

# Application of Risk Management in the Nursing of Patients with Acute Skin Failure After Cardiac Surgery

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**Abstract:** **Objective:** To observe the effect of risk management in the nursing of patients with acute skin failure after cardiac surgery. **Methods:** A total of 76 patients with acute skin failure after cardiac surgery admitted to our hospital from March 2024 to April 2025 were selected as research subjects and randomly divided into two groups (38 cases in each group: control group and observation group). The control group received routine nursing during postoperative recovery, while the observation group received risk management. The time taken to improve acute skin failure symptoms and the quality of life of the two groups were statistically analyzed. **Results:** The time taken to improve acute skin failure symptoms in the observation group was shorter than that in the control group ( $P<0.05$ ). The quality of life of the observation group was higher than that of the control group ( $P<0.05$ ). **Conclusion:** Implementing risk management in the nursing of patients with acute skin failure after cardiac surgery helps to quickly improve patients' acute skin failure symptoms and enhance their quality of life.

**Keywords:** Risk Management; Cardiac Surgery; Acute Skin Failure; Nursing

## 1. Introduction

Cardiac surgery maintains a high surgical rate in clinical practice and is a type of surgery with high operational difficulty and trauma. Acute skin failure after surgery is a common complication in patients undergoing cardiac surgery during the postoperative recovery period. Currently, there is no unified conclusion on the pathogenesis of acute skin failure in clinical practice<sup>[1-2]</sup>. However, clinical diagnosis shows that acute skin failure after cardiac surgery is mostly caused by abnormal fluctuations in hemodynamics during surgery,

which diverts blood from the skin to other important tissues and organs, leading to insufficient skin perfusion<sup>[3]</sup>. The impact of acute skin failure not only affects patients' postoperative recovery but also reduces their quality of life during the postoperative recovery period. This study mainly observed the effect of risk management in the nursing of patients with acute skin failure after cardiac surgery.

## 2. Materials and Methods

### 2.1 General Data

A total of 76 patients with acute skin failure after cardiac surgery admitted to our hospital from March 2024 to April 2025 were selected as research subjects and randomly divided into two groups (38 cases in each group: control group and observation group). In the control group, there were 20 males and 18 females, aged 45-72 years, with an average age of  $(56.88\pm 2.01)$  years. The body mass index (BMI) was 21-25 kg/m<sup>2</sup>, with an average of  $(22.77\pm 1.02)$  kg/m<sup>2</sup>. In the observation group, there were 21 males and 17 females, aged 43-71 years, with an average age of  $(56.24\pm 2.33)$  years. The BMI was 21-25 kg/m<sup>2</sup>, with an average of  $(22.56\pm 1.32)$  kg/m<sup>2</sup>. There was no significant difference in baseline data between the two groups ( $P>0.05$ ).

### 2.2 Methods

The control group received routine nursing in all aspects during postoperative recovery, including closely monitoring changes in the surgical incision and observing the patient's skin condition. Patients were administered medications as prescribed by doctors, and skin cleaning was performed. Patients were provided with loose and comfortable clothing to reduce skin friction caused by clothing. The observation group received risk management during postoperative recovery, with the following measures:

(1) Risk factor identification: By reviewing previous clinical cases and evidence-based support, the factors leading to acute skin failure in these patients after surgery were analyzed, and a risk management plan was formulated. Specifically, the risk factors for acute skin failure in patients after cardiac surgery include:

① Age: Most patients are older, resulting in reduced adaptability and stability of skin tissue, and relatively weak response ability to physiological stress (hypoxia, insufficient perfusion), which increases the risk of acute skin failure. ② Nutritional status: Patients' nutritional status is also associated with acute skin failure. Low nutritional levels may easily affect blood supply to the skin and other parts, thereby increasing the incidence of acute skin failure. ③ Drug factors: During cardiac surgery, large doses of sedative-analgesic drugs and vasoactive drugs are used, which may affect the body's microcirculation to a certain extent and increase the incidence of acute skin failure after surgery.

(2) Nursing measures: ① Management of skin hypoperfusion: During the patient's postoperative recovery, closely observe changes in hemodynamics and control the dosage of vasoactive drugs according to changes in the patient's condition. ② Skin temperature management: During postoperative recovery, provide heat preservation care for patients, reasonably adjust the temperature in the ward, and avoid insufficient blood circulation caused by excessively low skin temperature. ③ Nutritional support: During postoperative recovery, conduct good nutritional management for patients, and provide nutrient-rich food to meet their nutritional needs during recovery. ④ Position management: During postoperative recovery, nurses should properly manage the patient's position to avoid prolonged compression of local tissues. Place soft pads on

the patient's bony prominences, ensuring appropriate thickness, size, and a flat surface; maintain the patient in a lateral position at an angle of approximately 30°, with pillows supporting the legs and buttocks. When turning over, slowly turn the patient to 15° and hold for 15 seconds, increasing by 15° each time and holding for 15 seconds until the turn is completed.

## 2.3 Observation Indicators

(1) Statistics on time to symptom improvement: Record the time taken to improve symptoms of skin itching, pigmentation, and dry desquamation.

(2) Quality of life analysis: The quality of life of patients during recovery was evaluated using the World Health Organization Quality of Life-BREF (WHOQOL-BREF) scale. The scale consists of subjective questions. Patients were guided to answer each question in the scale according to their actual situation in a quiet state. Higher scores in each dimension indicate better quality of life.

## 2.4 Statistical Methods

All data in the study were analyzed using SPSS 26.0. Measurement data such as WHOQOL-BREF scores were expressed as mean  $\pm$  standard deviation ( $\bar{x} \pm s$ ) and tested by t-test. Enumeration data were expressed as percentages (%) and tested by chi-square test. A P value  $<0.05$  was considered statistically significant.

## 3. Results

### 3.1 Statistics on Time to Symptom Improvement

The time taken to improve acute skin failure symptoms in the observation group was shorter than that in the control group ( $P < 0.05$ ), as shown in Table 1.

**Table 1. Statistics on Time to Symptom Improvement Between the Two Groups ( $\bar{x} \pm s$ , days)**

Group	Number of Cases	Skin Itching	Pigmentation	Dry Desquamation
Observation	38	$1.56 \pm 0.25$	$2.01 \pm 0.33$	$2.12 \pm 0.23$
Control	38	$2.88 \pm 0.15$	$3.35 \pm 0.34$	$3.21 \pm 0.41$
t	-	18.052	17.368	16.011
P	-	$<0.001$	$<0.001$	$<0.001$

control group ( $P < 0.05$ ), as shown in Table 2.

### 3.2 Quality of Life Analysis

The WHOQOL-BREF scores of quality of life improved in both groups after nursing, and the observation group had higher scores than the

## 4. Discussion

Acute skin failure is common in patients undergoing cardiac surgery. Although this

postoperative complication does not pose a major threat to patients' lives, it still affects their postoperative recovery and reduces their postoperative quality of life<sup>[4-5]</sup>. In the postoperative nursing management of cardiac surgery patients, it is necessary to accurately carry out various risk management work based on the factors leading to acute skin failure, so as to quickly improve patients' acute skin failure symptoms and indirectly help them recover.

Risk management has high applicability in the nursing of cardiac surgery patients. Nurses accurately analyze the factors leading to postoperative related symptoms based on the patient's condition characteristics and carry out targeted management [6]. By evaluating acute skin failure after cardiac surgery and guided by

the concept of risk management, nursing support is provided from aspects such as skin hypoperfusion management, skin temperature management, nutritional support, and position management to reduce the impact of various risk factors on patients. Observations show that under the effect of risk management, various symptoms of patients with acute skin failure after cardiac surgery can be improved quickly, and their quality of life during postoperative recovery can be enhanced, with an ideal effect.

In conclusion, risk management can be implemented in the nursing of patients with acute skin failure after cardiac surgery to quickly relieve their acute skin failure symptoms and help them recover.

**Table 2. Comparison of WHOQOL-BREF Scores Between the Two Groups ( $\bar{x} \pm s$ , Points)**

Group	Number of Cases	Physiology		Environmental Factor		Social Relationship		Psychology	
		Before Nursing	After Nursing	Before Nursing	After Nursing	Before Nursing	After Nursing	Before Nursing	After Nursing
Observation	38	14.05±1.33	23.35±1.05	15.11±1.35	24.35±1.14	8.05±1.05	14.22±1.22	15.05±1.35	25.68±1.05
Control	38	14.45±1.25	20.23±1.12	15.08±1.26	22.11±1.15	8.11±1.22	11.75±1.15	15.11±1.21	20.15±1.11
t	-	0.588	16.758	0.379	13.425	0.234	16.425	0.284	24.425
P	-	0.452	<0.001	0.706	<0.001	0.918	<0.001	0.778	<0.001

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### References

- [1] Xu Huan. Analysis of risk factors for acute skin failure in elderly critically ill patients and discussion on nursing countermeasures [J]. Shanxi Medical Journal, 2025, 54(10): 779-782.
- [2] Zhang Jian, Wang Xiaoping, Shi Xusheng, et al. Construction and validation of a risk assessment tool for acute skin failure in ICU patients [J]. Chinese Journal of Critical Care Nursing, 2025, 6(05): 517-523.
- [3] Zhang Shibian, Li Congyan, Zhao Rui, et al. Construction of a nursing training program for ICU nurses on acute skin failure based on the ADDIE model [J]. Family Nursing, 2025, 23(08): 1387-1392.
- [4] Xie Yijie, Shen Yihui, Cheng Haoran, et al. Current status of knowledge, attitude and practice of acute skin failure nursing among ICU nurses and analysis of influencing factors [J]. Practical Geriatrics, 2024, 38(12): 1194-1199.
- [5] Qu Zupeng, Yin Zhiyong, Wang Jianwei, et al. Current status of knowledge, attitude and practice of acute skin failure among emergency department medical staff and analysis of influencing factors [J]. Contemporary Nurses (Late Issue), 2024, 31(12): 145-149.
- [6] Li Ping, Jiang Yan, Lu Xiaomeng, et al. Current status of knowledge, attitude and practice of acute skin failure among ICU nurses and its influencing factors [J]. Evidence-Based Nursing, 2024, 10(20): 3772-3775.