**Jurnal Penelitian Perawat Profesional**
Volume 6 Nomor 6, Desember 2024
e-ISSN 2715-6885; p-ISSN 2714-9757
http://jurnal.globalhealthsciencegroup.com/index.php/JPPP

# MANAGEMENT WOUND DEHISCANCE WITH HEAVY EXUDATE: A LITERATURE REVIEW

**Lima Florensia, Mareta Dea Rosaline*, Diah Tika Anggraeni, Nourmayansa Vidya Anggraini, Pipit Lestari**
Fakultas Ilmu Kesehatan, Universitas Pembangunan Nasional Veteran Jakarta, Jl. Limo Raya No.7, Limo, Depok, Jawa Barat 16514, Indonesia
*maretarosaline@upnvj.ac.id

## ABSTRACT

Wound dehiscenceis a serious postoperative complication that can lead to increased morbidity, extended hospitalization, and higher healthcare costs. This research aims to synthesize the current evidence on the management strategies for deshiscence wounds with heavy exudate. Literature review through several stages is making questions, identification, eligibility, selection of article inclusion, and screening. The Selection Process is listed in the framework of the review literature. Research used PICO, articles published from 2019 to 2024 in English, and searches came from online database are "Pubmed", "ProQuest", Science Direct". Six high-quality articles showed different results adjusted to the system and the conditions of where the research was conducted. The results of the reviewed article focus on wound dehiscence with heavy exudate presents significant challenges in clinical wound management. The optimal approach involves a combination of appropriate exudate management and infection controls. Studies included in this review highlighted the importance of individualized treatment plans for patients with dehiscence and heavy exudate.

Kata kunci: dehiscence; exudate; heavy; management; wound

## INTRODUCTION

Wound dehiscence is a surgical complication characterized by the partial or complete separation of the layers of a surgical wound. This separation can occur at various levels, involving the skin, subcutaneous tissue, and fascial layers (Lopes et al., 2023). The incidence of abdominal wound dehiscence varies between 0.4 – 3.5%, with mortality as high as 45% in different health facilities without specific global incidence recorded.In Indonesia found approximately 252 cases of abdominal wound dehiscence with incidence varies between 0.4 – 1.13% (WHO,2020) Managing wounds with heavy exudate requires a specialized approach to prevent infection and promote healing, primarily through the selection of appropriate dressings and therapies (Adderley, 2010). The incidence of dehiscence can range from 0.1% to 5.5%, and it is often associated with increased morbidity and delayed healing ((Brown, 2022). When the wound dehiscence is accompanied by heavy exudation, the management becomes even more challenging. (Hermawan, Wibisono, & Nembo, 2021). Managing wounds with heavy exudate requires a specialized approach to prevent infection and accelerate healing, particularly through the selection of appropriate dressings and therapies have been identified in various studies; however, there is still no definitive consensus on the most effective approach. This research aims to synthesize the current evidence on the management strategies for deshiscence wounds with heavy exudate.

## METHOD

This research uses a conducted based on the systematic literature review reporting guidlines suggested by the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA). The preparation of this review through several stages is to create a research question by the PICOS method (Problem, Intervention, Comparison, Outcome and

Systematic), and then conduct a literature review using diagrams, consisting of identification, eligibility, screening, feasibility selection, and determination of articles that fit the inclusion criteria. Journal identification is done by searching journal articles in three databases. The databases used by the authors are PubMed, Proquest, and Science Direct. Furthermore, before performing a search, the author chooses the settings on each database search page namely: articles published between 2019-2024, reference types are articles, the language used is English.Keyword s include "heavy exudate", "management", "wound dehiscence", From these keywords are expected to be conducted a literature review to answer the question of researchers. Then after searching on each keyword, the author combines/compiles the keyword with the conjunction and (And). The eligible articles are adjusted based on the suitability of the title and abstract article, At the eligibility stage the remaining articles on the Proquest database are 2 articles, PubMed database is 2 articles, and Science Direct 2 articles.The articles found were then synthesized and analyzed based on inclusion and exclusion criteria. Inclusion criteria include (1) clinical studies, controlled trials on the management of dehiscence wounds with heavy exudate. Exclusion criteria for this study were studies involving pediatric populations and did not focus on dehiscence or failed to report on exudate management. In this study, articles unrelated to the topic were removed, and articles with similar titles were replaced with those having different titles but supporting the main content of the research. Articles that met the criteria were reviewed and categorized according to their research findings, which would then be used to discuss management wound dehiscence with heavy exudate.

## RESULT

The six reviewed articles showed different results. Wound dehiscence with heavy exudate presents significant challenges in clinical wound management. The optimal approach involves a combination of appropriate exudate management and infection controls. The important component is individualized treatment plans for patients with dehiscence and heavy exudate.

## DISCUSSION

The underlying pathophysiology of wound dehiscence involves impaired collagen synthesis, poor tissue integrity, and an imbalance in the wound healing cascade. When dehiscence occurs, the wound may release large amounts of fluid (exudate), which can be a result of inflammation, infection, or ischemia. Heavy exudate can complicate wound healing by delaying epithelialization, fostering a moist environment conducive to bacterial growth, and causing further tissue maceration. Managing this excessive drainage is crucial in preventing infection and promoting healing. Effective management of wound dehiscence with heavy exudate requires a multifaceted approach, including infection control, exudate management, and the promotion of tissue healing

### Exudate Management

The main challenge in dehiscence with heavy exudate is preventing the wound from becoming too wet, which can compromise tissue integrity and promote bacterial growth. Key strategies include (1) Absorbent Dressings: Hydrocolloids, alginates, and foam dressings are highly absorbent and help manage heavy exudate. Penelitian yang dilakukan oleh (Wojcik et al., 2021) tentang Superabsorbent curdlan-based foam dressings with typical hydrocolloids properties for highly exuding wound management menyatakan bahwa was to use.curdlan, which is known to support wound healing, as a base for the production of superabsorbent hybrid biomaterials (curdlan/agarose andcurdlan/chitosan) with the intended use as wound dressings for highly exuding wound management. This study developed two types of superabsorbent biomaterials based on curdlan, namely curdlan/agarose (Mat1) and

curdlan/chitosan (Mat2), for wound management with high exudate. These biomaterials were created using a freeze-drying method to produce a foam structure with superabsorbent capability. The results showed that the foam biomaterials, with a highly porous structure (66–77%), transformed into a soft gel upon contact with wound fluid, acting like a conventional hydrocolloid dressing. This new biomaterial exhibits superabsorbent capacity (1 g of biomaterial absorbs about 15 ml of exudate) with horizontal absorption while keeping the edges dry and has a water vapor transmission rate of around 1700–1800 g/m²/day, recommended for wound dressings in chronic wounds with moderate to high exudate.

Research by (Ahmad et al., 2024) developed an alginate-based hydrogel wound dressing using a non-woven fabric from industrial cotton waste processed through hydroentanglement. The hydrogel-alginate composite was made using a sol-gel method with various alginate concentrations (0.5%, 1%, and 1.5%) and drying temperatures (20°C, 40°C, and 60°C). The results indicated that hydrogels with higher alginate concentrations showed greater exudate absorption capacity, reaching 650% at the highest drying temperature. The optimal combination of alginate concentration and drying temperature enhanced exudate absorption and antibacterial properties, which are essential for accelerating wound healing. Furthermore,research by (Miguel, D'Angelo, Ribeiro, Ferreira, & Coutinho, 2023) investigated an antibacterial and bioactive sponge incorporating Codium sp.-mediated biosynthesized silver nanoparticles (AgNPs) for managing high-exudate wounds. The antibacterial sponge was created by impregnating AgNPs into the sponge matrix. This process was designed to produce a porous structure capable of efficiently absorbing wound exudate. Characterization was performed to evaluate the physical and biochemical properties of the sponge, including porosity, swelling capacity, and biodegradation profile. Antibacterial tests were conducted to assess the sponge's effectiveness against pathogenic bacteria, such as *Staphylococcus aureus*. The results indicated that the sponge had high porosity and good swelling capacity, which are crucial for managing exudative wounds. The porous structure enables gas exchange and optimal exudate absorption. This study highlights the great potential of antibacterial sponges made from biosynthetically synthesized AgNPs for clinical use. With rising antibiotic resistance, nanoparticle-based solutions like this can be an effective strategy in wound management.

NPWT, or vacuum-assisted closure, has been shown to be highly effective in managing wounds with excessive exudate. It promotes wound contraction, increases blood flow, and helps remove excess fluid, facilitating faster healing. Research by Jang, Shim, Lee, Lee, & Lee, (2013) on *Application of negative pressure wound therapy in patients with wound dehiscence after abdominal open surgery: a single center experience* demonstrated that NPWT is a promising method for managing abdominal wound complications, with no significant risks such as bowel perforation. Research by (McElroy, 2019) indicated that NPWTi-d with ROCF-CC is a beneficial adjunctive treatment for complex wounds, particularly when surgical options are limited or not desired. A total of 85.7% of patients did not require further surgical debridement, indicating effective wound management. Observations included less malodor, reduced surrounding erythema, and clear demarcation of healthy skin from devitalized tissue.

**Infection Control**

Infection is a major concern in dehisced wounds, particularly when heavy exudate is present. Signs of infection, including increased pain, erythema, and foul odor, should prompt immediate intervention. Treatment may involve topical antimicrobial agents (such as silver sulfadiazine or honey-based dressings) can be effective in controlling bacterial load.The

research by (Dina Jarjis, Thomas Crewe, & Henrik Matzen, 2016), The case report follows the CARE (Case Report) guidelines. It describes a 40-year-old female patient who underwent abdominoplasty two years after laparoscopic gastric bypass surgery resulting in significant weight loss. The patient experienced wound infection and dehiscence ten days post-surgery. A swab culture was performed, confirming the presence of Staphylococcus aureus. The application of Manuka honey resulted in significant clinical improvement. The patient showed continuous progress in wound healing without the need for surgical intervention. After six weeks of treatment with the honey, complete healing was achieved, and the resulting scar tissue was described as fine. Honey's mechanisms of action include its antibacterial effects (due to hydrogen peroxide production, low pH, and osmotic effects), anti-inflammatory properties, and the ability to stimulate immune responses, which collectively contribute to enhanced wound healing.

## CONCLUTION

Wound dehiscence with heavy exudate presents significant challenges in clinical wound management. The optimal approach involves a combination of appropriate exudate management and infection controls. Studies included in this review highlighted the importance of individualized treatment plans for patients with dehiscence and heavy exudate. Several studies indicated that NPWT significantly improved healing rates and reduced the incidence of infection compared to traditional dressing methods. The use of advanced wound dressings (e.g., hydrocolloids and alginates) also demonstrated positive outcomes in controlling exudate and promoting wound healing. However, the choice of management should always be guided by clinical factors such as wound size, depth, infection status, and the patient’s comorbid conditions. While there is substantial evidence supporting for further research is required to better understand the long-term outcomes and cost-effectiveness of these treatments.

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