

Cut to the Quick?

by Hannah Mueller, DVM

Accidents happen, and occasional wounds are a fact of life. Recognizing and dealing with your horse's injuries in a holistic way helps ensure successful recovery.

You go out to the field to catch up your horse for a ride, and notice blood on one of his legs. He must have hurt himself playing with his pasture buddies. What should you do?

Knowing a bit about wound healing is important for successful holistic wound care. Treatment options can vary based on the type or stage of a wound. Having a first aid kit and your veterinarian's number close at hand are also important. Of course, prevention is key, but accidents can happen to all of us, so be prepared.

Wound Types

Wounds come in all shapes, sizes and types. There are open wounds (lacerations and punctures) that cut through the skin; closed wounds (contusions) that cause bruising under the skin; superficial wounds (abrasions) that only extend partway through the skin, and combinations of all of the above.

- **Abrasions** generally heal with minimal treatment and are at low risk of infection. However, immediate treatment can help accelerate healing. I start with Traumeel homeopathic cream after using a topical disinfectant (chlorhexidine, betadine or Equilite's The Sauce). Following up daily topical treatments with Traumeel or ointments containing aloe vera and vitamin E (such as RestorAid EQ) also help keep the wound from drying out, and aid in healing. Boosting systemic vitamin E and omega-3 fatty acids with oral vitamin E supplements (such as Elevate W.S. by Kentucky Performance Products and 1/3 to 1/2 cup per day of ground flax seed, respectively) can help with skin healing and new hair growth.
- **Contusions** are a result of significant tissue trauma that doesn't break the skin. Hematoma or bruise formation occurs, and swelling can be significant. Immediate cold therapy is the first line of defense. The area should be cold hosed or iced for ten to 15 minutes every two to three hours over the first 72 hours. Arnica is also very important, and should be in your first aid kit. It can be applied topically in the form of creams or liniments (Traumeel and Sore-No-More Gelotion) and/or given orally as a homeopathic treatment. Oral anti-inflammatories should also be used, depending on the severity of the wound. For serious wounds, non-steroidal anti-inflammatories (NSAIDs) should be used. Bute is the traditional NSAID used for wounds, but many horses are sensitive to it and suffer GI upset and ulcers. When possible, use Equioxx (firocoxib), a COX-2 selective NSAID, which basically means fewer side effects. For less serious wounds, herbal anti-inflammatories such as devils claw and yucca (Equilite's Ani-motion, B-L Solution) can be used. After the area has been iced and treated topically, apply a compression wrap if possible to prevent further swelling.

- **Open wounds** (lacerations and punctures) are often the most serious, and will require the most intensive treatment. When in doubt, call your vet out! These wounds extend through the full thickness of the skin, and often into deeper tissues. Both punctures and lacerations should receive immediate veterinary care so the extent of the wound can be properly explored and an appropriate treatment plan initiated (cleaning, suturing, flushing, drain placement, etc). In many cases, antibiotics can be avoided in clean wounds that are caught and treated immediately. Boosting the immune system with Echinacea and vitamin C is also important. Cold therapy, anti-inflammatories, and compression should be used for lacerations as they would for contusions.

Damage Control

Some lacerations and punctures look minor at first glance, even though they are very serious. The location of the wound is important. Two wounds of equal size and depth can have very different treatment needs and outcomes if in different locations, such as a wound over the lower leg versus one on the hindquarters. There are very thin subcutaneous layers between the skin and tendons or joints on the lower legs, whereas thick layers of muscle lie below the skin on the hindquarters.

Wounds into muscle generally heal well with clipping, thorough cleaning, and suturing, etc. If the wounds are very deep (such as a puncture from a T-post -- hence all T-posts should be capped!) they may need surgically placed drains and/or regular wound flushing. Wounds on the lower legs need to be explored by your veterinarian to determine if there is tendon or joint involvement. When joint capsules and tendon sheaths are penetrated, life threatening lameness can result if it's not treated properly.

Lower leg injuries can also take longer to heal due to poor circulation and friction from joint movement. Limbs may need to be immobilized with splints, and should be protected with bandages for healing to occur. Proper bandaging is important -- be sure to have your veterinarian show you how. Bandages should start with a sterile dressing directly over the wound (non-stick Telfa, or a Kerlix AMD pad if infection is present). It can be secured with cling wrap or roll gauze. A generous layer of cotton padding should be next, followed by vetwrap and, if needed, Elastikon (adhesive elastic tape). Once the wound is no longer oozing, reusable quilted cottons and standing wraps can be used to secure the sterile dressing.

Healing Stages

There are four "stages" of wound healing. A good understanding of these will help you determine the appropriate day-to-day treatment of the wound.

1. **Inflammation:** Vasoconstriction immediately occurs to aid in clotting, and is quickly followed by vasodilatation where swelling occurs. White blood cells are brought in for the next phase. In this phase, applying pressure on the wound is very important.
2. **Debridement:** By six hours, the white blood cells are in action cleaning up the bacteria and debris in the wound. This stage results in the accumulation of pus or exudates, and continues as long as there is infection present. In this phase, frequent gentle wound cleaning and infection control are important.

3. **Repair:** By day three, granulation tissue starts to form, providing the framework for epithelial cells to grow new skin across the wound. This stage can be delayed by the debridement stage and infection. In this phase, providing the body with the necessary building blocks for wound healing and the prevention of proud flesh formation is important.
4. **Maturation:** After a few days (or longer, due to lag time), scar tissue forms and slowly remodels over time.

Good Intentions

There are also three main types of wound healing, depending on the kind of wound, time elapsed from the initial injury, and the level of infection.

1. *First intention* healing is when there is primary or immediate closure of the wound. The first 24 hours are the most important. If suturing a laceration is possible, the earlier is it done the better the outcome will be. Suturing a laceration outside the 12 to 24 hour window of opportunity greatly decreases the healing rate and increases the risk of infection and scarring.
2. *Second intention* healing is for lacerations that can't be sutured and have to be left open to heal. This type of healing happens through the formation of granulation tissue, followed by wound contraction and epithelialization (a big word for skin cell formation over granulation tissue). Second intention healing can be inhibited by proud flesh formation, a common occurrence with horses. Trypsin is an effective topical treatment to help reduce proud flesh. Significant proud flesh formation requires surgical debridement.

Alternative Treatments and Therapies

Treatment	Benefits
Comfrey	Can be used topically as a compress to relieve bruising and soft tissue damage.
Calendula	Helps reduce inflammation, control bleeding and soothe damaged tissue.
Tea tree oil	Antibacterial and antifungal for topical wound treatment.
Aloe vera	Soothes, moisturizes, and aids in wound healing.
Vitamin E (tocopherols)	Antioxidant, decreases scarring.
Clay poultice	Helpful for drawing out swelling or infection from a wound (Miracle Clay by Dynamite is an example).
Colloidal silver	Can be used topically or internally to prevent infection.
Acupuncture	Decreases pain at wound site, increases healing rate and circulation, boosts the immune system to help fight infection.
Massage	Massaging around a wound can help increase circulation and reduce muscle strain resulting from a horse guarding a wound.
Magnets	Known to increase circulation, which can aid in wound healing.
Hyperbaric oxygen therapy	Increases oxygen saturation in bloodstream and body tissues, enhancing wound healing and decreasing recovery time.
Mental stimulation	Grooming and playing in-hand games with your horse while on stall rest is important for overall happiness (and wound healing).

3. *Third intention* healing occurs when a wound is too infected or contaminated to be sutured immediately, but can be closed later. The infection is treated and a few days later the wound is surgically debrided and sutured closed.

As you can see, wounds come in all types with various treatment options. Whenever your horse hurts himself, it is important to contact your veterinarian to discuss the best treatment plan. If a treatment plan is not working well, there are many other options you can try; be sure to talk with your veterinarian about them to see if they would be appropriate for your horse. In all cases, prompt action is the key to successful healing.

Dr. Hannah Mueller is a 2004 graduate from Oregon State University College of Veterinary Medicine. She has loved, cared for, ridden and trained horses most of her life -- they are her passion. She started her own mobile veterinary practice in Monroe, Washington in December of 2004 and offers full service equine veterinary care including acupuncture, chiropractic, advanced dentistry, sports medicine and more. Find out more at www.cedarbrookvet.com.
