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Top ten tips : management of surgical wound dehiscence

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Introduction

The worldwide volume of surgery is considerable, with an estimated 234.2 million major surgical procedures carried out every year across the globe(1). In Australia during 2010-11, 2.4 million admissions involved a surgical procedure(2). 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(3). Failure of the wound to heal may be due to a number of reasons: patient related factors, for example age, cardio-vascular disease(4, 5) mechanical reasons of suture breakage or knots slipping(6) infection or dehiscence(4, 5, 7, 8), radiotherapy or chemotherapy(9).

Surgical wound dehiscence (SWD) is defined as the rupturing of opposed or sutured margins following a surgical procedure(10). Dehiscence can occur up to and including Day 30 post-operatively. Further definition of wound dehiscence according to the CDC definition classifies dehiscence as a deep surgical site infection (deep or organ space SSI) (11)and, as such, is classified as an SSI regardless of whether the dehiscence is confirmed microbial or 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 no clarity recorded between superficial or deep SSI. This conundrum is also faced in post discharge surveillance in the community nursing setting where it most likely when the dehiscence may occur.

In the United Kingdom, SSI constitutes 20% of all health care related infections, and at least 5% of admitted patients will develop an SSI(12). In North America, the fiscal estimate of SSI is reportedly USD 10 billion annually in direct and indirect medical costs (13). The estimated costs attributable to SSI in Europe range from 1.47 to 19.1 billion Euros (12). In Australia, estimated costs associated with SSI are AUD268 million per year (14, 15) 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 the cost of managing SWD (16, 17). Further additional costs associated with delays in healing and reduced quality of life for the patient, family, and the wider community are also difficult to ascertain from a cost point of view. More importantly, the use of an optimal therapy to improve wound healing outcome following surgery and prevent wound complications remains to be determined.

Top Ten Tips

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(18). Most dehiscence occurs 4 – 14 days following surgery (4-6, 9, 19).

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.

- Intra operative risk factors such as emergency admission(20, 21), classification of surgery(22); clean, clean-contaminated or dirty, duration of procedure and intra

operative warming(23, 24) are known factors that may contribute to delayed postoperative healing.

- Postoperative factors such intra-abdominal pressure e.g. excessive coughing, recurrent vomiting, 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 post-operative management. In depth pre-operative assessment of the patient that identifies and records any risk factors which suggest strategies to reduce these risks should be adhered to, follow your local policy or guideline for further information. 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 ten tip 4 discusses infection in more detail, however, visible signs of healing disruption may include, but are not limited to;

- Apposed 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 & categorise type of wound dehiscence including on - going assessment of the patient

Complete accurate wound assessment (anatomical location, size, tissue involvement/characteristics, exudate type/amount, presence of odour, pain assessment) in the patient notes and wound care plan is paramount; treatment should be documented in the notes following 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 (18):

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(18, 25-28)

- 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 peri-wound tissue

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

The goal of care may be different to healing by primary intention, and as such there should be a clear and achievable goal 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 of 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, negative pressure therapy and return to theatre for closure may be indicated(29). Referral to tissue viability services and the medial 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 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(30).

7. Managing patient's expectations

Understanding the patient's expectations is the best way to manage his/her 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 during is also of key importance.

8. Multi-disciplinary management approach

Dehiscence requires a multidisciplinary approach that may involve surgeons, infection control specialists, home care or community nursing, nutritional experts and other allied health professionals. Local guidelines should be followed regarding the inter disciplinary approach imaging of the wound - some health care areas may recommend wound imaging through medical imaging

departments, others may recommend tracing the wound - please refer to local guidance.

Subsequent wound assessment schedules should be documented and recommended treatment recorded with the rationale for 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 if they should experience any of these signs. Through education, patient's can be made aware of the signs to watch for, and how and when to seek help from a healthcare professional. Patient education can be in the form of verbal communication/demonstration or take-home brochures/information sheets on discharge in the acute care nursing setting. In the community nursing setting, a fact sheet may be left at home for the patient with a lay description of the physical signs of complications and a contact number for care management.

10. Post discharge surveillance

Continual follow up of the patient's wound, medication, health and well-being as well as accurate record keeping during this period is crucial to facilitate healing. 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 important also to document this in the wound care plan to allow for communication within the multidisciplinary team and the continuity of care. Accurate record keeping is essential to allow researchers, health economists and others to study, understand and inform the wider community including government and advocacy agencies on costs and clinical impact of dehiscence. This is necessary information required in advising decision makers and policy advisors in the health care sector. 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 that poses a clinical challenge in its management. 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 post-operative period. The need for early identification 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.

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