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Impact of Integrated Anesthesia and Nursing Management in the Recovery Room for Hypertension Surgery Patients

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Abstract: *Objective:* To analyze and evaluate the effects of the anesthesia and nursing integration management model in the anesthesia recovery room for patients undergoing hypertension surgery. *Methods:* A total of 100 patients with hypertension admitted to the hospital from May 2020 to December 2021 were selected and divided into two groups based on different management methods: the control group and the observation group, with 50 patients in each group. The control group received traditional nursing management, while the observation group was managed using the integrated anesthesia and nursing management model. Various indicators, including complications, recovery period metrics, vital signs, nursing satisfaction, and patient emotions, were compared between the two groups to determine the most suitable anesthesia nursing model. *Results:* Implementation of the integrated anesthesia and nursing management model showed that the mean arterial pressure and blood oxygen saturation levels in the observation group were significantly higher than those in the control group. The nursing satisfaction in the observation group was also markedly improved. Furthermore, the incidence of complications in the observation group was significantly lower than in the control group. *Conclusions:* The integrated anesthesia and nursing management model in the anesthesia recovery room positively influences patient outcomes. It effectively reduces complications, alleviates patients' psychological and emotional stress, and stabilizes vital signs. Additionally, this model enhances the professional performance of nursing staff, significantly improving the overall quality of nursing care and patient satisfaction.

Keywords: Integrated management model; Hypertension; Anesthesia recovery room

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1. Introduction

Hypertension, a prevalent chronic condition in clinical care, poses unique challenges due to the need for stable blood pressure management and the increased risk of cardiovascular complications in affected individuals. For treatment and nursing personnel, uncontrolled hypertension presents significant difficulties. With the aging

population in China, the clinical management of hypertension has become increasingly emphasized, particularly during surgical procedures [1].

Surgical treatment for hypertension is now a primary therapeutic approach, often prioritized over drug therapy. However, the safety of surgical procedures and postoperative care remains a significant concern for healthcare providers. Among the factors influencing postoperative recovery, anesthetic drugs represent a major variable. From the conclusion of surgery to the recovery phase, patients often experience residual effects from anesthetic agents. Without effective protection and management during this period, complications may arise, compromising treatment efficacy and affecting patient prognosis [2].

Recent research suggests that the integrated anesthesia and nursing management model is a novel approach to nursing care. This model significantly shortens patients' time in the anesthesia recovery room, reduces complications, improves nursing staff competencies, and ensures patient safety.

2. Materials and methods

2.1. General information

A total of 100 patients with hypertension who underwent surgery from May 2020 to December 2021 were selected as research participants. The patients were analyzed systematically based on their characteristics and the specifics of the surgical procedures. Among them, 50 patients were assigned to the control group, and 50 patients were assigned to the observation group.

Inclusion criteria:

(1) Patients diagnosed with hypertension.

(2) Patients who met postoperative nursing standards.

(3) Patients who were conscious and capable of clear expression and communication.

(4) Patients who provided informed consent and voluntarily participated in the study.

2.2. Methods

2.2.1. Establishing an integrated anesthesia-nursing management system

An integrated anesthesia-nursing management system was established within the department, along with a dedicated management team comprising the head nurse and nursing staff. The head nurse served as the team leader, overseeing the daily responsibilities of the nursing staff and encouraging efficient task completion and performance evaluations [3]. The head nurse allocated responsibilities and refined workflows to enhance nursing efficiency and patient satisfaction.

Team members were required to adhere to clear operational rules and seek assistance whenever necessary. Regular training sessions and assessments of nursing operations and foundational knowledge were conducted. Centralized lectures provided further education, ensuring team members mastered basic nursing principles, gained familiarity with new technologies, and became proficient in using various departmental instruments and equipment.

2.2.2. Optimizing patient transfer and equipment preparation

To minimize patient transfer times, the distance between the operating room and the anesthesia recovery room was actively reduced. Emergency equipment such as electrocardiograms and ventilators was prepared in advance

in the recovery room, with designated technicians available for maintenance and testing [4]. Nursing points were organized, centralizing beds and matching necessary supplies.

Patients' anesthesia status, including consciousness, blood pressure, and respiratory function, was closely monitored. In cases of severe complications, patients were promptly transferred to the ICU for further care [5].

2.2.3. Managing patient emotions and postoperative monitoring

The emotional state of patients has a significant impact on their condition and recovery time. Nurses should pay close attention to patients' emotional fluctuations, especially after surgery when such fluctuations tend to be more pronounced. Strengthening communication with patients, understanding their needs, and closely observing changes in their wounds are essential to ensuring a safe and stable recovery period.

Some patients, due to limited knowledge of their condition or concerns about postoperative pain, may experience severe stress reactions. These reactions can manifest as emotional tension, increased heart rate, shortness of breath, and other symptoms [6]. Nursing staff should provide accurate information about the surgical procedure to alleviate anxiety and tension.

Under the integrated anesthesia-nursing management model, nursing staff must monitor patients' postoperative conditions closely. This is especially critical when patients are unconscious, as it requires careful observation of their breathing, respiratory rate, and respiratory patterns. Appropriate diagnosis and treatment should be provided based on specific conditions.

Necessary instruments and equipment should be prepared in advance in the anesthesia recovery room to monitor patients' conditions effectively [7]. For instance, in cases of breathing difficulty, ventilation tubes may be used to stabilize respiration. The catheter should be removed promptly once the patient regains consciousness.

Patients may encounter minor complications following hypertension surgery, such as throat blockage. Nursing staff should regularly assist in clearing foreign bodies from the mouth and provide appropriate oral care to prevent the condition from worsening. Additionally, nurses should routinely assess wound conditions and reposition patients regularly to prevent infections [8].

Once the effects of anesthesia subside, sedative medications should be used appropriately and scientifically, considering the patient's wound condition and following the doctor's advice.

2.2.4. Post-anesthesia care unit monitoring and management

Post-anesthesia care unit (PACU) nurses conducted comprehensive assessments of patient recovery based on clinical manifestations and anesthesia recovery scores. This process was critical for identifying potential risks and complications. For patients with low recovery scores, nursing staff collaborated with anesthesiologists to analyze underlying causes, such as residual anesthetics or intraoperative complications and implemented targeted interventions [9].

Patients' bodies were cleaned immediately upon arrival in the recovery room. Measures to prevent hypothermia, such as preemptive warming, were taken due to prolonged exposure to low temperatures during surgery and significant fluid infusions. These steps helped mitigate complications like arrhythmia and hypothermia-induced issues [10].

2.3. Observation indicators

(1) The relevant data of the observation and control groups were compared.

(2) Indicators and responses during the recovery period were analyzed to identify differences between the two groups.
(3) Mean arterial pressure (MAP) was measured at four distinct stages in the PACU to compare the groups.
(4) The incidence of complications, including arrhythmia, hypoxemia, cognitive impairment, and nausea/vomiting, was recorded and compared to evaluate the overall complication rates.

2.4. Statistical analysis

Quantitative data were expressed as mean ± standard deviation (SD) and analyzed with *t*-tests, while qualitative data were expressed as [*n* (%)] and analyzed with χ^2 tests. Statistical significance was defined as $P < 0.05$.

3. Results

3.1. Comparison of indicators during the recovery period

Nurses recorded and analyzed all reactions and conditions of patients during their stay in the PACU, with particular attention given to the time from surgery to recovery and other symptoms. Analysis of the data revealed that the recovery time of the observation group was significantly shorter than that of the control group, with statistically significant differences between the two groups (**Table 1**).

Table 1. Indicators of the recovery period

Group	Extubation time (min)	Anesthesia recovery time (min)	Steward's recovery score (points)
Control group (n = 50)	12.02 ± 1.52	94.13 ± 1.54	2.05 ± 0.36
Observation group (n = 50)	10.21 ± 1.22	68.24 ± 2.06	3.21 ± 0.13
t	6.566	71.177	21.430
P	0.000	0.000	0.000

3.2. Comparison of complications

Under the anesthesia and nursing integration model, analysis of the two groups showed that the incidence of complications in the observation group was significantly lower than that in the control group, demonstrating research significance (**Table 2**).

Table 2. Comparison of complication rates [*n* (%)]

Group	Nausea and vomiting	Hypoxemia	Arrhythmias	Overall incidence
Control group (n = 50)	3 (6.00%)	3 (6.00%)	2 (4.00%)	8 (16.00%)
Observation group (n = 50)	1 (2.00%)	0 (0.00%)	0 (0.00%)	1 (2.00%)
χ^2				5.982
P				0.014

3.3. Comparison of vital signs

The implementation of the anesthesia and nursing integrated management model demonstrated that the mean arterial pressure (MAP) and blood oxygen saturation (SpO_2) levels of the observation group were significantly

higher than those of the control group, while heart rate (HR) was lower. These findings highlight the comparative significance of improved vital signs in the observation group (**Table 3**).

Table 3. Comparison of vital signs data

Group	MAP (mmHg)		HR (beats/min)		SpO_2 (%)	
	Before intervention	After the intervention	Before the intervention	After the intervention	Before the intervention	After the intervention
Control group (n = 50)	102.35 ± 3.47	84.68 ± 4.02	76.25 ± 3.41	91.33 ± 5.32	99.71 ± 3.34	90.31 ± 2.17
Observation group (n = 50)	101.99 ± 4.12	93.39 ± 3.74	77.18 ± 3.39	82.41 ± 3.55	99.68 ± 3.41	95.54 ± 2.15
t	0.472	11.989	1.367	9.861	0.044	12.106
P	0.637	0.000	0.174	0.000	0.964	0.000

4. Discussion

Hypertension is a prevalent chronic condition among the elderly, requiring meticulous management and treatment. Although hypertension may not present with evident symptoms in its early stages, the condition often progresses to cause dizziness, headaches, and other complications, necessitating prompt medical attention and intervention. Particularly when complications arise, hypertensive patients face more complex treatment challenges, which also place greater demands on nursing care. Postoperative recovery and the prevention of complications are directly influenced by the quality of nursing. Hence, implementing an integrated management model of anesthesia and nursing provides a more comprehensive and scientific approach to ensuring effective surgical outcomes for hypertensive patients [11].

First, the anesthesia-nursing integration model enables continuous monitoring of vital signs in hypertensive patients, including blood pressure, heart rate, and respiration. Early detection of abnormalities allows for immediate corrective measures, ensuring that vital signs remain within a safe range and reducing postoperative risks. Considering the varied conditions and symptoms of hypertensive patients, such as the severity of their disease, medication regimens, and symptom characteristics, nurses must work collaboratively with physicians to develop tailored treatment plans. This involves selecting appropriate anesthetic agents and dosages, optimizing surgical processes, and providing individualized rehabilitation guidance after surgery. The integrated management approach emphasizes strict observation of patients in the anesthesia recovery room to accurately assess their condition, ensuring timely interventions and effectively mitigating unforeseen complications [12].

Second, advancements in medical and clinical nursing technologies have led to heightened expectations from patients and their families regarding postoperative nursing care quality. Traditional nursing management models are increasingly inadequate in addressing the complex and dynamic needs of modern healthcare. The implementation of the integrated anesthesia-nursing management model incorporates more rigorous and systematic training for nursing staff while emphasizing a patient-centered approach. This model encourages nurses to prioritize both technical precision and patient comfort, emphasizing humanized care and management practices [13].

The findings of this study indicate that the extubation and anesthesia recovery times in the observation group were significantly shorter than those in the control group, and recovery scores were notably higher. The integrated anesthesia-nursing management model allows nursing staff to refine processes within specific systems and work

protocols, thereby reducing extubation and recovery times. This enables patients to regain consciousness and spontaneous breathing more quickly, alleviating postoperative pain and discomfort [14]. Additionally, nursing staff can implement tailored care plans based on patient's symptoms and medication needs, improving the effectiveness of nursing interventions and increasing patient satisfaction. After the intervention, the observation group demonstrated higher mean arterial pressure and blood oxygen levels, along with lower heart rates compared to the control group.

Third, the integrated anesthesia-nursing management model facilitates targeted nursing care, reducing the risks of postoperative infections and other complications. Data analysis revealed a significantly lower incidence of complications in the observation group compared to the control group. By employing standardized procedures and continuous patient monitoring, nursing staff can promptly identify and address potential risk factors, such as blood pressure fluctuations and respiratory depression, thereby minimizing adverse events during the nursing process [15]. Unlike traditional nursing models, the integrated approach places greater emphasis on patients' emotional well-being and psychological states, ensuring they feel respected and cared for throughout their recovery. For example, nurses should communicate with patients about their condition immediately after anesthesia, monitor emotional changes, and provide targeted counseling to alleviate anxiety or negative emotions. This approach enhances both physical and mental recovery, fosters improved patient satisfaction, and strengthens trust, thereby promoting harmonious doctor-patient relationships.

This discussion underscores the critical role of the anesthesia-nursing integrated management model in improving the quality of care for hypertensive patients undergoing surgery, leading to better outcomes and enhanced satisfaction for both patients and their families.

Disclosure statement

The author declares no conflict of interest.

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