4.31$  years; disease duration of 1–6 days, with an average of  $3.84 \pm 0.71$  days; BMI ranging from 18.04–28.52 kg/m<sup>2</sup>, with an average of  $23.28 \pm 1.16$  kg/m<sup>2</sup>; lesion sites included 10 cases at lumbar vertebra L2–3, 18 cases at lumbar vertebra L4–5, and 21 cases at lumbar vertebra L5-sacral vertebra S1. There were no significant differences in general data between the two groups ( $P > 0.05$ ).

Inclusion criteria: (1) Meeting the diagnostic criteria outlined in the “Guidelines for the Diagnosis, Treatment, and Rehabilitation Management of Lumbar Disc Herniation”<sup>[5]</sup>; (2) Experiencing severe pain symptoms; (3) Aged 30–60 years; (4) Having indications for acupuncture treatment; (5) Having complete clinical data; (6) Providing informed consent for the study. Exclusion criteria: (1) Spinal cord tumors; (2) Neurological deficits; (3) Spondylitis or spinal fractures; (4) Occupying lesions of the lumbar spine; (5) Malignant tumors; (6) Severe arthritis.

### 2.2. Methods

The control group received conventional acupuncture therapy, strictly adhering to the acupoint selection criteria outlined in the “13th Five-Year Plan” textbook, and selecting acupoints in accordance with the requirements for “low back pain” and “sciatica.” The primary acupoints chosen were Weizhong (BL40), Ashi points, Shenshu (BL23), and Dachangshu (BL25). The supplementary acupoint selection was as follows: if the condition was along the Du meridian, Houxi (SI3) was selected; if it was along the Foot-Taiyang meridian, Shenmai (BL62) was chosen; and if it was related to the lumbar spine, Yaojiaji points were selected. The treatment procedure was as follows: the patient lay prone, and the selected acupoints were fully exposed and locally cleaned and disinfected. A 1.5-inch needle was inserted into each acupoint to a depth of 2–3 cm, and the lifting-thrusting and twirling techniques were applied. Once

a sensation of soreness, numbness, distension, or pain was achieved, the needles were retained for 30 minutes. This treatment was administered once a day, five times a week, for a total duration of one week.

The observation group received a combined treatment of motor acupuncture. An appropriate body position was chosen, and the treatment area was fully exposed and thoroughly cleaned and disinfected with 75% medical alcohol. Motor acupuncture was performed by selecting a distal acupoint along the meridian, often employing the reducing technique. After successful needling and achieving qi sensation in the local area, the patient was instructed to move their waist appropriately, performing active movements such as forward flexion, lateral flexion, and backward extension while the needles remained in place. The patient was encouraged to move their waist without experiencing pain. If the patient experienced severe pain, the physician assisted with waist movements. The needles were manipulated every 5 minutes, and the patient was allowed to move freely for 5 minutes, with a total treatment time of 10 minutes. If the patient experienced pain in the midline of the waist, Renzhong, Houxi, and Yaotongdian were selected for needling, and the patient was instructed to move their waist appropriately. If the patient experienced pain on both sides of the waist, they were seated, and Yaotongdian, Yanglingquan, and Shenmai were selected for needling, with needle insertion performed in coordination with the patient's cough. The patient was then instructed to move their waist appropriately. If the patient experiences low back pain extending to both flanks, maintain a seated position and select the Taichong acupoint for acupuncture. The depth of needle insertion and the duration of needle retention should be determined based on the patient's pain symptoms. This treatment should be administered once a day, five times a week. After applying the moving acupuncture technique, proceed with the regular acupuncture method.

## **2.3. Observation indicators**

### **2.3.1. Pain symptoms**

Utilize the Visual Analog Scale (VAS) for pain assessment <sup>[6]</sup>, with a total score ranging from 0 to 10, where a higher score indicates more severe pain.

### **2.3.2. Lumbar spine function**

Employ the Japanese Orthopaedic Association (JOA) evaluation score <sup>[7]</sup> to assess subjective symptoms, clinical signs, bladder function, and limitations in daily activities, with a total score ranging from 0 to 29, where a lower score indicates more severe impairment.

### **2.3.3. Clinical efficacy**

After one week of treatment, refer to the "Diagnostic Efficacy Criteria for Traditional Chinese Medicine Diseases and Syndromes" <sup>[8]</sup> to establish efficacy evaluation criteria. Cure: complete disappearance of low back and leg pain, negative straight leg raise test, and return to normal work and life; marked improvement: significant alleviation of low back and leg pain, straight leg raise test close to 70°, and substantial return to normal work and life; effective: some improvement in low back and leg pain, improvement in the straight leg raise test compared to before treatment, mild activity limitation, and some improvement in work and life; ineffective: no significant change in symptoms and signs before and after treatment; total effective rate = 1 – ineffective rate.

## **2.4. Statistical methods**

Comparisons were made using SPSS 27.0. Measurement data (conforming to normal distribution) were presented

as mean  $\pm$  standard deviation (SD) and subjected to *t*-tests. Frequency data (expressed as percentages) were analyzed using the  $\chi^2$  test, with  $P < 0.05$  considered statistically significant.

### 3. Results

#### 3.1. Comparison of pain symptoms and lumbar spine function between the two groups

As shown in **Table 1**, after one week of treatment, the pain symptom scores in the observation group were lower than those in the control group ( $P < 0.05$ ), while the lumbar spine function scores were higher in the observation group compared to the control group ( $P < 0.05$ ).

**Table 1.** Pain symptoms and lumbar spine function in the two groups (mean  $\pm$  SD, points)

Group	Number of cases	Pain symptoms		Lumbar function	
		Pre-treatment	After 1 week of treatment	Pre-treatment	After 1 week of treatment
Observation group	49	7.48 $\pm$ 1.37	1.96 $\pm$ 0.54 <sup>a</sup>	11.43 $\pm$ 3.21	28.07 $\pm$ 4.67 <sup>a</sup>
Control group	49	7.32 $\pm$ 1.30	3.41 $\pm$ 0.75 <sup>a</sup>	12.05 $\pm$ 3.57	22.43 $\pm$ 4.51 <sup>a</sup>
<i>t</i> -value	—	0.593	10.983	0.904	6.081
<i>P</i> -value	—	0.555	<0.001	0.368	<0.001

Note: Compared with the same group before treatment, <sup>a</sup> $P < 0.05$ .

#### 3.2. Comparison of clinical efficacy between the two groups

As shown in **Table 2**, the total effective rate of treatment in the observation group was higher than that in the control group ( $P < 0.05$ ).

**Table 2.** Clinical efficacy in the two groups [*n* (%)]

Group	Number of cases	Cured ( <i>n</i> )	Markedly effective ( <i>n</i> )	Effective ( <i>n</i> )	Ineffective ( <i>n</i> )	Total effective rate (%)
Observation group	49	20	20	8	1	97.96
Control group	49	13	13	16	7	85.71
$\chi^2$	—	—	—	—	—	4.900
<i>P</i> -value	—	—	—	—	—	0.027

### 4. Discussion

The triggering mechanism of LDH has not yet been clinically established, but it is believed that middle-aged and elderly individuals are at high risk, which is associated with factors such as inflammatory stimulation and sustained accumulation of injuries. Conventional Western medicine advocates for treating LDH based on the severity of the condition. Patients with milder symptoms often receive conservative drug therapy, including oral medication and drug injection blockades, which can suppress inflammatory responses and alleviate pain symptoms, particularly acute pain. However, clinical investigations have found that long-term use of Western medications in LDH patients can induce gastrointestinal reactions, allergic reactions, and even drug resistance issues, making it difficult

to guarantee both treatment efficacy and safety. Especially for middle-aged and elderly patients, large-dose medication is more prone to causing adverse reactions and compromising treatment safety. With the development of traditional Chinese medicine (TCM), various TCM methods have been applied in the treatment of orthopedic-related diseases and have achieved certain effects, particularly TCM external therapies. As modern medicine advances rapidly, many modern treatment methods have been combined with TCM external therapies to form new treatment regimens, yielding favorable therapeutic outcomes.

Acupuncture, a common external therapy in TCM, exhibits strong analgesic properties. Studies<sup>[9]</sup> have indicated that combining acupuncture with appropriate exercise can swiftly alleviate pain symptoms at the affected site and achieve more sustained and satisfactory analgesic effects. The concept of movement acupuncture was first proposed by Dr. Yang Weijie and recorded in “Acupuncture Meridians and Collaterals.” It is also known as interactive acupuncture or dynamic-static acupuncture. Movement acupuncture, also referred to as the movement acupuncture technique, involves the therapist guiding the patient to simultaneously move the relevant or affected body part while performing manual manipulation after the acupuncture needle has elicited the “de qi” sensation. This approach aims to harness the patient’s own potential to treat diseases. When the patient moves the affected or treated area, it can stimulate the circulation of meridian qi, directing qi to the affected site, clearing meridian blockages, coordinating the functions of the zang-fu organs, restoring smooth qi and blood flow, and ultimately achieving the therapeutic goal of “pain relief through unobstructed flow”<sup>[10]</sup>. Patients with acute LDH often experience severe pain, which significantly impairs their ability to carry out daily activities and work, and may even restrict normal movement. This condition is primarily caused by the stagnation of meridian qi and blood due to various factors, leading to impaired circulation and, ultimately, pain resulting from blocked qi and blood flow. Therefore, patients with acute LDH have higher demands for treatment, particularly for analgesic therapy.

This study found that after one week of continuous treatment, the pain symptom scores of patients in both groups decreased, with a greater decline observed in the observation group, resulting in lower scores compared to the control group. This suggests that the movement acupuncture technique can effectively alleviate pain symptoms and enhance analgesic effects during the acute phase. The reason is that applying the movement acupuncture technique for acute LDH not only leverages acupuncture’s ability to dredge meridians, promote blood circulation, and relieve pain, but also combines it with appropriate movement to facilitate the flow of meridian qi, restore smooth blood and qi circulation, and improve pain symptoms. The movement acupuncture technique often involves selecting distal acupoints, emphasizing strong stimulation, and employing the reducing method for needle manipulation. After needle insertion, patients are instructed to move their waist or the painful area as directed, achieving significant therapeutic effects by rapidly promoting blood and qi circulation and restoring unobstructed meridians, thereby ensuring treatment efficacy. The selection of distal acupoints strictly adheres to traditional meridian circulation theory and the theory of combining root and branch, fully aligning with the principles of selecting acupoints based on syndrome differentiation, thus resulting in outstanding pain relief effects.

This study also found that after one week of continuous treatment, the lumbar spine function scores of patients in both groups increased, with a greater rise observed in the observation group, resulting in higher scores compared to the control group. The overall treatment effectiveness rate was also higher in the observation group than in the control group, indicating that the movement acupuncture technique can better improve the condition, restore lumbar spine function, and enhance treatment outcomes. The reason is that the movement acupuncture technique combines the advantages of acupuncture with modern anatomical characteristics. During movement, the afferent information can activate the spinal cord center in the human body, triggering descending impulses

that enhance descending inhibition and improve analgesic effects. During the treatment process, when combined with body posture and movement, small-amplitude movements are performed in the area where the needles are retained, with frequent stimulation during movement intervals. Repeated stimulation multiple times can produce intense stimulation in a short period, thereby enhancing the acupuncture effect and promoting the unblocking of meridians. Appropriate lumbar joint movements are performed with the needles in place, and stimulation continues during movement intervals, which can strengthen the effects of promoting qi circulation, relieving pain, unblocking meridians, and resolving blood stasis. This approach improves pain symptoms in the affected area, relaxes local muscle connective tissue, relieves lumbar muscle spasms, corrects small joint dysfunction, restores physiological activity function, and accelerates the repair of lumbar tissues.

The innovation of this study lies in the design of a controlled trial to compare the effects of ordinary acupuncture and ordinary acupuncture combined with movement acupuncture, evaluating the clinical application value of movement acupuncture. This provides data reference and support for clinical selection of movement acupuncture in the treatment of LDH, guiding clinicians to better treat the disease, improve cure rates, and reduce recurrence rates. This study evaluates the effects of movement acupuncture on pain symptoms, lumbar function, and clinical efficacy, providing a basis for clinical adoption of this therapy. The limitations of this study include the short observation period for patients and the lack of treatment data on inflammatory factors and hemorheology, which only allows for the determination of some effects of movement acupuncture and requires further clinical analysis. However, due to its simple and convenient operation, high safety, and absence of drug resistance issues, it is expected that movement acupuncture will become a common treatment option in many medical institutions in the future.

## 5. Conclusion

In summary, the use of ordinary acupuncture and movement acupuncture in the treatment of LDH can improve clinical efficacy, alleviate pain symptoms, and enhance lumbar function, making it worthy of clinical promotion.

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## Disclosure statement

The authors declare no conflict of interest.

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