

Research on Strategies for Wound Healing and Infection Control in Skin Disease Nursing

Xiaoyu Yang^{1*}

¹ Hospital of Dermatology, Chinese Academy of Medical Sciences, Nanjing, China

Abstract. The skin, as the largest organ in the human body, plays multiple roles such as protecting, sensing, and regulating body temperature. Wound healing and infection control are two extremely important links, in the treatment and care of skin diseases. Efficient wound healing and infection control strategies affect the speed and quality of patient recovery and can reduce medical costs and alleviate social burdens. This study adopts the method of literature review to systematically sort out the basic theory of skin wound healing, analyze the particularity of skin disease wound care, and summarize the key technologies of wound healing and infection control. Research has found that skin wound healing is a complex physiological process involving multiple stages such as inflammatory response, cell proliferation, and tissue remodeling. Therefore, wound care for skin diseases requires personalized nursing measures based on the characteristics of different types of skin diseases. The research results indicate that effective wound healing and infection control strategies include: cleaning the wound, rational use of dressings, maintaining a moist environment for the wound, and timely treatment of infections. These strategies provide a scientific theoretical basis and practical guidance for wound healing and infection control in skin disease care, which helps to improve the quality of clinical nursing and promote patient recovery.

1 Introduction

The skin, the largest organ in the human body, is responsible for important physiological functions such as: defending against external invasion, regulating body temperature, and sensing touch. In the treatment and nursing process of skin diseases, wound healing and infection control are two core links that affect patients' recovery and quality of life. Effective wound care strategies can accelerate the healing process and significantly reduce the risk of complications, thereby improving patients' overall health. Therefore, in-depth research on wound healing and infection control strategies in dermatology nursing is significant for clinical practice.

2 Basic Theories of Skin Wound Healing

2.1 Overview of Skin Structure and Function

The skin is a complex organ composed of three main layers: epidermis, dermis, and subcutaneous tissue. As an outer layer, the main function of the epidermis is to provide a physical barrier to prevent external environmental damage. The skin is a complex organ composed of three main layers: epidermis, dermis, and subcutaneous tissue. As an outer layer, the main function of the epidermis is to provide a physical barrier to prevent external environmental damage. The dermis

layer contains abundant blood vessels, nerve endings, sweat glands, and hair follicles, responsible for transporting nutrients, sensing external stimuli, and regulating body temperature. Subcutaneous tissue is mainly composed of fat and connective tissue, which plays a role in storing energy, protecting internal organs, and maintaining body temperature. The collaborative work of these three layers ensures that the skin can effectively perform its functions of protecting, sensing, and regulating body temperature [1].

2.2 Physiological Process of Wound Healing

Wound healing is a complex, multi-stage, and dynamically changing physiological process that involves multiple biological and cellular mechanisms. The process mainly includes the following stages: platelet aggregation and hemostasis, inflammatory response and pathogen clearance, angiogenesis, cell proliferation and matrix deposition, and tissue remodeling. This series of complex physiological processes requires precise regulation to ensure the efficiency and quality of wound healing [2].

2.3 Analysis of Factors Affecting Wound Healing

In the process of wound healing, numerous factors interact with each other, jointly affecting the speed and quality of healing. Age is one of the key factors, as

* Corresponding author: 15150504342@163.com

increasing age, cell proliferation, and decreased migration ability can prolong the healing process. Nutritional status is equally crucial for wound healing, as a lack of nutrients such as protein, vitamins, and minerals can directly affect the repair and regeneration ability of cells.

Blood circulation plays an important role in wound healing. Good blood circulation can ensure that the wound area receives sufficient oxygen and nutrients, promoting cell repair and new tissue generation.

Infection is another important factor that affects wound healing. Bacterial or fungal infections can cause local inflammatory reactions, damage newly formed tissues, and prolong healing time. In addition, the impact of chronic diseases such as diabetes on wound healing cannot be ignored. Patients with diabetes are often accompanied by microvascular and neuropathy, which affects the blood supply and nerve sensation in the wound area, increases the risk of infection, and thus delays healing.

Psychological factors also need to be taken seriously. Emotional states such as stress and anxiety may indirectly affect wound healing by affecting the endocrine and immune systems. For example, increased secretion of stress hormones such as cortisol may suppress inflammatory responses and immune cell activity, thereby affecting the healing process.

In summary, wound healing is a complex process influenced by multiple factors. A deep understanding and control of these factors is of great significance for promoting wound healing and improving patient prognosis [3].

3 The Particularity of Wound Care for Skin Diseases

The schematic process of wound care for skin diseases is shown in Figure 1.

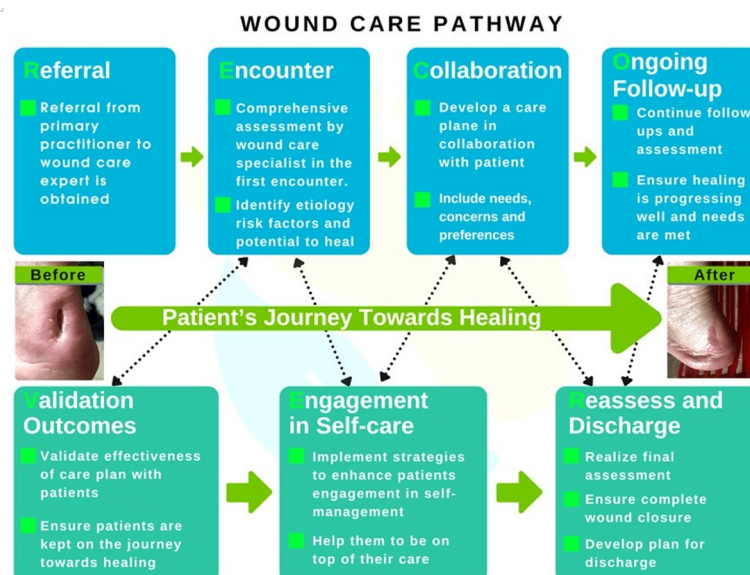


Fig. 1. Schematic Process of Skin Disease Wound Care Structure

3.1 Characteristics of Skin Disease Wounds

The care of skin disease wounds is unique, mainly due to their distinct pathological features and clinical manifestations. Firstly, skin disease wounds are often accompanied by inflammatory reactions, which occur because the skin, as the body's first line of defense, quickly activates inflammatory mechanisms to protect the body when damaged or infected. Inflammation not only causes symptoms such as redness, swelling, heat, and skin pain but also affects the healing process of wounds.

Secondly, itching is one of the common symptoms of skin disease wounds. The itching sensation may be caused by inflammatory mediators, as well as dry skin or abnormally sensitive nerve endings. Persistent itching affects the patient's daily life and may also lead to scratching wounds, further exacerbating skin damage and inflammation.

In addition, pain is also a significant characteristic of skin disease wounds. The degree and nature of pain may vary depending on the disease type and the wound's depth. Pain not only brings discomfort to patients but may also affect their mobility and mental health.

It is worth noting that the symptoms and characteristics of skin disease wounds may vary depending on the type of disease. For example, wounds of autoimmune skin diseases such as eczema and psoriasis may manifest as chronic inflammation and recurrent episodes; Wounds of malignant lesions such as skin cancer may be accompanied by varying degrees of tissue damage and bleeding.

However, the symptoms and characteristics of skin disease wounds may vary depending on the type of disease. For example, wounds of autoimmune skin diseases such as eczema and psoriasis may exhibit chronic inflammation and recurrent episodes. In contrast, wounds of malignant lesions such as skin cancer may be accompanied by varying degrees of tissue damage and bleeding.

Therefore, the care of skin disease wounds needs to be personalized according to the specific type of disease and wound characteristics, including appropriate cleaning, anti-inflammatory treatment, anti-itch, and pain relief measures, as well as necessary psychological support and education to promote wound healing and improve patient's quality of life [4].

3.2 Nursing Needs of Patients with Skin Diseases

The nursing needs of patients with skin diseases vary depending on the type, severity, age, gender, lifestyle, and overall health status of the disease. Therefore, it is crucial to develop personalized nursing plans. Here are some key points: disease education, symptom management, skin care, dietary and lifestyle adjustments, psychological support, regular monitoring and evaluation, environmental control, and medication management. In short, the nursing needs of patients with skin diseases are multifaceted and require a comprehensive and personalized approach to ensure optimal nursing outcomes. Comprehensive interventions in patient education, symptom management, skin care, lifestyle adjustments, and psychological support can effectively improve patients' quality of life [5].

3.3 Infection Risk in Wound Care

Infection control is a key consideration in the care of skin disease wounds. Due to the impaired function of the skin barrier, skin disease wounds are more susceptible to infection by bacteria, fungi, and other pathogens. Infection not only prolongs wound healing time but may also lead to serious complications such as cellulitis, sepsis, etc. The following measures are crucial for reducing the risk of infection: cleaning, antibacterial treatment, dressing, monitoring, patient education, environmental control, nutritional support, and blood sugar control [6].

4 Wound Healing and Infection Control Strategies

4.1 Cleaning and Disinfection Techniques

Cleaning and disinfection techniques are fundamental and critical components in wound healing and infection control strategies. Regular cleaning of wounds can remove bacteria, dead skin cells, and secretions, reducing the risk of infection. Here are some key cleaning and disinfection techniques: cleaning, disinfectant selection, correct disinfection methods, dressings, monitoring, patient education, and environmental control. Proper cleaning and disinfection techniques can effectively reduce the risk of wound infection, promote wound healing, and improve the overall health status of patients [7].

4.2 Selection and Application of Wound Dressings

4.2.1 Traditional Dressings

Choosing the appropriate dressing is crucial for promoting healing and controlling infection during the wound-healing process. Traditional dressings, such as gauze and cotton pads, are typically suitable for dry, non-infectious wounds. The main function of these dressings is to absorb a small amount of secretions, protect the wound from external contamination, and allow the wound surface to breathe.

The selection and application of dressings should be determined based on the specific condition of the wound, the overall health status of the patient, and the treatment goals. The correct selection and application of dressings are important components of wound care, helping to optimize the healing process and reduce complications.

4.2.2 High-tech Dressings

For example, hydrocolloid dressings and foam dressings are important advances in the field of wound care, especially for wounds with more secretions or risk of infection.

When selecting and applying these dressings, consideration should be given to the specific conditions of the wound, such as size, depth, exudate, infection risk, and the overall health status of the patient. The correct selection and application of dressings can significantly improve the wound healing process, reduce complications, and enhance patients' quality of life [8].

4.3 Anti-infection Treatment and Monitoring

In wound care, anti-infective treatment and monitoring are key steps, especially in managing infectious wounds. The following are some key steps and considerations: rational use of antibiotics, microbial culture, treatment monitoring, personalized treatment, patient education, prevention and control, and interdisciplinary cooperation. Reasonable anti-infection treatment and monitoring can effectively control wound infection, promote wound healing, reduce complications, and improve the overall health and well-being of patients.

4.4 Nutritional Support and Rehabilitation Nursing

Nutritional support and rehabilitation care are two important auxiliary measures in the process of wound healing, which together promote the recovery and overall health of patients.

Nutritional support includes a balanced diet, specific nutrients, calories and energy, hydration, and personalized dietary plans.

Rehabilitation nursing includes physical therapy, functional training, psychological support, and health education. Balanced nutritional support and comprehensive rehabilitation care can significantly promote wound healing, accelerate patient recovery, and

improve their quality of life. These measures need to be personalized and adjusted according to the specific situation and needs of patients to ensure the best treatment effect.

5 Case Analysis and Practical Exploration

5.1 Common Skin Disease Wound Care Cases

When analyzing common skin disease wound care cases, taking eczema and psoriasis as examples, we can explore the characteristics of these two diseases' wounds and corresponding nursing strategies.

5.1.1 Eczema

Eczema is a chronic inflammatory skin disease, with common symptoms including dryness, itching, redness, and swelling of the skin. Eczema wounds may become damaged due to scratching, increasing the risk of exudation and infection.

Use mild, non-irritating moisturizers to keep the skin moist and reduce dryness and itching. Depending on the severity of the condition, use local or systemic anti-inflammatory drugs such as corticosteroids. Use antihistamines or other anti-itch drugs to alleviate itching and reduce wound aggravation caused by scratching. Avoid known allergens and irritants, such as certain detergents, fragrances, or rough textiles [9].

5.1.2 Psoriasis

Psoriasis is a chronic autoimmune disease characterized by the appearance of erythema and silver-white scales on the skin. Psoriatic wounds may become painful and sensitive due to excessive skin hyperplasia and flaking.

Moisturizers and softeners can reduce skin hardening and scale accumulation. Ultraviolet phototherapy can control the excessive proliferation of skin cells. Local or systemic anti-inflammatory drugs can alleviate inflammation and pain. Doctors need to guide patients on how to properly handle skin scales, and avoid excessive scratching and skin damage.

When dealing with these diseases, it is important to develop personalized care plans based on the specific symptoms and severity of the patient's condition. In addition, patient education, psychological support, and long-term disease management are also key factors in ensuring treatment effectiveness and improving patients' quality of life [10].

5.2 Nursing Intervention Measures and Effect Evaluation

Evaluating the effectiveness of different nursing interventions is an important step in optimizing patient care and improving nursing quality in wound care. Here are some key evaluation aspects:

Dressing selection: Evaluate the dressing's ability to manage wound exudate, wound healing speed, infection

control effectiveness, and patient comfort. Observe the dryness, redness, pain, and signs of healing of the wound, such as the growth of granulation tissue.

Cleaning method: Evaluate the purification effect of the cleaning method on the wound and whether it causes pain, irritation, or other adverse reactions. Observe the cleanliness of the wound, the nature of the exudate, and whether there are signs of infection.

Anti-infection therapy: Evaluate the effectiveness of antibiotics or other anti-infection drugs in controlling wound infections. Monitor the degree of inflammation, exudate, pain sensation, and microbial culture results of the wound.

Nutritional support: Evaluate the impact of nutritional support on the speed and quality of wound healing. Observe the progress of wound healing, the patient's weight and nutritional status, as well as laboratory test results such as nutrient levels in the blood.

Rehabilitation nursing: Evaluate the impact of rehabilitation nursing on patients' functional recovery and quality of life. Assess the patient's activity ability, self-care ability, and changes in psychological state.

When evaluating the effectiveness, of scientific methods such as before and after comparison, quantitative and qualitative analysis should be used. In addition, patient feedback and satisfaction are also important indicators for evaluating the effectiveness of nursing interventions. Evaluating and adjusting nursing interventions can ensure optimal nursing outcomes for patients, promote wound healing, and improve quality of life [11].

5.3 Optimization of Infection Control Strategies

Optimizing infection control strategies is an important part of wound care, which requires personalized adjustments based on the patient's specific situation and wound characteristics. Here are some key points:

Firstly, a comprehensive infection risk assessment should be conducted on the patient, taking into account factors such as age, underlying diseases, wound type, depth, location, and past infection history.

Regular monitoring of wound healing and signs of infection, such as redness, increased exudate, odor, or worsening pain, can help detect infections early and take appropriate measures.

Use appropriate cleaning agents and disinfectants to reduce the amount of bacteria and pollutants. The frequency of cleaning and disinfection should be determined based on the cleanliness of the wound and the risk of infection.

According to the results of microbial culture and antibiotic sensitivity testing, use antibiotics reasonably. Avoid unnecessary use of antibiotics to reduce the development of drug resistance.

Educate patients on the importance of wound care, including how to properly clean wounds, change dressings, and identify signs of infection. The active participation of patients is crucial for infection control.

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In complex wound management, collaboration among multidisciplinary teams such as doctors, nurses, infection control experts, and nutritionists may be required to ensure comprehensive and effective infection control strategies.

Continuously adjust and optimize infection control strategies based on wound healing and patient feedback.

These measures can effectively control wound infections, promote wound healing, reduce complications, and improve the overall health and well-being of patients [12].

6 Conclusion

Effective wound care and infection control are key components of skin disease care. A deep understanding of the physiological process of wound healing, identification of the specificity of skin disease wounds, and adoption of targeted nursing strategies can significantly improve wound healing efficiency, reduce the risk of infection, and thus improve the overall treatment effect and quality of life of patients.

Wound care not only involves technical aspects such as cleaning, dressing selection, and infection control, but also includes comprehensive evaluation of patients, development of personalized care plans, and continuous effectiveness monitoring. In addition, patient education and psychological support also play an important role in promoting wound healing and improving quality of life.

In future research and practice, continuing to explore and optimize wound care strategies, especially in the application of high-tech dressings, selection of anti-infective treatments, and innovation in rehabilitation care, will help further improve the quality and efficiency of wound care. Interdisciplinary collaboration and continuous professional development can provide more comprehensive and effective care for patients with skin disease wounds, thereby achieving better treatment outcomes and improving their quality of life.

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