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MANAGEMENT OF ACUTE WOUNDS – FIRST RESPONSE

Effective management of acute wounds can alleviate pain, reduce the time to complete healing and in some circumstances, avoid the loss of the animal. Owners are often distressed and sometimes require clear (and firm) instruction to prevent them from being injured during their attempts to provide first aid.

Initial assessment should always include a clinical exam of the horse and obtaining a full history from the owner. A description of the last time the horse was seen normal if they didn't witness the incident can give a better idea of a likely timescale than asking when it happened. Finding the cause of the trauma can be helpful in formulating a plan, for example a barbed wire laceration near a synovial structure may be more likely to have penetrated the joint than a plain wire injury and wooden branch injuries are more likely to have left significant foreign material within the wound than those created by metal nails.

Physical examination should start from a distance, with attention paid to lameness, evidence of blood loss and general demeanour. In human trauma management the *ABCDE (Airway, Breathing, Circulation, Disability, Exposure)* system is used routinely. *Airway* obstruction is rarely associated with wounds except those associated with the face and neck. Abnormal patterns of *breathing* can be associated with those or with injuries to the neck and thorax, in particular those penetrating the chest or causing rib fracture which can cause anomalous chest movements with diaphragmatic breathing. These are most often associated with falls, road traffic accidents and collisions with gateposts. Penetrating wounds of the chest are rare and won't be discussed at length but achieving a rapid seal of the thoracic cavity is vital before referral to a suitable hospital. This is usually best achieved by using large (5 metric) gauge, monofilament suture material in a vertical or horizontal mattress pattern to create a skin seal.

If there are concerns regarding blood loss, an assessment of *cardiovascular status* should be made, as heart rate and peripheral circulation will respond rapidly to a reduced circulating volume. Since heart rate is also affected by pain, care should be

taken in interpreting that alone. Colour and hydration of mucus membranes and extremity temperature (ears are more reliable than feet) can also give an indication of cardiovascular status. In many instances haemorrhage is best controlled by applied pressure initially. Haemostatic battlefield dressings have been developed recently which may increase the speed of clotting but they are largely untested in horses. Applying a tourniquet proximal to a lower limb wound can be useful to allow evaluation of a lower limb wound and more accurate location of a large vessel but even with those in place it is often quicker and easier to simply apply a large pressure bandage initially.

Lameness (*Disability*) is particularly important in the assessment of limb wounds but shouldn't be ignored in any situation where a traumatic incident has occurred. Whilst that can be an indication of a major long bone fracture, splint bone and tendon injuries and synovial infection are a more common concern with equine limb wounds. Care should be taken when assessing not only where the wound is at rest, but also, where the skin could have been stretched to during a kick or with the limb flexed. Consideration to the relevant anatomy will be discussed during the talk. If there is any suggestion of bone damage then radiography is indicated but ultrasonography can also give an indication of surface disruption of bony architecture. It is also invaluable for assessing tendon damage and can contribute to knowledge of synovial involvement

Exposure is rarely a consideration in the UK but should not be ignored if a patient has been trapped and motionless in an exposed or wet environment for a prolonged period prior to discovery. Horses trapped in watercourses often lose significant body heat quite quickly so are at risk.

Once the wound has been assessed and the patient stabilized if required, attention should turn to treatment and resolution of the injury. This can potentially be delayed if a pressure bandage is required to control haemorrhage or if synovial involvement needs to be investigated. The first step towards healing is cleaning the surrounding tissue and removing as much contamination (organisms and foreign material) as possible. That is most effectively achieved with wound resection (which is better than debridement) and lavage. Even in wounds that are to be left open to heal by second intention that is a process that will speed healing. Where possible, primary closure is preferred as it greatly

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reduces the time to return to normal function and can reduce costs and rehabilitation time. That should not be attempted if it will require too much tension on the skin flap or if underlying tissue is compromised and drainage of dead space is required. My preference is for a combination of nylon sutures in a vertical mattress pattern combined with skin staples to improve apposition and cosmesis. In wounds with very little tension, skin staples alone are quick to apply with minimal foreign material within the wound space.

In wounds where tissue loss and tension makes primary closure impossible then healing by second intention is necessary. That can also be used to facilitate drainage from heavily contaminated wounds or from those where large pockets of dead space would be created by closure. The judicious use of drains and cast immobilization at the outset or following a short period for autodebridement will be discussed during the presentation as both of these can contribute to a faster resolution with less overall expense.