

Canine gangrenous mastitis : A report case

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This report describes the treatments and discusses the cost effectiveness of a NPWT device on gangrenous mastitis. Mastitis is an inflammation of the mammary gland found mainly in lactating females. Coliforms (*Escherichia coli*), *Staphylococcus* spp (*Staphylococcus aureus*) and, to a lesser extent, *Streptococcus* spp are the most commonly isolated organisms in bitches. The bitch can be presented because of local signs of inflammation, puppies failing to thrive or even severe septic shock. While more common in ruminants, gangrenous mastitis is rare in the bitch. It is mostly due to *Staphylococcus aureus*, a gram positive and catalase positive bacteria producing alpha hemolysin. This toxin binds to ADAM10, a transmembrane protein, forming pores in the cell membrane, causing an acute inflammation via intracellular calcium flow, leading to severe oedema, necrosis and gangrene. Loss of skin integrity also comes from the cleavage of E-cadherin by ADAM10 after its toxin-mediated activation. A 8.7kg, 3-year-old neutered female Sheltie farm dog was referred to the Veterinary Clinic of the University of Liège for suspicion of septic peritonitis after an ovariohysterectomy on 4 dead puppies 36 hours earlier. Amoxicillin-acid clavulanic and enrofloxacin antibiotherapy had been initiated during surgery. The dog was in decompensated septic shock. The surgical wound was not reactive and no sign of peritonitis was seen by abdominal ultrasonography. The right inguinal and the two most caudal left mammary glands were swollen, crackling with a patchy blue discoloration. An acute fulminant mastitis with gangrenous involvement and sepsis was diagnosed. Fluids and continuous rate infusion of norepinephrine and dobutamine were administered to control severe hypotension. Metronidazole was added since *Clostridium* spp could not be excluded. Debridement was started as soon as the arterial pressure was stabilised and the wound was disinfected with hydrogen peroxyde for the 3 first days. While hydrogen peroxyde is indicated for catalase negative infections, the already started antibiotherapy prevented bacterial identification and sensitivity determination. Alginate-honey patches replaced wet to dry bandages after 4 days. After 7 days of progressive debridement, the wound was 15cm long, 13cm wide and 1.2cm deep. A Negative Pressure Wound Therapy (NPWT) device was placed under anaesthesia after extensive debridement. It was kept in place for one week with one renewal after 2 days under slight sedation. The wound was then surgically closed. Cutaneous sutures were removed 10 days later as cicatrization was satisfactory. NPWT is indicated in open wound management, for infection control and for stimulating granulation tissue production prior to reconstruction. It increases contraction in deep, three dimensional wounds. Closure rate is significantly shorter with NPWT than with standard wet to dry bandages. Cost of NPWT is comparable to standard bandages but more comfortable for the patient. Standard bandages require daily changes, sometimes for several weeks and under repeated anaesthetics, which may be debilitating for the patient and expensive for the owner. Conversely, NPWT is changed only once and allows earlier surgical closure of the wound. The main complication is vacuum loss, which is surgeon's experience dependant.