

Application Effect of Clinical Pathway of Orthopedic Nursing in Patients with Ankle Fracture

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Abstract: Objective: This study investigates the effect of orthopedic nursing in patients with ankle fractures. Methods: A total of 84 patients with ankle fractures treated in our hospital from September 2022 to September 2023 were selected and randomly divided into a control group and an observation group using a random number table, with 42 cases in each group. The control group received routine nursing, while the observation group received orthopedic nursing clinical pathway on the basis of traditional nursing. We analyzed and scored the nursing satisfaction and nursing effect of the two groups. Results: Compared with the control group, the observation group had a higher total nursing satisfaction rate, shorter time to get out of bed, shorter hospital stay, and lower hospitalization cost. The Barid score and AOFAS score of the observation group were higher than those of the control group, while the NRS score was lower. Conclusion: The application of orthopedic nursing clinical pathway in patients with ankle fractures significantly improves their quality of life, promotes better recovery of ankle function, and shortens the rehabilitation time.

Keywords: Orthopedic nursing clinical pathway; Ankle fracture; Application effect

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1. Introduction

Ankle fracture is a common clinical disease caused by direct or indirect violence. Depending on the severity of the injury, patients may present with various symptoms such as ankle swelling, bruising, pain, and deformity, and in severe cases, they may even be unable to walk normally. At present, surgical treatment is mainly used in clinical practice. Compared with traditional conservative treatment, surgery can better improve ankle function but has certain trauma, which may lead to corresponding complications and thus affect the patient's rehabilitation. Existing studies have shown that effective and safe nursing for patients with ankle fractures is crucial to improving their curative effect. The orthopedic nursing clinical pathway is a new nursing model that focuses on the patient and helps them recover through multi-level and multi-dimensional nursing services. However, the effect of this nursing method on the rehabilitation of joint function in patients with ankle fractures is still unclear. Therefore, this study selected 84 patients with ankle fractures treated in our hospital from September 2022 to September 2023 to explore the application effect of the orthopedic nursing clinical pathway in patients with ankle fractures.

2. Objects and methods

2.1. Objects

As mentioned above, 84 patients with ankle fractures admitted to our hospital from September 2022 to September 2023 were selected as the research objects.

They met the inclusion criteria for the research population: first, they all met the diagnostic criteria for patients in the Expert Consensus on Optimization of Ankle Fracture Diagnosis and Treatment under the Concept of Enhanced Recovery After Surgery (ERAS) and had undergone CT, MRI, and other examinations; second, they had a clear history of trauma; third, all were fresh closed fractures; fourth, the time from fracture to admission was less than 8 hours; fifth, imaging examination and medical records were completely preserved.

The exclusion criteria were: first, complicated with tumors; second, complicated with mental diseases; third, dropping out midway; fourth, complicated with coagulation dysfunction; fifth, pathological fractures. They were divided into two groups with 42 cases in each group by random number table method. Among them, the control group included 27 male patients and 15 female patients, aged 21–71 years, with an average of (42.19 ± 1.46) years. The observation group included 25 male patients and 17 female patients, aged 22–71 years, with an average of (42.24 ± 1.28) years. There was no statistically significant difference in general data between the two groups ($p > 0.05$). All patients were informed of the research content, signed the informed consent form, and the study was approved by the Ethics Committee of our hospital ^[1].

2.2. Methods

The control group received routine nursing, and the specific measures were as follows.

2.2.1. Dietary guidance

A personalized meal plan was formulated according to the specific situation of the patient. Patients should not eat raw, cold, spicy, or irritating food, but eat more food rich in vitamins and protein.

2.2.2. Health education

Actively communicate with patients to understand their needs and conditions, and answer their questions. Educate patients on the etiology, prevention, and treatment, inform them of the treatment plan, process, and precautions, and assist them in completing all examinations.

2.2.3. Psychological counseling

According to the patient's mental state, distract their attention through listening to music, watching videos, etc. Discuss issues of concern with patients, encourage them to express their true thoughts, correct wrong ideas in time, and affirm their reasonable opinions.

2.2.4. Postoperative nursing

Patients were given daily physical exercise without special requirements.

2.2.5. Stepwise nursing intervention under the clinical pathway

The observation group was intervened by clinical pathway on the basis of the control group ^[2].

(1) Establishment of orthopedic clinical pathway nursing team: Nurses from various departments were

organized into an orthopedic clinical pathway nursing team, with the head nurse as the team leader to coordinate and manage various work. Team members were regularly trained on nursing pathway knowledge and skills, and could take up their posts only after passing the assessment. The Orthopedic Clinical Pathway nursing plan was formulated, and the Orthopedic Clinical Pathway was formulated on this basis.

- (2) On the day of admission: A special nurse was assigned to each patient to actively communicate with them, listen to their opinions, and make a detailed evaluation of their situation. The nurse first introduced herself to the patient, familiarized them with the environment of the hospital, department, and ward, and reduced their sense of strangeness. Instruct patients to quit smoking and drinking, explain the etiology and treatment methods, inform them of the surgical methods and precautions, and inform them of the treatment plan to build their confidence. Explain the significance and necessity of each examination. During the treatment, attention should be paid to preventing redness and swelling of the ankle, and at the same time, preventing frostbite ^[3].
- (3) 1 day before operation: During all examinations, patients should fast for 12 hours and abstain from drinking for 6 hours. According to different mental states, targeted psychological counseling was carried out by watching videos, listening to music, etc. Strengthen ward rounds and place snoring patients in different rooms to ensure that patients get enough sleep.
- (4) On the day of operation: Dynamically monitor the patient's vital signs, closely cooperate with doctors, and promptly inform doctors for treatment if any abnormalities are found. Observe the movement, blood supply, skin temperature, and sensation of the affected limb, and properly lift the affected limb to facilitate venous return and reduce swelling of the affected limb.
- (5) 1 day after operation: Instruct patients to drink more water and eat light food 6 hours after operation. On the first day after operation, instruct patients to sit up, change dressings regularly, and guide them to turn over and stretch. The fracture end was fixed with a folding cuff and a posterior support frame, and patients were encouraged to move their toes more ^[4].
- (6) 2 days after operation: After removing the drainage tube, patients could eat an appropriate amount of regular diet. According to the patient's physical condition and pain degree, isometric contraction exercises of the lower leg and toes were adopted. For patients with mild postoperative pain, 50 times a day; the number of exercises was increased or decreased by 10 times according to the patient's pain degree. For patients with no obvious pain after exercise, under the guidance of nursing staff, passive ankle pump exercise was performed 30–50 times a day.
- (7) 3–5 days after operation: Continue the muscle training carried out in the early stage, and strengthen the strength training of the leg muscles. Observe the patient's movement state and joint function recovery every day, and then make corresponding adjustments according to the patient's recovery degree. It is recommended to eat more food with high calories, high protein, and high vitamins ^[5].
- (8) 6 days after operation to discharge: With the assistance of crutches, perform three - point gait walking and sitting - position exercises to ensure that the affected limb bears no weight.
- (9) Discharge guidance: Instruct patients to do more exercise after discharge, inform them of precautions, and advise them to review regularly ^[6].

2.3. Observation indicators

- (1) Comparison of nursing satisfaction: Questionnaires were formulated according to the patient's situation

and distributed to the two groups of patients. The questionnaire included 10 questions, using a three-level scoring method, with a total score of 50 points. More than 39 points meant very satisfied, 25–39 points meant basically satisfied, and less than 25 points meant dissatisfied. The total satisfaction rate was calculated as (number of very satisfied cases + number of basically satisfied cases) / total number of cases $\times 100\%$.

- (2) Comparison of nursing status: Including time to get out of bed, hospital stay, and hospitalization expenses.
- (3) 30 minutes before and after nursing, the ankle recovery of patients was evaluated with reference to the Baird ankle score, with a total score of 100 points. The score was positively correlated with the ankle recovery.
- (4) 30 minutes before and after nursing, the ankle function of patients was scored with reference to the AOFAS score, with a total score of 100 points. The score was positively correlated with the ankle function.
- (5) 30 minutes before and after nursing, the patient's pain degree was evaluated according to the NRS, with a total score of 10 points. 0 points meant no pain, 10 points meant unbearable severe pain, and the score was positively correlated with the pain degree.
- (6) 30 minutes before and after nursing, the patient's quality of life was evaluated according to the Quality-of-Life Comprehensive Assessment Questionnaire, such as material life, social function, psychological function, and physical function, with each dimension scored 25 points ^[7].

2.4. Statistical methods

The research data were analyzed by SPSS19.0 software. Measurement data (conforming to normal distribution) and count data were expressed as ($\bar{x} \pm s$) and rate (%), respectively, and tested by t and χ^2 tests, respectively. $p < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of various scores between the two groups of patients

Before nursing, there was no statistically significant difference in Baird score, AOFAS score, and NRS score between the two groups ($p > 0.05$); after nursing, compared with the control group, the observation group had higher Baird score and AOFAS score, and lower NRS score, with statistically significant differences ($p < 0.05$), as shown in **Table 1**, **2** and **3** respectively.

Table 1. Comparison of Baird scores between the two groups (mean $\pm$ SD, points)

Group	No. of cases	Baird score		t	p
		Pre nursing	Post nursing		
Control Group	42	62.13 $\pm$ 7.11	79.35 $\pm$ 8.22	10.268	0
Observation Group	42	62.45 $\pm$ 7.07	87.96 $\pm$ 9.16	14.31	0
t		0.207	4.533		
p		0.836	0		

Table 2. Comparison of AOFAS scores between the two groups (mean $\pm$ SD, points)

Group	No. of cases	AOFAS score		<i>t</i>	<i>p</i>
		Pre nursing	Post nursing		
Control Group	42	61.28 $\pm$ 6.25	71.25 $\pm$ 7.26	6.767	0
Observation Group	42	61.78 $\pm$ 6.17	82.54 $\pm$ 8.15	13.161	0
<i>t</i>		0.37	6.703		
<i>p</i>		0.712	0		

Table 3. Comparison of NRS scores between the two groups (mean $\pm$ SD, points)

Group	No. of cases	NRS score		<i>t</i>	<i>p</i>
		Pre nursing	Post nursing		
Control Group	42	4.86 $\pm$ 1.05	2.26 $\pm$ 0.54	14.27	0
Observation Group	42	4.75 $\pm$ 1.42	1.46 $\pm$ 0.12	14.961	0
<i>t</i>		0.403	9.372		
<i>p</i>		0.687	0		

3.2. Comparison of quality-of-life scores between the two groups of patients

Before nursing, there was no statistically significant difference in social, physical, psychological function, and material life scores between the two groups ($p > 0.05$); after nursing, compared with the control group, the observation group had higher scores in social, physical, psychological function, and material life, with statistically significant differences ($p < 0.05$)^[8]. The comparisons were shown in **Table 4, 5, 6, and 7** respectively.

Table 4. Comparison of social function scores between the two groups (mean $\pm$ SD, points)

Group	No. of cases	Social function	
		Before nursing	After nursing
Control Group	42	14.63 $\pm$ 2.11	17.98 $\pm$ 2.24*
Observation Group	42	14.75 $\pm$ 2.16	21.05 $\pm$ 1.26*
<i>t</i>		0.257	7.741
<i>p</i>		0.797	0.000

Table 5. Comparison of physical function scores between the two groups (mean $\pm$ SD, points)

Group	No. of cases	Physical function	
		Before nursing	After nursing
Control Group	42	13.44 $\pm$ 2.16	17.68 $\pm$ 2.63*
Observation Group	42	13.38 $\pm$ 2.29	20.35 $\pm$ 2.65*
<i>t</i>		0.123	4.634
<i>p</i>		0.902	0.000

Table 6. Comparison of psychological function scores between the two groups (mean $\pm$ SD, points)

Group	No. of cases	Psychological function	
		Before nursing	After nursing
Control Group	42	15.75 $\pm$ 2.65	18.69 $\pm$ 2.26*
Observation Group	42	15.82 $\pm$ 2.49	21.87 $\pm$ 2.64*
<i>t</i>		0.124	5.93
<i>p</i>		0.901	0.000

Table 7. Comparison of material function scores between the two groups (mean $\pm$ SD, points)

Group	No. of cases	Material function	
		Before nursing	After nursing
Control Group	42	15.53 $\pm$ 2.14	18.56 $\pm$ 1.58*
Observation Group	42	15.65 $\pm$ 2.01	20.56 $\pm$ 1.87*
<i>t</i>		0.652	5.294
<i>p</i>		0.509	0.000

4. Discussion

The ankle joint consists of three structures: the talar body, the distal end of the tibia, and the distal end of the fibula. In daily life, since the ankle joint is a weight-bearing joint of the human body, the incidence of its fractures is high; the body bears significant pressure, and even a slight exertion can lead to bone fractures.

Currently, surgical treatment is commonly used in clinical practice for ankle fractures, aiming to improve patients' joint function and promote early recovery. However, surgery is highly invasive, with slow recovery, requiring long-term bed rest, and is prone to complications such as deep venous thrombosis of the lower extremities. Therefore, necessary intervention measures need to be taken to facilitate patients' rehabilitation. The orthopedic nursing clinical pathway is a new nursing model that formulates scientific and reasonable nursing plans for different patient groups, thereby enhancing the pertinence, effectiveness, and orderliness of nursing work^[9].

This study found that the overall nursing satisfaction of patients in the experimental group ($\chi^2 = 5.824$, $p < 0.05$) was significantly higher than that in the control group. After nursing, the scores of social, physical, psychological functions, and material living standards of patients in the experimental group ($t = 5.294$, 7.741 , 5.930 , 4.634 , $p < 0.05$) were significantly higher than those in the control group. The results indicate that the application of clinical nursing pathways in patients with ankle fractures can significantly improve their quality of life and satisfaction. This may be because the orthopedic nursing clinical pathway emphasizes patient-centered care, which can meet various reasonable needs of patients. By formulating sequential nursing plans, the scientificity of nursing measures is ensured, omissions in clinical nursing work are avoided, and a better auxiliary effect on surgery is achieved. Meanwhile, we also found that the time to get out of bed, average hospital stay of patients in the treatment group were significantly shortened, and the hospitalization expenses were significantly lower than those in the control group ($t = 6.895$, 16.731 , 13.065 , $p < 0.05$). The Baird score and AOFAS score of patients in the experimental group were significantly higher than those in the control group, while the NRS score was significantly lower than that in the control group ($t = 4.533$, 6.703 , 9.372 , $p < 0.05$).

The results show that the application of clinical nursing pathways in patients with ankle fractures can significantly reduce patients' pain, accelerate their motor ability recovery, shorten postoperative rehabilitation time, reduce medical costs, and alleviate patients' economic burden. This is because the orthopedic nursing clinical pathway requires nurses to dynamically monitor patients' health status, so as to clearly understand their nursing needs and provide targeted care. In this study, the following measures were adopted: firstly, through health education, psychological counseling, and other nursing methods, patients can actively face the disease, accept treatment, eliminate negative emotions, and enhance treatment compliance. Secondly, creating a good ward environment for patients can effectively prevent hospital-acquired infections, thereby reducing postoperative complications. Thirdly, doing a good job in dietary nursing, ensuring patients have sufficient sleep time and adequate sleep, can promote fracture healing, enhance immune function, improve nutritional status, and shorten the time to get out of bed and hospital stay after surgery.

On this basis, the orthopedic nursing clinical pathway is proposed to help patients recover as early as possible, reduce the occurrence of complications, and achieve the goal of reducing medical costs. Patients with ankle fractures cannot walk with weight-bearing when discharged from the hospital, and their functional recovery cycle is long, requiring systematic rehabilitation training. Early functional exercises after surgery can promote local blood circulation, prevent complications such as muscle atrophy, and reduce the incidence of postoperative limb swelling, local adhesions, and stiffness of the affected limb.

5. Conclusion

The implementation of orthopedic nursing clinical pathways in patients with ankle fractures can significantly reduce patients' pain and recovery time, and improve ankle function^[10].

Disclosure statement

The author declares no conflict of interest.

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