

# Observation of the Effects of Anesthesia Recovery Nursing Combined with Heat Preservation Measures in Patients Undergoing General Anesthesia Surgery

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**Abstract:** *Objective:* To observe the application effects of anesthesia recovery nursing with heat preservation measures in patients undergoing general anesthesia surgery. *Methods:* 300 cases of general anesthesia surgery patients in our hospital from March 2023 to February 2024 were selected and divided into the control group and the observation group according to the random number table method, each with 150 cases. The control group adopted conventional care, while the observation group was given anesthesia recovery care and heat preservation measures on the basis of conventional care. The wake-up time, extubation time, hospitalization time, and the incidence of adverse reactions were compared between the two groups and statistically analyzed. *Results:* The wake-up time of patients in the control group was  $9.71 \pm 1.20$  hours, and that of the observation group was  $6.51 \pm 1.02$  hours, with statistically significant differences ( $P < 0.05$ ); the extubation times of patients in the observation group and the control group after awakening were  $8.52 \pm 0.41$  min and  $10.42 \pm 1.12$  min, respectively, with statistically significant differences ( $P < 0.05$ ). The hospital stay after the operation in the observation group and the control group was  $32.91 \pm 4.71$  days and  $37.24 \pm 3.34$  days respectively, and the difference was statistically significant ( $P < 0.05$ ), and the incidence rate of adverse reactions after extubation in the observation group (3.33%) was significantly lower than that in the control group (10.00%) ( $P < 0.05$ ). *Conclusion:* In general anesthesia surgery patients, the implementation of anesthesia recovery nursing with heat preservation measures can significantly improve the physical condition of patients, effectively shorten the duration of surgery and patients' wake-up time, and improve their quality of life, which is worthy of clinical promotion and application.

**Keywords:** Anesthesia recovery nursing; Heat preservation; General anesthesia

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## 1. Introduction

General anesthesia, as a commonly used anesthetic method in modern surgery, can effectively ensure the smooth progress of surgery, but at the same time, it may also lead to a series of postoperative complications, one

of the most notable problems is the decrease in patient's body temperature during anesthesia recovery. Recovery from anesthesia is a critical stage when patients gradually recover from unconsciousness to wakefulness, and the quality of nursing care in this stage is directly related to the recovery speed and prognosis of patients. During anesthesia recovery, the patient's thermoregulatory function will be weakened due to the influence of anesthetic drugs, coupled with factors such as exposed skin and loss of body fluids during the surgical process, which will easily lead to hypothermia <sup>[1]</sup>. Hypothermia not only increases the patient's sense of pain, but also may lead to postoperative infections, cardiac arrhythmias, coagulation disorders, and other serious complications, and even endanger the patient's life <sup>[2]</sup>. Therefore, how to implement effective nursing cooperation during the anesthesia recovery period to prevent patients from hypothermia, improve patients' comfort, and promote their rapid recovery has become an important research topic in current clinical nursing work <sup>[3]</sup>. In recent years, with the continuous updating of nursing concepts and the rapid development of nursing technology, the application of anesthesia recovery nursing care with heat preservation measures in general anesthesia surgical patients has gradually received widespread attention. The purpose of this study is to deeply explore the application effect of anesthesia recovery nursing with heat preservation measures in general anesthesia surgery patients, with a view to providing a theoretical basis and practical guidance for improving the quality of patients' postoperative recovery.

## **2. General information and methods**

### **2.1. General information**

300 cases of general anesthesia surgical patients admitted to our hospital from March 2023 to February 2024 were selected, of which 136 cases were male and 164 cases were female; their ages ranged from 21 to 70 years old, with an average of  $45.91 \pm 3.22$  years old. The patients were divided into two groups according to the random number table method; there were 150 cases in the observation group, 66 males and 84 females, with an average age of  $44.98 \pm 2.87$  years old, and 150 cases in the control group, 70 males and 80 females, with an average age of  $45.89 \pm 3.87$  years old. The differences in the general conditions, gender, age, and other information of all patients were not statistically significant ( $P > 0.05$ ), and were comparable.

Inclusion criteria: no contraindications to surgery by clinical examination; American Society of Anesthesiologists (ASA) I–II, and normal preoperative blood routine and liver and kidney function. Exclusion criteria: those with serious cardiac, pulmonary, respiratory, renal diseases or psychological disorders; those with cognitive disorders; pregnant or lactating women.

### **2.2. Methods**

The patients in the control group were given post-anesthesia recovery care: (1) Strengthening the patients' respiratory management, reducing the incidence of choking and coughing, and giving the appropriate amount of sedative when necessary; (2) Keeping the respiratory tract open, and oxygen and tracheal intubation were given for laryngeal edema; (3) Monitoring the patients' blood pressure, heart rate, etc., and notifying the doctor immediately if abnormalities occur; (4) When the patients were awake, encouraging the patients to try to get out of bed in a timely manner, if agitation occurred, appropriate interventions were taken; (5) Recording the patients' wake-up time, extubation time, and adverse reactions; (6) Providing a quiet and comfortable environment to ensure a good quality of sleep, so that they could wake up as soon as possible.

The patients in the observation group were given additional heat preservation measures on the basis of the control group: (1) The anesthesia recovery room maintained the appropriate temperature and humidity, and ensured air circulation, so as to avoid fluctuations in the patient's body temperature due to the environment

being too cold or hot, and the healthcare personnel checked the equipment inside the room regularly to ensure that they were functioning properly and to provide the patients with a good environment for recovery. (2) Immediately after the patient entered the anesthesia recovery room, he or she was covered with an insulating blanket to reduce heat loss. (3) In order to avoid the influence of cold liquid on the patient's body temperature, the infused liquid was heated to reach the appropriate temperature before infusion, and the medical staff also strictly controlled the speed of infusion to avoid fluctuations in the patient's body temperature caused by too fast or slow infusion. During the period of anesthesia recovery, healthcare personnel measured the patient's body temperature regularly and recorded the changes. If the patient's body temperature was found to be abnormal, timely measures were taken, such as adjusting the setting of the heat preservation blanket and providing more blankets. (5) Healthcare workers minimized the number of times the patient was turned to avoid excessive skin exposure. Meanwhile, for wounds or catheters that required examination, the examination was completed quickly and they were covered in time to reduce heat dissipation.

### 2.3. Observation indicators

The observation indicators included the time of waking up after anesthesia, extubation time (the time when the patient's spontaneous respiration returns to normal after waking up), hospitalization time, and the incidence of adverse reactions (including the number of cases of nausea, vomiting, respiratory depression, and other adverse reactions occurring in the patient) in the two groups of patients.

### 2.4. Statistical methods

SPSS13.0 statistical software was used for statistical analysis. The measurement data were expressed as mean  $\pm$  standard deviation (SD), *t*-test was used, and  $\chi^2$  test was used for the count data.  $P < 0.05$  was considered as a statistically significant difference.

## 3. Results

### 3.1. Comparison of wake-up time, extubation time, and hospitalization time after anesthesia in two groups of patients

The wake-up time of the patients in the control group was  $9.71 \pm 1.20$  hours, and that of the observation group was  $6.51 \pm 1.02$  hours. The difference was statistically significant ( $P < 0.05$ ). The patients' extubation times after waking up in the observation group and the control group were  $8.52 \pm 0.41$  min and  $10.42 \pm 1.12$  min, respectively, and the observation group was 0.5 minutes earlier than the control group, and the difference was statistically significant ( $P < 0.05$ ); the hospital stay of the two groups at the end of the operation was  $32.91 \pm 4.71$  days and  $37.24 \pm 3.34$  days, and the control group was 2.1 days longer than the observation group, and the difference was statistically significant ( $P < 0.05$ ), as shown in **Table 1**.

**Table 1.** Comparison of the wake-up time from anesthesia, extubation time, and hospital stay between the two groups of patients (mean  $\pm$  SD)

Groups	Wake-up time (hours)	Extubation time (minutes)	Length of stay (days)
Control group ( $n = 150$ )	$9.71 \pm 1.20$	$10.42 \pm 1.12$	$37.24 \pm 3.34$
Observation group ( $n = 150$ )	$6.51 \pm 1.02$	$8.52 \pm 0.41$	$32.91 \pm 4.71$
<i>t</i>	14.367	11.265	5.303
<i>P</i>	0.000	0.000	0.000

### 3.2. The incidence of adverse reactions in the two groups of patients

The incidence of adverse reactions after extubation of the observation group (3.33%) was significantly lower than that of the control group (10.00%), and the differences were all statistically significant ( $P < 0.05$ ), as shown in **Table 2**.

**Table 2.** The incidence of adverse reactions in the two groups of patients [ $n$  (%)]

Groups	Number of cases of adverse reactions	Incidence of adverse reactions
Control group ( $n = 150$ )	15	10.00%
Observation group ( $n = 150$ )	5	3.33%
$\chi^2$	-	5.357
$P$	-	0.021

## 4. Discussion

During surgery, patients are in a state of systemic stress, and the patient's condition and the trauma caused by the surgery can prevent the body from promptly adapting to changes in the external environment, leading to some adverse reactions. Preoperative patients are often affected by psychological factors such as tension and fear, which lead to sympathetic nerve excitation, systemic vasoconstriction, weakening or stopping of voluntary respiratory movements, and ultimately make surgery more difficult [4]. Postoperative patients have a long period of bed rest, and blood perfusion is reduced, resulting in decreased gastrointestinal peristalsis, easily triggering gastrointestinal flatulence and constipation, increasing patient pain, as well as prolonging the patient's awakening time; postoperative patients are often stimulated by pain and lead to a stress reaction, shortness of breath, increased sweating, accelerated heart rate, increased blood pressure, and other phenomena [5,6], which may lead to patient aspiration, and even cause respiratory depression and asphyxia.

Anesthesia recovery nursing can effectively improve the physical condition of patients and shorten their wake-up time [7,8]. Studies have shown that after the application of anesthesia recovery nursing methods, the patients' extubation time and hospital stay were reduced by 9.0% to 14.2% compared with the pre-treatment period, and the time for the patients' spontaneous respiration returned to normal after waking up was as high as 83.9–96.0% [9]. In this study, after the implementation of anesthesia recovery nursing and heat preservation measures for patients in the observation group, the patient extubation time after waking up in the observation group and the control group were  $8.52 \pm 0.41$  min and  $10.42 \pm 1.12$  min, respectively, with statistically significant differences ( $P < 0.05$ ), and the hospitalization time of the two groups at the end of the operation was  $32.91 \pm 4.71$  days and  $37.24 \pm 3.34$  days, the difference was statistically significant ( $P < 0.05$ ), suggesting that this nursing measure has a good effect on the recovery of normal spontaneous respiration and the reduction of hospitalization time after anesthesia recovery. General anesthesia patients are prone to hypothermia due to weakened thermoregulatory function, exposed skin, and loss of body fluids during surgery. Hypothermia may lead to a variety of complications, such as infection, cardiac arrhythmia, coagulation dysfunction, etc., which seriously affects patients' recovery process. Therefore, thermal insulation measures during the anesthesia recovery period, such as the use of thermal blankets and regulating the temperature of the operating room, can help maintain the patient's normal body temperature and reduce the occurrence of hypothermia-related complications.

It was also found that for general anesthesia surgery patients, after the implementation of heat preservation measures, it can effectively shorten the patients' wake-up time and significantly improve their quality of life

<sup>[10]</sup>. In this study, the average postoperative wake-up time of patients in the observation group was  $6.5 \pm 1.0$  hours, which was significantly shorter than that of  $9.7 \pm 1.0$  hours in the control group, and the difference was statistically significant ( $P < 0.05$ ). During the period of anesthesia recovery, patients are in the critical stage of transition from unconsciousness to wakefulness, and the nursing care at this time is not only related to the comfort of patients but also directly related to the speed and effect of their postoperative recovery. Through anesthesia recovery care, nurses can actively provide psychological support to patients, alleviating their anxiety and fear. Additionally, professional nursing practices, such as assisting patients in adjusting their positions and maintaining airway patency, ensure that patients can smoothly transition through the anesthesia recovery period.

The implementation of anesthesia recovery care with heat preservation measures in general anesthesia surgery patients can effectively shorten the patient's wake-up time and reduce the incidence of nausea, vomiting, respiratory depression, and other adverse reactions after extubation. The specific advantages are (1) maintaining the patient's anesthesia effect <sup>[11]</sup>; (2) reducing the patient's stress response due to pain and relieving their mental tension <sup>[12]</sup>; (3) maintaining a normal respiratory rate and rhythm, preventing adverse reactions such as respiratory depression and tachycardia caused by inadequate or excessively rapid ventilation; (4) promoting early postoperative recovery, increasing the success rate of the surgery, and improving the quality of postoperative rehabilitation. The results of this study suggest that the incidence of adverse reactions after extubation of the observation group (3.33%) was significantly lower than that of the control group (10.00%), and the differences were all statistically significant ( $P < 0.05$ ), and the use of anesthesia recovery nursing care with heat preservation measures can effectively improve the wake-up rate of general anesthesia surgical patients and the physical condition of the patients after extubation, reduce the incidence of adverse reactions, and promote the quality of postoperative recovery. The joint application of anesthesia recovery care and heat preservation measures can give full play to the advantages of both and further improve the recovery of patients. On the one hand, anesthesia recovery care can ensure that patients receive comprehensive care and support during the recovery process, and reduce complications caused by discomfort and anxiety; on the other hand, heat preservation measures can effectively prevent hypothermia, reduce various hypothermia-related complications, and create a good physiological environment for the recovery of patients. Therefore, in clinical practice, nursing staff should strengthen their learning of anesthesia recovery nursing knowledge and establish a set of anesthesia recovery and heat preservation nursing programs suitable for their department based on their actual situation, to provide a theoretical basis for better service to patients, and to ensure that the patients complete the surgical treatment in a safe, healthy and comfortable way.

## 5. Conclusion

In summary, the implementation of anesthesia recovery care with heat preservation measures in general anesthesia surgery patients can significantly improve the patient's physical condition, effectively shorten the operation time and the patient's wake-up time, and improve the patient's quality of life, which is worthy of clinical promotion and application.

## Disclosure statement

The authors declare no conflict of interest.

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