# The Application Value of Moist Dressing Combined with Growth Factor in Traumatic Wound Dressing Care

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## Abstract

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**Objective:** To analyze the nursing efficacy of moist dressings combined with growth factor gel in trauma wound dressing care.

**Methods:** A total of 82 trauma patients requiring dressing changes, admitted to our hospital from April 2023 to June 2023, were selected as study subjects and divided into a study group and a control group based on admission order. The control group received moist dressing care, while the study group received combined care with growth factor gel in addition to moist dressings. Clinical indicators, wound healing grades, and endothelial growth factor levels were compared between the two groups to evaluate nursing efficacy.

**Results:** In comparisons of clinical indicators between the two groups, the study group demonstrated significantly fewer dressing changes, shorter wound healing time, and shorter trauma recovery time than the control group ($P<0.05$). The total excellent and good rate of wound healing was 97.55% in the study group versus 82.92% in the control group, with the study group's rate being significantly higher ($P<0.05$). No significant difference existed in endothelial growth factor levels between the two groups before intervention ($P>0.05$). After intervention, the levels of bFGF, KGF, and VEGF in the study group were significantly higher than those in the control group ($P<0.05$).

**Conclusion:** The application of moist dressings combined with growth factor gel in trauma wound dressing care can promote faster and better wound healing in trauma patients, improve clinical treatment efficiency, and demonstrates favorable application effects.

## Full Text

# Application Value of Wet Dressing Combined with Growth Factor Gel in Traumatic Wound Dressing Care

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## Abstract

**Objective:** To analyze the efficacy of wet dressing combined with growth factor gel in traumatic wound dressing care. **Methods:** Eighty-two patients requiring traumatic wound dressing changes admitted to our hospital from April 2023 to June 2023 were selected as study subjects and divided into a study group and a control group based on admission order. The control group received wet dressing care, while the study group received combined care with growth factor gel in addition to wet dressings. Clinical indicators, wound healing grades, and cellular endothelial growth factor levels were compared between the two groups to evaluate nursing effectiveness. **Results:** Comparisons of clinical indicators showed that the study group had significantly fewer dressing changes and shorter wound healing times and complete healing times compared to the control group ($P<0.05$). The total excellent-good healing rate was 97.55% in the study group versus 82.92% in the control group, with the study group showing significantly superior wound healing outcomes ($P<0.05$). No significant differences in cellular endothelial growth factor levels were observed between groups before intervention ($P>0.05$); however, post-intervention levels of bFGF, KGF, and VEGF were significantly higher in the study group ($P<0.05$). **Conclusion:** The application of wet dressing combined with growth factor gel in traumatic wound dressing care promotes faster and better wound healing, improves clinical treatment efficiency, and demonstrates good clinical efficacy.

**Keywords:** traumatic wound dressing care; wet dressing; growth factor gel; wound healing; cellular endothelial growth factor

## Introduction

Trauma represents a common surgical condition in clinical practice, where postoperative dressing changes are typically required to ensure therapeutic efficacy. Wound infection constitutes a critical factor affecting healing outcomes in traumatic wounds. When infection occurs, it not only intensifies physiological pain but also increases psychological stress, significantly impacting patients' quality of daily life. Dressing change, also known as dressing replacement, is a fundamental procedure in trauma management that involves wound observation and cleaning to reduce foreign bodies and exudate, thereby creating optimal conditions for wound healing.

Wet dressings serve as a common dressing change method that accelerates ex-

tracellular matrix deposition and enhances wound healing by maintaining a moist wound environment, demonstrating superior efficacy compared to traditional dry dressings [1-2]. Growth factor gel can repair necrotic and degenerated epithelial cells, promote wound healing, and provide anti-inflammatory and antimicrobial effects, offering significant clinical value in traumatic wound dressing care. This study selected 82 patients requiring traumatic wound dressing changes admitted to our hospital from April 2023 to June 2023 as observation subjects, with results reported as follows.

### 1.1 General Information

This study enrolled 82 patients requiring traumatic wound dressing changes admitted to our hospital from April 2023 to June 2023. Participants were divided into a study group and a control group based on admission order, with 41 cases in each group. The study group comprised 28 males and 13 females, aged 49-72 years with a mean age of $(57.48\$\pm3.28)years.Thecontrolgroupincluded27malesand14females,aged48-73yearswithameanageof(58.07\pm\$3.35)$ years. No significant differences in baseline characteristics were observed between the two groups (P>0.05), ensuring statistical comparability.

### 1.2 Inclusion and Exclusion Criteria

**Inclusion criteria:** Met clinical criteria for traumatic wound dressing care; Patients and their families provided informed consent; Study protocol was approved by the hospital's Medical Ethics Committee.

**Exclusion criteria:** Patients with cognitive impairment or psychiatric disorders; Patients with poor treatment compliance; Patients with severe organic lesions; Patients who had taken antibiotics within one month prior to the study; Patients with immune or hematological diseases; Patients with incomplete clinical data.

### 1.3 Methods

All patients received routine nursing care upon admission, including comprehensive assessment of their condition, wound infection status, limb mobility, and psychological state, followed by basic nursing interventions. Nursing staff implemented appropriate care strategies according to medical orders and actual patient conditions, including anti-infection treatment and nutritional nerve support. Wound surfaces were cleaned by first performing circular disinfection with isotonic saline from the wound center outward to approximately 5 cm beyond the wound edge. Subsequent staged cleaning of the traumatic wound was performed, with identification and debridement of necrotic tissue. Wound area was measured and exudate volume assessed to select appropriate dressings based on wound characteristics.

The control group received wet dressing care. Appropriate wet dressings were selected based on wound severity: for severe trauma, hydrogel dressings were applied, typically with silver ion antimicrobial dressings as primary coverage followed by secondary alginate dressing coverage; for milder trauma, silver ion dressings were applied with hydrocolloid coverage and final foam dressing overlay. Bandages were used for fixation when necessary. Wound exudate was monitored post-application, with dressing changes performed twice daily for heavy exudate and once daily for minimal exudate. If wound ulceration occurred during wet dressing treatment, debridement gel was applied to necrotic tissue and covered with silver ion dressings. This antimicrobial process required extended duration, necessitating enhanced microbial prevention to avoid wound impact, reduce odor, and improve patient experience. Once ulcer surfaces began to crust, dressings could be changed weekly.

The study group received combined wet dressing and growth factor gel care. Recombinant bovine basic fibroblast growth factor gel (Manufacturer: Zhuhai Yisheng Bio-pharmaceutical Co., Ltd.; Approval No.: Guoyao Zhunzi S20040001) was applied evenly across the entire wound surface before wet dressing application. Wet dressing protocols were identical to the control group. During dressing changes, growth factor gel adherence was monitored to ensure uniform application and avoid treatment interference. Post-dressing, nursing staff provided health education on daily wound cleaning measures, emphasizing avoidance of water exposure and excessive movement to prevent infection or secondary injury that could compromise clinical care quality.

### 1.4 Observation Indicators

Clinical indicators were compared between groups, including number of dressing changes, wound healing time (days), and complete healing time (days). Wound healing grades were assessed as Grade I, II, or III: Grade I indicated healing without complications and good wound condition; Grade II indicated mild inflammatory reaction during healing with satisfactory outcomes; Grade III indicated suppuration requiring drainage with poor healing. Total excellent-good healing rate was calculated as: (Grade I cases + Grade II cases) ÷ total cases × 100%. Five milliliters of venous blood were collected before and after intervention to measure serum basic fibroblast growth factor (bFGF), keratinocyte growth factor (KGF), and vascular endothelial growth factor (VEGF) levels using ELISA, with cellular endothelial growth factor levels compared between groups.

### 1.5 Statistical Methods

Statistical analysis was performed using SPSS 22.0 software. Measurement data ($x \pm s$) were analyzed using t-tests, and count data were analyzed using $^2$ tests. $P<0.05$ indicated statistically significant differences.

### 2.1 Comparison of Clinical Indicators

The study group demonstrated significantly fewer dressing changes and shorter wound healing times and complete healing times compared to the control group ($P<0.05$). Details are presented in Table 1 .

### 2.2 Comparison of Wound Healing Grades

The total excellent-good healing rate was significantly higher in the study group compared to the control group ($P<0.05$). Details are presented in Table 2 .

### 2.3 Comparison of Cellular Endothelial Growth Factor Levels

No significant differences in cellular endothelial growth factor levels were observed between groups before intervention ($P>0.05$). Post-intervention levels of bFGF, KGF, and VEGF were significantly higher in the study group ($P<0.05$). Details are presented in Table 3 .

## Discussion

With advances in modern medical standards and living conditions, understanding of dressing care has evolved significantly. Dressing changes are no longer viewed merely as wound protection but as crucial interventions for preventing infection and promoting healing, requiring consideration of both physiological outcomes and patient burden reduction. Conventional traumatic wound care primarily employs traditional dry dressings such as cotton pads and gauze, characterized by mesh weaving structures with high exudate absorption capacity that effectively prevents fluid accumulation and provides adequate wound protection [3]. However, dry dressings present notable limitations, including prolonged healing times, frequent dressing changes, and adhesion to wound surfaces that causes significant pain during removal and can damage newly formed granulation tissue, thereby delaying recovery and increasing nursing workload.

Wet dressings create a moist wound healing environment that accelerates healing while maintaining dryness of the wound periphery, enhancing exudate absorption and facilitating clearance of necrotic tissue [4-5]. Additionally, they block foreign particulate matter, maintain constant wound temperature, prevent medication entry, and achieve hemostatic and analgesic effects, representing an ideal dressing care approach. Recombinant bovine basic fibroblast growth factor, a multifunctional cytokine, promotes growth of various cell types and accelerates granulation tissue formation to enhance wound healing [6-8]. The combination with wet dressings demonstrates positive effects on accelerating wound healing in trauma patients.

Our findings showed that the study group had significantly fewer dressing changes and shorter wound healing and complete healing times ($P<0.05$), indicating superior nursing efficacy. The total excellent-good healing rate of 97.55% in the study group versus 82.92% in the control group ($P<0.05$)

demonstrates that combined care not only accelerates healing but also improves healing quality. This may be attributed to the combination of wet dressings and growth factor gel facilitating enhanced drug absorption and reduced wound exposure, thereby preventing infection [9]. Furthermore, combined care provides better protection of wound nerves, reducing patient pain and promoting healing quality.

Comparisons of cellular endothelial growth factor levels revealed no pre-intervention differences ($P>0.05$), but significantly elevated post-intervention bFGF, KGF, and VEGF levels in the study group ($P<0.05$). bFGF, a heparin-binding growth factor, promotes vascular endothelial cell proliferation and angiogenic activity. KGF, a basic protein growth factor, specifically regulates epithelial cell renewal, accelerating regeneration and differentiation. VEGF, a vascular endothelial growth factor, increases vascular permeability and promotes endothelial cell migration and proliferation [10]. These findings indicate that combined wet dressing and growth factor gel care effectively promotes cellular endothelial growth factor expression, thereby accelerating wound healing. Wet dressings create an optimal sealed healing environment while growth factors stimulate cellular growth factor production and enhance repair of damaged tissue, yielding synergistic therapeutic benefits.

## Conclusion

The application of wet dressing combined with growth factor gel in traumatic wound dressing care promotes faster and better wound healing, improves clinical treatment efficiency, and demonstrates good clinical efficacy.

[1] Gao WT, Cui XH, Wu QM, et al. Effects of Simiao Decoction combined with wet dressing on PUSH score and granulation tissue growth factors in patients with stage IV pressure injuries [J]. Journal of Clinical and Experimental Medicine, 2022, 21(17): 1866-1870. [2] Lu M, Ma XY, Zhang J, et al. Effects of Huanglian Zicao wet dressing on inflammatory markers and dorsalis pedis artery blood flow in early diabetic foot ulcers [J]. Lishizhen Medicine and Materia Medica Research, 2022, 33(08): 1931-1932. [3] Ru MH, Qin YW, Huang MZ, et al. Application of Kangfuxin Liquid combined with wet dressing in treatment of abdominal incision fat liquefaction [J]. China Medicine and Pharmacy, 2021, 11(15): 208-211. [4] Ye QY, Mao XH, Wu J, et al. Nursing care of a child with drug extravasation injury treated with wet dressing [J]. Chinese Journal of Rural Medicine and Pharmacy, 2021, 28(13): 73-74. [5] Cai YT. Network Meta-analysis of wet dressing for pressure injury treatment and investigation of nurses' awareness of wet dressing [D]. Lanzhou University, 2021. [6] Wang XX. Evaluation of wet dressing and psychological nursing for open fracture wound infection patients [J]. Psychological Monthly, 2020, 15(18): 198-199. [7] Huo R, Chen YX, Liu QL, et al. Application effect of moist healing dressing combined with wound assessment triangle in intestinal stoma skin-mucosal separation [J]. Journal of Bengbu Medical College, 2022, 47(08): 1092-1095+1101. [8] Chen QX, Zeng YY. Effect of wet dressing on wound healing in elderly diabetic foot

patients [J]. Diabetes New World, 2022, 25(04): 121-124. [9] Yan J. Clinical effect of moisturizing dressing covering granulation surface with autologous micro-skin grafting in deep burn wound patients and its influence on VAS score and related wound healing indicators [J]. Jiangxi Medical Journal, 2021, 56(09): 1485-1487+1493. [10] Gao L. Application of vacuum sealing drainage and wet dressing in diabetic foot infection nursing [J]. Diabetes New World, 2021, 24(18): 96-99+104.

*Note: Figure translations are in progress. See original paper for figures.*