Wound healing represents a well orchestrated reparative response that is induced by injuries. However, for many reasons, a wound can change its dynamics from a healing wound to a non-healing wound, which can sometimes lead to the formation of a sinus. A wound sinus is a discharging blind-ended track that extends from the surface of an organ to an underlying area or abscess cavity (Everett, 1985) and most tissue viability nurses would have treated a sinus wound at some point in their career. Yet, even though they are commonly found, there is little information available on the management of these difficult to heal wounds.

Recurrence rates remain high, often as a result of incomplete assessment or the use of inappropriate dressing techniques that prevent the drainage of exudate and allow the formation of epidermal bridges (Butcher, 1999) or complete closure of the surface of the sinus. Complete closure permits the exudate to collect in a pocket below the surface until suddenly, it will become painful and force the surface open to allow discharge onto the surface.

An understanding of wound aetiology and the conditions required to effect successful management and resolution will aid treatment and this article will examine a revolutionary method of combining high frequency ultrasound and capillary drainage that is successfully used in the Wound Healing Centre in Eastbourne.

Sinus formation & assessment

Although abscess cavities most frequently arise from cutaneous pathogens, they may also result from infections in deeper structures, such as chronic osteomyelitis (Butcher, 1999) and it is important to rule out potential of infection in the bone before treating. Other causes could be a foreign body, trauma or pressure damage which produces formation of localised haematoma leading to tissue ischaemia which creates a blind sinus or can be related to or poor wound management.

If a sinus is blocked by a dressing, no matter how absorptive that dressing may be, the fluid cannot drain out of the cavity and this leads to a collection of fluid in the base of the sinus which enlarges even further as it fills to excess creating an abscess. The abscess cavity therefore fills with serous exudate, debris and pus, providing an ideal area for bacterial proliferation (Vickery, 1997).

The sinus should be gently explored with a fine malleable probe to assess depth, direction and multiplicity of the tracts present is always useful in the case of sinus wounds (Butcher, 1999) as it provides the easiest method for assessment of size and depth. The Eastbourne Wound Healing Centre always uses high frequency ultrasound to assess depth and direction of any sinus wound as this not only provides a baseline measurement, but also provides accurate scientific measurements of any healing that occurs over a period of time.

Where bony involvement or infection is possible, plain X-ray examination is recommended and this is of particular importance in foot sinuses in diabetic patients, where underlying osteomyelitis is a risk. When high definition ultrasound is unavailable, the instillation of radio-opaque dye (sinogram) may sometimes be necessary to assess the extent of the sinus, particularly in deep wounds (Butcher, 1999).

A thorough examination of the wound is essential to observe the condition of the surrounding tissue for signs of maceration, excoriation and cellulitis. The nature of the exudate, its volume, colour and consistency should also be noted (Butcher, 1999).

Management of a sinus wound

The management of a sinus will very much depend on its underlying aetiology and a full patient history will be of great assistance in determining the likely cause of the sinus. (Butcher, 1999). There are many different types of wound dressings available and it is important that nurses know what sort of dressing is appropriate for a highly exuding wound as using the wrong dressing can lead to repeated dressing changes and soiling of clothes and bedding and will undermine the patient’s faith in care (Anderson, 2002).

The wound sinus dressing aims to prevent adherence of the wound edges and therefore stop premature closure. Although used for many years to pack sinuses, ribbon gauze is now not recommended, as tight gauze acts as a bung that prevents free drainage of exudate (Everett, 1985) and Eastbourne Wound Healing Centre advises that dressings

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- Difficult to heal wounds
- Recurrence
- Pain
that absorb will not necessarily effectively drain a sinus.

Treatment regimes must be based around removal or treatment of the causative factor with simple acute sinusus-es being treated conservatively with dressings, such as Advadraw, that encourage the granulation of the cavity and track (Butcher, 1999). Advadraw also provides an alternative to drainage tubes as the unique action of this dressing transports exudate either into a secondary dressing or (as used in Eastbourne Wound Healing Centre) a drainage bag.

High-pressure irrigation can cause pain, bacterial spread (Lawrence, 1997) and may damage body defenses (Wheeler, 1976). Therefore, the Eastbourne Wound Healing Centre uses the capillary dressing Advadraw to cleanse the sinus.

Advadraw

Advadraw is a highly absorbent dressing (has the ability to absorb exudate 30 times its own weight), low adherent rapid capillary action dressing with a unique method of removing excessive fluid from a wound bed. The dressing has three components: a central wicking layer sandwiched between highly absorbent, soft viscose/polyester pads and an outer non-adherent contact layer. The action of this dressing is to actively draw fluid from the wound bed into the central wicking layer from where it is rapidly redistributed into the absorbent pads. This capillary action results in excellent fluid management while retaining a moist wound healing environment. Fluid can be transferred from one Advadraw to another and cutting into any shape will not impair its function.

Wound sinuses are notoriously difficult to dress due to their depth and narrow width, and present the practitioner with a challenge in terms of dressing selection. Advadraw Spiral (Figure 1) is a rapid capillary action dressing that is supplied in a pre-cut ribbon shape. It has a double-sided wound contact layer that makes it convenient and easy to use in patients with sinuses.

Placed into a sinus, it ‘suctions’ up the fluid and deposits it into a wound bag. A paediatric stoma bag is quite suitable.

Occasionally, if the wound fluid is likely to come back onto the skin because of the position of the patient, then it is simple to place a small amount of Advadraw within the wound bag to absorb the fluid away from the site.

A case study using capillary action on a sinus wound

This gentleman had developed a sinus five years previously following surgery for an anterior and posterior resection. Following the resection, he developed pressure damage over the surgical incision.

The Wound Healing Centre took over his care and undertook high frequency ultrasound assessment. This showed a wound that tracked toward the spine (Figure 2) and then changed direction and tracked until it became a reservoir for wound fluid.

The blue areas represent healthy tissue and the dark areas represent fluid or oedema.

The capillary dressing was placed inside the sinus and ultrasound was used to demonstrate the position of the dressing in the sinus (Figure 3). This allowed the practitioners to guide the dressing into an optimum position with the end of the dressing into the reservoir. The end of the dressing was then placed into a small stoma bag, permitting free drainage of the fluid into the bag.

The wound was then assessed with ultrasound every 2nd week. The sinus is filling in with the ‘blue’ healthy tissue and the darker area is reducing in size.

Attendance at the Wound Healing Centre for this gentleman were quickly reduced from alternate days to weekly and this wound went on to successfully heal after 16 weeks.

For five years the sinus had been packed with expensive dressings and had cost approximately £200 per week. Within one week of using a capillary dressing, the cost of treatment reduced to £6 per week and the quality of life for this gentleman increased to the same level as prior to his operation.

Conclusion

Since this case study was undertaken, the Wound Healing Centre has developed a protocol for treatment of sinus wounds that consistently uses capillary dressings and stoma bags and the success rate of sinus healing is reliable, cost effective and simple to achieve.

Therefore, the Wound Healing Centre would recommend the use of capillary dressing such as Advadraw Spiral in the treatment of sinus wounds.

References


