

SURGICAL MANAGEMENT OF SEVERE TRAUMA INVOLVING GROUP OF MUSCLES AROUND THE BRISKET OF DONGOLA BREED OF HORSE: A CASE REPORT

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ABSTRACT Background: Equine wound management is challenging to the veterinarian in practice. This paper presents the successful management outcome of a large wound on the brisket of a seven and half years old Dongola Stallion horse sustained from a road traffic accident. **Case Summary:** There was traumatic shearing off of the skin including the dermis and fascia of the thoracic inlet beginning from the ventral caudal end of the neck to the cranial border of both shoulders and there were two open wounds on the medio-cranial aspect of the right tibial region just below the elbow joint. All physiological parameters were within normal range. Continuous suture and interrupted patterns were used during the surgical procedure until all the exposed muscles were apposed. **Conclusion:** The surgery was successful, with good post operative care, the wound healed properly.

KEYWORDS Horse, wound, accident, surgery, Dongola

Introduction

Wounds constitute the most commonly encountered injuries in equine practice (Westgate et al., 2010; Pollock, 2011). Due to the horse's nature and the environment in which it lives, wounds frequently involve a significant amount of tissue trauma. Legs caught in fences, panels, wire, or gates are a frequent occurrence, as are lacerations from steel siding, trailer accidents, kicks, and riding accidents. As a result, equine ambulatory practitioners typically see a relatively large number of cases presenting for wound care. Enormous variation exists in treatments, medications, bandages, and bandaging techniques applied to wounds in horses (Theoret, 2008; Gomez, 2008). In pathology, wounds

remain a challenging clinical problem, with early and late complications presenting a common cause of morbidity and mortality (Natarajan et al., 2000). A wound is a breakdown in the protective function of the skin or loss of continuity of epithelium, with or without loss of underlying connective tissues, muscles, nerves, bones following injury to the skin, surgery, a blow, cut, chemicals, heat, cold, friction, shear force, pressure or diseases such as leg ulcers or carcinomas (Velnar et al., 2009; Fernandez and Griffiths, 2015). Wound healing is a homeostatic mechanism for restoration of physiological balance and is triggered by the interruption of the connection between adjacent cells or cell death. The healing process consists of a sequence of overlapping events including inflammatory responses, regeneration of the epidermis, shrinkage of the wound and finally connective tissue formation and remodelling (Leaper and Harding, 1998; Choucair and Phillips, 1997).

Indeed, it seems that of all the species dealt with by veterinary surgeons, the horse is particularly prone to wounds. Reasons for higher incidence of wounds in horses than other species may be due to the conditions in which horses are kept, the type of work they are involved in, and the potentially "flighty" equine temperament. (Pollock, 2011). Wound infection is a challenge to wound management and wound infection and dehiscence can

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occur in both surgically or trauma-induced wounds (Carter et al., 2003; Westgate et al., 2010). Factors that influence infection include integrity of the wound and its perfusion, the wound repair process, bacterial challenge and host immunity. The management protocol employed in equine wound may also determine the outcome of such wounds. Equine wound management is challenging to the veterinarian in practice (Carter et al., 2003). This paper presents the successful management outcome of a large wound on the brisket of a horse sustained from a road traffic accident involving both the horse and its rider.

Case Presentation

A seven and half years old Dangola Stallion was presented to the veterinary Teaching Hospital of the University of Ibadan following a road traffic accident involving it and its rider. The horse, owned by the mounting department of the State Police, was ridden on the highway and had collided with an on-coming vehicle. There was traumatic shearing off of the skin including the dermis and fascia of the thoracic inlet beginning from the ventral caudal end of the neck to the cranial border of both shoulders and there were two open wounds on the medio-cranial aspect of the right tibial region just below the elbow joint (figure 1). The horse also favoured both hind limbs. The temperature, respiratory rate, heart rate and pulse rate were 38.5° C, 72 breaths/min. 50 beats/min and 52/min respectively. All were within normal range. The mucous membrane was pink. Its weight was estimated as 220kg.



Figure 1: Wound presented to the Veterinary Teaching Hospital.

Management

The horse was placed on intravenous fluid (15litres Hartman's Solution, Danax®) and given xylazine hydrochloride (XYL-M2®, VMD, Holland) intramuscularly for both sedation and analgesia at a dosage of 2mg/kg body weight.

Surgery

The wounds were thoroughly irrigated with normal saline to remove all dirt and all loose and unviable flesh was trimmed. Following site infiltration with lignocaine hydrochloride, the exposed muscles were closed layer by layer (figure2) using 2-0 and 1-0 chromic catgut sutures (Ethicon, USA), using continuous



Figure 2: Wound repair in progress

suture pattern until all the exposed muscles were apposed. The edges of the skin flap were trimmed and closed with 2-0 nylon suture (Ethicon, USA), using simple interrupted suture and continuous patterns. The two open wounds on the medio-cranial aspect of the right tibial region just below the elbow joint were also sutured using 2-0 nylon suture (Ethicon, USA), with simple interrupted suture pattern.

Post-operative care

Tetanus toxoid was administered 1500i.u and penicillin-streptomycin antibiotic. (PENSTREP 20/25, Kepro B.V., Holland at a dosage of 1ml/25kg for 5 days) intramuscularly. Oxytetracycline spray (Holland) was sprayed on the wound after closure (figure2). The sutures were removed a week later following wound dehiscence although significant wound contraction had taken place (figures 3 and 4).



Figure 3: Wound repair completed.

Discussion:

The wounds of this horse were closed primarily. Primary repair of the wound is the preferred treatment for wounds that involve detachment of skin with maintenance of an intact blood

Table 1 Timeline

Dates	Medical History	Diagnostic testing	Interventions
	No previous case	None	None
12/02/2017	Wound from road accident	Physical examination, Respiratory rate, Heart rate, Rectal temperature	Surgical wound repair



Figure 4: Showing wound management by 12th day.

supply (Hansen, 2008). Tissue integrity and perfusion, wound repair processes, and bacterial challenge and host responses heavily influence infection. Excessive tension of sutured skin often also lead to complications of healing because of local ischemia with pressure necrosis of the surrounding skin and the pull through of sutures at the skin edge with subsequent wound disruption. Both surgical and traumatic wounds can fail to heal and become chronic but traumatic wounds are more commonly affected by healing difficulties. A large number of horse trauma wounds progress to chronicity making wound healing management plans more complex. Trauma wounds are very important in horses because of the high prevalence (Collins et al., 2000; Singer et al., 2003). The incidence of wound infection appears higher in horses than in small animals and man (Cruse and Ford, 1980; Levy et al., 1988). One factor responsible for this is the high number of resident microbes on horses' skin (Westgate et al., 2010).

CONCLUSION:

Careful management is important for successful treatment of horse wounds. Wounds should be assessed quickly and carefully and aseptic surgical techniques meticulously employed. Post-operative care was done conscientiously and appropriate antibiotic treatment regimens employed.

COMPETING INTERESTS

The authors declare no conflict of interest. Written informed consent obtained from the patients for publication of this article and any accompanying images.

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