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CLINICAL AND PARACLINICAL CHARACTERISTICS AND PATIENT CARE OUTCOMES LUMBAR SPONDYLOLISTHESIS SURGERY AT 108 CENTRAL MILITARY HOSPITAL IN 2025

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ABSTRACT

Objective: To describe clinical and paraclinical characteristics and evaluate the outcomes of nursing care for patients undergoing lumbar spondylolisthesis surgery at the 108 Military Central Hospital in 2025.

Methods: A cross-sectional descriptive study was conducted on patients diagnosed with lumbar spondylolisthesis who underwent surgery at the Spine surgery department, 108 Military central Hospital. Data was collected from medical records and through a self-designed interview tool to assess nursing care effectiveness based on the Oswestry Disability Index (ODI), the Visual Analog Scale (VAS) for pain assessment, and patient satisfaction with nursing care outcomes. Data was analyzed using SPSS 25.0 with frequency tables and percentage distributions.

Results: The mean age of participants was relatively high (61.7 ± 8.9 years), with a male-to-female ratio of 1:4.3. The average length of hospital stay was 5.8 ± 2.0 days. Pain was the primary reason for admission in 95% of cases. A total of 83.5% of patients experienced painless dressing changes, and the standard dressing change frequency of every two days was achieved in 95.5% of cases. The proportion of patients whose surgical drains were removed within 48 hours was high (96.0%), and more than half did not require urinary catheterization after surgery (58.5%). The incidence of nerve root injury and surgical site infection were 3.5% and 1.0%, respectively. All patients reported satisfaction with surgical nursing rehabilitation activities, with 55.7% being very satisfied, 25.8% satisfied, and 15.5% neutral.

Conclusion: The postoperative complication rate was very low (4.5%), and 100% of patients expressed satisfaction with nursing care at varying levels. The proportion of patients with good care outcomes was very high (86.5%).

Keywords: Lumbar spondylolisthesis surgery, nursing care, 108 Military Central Hospital.

1. INTRODUCTION

Lumbar spondylolisthesis is an abnormal forward or backward displacement of the upper vertebrae compared to the lower vertebrae in the lumbar region [1]. With a sedentary lifestyle, heavy work, and incorrect posture, the rate of people with lumbar spondylolisthesis is increasing, especially in middle-aged and elderly people. The disease has an incidence of about 6% of the population [2]. Spondylolisthesis causes back pain, reduces mobility and affects the patient's daily quality of life [3]. Treatment of symptomatic spondylolisthesis is mainly by internal medicine [4]. Spinal fixation surgery is indicated when there is instability, nerve compression, and pain that greatly affects the patient's daily life [5]. This is a major surgery, many complications can occur after surgery, so care, monitoring, and post-operative recovery guidance is an important job of the nurse, contributing to the success of the surgery, improving the effectiveness of treatment, shortening the length of hospital stay, helping patients quickly return to normal work and life [6],[7], care is carried out according to Circular 31/2021/TT-BYT regulating nursing activities in hospitals. Post-operative patient care such as monitoring, changing surgical wound dressings, drainage care,

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medication, exercise guidance, nutrition, psychology... helps patients recover quickly, contributing to improving service quality, meeting patient satisfaction, towards the goal of "taking the patient as the center".

Central Military Hospital 108 (CMC 108) is one of the leading hospitals in training and educating specialized nurses to meet the needs of comprehensive patient care. At the Department of Orthopedics and Traumatology Spine – The Institute of Trauma and Orthopedics annually performs thousands of surgeries related to spinal diseases, and at the same time, nursing care for patients after surgery is highly focused. Care outcomes are an important measure of the effectiveness of care services. Monitoring and evaluating care outcomes helps us make appropriate adjustments to improve the quality of life for patients. Therefore, we conducted research on this topic with the following objectives: Describe clinical and paraclinical characteristics and patient care activities. Lumbar spondylolisthesis surgery at 108 Military Central Hospital in 2025.

2. RESEARCH OBJECTS AND METHODS

2.1. Research subjects: The patient was indicated for surgery for lumbar spondylolisthesis at the Spine surgery department, 108 Military central Hospital

- Selection criteria:

+ Patients ≥ 18 years old, agree to participate in the study.

+ Medical records record complete, accurate and clear information.

- Exclusion criteria:

+ Patients with limited hearing and speech, and neuropsychiatric disorders

+ Patients with serious or emergency medical conditions cannot participate in the study.

+ Patients withdraw from the study or do not comply with treatment/ arbitrarily use other drugs/ other interventions during treatment

2.2. Research method

2.2.1. Research design: Cross-sectional study.

- Time: from January to June 2025

- Research location: Department of Spinal Orthopedics B1-D, 108 Central Military Hospital.

2.2.2. Sample size

Apply the sample size formula to determine a proportion in a clinical study with a finite population:

$$n = \frac{Z^2_{1-\alpha/2}\, p\,(1-p)N}{d^2\,(N-1) + Z^2_{1-\alpha/2}\, p\,(1-p)}$$

+ n is the sample size to be studied

+ N is the total number of patients in the finite population. Here, the total number of patients who come for examination and are indicated for lumbar disc herniation surgery (according to statistics of 108 Military Central Hospital in the first 6 months of 2024) is 500 patients.

+ α: Statistical significance level (0.05) then $Z^2_{1-\alpha/2} = 1.96$

+ p is the reference rate of a previous study. Here, referring to the study by author Nguyen Thi Ngoc Thanh (2021) studying the results of care and recovery of patients after surgery for lumbar disc herniation, the result is that the rate of patients with good overall care results is 73.9% → p = 0.74 [8].

+ d: 0.05

Substitute the above formula to calculate the sample size needed for research as 187 patients.

2.2.3. Sampling method

By convenience sampling method: select eligible patients to participate in the study during the study period until the sample size is sufficient.

The results selected 200 suitable patients, the sample size for analysis was 200 patients.

2.3. Research methodology

The investigator contacted the department head in advance to ask for permission to collect data.

Collect demographic information at the time of admission.

Collect data from medical records combined with questioning patients about information related to clinical and paraclinical characteristics.

Collect information on care outcomes at admission, postoperative day 1, postoperative day 3, and discharge.

Satisfaction with care outcomes was collected on the day of discharge.

2.4. Evaluation criteria

Patient assessment through observation, including 9 contents: monitoring and timely handling of abnormalities; monitoring the status of surgical wounds and drainage; nutritional care; exercise care (according to the ODI scale); implementing medical orders; sleep care; personal hygiene; mental care; and health education. Each content has standards for passing and failing, reflecting the level of completion of the nurse's work.

The results of care are assessed through patient interviews with 34 questions, each question is scored according to 3 levels: 2 points (performed well), 1 point (performed but not regularly), 0 points (not performed). Care is considered satisfactory when the total score is ≥

82 (equivalent to ≥ 80% of the maximum score); below 82 points is unsatisfactory.

Patient satisfaction with nursing care was assessed using a 5-point Likert scale, categorized as "satisfied" (choose satisfied or very satisfied) and "dissatisfied" (choose normal, dissatisfied or very dissatisfied).

2.5. Data processing method

Using SPSS 20.0 software to process data.

2.6. Research ethics

The study was approved by the Ethics Council of Thang Long University under Decision No. 25021302/QD-DHTL dated February 13, 2025 and approved by 108 Central Military Hospital .

3. RESULTS

3.1. General characteristics of research subjects

The proportion of women is more than 4 times higher than that of men. The average age is relatively large (61.7 ± 8.9). There is an uneven distribution between age groups and occupational groups: farmers and workers account for the highest proportion (52.0%), while freelancers and traders account for only 1.0%. The study subjects are mainly concentrated in rural areas and deltas (65.5%). Half of the subjects are overweight or obese.

3.2. Clinical and paraclinical characteristics of patients undergoing surgery for lumbar spondylolisthesis

Table 1. Symptoms and reasons for hospitalization of patients with spondylolisthesis (n=200)

Variable	Number (n)	Percentage (%)
Hospitalization symptoms		
Back-ache	190	95.0
Pain in one leg	96	48.0
Pain in both legs	104	52.0
Intermittent claudication	123	61.5
Characteristics of pain		
All positions	42	21.0
Painful walking	158	79.0
Stand for long	105	52.5
Lie down to relieve pain	137	68.5
Lying down increases pain	2	1.0
Pain when bending	35	17.5
Symptoms of nerve root pain		
Painful	192	96.0
Numb	150	75.0
Reduced sensation	12	6.0

The symptoms that caused hospitalization were unevenly distributed, with back pain being the main reason for hospitalization (95.0%). About half of the patients had leg pain. According to the nature of the pain, patients mainly responded that the pain was worse when walking and that it was better when lying down. Most patients also reported that pain was a common symptom of radicular pain.

Table 2. X-ray and MRI images of patients with spondylolisthesis (n=200)

Variable	Number (n)	Percentage (%)
Slide position		
L3	22	11.0
L4	115	57.5
L5	34	17.0
L3 and L4	16	8.0
L4 and L5	13	6.5
Slip level		
Level 1	178	89.0
Level 2	16	8.0
Level 3	2	1.0
Level 4	4	2.0
Level 5	0	0
Magnetic resonance imaging		
Spinal stenosis	86	43.0
Narrow graft hole	13	6.5
Herniated disc	17	8.5
Degeneration of the spinal cord	34	17.0
Waist gap fibrous organization	0	0.0
Not implemented	50	25.0

The distribution of spondylolisthesis is uneven among locations, mainly concentrated at L4; the rate of level 1 spondylolisthesis is the highest and there are no cases of level 5 spondylolisthesis.

Table 3. Results of surgical wound care and drainage of patients after surgery (n=200)

Wound care and drainage results		Number (n)	Percentage (%)
Feelings about dressing changing technique			
Painless		167	83.5
Less pain		25	12.5
Painful		8	4.0
Frequency of wound dressing changes			
2 days/time		191	95.5
1 day/time		5	2.5
Abnormal > 2 times/day		4	2.0
Drainage care			
2 days/time		175	87.5
1 day/time		20	10.0
Abnormal > 2 times/day		5	2.5
Withdrawal time	After 24 hours	6	3.0
	After 48 hours	192	96.0
	After 72 hours	2	1.0
Urinary tract care			
No catheterization		117	58.5
Has catheterization	Withdraw after 24 hours	30	15.0
	Withdraw after 48 hours	43	21.5
	Withdraw after 72 hours	10	5.0

The results of Table 3 show that the rate of patients who had painless dressing changes was quite high (83.5%) and with a normal frequency of 2 days/time reaching 95.5%. The rate of patients who had surgical wound drainage removed after 48 hours was very high (96.0%), and more than half of patients after surgery did not need a urinary catheter (58.5%).

Table 4. Length of hospital stay and postoperative complications and care (n=200)

Variable	Quantity (n)	Proportion (%)
Hospital stay		
< 5 days	100	50.0
6- 10 days	95	47.5
11- 15 days	4	2.0
>15 days	1	0.5
Average time (min – max)	5.8 ± 2.0 (3 – 18)	
Accidents, complications after surgery, care		
Yes	9	4.5
No	191	95.5
Type of accident, complication		
Surgical site infection	2	1.0
Nerve root injury	7	3.5

Results of Table 4 show that most patients were hospitalized for less than 1 week, of which less than 5 days accounted for 50%. The rate of postoperative complications was very low (4.5%), of which nerve root injury complications accounted for 3.5% and surgical site infection complications accounted for 1.0%.

Table 5. Results of patient satisfaction after spondylolisthesis surgery (n=200)

NC variable	Satisfaction level				
	Very dissatisfied	Not satisfied	Normal	Satisfied	Very satisfied
DD cooperates well and handles work proficiently	0 (0,0)	0 (0,0)	10 (5.0)	121 (60.5)	69 (34.5)
DD provides information and answers questions	0 (0,0)	0 (0 .0	9 (7.3)	71 (55.7)	43 (35.0)
NB is provided with full information	0 (0.0)	5 (2.5)	8 (4.0)	135 (67.5)	52 (26.0)
Full tracking	0 (0.0)	0 (0.0)	7 (3.5)	117 (58.5)	76 (38.0)
Nursing communication attitude	0 (0,0)	2 (1.0)	4 (2.0)	159 (79.5)	35 (17.5)

NC variable	Satisfaction level				
	Very dissatisfied	Not satisfied	Normal	Satisfied	Very satisfied
Payment for hospital discharge and quick transfer	0 (0,0)	1 (0.5)	5 (2.5)	137 (68.5)	57 (28.5)
Counseling, nutrition education, full exercise	0 (0,0)	0 (0,0)	3 (1.5)	176 (88.0)	21 (10.5)
Overall satisfaction	0 (0,0)	0 (0,0)	18 (9.0)	133 (66.5)	49 (24.5)

Table 5 shows that the overall patient satisfaction rate with nursing care is very high (91.0%).

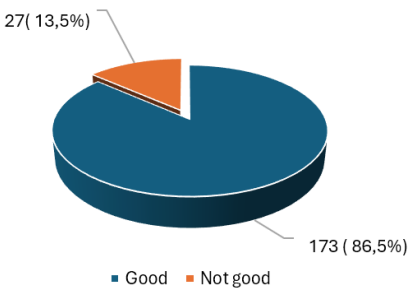

Figure 1. General care outcomes in patients after lumbar spondylolisthesis surgery (n=200)

Results in figure 1 show that good care outcomes were very high (86.5%).

4. DISCUSSION

4.1. Demographic characteristics of the study subjects

Lumbar spondylolisthesis surgery aims to correct the slippage, fix the spine with pedicle screws, and posterior interbody bone grafting, which is considered the most effective and most commonly used to treat lumbar spondylolisthesis and can be performed at different ages. Our study (NC) shows that the patient group has an average age of 61.7 ± 8.9, of which 82.5% are > 50 years old and 17.5% are ≤ 50 years old. This result is consistent with a number of studies on lumbar spondylolisthesis surgery subjects in the world and in Vietnam. NC by Vikaesh Moorthy in 2023 in Brazil on 995 patients, the average age is 61.4 ± 10.1 [9]; Hoang Gia Du 's study in 2022 at Bach Mai Hospital had an average age of 56.9 ± 1.75 10 , in which the proportion of patients over 50 years old accounted for 80.9% ; However , our results were higher than Pham Hong Phong's study in 2021 at Viet Duc Hospital [10] (15 - 72). This may be due to the difference in epidemiology of the study subjects, the subjects in the study at Viet Duc Hospital often had surgery related to injuries or work accidents, while the subjects in our study included both soldiers and the elderly. This is also consistent with the pathogenesis of lumbar spondylolisthesis including both degenerative and traumatic conditions. Regardless of age, the issue of lumbar spondylolisthesis surgery needs to be carefully considered and the nurse needs to predict the advantages and difficulties that the patient will encounter in order to support them in the most optimal way to give them the ability to recover quickly, maintain normal activities and most importantly, improve. However, the older the age of surgery, the greater the consequences of postoperative complications and the greater the need for nursing care. Our study showed that 12.0% of the subjects were over 70 years old. This shows that the elderly need to pay attention to the problem of prolonged lying down, immobility leading to secondary pneumonia, urinary tract infections, and pressure ulcers12. In addition, the elderly over 70 years old often have poor calcium synthesis, so the health education work for patients by nurses needs to guide patients after surgery to supplement foods and medicines to prevent osteoporosis, reduce bone loss and increase the process of new bone formation.

Our research results show that the proportion of women is 81.0%, higher than the proportion of men 19.0%, the male to female ratio is 1:4.3. Normally, the proportion of female patients with lumbar spondylolisthesis is higher than that of men because women have bone density and bone quality that gradually decrease with age. We believe that this difference comes from the limited sample size collected in the study compared to other topics. In our opinion, the number of female patients with the disease is higher, possibly because the socio-economic conditions of our country are still low, so women still have to work as hard as men. The majority of women with the disease are farmers, administrators who often have to sit a lot and do hard manual work. In addition, the old age factor makes women more susceptible to osteoporosis and leads to trauma or degeneration of the lumbar spine. Thus, factors such as heavy labor and pregnancy are among the common progressive trends in women that can increase the incidence of the disease in women. In addition, the degenerative condition of the spine and osteoporosis in women occurs faster due to hormonal deficiency after menopause. That explains why the high incidence of the disease in women female.

The mean BMI in women was 22.9 ± 2.7, higher than that in men at 21.9 ± 2.3; with the mean age of women at 59.5 ± 10.2, lower than that of men at 66.7 ± 7.1 years. The difference between the two sexes in age, BMI plus the proportion of women in the majority in most

studies. This phenomenon may suggest a gender difference in disease prevalence or in the choice of treatment. In Vietnam, cultural and social factors may affect the way women access health services and make treatment decisions. Therefore, considering gender factors in studies of lumbosacral spondylolisthesis is necessary to ensure equity in health care as the mobility of both sexes is lower around retirement age than in working age.

4.2. Clinical and paraclinical symptoms of patients with lumbar spondylolisthesis surgery

Common functional symptoms in lumbar spinal stenosis. The results of our study showed that 90.0% of patients were hospitalized with back pain, pain radiating down one leg (48.0%) and pain radiating down both legs (52.0%). This result is similar to the study of Nguyen Duc Hoang in 2022: the rate of patients with only back pain was very low (4.0%) but back pain radiating down the leg in the radicular type of one leg accounted for 71.4% and both legs accounted for (17.2%). The rate of patients with claudication in our study was 61.5%, a result similar to the study of Duong Tung Anh in 2021 at Viet Duc Friendship Hospital: 65.9% of patients had symptoms of claudication [11]. Thus, the main reason for hospitalization of patients is low back pain radiating down the leg due to pain along the corresponding location of the compressed nerve root, the pain is mechanical in nature and appears after local low back pain, the pain intensity is uneven between the areas of the leg. Or when raising each leg up gradually, the patient will feel pain when the knee is straightened and cannot be raised further. The positive level is assessed by the angle between the limb axis and the bed surface when pain appears.

Disc herniation is one of the causes of pain in spinal stenosis, it is also evidence of spinal instability whether or not it is clearly shown on film. In our study, we found that spinal stenosis accounted for 43.0%, disc degeneration 17.0%. Thus, in addition to the value of accurately diagnosing the cause of nerve compression in spondylolisthesis, MRI images also help surgeons orient the work of nerve release, determine the strategy before and during surgery. In addition, MRI also evaluates the soft tissues around the lesion area. In summary, when there are clinical manifestations that help orient to spondylolisthesis, the two priority imaging diagnostic methods applied are conventional X-ray and MRI to help assess the cause of slippage, the cause of nerve compression and the degree of spinal instability, helping to indicate surgery and orient the work to be done in PT.

4.3. Results of care for patients with lumbar spondylolisthesis surgery

Results of surgical wound care and drainage: 83.5% of patients had dry surgical wounds with no signs of inflammation or infection and felt no pain; 2.5% of patients received abnormal drainage care due to incomplete subcutaneous fluid requiring aspiration. Our results showed that there were no cases of drainage prolapse, which shows that the current patient transfer work has improved a lot, and attention has been paid to the suturing and fixing of drainage to minimize discomfort for patients. Nurses need to pay attention to the infusion and drainage lines when transferring patients to bed, absolutely avoiding pulling and stretching the lines from inside the patient.

Our research shows that 1.0% of infections occur in patients with long surgery times lasting more than 4 hours, and patients with diseases that are at risk of infection such as diabetes, high blood pressure, etc. However, these are superficial infections, detected promptly during the care process, so they do not affect the spinal fixation device. To minimize infection, nurses need to prepare before surgery according to the correct procedure: bathing with 2% chlorhexadine solution, cutting fingernails and toenails, etc., and following the correct hand hygiene times and technical procedures.

At 108 Military Central Hospital, the Early Recovery After Surgery (ERAS) program is being applied for patients. The goal of this method is to reduce hospital stay, improve treatment quality, reduce costs and reduce complication rates for patients by maintaining organ function before surgery and reducing reactions to stress, inflammation, and increasing immunity after surgery. Patients are specifically advised about ERAS before surgery to confidently participate in the treatment process and post-operative care. Patients will receive optimal nutrition and anesthetic, anesthesia - pain relief regimens. In daily hygiene care and urinary care, our study showed that the rate of catheterization was 58.5%, and most patients had their catheters removed early within the first 48 hours, only 5% of patients had them removed after 72 hours. It is worth noting the change in care at the 108 Central Military Hospital. We pay great attention to infection control, in which there is coordination between nurses and caregivers in personal hygiene for patients to prevent infection ; the coordination is highly effective, partly benefiting patients, partly reducing the workload of care for patients. Care activities for urinary catheters include instructing family members on how to clean the patient's genitals, instructing them on how to hang the urine bag to avoid urine reflux causing upstream infection, and an important thing is to pair the urinary catheter hourly to prevent the patient from experiencing the syndrome of losing the micturition reflex after removing the catheter. In addition to removing the catheter early, in our study, no patient had urinary tract infection.

4.4. Research limitations

Patients are admitted to the hospital at different times of the disease, so clinical symptoms upon admission are actually manifestations of the disease at different stages, making it difficult to analyze and highlight the

clinical progression of the disease at each stage.

Assessing nursing care through patient interviews is also a limitation. Patients rely on the frequency of performing nursing techniques to assess whether nursing care is adequate or not, which can lead to confusion. For example, if a patient's health has improved, the frequency of performing nursing techniques may decrease, but the patient may think that the nurse is not performing care.

5. CONCLUSION

Overall, the study population had a relatively high average age, with a predominance of female patients and a majority engaged in manual labor, along with a notable prevalence of overweight and obesity. Most were hospitalized for back pain, predominantly diagnosed with degenerative spondylolisthesis, often detected incidentally, with L4 being the most common site. Nursing care outcomes were positive, with high rates of proper dressing changes, timely drain removal, and no need for urinary catheterization after surgery, contributing to patient satisfaction and good care outcomes, both exceeding 85%.

RECOMMENDATION

Preoperative care requires attention to the patient's pain status, and nutritional status to provide a suitable diet for the patient before and after surgery due to the high rate of overweight and obese patients. For post-operative patients, early mobilization and early catheter removal should be encouraged to limit urinary tract infections.

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