Exit site wounds made easy

Volume 3 | Issue 2 | June 2012 www.woundsinternational.com

Introduction

Crude tracheotomies have been depicted on Egyptian artefacts as far back as 3600BC[1], while the ancient Syrians used catheters fashioned from reeds. Percutaneous devices are now in common use in clinical practice over a wide range of therapy areas. These devices create a wound (exit site) that needs to be managed appropriately to prevent complications, such as infection or overgranulation. Effective management of an exit site wound can be challenging, although the risks can be reduced by adopting principles of good basic care, close observation and appropriate patient and carer education.

Authors: Spruce P, Warriner L, Keast D, Kennedy A. Full author details can be found on page 6.

What is an exit site wound?

A range of percutaneous devices are currently used in clinical practice, including peritoneal dialysis (PD) catheters, percutaneous endoscopic gastrostomy tubes (PEGs), tracheostomy tubes, suprapubic catheters, and vascular access devices. These devices are indicated for patients who are unable to maintain normal bodily functions as a result of illness or disability and require additional therapy to maintain life.

Percutaneous devices are introduced through a surgically created defect in the skin to provide access to underlying structures, organs or tissues for the administration or removal of fluids or gases. This opening in the skin is known as the exit site: in some specialties and/or countries this is also referred to as an entry or insertion site.

In addition, external fixation devices, which hold skeletal wires or pins in place may be used as part of a trauma or orthopaedic treatment care plan. A percutaneous wound is formed at the interface between a pin or wire and the skin — this also known as a 'pin site'[2].

Unlike acute or chronic wounds where the ultimate goal is wound healing, for an exit site wound the aim is to maintain a healthy opening with minimal exudate. While there is a natural tendency for the wound to close around the tube[3], all percutaneous devices and external fixator pins or wires act as a foreign body in the tissue, preventing closure of the wound. Healing can only occur once the device has been removed at the end of treatment.

Box 1 Risk of complications in exit site wounds

- **Central venous catheters** are responsible for an estimated 250,000-400,000 bloodstream infections per year worldwide, with an associated mortality of 10-35%[4]
- Exit site infections in **peritoneal dialysis** result in a six-fold increased risk for peritonitis, leading to catheter removal in 50% of cases[5]
- **Pin tract infection** is a major complication of external fixation for complex fractures and limb deformity[2]. Reported infection rates around the pin site range between 1% for major infections (eg osteomyelitis) and 80% for minor infections[6]
- **Percutaneous endoscopic gastrostomy** (PEG) is the method of choice for long-term artificial enteral nutrition/hydration. Local infection occurs in approximately 2% to 39% of procedures[7]

The length of time that a percutaneous or external fixation device is in place will depend on the therapy area or treatment required. The longer a patient has an exit site wound, the greater the chance of developing complications[2]. For example, an orthopaedic pin or wire will be required until the fracture is healed when it can be removed. However, a patient who cannot eat or drink may require nutritional support via a PEG for the remainder of his/her life.

Why are exit site wounds challenging?

Exit site wounds are at increased risk of infection and patients who require these devices may also have associated comorbidities that put them at higher risk of wound complications. It is important that a holistic approach is adopted to maintain the patency of the exit site for as long as possible and to prevent complications. Each device has specific requirements for its management. A poorly managed exit site wound can increase the risk of complications, which can result in a reduced quality of life, death or discontinuation of the therapy (Box 1).

Developing best practice

Best practice guidelines that focus on the management of acute and chronic wounds may be inappropriate for exit site management. Further work is needed to develop guidance for clinicians on exit site management, based on current evidence and best practice.

Basic principles for exit site wound management

Each device will have specific requirements for its ongoing management and it is important that the manufacturer's instructions and local protocols are followed. While these may be incorporated into clinical guidelines, there are a number of basic principles that are relevant to all exit site wounds.

Exit site wounds made easy

Wounds International

Basic management principles include:

- **Ensuring the patency and effectiveness of the device**
- **Maintaining the integrity of the surrounding skin**
- **Preventing infection and other complications.**

Effective management of the device

The risk of complications developing in and around an exit site will depend on the general condition of the patient and the type of device used. This risk can be reduced using good basic care, close observation and appropriate education to ensure that the device is managed correctly.

All devices need be positioned, immobilised and secured properly[8,9]. This may involve the use of appropriate dressings to help immobilise the device [2]. Patient movement or poor positioning, however, may cause the device to damage the surrounding skin by pressure or friction. Where dressings or tapes are required, these should not cause any additional trauma to the site and should be replaced when they become wet or soiled to reduce the risk of infection[10].

Devices should also be checked to ensure they fit properly and there is no splitting or cracking, which may allow fluid to leak onto the surrounding skin. Inspection can be undertaken during routine cleansing.

Maintaining skin integrity

The skin surrounding the exit site should be kept clean and dry to prevent bacterial growth. In the immediate postoperative period, a clinically clean, undisturbed environment is often recommended to promote epithelialisation of the sinus tract[8,9].

The use of a barrier cream is not routinely indicated for the management of the skin surrounding an exit site. If this is required to treat skin irritation or excoriation, the clinician must ensure that the product will not cause damage to the device, or there is no risk of it liquefying with leakage down the opening of the exit site.

Preventing exit site infection

All exit sites are colonised with bacteria; heavy bacterial colonisation can lead to exit site infections. Common pathogens include *Staphylococcus aureus,* including MRSA, *Pseudomonas aeruginosa* and *Escherichia coli.* Fungal infections are often problematic where devices are made of polyurethane or silastic, such as those used in PEGs and suprapubic catheters[11].

Infection may be superficial around the exit site or it may progress down the tract or tunnel, increasing the risk of bacterial invasion of the underlying structures. This may be a particular issue if the device becomes loose or is positioned incorrectly.

Wound cleansing using an aseptic approach

For some devices, such as central lines or percutaneous intravenous central catheters (PICCs), an aseptic technique[12] is used for the duration of therapy, followed by the application of a clear film dressing to allow observation of the exit site. This procedure should be repeated weekly[13], but if infection is suspected the exit site should be cleaned more frequently[2].

The aim of cleaning the wound is to reduce the number of micro-organisms present and to remove exudate, blood and wound debris from around the site and the device, which may be a medium for bacterial growth[14]. Normal saline and antiseptic agents such as povidone iodine, chlorhexidine and polyhexamethylene biguanide (PHMB) are commonly used[6,15].

Wound cleansing using a socially clean approach

For some exit wounds a 'socially clean' approach may be used to keep the site free from contaminants and reduce the bacterial load. For therapies where this approach is used, a daily routine of cleansing is often recommended, although the frequency may be altered based on the condition of the wound, level of exudate and the lead clinician's recommendations.

Establishing a routine of regular cleansing can help the patient or carer to observe the site and recognise any early onset of complications. This involves a simple three-step method:

1. **Cleanse the skin around the device using a mild soap and warm water**
2. **Cleanse the device according to the manufacturer's instructions, removing any build up of dried exudate or blood and residual soap**
3. **Dry the area thoroughly using a clean cloth.**

During any cleansing procedure, care should be taken to prevent fluid leaking into the tube. Ideally, the exit site and device should be thoroughly dried using a suitable cloth. Fabrics, such as gauze, may shed fibres onto the exit site and should be avoided as these can increase the risk of further irritation and inflammation.

Other general advice includes:

- **Patients should take a shower rather than have a bath, although this will vary according to the device. Showering may be recommended immediately prior to dressing changes or on the day of dressing changes[2]**
- **Patients should be advised that shower gel or shampoo could cause an exit site reaction[16].**

Role of dressings

Dressings may be used to provide an effective barrier to prevent bacteria and other contaminants from entering the exit site wound. Guidance on the use of dressings tends to focus on their use and advantages, rather than recommending one product over another. For example,

a recent consensus on pin site management found that most respondents (76%) agreed that wounds should be dressed, but there was a lack of agreement as to what type of dressing should be used. There was strong agreement that the dressing material should keep excess moisture away from the wound (86.7%) and that dressings should be kept clean and dry and be changed weekly or more frequently for infected wounds[2]. There has been an increase in the use of dressings impregnated with antiseptic agents in exit site management. In a recent review, Hadaway reported on the use of PHMB to reduce surgical site infection (SSI)[17]. As the same organisms found in SSI are also found in catheter-related bloodstream infections, the author suggests that PHMB could be of benefit when used for this type of wound.

Infection as a complication around exit site wounds

The risk of infection should always be considered and it is important to recognise the risk factors associated with the different devices and therapies. It is recommended that a comprehensive assessment of the patient and his/her wound should be undertaken to identify the risks and appropriate steps taken to reduce infection. The frequency of review will depend on whether the device is for short-term or permanent use.

What are the associated risk factors?

There are a number of risk factors that can increase the risk of infection at the exit site. These may be related to:

- **The general condition of the patient and host factors, such as comorbidities (eg diabetes, anaemia and malnutrition), as well as lifestyle choices such as smoking**
- **The use of medications that impair wound healing, such as steroids or cytotoxic agents**
- **Whether the procedure was planned and the use of antibiotic prophylaxis at the time of insertion.**

Identifying exit site infection

Following the introduction of the device, it is normal for the signs of inflammation (eg heat, bloody or yellowish discharge, pain and erythema) to develop around the exit site, but these signs should subside within 72 hours[18,19]. This is a normal response and should not be mistaken for infection.

The signs and symptoms of infection include pain, increased exudate, heat and erythema. The opening tract may become enlarged or there may be signs of tissue breakdown[3] and the patient may present with pyrexia. A serous (blood stained) or purulent discharge indicates the presence of bacteria and the possible development of an abscess or tunnel infection. Ultrasonography or other investigations (eg microbiology) may be undertaken to confirm this.

How to treat exit site infection

Early identification and diagnosis of infection is important for prompt and effective treatment. Each therapy area will have specific guidelines for the detection and management of infection, which will depend on observation of the patient, possible microbiological cultures and the use of an appropriate treatment (eg systemic antibiotics) when indicated.

The use of dressings impregnated with antiseptic agents such as silver, iodine, PHMB, chlorhexidine and honey may be used for their barrier function where localised infection is suspected. A small randomised controlled study using PHMB-impregnated dressings has demonstrated a reduction in the rate of methicillin-resistant *Staphylococcus aureus (*MRSA) colonisation around tracheostomy sites[20], while a small non-comparative evaluation of a silver dressing was found to be effective in reducing MRSA around PEG sites[21].

A range of antimicrobial dressings is now available that has been specially designed for use around exit sites and include fenestrated, keyhole or disc-shaped dressings (eg Kendall™ AMD antimicrobial foam dressings) (Figure 1). Alternatively, suitable antimicrobial dressings can be cut to fit around the device.

Biofilms and exit sites

A biofilm develops when free floating micro-organisms attach to a surface, quickly replicating and forming colonies that are tolerant to antibiotics, antiseptics and disinfectants[22].

Biofilm formation is a specific risk on percutaneous devices, in particular, tubular latex or silicone devices, which when inserted may acquire biofilms on the inner or outer surfaces[11]. The longer the device remains in place, the greater the tendency of these organisms to develop biofilms and they are now recognised as a major factor contributing to bacterial infection and chronic inflammation. However, the link between biofilm contamination and the development of infection is not yet understood[11].

While the presence of a biofilm on a device does not represent a clinical infection, it can lead to replacement or removal of the device.

Management of biofilms and exit sites

A number of general wound management measures can be used to disrupt biofilm formation, including the use of an aseptic technique to prevent nosocomial or cross-infection at the site.

It is recommended that cleansing with saline or antiseptic agents together with an appropriate debridement technique should be used to disrupt the biofilm[23]. However, eradication is difficult due to the tolerance of biofilm organisms on these devices[24].

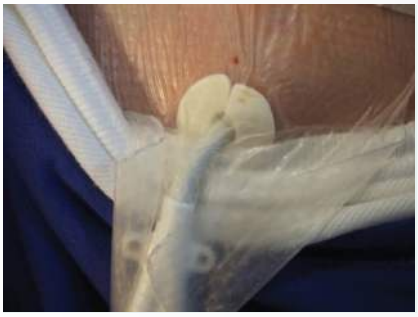


Figure 1: The Kendall™ AMD antimicrobial foam disc can be used around percutaneous devices for the protection and management of the exit site (photo courtesy of G Totten, Renal Unit, Antrim, NI).

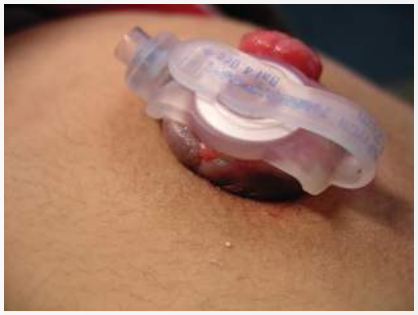


Figure 2: Overgranulation in a four-year-old boy with a low profile device. Note evidence of fresh bleeding and excessive granulation tissue causing poor fitting of gastrostomy button (courtesy of A Kennedy).

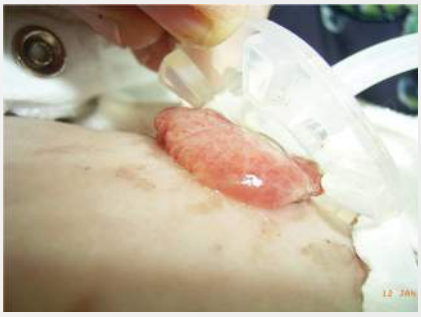


Figure 3: Exophytic hypergranulation tissue around PEG site of 12-month-old baby (courtesy of A Kennedy).

Some devices can deter biofilm formation, either because they are impregnated with antimicrobial agents or the material surface can reduce adherence of micro-organisms[25,26].

Overgranulation as a complication around exit site wounds

The development of overgranulation (hypergranulation) tissue around an exit site is relatively common, although why this occurs is not fully understood. In chronic wounds, it is thought that this may be due to prolonged inflammation[27,28], external friction or continued minor trauma[29,30], and overuse or inappropriate use of occlusive dressings[31].

For exit sites, overgranulation is thought to develop as a result of constant friction between the device and the skin, caused by a poorly fitting or inappropriately secured device[32]. Excess moisture from fluid leakage leading to skin breakdown may also be a contributory factor[33] (Figures 2-6).

The development of overgranulation tissue can cause increased exudation, which may lead to maceration of the surrounding skin and soiled clothing[34]. When associated with an increased bacterial load, this may cause the wound to become malodorous. This, together with bleeding and increased exudate, can impact negatively on the patient's quality of life[26] and it is important that the underlying cause is identified and corrected. If undetected or left untreated, there is the risk that overgranulation tissue may lead to replacement of the device or removal.

How to identify overgranulation?

The development of overgranulation tissue may be overlooked by the patient as it is generally painless. It may present as:

- **'Healthy' overgranulation —a pinky red moist cauliflower-like structure[35], which may bleed but is otherwise symptom free[34].**
- **'Unhealthy' overgranulation tissue — a beefy red or bluish mass that extends above the wound surface and may be dehydrated, friable and easy to break[27].**

It is important that overgranulation tissue is detected at an early stage, so that treatment can be implemented before further complications develop around the exit site. As many exit sites are routinely managed by patients and their carers, they should be given appropriate information and visual aids to recognise this complication.

How to manage overgranulation?

The prevention of overgranulation relies on

Figure 4: A healthy PEG site (photo courtesy of L Warriner).

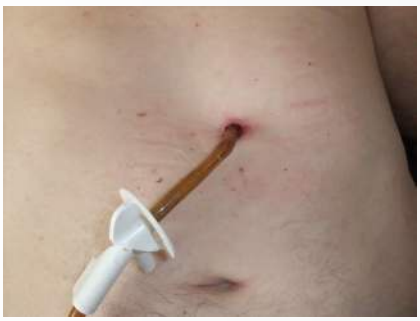


Figure 5: Overgranulation tissue around a PEG site (photo courtesy of L Warriner).

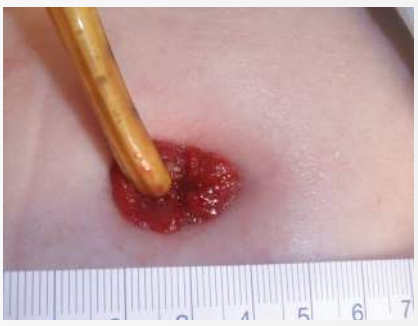
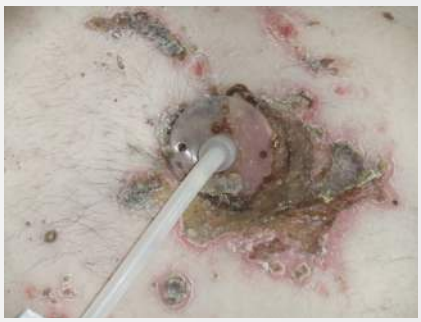


Figure 6: Excoriation around a PEG site (photo courtesy of L Warriner).



regular and systematic care of the exit site. This involves cleansing the surrounding skin and the device to prevent infection and skin maceration.

It is recommended that the exit site be checked by the patient or carer on a daily basis, although this may be carried out more frequently if complications are detected.

There is a lack of good quality evidence of the best way to manage overgranulation and options may depend on product awareness, availability and local protocols. The clinician should consider the effectiveness of the intervention, how comfortable it is for the patient, and the risk to the device and the surrounding tissues.

Goals of treatment

The goal is to manage the associated excess exudate and bacterial burden, and apply sufficient gentle pressure to reduce the overgranulation tissue[33]. If the cause of the overgranulation is due to inflammation then consider securing the device to minimise friction around the wound site[32].

Physical and chemical removal

Overgranulation tissue may be removed by surgical debridement or curettage. This is a one-off procedure and requires a high level of clinical expertise and should only be performed by a specialist who has been trained appropriately[36]. It is usually undertaken in the operating theatre and may be painful for the patient.

Silver nitrate treatment is a longstanding treatment of overgranulation tissue[26]. It can be applied using a stick with the tip consisting of 95% silver nitrate and 5% potassium. It has been shown to be effective when used daily or twice daily for up to four days[37]. The surrounding skin may require protection with a simple barrier cream or ointment to prevent

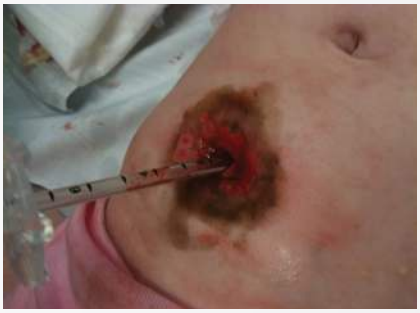


Figure 7: Neonate with a fungal rash and hypergranulation treated with topical silver nitrate by an untrained, inexperienced practitioner (photo courtesy of A Kennedy).

chemical burns and to manage the increased exudate associated with this technique[35]. However, this method is now discouraged when used by clinicians without the appropriate level of skill and knowledge as it can cause trauma to the wound and increased inflammation[27] (Figure 7).

Topical steroids

Topical steroids can be applied to reduce the inflammatory response[26], but must be used with caution in devices where there is the risk of fungal infection. Topical steriods should be applied according to the manufacturer's instructions and may need to be covered with a foam or non-adherent dressing.

Haelan® Tape (Typharm) is a transparent surgical tape, which has been impregnated with a low dose of steroid and is marketed specifically for the treatment of overgranulation. It has the advantage of exerting pressure to reduce the overgranulation and can be cut to shape around the site[26,32].

Antimicrobial dressings

Topical antimicrobial dressings can be used to reduce the bioburden in the tissue and subsequent inflammatory response. The use of polyhexamethylene biguanide (PHMB) is relatively new in this indication but is effective against a range of bacteria and fungi[38] and is not deactivated in the presence of organic substances such as blood or pus[39].

Foam dressings

Foam dressings are increasingly being used as an atraumatic method of reducing overgranulation. When applied to the wound the dressing provides localised pressure, which may help to reduce the oedema and flatten the affected tissue[27]. It has been suggested that two pieces of the foam may be used to increase the pressure[32].

A recent independent audit of 24 patients with overgranulation tissue around the exit site evaluated a standard approach to treatment involving:

- **A daily routine of cleansing the exit site and checking the device.**
- **Daily dressing changes using a PHMB- impregnated foam dressing (Kendall™ AMD antimicrobial foam dressing). This should be cut to a keyhole shape and fitted around the device, and covered with a standard polyurethane foam dressing.**
- **Review at two weeks and then every two weeks for six weeks.**

The results of the audit found that after using the PHMB impregnated foam dressing and standard foam for two weeks, there was resolution of the overgranulation tissue in 33% of patients. There was complete resolution of overgranulation at the six week review in a total of 16/24 patients (66.6%)[33].

The role of education

It is important that clinicians keep-up-to date with current technologies and procedures to ensure the best care for their patients[9]. Many patients with long-term devices are encouraged to self-manage at home. Healthcare professionals should provide adequate support for patients to manage their device appropriately and help prevent complications. It is important that patients are concordant with the care of the device and the surrounding tissues. Failure to do so will impact on the ongoing success of the device.

Patients who self-manage need to:

- **Be able to demonstrate how to care for their exit site before discharge and be provided with written instructions for routine care of their device and surrounding skin to prevent complications**
- **Know how to recognise the signs and symptoms of infection and overgranulation.**

Any advice given to patients and their carers should be simple, consistent and supported by clear information, including pictures and diagrams. Where appropriate, information should be offered in the language of the patient.

References

1. Sittig E, Pringnitz JE. Tracheostomy: evolution of an airway. *AARC Times* 2001.
2. Royal College of Nursing. Guidance on pin site care. Report and recommendations from the 2010 Consensus Project on Pin Site Care. RCN, London 2011.
3. McClave SA, Neff RL. Care and long-term maintenance of percutaneous endoscopic gastrostomy tubes. *J Parenter Enteral Nutr* 2006; 30(1): S27-S38.
4. Altman S. Showering with central venous catheters: experience using the CD-1000 composite dressing. *Dial Transpl* 2006; 35(5): 320–27.
5. Johnson DW, Clark C, Isbel NM, et al.The honeypot study protocol: a randomized controlled trial of exit-site application of medihoney antibacterial wound gel for the prevention of catheter-associated infections in peritoneal dialysis patients. *Perit Dial Int* 2009; 29 (3): 303-9.
6. Temple J, Santy J (2004) Pin site care for preventing infections associated with external bone fixators and pins. Cochrane Database Syst Rev (1): CD004551.
7. Zopf Y, Konturek P, Nuernberger A, et al. Local infection after placement of percutaneous endoscopic gastrostomy tubes: a prospective study evaluating risk factors. *Can J Gastroenterol* 2008; 22(12): 987-91.
8. Best C. Percutaneous endoscopic gastrostomy feeding in the adult patient. *Br J Nurs* 2009; 18(12): 724-9.
9. Tomlins MJ. Practice change in peritoneal dialysis exit site care. Renal Soc Aus J, 23 Apr 2008.
10. Sigler B . Nursing care of clients with upper airway disorders. In: Black JM, Matassarin-Jacobs E (eds). *Medical Surgical Nursing: clinical management for continuing of care*. 5th edition. Philadelphia: Saunders, 1997; 1067-103.
11. Donlan RM. Biofilms and device-associated infections. *Emerging Infect Dis* 2001;7(2)
12. NICE Pathways 2012. Prevention and control of healthcare-associated infections overview. Available at: http://pathways.nice.org.uk/pathways/prevention-and-control-of-healthcare-associated-infections
13. Department of Health. Winning ways: working together to reduce healthcare associated infection in England. Report from the Chief Medical Officer, London: DH, 2003.
14. Wong FSY. Use of cleansing agents at the peritoneal catheter exit site. *Perit Dial Int* 2003; 23(2) S148-S52.
15. Khan MN, Naqvi AH. Antiseptics, iodine, povidone iodine and t raumat ic wound cleansing. *J Tissue Viability* 2006; 16(4): 6-10.
16. Wood M. A protocol for care of skeletal pin sites. *Nurs Times* 2001; 97(24):66.
17. Hadaway L. Polyhexamethylene biguanide dressing — another promising tool to reduce catheter-related bloodstream infection. *JAVA* 2010;15(4):203-5.
18. BhattacharyyaM, BradleyH. Antibiotics vs an antimicrobial dressing for pin-track infection. *Wounds UK* 2006; 2,(2): 26-33.
19. Lynch CR, Fang JC. Prevention and management of complications of percutaneous endoscopic gastrostomy (PEG) tubes. *Pract Gastroent* 2004; 66-72.
20. Motta GJ, Trigilia D (2005) The effect of an antimicrobial drain sponge dressing on specific bacterial isolates at tracheostomy sites. *Ostomy Wound Manage* 2005; 51: 60–3.
21. Leak K, PEG site infections. A novel use for Actisorb Silver 220. *Br J Comm Nurs* 2002; 7: 321-25.
22. Phillips PL, Wolcott RD, Fletcher J, Schultz GS. Biofilms Made Easy 2010;1(3). Available from www.woundsinternational.com
23. Wolcott RD, Rhoads DD, Bennett ME, et al. Chronic wounds and the medical biofilm paradigm. *J Wound Care* 2010; 19(2): 45-50, 52-53.
24. Donlan RM. Biofilms on central venous catheters: is eradication possible? *Curr Top Microbiol Immunol* 2008; 322: 133-61.
25. Von Eiff C, Jansen B, Kohnen W, Becker K. Infections associated with medical devices: pathogenesis, management and prophylaxis. Drugs 2005;65(2):179-214.
26. Johnson S. Haelan Tape for the treatment of overgranulation tissue. *Wounds UK* 2007; 3(3): 70-74.
27. Harris A, Rolstad, BS. Hypergranulation tissue: a non-traumatic method of management. *Ostomy Wound Manage* 1994; 40(5): 20-3.
28. Nelson L. Points of friction. *Nurs Times* 1999; 95(34): 72-5.
29. Lyon C, Smith AJ. *Abdominal Stomas and Their Skin Disorders – An Atlas of Diagnosis and Management*. Martin Dunitz Ltd, London 2001.
30. Hanlon M, Heximer B. Excess granulation tissue around a gastrostomy tube exit site with peritubular skin irritation. *J Wound Ostomy Continence Nurs* 1994; 21(2): 76-7.
31. Dealey, C (2007) The Care of Wounds: a guide for nurses 3rd edition. Wiley-Blackwell, Oxford.
32. Stephen-Haynes J, Hampton S. Understanding and treating overgranulation, 2010. Available from www.wcauk.org/downloads/booklet_overgranulation.pdf
33. Warriner L, Spruce P. Managing overgranulation tissue around gastrostomy sites. Br J Nurs 2012; 21(5): S14-6, S18, S20 passim
34. Vuolo J. Hypergranulation: exploring possible management options. *Br J Nurs* 2010 (Tissue Viability Suppl) 19(6): s4-s8
35. Griffiths J, Joyce J, Scanlon L, Feber T, Firth H. Best practice for gastrostomy tube management. British Association of Head and Neck Oncology Nurses, Bristol 2001.
36. Widgerow AD, Leak K. Hypergranulation tissue: evolution, control and potential elimination. *Wound Healing S Africa* 2010; 3(2): 1-3.
37. Borkowski L. G tube care: managing hypergranulation tissue. *Nursing* 2005; 35(8): 24.
38. Hubner NO, Kramer A. Review on the efficacy, safety and clinical applications of polihexanide, a modern wound antiseptic. *Skin Pharmacol Physiol* 2010; 23(suppl 1):17–27.
39. Lee WR, Tobias KM, Bernis DA, Rohrback BW. In vitro efficacy of a polyhexamethylene biguanide-impregnated gauze dressing against bacteria found in veterinary patients. *Vet Surg* 2004; 33(4): 404-1.

This 'made easy' is supported by an unrestricted educational grant from Covidien

Author details

Spruce P[1], Warriner L[2], Keast D[3], Kennedy A[4]

1. **Clinical Director, TVRE Consulting, Stoke on Trent, UK**
2. **Home Enteral Feeding Specialist Nurse, County Durham and Darlington NHS Foundation Trust, UK**
3. **Center Director, Aging Rehabilitation & Geriatric Care Research Center, London, Ontario, Canada**
4. **Clinical Nurse Consultant, Paediatric, Surgery and Wound Care, Sydney Children's Hospital, NSW, Australia**

Summary

Percutaneous devices create a wound (exit site) that remains open for as long as the device is *in-situ*. Such wounds are challenging and require effective management to prevent complications, such as infection and overgranulation. It is important to keep the exit site clean and dry and to check the device routinely to ensure it is positioned correctly, is secure and shows no splitting or cracking. For those with long-term devices, many patients will self-manage at home. As well as knowing how to care for the device and surrounding skin appropriately, patients should learn how to recognise complications early and know what to do if these occur.

To cite this document: Spruce P, Warriner L, Keast D, Kennedy A. Exit site wounds Made Easy. *Wounds International* 2012; 3(2): Available from: http://www.woundsinternational.com