Management of Wounds in Horses

Horses are “fight or flight” animals and have a great propensity towards skin wounds which generally occur while avoiding a potential threat, are surprised, or by accident. Oftentimes horse owners are faced with the dilemma of examining a wound and determining whether or not a veterinarian needs to be contacted. The aim of this article is to clarify some differences between wound types with regards to severity and prognosis, as well as provide an overview of current concepts in wound management.

Abrasions are wounds involving only the superficial layers of the skin. As they are generally not all the way through the skin, they can not be sutured. They may however be very painful and can cause a great degree of lameness. If severe, they should be closely evaluated to make certain that no portion of the abrasion goes full thickness into an important structure. Generally they respond well to hydrotherapy, sweat-wraps and anti-inflammatories (“bute”). Horses do get bruises or contusions, they are just more difficult to see than in humans because of their thick hair coat. These are treated according to severity.

Puncture wounds typically create a lot of necrosis of deep muscle tissue and are generally treated by daily lavage (“flushing”) and antibiotics. Because of the degree of deeper trauma, oftentimes these are not closed primarily but are allowed to heal by second intention. One common puncture wound is nail punctures to the feet. Where the nail goes is of paramount importance and can be very difficult to determine once the nail is removed. For this reason, most veterinarians recommend leaving the nail in place until an X-ray can be taken to determine what structures are involved (see figure 1). Most don’t involve vital tissues and are managed similarly to foot abscesses. Those that involve vital structures (primarily the navicular bursa) are very important and managed aggressively like infected joints discussed later in this article.

The most common type of wound in horses is a laceration (“cut”) of the face or limbs. Most lacerations can be sutured if caught early enough and should be evaluated by a veterinarian. Most wounds if sutured will heal in 2 weeks with minimal scar formation. As in people, laceration repairs in horses sometimes fail. If this occurs contact the veterinarian who performed the repair as he or she may want to re-evaluate the wound and change game plans. When a laceration is
sutured closed, it is said to heal by 1st intention or “direct” healing. A laceration allowed to heal on its own by heals by 2nd intention or “indirect” healing. Sometimes veterinarians allow a wound to be treated under a sweat wrap for 1 or more days prior to closure, this is “delayed primary closure”. Delayed primary closure is sometimes used when a laceration has passed the “golden period” which is the time (approximately 6 hours for the average wound) in which a wound is likely to be managed by suturing because contamination and/or infection has not become established.

The BIG thing is that if the wound is over a synovial structure (a joint, tendon sheath or a bursa) it needs to be treated immediately as wounds involving these structures can be life threatening. Tendon sheaths occur in front of and behind most joints of the limbs of horses. They serve to provide fluid identical to joint fluid to lubricate tendons as they glide over bony prominences. A bursa is a synovial fluid filled sac which, like a tendon sheath, serves to facilitate tendons gliding over bony prominences. The navicular bursa is often treated in navicular disease, distension of the olecranon bursa is a “shoe boil”, and distension of the calcaneal bursa is a “capped hock”. It can be difficult to determine if a wound involves a synovial structure (joint, tendon sheath or bursa) but a good rule of thumb is if a wound is within a hands breadth of the middle of a joint, involvement of a synovial structure is more likely. More on this later.

So, if you identify a laceration on a horse under your care, the following steps should be taken. First evaluate the degree of bleeding or hemorrhage. If you can “count the drops” as the wound bleeds, you have plenty of time to treat the wound. If however, there is a steady stream of blood shooting from the wound under pressure in veterinary school they preach “Don’t Panic, Apply Direct Pressure, Clamp, & Ligate”. The first two things, don’t panic and apply direct pressure should be performed by the caretaker. Direct pressure will decrease most hemorrhage to a safe level. This can be accomplished with a towel, gauze or even just a hand until a bandage can be applied. Bandage material should be a part of everyone’s first aid kit at the barn and in the trailer. A bandage of just good thick cotton material and “vet-wrap” is generally sufficient to maintain pressure on a lacerated vessel until a veterinarian arrives. If hemorrhage is minimal or it has been controlled the wound should be thoroughly cleaned. Betadyne or Nolvasan are the two anti-septics used most commonly in horses and both are very effective. Cold hosing a wound is a good first line of defense followed by thorough scrubbing with an anti-septic. Once the wound has been cleaned, it is generally safe to apply an antibiotic ointment (Furacin, Nolvasan, Silvadene etc) and a light bandage if possible.

This is now the time to contact a veterinarian. You have assessed the wound location and can provide a reasonable description of the wounds proximity to the nearest joint, as well as the thickness of the wound and applied first-aid. It will be the call of the veterinarian whether or not a visit is indicated. If you can pull the skin edges apart, it is a full thickness laceration and most
veterinarians will recommend an evaluation unless it’s very small and in a safe spot. Virtually any equine veterinarian can tell you horror stories of very small wounds in a bad spot that were not properly managed and led to the horse’s ultimate demise so they don’t mind being consulted.

The vast majority of wounds are superficial and do not involve any vital structures. In general, they will be managed by having the surrounding hair clipped and being thoroughly cleaned, the edges of the skin around the wound “blocked” with a numbing agent (lidocaine or carbocaine) and primary closure will be attempted. Wounds of the lower limb may not be blocked directly but be desensitized by having their nerve supply temporarily deadened. Some wounds because of their location or the nature of the patient require general anesthesia. Oftentimes, wound edges will be “freshened up” by trimming the margins. This makes a traumatic wound more like a surgical incision which tends to do better. Whether or not they will need to be covered by a bandage generally depends on veterinarian’s preference as well as location (most wounds of the lower limb are bandaged). The same is true about indication for antibiotics. All wounds and circumstances are different and some don’t mandate antibiotics at all while others require several weeks of intravenous antibiotics. Most are managed with oral antibiotics administered by the owner under the guidance of the veterinarian. The lower legs and face are probably the most common sites for lacerations. Wounds around the face have a very good blood supply and usually heal very well with primary closure. In many instances, the same wound on a leg would be allowed to heal on its own but on the face closure is attempted. Typically the sutures will be removed from any of these wounds in 12-14 days.

Wounds involving the foot, especially the heel bulbs are under a lot of tension while horses walk which is why they are frequently managed by a “foot cast” (figure 2). This is a cast that you can generally manage at your barn as it does not extend up above the fetlock. Heel bulb lacerations tend to heal much better in these casts and you actually probably save considerable money in the long run as several bandages typically cost more than one cast. These casts are typically removed in 2-3 weeks.

Another way to manage wounds that are under tension, especially those further up the limb is the use of “stents”. Stents are just devices that distribute the pressure of the suture over a wider area. This can be accomplished with plastic tubing placed between the suture and skin, buttons, and a whole host of other ways.

Lacerations involving joints are a whole different thing. Once a wound communicates with a synovial structure, it is assumed that the structure is infected, and it does not take very many bacteria at all to do this. Septic arthritis is the result of an infected joint and due to the damage the bacteria cause to the
cartilage and surrounding structures as well as the amount of pressure exerted on the joint capsule as fluid pressure rises, horses can be as lame as if they had a fracture. The resultant arthritis can be severe enough to cause permanent lameness. Also, the “good leg” opposite the wound now has to bear more than its fair share of the horse’s weight which can lead to laminitis. Whether or not a synovial structure is involved is the first thing your veterinarian will try to determine. If that assessment cannot be made visually, further precautions are necessary. If a wound is near a joint for example, the surrounding area is typically cleaned very thoroughly and a sterile needle will be placed into the joint away from the wound (Figure 3). The joint is then distended with sterile saline and the wound is closely inspected for fluid leakage. If fluid injected from a syringe away from the wound comes out of the wound, you have communication from the wound to the joint and a life threatening condition.

The good news is modern medicine has made huge advances in the management of infected joints. The bad news is it is not always successful and is very expensive to treat. Infected joints are generally treated by lavaging large volumes of sterile fluid through the joint to flush out the bacteria and the toxins the bacteria produce. This is typically done under general anesthesia. A regional limb perfusion is a procedure that can also be of tremendous value (Figure 4). With a regional limb perfusion the target area of the limb is isolated by one or two tourniquets, and a large dose of a very potent antibiotic is placed in a vessel near the wound. The tourniquet holds the antibiotic near the wound for 20-30 minutes and allows the area to be “supersaturated” with the antibiotic. The levels of antibiotic achieved at the wound are not attainable by conventional routes.

Systemic antibiotics will also be a big part of the management of these wounds and are typically given by the intravenous and or intramuscular route as these antibiotics are usually better suited than oral antibiotics. The prognosis for soundness varies tremendously with wounds involving infected joints and are determined on a case by case basis.
Lacerations involving tendons are another major cause for concern. The tendons of the distal limb run directly in front and behind the legs. If while examining a wound you notice glistening white tendon like material in the wound, have a handler hold the horse still until a veterinarian can get there as soon as possible. The severity of tendon lacerations depends on location and extent of damage. In general, tendon lacerations of the front of the limb ("extensor tendons") do well, lacerations involving the tendons of the back of the limb ("flexor tendons") are serious. Full thickness involvement is obviously more serious than partial thickness ones as is multiple tendon involvement more serious than single tendon involvement. Hindlimbs have a better prognosis than forelimbs with tendon lacerations and infected joints because they don't have to bear the weight of the head and neck. Flexor tendon lacerations are generally managed with some form of cast or splint and prognosis for full athletic soundness varies but is not typically great (Figure 5).

In summary, most wounds should involve at least a phone call to your veterinarian, especially if they are near a joint or tendon. Being familiar with basic anatomy will be of tremendous value in helping describe wound location and how serious they are. Have your veterinarian help put together a first-aid kit for your barn or trailer and become familiar with its contents. Doing all the initial steps right are the biggest keys to a successful outcome.

Figure 1- Radiograph showing a nail puncture to the foot that missed all vital structures.
Figure 2- A foot cast extending up to the mid-pastern area.
Figure 3- Sterile fluid being injected into a fetlock joint to determine if the wound communicates with the joint.
Figure 4- A regional limb perfusion of a horse with an infected joint.
Figure 5- A splint supporting the back leg of a horse with a severe flexor tendon laceration.

Tim G. Eastman DVM, DACVS, MPVM was raised in Monterey County California where his family had deep roots in the local horse industry. Like many veterinarians, he decided to become an equine veterinarian at a very young age. He obtained a degree in Animal Science at Cal Poly San Luis Obispo and a business minor. He also obtained a doctorate in Veterinary Medicine from the University of California at Davis in 1996' as well as a Master's Degree in Preventative Veterinary Medicine. He performed a one year internship at Littleton Large Animal Clinic in Littleton Colorado and then a 3 year surgical residency at Texas A&M University in College Station Texas. He met his wife, Alexandra (Alex) in veterinary school and got married during his surgical residency. They now work together as co-owners of Steinbeck Country Equine Clinic in Salinas California.