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# APPLICATION OF MOIST WOUND HEALING IN AN INFECTED WOUND FOLLOWING PERFORATED APPENDECTOMY: A NURSING CASE STUDY

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**ABSTRACT**

*Background: Perforated appendicitis is an emergency condition that requires immediate surgical intervention and carries a high risk of complications, particularly surgical site infection. Inadequately managed wound infections may progress to serious complications, such as sepsis, increasing patient morbidity and mortality. Therefore, effective and evidence-based wound management is essential to accelerate healing and prevent further complications. Objective: This study aimed to describe the management of an infected postoperative wound following perforated appendectomy using a moist wound healing approach. Method: A case study was conducted involving one patient with an infected postoperative wound measuring 20 cm in length, 5 cm in width, and 6 cm in depth, accompanied by purulent exudation and an unpleasant odor. The intervention included opening the sutures to facilitate exudation drainage, debridement to remove necrotic tissue, and subsequent wound care using the moist wound healing approach with modern dressings tailored to the wound condition. Wound progress was evaluated regularly over 12 weeks by monitoring wound size, exudation volume, and signs of infection. Results: After four weeks of treatment, healthy granulation tissue had developed, accompanied by reduced exudation and resolution of the wound odor. By week 12, the wound had achieved complete epithelialization without signs of ongoing infection. Conclusion: The combination of debridement and moist wound healing was effective in managing an infected wound following perforated appendectomy, promoting wound healing and potentially reducing the risk of serious complications, such as sepsis.*

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## INTRODUCTION

Appendicitis is one of the most common causes of emergency abdominal surgery. In certain conditions, delayed treatment may lead to appendices perforation, increasing the risk of serious complications such as peritonitis and systemic infection. Patients with perforated appendicitis who undergo appendectomy are at high risk of developing surgical site infections due to bacterial contamination from the abdominal cavity (Ministry of Health of the Republic of Indonesia, 2022).

Postoperative wound infection following appendectomy for perforated appendicitis not only delays wound healing but may also progress to more severe complications such as sepsis. Sepsis is a life-threatening condition characterized by organ dysfunction resulting from an uncontrolled response to infection. Globally, sepsis is one of the leading causes of death, with reported mortality rates ranging from 20% to 40%, particularly in cases of severe infection that are not adequately managed (Indonesian Society of Intensive Care Medicine, 2021).

In patients with perforated appendicitis, the risk of sepsis is significantly increased due to intro-abdominal bacterial contamination and the potential spread of infection through the surgical wound. Several studies have shown that surgical site infection is an important factor contributing to increased morbidity and mortality among patients undergoing abdominal surgery. This indicates that inadequate wound management may worsen the patient's condition and increase the risk of death (Ramadhani et al., 2022).

However, sub optimal wound care practices are still encountered in clinical settings, including inadequate exudation drainage, failure to perform debridement of necrotic tissue, and the use of dressings that are inappropriate for the wound condition. These conditions may promote bacterial accumulation and accelerate the progression of a local infection into a systemic infection. Therefore, a more effective and evidence-based wound care approach is needed to reduce the risk of serious complications (Nurapandi et al., 2023).

One wound care method that is currently widely used is moist wound healing, which maintains the wound in a moist environment to facilitate faster healing. A moist wound environment promotes the formation of new tissue, supports optimal epithelial growth, and allows wound fluid such as pus or exudation to be managed more effectively. In addition to facilitating wound healing, this approach may reduce the risk of more severe infection, including sepsis, in patients with infected wounds following appendectomy for perforated appendicitis (Setyowati, 2022; Sabil, 2023).

In moist wound healing, the dressings used are designed to absorb excess fluid, such as pus or exudation, without causing the wound to become excessively dry. This is particularly important in infected wounds because accumulated wound fluid may provide a favorable environment for bacterial growth and exacerbate the infection. With appropriate moisture management, the wound can be maintained in a cleaner

condition, wound odor can be reduced, and healthy tissue formation can be facilitated. In addition, modern dressings help protect the wound from friction and external contamination (Sabil, 2023).

Another advantage of the moist wound healing method is that dressing changes can be more comfortable for patients. With conventional wound care, gauze may adhere to the wound surface, potentially causing pain and bleeding when removed. In contrast, modern dressings used in moist wound healing are less likely to adhere to the wound bed, thereby reducing the risk of trauma to newly formed tissue. With the wound maintained in a more stable and protected condition, new tissue formation and wound closure can occur more rapidly and optimally (Masruroh et al., 2025).

The moist wound healing method is particularly appropriate for postoperative wounds following appendectomy for perforated appendicitis because these wounds generally have a high risk of infection due to bacterial contamination from the abdominal cavity. In cases of perforation, infected fluid and necrotic tissue may become trapped within the wound area, thereby impairing the healing process. Through the moist wound healing approach, the wound condition can be better controlled because modern dressings help regulate wound moisture, absorb exudation, and create an environment conducive to healthy tissue growth (Nurapandi et al., 2023).

Furthermore, postoperative wounds following appendectomy for perforated appendicitis are often relatively large and have considerable depth, requiring a longer healing process than uncomplicated surgical wounds. Under these conditions, conventional wound care may cause the wound to become excessively dry, damage newly formed tissue during dressing changes, and increase the risk of pain. Therefore, the application of moist wound healing may be a more appropriate approach because it helps maintain wound stability, accelerate granulation tissue formation, and support epithelialization, thereby promoting more optimal wound healing (Hikmawati, 2024).

## METHOD

This study employed a case study design involving a single patient with an infected postoperative wound following appendectomy for perforated appendicitis. The case study design was selected to provide an in-depth description of the wound condition, wound care procedures, and healing progress following intervention using the moist wound healing method.

The study was conducted at the independent nursing wound care practice of Ns. Liza Phonna, S.Kep., CWCCA, from January to April 2026. The study subject was one patient with an infected postoperative wound following appendectomy for perforated appendicitis, characterized by purulent exudation, wound odor, and necrotic tissue at the surgical site. After the wound sutures were opened to facilitate exudation drainage, the wound measured 20 cm in length, 5 cm in width, and 6 cm in depth.

Data were collected through direct observation of the wound condition, patient interviews, and documentation of wound progress throughout the treatment period. The observed parameters included wound dimensions, exudation volume, wound tissue condition, wound odor, and signs of infection. Wound assessments were conducted regularly to monitor the progress of the healing process.

The intervention began with opening the wound sutures to facilitate exudation drainage and reduce the accumulation of infected fluid in the wound area. Debridement was subsequently performed to remove necrotic tissue that could impede the healing process. Wound care was then provided using the moist wound healing method, with modern dressings selected according to the wound condition and the amount of exudation.

Regular evaluations were conducted over a 14-week period to monitor changes in wound condition, including granulation tissue formation, reduction in exudation, decreased wound odor, and epithelialization until complete wound closure was achieved without signs of ongoing infection. The patient provided informed consent before the intervention and publication of the case data.

## RESULT AND DISCUSSION

The patient presented with an infected postoperative wound following appendectomy for perforated appendicitis. The wound measured approximately 20 cm in length and had approximately 12 sutures. Purulent exudation was observed draining from between the sutures, accompanied by an unpleasant odor. These findings indicated a surgical site infection characterized by exudation accumulation and the possible presence of necrotic tissue trapped within the wound.

**Figure 1. Wound Condition at Initial Presentation**



Following the opening of the wound sutures, the wound measured 20 cm in length, 5 cm in width, and 6 cm in depth. The wound appeared open, with a substantial amount of exudation and necrotic tissue present in several areas. The large size and considerable depth of the wound

indicated significant tissue damage and an increased risk of delayed healing if not managed appropriately.

**Figure 2. Following Wound Suture Opening and Debridement**



Debridement was performed to remove necrotic tissue from the wound bed. Debridement is an important step in the management of infected wounds because it helps reduce the bacterial burden and promotes the formation of healthy tissue. In addition, opening the wound allowed more effective exudation drainage, thereby preventing fluid accumulation that could exacerbate the infection.

Subsequent wound care was performed using the moist wound healing approach with modern dressings selected according to the wound condition. A moist wound environment helps facilitate automatically debridement and supports granulation tissue formation. Furthermore, modern dressings help manage exudation levels, maintain an appropriate wound moisture balance, and prevent irritation of the surrounding tissue.

**Figure 3. Application of Modern Wound Dressings**



The wound showed significant improvement after four weeks of treatment. At this stage, granulation tissue began to develop, accompanied by a reduction in exudate, resolution of the unpleasant odor, and a healthier wound bed appearance. Granulation tissue formation is an

important indicator of wound healing because it reflects cellular proliferation and tissue repair.

**Figure 4. Granulation Tissue Formation and Epithelialization**



The wound continued to improve throughout the healing process, and by week 12, complete epithelialization had been achieved. This optimal wound closure indicates that the combination of debridement and the application of *moist wound healing* was effective in managing an infected wound of considerable size and depth. A moist wound environment facilitates epithelial cell migration and supports optimal new tissue formation.

The findings of this case are consistent with previous studies reporting that the *moist wound healing* method is more effective than conventional wound care in accelerating wound healing, particularly in extensive wounds with infection. This approach not only promotes faster healing but also improves the quality of newly formed tissue and reduces the risk of complications.

An infected wound in a patient following appendectomy for perforated appendicitis represents a complex condition involving extensive tissue damage and bacterial contamination originating from the abdominal cavity. In this case, the initial wound dimensions of 20 cm × 5 cm × 6 cm, accompanied by purulent exudation and an unpleasant odor, indicated a significant wound infection. These findings are consistent with the characteristics of a surgical site infection, which include inflammation, excessive exudation, and the possible presence of necrotic tissue that may impede the healing process (Ramadhani et al., 2022).

Opening the wound sutures was an appropriate step in the management of the infected wound, particularly to facilitate exudation drainage and reduce pressure within the wound. Accumulated exudation that is not adequately drained can provide a medium for bacterial growth and exacerbate the infection. Furthermore, opening the wound allows more effective debridement of necrotic tissue trapped within the wound.

Debridement plays an important role in reducing the bacterial burden and promoting new tissue formation (Nurapandi et al., 2023).

Following debridement, the application of moist wound healing became a key component in accelerating the wound healing process. A moist wound environment facilitates natural autolytic debridement, enhances fibro blast activity, and promotes granulation tissue formation. This was observed in the present case, in which healthy granulation tissue began to develop after four weeks of treatment, accompanied by reduced exudation and resolution of the wound odor. These findings are consistent with previous research indicating that moist wound healing can accelerate the proliferation phase of wound healing (Setyowati, 2022).

In addition to promoting granulation tissue formation, the use of modern dressings as part of the moist wound healing approach helps control exudation and maintain an appropriate wound moisture balance. This is particularly important for wounds with high exudation levels, as observed in this case, because excessive fluid can cause maceration of the surrounding tissue. Effective exudation management helps maintain a more stable wound environment and supports the epithelialization process (Sabil, 2023).

Optimal wound healing in this case was demonstrated by complete epithelialization at week 12, with no signs of ongoing infection. This outcome suggests that the combination of debridement and moist wound healing was effective in managing an infected wound of considerable size and depth. Furthermore, this successful outcome highlights the importance of continuity of wound care and regular monitoring in achieving optimal healing outcomes (Hikmawati, 2024).

Overall, this case reinforces the importance of managing infected wounds not only by addressing the infection but also by creating an optimal wound environment to support healing. The moist wound healing approach offers potential benefits, including faster wound healing, reduced pain, and a lower risk of complications such as sepsis. Therefore, this method may be considered an important approach to the management of infected wounds, particularly those occurring after appendectomy for perforated appendicitis.

## CONCLUSION

The application of moist wound healing proved effective in creating an optimal wound environment, accelerating granulation tissue formation, reducing exudation and wound odor, and supporting epithelialization until complete wound closure was achieved within 14 weeks. Therefore, wound care using the moist wound healing method may be an effective option for managing infected wounds, particularly those occurring after appendectomy for perforated appendicitis. This approach may also help reduce the risk of serious complications, such as sepsis, and improve the overall quality of wound healing.

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