

Effects of comprehensive nursing on the pain and joint functional recovery of patients with hip replacements.

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Abstract

Objective: This study aims to explore the effects of comprehensive nursing on the pain and joint functional recovery of patients with hip replacements.

Methods: A total of 100 patients with artificial hip replacements in our hospital were selected from January 2015 to September 2016. Using the random number method, we divided the patients into the control and observation groups, with 50 patients in each group. The patients in the control group underwent routine nursing care, whereas the patients in the observation group received comprehensive nursing intervention. The patient indices were compared between the two groups.

Results: The visual analog scale (VAS) scores of the patients at different times showed statistically significant differences between the control and observation groups ($P<0.05$). The numerical value in the observation group was lower than that in the control group. After q test, the numerical values of the patients at different time points showed significant differences between the two groups ($P<0.05$). Meanwhile, the VAS scores of the patients in the two groups decreased with time. The exercise compliance and satisfaction degree scores between the observation and control groups revealed significant differences ($t=8.366, 16.268, P<0.05$). The incidence rates of adverse reaction also showed significant differences between the groups ($\chi^2=7.162, P<0.05$). The hip ranges of motion within the 7-day postoperative period did not generally differ significantly between the control and observation groups. However, the flexion, backward extension, abduction, and adduction of the patients in the 7-day postoperative period significantly differed ($P>0.05$). Moreover, the data in the 3-month postoperative period were higher than those of the 7-day postoperative stage. The data from the observation group were higher than those from the control group within the 3-month postoperative period, and the difference was significant ($P<0.05$).

Conclusion: The comprehensive nursing intervention positively influenced the alleviation of postoperative pain in patients with hip joint replacements. Such intervention could also improve patients' compliance with rehabilitative exercises and accelerate hip joint functional recovery. Thus, such approach merits promotion in large clinical settings.

Keywords: Hip replacement; Pain; Joint functional recovery.

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Introduction

Artificial hip replacement is a popular surgical method. This procedure aims to correct hip joint disease caused by several factors. Examples of hip joint diseases treated by the surgery include hip joint pain and deformity caused by elderly arthritis, long-term degenerative joint wear, and rheumatoid arthritis. Artificial hip replacement exerts an immediate therapeutic effect [1,2]. The procedure can eliminate the original disease and recover normal hip function to a certain extent. According to statistical data, the therapeutic effect of artificial hip

replacement is not only related to the surgical outcome but also to the rehabilitative training. However, a significant number of patients hold certain contraindications to rehabilitative training because of physiological pain or psychological problems [3,4]. These factors can seriously affect the surgical outcome and is not conducive to the functional recovery of hip joints. In previous studies, the inimical emotions of hip replacement patients decreased when nursing staff provided proper postoperative intervention [5]. The patients also became further enthusiastic to perform rehabilitative exercises. Ultimately, the

intervention positively promoted the patients' functional recovery. In the present study, the effect of comprehensive nursing intervention was investigated in 100 patients with artificial hip replacements in our hospital from January 2015 to September 2016. Positive results were achieved.

Methods

Research objects

A total of 100 patients aged 42-71 years old (average: 54.28 ± 11.56 years) with artificial hip replacements in our hospital were selected from January 2015 to September 2016. This research was approved by the medical ethics committee of the hospital. All the patients and their families signed informed consents.

Inclusion criteria

Hip replacement surgery in the orthopaedic's department for the first time; Age younger than 80 years old; Personal and family members' signing of informed consents.

Exclusion criteria

Allergy to any drug in the study; Pregnancy or lactation; History of other surgical treatments (within 1 month); Treatment with a high dose of hormone within the past 6 months; Comorbidity with severe cardiovascular and cerebrovascular diseases, mental diseases, or other diseases that may affect the study result.

Research Method

Patient groups and results

Using the random number method, we divided the 100 patients into control and observation groups, with 50 patients in each group.

Patient intervention

The patients in the control group underwent routine postoperative nursing and rehabilitative exercises. Whenever the patients experienced unbearable pain after surgery, routine analgesic drugs were administered.

In the observation group, the routine nursing intervention administered to the control group was combined with the nursing pain management model. The main points were as follows:

(1) During surgery, the patients were given holistic individualized health education. Thus, the patients and family members were fully informed on pain on their first day in the ward, at 24 h before operation, and at 24 h postsurgery. At other time points, the pain-related questions asked by the patients and their families were answered. The nursing staff accomplished the above steps through several means, such as utilizing advanced multimedia equipment, communicating with

the patients and their families face-to-face during rounds, taking intensive classes, and sharing related knowledge. Meanwhile, the health education content at least included the following aspects. First, the patients were informed of the pain they would experience after hip joint surgery. Whenever the pain was unbearable, the patients were instructed to perform any pain management measure. The nursing staff recorded each patient's assessment of pain tolerance and pain health education process. The patients and their families were asked to repeat the basic knowledge on health education. The nursing staff performed spot checks.

(2) The nursing staff managed each patient's physiological pain and conducted psychological counseling. Studies showed that relaxed patients presented with increased pain thresholds. The nursing staff assessed each patient's psychological situation daily by recording the patient's sleep patterns. When the patient experienced anxiety, fear, and other negative emotions, which then affected the normal physiological indices, the nursing staff timely communicated with the patient or family members. The nursing staff also distracted the patients using numerous techniques, such as listening to music, watching entertainment programs, and initiating reasonable relaxation. These measures reversed the negative emotions within the fastest time.

(3) After hip joint replacement, the patient's pain level was assessed using a visual analog scale (VAS) in real time. Meanwhile, corresponding pain management measures were implemented depending on the VAS scores. In general, 5 were considered as the cut-off level. The patients whose VAS scores were lower than 5 were encouraged by the nursing staff to alleviate their own pain through non-drug methods. The methods included distraction and frequent chatting with family members. Meanwhile, the patients with scores higher than 5 were given corresponding analgesic drugs in accordance with hospital rules.

(4) Interdepartmental cooperation was advocated. Different departments participated in the surgical procedure. Naturally, multi-departmental cooperation in the patient's pain management was promoted. The doctors and nurses in the anaesthesiology and orthopaedics departments discussed each patient's clinical situation. The analgesia plan was formulated by individual patient demand. The patient's condition was also jointly assessed. When a problem arose on the analgesic plan, rapid communication was conducted, and the plan was altered accordingly. Information was exchanged among involved medical practitioners.

Observation index

(1) Rehabilitative training compliance, satisfaction degree, and adverse reaction incidence were measured through the following method:

The rehabilitative training compliance of each patient was analysed through the patient's psychological states, diet, exercise, and outpatient review using a questionnaire. The questionnaire was designed by our hospital. The highest score

was 100 and indicated complete compliance to the medical staff's instructions, whereas 0 indicated incomplete compliance to the medical staff's instructions. Patient satisfaction was also investigated using the questionnaire in the 3-month postoperative period. The highest score was 100. A low score signifies a low degree of satisfaction.

(2) The patients' pain was assessed using the VAS score system. The upper limit was 10, with 0 indicating no pain and 10 denoting the most severe pain. The patients' pain scores were assessed at 6, 12, 24, 36, 48, and 72 h postsurgery.

(3) Hip joint functional recovery was assessed by hip joint activity. The Harris scale was used to evaluate hip flexion, backward extension, abduction, and adduction. The data obtained at 7 days and 3 months after surgery.

Statistical analysis

The data were descriptively analyzed using the SPSS19.0 statistical software and expressed as $\pm S$. The frequency data

were compared using the χ^2 test, whereas the measurement data were compared by t-test. The ANOVA for repeated measurement was performed at different time points. For positive results, the q test was performed. $P<0.05$ was considered to indicate statistically significant difference.

Results

Comparison of general clinical data between the control and observation groups

Sex, age, and disease course did not significantly differ between the control and observation groups ($P>0.05$). The results are shown in Table 1.

Table 1. Comparison of clinical data between the control and observation groups.

Item	Control group (n=50)	Observation group (n=50)	Statistics	P
Sex	/	/	$\chi^2=0.040$	0.841
Male (n)	27	26	/	/
Female (n)	23	24	/	/
Age ($\pm S$, year)	53.97 ± 10.27	55.84 ± 11.78	$t=0.846$	0.400
disease course ($\pm S$, year)	2.14 ± 0.51	2.21 ± 0.48	$t=0.707$	0.481

Comparison of VAS scores between the control and observation groups at different postoperative time points

The VAS scores of the patients were significantly different between the control and observation groups at different postoperative time points ($P<0.05$). The numerical value in the

observation group was lower than that in the control group, and the difference was significant ($P<0.05$). After q test, the numerical values were significantly different between any two time points ($P<0.05$). In addition, the VAS scores of the patients in the two groups decreased with time. The specific results are shown in Table 2.

Table 2. Comparison of VAS scores between the control and observation groups at different postoperative time points.

Group	Post-surgery						F	P
	6 h	12 h	24 h	36 h	48 h	72 h		
Control group (n=50)	8.05 \pm 1.21 ^{bcd}	6.84 \pm 1.01 ^{acdef}	5.17 \pm 0.53 ^{abdef}	4.18 \pm 0.47 ^{abcef}	3.87 \pm 0.51 ^{abcdf}	2.84 \pm 0.69 ^{abcde}	15.687	<0.001
Observation group (n=50)	5.13 \pm 0.84 ^{bcd}	4.22 \pm 0.74 ^{acdef}	3.26 \pm 0.45 ^{abdef}	2.95 \pm 0.55 ^{abcef}	2.01 \pm 0.37 ^{abcd}	1.84 \pm 0.44 ^{abcde}	13.487	<0.001
t	14.017	14.796	19.425	12.022	20.874	8.641	/	/
P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	/	/

^acompared with 6 h after operation, $P<0.05$; ^bcompared with 12 h after operation, $P<0.05$; ^ccompared with 24 h after operation, $P<0.05$; ^dcompared with 36 h after operation, $P<0.05$; ^ecompared with 48 h after operation, $P<0.05$; and ^fcompared with 72 h after operation, $P<0.05$.

Comparison of intervention effects between the control and observation groups

The exercise compliances and satisfaction degree scores were significantly different between the observation and control

Table 3. Comparison of intervention effects between the control and observation groups.

Item	Control group (n=50)	Observation group (n=50)	Statistics	P
Exercise compliance (± S)	62.54 ± 15.27	87.84 ± 14.97	t=8.366	<0.001
Degree of satisfaction (± S)	42.67 ± 10.53	78.61 ± 11.54	t=16.268	<0.001
Adverse reaction (n [%])	11 (22.00)	2 (4.00)	$\chi^2=7.162$	0.007

Comparison of hip joint activities of patients between the control and observation groups in the 7-day and 3-month postoperative periods

Hip joint activity did not significantly differ between the control and observation groups within the 7-day and 3-month postoperative periods ($P>0.05$). However, the flexion, backward extension, abduction, and adduction data of the

groups ($t=8.366, 16.268; P<0.05$). The incidence rates of adverse reactions were also significantly different ($\chi^2=7.162, P<0.05$) (Table 3).

patients significantly varied between the control and observation groups in the 7-day and 3-month postoperative periods ($P<0.05$). Moreover, the four motion ranges of the patients in the 3-month postoperative period were greater than those of the others ($P<0.05$). The motion ranges in the observation group was higher than those in the control group within the 3-month postoperative period ($P<0.05$), and the differences were significant (Table 4).

Table 4. Comparison of hip joint activities between the control and observation groups within the 7-day and 3-month postoperative periods (± S).

Group	n		Flexion	Backward extension	Abduction	Adduction
Control group	50	7-Day postoperative period	85.46 ± 8.24	27.94 ± 3.97	66.48 ± 7.54	21.56 ± 3.08
		3-Month postoperative period	104.52 ± 7.59	39.44 ± 4.12	88.97 ± 8.74	38.17 ± 4.16
	t		12.030	14.213	13.777	22.691
	P		<0.001	<0.001	<0.001	<0.001
Observation group	50	7-Day postoperative period	85.74 ± 9.57	28.13 ± 4.02	67.51 ± 9.82	22.47 ± 4.97
		3-Month postoperative period	138.69 ± 10.28	61.57 ± 5.48	138.47 ± 12.98	63.97 ± 4.32
	t		26.658	34.792	30.828	44.563
	P		<0.001	<0.001	<0.001	<0.001
t 7-Day postoperative period			0.157	0.238	0.588	1.101
P 7-Day postoperative period			0.876	0.813	0.558	0.274
t 3-Month postoperative period			18.908	22.824	22.368	30.419
P 3-Month postoperative period			<0.001	<0.001	<0.001	<0.001

Discussion

Most patients with hip joint replacements experience negative emotions, such as depression and anxiety, as well as various postoperative complications. Therefore, active nursing during the postoperative period is particularly important. Patients with hip replacements usually lie in bed for long periods before surgery [6]. In this case, problems on the autologous blood circulation of the lower limb may arise. Some patients may suffer from vein embolism and bedsores. After operation, patients should be encouraged to engage in rehabilitative training as soon as possible with a positive attitude and aiming to achieve the best recovery effect in a short time [7]. If the

patients are not subjected to regular and timely rehabilitative training, the replacement effect may be discounted. Poor restoration may also ensue, and another surgery may be required. Pain is a difficult problem that almost all patients face after orthopedic surgery. The pain disturbs the patients, and secondary symptoms appear because of psychological effects. The nursing staff should address pain effects to stabilize the patient's emotion promptly. Studies confirmed that negative psychological emotions could aggravate the pain [8]. The pain could also worsen the patient's unstable emotional state. The two factors may influence each other, and the combined effect may cause the patient to refuse to attend

rehabilitative training. These occurrences may then negatively influence the surgical outcome.

The comprehensive nursing intervention method applied in this research is based on a summary of the previous work experiences of the medical staff in our hospital. On the basis of the research objective, we formulated a complete set of guidelines aimed to manage patients' postoperative pain in the orthopedics department. The patients' postoperative pain was regarded as the starting point, and a set of feasible interventions were developed [9]. The time points and operation procedures of all the interventions were concretely planned. As shown by the effects during actual implementation, the scheme achieved good results in postoperative pain remission and joint functional recovery. Postoperative rehabilitative exercise compliance and satisfaction degree were significantly higher and the adverse reaction rates were significantly lower in the observation group than in the control group. The VAS scores in the observation group was significantly lower than those in the control group at different postoperative time points. The joint functional recovery in the observation group was better than that in the control group 3 months after surgery. The above-mentioned results suggest that this comprehensive nursing intervention could effectively improve the levels of pain management and functional recovery of patients after hip joint replacement.

Several conclusions were drawn from these results. First, through the nursing staff's patient education during the hospitalization process, the patients and their families became psychologically prepared for the postoperative pain. The patients gained understanding of pain-related mechanisms, and their compliance to medical staff instructions were improved significantly [10]. During hospitalization, different nursing interventions should be performed for the patients at different stages. This "individualized" approach increases the likelihood of patient acceptance of medical intervention. This psychological factor in patients was specifically emphasized in the scheme presented. The focus should not lie on the patients' somatic reactions as those observed in previous methods. This new approach is called comprehensive intervention, and the patients' anxiety and depression were directly determined. The patients' pain thresholds were increased, and hip joint recovery effects were enhanced with the aid of advanced interventions, such as the use of multimedia devices.

Conclusion

Comprehensive nursing intervention positively influenced pain alleviation in patients after hip joint replacement. This approach can improve patient compliance to rehabilitative exercises and thus enhance the hip joint functional recovery of patients. Hence, this intervention should be promoted in clinical settings.

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