10.00–10.30

Initial fracture management before transport to a referral centre

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The immediate first aid for the fracture case can be critical for the survival of the horse. The goal of first aid is to prevent further injury to bone or soft tissue by stabilising the limb and rendering the horse fit to travel. Ideally the splint should immobilise the joints proximal and distal to the fracture. Below is a list of equipment required; commercial splints such as the Kimzey or Monkey splints can be used for distal limb fractures.

Materials required for splinting suspected fractures in the field:

- Gamgee: 8 long rolls, or 10 rolls cotton wool
- Cotton bandages: 20
- Elastoplast: 4
- Heavy duty tape (e.g. ticktape)
- PVC gutter: Use double (53 and 84 cm long)
- Wooden splints: Approximately 1 x 4 cm (plus saw)

A thorough examination of the horse should be made by the attending veterinary surgeon and the decision to splint the limb will depend on this.

ROBERT JONES BANDAGE

This is the basis of first aid for suspected fractures. On its own it will provide substantial immobilisation but this is significantly enhanced with additional splints.

The limb is wrapped in a single layer of cotton wool or gamgee which is bandaged very firmly with a cotton bandage. This is followed by subsequent layers each of a single thickness of padding under an elastic bandage until the whole dressing is 3 times limb thickness. With each layer it is necessary to bandage more tightly. It is crucial to use multiple thin layers. When flicked with a finger the final bandage should feel almost as hard as wood. Anything less will be unsatisfactory. It is surprising how hard the bandages need to be pulled to achieve this and if the layers are more than one thickness of padding they will be too soft.

LIMB IMMOBILISATION FOR SPECIFIC FRACTURES

The following describes a practical approach and has proved effective in practice but there are other methods. It is appropriate to divide the limb into sections within which a specific splinting technique effectively and safely immobilises most fractures for that section (Bramlage 1983).

THE FORELimb

Region 1. Distal metacarpus, first and second phalanges

The principle of the splint is to align the dorsal cortices of the distal limb to prevent the fracture acting as a fulcrum when loaded. The splint is most easily applied with an assistant holding the forearm of the horse. A thin Robert Jones bandage is first applied from the carpus to the point of the toe and a splint is tightly taped dorsally.

Region 2. Mid metacarpus to distal radius

This requires a full Robert Jones bandage from toe to elbow with the foot in the normal standing position. Splints are then taped tightly to the lateral and caudal aspects of the Robert Jones bandage. Guttering or wooden splints can be used caudally but wood is more suitable laterally. In a 450 kg horse the length required is approximately 84 cm and it is wise to protect the proximal end with padding.
Region 3. Mid and proximal radius
The lateral musculature of the forearm develops an abduction force on fractures in this region so splinting is designed to counteract this force. A Robert Jones bandage is applied from ground to elbow. The splint should extend from the foot to mid scapula level and is taped tightly to the lateral aspect of the limb for the full length of the dressing.

Region 4. Ulna, humerus and scapula
These fractures cannot themselves be splinted but they disable the triceps muscles, which many horses find distressing. Fixing the carpus enables the horse to use the limb more easily and gives it confidence. Padding should be bandaged to the limb from fetlock to elbow and a splint taped to the limb caudally. This splint will not support the fracture. It merely allows the horse to ambulate more safely.

THE HINDLIMB
The reciprocal apparatus presents special problems when splinting the hindlimb. Injuries from the proximal metatarsus to the stifle are more difficult to immobilise than equivalent sites on the forelimb and some horse are very intolerant of restriction of movement in a hindlimb to the point where a support may have to be removed. The limb is divided into 3 regions (Bramlage 1983).

Region 1. Distal metatarsus and phalanges
This is applied as in the forelimb and is greatly facilitated if the limb is held above the hock by an assistant. The toe of the splint will need reinforcement.

Region 2. Mid and proximal metatarsus
The splint should fix the tarsus to the limb distal to the fracture. A thinner Robert Jones bandage from the toe to the calcaneus is used and splints are fixed caudally and laterally. Wood is better than guttering for these splints. The leg does not need to be held by an assistant since this makes it hard to judge the ground level position of the splints. The bandaging should be as proximal as possible as it tends to slip distally however well it is applied.

Region 3. Tarsus and tibia
The aim of this splint is to counteract the medial force of the lateral musculature of the tibia, and the destabilising effect of flexion of the stifle through the reciprocal apparatus. A 12 mm mild steel rod works well as a splint since it can be fashioned into shape by hand but is strong enough to provide support. It should be shaped to fit the caudolateral and caudomedial aspects of the limb from the toe to the tuber coxae with the loop of the steel proximal and covered with protective material. The splint is then firmly taped to a full length Robert Jones bandage from the toe to the proximal tibia.

REFERENCES