Managing postsurgical wounds in the patient’s home

Kirsty Mahoney

Since 2005, the pace of innovation in surgical techniques has meant a 45% increase in patients receiving surgical procedures to manage a variation of medical conditions (NHS Confederation, 2016). This equates to approximately nine million surgical procedures (NHS Confederation, 2016), while a survey across five NHS Trusts in England revealed that within the community setting surgical wounds represented 13% of wound types (Ousey et al, 2013). This indicates that the prevalence of surgical wounds in the community may have a significant impact on a nurse’s caseload, particularly where they are not treated appropriately.

KEYWORDS:
- Wound care
- Surgical wounds
- Pain
- Surgical site infection

Since 2005, the pace of innovation in surgical techniques has meant a 45% increase in patients receiving surgical procedures to manage a variation of medical conditions (NHS Confederation, 2016). This equates to approximately nine million surgical procedures (NHS Confederation, 2016), while a survey across five NHS Trusts in England revealed that within the community setting surgical wounds represented 13% of wound types (Ousey et al, 2013). This indicates that the prevalence of surgical wounds in the community may have a significant impact on a nurse’s caseload, particularly where they are not treated appropriately.

Most surgical procedures do not result in complications, however, no operation is entirely without risk. Any intervention aimed at preventing complications should involve the identification and reduction of risk factors, such as surgical site infection (SSI), and the establishment of an optimal patient environment to facilitate healing. This article will look at the post discharge complications and best practice treatment options of surgical wounds within the community setting.

WOUND HEALING

The normal healing process is a complex series of biological and chemical events that can be divided into four distinct overlapping phases (Hart, 2002):

- Haemostasis: the body’s response to blood vessel trauma and bleeding, involving platelets and blood clotting proteins working to stem blood flow
- Inflammation: a self-protective response where white blood cells remove harmful stimuli such as damaged cells or pathogens
- Proliferation: this stage involves a range of changes including angiogenesis (formation of new blood vessels), collagen deposition, growth of granulation tissue and epithelialisation
- Maturation: the final stage of wound healing where collagen fibres cross-link with each other and proteins to increase the strength of the new scar tissue (Bryant and Nix, 2012).

The progress of wound healing is usually uncomplicated (Enoch and Leaper, 2005) and should be competed within a timely manner, i.e. 4–6 weeks. Wounds are usually classified as acute or chronic, and this is largely dictated by how long the wound has been present, for example, wounds that heal within the 4–6-week period without being negatively...

Figure 1. Wound closure using staples.

Figure 2. Wound closure using stitches.
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influenced by any underlying aetiology such as diabetes are usually classified as acute. Surgical wounds usually fit into this classification and a wound audit in one NHS trust indicated that 70% of surgical wounds had healed within six weeks (Drew et al, 2007).

**SURGICAL WOUNDS**

There are several methods of closing a surgical wound, including staples or clips (Figure 1), sutures (Figure 2), adhesive tapes and skin adhesives (Bryant and Nix, 2012).

The method chosen will often depend on the surgeon’s preference, the anatomical location of the wound and the tissue type involved (Vuolo, 2009). Sutures should not remain in place for longer than 7–14 days, however, this does depend on their anatomical location. Facial wounds, for example, usually require sutures to be removed after seven days, while abdominal and lower limb wounds should be left in place for 10–14 days (Wu, 2006). Sutures that have been left in for too long can cause skin reactions and scarring, while removing them too soon can lead to wound dehiscence (where the wound ruptures along a surgical incision) (Bryant and Nix, 2012).

Surgical wounds may be closed following surgery and heal by primary intention or, if infection is present, they may be left open to heal by secondary intention (Figure 3). Wounds that have a high bacterial load often breakdown if re-sutured, therefore Franz et al (2008) suggested that surgical wounds with a high bacterial load should be left open to allow free drainage of pus and exudate.

**PATIENT ASSESSMENT**

The main goal of managing a patient with a surgical wound is to prevent complications such as infection. This can be achieved through proper assessment of the patient, identifying potential risk factors, such as bowel surgery, anatomical location of the wound, and the patient’s nutritional status (see Table 1), that may deter healing. Interventions can be put into place to address any potential risk and optimise the patient’s systemic environment.

The following circumstances may increase the patient’s risk of complications:

- **Age**: the skin thins and loses its elasticity as people age; the body’s cellular repair function also declines. Conversely, younger patients may have an immature immune system, which increases risk of infection (Bryant and Nix, 2012).
- **Poor nutrition**: during and after surgery patients can quickly become depleted of essential nutrients due to long periods without food and drink, or lose protein and nutrients through highly exuding wounds (Vuolo, 2009). Inadequate nutrition can affect immune function, collagen synthesis and alter tensile strength, which are essential for supporting wound healing and, if not adequately addressed, can lead to slow or impaired healing (Quain and Khardori, 2015).
- **Obesity**: adipose tissue (which stores fat) is avascular and can reduce blood flow to the skin (Vuolo, 2009).
- **Predisposing comorbidities**: conditions such as diabetes, peripheral vascular disease and anaemia, for example, can result in a poor vascular supply.
- **Some medications such as steroids and chemotherapy agents act as immunosuppressants and may affect the body’s ability to combat infection(Vuolo, 2009). Steroids have also been shown to reduce macrophage infiltration and reduce tensile strength, which may impede healing (Wang et al, 2013).

![Figure 3. Wound healing by secondary intention following dehiscence.](image-url)
Quality of Life on Prescription

NHS reforms, budget cuts, uncertainty – it’s easy to see how priorities might be affected. There is one way however to save time and money at the same time as improving patients’ Quality of Life, helping them retain their dignity and independence.

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Duncan Stang,
National Diabetes Foot Coordinator for Scotland
may need to be addressed to optimise the patient’s potential for healing and will include:

- **Patient-related factors:** including comorbidities (e.g. diabetes), medication, nutrition
- **Wound-related factors:** including size of the wound, position of the wound, tissue in the wound bed, presence of infection, exudate, pain, odour and condition of the surrounding skin.

Haematoma formation

Haematomas (classed as an abnormal collection of blood outside a blood vessel) (Figure 4) can form as a result of anticoagulation therapy given after surgery to prevent complications, such as deep vein thrombosis (DVT) (Franz et al, 2007) or trauma during surgery.

The size of the haematoma will guide management; smaller haematomas may disperse on their own, however, larger examples may need to be addressed to optimise the patient’s potential for healing and will include:

- Patient-related factors: including comorbidities (e.g. diabetes), medication, nutrition
- Wound-related factors: including size of the wound, position of the wound, tissue in the wound bed, presence of infection, exudate, pain, odour and condition of the surrounding skin.

<table>
<thead>
<tr>
<th>Table 2: Levels of SSI</th>
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<tbody>
<tr>
<td><strong>Level of SSI</strong></td>
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<tr>
<td>Superficial SSI: affects skin and subcutaneous tissue</td>
</tr>
<tr>
<td>Deep incisional SSI: affects the fascia and muscle layer</td>
</tr>
<tr>
<td>Organ/space infection: affects areas other than the incision site, e.g. joints/organs</td>
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Table 3: Dressing properties required according to TIME framework (Dowsett and Ayello, 2004)

<table>
<thead>
<tr>
<th>Wound bed</th>
<th>Property of dressing required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T = tissue type:</strong></td>
<td></td>
</tr>
<tr>
<td>Granulation</td>
<td>Protect granulation tissue</td>
</tr>
<tr>
<td>Devitalised tissue (slough/necrosis/haematoma)</td>
<td>Debride</td>
</tr>
<tr>
<td><strong>I = infection</strong></td>
<td></td>
</tr>
<tr>
<td>Reduced bacterial load</td>
<td></td>
</tr>
<tr>
<td><strong>M = moisture balance (excessive exudate)</strong></td>
<td></td>
</tr>
<tr>
<td>Absorption and prevention of maceration</td>
<td></td>
</tr>
<tr>
<td><strong>E = edge (non-advancing or undermining)</strong></td>
<td></td>
</tr>
<tr>
<td>May require reassessment and referral to tissue viability or back to surgeon</td>
<td></td>
</tr>
<tr>
<td>Use of advanced therapies such as negative pressure wound therapy (NPWT)</td>
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Figure 4.
Postoperative haematoma.
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require surgical debridement and could lead to wound dehiscence and infection (Oldfield and Burton, 2009).

Pain
Postoperative pain can be experienced up to two weeks following surgery for a closed wound (Apfelbaum et al, 2003). Pain is very much an individual experience and will depend on how a particular patient responds; where the wound is; tissue type; and whether infection is present. Unresolved pain may lead to poor wound healing (Bryant and Nix, 2012), while pain experienced at dressing changes can mean patients become resistant to treatments recommended in the future.

Pain should be assessed using locally available pain assessment tools, such as a visual analogue scale (VAS), where patients pinpoint their pain experience on a vertical line anchor at each end with verbal descriptors (‘no pain’ and ‘the worse pain imaginable’, for example) (Hawker et al, 2011), with analgesia prescribed and its effectiveness monitored accordingly.

CARE OF THE SURGICAL WOUND

Postoperative wound cleansing
Guidelines from NICE (2008) suggested that saline should be used for wound cleansing up to 48 hours postoperatively (should cleansing be required). Ideally, dressings should be left intact for 48–72 hours to allow wound epithelisation (NICE, 2008), and wound cleansing would only be advocated before this due to excessive exudate appearing on the dressing or if wound dehiscence occurs. After 48 hours, patients may shower if their wound is intact. Should the wound dehisce or require cleansing after 48 hours, potable tap water is considered appropriate.

Postoperative dressings
It has been suggested by NICE (2008) that postoperative wounds should be covered with an ‘appropriate interactive dressing’. However, this is very subjective and does not offer very much information about what an appropriate interactive dressing consists of.

In the author’s clinical experience, an ideal postoperative dressing should possess the following characteristics:
- Prevent contamination
- Allow inspection of the wound, i.e. have a see-through element to allow for monitoring of progress
- Be non-traumatic on removal
- Maintain a moist wound environment
- Be able to be left in place for up to seven days to lessen traumatic impact of dressing changes
- Have waterproof properties and allow the patient to shower
- Incorporate some flexibility and allow movement to deal with any postoperative oedema and to prevent blistering (Roberts et al, 2011).

Oldfield and Burton (2009) suggest that a semipermeable island film or hydrocolloid dressing would be suitable immediately postoperatively, as long as no infection or wound dehiscence has occurred. Ideally, dressings should be left in place for up to 48 hours if no erythema or oozing develops. However, patients might prefer their wounds to be covered for longer, until sutures or clips are removed to prevent them ‘catching’ or ‘pulling’ on clothing (Oldfield and Burton, 2009).

Should complications such as dehiscence or infection occur, it may be helpful for the community nurse to use the principles of a wound-healing framework such as TIME (see Table 3), which is designed to help clinicians systematically interpret the characteristics of a wound and decide on the best intervention. TIME will assist community nurses in their treatment decisions and help to establish wound care goals, particularly around dressing selection.

As well as patient-centred considerations such as pain, comfort and effectiveness, for the community nurse the main considerations for dressing selection include cost-effectiveness, appropriateness, i.e. does the dressing promote wound bed preparation, and whether the product is available on the local formulary.

KEY POINTS

- Many community nurses will have to attend patients that have a surgical wound.
- The desired clinical outcome for any surgical wound will be to achieve closure and skin integrity with an acceptable cosmetic result, and to avoid any complications.
- Patients presenting to community nurses after discharge from hospital may well have experienced postoperative complications or may be at risk of complications following suture removal.
- Pain should be assessed using locally available pain assessment tools, such as a visual analogue scale (VAS).
- Most surgical wounds will progress without complications, but it is essential that community nurses know about potential postoperative complications and how to manage them.
- Successful wound management involves a thorough assessment of patient-related characteristics, wound-related features and potential risk factors.
- Other potential factors to consider are the increased financial burden and inverse impact on patients’ quality of life.

CONCLUSION

A large proportion of postoperative wound care is managed in the community and while most surgical wounds will progress without complications, it is essential that community nurses have adequate knowledge of potential postoperative complications and how to manage them.

Successful wound management involves a thorough assessment of patient-related characteristics, wound-related features, and identification of potential risk factors, as well as optimising the patient’s environment to better facilitate wound healing.
You visit your patient at home. As you arrive, he hides his legs under a blanket.

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REFERENCES


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