Canine de-gloving trauma

A 7½ year old Labrador Retriever presented with a large degloving injury to his inguinal/thigh area. After stapling, the skin edges became necrotic and started to dehisce. Despite the use of oral antibiotics the wound smelled very foul.

The staples and drains were removed and the wound edges trimmed back to healthy tissue. This left a huge gaping wound of about 12inch (30cm) by 6inch (15cm) at its widest. Mattress sutures using stents to protect from pull through were used to appose the skin edges closer and a honey-based ointment was applied daily by the owners at home. In roughly one month time the wound was clinically closed without any infections or adverse effects.

Product: L-Mesitran Ointment.
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Introduction
The use of antibiotics in veterinary infection management can lead to antibiotic resistance, underlining the necessity of a judicious use of antibiotics in small animal medicine. In this case the honey ointment proved a valuable material at keeping a large, contaminated wound clean. It also established a very healthy granulation bed and kept the tissue moist, viable and free of infection. In this case honey ointment was a reasonable option to expensive, and not guaranteed, skin grafting.

Case history
On November 2, 2010 an 80 pound (36kg) 7.5 year old male Labrador Retriever was presented to the surgery with a large degloving injury to his inguinal/thigh area. The dog was dragged underneath a livestock trailer. After careful wound debridement with water and chlorhexidine scrub the wound edges were stapled together. Because it was a large degloving type of wound the skin edges became necrotic and started to dehisce. Despite the use of oral antibiotics the wound smelled very foul (fig. 1). Degloving wounds are common injuries for which skin grafting may be indicated however there should be enough skin available or even scrotum. In this particular case neither was available and with consent of the owners an experimental approach was implemented utilizing a honey based ointment as an adjunctive therapy to slowly pulling the skin together with a series of surgeries.

The staples and drains were removed and the wound edges trimmed back to healthy tissue. This left a huge gaping wound of about 12inch (30cm) by 6inch (15cm) at its widest (fig. 2). Mattress sutures using stents to protect from pull through were used to appose the skin edges closer and the honey-based ointment (L-Mesitran, Triticum, NL) was applied (fig. 3).

Due to copious drainage an attempt was made to bandage the wound using absorbent padding covered with a T-shirt. However, due the location of the wound bandaging was abandoned as they would slip off of the wound with movement. The owners were instructed to apply the ointment daily throughout treatment and the tissue remained healthy and free of infection. The dog also received oral ciprofloxacin throughout treatment.

At four days post-op the right side is healing, but the left side, where the largest gap is, had pulled through the stitches. Also, the skin on the caudal side of this gap (towards the head) is not adhering to the muscle layer. The wound was cleaned and the loose skin was tacked down with simple interrupted sutures (fig. 5). One week later the dog returned for a follow up visit. The loose skin did not adhere to the muscle and the edge had formed a thick scar (fig. 6).

The owners reported that the application of the ointment was easily accomplished and well tolerated by the patient. The skin was fenestrated in order to try to pull it closer to the opposing edge. Notice however that the right side is healing well (fig. 7).
The next day the dog was presented for a review. There was an already thickened blackened skin edge on the caudal side (fig. 8).

On November 23, 2010 (19 days post-op) another surgery was done where the bottom half of the thickened scar tissue was cut off, the skin undermined and the edges pulled together a little bit more. In less than one month (on December 1) the wound is healing well. The gap is much smaller and the skin is adhering better to the muscle layer (fig. 10).

The skin shows healthy granulation and remains free of infection. Oral antibiotics were discontinued at this time. The owners reported that by December 25, 2010 the wound had completely healed. We were unable to arrange a follow-up photograph of the completely healed wound.

In human wound management the use of medical grade honey based products has been well documented citing its antimicrobial properties, stimulation of new tissue growth and its clinical use in e.g. MRSA infected wounds.

The efficacy of honey in the healing of cutaneous wounds of rabbits was studied on the basis of histo-pathological and biochemical changes. Treated lesions showed less oedema, fewer polymorphonuclear and mononuclear cell infiltration, less necrosis, better wound contraction, improved epithelialization and lower glycosaminoglycan and proteoglycan concentration and better tissue organization and consequently an improved tissue ultimate strength and yield strength.

In this case the honey ointment proved a valuable material at keeping a large, contaminated wound clean. It also established a very healthy granulation bed and kept the tissue moist, viable and free of infection. The owners were willing to try to heal their dog, but there were financial constraints. Honey ointment was a reasonable option to expensive, and not guaranteed, skin grafting. The owners were motivated to undertake the daily routine of wound care over an extended period of time. They were extremely pleased at the outcome.

References
1. Swaim SF. Skin grafts. In: Slatter D, ed. Textbook of Small Animal Medicine (AVMA). The question thereafter is: what alternatives are there to the control group9. Rabbits were used to show that the topical use of honey as wound dressing after surgery reduces duration of healing and width of scar more than povidone iodine and that it is a good alternative for stimulating and improving of surgical wound healing. Wistar rats showed a marked increase in the activities of all the glycolytic enzymes in the experimental wounds when compared to control, suggesting that honey could provide sufficient energy for cellular activity needed for the repair process.

In clinical veterinary wound management there are oddly enough only a few published articles on the use of honey based products. Again the efficacy against MRSA, VRE, E. Coli and a range of other bacteria is reported. Honey has been used successfull in the management of an infected wound in a trumpet swan and equine wound management. A single blinded, randomized, prospective pilot study was done in Uppsala (Sweden) to evaluate the effect of a honey-based ointment in the treatment of surface pyoderma in dogs and for the treatment of pyoderma in dogs. This pilot study showed that the honey based product (L-Mesitran) is effective for treatment of surface pyoderma in dogs and that the ointment is safe to use. It is as effective as 3% chlorhexidine shampoo treatment. The pet owners considered the treatment with ointment easier to perform compared to washing with antibacterial shampoo.

The author recognizes that more research on larger sample groups in the practical setting of veterinary clinics is necessary. However, the already available research points out that honey and honey based dressings can be a very effective alternative to antibiotics.

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References