

TOP TIPS FOR CARING FOR PATIENTS WITH A SURGICAL WOUND

Postoperative care of a surgical wound forms an integral part of a clinician's knowledge base, due to the large number of surgical procedures carried out annually in the UK (11 million according to the Department for Health [DH], 2009). This article examines strategies that will prove useful to clinicians.

In the UK, approximately 11 million surgical procedures are carried out each year (DH, 2009). Therefore, the postoperative care of a surgical wound is an essential aspect of learning for all clinicians working within a surgical area and should be given significant attention in wound care education. Learning what is considered 'normal' in wound healing will ensure that wounds not progressing normally can be identified by clinicians and care plans devised, dressings selected and actions implemented.

Most surgical wounds healing through primary intention will heal uneventfully. They will usually epithelialise within 48 hours, with healing continuing underneath the surface, and will heal fully within approximately two weeks (Burton, 2006). However, those surgical wounds that have been left open or have since opened up (dehisced) after the surgery will need additional support and expertise to prevent complications and to heal by secondary intention in a timely manner. Healing by secondary intention refers to when the wound granulates from the base of the wound upwards to fill the defect with new

tissue. Wounds that typically heal by secondary intention are pressure ulcers, leg ulcers, diabetic foot ulcers and surgical wounds that have dehisced.

Wound healing by secondary intention involves a much larger surface area of damaged tissue to cover with granulation (red, lumpy, healthy tissue) and epithelialising (pink, silvery, fragile) tissue. The wound edges either cannot be approximated, or edges that were approximated have dehisced and, therefore, will take much longer to heal.

TOP TIPS

The following tips will help the clinician caring for patients with surgical wounds:

1 WOUND CLOSURE TECHNIQUES

Most surgical wounds are closed by approximating the wounds edges and securing them using sutures or clips. This is known as primary closure (*Figure 1*). These wounds should then be covered by an interactive postoperative dressing, which provides breathability, but is also waterproof. Patients should

AMY OLDFIELD
Tissue Viability Clinical Nurse Specialist,
Nurse Specialist
UHCW NHS Trust

be educated regarding the length of time that dressings must remain in place and should see a practice nurse for suture or clip removal, if discharged from hospital.

The technique used when utilising clips/sutures to approximate wound edges and achieve wound closure can be a key factor in determining the likelihood of wound breakdown. Tight sutures can cause tissue necrosis, while loose sutures can result in the wound failing to epithelialise. Clips that become embedded into a wound can cause pain and trauma on removal. Ensuring that all clips/sutures are removed on time is essential, otherwise the body may experience an inflammatory reaction and reject the foreign material.

2 ASEPTIC TECHNIQUE

Poor aseptic technique can lead to cross infection resulting in the contamination of wounds and other susceptible sites, which can then lead to serious infections (Dougherty and Lister, 2008). A standardised approach to aseptic technique should be followed when caring for patients with surgical wounds.

Most postoperative wounds will not need to be cleansed within the first 48 hours (Pudner, 1997; Mangram

et al, 1999). However, if needed, an aseptic technique should be utilised and warmed normal saline used as the cleansing solution. After 48 hours has passed, the patient can bath or shower as normal and the postoperative dressing removed as the wound should be epithelialised, i.e. clean and dry at this stage and then the wound is left exposed (Figure 1).

3 PRINCIPLES OF SUTURE AND CLIP REMOVAL

When removing clips/sutures, the practitioner should use a clean technique and ensure that the date suggested by the surgeon for removal is adhered to. If there are numerous wounds to remove clips/sutures from, start with the cleanest in appearance. Likewise, if the wound extends into a less clean area, such as the groin, buttocks or axilla, then commence the clip/suture removal at the cleaner end of the wound.

When removing sutures, clinicians should attempt to minimise the amount of suture material that has been above the skin surface from travelling underneath the wound, as this could result in contamination of the wound by bacteria present on the suture material. Alternate sutures/clips can be removed if there are concerns regarding

Table 1
Signs and symptoms of infection

<i>Classic signs</i>	<i>Additional signs and symptoms</i>
<ul style="list-style-type: none"> ▶▶ Pyrexia ▶▶ Inflammation ▶▶ Oedema ▶▶ Pain ▶▶ Increase in exudate or pus. 	<ul style="list-style-type: none"> ▶▶ Delayed healing ▶▶ Bridging of skin across a wound ▶▶ Dark/discoloured granulation tissue ▶▶ Increased friability (tissue which bleeds easily) ▶▶ Painful altered sensation to the wound site/surrounding skin ▶▶ Altered odour ▶▶ Wound breakdown ▶▶ Pocketing at the base of the wound.



Figure 1. *Wound healing by primary closure.*



Figure 2. *Diabetic patient with a forefoot amputation with slough present.*



Figure 3. *Toe amputation with dry necrosis present in a patient with peripheral vascular disease.*



Figure 4. *Diabetic patient with a forefoot amputation with good evidence of healthy granulation tissue.*



Figure 5. *Faciotomy wound healing through secondary intention with epithelial tissue present.*



Figure 6. *Sutures visible in the base of a dehiscent abdominal wound.*



Figure 7. *Bone visible at the top of the wound in a forefoot amputation.*



Figure 8. *Metalwork visible in a dehiscent spinal wound.*

potential dehiscence and the remaining sutures/clips removed a few days later.

4 WOUND ASSESSMENT

A detailed wound assessment alongside the holistic patient assessment is essential in planning the wound care to be delivered for each patient (Burton, 2006). All surgical wounds should be assessed and the relevant documentation completed on at least a weekly basis. Most clinical areas will use a standardised wound assessment form. This legal document, which often includes a body map, ensures that all aspects of the assessment are completed at each episode (Oldfield, 2010). This assessment should be completed by a competent registered practitioner to ensure continuity of care for the patient (Storey, 2005; Edwards, 2005), and enable different clinicians to compare the status of the wound.

The wound assessment should include the aetiology (cause) of the wound, wound dimensions in centimetres, including longest length, width and depth of the wound, percentage of tissue types visible, i.e. slough (*Figure 2*), necrosis (*Figure 3*), granulation (*Figure 4*) and epithelial tissue (*Figure 5*), as well as the presence of any foreign bodies (i.e. suture material (*Figure 6*), bone (*Figure 7*), metal work (*Figure 8*) and tendon (*Figure 9*)). This assessment should also look at the level, viscosity and colour of the exudate, odour, pain levels as stated by the patient before during and after the dressing change, signs of infection, and the condition of the surrounding skin.

5 WOUND DEHISCENCE

Wound dehiscence is characterised by the 'opening up' of a surgically closed wound (Dealey, 2005). This can be a partial dehiscence involving superficial skin layers or a complete dehiscence involving the deeper

structures. Complications such as wound dehiscence are more common in older people (Miminas, 2007). Wounds can dehisce for many reasons — infection (*Figure 10*), poor vascular supply (*Figure 11*), mechanical stress on the wound, oedema, malnutrition (*Figure 12*) and haematoma. The main reason for the wound dehiscence should be identified as a priority by the clinician and actions implemented to address this reason

6 PREVENTION AND MANAGEMENT OF POOR NUTRITION

The role of nutrition in wound healing is well known (Reynolds, 2000) and its importance should not be underestimated. Where possible patients should be well-nourished prior to undergoing a surgical procedure by ensuring their diet includes protein from meat, fish, pulses and dairy products.

During the postoperative phase of wound healing an adequate protein and calorie intake is essential for effective and timely wound healing. Clinically it is possible to see the effects of poor nutrition in wounds healing by secondary intention by observing pale flat granulation tissue (*Figure 12*), rather than the usual lumpy bright vibrant red granulation tissue (*Figure 4*).

7 PREVENTION AND TREATMENT OF SURGICAL SITE INFECTION

Infection delays healing, therefore, all staff caring for surgical wounds should be able to identify the clinical signs of infection (*Table 1*) and understand the methods employed to prevent/reduce the risk of a surgical site infection. Prevention of infection can be achieved by following national guidelines for prevention of surgical site infection (SSI) (National Institute for Health and Clinical Excellence [NICE], 2008).

Clinicians should use effective pre-, peri- and postoperative care, including:

- ▶▶ Hand hygiene techniques
- ▶▶ Maintaining normothermia
- ▶▶ Effective blood glucose control for diabetics
- ▶▶ Minimising hair removal and use of clippers if its removal is essential
- ▶▶ Good postoperative aseptic technique
- ▶▶ Sterile theatre setting
- ▶▶ Sterile equipment

- ▶▶ Theatre apparel
- ▶▶ Antiseptic skin preparation
- ▶▶ Tented theatres for high risk procedures (*Table 2*).

For up to approximately seven days after the operation an acute wound can exhibit signs of inflammation. It is important not to confuse these with signs of infection. A wound swab or sample of pus/purulent exudate should be taken if signs of infection are present (*Table 1*). The routine swabbing of wounds should



Figure 9. Tendon visible in a surgically debrided wound.



Figure 10. Signs of infection present.



Figure 11. Patient with amputation due to peripheral vascular disease, note dark dry granulation, indicating reduced blood supply.



Figure 11. Dehiscent surgical wound with pale granulation tissue, indicating patient is poorly nourished.

Table 2

Preventing surgical site infection (NICE, 2008)

Pre-operative prevention

- ▶▶ Length of preoperative stay (patients being admitted for planned elective surgery should be admitted as close to the date of their surgery as possible to reduce the risk of infection)
- ▶▶ Optimal hand hygiene
- ▶▶ Prophylactic antibiotics should always be given for contaminated and dirty/infected wounds. They should be administered intravenously on commencement of anaesthetic
- ▶▶ Adequate nutrition and hydration
- ▶▶ Pre-operative infection screening
- ▶▶ Patient information.

Peri-operative prevention

- ▶▶ Hand hygiene
- ▶▶ Appropriate theatre wear — masks/ gowns/ gloves
- ▶▶ Skin preparation
- ▶▶ Wound irrigation
- ▶▶ Wound closure techniques (if the sutures are placed too tightly, they can place undue tension on the wound and have the potential to cause tissue necrosis)
- ▶▶ Temperature regulation
- ▶▶ Glucose control.

Postoperative prevention

- ▶▶ Hand hygiene
- ▶▶ The use of drains in or in close proximity to the wound will keep the wound or skin open and so be vigilant about the increased risk of bacterial contamination
- ▶▶ Use of interactive dressings changed under aseptic technique
- ▶▶ Debridement of open wounds
- ▶▶ Recognition of infection and appropriate use of antibiotics
- ▶▶ Postoperative management of wound dehiscence
- ▶▶ Give out clear patient information about reducing the risk of infection.

be discouraged as all wounds will be colonised with some bacteria, and can progress with a low level of bacteria present. Only if they delay the wound healing should treatment commence to reduce their levels (Kingsley, 2001; Patten, 2010).

Patients identified as having a wound infection should be treated with systemic antibiotics (Best Practice Statement, 2011) and, where appropriate, topical antimicrobial dressings, such as silver, iodine and honey-impregnated products should be prescribed. The use of topical antimicrobials should be reviewed at two weeks for their effectiveness and stopped once improvements in the wound have been identified to prevent the development of resistance.

8 DEVELOPMENT OF HAEMATOMA

A haematoma is a bruise/collection of blood within the tissue, which develops following trauma to the skin (Collins et al, 2002). Some haematomas if they are small/ minor can be reabsorbed by the body and only require the damaged area to be protected from trauma to assist in healing. However, for larger haematomas autolytic debridement with moist wound healing products or surgical debridement may be appropriate. Haematomas are an ideal medium for bacteria (Pudner and Ramsden, 2000) and care should be taken to ensure they do not become infected. For large areas of skin loss following debridement, a skin graft may be necessary to cover the defect if the patient is fit for a surgical procedure (Beldon, 2011).

9 POOR VASCULAR SUPPLY

There are many reasons why a wound can experience poor quality blood supply. Peripheral vascular disease, anaemia and smoking can all have a significant effect on a patient's ability to heal a wound. They can result in delayed wound healing, wound dehiscence or amputation. Patients should be encouraged to stop smoking

prior to any surgical procedure and supported to maintain this postoperatively. A referral can be made to smoking cessation service if patients require additional support.

Anaemia should be corrected where possible pre-operatively and maintained postoperatively. Wounds that have a reduced blood supply, i.e. amputation sites in patients with peripheral vascular disease, will often have a characteristically low exudate level and the wound bed can exhibit dry slough, dry necrosis and dark dry granulation tissue unless the blood supply is adequately restored through angioplasty or bypass surgery. In patients who are anaemic, this will often show as a granulating wound with the presence of pale flat granulation tissue.

CONCLUSION

The correct management of a surgical wound is a vital skill for many clinicians to master. The ability to recognise what constitutes a healthy healing wound and identify complications as they occur is essential.

Postoperatively, the care of a surgical wound can be influenced by staff utilising an aseptic technique, using suitable interactive postoperative dressings, good hand hygiene, regular documented wound assessment and being knowledgeable about surgical wound care. Staff should also be knowledgeable about the NICE guidelines for prevention of SSI (NICE, 2008) and ensure that the area where they work follows these national principles. **WE**

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