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A study on postoperative nursing of minimally invasive surgery for lumbar disc herniation

Weiwei QUAN[1]*

Abstract

In order to explore the effective nursing methods and clinical therapeutic effects for patients with lumbar disc herniation after receiving minimally invasive surgery. In this study, a total of 50 patients receiving minimally invasive surgery for lumbar disc herniation in our hospital over the past year were selected and randomly divided into trial group and control group, with 25 patients in each group. Patients in control group were given routine nursing, and those in trial group were given postoperative comprehensive nursing including postoperative rehabilitation exercise, psychological nursing, diet nursing and other aspects. Visual analogue scale (VAS) was used to score the pain of patients in both groups before and after surgery; The final result shown that patients in trial group had better postoperative recovery time and hospital stays than patients in control group after nursing, with statistically significant difference ($P < 0.05$); the score of visual analogue scale (VAS) in trial group was better than that in control group, and with statistically significant difference ($P < 0.05$); the effective rate of trial group was 92.5%, compared with the 75% of control group with statistically significant difference ($P < 0.05$); the score of Barthel index of trial group was obviously better than that of control group, with statistically significant difference ($P < 0.05$). Therefore, the postoperative comprehensive nursing can not only help to improve the postoperative therapeutic effect, but also reduce the pain, accelerate the postoperative recovery and shorten the hospital stays of patients. Therefore, it shall be paid attention to and widely used in clinical practice.

Keywords: lumbar disc herniation; minimally invasive surgery; comprehensive nursing.

Practical Application: With the continuous progress of medical technology, minimally invasive surgery for lumbar disc herniation is more and more widely used. In order to improve the postoperative rehabilitation rate, major hospitals give priority to comprehensive nursing methods in clinic, so as to improve the rehabilitation rate of patients and reduce patients' pain and medical expenses.

Lumbar disc herniation is a common and frequent disease in clinical orthopedics. Its pathogenesis is that the degeneration of intervertebral disc and the rupture of annulus fibrosus cause the herniation of nucleus pulposus, which compresses the spinal cord or nerve and thus leads to a series of syndromes (Zhou, 1989). Lumbar disc herniation can occur at any age and is frequent between the ages of 20 and 50 years. The disease is prone to relapse and is mainly manifested as pain in lumbar and legs clinically, which will affect patients' daily activities; some serious cases may have spinal stenosis, and even lose their ability to work, causing many inconveniences to patients' daily life and seriously affecting their quality of life (Ren, 2014). At present, with the progress and development of medical technology, minimally invasive surgery for lumbar disc herniation emerges. Such surgical method, by means of advanced modern instruments, equipment and technology, has the same therapeutic effect as the traditional open surgery, and, compared with the traditional surgery, the advantages of small trauma, remarkable therapeutic effect, high precision, less bleeding, higher safety, easier recovery, lower cost of treatment, etc., so it gains much popularity among patients (Bocci, 1999; People's Republic of China, 1999). Therefore, the resulting postoperative nursing also becomes a new nursing research topic, which can provide effective references for future surgical treatment and postoperative nursing of lumbar disc herniation. In this study, a total of 80 patients receiving minimally invasive surgery for lumbar disc herniation in our hospital over the past year were selected and randomly divided into trial group and control group, with 40 patients in each group. Patients in control group were given routine nursing, and those in trial group were given comprehensive nursing including postoperative rehabilitation exercise, psychological nursing, diet nursing and other aspects. Comprehensive nursing is that the nursing process is taken as the main body and made systematic, based on which the nursing philosophy, responsibilities and evaluation of nurses, standardized nursing plan, patient education plan, discharge plan, filling of various nursing forms, control of nursing quality and other aspects are all closely integrated and coordinated to ensure the level and quality of nursing services. It perfectly combines the advantages of primary nursing and team nursing. Currently, as the medical level constantly develops, comprehensive nursing is also increasingly used in clinical practice. For example, comprehensive nursing measures are taken for the postoperative nursing of cardiovascular and cerebrovascular diseases, angina pectoris, coronary heart disease, cancer, fracture, cerebral infarction and other diseases, and achieve good results, which are beneficial to improving the

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[1] *Operating Room, Zhejiang University Of Traditional Chinese Medicine Affiliated Wenzhou Hospital, Zhejiang, Wenzhou, China*
*Corresponding author: qwwei76@outlook.com

quality of life of patients, reducing the disability rate, alleviating or avoiding the pain, reducing the hospitalization costs, making patients recover as soon as possible, etc. Results of this study have also shown that postoperative comprehensive nursing for patients receiving minimally invasive surgery for lumbar disc herniation not only helps to improve the postoperative clinical therapeutic effects, but also relieves the pain, improves the quality of life and reduces the hospitalization costs of patients, thus playing a positive role in promoting the future clinical study and worthy of wide clinical application. The detailed report is as follows.

1 Data and methods

A total of 80 patients aged between 20 and 69 years (average age: 46.00 ± 14.14 years) who received surgery for lumbar disc herniation in our hospital over the past year were selected, including 32 males and 18 females. All selected patients were confirmed to meet the surgical indications and have no contraindications to microsurgery according to their previous medical records, clinical symptoms and other information. After given the conventional anesthesia, patients were located under the fluoroscopy and monitoring of X-Arm X-Ray Unit to determine the protruded intervertebral space, and then a longitudinal incision with a length of 1.5-2.0cm was made. Then a fixed intervertebral disc endoscopy operating system was installed to perform the minimally invasive surgical treatment (Li, 2012). After the treatment, the 50 patients were divided into trial group and control group, with 25 patients in each group. Patients in trial group were given comprehensive nursing, and those in control were given routine nursing. All treatment methods and nursing methods in this study were approved by the ethics committee of our hospital. All patients participating in this study and their family members were informed of the content and plan of this study, and voluntarily accepted and actively cooperated in this study. There was no significant difference between the two groups in general clinical data such as age, gender and clinical symptoms, so the two groups had no statistically significant difference ($P > 0.05$) and were comparable.

2 Nursing

2.1 Nursing methods

The 25 patients in control group were given routine nursing, which mainly includes that the patients and their family members were informed of the matters needing attention in postoperative recovery process; patients were given postoperative routine drugs and monitoring directed by doctors, and were instructed to properly wear waist support when getting out of bed for activities three days after surgery. Nurses of patients in control group shall record and regularly sort out patient's daily data based on the items in this study.

Nursing of trial group

The 25 patients in trial group were given comprehensive nursing including postoperative rehabilitation exercise, psychological nursing, diet nursing and other aspects based on routine nursing, with a special nursing team set up to implement the nursing plan and special nurses assigned to record on time and regularly sort out patients' physical conditions and other aspects every day. The specific nursing content is reported as follows.

Postoperative nursing plan and publicity and education of daily basic knowledge

Before carrying out all-sided postoperative comprehensive nursing, nurses participating in this nursing study are responsible for sorting out the nursing contents and develop a nursing plan according to the purpose of this nursing study, and then they give detailed explanations to patients and their family members in such forms as PPT or graphics and texts, so that patients and their family members can provide active cooperation in the future. Nurses shall also timely explain relevant knowledge about the disease to patients and their family members, and inform them that a series of possible discomforts after surgery are normal and they do not have to worry about them, and that they shall timely inform the medical workers in case of any discomfort (Hui, 2011). Nurses shall also provide training on basic nursing knowledge for patients and their family members, to help them deal with sudden physical discomforts and daily physical recovery, and promote patients' postoperative physical recovery, thus achieving a good therapeutic effect.

Strengthen postoperative basic nursing

Patient returning to the ward from the CT room after surgery shall be moved to the bed by three nurses, who shall stand separately by the patient and the outer edge of the bed, and hold up the patient's shoulders, waist and buttocks and lower limbs to keep the body horizontal, and then lift the patient up hard and move the patient gently to the bed. Nurses shall instruct the patient to keep in a prone position on the bed, and change to a normal position 6-8 hours later; 24 hours of bed rest must be ensured. During the bed rest, the nurses shall help the patient turn over once every 1-2 hours, ensuring that the patient is in an axial position and the spine is kept in a horizontal line when turning over. The nurses shall also tell the patient not to twist the body forcibly by himself/herself for fear that his/her spine is twisted, slipped or displaced or has other conditions (Li, 2012). At the same time, the patient shall be instructed to relieve himself/herself on the bed during the 24 hours of bed rest and to wear the waist support when coughing and defecating, to prevent the exacerbation or recurrence of lumbar disc herniation due to the increased pressure in the chest and abdomen (Li & Yao, 2009). ECG monitoring shall be performed for the patient after surgery to closely observe the changes in blood pressure, heart rate, heart rhythm and other vital signs, so that the complications can be discovered in time. At the same time, attention shall also be paid to the changes in the patient's mind and pupils, the worsening of pain and the feeling of the patient's lower limbs, and any abnormality, if any, shall be immediately reported to attending doctor for treatment. The nurses shall also pay attention to the bleeding or exudation of the patient's wound within 24 hours after surgery, ensuring that the wound dressing is dry and clean and that the dressing found to be contaminated is timely replaced to avoid wound infection. The patient's skin shall be kept clean and the sheets clean, dry and flat. Local massage for the place

of bone prominence is required, and special attention shall be paid to keeping the lumbar and back warm.

Postoperative rehabilitation nursing

From the second day after surgery, nurses told the patient that he/she could walk wearing the waist support and instruct the patient in active flexion-extension of joints of lower limbs, mainly the flexion-extension of dorsa of feet, eversion of ankle joints and flexion-extension of knee joints, every day after getting up, before lunch, before dinner, and before going to bed, for 20-30 repetitions each time, until he/she was discharged. The main purpose is to prevent the formation of deep venous thrombosis (DVT). Nurses could also instruct the patient to do straight-leg-raising (SLR) movement three times a day, for 15 minutes each time, which could prevent nerve adhesion and accelerate the elimination of nerve root edema (Li & Zhi, 2010). From the fifth day after surgery, the patient could be instructed to exercise his/her lumbar and back muscles. The first is five-point support exercise (Supine Gluteal Bridge). The patient lays on his/her back with knees bent and feet kept apart to the shoulder width, raises his/her buttocks to the limit under the support of the head, elbows and feet on the bed, and then lowers the buttocks down to the starting position; the above movement is repeated for 10 times. The second is three-point support exercise. Similarly, the patient lays on his/her back with knees bent and feet kept apart to the shoulder width, raises his/her buttocks to the limit under the support of the head and feet on the bed, and then lowers the buttocks down to the starting position; the above movement is also repeated for 10 times. The last is flying swallow type exercise. The patient lays in a prone position with arms extended backwards and head and neck raised to such an extent that his/her chest is gotten off the bed, and at the same time extends his/her legs backwards to get them off the bed as far as possible; the above movement is repeated for at least 5 times. In this way, the patient's back extensor can be effectively exercised (Chen, 2010). Two weeks after the surgery, the patient can properly increase the number of times of each exercise according to personal conditions and his/her own tolerance, and does not be too hasty or does excessive exercises which may cause injury. Nurses shall also, together with the patient's family numbers, urge the patient to get rid of the bad postures in daily life and develop healthy postures, which can be beneficial to the patient's postoperative recovery and prevent the recurrence.

Postoperative pain nursing

Lumbar disc herniation occurs when annulus fibrosus of the lumbar disc ruptures, making the nucleus pulposus protrude through the rupture and compress the nearby nerve roots, thus resulting in the edema and adhesion of the nerve roots. Therefore, patients with lumbar disc herniation have a series of pains, such as lumbar pain, leg numbness and sciatica. The pains are not relieved immediately after treatment. Hence, patients with severe pain can be given appropriate analgesics; the possibility of infection of surgical incision shall be considered for pains in surgical incision after surgery and appropriate antibiotics can be given, and nurses shall closely observe the surgical incision and strengthen the treatment for the surgical incision.

Postoperative psychological nursing

Patients who have long suffered from lumbar disc herniation have serious psychological stress and tend to have emotions such as anxiety and panic, due to the serious effect of the disease on their daily life, their concerns about some conditions after surgery, and some discomforts caused after surgery, which may affect their postoperative physical recovery and thus result in poor therapeutic effect. Therefore, nurses shall properly guide patients in psychology after surgery, understand their psychological conditions and pay close attention to their emotional fluctuations. Nurses shall provide services for patients kindly, communicate with them gently, give them spiritual comfort and ease their unhealthy emotions, ensuring that patients can feel the care and respect from nurses and thus enhance their trust in nurses, relieve their fear of the disease and build confidence in overcoming the disease. Patients then will cooperate with the treatment and recover as soon as possible. Besides, nurses can also tell some interesting stories to patients to temporarily distract their attention from physical pain and relax their mood; some soft music can also be played to help those suffering from insomnia sleep. These measures can also improve the therapeutic effect.

Postoperative diet nursing

Patients need not fast after surgery and just maintain a normal appetite. Nurses shall prepare reasonable set meals for patients according to their conditions, and provide them with more high-calorie and high-protein food such as bone soup and pork liver (Guan et al., 2020; Qin et al., 2021; Wang et al., 2021); nurses shall also prepare plenty of fruits and vegetables for patients and remind them to eat more after surgery (Chen et al., 2021; Hu et al., 2021; Wu et al., 2021). At the same time, nurses shall instruct patients to drink more water after surgery to prevent the postoperative complications such as urinary retention and constipation. Patients shall also be informed that milk, bean products and other foods that can easily produce flatulence are forbidden to prevent the abdominal distension; cold, spicy and other irritating foods are also not allowed. Most importantly, nurses must instruct patients not to smoke or drink, and develop good dietary habits.

Postoperative discharge nursing

Nurses shall intensify the exercise of patients' lumbar and back muscles one day before discharge, with proper health publicity and education, to ensure the healthy development of the body in all aspects after patients discharge. Nurses shall instruct patients to wear the waist support on the way home on the day of discharge, and rest on a hard bed with a soft mattress after returning home, ensuring that the lumbar and back are kept warm. Patients shall keep on high-intensity exercise of lumbar and back muscles within one month after discharge, and then remove the waist support and start the waist movement after one month. Exercise of lumbar and back muscles shall be kept on, but patients shall exercise slowly according to

their physical conditions and do not be hasty (Luo, 2001). Nurses shall also instruct patients to lie on their back on the bed within three months after discharge and avoid weight on their waist. In the daily life and work, patients shall not stand for a long time to avoid excessive physical fatigue; behaviors of bending over and carrying or lifting heavy things are not allowed. Patients shall protect themselves against getting cold for fear that the behaviors such as coughing and sneezing affect the recovery of lumbar. Patients are not allowed to turn around after bending over, an action like pouring away the water, or suddenly bend over or stand up, and must avoid the physical labor requiring high strength and heavy load. Patients who want to take things from a lower position shall squat down and bend their hips and knees, and stand up slowly after they have taken things instead of suddenly straightening up forcibly, to prevent the intervertebral disc from being pushed into spinal canal due to too much pressure on lumbar spine and causing nerve compression again.

2.2 Observation index

Visual analog scale (VAS) (Melzack, 1975) was used to evaluate the pain tolerance of patients in both groups before and after nursing: 0 means patients feel painless; 1-3 means patients has mild but tolerable pain; 4-6 means patients feel painful and the pain affects the sleep but is tolerable; 7-10 means patients have intolerable strong pain and the pain affects the appetite and sleep. A self-made scale of department was used to compare the postoperative recovery time and hospital stays of patients in both groups; the reference Macnab (Le et al., 2003) criteria for evaluation of therapeutic effect were used to evaluate the therapeutic effects of patients in both groups before and after nursing, which can be rated as excellent, good, fair and poor. Excellent: leg can be raised for more than 70° in straight-leg-raising test, pain disappears, motor function is not restricted, and normal work and activity are recovered; Good: leg can be raised for more than 70° in straight-leg-raising test, pain is significantly relieved with still a little pain left, but the motion of lower limbs and waist is not restricted, and general daily work is not affected; Fair: leg can be raised for a larger angle but less than 70°, and pain can be felt occasionally and affects the daily work and activities; Poor: results of straight-leg raising test and symptoms are not significantly improved and even get worse after surgery. Evaluation on patients' ability to perform daily activities using Barthel index can also evaluate the functional status before and after treatment and thus the therapeutic effects of patients. Content of Barthel index mainly includes toileting, defecating, urinating, feeding, dressing and negotiating stairs (10 points for each item); bathing and grooming (5 points for each item); transfers, and walking on the ground (15 points for each item). The scale has a score of 0-100 and is used to evaluate the independent living conditions before and after treatment. The higher the score, the stronger the independence in life and the less dependence on others.

2.3 Statistical methods

In this study, SPSS17.0 Statistics was used for statistical analysis of the data. The measurement data were expressed in ($\bar{x} \pm s$). The difference between the two groups was compared by t test and x^2 test, respectively, and $P < 0.05$ means that the difference was statistically significant.

3 Results

3.1 Comparison of pain degree before and after nursing between the two groups

Results of data of pain scores before and after nursing between the two groups respectively recorded by nurses are shown in Table 1 and Table 2.

The data in Table 1 were analyzed by t test in the SPSS17.0 software to obtain relevant conclusion. Specific operation steps are as follows.

Table 1. Comparison of Pain Scores before Nursing between the two groups (point).

	Pain Scores before Nursing (VAS)									
Trial group	3	7	8	10	8	6	5	8	9	6
	10	5	6	4	7	8	10	9	8	6
	7	8	5	6	5					
Control group	4	6	8	9	6	4	6	7	10	8
	9	5	9	6	7	9	8	5	8	7
	5	10	8	6	8					

Table 2. Comparison of Pain Scores after Nursing between the two groups (point).

	Pain Scores after Nursing (VAS)									
Trial group	0	2	3	3	2	1	2	1	2	1
	2	1	2	0	2	1	1	0	3	1
	1	3	2	1	2					
Control group	1	2	3	6	2	1	2	2	3	1
	2	3	4	0	2	1	2	5	4	3
	1	2	5	1	3					

Data entry

Open the SPSS data editor, define the two variables of group (1 for trial group, and 2 for control group) and x (pain score), and enter the data.

Data analysis

Click the "Analyze" button in the editor, select "Compare Means", and then select the dialog box of "Independent-Samples T Test"; open the dialog box of "Independent-Samples T Test", and define the Test Variable as x and the Grouping Variable as group; open the dialog box of "Define Groups", enter "1" in Group 1 and "2" in Group 2, click "Continue" to return to the main dialog box, and finally click "OK" to perform the analysis.

Output results

Table 3 and Table 4 and were obtained from the analysis results in 3.1.2.

The analysis steps in Table 2 were the same as those in Table 1. Therefore, Table 5 was obtained by integrating the analysis results of the two tables.

According to the results shown in Table 6, the difference in pain before nursing between the two groups was not statistically significant ($P > 0.05$). The VAS score was (1.56 ± 0.92) for patients in trial group after nursing, compared with the (2.44 ± 1.47) for patients in control group after nursing. The VAS scores after nursing were reduced compared with those before nursing for patients in both groups, but the reduction of the VAS scores for patients in trial group was much higher than that for patients in control group, and the difference between the two groups was statistically significant ($P < 0.05$).

3.2 Comparison of postoperative recovery time and hospital stays between the two groups

Results of data of postoperative off-bed time, pain relief time, and hospital stays after routine nursing and comprehensive nursing

Table 3. Group statistics.

	Group	N	Mean	Std. Deviation	Std. Error Mean
x	1	25	6.96	1.904	.381
	2	25	7.12	1.764	.353

Table 4. Independent samples test.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
				t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.						Lower	Upper
x	Equal variances assumed	.085	.772	-.308	48	.759	-.160	.519	-.1.203	.883
	Equal variances not assumed			-.308	47.723	.759	-.160	.519	-.1.204	.884

F = F value of variance homogeneity test; Sig. = P value of variance homogeneity test; t = t value; df = degree of freedom; Sig. (2-tailed) = Bilateral probability, i.e. p value.

Table 5. Comparison of Pain Scores before and after Nursing between the two groups (point, $\bar{x}$ ± s).

Group	n	VAS Score	
		Before Nursing	After Nursing
Trial group	40	6.96 ± 1.90	1.56 ± 0.92
Control group	40	7.12 ± 1.76	2.44 ± 1.47
t value		0.649	-2.535
P value		0.519	0.015

Table 6. Comparison of Postoperative Off-Bed Time between the two groups.

	Postoperative Off-Bed Time (d)																			
Trial group	3	5	3	4	6	2	5	3	2	3	5	7	2	8	3	4	6	2	3	5
	2	5	8	4	3															
Control group	5	6	4	3	5	8	6	9	11	5	9	7	8	5	3	3	10	5	3	5
	9	8	6	3	4															

respectively between the two groups respectively recorded and sorted out by nurses are shown in Table 6, Table 7 and Table 8.

The data in Table 6, Table 7 and Table 8 were analyzed by t test in the SPSS17.0 software to obtain relevant conclusion. The specific operation steps were the same as those in 3.1, and Table 9 was obtained by integrating all the data.

According to Table 9, it can be concluded that the postoperative off-bed time, postoperative pain relief time and hospital stays of trial group were all better than those of control group, and the difference between the two group was statistically significant ($P < 0.05$).

3.3 Comparison of evaluation on therapeutic effects of patients between the two groups

Results of data of therapeutic effects between the two groups respectively recorded and sorted out by nurses are shown in Table 10.

In order to facilitate our analysis of the influencing factors, we divided the evaluation results of therapeutic effect into two categories, where "excellent", "good" and "fair" in Macnab criteria mean effective and "poor" means ineffective. Independent chi-square test in SPSS17.0 Statistics was used for statistical analysis of this group of data and thus obtained the corresponding conclusion. Specific operation steps are as follows.

Data entry

Open the SPSS data editor, and click the "Define View" button to define the three variables of g, r and f, where g means Group (1 for trial group and 2 for control group); r means Effect (1 for effective and 2 for ineffective); f means Frequency. Then click the "Data" button to enter the data.

Data analysis

Click the "Data" button in the Data editor, select and open the dialog box of "Weight Cases" to define the weight cases, select the variable f of the weight cases, and click the "OK" button; click the "Analyze" button in the Data editor, select "Crosstabs" under the "Descriptive Statistics"; open the dialog box of "Crosstabs", select row variable g and column variable r; open the sub-dialog box of "Crosstabs: Statistics", select "Chi-square", and click "Continue" to return to the main dialog box; open the sub-dialog box of "Crosstabs: Cell Display", define and output row percentages and click "Continue" to return to the main dialog box; finally click "OK" to perform the analysis.

Table 7. Comparison of Pain Relief Time between the two groups.

	Postoperative Pain Relief Time (d)																				
Trial group	8	5	8	7	6	5	8	7	9	6	8	9	7	8	6	10	7	9	8	6	7	8	7	5	4
Control group	12	9	10	15	8	10	6	9	11	8	9	12	9	5	6	9	10	8	7	6	8	7	10	6	8

Table 8. Comparison of Hospital Stays between the two groups.

	Hospital Stays (d)																				
Trial group	5	7	5	4	6	5	8	5	9	5	6	7	8	6	5	7	6	5	6	7	6	9	8	7	9
Control group	8	6	9	5	7	8	10	12	14	8	9	7	9	6	5	8	10	8	7	9	9	8	12	9	11

Table 9. Comparison of Postoperative Recovery Time and Hospital Stays between the two groups (d, $\bar{x} \pm s$).

Group	Case number (n)	Postoperative off-bed time	Postoperative pain relief time	Hospital stays
Trial group	25	4.12 ± 1.83	7.12 ± 1.48	6.44 ± 1.45
Control group	25	6.00 ± 2.42	8.72 ± 2.28	8.56 ± 2.16
T value		-3.100	-2.94	-4.08
P value		< 0.05	< 0.05	< 0.05

Table 10. Comparison of Evaluation on Therapeutic Effects of Patients between the two groups (n).

Group	n	Excellent	Good	Fair	Poor	Effective rate/%
Trial group	25	14	8	2	1	96.0
Control group	25	10	7	2	6	76.0

Statistical results

We obtained the statistical results as shown in Table 11 and Table 12 through the above analysis in 3.3.2.

Table 13 was obtained by integrating the analysis results of the data in Table 11 and Table 12.

According to the results in Table 13, the effective rate for patients in trial group after nursing was 96.0%, which was much higher than the 76.0% for patients in control group after nursing. The ineffective rate for patients in trial group after nursing was 4.0%, which was much lower than the 24.0% for patients in control group after nursing. The difference between the two groups was statistically significant (P < 0.05).

3.4 Comparison of Barthel index for patients in the two groups before and after nursing

Results of data of comparison of Barthel index for patients in the two groups before and after nursing recorded and sorted out respectively by nurses are shown in Table 14 and Table 15.

The data in Table 14 and Table 15 were analyzed by t test in the SPSS17.0 software to obtain relevant conclusions. Specific operation steps were the same as those in 3.1, and Table 16 was obtained by integrating all the data.

According to the results in Table 16, the difference of Barthel index between the two groups before nursing was not statistically significant (P > 0.05). The Barthel index of patients in

Table 11. Crosstabulation of Groups * Occurrence of Complications.

			Effect		Total
			Effective	Ineffective	
Group	Trial group	Count	24	1	25
		% within the group	96.0%	4.0%	100.0%
	Control group	Count	19	6	25
		% within the group	76.0%	24.0%	100.0%
Total		Count	43	7	50
		% within the group	86.0%	14.0%	100.0%

Table 12. Chi-Square tests.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig.(2-sided)	Exact Sig.(1-sided)
Pearson Chi-Square	4.153[a]	1	.042		
Continuity Correction[b]	2.658	1	.103		
Likelihood Ratio	4.545	1	.033		
Fisher's Exact Test				.098	.049
Linear-by-Linear Association	4.070	1	.044		
N of Valid Cases	50				

df = degree of freedom; Asymp. Sig. (2-sided) = Bilateral probability value; Exact Sig.(2-sided) = Probability value of bilateral exact probability method; Exact Sig.(1-sided) = Probability value of one-sided exact probability method. a 2 cells (50.0%) have expected count less than 5. The minimum expected count is 3.50; b Computed only for 2 × 2 table.

Table 13. Comparison of Evaluation on Therapeutic Effect of Patients between the two groups (n %).

Group	No. of People (n)	Effective	Ineffective
Observation group	25	24 (96.0)	1 (4.0)
Control group	25	19 (76.0)	6 (24.0)
x^2		4.153	
P		0.042	

Table 14. Comparison of Barthel Index for patients in the two groups before nursing (point).

	Barthel index before nursing (point)																			
Trial group	59	68	69	68	70	59	48	60	65	40	70	52	59	50	62	58	52	65	60	59
	49	40	50	42	78															
Control group	60	55	65	50	48	61	58	52	67	46	50	60	65	68	70	56	78	60	53	69
	59	50	61	58	52															

Table 15. Comparison of Barthel Index for Patients in the two groups after nursing (point).

	Barthel index after nursing (point)																			
Trial group	69	78	80	75	90	69	88	80	69	70	85	72	89	61	70	69	77	65	80	66
	89	73	59	74	78															
Control group	70	65	72	50	88	61	68	52	67	70	78	60	69	79	81	69	78	58	59	71
	65	56	73	63	52															

Table 16. Comparison of Barthel Index for Patients in the two groups before and after nursing (point, $\bar{x} \pm s$).

Group	n	Barthel index	
		Before nursing	After nursing
Trial group	40	58.08 ± 10.04	75.00 ± 8.72
Control group	40	58.84 ± 7.92	66.96 ± 9.66
T value		-0.297	3.089
P value		0.768	0.003

trial group after nursing was (75.00 ± 8.72) points, and the VAS score of patients in control group after nursing was (66.96 ± 9.66) points. The Barthel index of patients in the two groups after nursing was improved, compared with that before nursing, but the improvement of the Barthel index for trial group was significantly higher than for control group, and the difference between the two groups was statistically significant ($P < 0.05$).

4 Discussion

As society makes progress and develops constantly, people's pace of life is also continually accelerating, which leads to increasing work pressure and labor intensity. Therefore, the incidence of lumbar disc herniation is rising year by year, especially among people between the ages of 20 and 50 years. At present, with the progress and development of medical technology, minimally invasive surgery for lumbar disc herniation emerges. Such surgical method, by means of advanced modern instruments, equipment and technology, has the same therapeutic effect as the traditional open surgery, and, compared with the traditional surgery, the advantages of small trauma, remarkable therapeutic effect, high precision, less bleeding, higher safety, easier recovery, lower cost of treatment, etc., so it gains much popularity among patients. However, investigation found that some patients after receiving minimally invasive surgery still have a series of complications on which simple traditional nursing methods have no obvious therapeutic effect. Therefore, to improve the postoperative therapeutic effect for patients and reduce the complications, the comprehensive nursing mode integrating postoperative rehabilitation exercise, psychological nursing, diet nursing and other nursing methods shall be used by nurses (Ou, 2012). Postoperative rehabilitation exercise can improve local blood circulation to relieve local swelling and pain, accelerate the repair of damaged tissues to prevent postoperative nerve root adhesion, and enhance the elasticity and endurance of lumbar and back muscles and fascia to strengthen the stability and flexibility of joints of vertebral column (Zheng et al., 2002), which is helpful to consolidate and improve the postoperative therapeutic effect, and prevent the recurrence of the disease (Xu, 2002). Comprehensive nursing is that the nursing process is taken as the main body and made systematic, based on which the nursing philosophy, responsibilities and evaluation of nurses, standardized nursing plan, patient education plan, discharge plan, filling of various nursing forms, control of nursing quality and other aspects are all closely integrated and coordinated comprehensively to ensure the level and quality of nursing services. It perfectly combines the advantages of primary nursing and team nursing. By comprehensive nursing, patients can obtain continuous and comprehensive holistic nursing, which is highly satisfactory; nurses' sense of responsibility, sense of knowledge and sense of achievement can be strengthened, so that their initiative and enthusiasm for work are enhanced and their job satisfaction is increased; nurses' communication with patients, patients' family members and other medical workers can be strengthened and their cooperation can be enhanced; effective communication among team members can be promoted and service quality of nursing can be improved; nurses can be helped to participate in the formulation of nursing plans, which can therefore enhance their work interest and satisfaction. However, it also has some disadvantages such as the relatively weak evening and night shift crew, compared with day shift, due to the vacancy of nurses, and the greater work pressure of nurses due to the accelerated nursing pace.

In this study, psychological nursing was performed for patients receiving minimally invasive surgery for lumbar disc herniation, and humanistic nursing was taken as a basic concept and combined with evidence-based nursing, based on which a special nursing team was set up to work out a comprehensive nursing regimen including postoperative rehabilitation exercise, psychological nursing, diet nursing and other aspects on the basis of the routine nursing, which is used for nursing intervention for patients from physiology, psychology and other aspects to strengthen the guidance to patients in pain nursing and rehabilitation exercise and timely relieve patients' anxiety, so as to help patients relieve pain, enhance the confidence in treatment and improve the therapeutic effect. Based on the analysis in this study, we concluded that

patients in trial group, after receiving comprehensive nursing, had better reduction of VAS score, postoperative recovery time, hospital stays, effective rate of treatment, and Barthel index than patients in control group, and the difference between the two groups was statistically significant ($P < 0.05$). This indicates that effect of comprehensive nursing is obviously better than that of routine nursing. Therefore, comprehensive nursing regimen including postoperative rehabilitation exercise, psychological nursing, diet nursing and other aspects based on routine nursing can lay a good foundation for the early rehabilitation of patients receiving minimally invasive surgery for lumbar disc herniation.

In conclusion, despite the disadvantages such as the great demand for nurses and greater pressure of nurses, postoperative comprehensive nursing can not only effectively reduce the pain and improve the postoperative therapeutic effect of patients receiving minimally invasive surgery for lumbar disc herniation, but also promote the recovery of their limb function and improve their ability to perform the activity of daily living, thus improving the quality of life of patients and the happiness of patients and their families. For clinical study, it also has a positive role in promoting the development of clinical study, and thus shall be paid attention to and widely used in clinical practice.

Conflict of interest

The author declare that they have no conflict of interest.

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