A Simple Method of Splinting the Equine Carpus

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Immobilization of the equine carpus is a necessary component in the management of a variety of injuries. This report describes a simple way to accomplish this with a splint using readily obtainable materials, which can be accomplished relatively easily in the standing patient. Author’s address: Elgin Veterinary Hospital, Inc., PO Box 629, Elgin, TX 78621; e-mail: RLewis7752@aol.com. © 2013 AAEP.

1. Introduction

Immobilizing the equine carpus in an extended position may be indicated in the management of radial nerve paralysis and selected cases of ulnar or olecranon fractures and to aid in healing of some soft tissue injuries of the carpus, particularly on the dorsal aspect. Immobilization is an important component of emergency management of cases that have sustained multiple carpal bone fractures (crushed carpus) resulting in carpal instability. This also applies to some fractures of the distal aspect of the radius, as a means of stabilization of the limb before surgical repair or cast application.

2. Materials and Methods

Materials described in this article will be suitable for the average adult horse, weighing in the 400- to 600-kg range. Adjustments will be necessary in the size of some of the components for smaller patients. Materials needed are as follows:

(1) 24-inch section of 6-inch-diameter schedule 40 PVC pipe
(2) 24-inch section of 6-inch-diameter C900 PVC pipe
(3) five rolls of 12-inch wide cotton combine or 12-inch-wide roll cotton
(4) five rolls of 4-inch cohesive bandage
(5) three rolls of 4-inch elastic adhesive tape or one large roll of duct tape

The PVC pipe, both the schedule 40 and C900, are cut lengthwise to create two identical halves. One end of each of the two C900 pipe halves is tapered on one corner, such that when they are applied, one half is applied to the distal limb medially and the other half laterally. The distal corners should be tapered to prevent abrasions on the dorsal aspect of the pastern. It is recommended to also slightly round the corners of the dorsal end of one of the halves of the schedule 40 PVC pipes. Cotton combine roll is applied to the limb beginning at the foot, progressing up the limb with subsequent rolls as far dorsally as possible. This material is layered as necessary to achieve a relatively tubular appearance to the final bandage. The intent of the cotton bandaging is to create a snug fit when the PVC splints are applied. The author prefers a 4-inch cohesive bandage to bind these sequential layers as they are placed. When the configuration of the bandage is satisfactory, the C900 pipe halves are applied to the distal limb, one half applied medially and the other half laterally. They are taped together tightly at the distal end and the midbody, with either duct
tape or elastic adhesive tape, so the opposing cut edges are in contact. One of the schedule 40 pipe halves is then placed on the caudal aspect of the limb, the dorsal end being positioned just below the upper limit of the bandage. Pressure is placed on the dorsal carpus to force it into the splint while the upper splint is pulled cranially. This should gain full extension of the carpus. The leg and splint are held in this manner while an assistant binds this splint with tape.

This splint, when properly applied, should be very rigid and fit snugly on the limb. The distal end should rest on or slightly above the ground caudal to the heel of the foot, and the other end should be as far proximal as can be obtained with the bandage.

3. Discussion and Conclusions

The described splint technique has been used by the author successfully on dozens of the various described cases. This technique was developed out of frustration in the use of other more conventional splinting methods. A distinct advantage of this splint is that it can be easily applied in most standing patients, reducing the need for full limb cast application under general anesthesia. Compared with casting, the ability to remove the splint and change the underlying bandage materials may be more desirable in cases of soft-tissue trauma. Another distinct advantage is the inherent ability to vary the length of the splint to achieve an optimum fit. The main disadvantage is the necessity to achieve the necessary configuration of the underlying bandage to facilitate a uniformly snug fit inside the splints. Also, this splint will not provide immobilization as rigid as does a thinly padded, full limb cast.

The author has found this splint to be particularly useful in cases of temporary radial nerve paralysis from trauma to the lateral aspect of the humeral region. Although some cases are relatively transient in nature, requiring 2 to 3 weeks before sufficient nerve function is regained, this splint has been used to manage cases lasting as long as 4 months. It has also been used in several cases of temporary iatrogenic paralysis of the extensor branches of the radial nerve caused by infiltrate of local anesthetic in the humeroradial joint.

Splinting of the carpus is indicated in the management of some cases of ulnar or olecranon fractures. Relatively non-displaced physeal fractures of the olecranon process in young horses can be managed quite well with splinting of the carpus and stall confinement. Splinting is also an aid in management of ulna and olecranon fractures when economic considerations preclude surgical repair with internal fixation.

Cases of multiple carpal bone fractures resulting in instability of the carpus typically are best managed with some form of surgical intervention combined with external coaptation such as a cast. However, many acute severe orthopedic injuries require immediate stabilization at the time of injury to assist in transport to a surgical facility. This is also done to facilitate some weight bearing on the injured limb in an effort to reduce the risk of contralateral limb laminitis developing.

The author has used this splint technique in several incomplete fractures of the distal radius that presented with open wounds from external trauma. This splinting system will allow management of the wounds while protecting the distal radius during the time required for adequate fracture healing. Additionally, this splinting technique has been used to protect wound repairs of several cases of severe cranial carpal lacerations with open joints that were surgically repaired under general anesthesia.

In conclusion, the described splinting system can be an effective aid in managing many conditions that benefit from carpal immobilization and support. This system utilizes readily obtainable materials and is relatively simple to apply to a standing patient.

References