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# A Clinical Analysis of Manual therapy for Lumbar Disc Herniation Guided by the Yin-Yang Balance Theory

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**Abstract:** ***Lumbar disc herniation is a common orthopedic disorder in clinical practice, with most patients achieving favorable clinical outcomes through conservative treatment. Chief Physician Chen Bing and his team have developed an effective therapeutic technique for lumbar disc herniation based on Traditional Chinese Medicine (TCM) theory of yin-yang balance and spinal biomechanics. Dr. Chen posits that the fundamental pathogenesis of lumbar disc herniation lies in the imbalance of musculoskeletal strength on both sides of the spine. According to yin-yang balance theory, equilibrium of spinal forces on both sides is essential for maintaining normal lumbar spine posture, which is referred to as "yin equilibrium and yang stability." The team identifies the side with muscle tension as the yin side and the side with muscle contracture as the yang side during lumbar disc herniation onset. Guided by this principle, they employ manual manipulation of the medial thigh muscle group to regulate spinal muscle strength balance, thereby achieving therapeutic goals for lumbar disc herniation. This technique effectively balances bilateral muscular forces, harmonizes yin-yang dynamics, and significantly alleviates patients' lower back and leg pain symptoms, providing a novel approach for clinical management of lumbar disc herniation.***

**Keywords:** Lumbar disc herniation, Yin-Yang balance, Spinal biomechanics, Manual therapy.

## 1. Introduction

Lumbar disc herniation (LDH) refers to a syndrome characterized by lower back pain and leg discomfort, caused by degenerative changes or trauma to the lumbar intervertebral disc, resulting in partial or complete rupture of the annulus fibrosus and varying degrees of nucleus pulposus protrusion, which irritates or compresses spinal nerves and nerve roots [1]. This condition is a common and frequently occurring disease in orthopedics, with a prolonged course and high recurrence rate, significantly impacting patients' daily lives and work [2]. Modern medical treatment for lumbar disc herniation primarily employs two approaches: surgical intervention and pharmacotherapy. Surgical treatment is associated with high invasiveness, elevated economic costs, and relatively low patient acceptance [3]; pharmacotherapy often involves glucocorticoids and nonsteroidal anti-inflammatory drugs (NSAIDs), which may lead to adverse effects such as gastrointestinal reactions and hepatic/renal impairment with long-term use [4], while also demonstrating limited efficacy in symptom relief. Therefore, to enhance clinical outcomes and quality of life for patients with lumbar disc herniation, there is an urgent need to explore and develop a simple, cost-effective treatment regimen.

Chief Physician Chen Bing, a Sichuan Provincial Qihuang Elite Talent and a reserve candidate for the seventh batch of academic and technical leaders under the Sichuan Provincial Administration of Traditional Chinese Medicine, serves as a standing council member of the Sichuan Association of Traditional Chinese Medicine and a master's supervisor. With nearly 20 years of experience in clinical practice, teaching, and research in traditional Chinese orthopedics and traumatology, he specializes in treating orthopedic and traumatological diseases using integrated traditional Chinese and Western medicine approaches. Drawing on extensive clinical experience, Chief Physician Chen Bing combines ancient wisdom with modern practices, integrating the TCM "yin-yang balance theory" with spinal biomechanics to guide manual therapy for lumbar disc herniation. This article aims to summarize and organize Chief Physician Chen Bing's clinical experience in treating lumbar disc herniation using the yin-yang balance theory, providing a novel approach for clinical diagnosis and treatment of this condition.

## 2. Etiology and Pathogenesis

Chief Physician Chen Bing posits that the fundamental pathogenesis of lumbar disc herniation lies in the imbalance of yin and yang in the lumbar spine. Modern medicine attributes the symptoms of lumbar disc herniation primarily to the compression of the dura mater, nerve roots, and cauda equina by the herniated nucleus pulposus, leading to ischemia and hypoxia of the nerve roots, which triggers localized inflammatory responses and manifests as symptoms such as low back and leg pain. Concurrently, the herniated nucleus pulposus disrupts the intrinsic and extrinsic stability of the spine and compromises the biomechanical structural balance of the lumbar spine [5], often inducing postural changes in the lumbar spine that subsequently impair body alignment, with scoliosis being the most prevalent manifestation (accounting for over 80% of cases) [6]. In traditional Chinese medicine, this condition falls under the categories of "low back pain," "bi syndrome," and "bone bi syndrome." The *Suwen: Great Treatise on Yin-Yang Correspondence* states, "Yin and yang are the principles of heaven and earth, the fundamental order of all things," establishing yin and yang as the cosmic fundamental laws governing the origin, development, transformation, and cessation of all phenomena. The *Suwen: Treatise on Vital Energy and Heaven* further emphasizes, "When yin is balanced and yang is secreted, the spirit and vitality are restored," underscoring that yin-yang imbalance is the root cause of disease and that maintaining yin-yang equilibrium is essential for preserving normal physiological

functions, playing a critical role in clinical diagnosis and treatment [7]. Traditional Chinese medicine classifies structures within the spinal system, including muscles, intervertebral discs, and ligaments, as "tendons," while vertebral bodies are categorized as "bones," with bones representing yang and tendons representing yin [8]. Chapters such as *The Formation of the Five Zang Organs* and *Treatise on Flaccidity* elaborate on the function of "tendons": "All tendons belong to joints; the principal tendon governs bone fixation and facilitates movement," highlighting the role of "tendons and bones" in connecting and stabilizing joints, facilitating movement, and providing structural support within the human system [9]. Dr. Chen summarized the clinical manifestations of "muscle displacement and bone misalignment" —such as rupture of lumbar intervertebral disc fibers, nucleus pulposus protrusion compressing nerve roots, and lumbar spinal instability with scoliosis—as an imbalance of yin and yang in muscles and bones. This imbalance subsequently leads to bilateral yin-yang imbalance in the lumbar spine, resulting in symptoms such as lower back pain and pain or numbness in the affected lower limbs. Maintaining bilateral yin-yang balance in the lumbar spine ensures normal physiological function of spinal joints. According to spinal biomechanics, the maintenance of spinal upright posture and stability is achieved through torque and force interactions [10]. Vertebrae, intervertebral discs, and surrounding ligaments provide torque constraints for spinal alignment, while symmetrical forces generated by the iliopsoas muscles and other lumbar muscles ensure spinal stability. Based on years of clinical experience, Dr. Chen observed that patients with lumbar disc herniation often exhibit spinal biomechanical imbalance. This imbalance can trigger somatic compensation, leading patients to adopt protective postures involuntarily to alleviate nerve root compression and pain, thereby inducing temporary spinal scoliosis. The human body possesses relative symmetry; spinal scoliosis inevitably causes surrounding muscles and ligaments to experience alternating states of tension and relaxation. This results in increasingly pronounced differences in paravertebral muscle strength, further destabilizing the bilateral spinal alignment. According to Traditional Chinese Medicine's yin-yang theory, the disruption of bilateral spinal balance leads to subsequent imbalance in the yin-yang states on both sides. The collapse of spinal mechanical equilibrium and yin-yang balance simultaneously exacerbates spinal curvature while preventing nucleus pulposus retraction. The resulting mechanical imbalance in paraspinal muscles and ligaments further compresses nerve roots, leading to persistent lumbar disc herniation symptoms that progressively worsen through a vicious cycle. Clinically, this condition can be qualitatively characterized as an yin-yang imbalance, whether analyzed from anatomical morphology or mechanical function. As the ancient text states: "When yin-yang balance is restored, tendons and bones harmonize [11]; when disrupted, diseases arise." Dr. Chen Bing, Chief Physician, categorizes the tense-side muscles on both spinal sides as yin and the contracted-side muscles as yang based on yin-yang attributes. By restoring yin-yang equilibrium to rehabilitate lumbar spine mechanics and function, this approach aims to alleviate clinical symptoms of lumbar disc herniation.

Based on the above discussion, Master Chen posits that the essence of lumbar disc herniation lies in the imbalance of yin and yang. In treatment, emphasis is placed on harmonizing yin and yang and restoring balance, starting from localized approaches to adjust the biomechanical equilibrium of lumbar muscles and bones, thereby restoring the overall physiological function of the spine.

## 3. Treatment Methods

Dr. Chen applied the Modified Internal Femoral Adductor Muscle Group Traction Technique based on the "Yin-Yang Balance Theory" to treat lumbar disc herniation, aiming to adjust the muscle strength balance on both sides of the lumbar spine and achieve Yin-Yang equilibrium in the lumbar region. The Modified Internal Femoral Adductor Muscle Group Traction Technique was developed by Chief Physician Chen Bing through synthesizing previous clinical experience and his own extensive clinical practice. The specific procedure is as follows: 1. The patient lies prone on the examination table with hands naturally placed at both sides of the trunk, head tilted to one side to maintain breath harmony; 2. The practitioner stands on the right side of the examination table and applies finger kneading or palm-heel kneading techniques with the left hand to both sides of the affected vertebra, inducing partial relaxation of tense and contracted muscles and ligaments on both sides; 3. Instruct the patient to flex the knee of the affected lower limb slightly. The practitioner's right hand penetrates the medial femoral adductor muscle group at the root of the affected thigh, placing the thumb above the thigh and the index, middle, and ring fingers below. Using the wrist joint as a pivot, the thumb above and the three fingers below simultaneously apply grasping and traction forces to the adductor muscle group. This technique is performed bilaterally until muscle relaxation is achieved. The traction force should be adjusted to a level where the patient experiences noticeable soreness but remains tolerable. Each side undergoes 20 repetitions per set, with alternating bilateral sessions. A treatment course consists of completing 5 sets on each side.

Dr. Chen posits that the key mechanism of manual therapy lies in its ability to eliminate aseptic inflammation, improve spinal canal blood circulation, reduce lumbar nerve irritation, relieve lumbar muscle spasms, and restore mechanical balance of the lumbar spine. Its therapeutic mechanisms can be summarized in two aspects: First, based on the fascial line theory described in *Anatomical Train: Myofascial Meridians of Manual and Motion Therapy*, manipulation of the gracilis and adductor magnus muscles can regulate the anterior deep fascial chain involving the pelvis and trunk [12]. Muscle spasms induced by trigger points may disrupt normal biomechanical balance of periarthritis muscles, such as spinal degenerative changes and functional instability [13]. By modulating trigger points in the adductor muscle group, neural-mechanical transmission through the adductor muscles (deep layers), pelvic floor muscles, and iliopsoas muscles can stimulate the femoral nerve and obturator nerve, indirectly affecting lumbar spinal nerve roots. This enhances pain threshold, promotes absorption of aseptic inflammation around nerve roots [14], and alleviates inflammatory responses in nerve roots [15]. Second, anatomically, the iliopsoas muscle inserts onto the lesser trochanter of the femur. Manipulation of the adductor muscles and lesser trochanter

can reduce iliopsoas spasms [16], thereby correcting lumbar mechanical balance from deep tissue levels and mitigating symptoms.

## 4. Clinical Examples

Patient Zhang, male, 72 years old, was admitted to our hospital on January 24, 2024, with family assistance. Chief complaint: Low back pain and right lower limb pain accompanied by limited mobility for over 2 years, with exacerbation in the past week. Current medical history: The patient reported onset of low back pain and right lower limb pain without obvious precipitating factors 2 years ago, which relieved with supine rest but worsened after walking. The patient did not take it seriously and had intermittently received physiotherapy outside the hospital, with occasional symptom relief. One week ago, after performing household chores, the patient experienced aggravated low back and right lower limb pain, accompanied by difficulty bending forward and walking. Oral medications (details unknown) provided no significant symptom relief, prompting hospitalization. Upon admission, the patient was conscious but slightly lethargic, with pale complexion, emaciation, and pale lips. He reported chronic fatigue, normal appetite and sleep, and no abnormal bowel or urinary symptoms. Tongue was pale with thin white coating, and pulse was wiry and thin. Past medical history: Chronic gastritis for over 10 years, with no other special findings. Physical examination revealed no visible swelling in the lumbar region, slight leftward curvature of the lumbar spine, left paravertebral muscle spasm, tenderness at the L4-5 intervertebral space, right paravertebral tenderness and percussion pain, positive right Lasegue's sign at 40°, negative bilateral "4" sign test, right quadriceps muscle strength grade IV, right dorsiflexor muscle strength grade IV, right plantar flexor muscle strength grade IV, limited bending mobility, and a limp gait due to right lower limb weakness during walking. Superficial lower limb sensation showed no significant abnormalities. Auxiliary examinations: Outpatient lumbar MRI revealed right posterior disc herniation at L4-5 with L5 nerve root compression, as well as disc bulges at L2-3, L3-4, and L5-S1.

The patient's initial diagnosis was: Traditional Chinese Medicine (TCM) diagnosis of lumbago (syndrome of liver-kidney deficiency and qi-blood insufficiency), and Western Medicine diagnosis of lumbar disc herniation (L4-5). Assessments were conducted based on standard VAS scoring criteria, standard NRS scoring criteria, and standard lumbar JOA scoring criteria, with results showing a VAS score of 5, NRS score of 6, and lumbar JOA score of 11. The patient received modified medial thigh muscle group plucking manipulation therapy. After one course of manual therapy, the patient was instructed to slowly turn onto their back and perform the right Leg-Segal sign at 60°, which was positive. Subsequent scoring revealed a VAS score of 3, NRS score of 4, and lumbar JOA score of 17. The patient reported significant relief from lumbar pain and marked improvement in restricted lumbar mobility, enabling independent ambulation without assistance. The improvement rate calculated using the improvement rate formula was 33.3%, and the comparative results based on improvement criteria indicated efficacy. The patient was advised to rest at home, prioritize supine positioning, avoid prolonged standing/sitting and excessive bending, and perform daily lumbar muscle functional exercises. At follow-up one week later, lumbar and right lower limb pain showed significant reduction, with marked improvement in right lower limb mobility. Re-evaluation of right lower limb muscle strength revealed right quadriceps muscle strength grades IV-V, right dorsiflexor muscle strength grades IV-V, and right plantar flexor muscle strength grades IV-V, with no significant gait limp observed.

The patient presented as an elderly male with a prolonged disease course, predominantly affecting the right limb. Palpable muscle tension and spasm were observed in the paravertebral muscles of the 4th and 5th lumbar vertebrae, accompanied by localized tenderness and reduced muscle strength in the right lower limb, manifesting as a claudication gait. The modified medial thigh muscle group plucking technique successfully restored muscle strength balance between both lumbar vertebrae, alleviating lumbar muscle tension and contractures. This intervention enabled the contralateral contracted muscles and ligaments to regain physiological function while reducing tension in the ipsilateral muscles, thereby achieving a state of "yin-yang equilibrium" in the lumbar and lower limb muscles. Significant improvement was noted in lumbar pain and right lower limb pain, along with enhanced muscle strength and marked reduction in claudication. These clinical findings demonstrate the therapeutic principle of yin-yang balance in lumbar spine pathology.

## 5. Conclusion

The therapeutic application of massage techniques for orthopedic disorders has a long-standing history. Based on the theory of yin-yang balance and spinal biomechanics, Master Chen proposed the "Lumbar Yin-Yang Balance Theory," which guided the use of modified medial thigh muscle group plucking techniques for treating lumbar disc herniation. The modified medial thigh muscle group plucking technique can be categorized as a tendon-releasing manipulation within Traditional Chinese Medicine (TCM) massage techniques. This method begins with kneading to relax local lumbar muscles, reducing stress on the lumbar spine [17] and decreasing intervertebral disc pressure. Subsequently, high-intensity plucking techniques are applied to the medial thigh muscle group, with force penetrating deep into the muscles to reach the bone surface. Compared to traditional gentle techniques, this approach more effectively alleviates localized lumbar muscle spasms, accelerates the absorption of inflammatory substances [18], and enhances pain threshold, yielding more pronounced therapeutic effects. This technique for treating lumbar disc herniation promotes lumbar musculoskeletal balance, corrects postural changes induced by biomechanical factors, and addresses the pathological state of "pain due to obstruction and pain due to deficiency" in the lumbar region and lower body. It offers advantages such as simplicity of operation, low cost, and high patient acceptance. Clinically, it has relieved pain in hundreds of patients with lumbar disc herniation, providing a novel therapeutic approach for clinical management of this condition.

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