

## Ten top tips: management of surgical wound dehiscence



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The worldwide volume of surgery is considerable, with an estimated 234.2 million major surgical procedures carried out every year across the globe<sup>[1]</sup>. In Australia during 2010-11, 2.4 million admissions involved a surgical procedure<sup>[2]</sup>. Wound healing by primary intention following surgery is assisted by the use of sutures, staples, glue, adhesive tape wound dressings or negative pressure wound therapy (NPWT), and healing commences within hours of closure<sup>[3]</sup>. Failure of the wound to heal may be due to a number of reasons: patient-related factors, for example age, cardiovascular disease<sup>[4,5]</sup> mechanical reasons of suture breakage or knots slipping<sup>[6]</sup> infection or dehiscence<sup>[4,5,7,8]</sup>, radiotherapy or chemotherapy<sup>[9]</sup>.

Surgical wound dehiscence (SWD) is defined as the rupturing of opposed or sutured margins following a surgical procedure<sup>[10]</sup>. Dehiscence can occur up to and including day 30 postoperatively, with some reports of dehiscence occurring between day 7 and 9, and day 13<sup>[9]</sup>. Further definition of wound dehiscence according to the Centers for Disease Control and Prevention definition classifies dehiscence as a deep surgical site infection (deep or organ space SSI)<sup>[11]</sup> and, as such, is classified as an SSI, regardless of whether the dehiscence is confirmed as microbial or of a non-microbial nature. Consequently, determining prevalence and incidence of dehiscence is sometimes thwarted due to the very nature of the medical reporting and clinical coding within the acute care setting as it is often lumped under the SSI definition with little or no clarity recorded between superficial or deep SSI. This reporting conundrum is also faced in post discharge surveillance in the community nursing setting where it most likely when the dehiscence may occur.

In the UK, SSI constitutes 20% of all healthcare-related infections, and at least 5% of admitted patients will develop an SSI<sup>[12]</sup>. In North America, the fiscal estimate of SSI is reportedly USD10bn annually in direct and indirect medical costs<sup>[13]</sup>. The estimated costs attributable to SSI in Europe range from EUR1.47bn to EUR19.1bn<sup>[12]</sup>. In Australia, estimated costs associated with SSI are AUD268mn per year<sup>[14,15]</sup> as reported in the

acute care setting. The cost of SWD not only impacts the acute care setting; the burden is also borne by district and community nursing settings. Recent studies have yielded data regarding the cost of managing SWD<sup>[16,17]</sup>. Further additional costs associated with delays in healing and reduced quality of life for the patient, family, and the wider community may be difficult to ascertain from a financial point of view. More importantly, the use of an optimal therapy to improve wound healing outcomes following surgery and prevent wound complications remains to be determined.

**1 Identify risk factors:** Patients may be more at risk of wound dehiscence if they are over 65 years old, have signs of systemic and local wound infection, are obese, or have had a previous surgery in the same anatomical region<sup>[18]</sup>. Most dehiscence occurs 4–14 days following surgery<sup>[4,5,7–9,19]</sup>. The patient assessment should be undertaken and results documented following every visit to the patient with any changes reported to the nurse in charge and medical staff. Intraoperative risk factors, such as emergency admission<sup>[20,21]</sup>, classification of surgery<sup>[22]</sup>; clean, clean-contaminated or dirty, duration of procedure and intraoperative warming<sup>[23,24]</sup>, are known factors that may contribute to delayed postoperative healing. Postoperative factors, such as intra-abdominal pressure, e.g. excessive coughing, recurrent vomiting and constipation, may also lead to dehiscence following surgery, according to anecdotal evidence. Knowledge of these risk factors during the patient's journey is key to postoperative management. In-depth pre-operative assessment of the patient to identify and record any risk factors to inform preventative measures to reduce risks should be adhered to and clinicians should follow their local guidelines. This may include health education regarding weight loss and nutritional advice.

**2 Identify signs and symptoms of wound dehiscence:** Surgical wounds may often present with specific visual signs that may indicate a disruption to the normal healing process and possibly the presence of infection. Top Tip 4 discusses infection in more detail,

however, visible signs of healing disruption may include, but are not limited to:

- Opposed sutured margins open or separated at any point along the incision site
- Broken sutures (non-healed opposing margins)
- Redness at the incision site
- Patient experiencing pain at the incision site.

Further indication of disruption to the normal healing process, which include, but are not limited to:

- Swelling, oedema, seroma
- Bleeding
- Exudate from the incision site.

### 3 Accurately assess and categorise type of wound dehiscence including ongoing assessment of the patient:

Complete accurate wound assessment (anatomical location, size, tissue involvement/characteristics, exudate type/amount, presence of odour, and pain assessment) in the patient notes and wound care plan is paramount; treatment should be documented in the notes after every assessment. Determining the type of dehiscence and recording the correct classification provides clinical coders and researchers with much-needed information in regards to the patient's dehiscence. There are two types of dehiscence:

- Partial dehiscence
- Full-thickness dehiscence.

### 4 Assess for clinical indicators of infection:

The early identification of clinical indicators of infection is important in the management of the patient's surgical wound. There are several published guidelines for the detection, diagnosis and management of wound infection<sup>[25-29]</sup>; clinicians should check with their local clinical guidelines as to the management of postoperative wound infection. Any of the following indicators should be documented in the patient's notes/care plan and reported to the nurse in charge and medical staff.

A plan of care to manage these indicators should be developed and clearly documented with clear, achievable evaluation dates. Local guidelines must also be checked as to the clinical indicators of wound infection. The indicators are:

- Dull wound tissue
- Slough
- Failure of wound to decrease in size
- Hypergranulation
- Increased exudate

- Erythema
- Increased pain or unexplained pain
- Malodour
- confirmed presence of infection (microbiology)
- Increased temperature of periwound tissue.

### 5 Determine goal of care (e.g. surgical debridement/closure versus healing by secondary intention):

The goal of care may be different to healing by primary intention and, as such, clear and achievable goals should be documented. This should be discussed with the patient and all planned interventions explained.

The goal of care is to prepare the wound bed for future closure. Interventions will include assessment of the wound bed to identify any signs necrotic tissue and infection. If infection is suspected, there should be appropriate use of antibiotics, removal of drains, sutures or staples and surgical debridement. Following the removal of necrotic tissue, superficial dehiscence can be closed by secondary intention. For large and deep wound dehiscence, NPWT and a return to theatre for closure may be indicated<sup>[30]</sup>. Referral to tissue viability services and the medical team should be made for advice and care following all wound dehiscence. The goal of care and planned interventions should be discussed and explained to the patient, and recorded in the notes with clear and achievable evaluation dates.

**6 Correct wound bed preparation:** Effective wound bed preparation is essential to the wound healing process. Using assessment techniques, such as Tissue, Infection/Inflammation, Moisture, Edge (TIME), can be useful when performing a focussed wound bed assessment. The TIME framework offers a systematic approach to wound healing, which involves eliminating non-viable tissue, controlling infection, restoring moisture balance and promoting epithelial advancement<sup>[31]</sup>.

### 7 Managing patient's expectations:

Understanding the patient's expectations is the best way to manage these expectations. Frequent and honest communication regarding what to expect in terms of healing and pain management may be key to the patient's overall experience during this time. Keeping lines of communication open will build trust and make patients feel comfortable. Managing patient's expectations in relation to healing is paramount during this time, with the focus

being on the timely delivery of information about potential outcomes, i.e. further surgical interventions, an increase in nursing visits and pain management. The impact on the wellbeing of the patient is also of key importance.

**8 Multidisciplinary management approach:** Dehiscence requires a multidisciplinary approach that may involve surgeons, infection control specialists, home care or community nursing, nutritional experts and other allied healthcare professionals. Local guidelines should be followed regarding the interdisciplinary approach imaging of the wound — some healthcare centres may recommend wound imaging through medical imaging departments, while others may recommend tracing the wound. Subsequent wound assessment schedules should be documented and recommended treatment recorded along with the rationale for the choice.

**9 Patient and carer education:** The first possible indicators of dehiscence may be: a sudden pain around the wound area; tachycardia; abnormal and/or excessive serous or sero-sanguineous discharge; opening of the wound; change in wound contour; viscera visible at the skin surface; abnormal serous or sero-sanguineous discharge. It is important that the patient understands these signs and be guided on how to inform a healthcare professional, should they experience any of these signs. Through education, patients can be made aware of the signs to watch for, and how and when to seek help from a healthcare professional. Patient education can take the form of verbal communication/demonstration or take-home brochures/information sheets on discharge in the acute care setting. In the community care nursing setting, a fact sheet may be left at home for the patient with a lay description of the physical signs of complication and a contact number for care management.

**10 Post-discharge surveillance:** Continual follow up of the patient's wound, medication, health and wellbeing, as well as accurate record keeping during this period, is crucial to an optimal outcome for the patient. Reassessment of the wound to determine the therapeutic requirements to reflect the needs of the wound healing

phase is required at constant intervals. It is also important to document this in the wound care plan to allow for communication within the multidisciplinary team and ensure the continuity of care. Accurate record keeping is essential to allow researchers, epidemiologists and health economists to study, understand and inform the wider community. Evidence is needed to determine the costs and clinical impact of wound dehiscence. Moreover, evidence is needed to inform and guide policy development, and provide decision makers in the healthcare sector with the evidence to make informed decisions.

## Conclusion

Surgical wound dehiscence is a complication following surgery, whose management poses a clinical challenge. With the growing ageing population and global increase in chronic disease, such as diabetes and obesity, patient-related comorbidities may contribute to the occurrence of surgical wound dehiscence. As such, individuals who may be at risk may need specific management in the pre- and postoperative period. The need for early identification of level of risk followed up by accurate assessment and timely treatment may prevent minor problems escalating into catastrophes. The role of proper assessment, diagnosis, treatment and diligent record keeping must not be overlooked. Furthermore, the multidisciplinary approach to patient care is needed in the management of patients with a surgical wound dehiscence to ensure consistency in delivery of the care plan for timely and sustained surgical wound healing. **WINT**

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