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# Observation on the Effect of Shentong Zhuyu Decoction Combined with Acupotomy Lysis in the Treatment of Sciatica Caused by Lumbar Disc Herniation

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**Abstract:** *Objective:* This paper aims to observe the curative effect of Shentong Zhuyu Decoction combined with acupotomy lysis in patients with lumbar disc herniation and sciatica. *Methods:* 72 patients with lumbar disc herniation and sciatica who were treated from March 2022 to March 2023 were randomly divided into two groups. The study group was treated with Shentong Zhuyu Decoction combined with acupotomy lysis, and the control group was treated with acupotomy lysis. The patients' walking ability, lumbar pain, lumbar function, quality of life, and complications were compared. *Results:* The walking ability indexes of the study group were better than those of the control group ($P < 0.05$). The visual analogue scale (VAS) and Oswestry disability index (ODI) of the study group were lower than those of the control group, and the Japanese orthopedic association score (JOA) was higher than that of the control group ($P < 0.05$). The quality of life scale using 36-item short-form (SF-36) survey in the study group was higher than that in the control group ($P < 0.05$). The complication rate of lumbar disc herniation in the study group was lower than that in the control group ($P < 0.05$). *Conclusion:* Shentong Zhuyu Decoction combined with acupotomy lysis can improve lumbar function, relieve pain, and restore walking ability in patients with lumbar disc herniation and sciatica, which is a highly effective and feasible treatment with great clinical value.

**Keywords:** Lumbar intervertebral disc herniation; Sciatica; Shentong Zhuyu decoction; Acupotomy lysis; Curative effect

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## 1. Introduction

There are many complications of lumbar disc herniation, one of which is sciatica. Sciatica is related to the increased pressure on the nerve root which is transmitted to the sciatic nerve pathway, causing patients to experience persistent pain in the calf, thigh, and buttocks, which has a great impact on physical function. Scholars of traditional Chinese medicine believe that sciatica after lumbar disc herniation is related to liver and kidney insufficiency, exogenous cold-damp pathogens and toxin, and long-term illness that causes meridian,

*qi*, and blood blockage, and conventional massage and acupuncture treatment have a high risk of recurrence [1]. Therefore, it should be treated with prescriptions for strengthening the bones and kidneys, and eliminating pathogens, such as Shentong Zhuyu Decoction, etc. However, taking traditional Chinese medicine alone cannot quickly restore the patient's lumbar spine function. With the analysis of clinical practice, the pressure on the lumbar spine increases after lumbar disc herniation, and acupotomy lysis can be used to release the blockage of the lumbar spine, reduce the pressure on the lumbar spine, and enhance the curative effect [2]. In this paper, a sample of 72 patients with lumbar disc herniation and sciatica treated from March 2022 to March 2023 was used to explore the curative effect of Shentong Zhuyu Decoction combined with acupotomy lysis.

# 2. Materials and methods

## 2.1. General information

A sample of 72 patients with lumbar disc herniation and sciatica admitted from March 2022 to March 2023 were randomly divided into two groups. The data of patients with lumbar disc herniation in the study group were compared with those in the control group ($P > 0.05$), as shown in **Table 1**.

**Table 1.** Data analysis of lumbar disc herniation patients

| Group | Gender | | Age (years) | | Disease duration (years) | |
|---|---|---|---|---|---|---|
| | Male | Female | Range | Average | Range | Average |
| Study group ($n = 36$) | 20 (55.56) | 16 (44.44) | 31–67 | 54.72±1.88 | 2–6 | 4.48±1.05 |
| Control group ($n = 36$) | 19 (52.78) | 17 (47.22) | 31–68 | 54.69±1.91 | 2–7 | 4.51±1.07 |
| $x^2/t$ | 0.0559 | | 0.0672 | | 0.1201 | |
| $P$ | 0.8130 | | 0.9466 | | 0.9048 | |

Inclusion criteria included patients with lumbar disc herniation confirmed by magnetic resonance imaging (MRI) and computed tomography (CT), patients with low back pain in spinal canal tension test, patients with lumbar spinal stenosis and local bone hyperplasia indicated by X-ray, patients with informed consent, and patients with radiating pain and numbness in the lower limbs.

Exclusion criteria were patients with bone tuberculosis, patients with spinal obstruction. patients with syringomyelia, patients with damaged organs, and patients with double fecal incontinence [3].

## 2.2. Methods

The study group was treated with Shentong Zhuyu Decoction in addition to acupotomy lysis, and the prescriptions were as follows: *Gentiana chinensis* and *Achyranthes bidentata* each 15g; *Notopterygium*, mulberry, and angelica each 12g; Safflower, peach nuts, myrrh, *Ligusticum wallichii*, *Cyperus rotundus*, Wulingzhi, fried eucommia, 10g each; earthworm 9g; licorice 6g. 300ml of juice was taken after decocting the aforementioned medicines, and 1 dose was taken in the morning and evening. Dosing was done for 4 weeks.

The control group was treated with acupotomy lysis. Patients with lumbar disc herniation were placed in the supine position, a thin pillow was prepared in advance on the patient's abdomen, and local disinfection was performed. Under the guidance of imaging equipment, the diseased lumbar segment, and the intertransverse processes and interspinous points were identified. The doctor takes the interspinous point as the entry point to release the tension between the vertebral bodies. It should be noted that the incision line must be parallel to the longitudinal direction of the spine, and ensured that the entry point is vertical. The interspinous bone area

was loosened, the blade was adjusted upward, and the ligament was peeled off normally. The intertransverse muscles and ligaments were released. Then, based on the imaging images, the acupotomy was inserted through the lateral intervertebral foramen. The edge of acupotomy must be parallel to the longitudinal axis of the spine. The peeling operation was stopped while in motion. After completion, the transverse process ligament of the superior horn was loosened, the point was fixed, and the acupotomy was inserted in the same way as the intertransverse muscle. This was done once a week for mild lumbar disc herniation, 2–3 times a week for moderate to severe lumbar disc herniation, with a treatment duration of 4 weeks.

### 2.3. Observation indicators

The indicators below were observed in the two groups.

(1) Walking ability including the pace speed, stride length, stride frequency, stride amplitude, and other indicators.

(2) Pain and lumbar function were evaluated. Visual analogue scale (VAS) is positively correlated with lumbar pain (0–10 points). Oswestry disability index (ODI) is positively correlated with lumbar dysfunction (0–50 points). Japanese orthopedic association (JOA) is positively correlated with lumbar function (0–29 points).

(3) Quality of life was assessed. 36-item short-form (SF-36) survey is positively correlated with quality of life in patients with lumbar disc herniation.

(4) Complications were observed including lumbar disjoint, dull pain, dizziness, and other symptoms.

### 2.4. Statistical analysis

Lumbar disc herniation data were processed with SPSS21.0, percentage (%) records ($x^2$ test) count data of lumbar disc herniation, mean ± standard deviation (SD) records ($t$ test) measurement data of lumbar disc herniation. $P < 0.05$ indicates that there is a statistical difference.

## 3. Results

### 3.1. Comparison of walking ability

Based on **Table 2**, the walking ability indexes of the study group were better than those of the control group ($P < 0.05$).

**Table 2.** Comparison of walking ability in patients with lumbar disc herniation (mean ± SD)

| Group | Step speed (cm/s) | Step length (cm) | Step frequency (step/min) | Step range (cm) |
|---|---|---|---|---|
| Study group ($n$ = 36) | 122.25±2.15 | 52.05±1.25 | 119.51±2.25 | 108.11±2.52 |
| Control group ($n$ = 36) | 107.36±1.84 | 48.36±1.11 | 108.43±1.76 | 101.43±1.88 |
| $t$ | 31.5705 | 13.2440 | 23.2725 | 12.7481 |
| $P$ | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 3.2. Comparison of lumbar pain and lumbar function

After treatment, the VAS and ODI scores in the study group were lower than those in the control group, and the JOA was higher than that in the control group ($P < 0.05$). The results are presented in **Table 3**.

**Table 3.** Comparison of lumbar pain and lumbar function (mean ± SD)

| Group | VAS | | ODI | | JOA | |
|---|---|---|---|---|---|---|
| | Before treatment | After treatment | Before treatment | After treatment | Before treatment | After treatment |
| Study group ($n$ = 36) | 6.25±1.21 | 1.42±0.45 | 26.11±2.15 | 7.59±1.25 | 16.42±2.42 | 26.88±1.85 |
| Control group ($n$ = 36) | 6.24±1.19 | 2.39±0.69 | 26.13±2.17 | 15.11±1.85 | 16.39±2.39 | 20.41±1.36 |
| $t$ | 0.0354 | 7.0651 | 0.0393 | 20.2086 | 0.0529 | 16.9069 |
| $P$ | 0.9719 | 0.0000 | 0.9688 | 0.0000 | 0.9579 | 0.0000 |

## 3.3. Comparison of quality of life

After treatment, the SF-36 score of patients with lumbar disc herniation in the study group was higher than that in the control group ($P < 0.05$), as shown in **Table 4**.

**Table 4.** Comparison of quality of life by SF-36 (mean ± SD)

| Group | Physical health | | Mental health | | Physiological functions | | Social functions | |
|---|---|---|---|---|---|---|---|---|
| | Before treatment | After treatment | Before treatment | After treatment | Before treatment | After treatment | Before treatment | After treatment |
| Study group ($n$ = 36) | 62.58±1.28 | 83.41±2.42 | 61.88±1.34 | 83.58±2.39 | 62.24±1.41 | 84.11±2.43 | 61.51±1.36 | 82.43±2.51 |
| Control group ($n$ = 36) | 62.61±1.31 | 76.26±2.36 | 61.91±1.33 | 75.49±2.15 | 62.19±1.43 | 76.21±2.09 | 61.49±1.37 | 75.36±1.87 |
| $t$ | 0.0983 | 12.6914 | 0.0953 | 15.0992 | 0.1494 | 14.7887 | 0.0622 | 13.5526 |
| $P$ | 0.9220 | 0.0000 | 0.9243 | 0.0000 | 0.8817 | 0.0000 | 0.9506 | 0.0000 |

## 3.4. Comparison of complications

According to **Table 5**, the complication rate of lumbar disc herniation in the study group was 2.78%, which was lower than that in the control group (16.67%), $P < 0.05$.

**Table 5.** Comparison of the complications of lumbar disc herniation [n (%)]

| Group | Lumbar disjoint | Lumbar pain | Dizziness | Incidence rate |
|---|---|---|---|---|
| Study group ($n$ = 36) | 0 (0.00) | 1 (2.78) | 0 (0.00) | 2.78 |
| Control group ($n$ = 36) | 1 (2.78) | 4 (11.11) | 1 (2.78) | 16.67 |
| $x^2$ | - | - | - | 3.9560 |
| $P$ | - | - | - | 0.0467 |

# 4. Discussion

Lumbar disc herniation occurs more frequently in middle-aged and elderly people. It can be secondary to sciatica and reduce the patients' quality of life. When a patient suffers from sciatica, the typical symptoms are pain in standing, sitting, and lying down, and unable to live a normal life. Western medicine scholars believe that patients with lumbar disc herniation have a herniated nucleus pulposus, which can stimulate adjacent tissues, aggravate pain and secondary inflammation, and affect lumbar nerve function. Conventional drugs are not effective in treating sciatica caused by lumbar disc herniation, thus doctors often recommend traction and surgical treatment to relieve the symptoms of sciatica [4]. In the theory of traditional Chinese medicine, there is no name for lumbar disc herniation. Some scholars include it in the category of "arthritis pain" and

"lumbar pain." Then, sciatica is secondary to lumbar disc herniation, and the long-term illness can turn into acute injury, which aggravates the pain in the waist and legs. Therefore, Chinese medicine scholars recommend strengthening the bones and kidneys, and eliminating pathogens for the treatment of lumbar disc herniation [4].

Conventional acupotomy lysis can relieve the pressure on the lumbar spine, restore the structural stability of the lumbar spine, and enhance the function of the spine. Combined with oral administration of traditional Chinese medicine, it can improve the outcome of lumbar disc herniation [5]. This article chooses Shentong Zhuyu Decoction, in which angelica is combined with safflower to dispel blood stasis and activate blood, *Notopterygium* is combined with Wulingzhi to dispel dampness, while *Gentiana chinensis* can prevent inflammation and relieve pain. The materials act as analgesic, with function of invigorating blood and removing blood stasis. Peach kernel can remove blood stasis and invigorate blood, myrrh can relieve pain, reduce swelling, and dispel stasis. *Ligusticum wallichii* can relieve pain and invigorate blood. Earthworm can dredge meridians, while licorice can harmonize various medicines. Relevant literature reports that acupotomy lysis alone has limited effect on restoring lumbar spine function, hence some scholars suggest combined treatment with Shentong Zhuyu Decoction to promote the patients' recovery [6].

Based on the data analysis in this study, the study group's step speed (122.25±2.15 cm/s), step length (52.05±1.25 cm), step frequency (119.51±2.25 steps/min), and step amplitude (108.11±2.52 cm) were all better than the control group ($P < 0.05$). It showed that the treatment with Shentong Zhuyu Decoction can enhance the patient's walking ability. During the treatment of needle-knife loosening, the tip of the acupotomy directly reaches the focus of the lesion to remove blood stasis. After loosening the local tissue, the pressure of the diseased nucleus pulposus on the adjacent tissue can be relieved, thus relieving the pain of the lumbar spine. With the treatment of Shentong Zhuyu Decoction, the physiological function of the lumbar spine can be further restored, thus patients have better recovery of walking ability [7]. Another set of data showed that the VAS (1.42±0.45) and ODI (7.59±1.25) scores of the study group were lower than those of the control group, and the JOA (26.88±1.85) score was higher than that of the control group ($P < 0.05$). This indicates that the addition of Shentong Zhuyu Decoction can relieve lumbar pain and enhance lumbar function. Acupotomy lysis is a physical treatment method, which can loosen the local ligaments of the lumbar spine, restore the balance of the spine, and reduce the pressure of the diseased lumbar spine on adjacent tissues. Acupotomy lysis combined with Shentong Zhuyu Decoction can restore the blood supply and enhance the function of the lumbar spine [8]. Moreover, the SF-36 score of patients with lumbar disc herniation in the study group was higher than that in the control group ($P < 0.05$). This shows that the addition of Shentong Zhuyu Decoction can improve the patients' quality of life. Combined application of needles and knife to loosen, peel off, remove local induration, adhesions, and pain points can dredge meridians, remove blood stasis, and activate blood circulation, and flexible use of knife tip can loosen local adhesions and relieve the tension of the lumbar spine muscles, thereby reducing symptoms of pain and spasm, and enhancing the patients' quality of life. Based on this, the addition of traditional Chinese medicine Shentong Zhuyu Decoction can nourish the liver and kidney, eliminate pathogenic factors, and strengthen the body [9]. The complication rate of lumbar disc herniation in the study group was 2.78%, which was lower than the 16.67% in the control group ($P < 0.05$). This may be because the prescription of Shentong Zhuyu Decoction has the functions of relieving pain, dredging meridians, removing blood stasis, and promoting blood circulation, and the medicinal properties of traditional Chinese medicine are safe without any side effects. The lesions are treated without opening the skin and subcutaneous tissue, which can reduce postoperative complications, promote postoperative lumbar self-repair, avoid complications such as radiating pain in the lower extremities, with high treatment safety [10].

In summary, the treatment of Shentong Zhuyu Decoction combined with acupotomy lysis in patients with sciatica after lumbar disc herniation can restore lumbar spine function, relieve lumbar pain, and reduce lumbar

complications, which has application value in clinical practice.

## Disclosure statement

The author declares no conflict of interest.

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