

Emergency management and transportation of equine fracture patients

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1. Introduction

Fracture fixation techniques for equine patients have progressed tremendously in the last 20 years and have improved the success of fracture repair in horses. However, properly applied initial first aid treatment can be critical to the success of any subsequent repair. Prompt and proper emergency stabilisation of the fractured limb can make the difference between death and an athletic future. All too often a horse's prognosis may be reduced if it is transported to a specialised clinic before adequate temporary stabilisation of the fracture has been achieved. The goal of the initial treatment and stabilisation is to prevent further trauma. The lack of adequate stabilisation results in eburnation of fracture ends, further fragmentation and fracture displacement, damage to soft tissue including neurovascular structures and muscles, and in the worst case to skin penetration leading to an open fracture. Further, the additional anxiety of the animal, as well as pain and persistent sweating, may result in the horse arriving at the clinic in a state of circulatory shock.

2. Preliminary Examination

A careful evaluation of the horse is required. The history may help with the differential diagnosis. Most limb fractures cause lameness immediately after the injury. Sudden inability to use a limb after a fracture creates anxiety that may lead to profuse sweating and circulatory shock. Pain may be less of a factor during the period immediately after the fracture occurs.

A general assessment will show if the horse is in shock, if it has haemorrhaged significantly or if there are other injuries as well as those involving the lame leg. The whole affected limb should be examined. Signs of oedema, crepitus, instability and pain elicited by palpation, joint flexion or rotation of the distal limb will often suggest a diagnosis. Some fractures (eg, non-displaced fractures of the first phalanx) can be difficult to diagnose in the field; however, if a fracture is suspected it is safer to splint the limb until a secure diagnosis can be made. Nerve blocking is contraindicated since it can encourage weightbearing on a fractured bone with potentially catastrophic consequences.

3. Triage

After initial assessment and localisation of the fracture, the veterinarian should discuss possibilities of treatment, prognosis and costs with the owner. In many cases an exact diagnosis of the type of fracture is unlikely to be achieved in the field, therefore referral to a specialised clinic for a second opinion and a more accurate prognosis should be discussed with the owner. Some cases are untreatable and will therefore necessitate euthanasia for humane reasons.

4. Preparation for transportation to a referral centre

If there is a break in the skin, the wound should be cleaned, disinfected, dressed with antiseptic and covered with a sterile or clean bandage. The horse should be treated with analgesics and broad spectrum antimicrobials. Slight sedation might be required if the horse is distressed. Adequate limb immobilization must be provided.

4.1 Limb immobilization

4.1.1 Fractures of the phalanges

To stabilize an injury of the distal limb it is necessary to eliminate the bending of the fetlock joint. This is done by applying a splint (PVC pipe, broom handles, twitches, wood slats or metal bar) to the front of the limb from the knee to the toe, aligning all the bones in a straight line. A light bandage is applied to the limb, the splint is put in place and taped to the leg with a non elastic adhesive tape (white tape, duct tape). The dorsal aspect of the cannon bone, P1 and the dorsal hoofwall should be in line and the horse should be walking on its toe. A wooden wedge attached to the solar surface elevates the heel and makes the horse more comfortable.

4.1.2 Fractures of the forelimb

a) Fractures from the distal cannon bone to the distal radius

The best way to immobilize these fractures is with a full limb bandage and external splints. The full limb bandage is applied by using 2 layers of padding, each of them covered with elastic gauze or ACE bandages. The finished product should prevent pressure sores from the splints during transportation. Avoid excessive padding, as this may result in an instable external coaptation. The splints should extend from the elbow to the ground and be placed behind and on the outside of the leg.

b) Fractures of the radius

The objective of stabilization is to prevent lateral movement of the leg. It is achieved by the use of a full limb Robert-Jones bandage identical to the one used for the mid forelimb fractures and the use of a lateral splint (e.g. wooden board) extending up the side of the chest to the withers, tapped to the leg as far up as possible.

c) Olecranon fractures

For olecranon fractures the goal of immobilization is to maintain extension in the carpus, to allow the horse to weight bearing. This replaces the lost function of the triceps muscle. A bandage is applied from the fetlock to the elbow and only a caudal splint is needed from the fetlock to the level of the elbow.

d) Fractures above the elbow

It is impossible to effectively immobilize those fractures, but because they are well protected by their muscle coverage a stabilization device is not necessary.

4.1.3 Fractures of the hindlimb**a) Fractures from the distal cannon bone to the hock**

A full limb Robert-Jones is applied using two layers of padding. Splints on the hindlimb are more difficult to apply than on the forelimb. The angle of the hock makes it difficult to apply a caudal splint. Therefore, the caudal splint can end at the point of the hock, rather than at the stifle. Ideally, a splint can be molded and applied to the hock from the ground to the level of the proximal tibia.

b) Fractures of the hock and tibia

They are the most difficult to effectively support because of the angulation of the limb. An outside splint bent to follow the contour of the leg from the hip to the ground is used over a full limb Robert-Jones.

c) Fractures of the femur

Like fractures of the upper forelimb fractures of the femur do not require immobilization. Their muscle coverage provides adequate protection.

5. Transportation

Transportation is another important step in assuring safe arrival at the referral center. Partitions, chest and rump bars should be used to provide minimal space so the horse can lean on these supports to maintain its balance. If the trailer allows a sling could give additional support to the horse.

These procedures will not guarantee a successful outcome but it will prevent a potentially treatable fracture from becoming hopeless.