

Management of a Stab Wound

Astrid Probst



ASTRID PROBST, KLINIKUM AM STEINENBERG, STEINENBERGSTR. 31,
72764 REUTLINGEN, GERMANY

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The Subject

A 43 year old man who was admitted to hospital on August 3rd 2008 with multiple stab wounds.

Medical History

Upon admission, the patient was found to have suffered wounds to the left side of the throat, the left side of the upper body and the abdomen. Other than these injuries, no other relevant medical conditions were identified upon assessment.

Procedure/Treatment

The patient was taken to theatre the same day for emergency surgery which included a repair to internal jugular vein, and an abdominal laparotomy to resect parts of the small intestine. Antibiotic cover was provided in accordance with the local clinical protocol.

The stab wounds in the throat and the upper torso healed uneventfully, but the wound in the abdominal wall failed to heal, resulting in dehiscence which was initially addressed by a further operation on August 13th.

This operation also proved unsuccessful, and the wound broke down a second time resulting in a malodorous moderately exuding cavity approximately 14 cm long, 5 cm wide and 4 cm deep, (Figure 1).

Swabs were taken for microbiological analysis which confirmed the presence of a mixed bacterial population.

On 20th August, because of the repeated failure to achieve primary closure, a decision was made to debride the wound surgically, apply topical negative pressure therapy (TNP) and allow it to heal by secondary intention.

An antimicrobial dressing, Cutimed® Sorbact®, was used as the wound contact layer to reduce the bioburden of the affected area, (Figure 2) and the TNP dressing was assembled in accordance with the manufacturer's instructions, (Figure 3). When the vacuum was turned on, the dressing was drawn down into the wound confirming that the seal between the film dressing and the skin was intact and airtight (Figure 4).

The dressing was changed initially after two days and then again after a further three days at which time TNP therapy was discontinued. At this point (25. 8. 2008) there was clear evidence of the formation some early granulation tissue. The wound was no longer malodorous and exudate production had diminished (Figure 5).

A more conventional dressing treatment was then adopted which involved the continued use of Cutimed® Sorbact® as the primary wound contact layer (Figure 6), and a highly absorbent Cutimed® Cavity dressing in the deepest parts of the wound (Figure 7). This combination was then covered with an absorbent pad held in place with Fixomull® Stretch.

The dressing was changed daily at which time the wound was irrigated with the Aqua free shower system, incorporating a terminal sterilising filter (Aqua Free Membrane Technology GmbH). During this treatment period Cutimed® Cavity was able to cope with the wound exudate produced whilst maintaining an appropriate wound healing environment.

The wound continued to improve, allowing the patient to be discharged from hospital on September 8th, at which time the cavity was approximately 8.5 cm long, 3 cm wide and 3.5 cm deep. Using Cutimed® Cavity the wound continued to progress normally and complete closure was achieved some eight weeks later in early November 2008.



Figure 1

20. 8. 2008

Dehiscent abdominal wound showing minimal granulation tissue and some areas of residual slough.



Figure 2

20. 8. 2008

Application of Cutimed® Sorbact® to wound base.



Figure 3

20. 8. 2008

The completed TNP dressing prior to application of vacuum.



Figure 4

20. 8. 2008

The completed TNP dressing after application of vacuum.



Figure 5

25. 8. 2008

Wound after two courses of TNP therapy showing early signs of granulation tissue.



Figure 6

1. 9. 2008

Wound continuing to progress with clear evidence of granulation tissue production. Cutimed® Sorbact® has been placed in the base of the wound prior to the introduction of Cutimed® Cavity.



Figure 7

1. 9. 2008

Cutimed® Cavity placed over the wound contact prior to the application of secondary absorbent layer and retention sheet.



Figure 8

8. 9. 2008

Prior to discharge, wound now looks very healthy with copious amounts of granulation tissue covering the base and walls of the wound. Also note pronounced epithelialising margin.



Figure 9

5. 2. 2009

Healed wound at follow up.

Discussion

With all forms of surgery there exists the potential for the development of a wound infection which can result in impaired healing but the magnitude of the risk varies considerably according to the nature of the procedure. Wounds are commonly classified into four groups based upon their probable degree of microbiological contamination.¹ Wounds involving surgery to the gastrointestinal tract or those involving penetrating trauma resulting in the discharge of the contents of the gut into the abdominal cavity are classed as 'dirty' and as such represent the highest risk of developing an infection as in this case.

Treatment for such wounds normally involves the provision of appropriate antibiotic cover combined with a suitable topical treatment to combat the growth of bacteria within the wound site. Numerous agents are available for this purpose including antiseptics solutions such as chlorhexidine, polyhexamethylene biguanide (PHMB) and various iodine preparations. Dressings containing various forms of silver are also widely and increasingly used for this application.

With many topical preparations there exists the possibility that the active agent can also exert an undesirable effect of new tissue potentially delaying wound healing. Alternatively, some antimicrobials can induce bacterial resistance which greatly reduces their effectiveness and value. An alternative approach to the treatment of infected or potentially infected wounds has recently been described which appears to be free of these potential drawbacks.

This new dressing, Cutimed® Sorbact®, utilizes the physical principle of 'hydrophobic interaction'. In the moist environment of an infected wound, microor-

ganisms are attracted to the dressing and become irreversibly bound to it. Subsequent removal of the dressing therefore also eliminates the immobilised bacteria from the vicinity of the wound. The mechanism of action of the dressing has been described in detail previously.² Unlike most medicated dressings Cutimed® Sorbact® releases nothing into the wound and is considered unlikely to induce bacterial resistance because of its unique mode of action.

In the later stages of wound healing, once the bio-burden of the wound has been reduced to a low level, a cavity dressing used alone may be employed to create the required moist wound environment. Cutimed® Cavity is considered very effective in this situation, capable of absorbing a significant amount of exudate without causing excessive drying of the wound bed, producing an environment that is considered to facilitate the production of additional granulation tissue.

In the current case, the selection of a new form of antibacterial dressing combined with a cavity wound dressing with good exudate handling properties was judged to have made an important contribution to the successful treatment of the patient.

References

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Author

Astrid Probst, Klinikum am Steinberg, Steinbergstr. 31, 72764 Reutlingen, Germany