

Managing contaminated and infected wounds

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WOUND INFECTION is one of the most common causes of failure of wound healing in animals. It is hard to exclude the risk of infection in animals and in some cases it can be impossible.

Antibiotic use is often routinely used as a prophylactic measure; however, where injury is traumatic in nature or an animal has otherwise compromised vascularity, there may not be sufficient blood flow to deliver the effects of the antibiotic to the damaged tissue.

This tissue is, in many cases, already contaminated and may therefore lack local defences to counter the proliferation of pathogens. Healing may well be interrupted by infection and potential breakdown despite the routine administration of antibiotics.

Topical dressings are often used to manage wounds, both traumatic and surgical, and those that offer antimicrobial properties reduce the risk of opportunist infection and support the antibiotic regimen. In addition, they are also used to counter local infection in cases where it is already established.

The following case studies summarise a practical evaluation of patients presenting with contaminated and infected wounds, and treated using a range of wound dressings (Cutimed Sorbact) that have only recently become available for veterinary use.

Mode of action

The range consists of dressings with antimicrobial properties, and has been used globally for many years to dress infected and critically colonised wounds^{1,2}. It has a mode of action which effectively removes microbes from the wound bed that otherwise may result in delayed wound healing³.

Aerobic and anaerobic micro-organisms have the ability to degrade or damage host tissue at a wound site, through the production of a variety of enzymes and toxins. These same micro-organisms are largely hydrophobic in nature.

The new dressings are coated with DACC (dialkyl carbamoyl chloride), a fatty acid derivative that makes the dressing highly hydrophobic. Once in physical contact with the wound bed, and in the presence of moisture, such as wound exudate, the hydrophobic nature of the dressing attracts bacteria that physically bind to the dressing fibres.

This process reduces the overall concentration of microbes in the wound without the risk of cytotoxicity or promotion of destructive bacterial endotoxin release. *In vitro* studies have indicated the dressings are effective within 30 seconds of application to a wound bed⁴.



Figure 1. Initial presentation: abrasion to the carpus of the right fore leg following an RTA. The superficial contaminated wound extends down the dorsal aspect towards and involving the digits.



Figure 2. Initial presentation: abrasion to the tarsus and digital area of the right rear leg.

Case studies

Case 1

Species and Breed: canine, cross-bred.

Sex: male.

Age: 5 years 3 months.

The patient was presented at the veterinary hospital within two hours following a road traffic accident, was stable and the wounds, although superficial, were highly contaminated. Superficial abrasions presented on the right foreleg extending from the carpus to the digits and similarly to the rear leg from the tarsus area (**Figures 1&2**).

The wounds were cleaned and a dressing applied to each of the wound areas. The dressings were held in place using routine bandaging and changed daily.

Following four days of treatment, the wounds had granulated, contraction was evident and epithelial tissue could be clearly seen at the wound margins. All signs of infection and contamination had diminished significantly and the wounds went on to heal rapidly.

The new wound dressing products were used in this case to reduce the effects of a high level of contamination and potential infection that was likely to develop. By managing the microbial load at the earliest opportunity it is believed that this dressing contributed to the successful treatment, rapid and uneventful healing of this case.

Case 2

Species and Breed: feline, domestic shorthair.

Sex: female.

Age: 2 years 9 months.

A two-year-old, female, domestic short-haired cat presented with a severe collar wound to the left axilla. The patient had been missing for two weeks prior to admission at the hospital so the true age of the wound could not be established.

On examination, the wound had a proximal cavity and appeared to be heavily infected exhibiting inflammation,



Figure 3. A collar injury resulted in a severe wound to the axilla of a domestic short-haired cat

Figure 4. Wound contraction had begun by the third dressing change and went on to heal without complication.



sloughing, discharge and significant odour. NSAIDs were administered to the patient and antibiotics to manage any systemic infection acquired during exposure of the wound.

Under anaesthesia the wound was clipped, thoroughly lavaged and debrided (**Figure 3**).

Dressings were applied directly to the wound and replaced at two-day intervals for six days. Dressing change was performed under general anaesthesia during this time.

On the second dressing change the granulation tissue appeared healthier, wound margins less inflamed and contraction was evident. No odour was present during dressing changes. The proximal cavity had clearly become shallower and by day six the wound had begun to contract significantly (**Figure 4**). The wound went on to heal without complication.

Case 4.

Species and Breed: feline, cross-breed.
Sex: female.
Age: 4 years.



Figure 7. A four-year-old cat presented with infection at the first digit following amputation two weeks previously. Dressings were applied following cleansing and debridement and maintained an infection-free environment until the wound healed.

The patient was re-presented following removal of the first digit of the left foreleg two weeks previously. The wound had become infected, was exuding heavily and was clearly painful (**Figure 7**).

The wound was thoroughly lavaged, the patient given antibiotics and pain relief and the wound dressed. Granulation tissue and contraction followed quickly, and the wound remained clean and healed without subsequent complication.

Case 3.

Species and Breed: canine, German shepherd dog.
Sex: entire male.
Age: 6 years 11 months.



Figure 5. A German shepherd dog presenting with dehiscence at the site of surgery following placement of an implant one week earlier.

The patient presented following placement of an implant one week earlier. The implant was at risk of rejection following infection and wound breakdown at the medial aspect of the tarsus (**Figure 5**).

The patient was anaesthetised, the sutures removed, the wound debrided and lavage performed using an iodine-based solution. The patient was treated with prophylactic antibiotics. Dressings were applied to the wound post-operatively to manage the risk of reinfection at the wound site.

After three days, the wound was much less inflamed and was infection-free. Healing progressed normally to satisfaction (**Figure 6**).

Figure 6. Following debridement under general anaesthesia the wound was dressed for a period of three days to prevent local reinfection at the site of surgery. The wound healed without further complication.



Conclusion

The case experiences in this study suggest that the new range of wound dressings had a positive effect in controlling wound contamination and infection in all of these patients – all went on to heal successfully and without further complication, despite their initial presentations. The dressings were well tolerated and easy to integrate into routine treatment.

References

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