How to Approach Hoof Wall Surgery in the Horse

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Introduction
The tissues which are encapsulated by the hoof wall and sole are prone to injury and disease. It is not unusual that either the type of problem or the severity of the disease process requires surgical intervention. For a multitude of reasons (historical perceptions, subsequent postoperative pain, and other reasons) surgical intervention involving this anatomic site is often perceived as “no man’s land.” The procedures to be discussed have evolved through our experiences over a 40-year span. The procedures that have evolved are designed to alleviate risk to the veterinarian and patient, ensure removal of diseased tissue, simplify postoperative care, and be relatively simple without requiring expensive equipment.

Disease processes for which access to structures within the hoof wall is required include submural infections, septic pedal osteitis, sequestration of the distal phalanx, and keratomas.

Methods
Once is has been determined that the horse has a deep-seated problem that needs to be addressed surgically, the lesion location should be accurately identified so that it will be targeted precisely at surgery. Oftentimes, peculiarities in the hoof wall (e.g., draining tracts, nail holes, cracks, prominences) will serve as a precise guide to target the lesion. In the absence of these indicators, three holes can be dremmeled at the points of an imaginary triangle over the lesion location and a BB taped in each hole. The foot is then radiographed and the location of the BBs used to fine-tune the surgical entry site into the foot.

Once the entry site has been established, the surgery can be performed in the standing or anesthetized patient. This decision is based on the clinician’s experience and preference, temperament of the horse, and the extent of the disease for which access to the foot is required. In most instances, we prefer to operate on these horses standing using mild sedation and regional anesthesia of the foot, however, there are certain situations where standing surgery is not in the best interest of the horse, the handler, or the clinician, and general anesthesia should be employed.

Prior to surgery, all four feet should be trimmed since the feet that will not be operated on are often neglected once surgery has been accomplished, es-
especially if the horse remains painful on the operated limb for an extended time.

Surgery can be performed with the horse restrained in a stocks or held by an assistant. Anesthesia of the foot is provided by blocking the palmar or plantal digital nerves at the abaxial level of the proximal sesamoid bones. Hemostasis is achieved by wrapping a roll of Vetrap firmly around the fetlock joint to compress and occlude the palmar digital arteries. When the vascular tissues of the foot have been incised, bleeding will ensue until the blood trapped in the foot distal to the tourniquet exsanguinates. Visualization at the surgery site should be unobscured except for minor oozing for the remainder of the surgery. The foot is prepared for aseptic surgery using standard techniques.

Whether to enter the foot through the wall or the sole depends on location of the lesion and extent of soft tissue infection. If access to the involved tissue can be achieved through the wall of the hoof, the horse will generally be much more comfortable after surgery than if an approach through the sole is required. Occasionally, both the sole and wall need to be invaded to successfully get to all aspects of the lesion.

We use two techniques to access the submural tissues and bone within the foot. The overlying hoof wall or sole can be removed in sequential layers.

Fig. 1. A Galt trephine with a retractable pilot bit (A) can be used to gain access to structures deep to the hoof wall or sole (B).
using a motorized, handheld burr; or alternatively using a Galt trephine with a retractable pilot bit (Fig. 1). When using a motorized burr, the wall or sole is thinned until the sensitive tissue is invaded. Unhealthy soft tissue is removed with a hoof knife or large spoon curette. Infected bone is usually discolored and soft, and should be curetted to healthy margins. Galt trephines can be purchased in a variety of sizes, but three-quarter–inch and one-inch sizes are appropriate for most lesions. The motorized burr technique can be used to access all sizes of lesions and can be enlarged as needed. Additionally, it is a more cost effective technique when treating only 1–2 cases/year.

Following debridement, the surgical site is firmly packed with gauze sponges and the foot bandaged. A disposable diaper and duct tape make an inexpensive waterproof bandage. The bandage is changed the day following surgery and the site inspected for residual necrotic tissue. Loose packing of the resected defect with gauze sponges improves patient comfort. The gauze sponges can be soaked in antiseptic or antimicrobial solutions. The bandage is changed at 2–3 day intervals for the first two weeks and then less frequently as the defect cornifies. Exercise is restricted until the defect has cornified (usually 4–6 weeks); increasing amounts of exercise are initiated as lameness subsides. The decision to cover the defect with artificial hoof wall repair materials is dependent upon whether or not instability exists as a result of wall removal and/or the wishes of the owner/trainer to return the horse to work. In most instances, hoof wall repair is not necessary.

References