

# ISRG JOURNAL OF CLINICAL MEDICINE AND MEDICAL RESEARCH [ISRGJCMR]



OPEN ACCESS



ISRG PUBLISHERS

Abbreviated Key Title: ISRG J Clinic.Medici.Medica.Res.

ISSN: 3048-8850 (Online)

Journal homepage: <https://isrgpublishers.com/cmmr/>

Volume – III, Issue - III (May-June) 2026

Frequency: Bimonthly



## Perioperative Multidimensional Nursing for an Elderly Patient with Thoracic Vertebral Fracture Complicated with Lacunar Infarction: A Case Report

Xiaozhu Yu<sup>1\*</sup>, Yanfang Guo<sup>2</sup>, Fangjing Ma<sup>3</sup>, Hubin Ming<sup>1</sup>

<sup>1</sup>School of Nursing, Pingdingshan University, Henan 467000, China ;

<sup>2</sup>Pingdingshan Hospital of Shanghai University of Traditional Chinese Medicine ;

<sup>3</sup>Huaxian Orthopaedic Hospital

| Received: 13.05.2026 | Accepted: 18.05.2026 | Published: 25.05.2026

\*Corresponding author: Xiaozhu Yu

### Abstract

**Objective :** This case report summarizes perioperative multidimensional nursing for an elderly patient with thoracic vertebral fracture combined with lacunar infarction, to provide a reference for clinical nursing of elderly complex orthopedic patients.

**Methods :** A 73-year-old male with T12 compression fracture and lacunar infarction received full-cycle quantitative risk assessments (Braden, Wells, SAS, Morse scales) and a tailored multidisciplinary nursing program covering precise preoperative prevention, intraoperative safety control, postoperative multimodal intervention, and discharge extended care. Integrated Western medicine, traditional Chinese medicine (TCM) therapy, and staged rehabilitation were implemented.

**Results :** The patient was hospitalized for 3 days without pressure injury, DVT, pulmonary infection, or other complications. NRS pain score decreased from 4 to 2. At 1-month follow-up, lower extremity muscle strength remained grade 5, and thoracic mobility recovered to 80% of pre-fracture level. At 3 months, SF-36 score rose from 55 to 86, with clinical fracture healing and stable bone cement filling.

**Conclusion :** Standardized risk assessment plus integrated Chinese-Western nursing, staged rehabilitation, and extended care can effectively reduce complications, relieve pain, and improve functional recovery and quality of life in elderly high-risk patients.

**Keywords:** Elderly patient; Thoracic vertebral fracture; Lacunar infarction; Perioperative nursing; Multidimensional care; Integrated Chinese-Western medicine

## 1. Introduction

Elderly thoracic vertebral fractures are commonly caused by low-energy trauma and often coexist with osteoporosis, cerebrovascular disease, and other comorbidities. <sup>1</sup>Lacunar infarction further impairs mobility, cognition, and treatment compliance, elevating perioperative risks and nursing difficulty. This report presents a successful multidimensional nursing strategy for a 73-year-old patient with T12 vertebral compression fracture and lacunar infarction.

## 2. Case Presentation

### 2.1 Clinical Data

A 73-year-old male farmer was admitted with low back pain and limited activity for 12 days after an electric bike fall. Past history was unremarkable except occasional alcohol consumption. On admission, vital signs were: temperature 36.4°C, pulse 77 bpm, respiration 18 breaths/min, blood pressure 163/85 mmHg, height 165 cm, weight 75 kg.

### 2.2 Diagnostic Findings

Imaging: T12 vertebral compression fracture, lumbar disc herniation, lumbar degeneration, low bone mass, lacunar infarction, <sup>2</sup>mild cardiac valvular regurgitation, and left ventricular diastolic dysfunction.

Laboratory tests: Routine blood, coagulation, liver and kidney function were within normal ranges.

Physical examination: Tenderness and percussion pain over T12; bilateral lower extremity muscle strength grade 5; moderate risks of DVT, falls, and mild anxiety (SAS 55); Braden score 20; SF-36 score 55.<sup>3-5</sup>

### 2.3 Treatment Course

The patient underwent percutaneous vertebroplasty + nerve block under local anesthesia on the second hospital day. The operation lasted 15 minutes with minimal blood loss (≈5 mL). Postoperative treatments included analgesia, anticoagulation, antibiotics, and TCM therapy. The patient was discharged on postoperative day 3 with satisfactory recovery.

## 3. Nursing Interventions

### 3.1 Preoperative Nursing

Multidimensional risk assessment and personalized care plan formulation.

Spinal protection using log-rolling, thoracolumbar bracing, and pressure injury prevention.

Pre-rehabilitation: Respiratory training, ankle pump exercises, quadriceps isometric contraction, and bowel training.

Psychological intervention and health education to relieve anxiety (SAS reduced to 38).

### 3.2 Intraoperative Nursing

Prone position management to maintain spinal alignment and prevent nerve injury.

Continuous monitoring of vital signs, consciousness, and core temperature (36.5–37.5°C).

Strict aseptic technique and efficient surgical cooperation.

### 3.3 Postoperative Nursing

#### 3.3.1 Multimodal Pain Management

Combined pharmacologic analgesia, TCM rubbing, and infrared irradiation; NRS score decreased from 4 to 2.

#### 3.3.2 Complication Prevention

**DVT:** Low-molecular-weight heparin + intermittent pneumatic compression + physical exercises.

**Pressure injury:** Dynamic assessment, air mattress, and skin care.

**Pulmonary infection:** Respiratory training, assisted coughing, and nebulization.

**Falls and neurological injury:** Close monitoring and safety precautions.

#### 3.3.3 Integrated Rehabilitation Nursing

TCM therapy: Modified Taohong Siwu Decoction and acupoint massage.

Staged rehabilitation: Early muscle training followed by ambulation training.

Nutritional support and continuous psychological intervention.

### 3.4 Discharge and Extended Care

Individualized guidance on activity, bracing, wound care, and home rehabilitation.

Multi-channel follow-up (WeChat, telephone, outpatient review) up to 6 months.

Family support and home safety modification.

## 4. Discussion

This case demonstrates that a multidisciplinary, multidimensional nursing model is effective for elderly patients with thoracic fracture and lacunar infarction. Standardized quantitative assessments enable precise risk identification. Integrated Chinese-Western interventions and staged rehabilitation improve safety and recovery. <sup>6-7</sup>Extended care ensures continuity and long-term outcomes. This approach can be generalized for similar complex geriatric orthopedic cases.

## 5. Conclusion

For elderly patients with thoracic vertebral fracture complicated by lacunar infarction, perioperative multidimensional nursing based on standardized risk assessment, integrated Chinese-Western medicine, staged rehabilitation, and extended care significantly reduces complications, relieves pain, and enhances functional recovery and quality of life.

## REFERENCES

1. Yang Y, Zhou XG, Chen QX, et al. Guidelines for diagnosis and treatment of secondary vertebral fracture after percutaneous vertebral augmentation for elderly osteoporotic thoracolumbar compression fractures (2025 edition). *Chin J Trauma*. 2025;41(7):613–626.
2. Hassani S, Koltai D, Amrhein TJ, et al. MRI Predictors of Cognitive Function After Lacunar Infarction. *Stroke*. 2025;56(7):1722–1729.
3. Gu MQ, Zhao YY, Chen SZ, et al. Interpretation of 2019 International Clinical Practice Guideline for the Prevention and Treatment of Pressure Injuries. *J Hebei Med Univ*. 2021;42(5):497–500.
4. Liu JX, Huang GH, Zhu CC, et al. Progress in the application of venous thromboembolism risk

assessment tools in the elderly. *J Pract Cardiac Cereb Vasc Pulm Dis.* 2025;33(7):133–140.

5. Chen B, Luo Z, Feng X, et al. Effect of high-quality care on limb function recovery and quality of life after osteoporotic hip fracture surgery in the elderly. *J Musculoskelet Neuronal Interact.* 2021;21(2):272–278.
6. Yang Z, Chen SF, Li Y, et al. Effect of step-by-step nursing on rehabilitation effect of elderly patients with thoracic compression fracture. *Chin J Integr Tradit West Nurs.* 2022;8(11):88–90.
7. Shi MM, Xia WQ, Zhu YM, et al. Clinical effect of traditional Chinese medicine compound combined with Baduanjin on postoperative rehabilitation of elderly patients with osteoporotic thoracolumbar compression fracture. *Chin J Surg Integr Tradit West Med.* 2025;31(6):848–852.