EXTERNAL COAPTATION: WHAT TO USE WHEN
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Key Points
- Splints can be made using wood, metal, PVC pipe, or cast material
- External coaptation should be placed over an effective pressure bandage
- Care must be taken to no cause further damage to the injured limb
- Preparation is critical to be prepared for treating horses with external coaptation

External coaptation is uses in horses with skin lacerations, tendon and ligament injury, and or fractures. The location and type of injury will guide the veterinarian with regards to the type and location of the external coaptation. Appropriate diagnostics should always be performed prior to placement of any external coaptation in order to make sure that the technique chosen will benefit the horse. Improperly chosen or placed external coaptation can actually be detrimental to the horse. Further or iatrogenic trauma should be avoided at all costs.

After the initial physical examination to determine the systemic status of the animal it is time to closely examine the affected area. This will often times require some type of sedation and/or local anesthesia. You must remember that if a horse has lost a significant amount of blood, or is severely dehydrated some sedatives (acepromazine, xylazine) can cause circulatory collapse. It may be beneficial in these animals to use other agents such as manual restraint (twitch etc.) or local anesthetic for the examination of the injury. Profound sedation should be avoided in the case of fracture in order to limit instability.

External coaptation techniques include; bandages, splints, and casting material. If there is a wound in the skin, the appropriate primary dressing (hypertonic saline, antimicrobial, calcium alginate, or semi-occlusive foam) should be placed directly over the wound. The primary dressing should be secured with an antimicrobial dressing, and covered with multiple layers of sheet cotton, combine cotton, or roll cotton as a compression layer. The amount of compression material is important. Too little will often result in uneven pressure from the overlying splint, too much, and the splint or coaptation is less beneficial because it is too far from the leg, or adds too much weight and acts as a fulcrum. The compression layer is compressed and held in place by a 6 inch gauze, and covered by Vet Wrap, Elastacon, Equisport or some other equivalent material.

There are many different types of splints available, including commercially available and "home made" varieties. The most commonly used commercial splint is the "Kimsey Splint". It is an aluminum splint that has a cradle for the foot and a bar that proceeds proximally on the dorsal aspect of the leg. The splint comes in a standard size that end just below the carpus, or with and extension that goes all the way to the elbow. The splint comes in various sizes. The splint incorporates nylon straps with velcro to fasten the splint to the leg. This type of splint is valuable for almost any type of injury. The main drawback is the cost of the splint. Other materials that are commonly used for splints include, PVC pipe, Wood, and casting material. These materials have the positive aspects of being relatively cheap, and accessible. The author’s recommendation is to keep some PVC pipe cut into 4-6 foot lengths, and 3-4 inch widths. It is important to begin with around a 6-8 inch diameter pipe that has a wall thickness of at least 1/4 inch. They are cut into 6 foot lengths with an
appropriate saw and then cut into 3-4 inch wide strips with a radial hand saw. The edges are filed to minimize any sharp edges. The splints can also be bent with a propane torch to make almost any configuration needed, although the bending will weaken the splint to some extend. Splints can also be made from cast material. Generally a bandage is placed on the affected limb, then a roll of cast material is placed in water and unrolled on the front or back of the limb, but not around the limb. This is allowed to dry, and incorporated into the bandage. These allow more perfect form fitting than does a PVC splint, but are generally more expensive, and not as strong. Splints should be secured over a good pressure bandage with 2 inch wide tape.

Tendon or Ligament Disruption
Most cases of tendon or ligament disruption are associated with lacerations of the overlying skin. Laceration of the extensor tendons is not a serious or potentially life threatening as is laceration of the flexor tendons. Coaptation of lacerated extensor tendons usually involves placement of a cast, firm bandage and splint, or firm bandage alone. There is much less tension on the extensor than the flexor tendons. Laceration of the flexor tendons has a much greater potential for ending the career of the horse. It is generally accepted that reconstruction of the tendon as well as some type of external coaptation (such as a cast) is necessary for any attempt at a successful outcome.

Fractures
Most horses with fractures need to be referred to a facility that can deal with the problems of fracture repair. The objective of first aid in this instance is to minimize continuing trauma to the leg during transport. In order to have a successful outcome, it is highly desirable to maintain the integrity of the surrounding soft tissue, and prevent the fracture from becoming open. If a fracture is suspected, it is usually prudent to place a bandage and a splint on the leg prior to radiographing or other manipulations. The type of splint and application of the splint will vary with the location of the fracture.

Phalanges and distal metacarpus/metatarsus
In this type of injury, a splint placed on the dorsal aspect of the limb is the most beneficial. This aligns the dorsal cortices of the bones, and allows for the best biomechanical properties. The splint begins at the bottom of the hoof wall and extends to the carpus. The leg is pulled up to the splint. The padding in the bandage should not be excessive as this may allow movement of the fracture ends.

Mid forelimb (mid-metacarpus to the distal radius)
In this type of injury, the use of a Robert Jones Bandage and rigid external splints are helpful. The splint material must extend from the elbow to the ground. Two splints should be used, place at the caudal and lateral aspect of the limb at 90 degree angles.

Mid and proximal radius
Fracture in this area are best stabilized by using a Robert Jones bandage in conjunction with two splints as described above. The only difference is that the lateral splint should extend up the lateral side of the shoulder.

Proximal to elbow
Generally the musculature surrounding these bones is substantial enough to support the fracture. Splinting here is used to support the lower limb. A bandage and a splint fixing the carpus in extension is helpful.

Mid and proximal metatarsus
        Splints placed caudally and laterally from the ground to the tuber-calcis.

Tarsus and Tibia
        Fractures in this area are difficult to splint adequately, primarily due to the reciprocal apparatus. A single lateral splint is placed from the ground to above the stifle to decrease abduction.

Femur
        Fortunately fractures of the femur rarely require splinting because little can be done with splinting to help.

        In moving a patient with a fracture, the transportation vehicle should be brought as close to the animal as possible to decrease the amount walking the horse needs to do. Horses with a fractured forelimb should be transported facing rearward to assure that their weight is thrown onto their two sound limbs when the vehicle stops. A horse with a rearlimb lameness should be facing forward for the same reasons. The horse should be strictly confined while being hauled to allow them to support themselves on structures such as the chest and rump bars and the center partition.