The Use of Occlusive Hydrocolloidal Bandages in Raptor Wound Management

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Recent advances in presentation, formulation, and utilization of human wound management products have brought about their increased use in veterinary medicine. The development of synthetic non-adherent dressings allow the application of semi-occlusive and occlusive bandages which keep the wound surface moist and prevent the formation of a scab. This has been found to increase the rate of re-epithelization and wound healing in humans and animals alike. [1, 3, 8]

Degernes[4,5,6] described avian wound classification and medical therapy extensively. Emphasis was placed on the utilization of semi-occlusive adhesive dressings (Tegaderm, 3M) for impeding desiccation and active scab formation. Nevertheless, in cases of deep wounds or areas with extensive de-epithelization, semi-occlusive bandages have only been partially successful in promoting a healthy granulation bed.

Occlusive hydrocolloidal bandages have been used for wound management in zoo animals.[3,7] Cambre[3] used DuoDERM hydroactive dressing on wounds in a giant anteater (*Myrmecophaga tridactyla*), a golden lion tamarin (*Leontopithecus rosalia*), a bald eagle (*Haliaeetus leucocephalus*), and a lilac-crowned amazon parrot (*Amazona finschi*), obtaining complete and uneventful healing in all cases. New formulations and presentations of this same product have facilitated its use in the treatment of de-epithelized or devitalized dermal wounds of raptors.

The combination of DuoDERM as a paste (Duoderm Paste) with a patch of dressing material (DuoDERM CGF) in the primary layer of the bandage has been effective in treating deep, full thickness dermal wounds with insufficient skin for surgical apposition. The dressing patch alone (DuoDERM, DuoDERM CGF) has been repeatedly utilized in full thickness wounds involving large areas (up to 5 cms in diameter) of dermal erosion and necrosis.

A thinner dressing patch (DuoDERM CGF EXTRATHIN) has been found to be highly pliable, conforming to contours and folds on the avian body. It has been used on superficial dermal erosions and patagial injuries with good results. All three modalities of primary layers have been used in the treatment of bumblefoot lesions.

The primary layer patches of DuoDERM have been adhered to the wound site by covering the application with a semi-occlusive, moisture and vapor permeable adhesive membrane (Tegaderm, 3M). Secondary and tertiary layers have also followed the method described by Degernes,[5] although many of these support bandages have become superfluous as secondary granulation and re-epithilialization progress. DuoDERM bandages are left in place until eight days after re-epithelization is complete.

The aforementioned protocol has been utilized successfully in great horned owls (*Bubo virginianus*), barred owls (*Strix varia*), a short eared owl (*Asio flameus*), golden eagles (*Aquila chrysaetos*), and bald eagles (*Haliaeetus leucocephala*). No side-effects have been noted. The product has a characteristic pungent smell when removed, and leaves a sticky residue on the skin and feathers around the site of application. This is normal, and must not be confused with pus or necrosis.[3,5] The dermal patches are non-toxic, and can withstand immersion in water without affecting its adhesive capacity. This product is not recommended for use on exposed muscle, tendon or bone.

Avian skin is high in dermal and epidermal lipids, and is thin in comparison to mammalian skin.[9,10] It is probably due to these characteristics that tissue exudation seems to be poor. The use of this form of occlusive bandaging relies on active exudate formation, since the preparation contains moisture reactive particles in a sterile, inert, hydrophobic polymer base. The polymer acts as a solid matrix to bind the hydroactive particles to the wound. When the bandage is placed over the wound, the hydroactive particles combine with the tissue exudate, forming a moist gel over the de-epithelized area. The moist environment promotes an increased rate of healing, while physically sealing out opportunistic microorganisms. The gel also allows the removal of the bandage without damaging areas that are undergoing active healing.[3] The use of this product at The Raptor Center has brought about positive results. Further studies in a controlled setting with diverse, measurable wounds in avian patients are encouraged.

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