

A Clinical Study of Integrated Healthcare Management in Process Optimization in an Adult Inguinal Hernia Day Unit

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Abstract: The purpose of this study is to explore the effectiveness of the application of the integrated medical and nursing management model in the optimization of the adult inguinal hernia day ward process. 105 patients who received adult inguinal hernia day surgery treatment in a hospital of general surgery from May 2023 to April 2024 were selected and grouped according to the time node of the introduction of the medical and nursing integration day ward management mode (12 October 2023). 52 patients before the introduction of the mode were included in the control group, while the other 53 patients after the introduction were included in the observation group. A comparative analysis was made for the differences in pre-hospital examination completion rate, day surgery failure rate, average length of stay, hospitalization cost, overall satisfaction, and incidence of adverse events between the two groups under different management modes. The results showed that the prehospital examination completion rate of the observation group (100%) was higher than that of the control group (59.62%), the day surgery failure rate (1.89%) was lower than that of the control group (30.77%), the average length of stay (5.03 ± 1.58 d) was shorter than that of the control group (7.82 ± 1.64 d), and the average cost of hospitalization ($8,108.2 \pm 264.6$ yuan) was less than that of the control group ($9,235.6 \pm 375.5$ yuan). The differences were all statistically significant ($P < 0.05$). The total satisfaction of patients in the observation group (98.11%) was significantly higher than that of the control group, and the differences were all statistically significant ($P < 0.05$). In the control group, there was one case of mislabeling of the surgical site, three cases of missing medical documents, two cases of medication dosage errors, two cases of anesthesia accidents, and one case of surgical instruments or gauze left behind, with a total incidence rate of 17.31%. In the observation group, there was only 1 case of missing medical documents and 1 case of medication dosage error, with an incidence rate of 3.77%, and the difference between the groups was statistically significant ($P < 0.05$). In conclusion, the implementation of integrated medical and nursing management for patients undergoing inguinal hernia surgery can effectively increase patients' willingness to undergo pre-hospital examination, reduce the day surgery failure rate, shorten the hospital stay, reduce hospital expenses, and reduce the risk of adverse events such as mislabeling of the surgical site, missing medical documents, medication dosage errors, anesthesia accidents, and surgical instruments or gauze left behind, which is highly satisfactory to the patient group. Hence, it is recommended to promote and apply this procedure in other departments.

1. Introduction

Inguinal hernia is a common clinical surgical disease, which is mainly manifested by the protrusion of abdominal contents at the weak point of the abdominal wall. With the aging of the population and changes in people's lifestyles, the incidence of inguinal hernia is gradually increasing, which has a serious impact on the life, health, and quality of life of the patient group^[1]. Inguinal hernias in adults are mainly treated by surgery, and the day surgery model has gradually become the trend in inguinal hernia treatment because of its advantages of reducing hospitalization time, lowering healthcare costs, and improving patient comfort. However, surgical management under the daytime ward model still faces many challenges, such as unsatisfactory management of the linkage between preoperative preparation, postoperative monitoring, post-discharge follow-up, and so on. It is necessary to accelerate the implementation of daytime ward process optimization to fully improve the prognosis of patients^[2]. Based on the optimization of the ambulatory ward process under the integrated healthcare management model, such as based on the conventional process, the integrated healthcare management is a highly efficient management model based on the close cooperation between the doctors and the nursing team, aiming to improve the patient's treatment effect and satisfaction by optimizing the nursing process, strengthening the collaboration between doctors and nurses, and improving the communication between the doctors and the patients^[3]. In the traditional surgical process, doctors and nursing teams carry out preoperative, intraoperative, and postoperative management independently of each other, and this separated working method easily leads to asymmetric information, poor communication, and low efficiency, which ultimately affects surgical outcomes and patient satisfaction. Especially in the mode of the daytime ward, the time of surgery and nursing is more compact, and the requirement for teamwork is higher. Therefore, applying integrated healthcare management to the day surgery process of adult inguinal hernia to optimize the whole surgical management process is an important means to improve clinical outcomes, reduce complications, and enhance patient satisfaction^[4]. This study aims to investigate the application effect of integrated healthcare management mode in the optimization of the day ward process of adult inguinal hernia by comparing the surgical indexes and prognosis of the two groups of patients under the traditional nursing mode and the integrated healthcare management mode.

2. Information and methodology

2.1. General information

105 patients who underwent day surgery for adult inguinal hernia in an institution of general surgery from May 2023 to April 2024 were selected and grouped according to the time node of the introduction of the model of integrated medical and nursing day ward management (12 October 2023). 52 patients before the introduction of the model were included in the control group, of which 31 were male and 21 were female, with an age range of 18–76 years, a mean of 59.56 ± 10.72 years, and a duration of illness of 12.17 ± 2.45 d. The other 53 patients after the introduction of the model were included in the observation group, of which 33 were male and

20 were female, with an age range of 18–75 years, a mean of 59.62 ± 10.72 years, and a duration of illness of 12.17 ± 2.45 d. In both groups, tension-free inguinal hernia repair under epidural anesthesia was chosen and all patches were made with Johnson & Johnson UMS3cm and UHSL. The study was approved for implementation by the ethical committee of the hospital.

Inclusion criteria: Adult patients aged between 18 and 76 years old, diagnosed with unilateral or bilateral inguinal hernia, and meeting the indications related to tension-free repair of inguinal hernia. No serious cardiovascular or respiratory diseases and able to tolerate surgery and anesthesia. No acute preoperative infection or other systemic diseases that require postponement of surgery. Patients and their families have a full understanding and informed consent of the surgical plan and the integrated medical and nursing management model and voluntarily participate in this study.

Exclusion criteria: Patients with severe cardiovascular, respiratory, hepatic, or renal insufficiency or other systemic diseases that are not suitable for surgery. Acute preoperative infection, severe anemia, or other conditions that are not suitable for surgery in the daytime ward. Patients who are allergic to anesthetic drugs or have contraindications to anesthesia. Patients with a previous history of inguinal hernia surgery or other complicated abdominal surgery that increases the risk of surgery.

2.2. Methodology

2.2.1. The control group adopts the conventional day surgery nursing process

(1) Doctors, nurses, and patients complete their respective duties and tasks, and outpatient doctors identify adult inguinal hernia patients who are eligible for day surgery and prescribe the corresponding preoperative examinations. (2) Patients complete the admission and preoperative preparations and come to the hospital at the appointed time to undergo surgery, postoperative checkups, and medication changes. (3) Outpatient nurses are responsible for registering the information, booking the time for surgery, and informing the relevant notes. (4) Ward nurses complete the relevant procedures, perioperative nursing care and precautions, and so on, for the hospital. (4) Ward nurses complete the procedures related to hospital admission, perioperative care, and precautions.

2.2.2. The observation group adopts the medical and nursing integration management mode based on the control group

- (1) The construction of healthcare integration management mode. 1) Set up a healthcare integration cooperation group, which is headed by the department director and the head nurse, and select senior specialist nurses to participate. Form a process optimization group consisting of day clinic specialist nurses, ward specialist doctors, and ward specialist nurses, and set up a WeChat group for healthcare integration in the day wards that includes the surgeon. 2) Formulate a communication system for healthcare integration, a performance assessment system, a job management system, and a training system. 3) Define the work tasks of the process optimization team, team members work together to sort out the original process, assess the problems and reasons for the process, and design a patient-centered process optimization plan, reflecting simplicity, safety, and efficiency.
- (2) The optimization of the day surgery nursing process under the integrated management model of medical and nursing care. 1) Based on the routine process, add outpatient appointment reception nurses to check and remind patients to stay in the hospital, to reduce the incomplete issuance of checklists or patients'

misremembering the appointment time to not be able to operate as scheduled. 2) Full-time nurses in the ward and doctors to complete the assessment of the preoperative period, the improvement of the medical record, and the development and implementation of psychological care, and health promotion. The nurses and doctors work together to complete the preoperative assessment, improve the patient's condition, develop and implement psychological care, health education, activity decision-making, pain management, and prevention of postoperative complications. After the operation, the nurses and doctors work together to complete the education of discharged patients and change the medication the next morning. 3) Carry out multi-form health education for patients of different ages in different phases and with different focuses. Before admission, the nursing staff adopts various forms of guidance such as verbal education, issuing paper education sheets, video education after scanning the two-dimensional code, as well as slides and videos in the hospital to increase the ways for patients to understand the relevant knowledge. The outpatient clinic focuses on introducing the flow of the day ward, explaining the examination items, and tracking the examination results. After hospitalization, the nursing staff focuses on the introduction of surgical methods of cooperation and the precautions to be taken after discharge. 4) Using the PDA scanning code reader to scan the patient's wristband in the anesthesia system to confirm the content of the patient's preoperative handover, and at the same time to check the medical record of the surgical safety checklist, surgical patient handover transfer order, and so on, to check the information before handing over the patient to the operating room.

2.3. Observation indicators

Statistical analysis of patients' pre-hospital examination completion rates, day surgery failure rates, average length of stay, and hospitalization costs.

Patient satisfaction with care management was investigated using the hospital's satisfaction questionnaire.

The ratio of the number of cases of adverse events such as wrong identification of the surgical site, missing medical documents, wrong dosage of medication, anesthesia accidents, surgical instruments or gauze left behind, and so on, to the total number of cases of surgery during daytime surgery in the two groups was counted.

2.4. Statistical methods

SPSS 24.0 statistical software was applied to analyze and process the relevant data. Measured data were expressed as (Mean \pm SD) and compared with the *t*-test; count data were expressed as *n* and compared with the χ^2 test. $P < 0.05$ was used to indicate that the difference was statistically significant.

3. Results

3.1. Comparison of pre-hospital examination completion rate, day surgery default rate, average length of stay, and hospitalization costs between the two groups of patients

The pre-hospital examination completion rate of the observation group was higher than that of the control group, the day surgery failure rate was lower than that of the control group, the average length of stay was shorter than that of the control group, and the average hospitalization fee was less than that of the control group, and the differences were statistically significant ($P < 0.05$), as shown in **Table 1**.

Table 1. Comparison of pre-hospital examination completion rate, day surgery default rate, average length of stay, and hospital costs between the two groups of patients

Groups	Completion rate of pre-hospital examinations (n, %)	Day surgery default rate (n, %)	Average length of hospitalization (Mean \pm SD, d)	Comparison of average hospitalization costs (Mean \pm SD, \$)
Control group ($n = 52$)	31 (59.62)	16 (30.77)	7.82 \pm 1.64	9235.6 \pm 375.5
Observation group ($n = 53$)	53 (100)	1 (1.89)	5.03 \pm 1.58	8108.2 \pm 264.6
χ^2 / t	26.7548	16.1363	8.8782	17.8112
P	0.0000	0.0001	0.0000	0.0000

3.2. Comparison of patient satisfaction between the two groups

The total patient satisfaction of the observation group (98.11%) was significantly higher than that of the control group, and the difference was statistically significant ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of overall patient satisfaction between the two groups (n, %)

Groups	Satisfied	Very satisfied	Unsatisfied	Total satisfaction
Control group ($n = 52$)	18 (34.62)	23 (44.23)	11 (21.15)	41 (78.85)
Observation group ($n = 53$)	31 (58.49)	21 (39.62)	1 (1.89)	52 (98.11)
χ^2				9.6258
P				0.0019

3.3. Comparison of the occurrence of surgical adverse events between the two groups

The incidence rate of patients in the observation group experiencing adverse events such as mislabeling of the surgical site, missing medical documents, wrong dosage of medication, anesthesia accidents, and surgical instruments or gauze left behind was 3.77%, which was significantly lower than that of the control group, which was 17.31%. The difference was statistically significant ($P < 0.05$), as shown in **Table 3**.

Table 3. Comparison of adverse surgical events between the two groups

Groups	Incorrect labeling of surgical site	Missing medical documentation	Incorrect dosage of medication	Anesthetic accident	Surgical instruments or gauze left behind	Rate of occurrence
Control group ($n = 52$)	1	3	2	2	1	9 (17.31)
Observation group ($n = 53$)	0	1	0	1	0	2 (3.77)
χ^2						5.1263
p						0.0236

4. Discussion

Patients with inguinal hernias are usually symptomatic and mildly painful and can lead to serious complications if left untreated. Therefore, the efficiency and safety of day surgery is particularly important. With the

advancement of medical technology and the change of medical model, day surgery has gradually become an important mode of inguinal hernia treatment for adults, and the application of day ward management mode not only helps to reduce the length of hospitalization of patients, but also effectively reduces the medical cost, and at the same time reduces the time of contact between patients and the hospital, and reduces the risk of nosocomial infections^[5]. For adult patients, the choice of day surgery can minimize disruption to their lives and work during hospitalization and enhance the treatment experience^[6]. In addition, the daytime ward management mode can optimize the allocation of hospital resources to the greatest extent possible, alleviate the tension of medical resources, and improve the utilization rate of the ward, which not only helps to shorten the waiting time of patients in the hospital but also accelerates the recovery process of patients. At the same time, through the rational arrangement of surgery and nursing care, patients can complete the preoperative examination, surgery, postoperative monitoring, and discharge preparation in a shorter period, thus effectively controlling medical costs and improving patient satisfaction^[7]. Although day ward management plays an important role in the treatment of patients with inguinal hernia, there are still many shortcomings in the traditional management mode. (1) Limited beds in the department, too many booked patients, and patients forgetting the appointment time and missing the appointment. (2) Short contact time, inpatient process, and teaching effect of the disease-related knowledge are not good^[8]. (3) There are many outpatients, the preoperative examination project prescribed by the doctor is incomplete, and the patient cannot find the doctor. (4) The daytime surgical turnover is faster, affecting the completeness of the medical record, accuracy and the site of the operation, the dose of medication, and so on. There are errors and risks of anesthesia accidents, surgical instruments or gauze left behind, and so on^[9]. To effectively circumvent these shortcomings, the implementation of integrated medical and nursing management is particularly urgent.

The results of this study showed that after the implementation of the process optimization of the adult inguinal hernia day ward based on the integrated management model of healthcare and nursing, the completion rate of pre-hospital examination of patients in the observation group reached 100%, which was significantly higher than that of the control group, which was 59.62%, indicating that under this model, the nursing staff and the outpatient doctors were able to work closely together and that by strengthening the checking of the preoperative examination and the appointment reminder, they could effectively avoid the problems caused by the lack of complete information or time. Reducing inadequate preoperative preparation due to errors and omissions not only improved the efficiency of surgical scheduling but also ensured foolproof preoperative preparation. The rate of day surgery missed appointments for patients in the observation group was only 1.89%, significantly lower than the 30.77% in the control group. This indicates that through the integrated healthcare management model, the healthcare team can more effectively track patients' pre-operative preparations and appointments to ensure that they come to the hospital on time to receive their surgeries. At the same time, the full-time nurses and doctors complete the preoperative assessment and health education together, and through a variety of educational means, patients can more comprehensively understand the surgical process and precautions, which enhances the patients' surgical compliance. The average length of stay and hospital costs of patients in the observation group were also significantly lower than those of the control group, which indicates that the optimization of ambulatory ward management based on the integrated management model of healthcare and nursing has not only improved the efficiency of the hospital but also raised patients' awareness of the financial burden by optimizing the allocation of resources and accelerating the turnover of the wards so that more patients can benefit from the efficient surgical services^[10]. The incidence rate of adverse events for

patients in the control group was 17.31%, while it was only 3.77% in the observation group. This indicates that the healthcare team can carry out pre-surgical safety checks and post-surgical follow-ups in a more refined manner under the integrated model, which can significantly reduce errors due to improper healthcare coordination and ensure surgical safety.

In conclusion, integrated healthcare management in adult inguinal hernia day ward process optimization significantly improves patient outcomes and satisfaction, reduces healthcare costs and adverse events, and has important clinical promotion value.

Disclosure statement

The authors declare no conflict of interest.

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