

Risk Factors and Management of Wound Dehiscence in Abdominal Surgery

Tania Itzel Juárez Campuzano¹, José David Simonin López², Victor Mario Martínez Bravo², Luis Eduardo Paz Malagón³, David Gonzalez García⁴, Rossella Pauleth Ramos Rodríguez⁵, Mauricio Emmanuel Umaña Reyes⁶, Cynthia Anai Quiroz López⁷

¹Universidad Nacional Autónoma de México, Ciudad Universitaria, Ciudad de México.

²Hospital Regional Río Blanco, SSA, Río Blanco, Veracruz.

³Hospital San José de Zamora, Zamora, Michoacán.

⁴Hospital Regional de Minatitlán PEMEX, Minatitlán, Veracruz.

⁵Hospital Regional de Especialidades No.30 IMSS, Mexicali, Baja California.

⁶Hospital General De Ciudad Valles, SSA, Ciudad Valles, San Luis Potosí.

⁷Hospital General Regional 110 IMSS, Oblatos, Guadalajara, Jalisco.

ABSTRACT

Wound dehiscence is a serious surgical complication, particularly in abdominal surgery, with potentially life-threatening consequences. This bibliographic review comprehensively examines the epidemiology and clinical significance of wound dehiscence. It delves into the theoretical framework, including its definition, risk factors, complications, and management strategies. The discussion section highlights emerging approaches and future directions in the management of wound dehiscence. In conclusion, the article underscores the importance of evidence-based practices in addressing this complex surgical challenge.

KEYWORDS: Wound Dehiscence, Abdominal Surgery, Surgical Complications, Risk Factors, Wound Healing, Management.

ARTICLE DETAILS

Published On:
06 November 2023

Available on:
<https://ijmscr.org/>

INTRODUCTION

Abdominal surgery is a cornerstone of modern medicine, addressing a wide range of conditions, from organ pathologies to malignancies. While these procedures have advanced significantly in terms of safety and outcomes, complications can still arise, presenting a significant challenge to both patients and healthcare providers. Among the complications, wound dehiscence stands out as a critical issue, as it can have far-reaching consequences, including prolonged hospital stays, increased healthcare costs, and potentially life-threatening situations.^{1,2}

Wound dehiscence is a complication characterized by the partial or complete separation of the layers of a surgical wound. It predominantly occurs at the surgical incision site and can affect various layers, from the skin to the deeper fascial tissues. This complication has a notable presence in abdominal surgery, particularly in procedures involving the gastrointestinal tract, liver, pancreas, and gynecological organs. Epidemiological data reveal its clinical significance, emphasizing that the incidence of wound dehiscence varies

depending on several factors, such as the type of surgical procedure, patient demographics, and the presence of comorbidities. Understanding the epidemiology of wound dehiscence is essential to recognize its impact and guide preventative measures.³

Definition:

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. Wound dehiscence often occurs along the incision site and may result in the exposure of underlying structures, including organs. The degree of wound dehiscence can range from mild separation with minimal clinical significance to severe dehiscence that leads to life-threatening complications. In abdominal surgery, it poses a substantial challenge due to the potential consequences on intra-abdominal organs and the peritoneal cavity.³

Risk Factors: ^{4,5}

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Understanding the risk factors that contribute to the development of wound dehiscence is crucial. These factors encompass a range of considerations:

Patient-Related Factors: Several patient-related factors increase the risk of wound dehiscence, including advanced age, obesity, malnutrition, immunosuppression, diabetes, and cardiovascular disease. These factors can affect wound healing and tissue strength, making patients more susceptible to dehiscence.

Surgical Factors: Surgical technique and the surgeon's experience play a pivotal role in preventing wound dehiscence. Factors such as excessive tension on the wound, the choice of suture material, and the quality of tissue approximation influence the risk of dehiscence.

Wound Factors: The quality of wound closure and healing is vital. Poor vascularization, tissue ischemia, and inadequate tissue perfusion can hinder wound healing, contributing to the risk of dehiscence.

Postoperative Care: Proper postoperative care and wound management are fundamental for preventing wound dehiscence. The use of prophylactic antibiotics, appropriate wound dressings, and vigilant monitoring of the surgical site can reduce the risk of infection and subsequent dehiscence.

Complications:⁶

Understanding the complications associated with wound dehiscence is vital for effective management:

Infection: Wound dehiscence is often associated with wound infection. Infections can range from localized wound infections to more severe systemic infections, including sepsis. Prompt recognition and treatment are crucial to prevent the progression of infection.

Evisceration: In severe cases of wound dehiscence, abdominal contents may protrude through the wound, a condition known as evisceration. This is a life-threatening complication that necessitates immediate surgical intervention.

Impaired Wound Healing: Wound dehiscence can lead to impaired wound healing, resulting in delayed recovery and increased risk of complications. Patients may require specialized wound care to promote healing and minimize complications.

Psychological Impact: The psychological impact of wound dehiscence on patients can be profound. Patients may experience anxiety, depression, and decreased quality of life due to complications and prolonged recovery.



Figure 1. dehiscent wound

Management:^{7,8}

The management of wound dehiscence is a complex process and involves a systematic approach:

Diagnostic Evaluation: A thorough diagnostic evaluation is crucial to assess the extent and underlying causes of wound dehiscence. This may include clinical examination, imaging studies, laboratory tests, and wound culture.

Surgical Intervention: Surgical intervention is often necessary for the management of wound dehiscence. The extent of surgery can vary, from wound exploration and debridement to complete wound reclosure. Surgeons may use specialized wound closure techniques and materials to optimize wound healing.

Wound Care: Effective wound care is crucial in controlling infection and promoting tissue healing. Wound care may include meticulous wound cleaning, irrigation, and the use of appropriate wound dressings.

Antibiotics: Appropriate antibiotic therapy is often required, especially in the presence of wound infection. The choice of antibiotics should be guided by culture and sensitivity testing when available.

Prevention: Prevention strategies are equally important and include meticulous surgical technique, patient optimization, and postoperative care to minimize the risk of wound dehiscence.

DISCUSSION

Emerging Approaches:

Tissue Adhesives: Emerging approaches in the management of wound dehiscence include the use of tissue adhesives and sealants. These products, such as fibrin glue and cyanoacrylate-based adhesives, can enhance wound strength and promote tissue healing. They are particularly useful in cases where conventional sutures or staples may not provide sufficient support. Tissue adhesives offer the advantage of minimally invasive application, reducing the potential for tissue damage and infection. Their use has gained popularity

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in specific surgical scenarios, particularly in cases of fragile or contaminated tissue.^{7,8}

Negative Pressure Wound Therapy (NPWT): Negative pressure wound therapy has become a valuable tool in the management of complex wound scenarios, including wound dehiscence in abdominal surgery. NPWT involves the application of controlled negative pressure to the wound, creating a microenvironment that promotes wound healing. It can help manage wound exudate, enhance tissue granulation, and reduce the frequency of dressing changes. NPWT is particularly valuable in cases where traditional wound closure may be challenging due to the presence of contamination or compromised tissue viability.^{7,8}

Biologic Therapies: Research into biologic therapies, such as growth factors and regenerative medicine, holds promise in the management of wound dehiscence. These therapies aim to stimulate tissue regeneration and improve wound healing. Growth factors, such as platelet-derived growth factor (PDGF) and vascular endothelial growth factor (VEGF), have demonstrated potential in enhancing tissue repair. Additionally, advances in tissue engineering and the development of tissue scaffolds may provide new options for improving the outcomes of patients with wound dehiscence. Biologic therapies have the potential to reduce the time to wound closure, minimize complications, and optimize cosmetic results.⁹

Advanced Wound Closure Materials: The development of innovative wound closure materials with enhanced tensile strength, infection resistance, and biocompatibility may contribute to better wound closure and reduced risk of dehiscence. Materials such as bioabsorbable sutures and tissue glues may become more sophisticated and effective in wound closure applications.¹⁰

CONCLUSION

In conclusion, wound dehiscence is a serious surgical complication in abdominal surgery with a unique theoretical framework. Emerging approaches and future directions offer hope for improved patient outcomes, with minimally invasive techniques, personalized treatment plans, and biologic therapies playing a pivotal role. As the field continues to evolve, evidence-based approaches will be essential in addressing this complex surgical challenge.

REFERENCES

- I. Van Ruler, O., & Boermeester, M. A. (2017). Surgical treatment of secondary peritonitis: A continuing problem. *Der Chirurg; Zeitschrift Fur Alle Gebiete Der Operativen Medizin*, 88(Suppl 1), 1.
- II. Riou, J. P. A., Cohen, J. R., & Johnson Jr, H. (1992). Factors influencing wound dehiscence. *The American journal of surgery*, 163(3), 324-330.
- III. Slater, N. J., Bleichrodt, R. P., & van Goor, H. (2012). Wound dehiscence and incisional hernia. *Surgery (Oxford)*, 30(6), 282-289.
- IV. Mahey, R., Ghetla, S., Rajpurohit, J., Desai, D., & Suryawanshi, S. (2017). A prospective study of risk factors for abdominal wound dehiscence. *International Surgery Journal*, 4(1), 24-28.
- V. Yamashita, Y., Nagasaka, S., Minoda, K., Abe, Y., & Hashimoto, I. (2023). Risk factors for early wound dehiscence by surgical site infection after pressure ulcer surgery. *The Journal of Medical Investigation*, 70(1.2), 101-104.
- VI. Otaghvar, H. A., Afsordeh, K., Hosseini, M., Mazhari, N., & Dousti, M. (2020). Causes of wound dehiscence in trauma patients with penetrating and non-penetrating abdominal wound in Rasool Akram Hospital within 2017-2020. *Journal of Surgery and Trauma*, 8(4), 156-160.
- VII. Denys, A., Monbailliu, T., Allaey, M., Berrevoet, F., & van Ramshorst, G. H. (2021). Management of abdominal wound dehiscence: update of the literature and meta-analysis. *Hernia*, 25, 449-462.
- VIII. Amini, A. Q., Khan, N. A., Ahmad, J., & Memon, A. S. (2013). Management of abdominal wound dehiscence: still a challenge. *Pak J Surg*, 29(2), 84-87.
- IX. Denys, A., Monbailliu, T., Allaey, M., Berrevoet, F., & van Ramshorst, G. H. (2021). Management of abdominal wound dehiscence: update of the literature and meta-analysis. *Hernia*, 25, 449-462.
- X. Boateng, J., & Catanzano, O. (2015). Advanced therapeutic dressings for effective wound healing—a review. *Journal of pharmaceutical sciences*, 104(11), 3653-3680.