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### HELPING WOUND HEALING WITH THE RIGHT TOPICAL DRESSING

Equine wound therapy is an important part of most practices. Due to the nature of traumatic equine wounds, a proportion of those encountered will require management as open wounds, which must heal by second intention. Following debridement of the initial wound, management with topical dressings is an important part of optimising the healing process. The aim of that management process is to assist in further debridement of devitalised tissue, to keep the wound bed suitably moist and the surrounding skin dry. The wound changes as it heals and as such the requirements for its management varies also.

It is generally accepted that in most instances the majority of devitalised tissue and contamination is best removed by sharp resection. Where possible the process of removal should not be left to debridement by dressings or chemicals. On that basis the small number of products available for chemical and enzymatic debridement and the use of wet-to-dry dressings (gauze swabs bandaged to the wound and pulled off when dry) should be avoided owing to the indiscriminate nature of tissue removal and destruction. The concept of biological debridement by larvae of the greenbottle fly is interesting and there is some reported evidence that their secretions may have antibacterial effects and promote angiogenesis. The debridement is also very specific for devitalised tissue. However, client acceptance may be an issue and sourcing medical grade larvae is not easy.

Autolytic debridement is the least traumatic and most specific form of debridement and maintaining wound fluid in contact with wound bed, allowing white blood cells and enzymes to act on necrotic tissue and bacteria, can maximize it. Moist wound healing can be very effectively created and supported with the topical dressings selected. The first dressing applied to an open wound after cleansing and sharp debridement should provide moisture and may provide extra benefit if it has antibacterial properties. Hydrogels are probably the most commonly used first contact layer in practice and generally contain carboxymethyl cellulose polymers, glycol and water. They are occlusive and provide an excellent environment for autolytic debridement resulting

in improved wound healing. They may also prevent dressings from adhering to the wound edges and damaging delicate epithelial cells during bandage changes.

An alternative to hydrogels is honey, and in particular Manuka honey. That appears to have additional qualities resulting in a better reduction in bacterial numbers and may improve healing, the effectiveness of debridement and reduce the incidence of infection. Recent studies have demonstrated improved healing of experimentally induced wounds in horses treated with manuka honey compared to those left untreated or treated with hydrogels, with the shortest healing times achieved in wounds treated until complete resolution, rather than ceasing once granulation was well established.

Other dressings frequently employed in the first few days after a wound are antimicrobial dressings. The most readily available and commonly used in the UK are silver ion impregnated dressings, which have been shown to reduce bacterial penetration of wounds and reduce bacterial numbers in total. They tend to be relatively expensive but have been shown to effectively kill many of the commonly encountered equine pathogenic bacteria.

Once wounds are debrided, clean and moist wound healing has been established and early granulation tissue formed (often approximately 5 days post-injury but that may be considerably longer with large defects with exposed bone or tendon), the topical dressings are generally changed. The most basic contact layer at this stage of healing is the semi-occlusive foam dressing, which is suitable for mildly exudative wounds. These are often used over the previously mentioned topical dressings also. These dressings provide a moist environment with thermal regulation, that enhances epithelialization and minimises exuberant granulation tissue. More modern dressings have a small pore size that prevents the ingrowth of cells, avoiding adherence of tissue, which is then disrupted when the bandage is removed.

Biological dressings have also been advocated at this stage to provide a framework, over which other cells migrate. These include porcine small intestinal submucosa or bladder basement membrane or equine amnion. These have been shown to improve

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epithelialization and reduce exuberant granulation tissue but overall the evidence of their advantage over a traditional synthetic nonadherent pad is equivocal. These types of contact layers can be maintained until wound healing is complete.

A very different approach to wound management has also been advocated, with the application of a ketanserin (a serotonin receptor antagonist) gel to the wound and surrounding skin, without bandaging, once the wound has been cleaned and haemorrhage has ceased. A commercially available product is applied twice daily until the wound has healed. An un-blinded positive control study on naturally occurring wounds suggested that this treatment reduced the incidence of exuberant granulation tissue and wound infection when compared to 2 alternative topical treatments without bandaging. This approach may have some value when dealing with small distal limb wounds but further comparisons between this approach and more traditional bandaging techniques are required.

Wounds that are partially or completely closed require non-occlusive dressings, which allow any exudate to be wicked away from the wound and prevent maceration of the surrounding skin. Simple foam non-adherent dressings are sufficient as a primary layer but the wound should be monitored for evidence of breakdown, at which point dressings as described for second intention healing should be used.