Proceedings of the 10th International Congress of World Equine Veterinary Association

Jan. 28 – Feb. 1, 2008 - Moscow, Russia

Next Congress:

WEVA 2009 Congress
Guanujá-SP, Brazil. September 24-27, 2009

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FLEXURAL DEFORMITIES IN YOUNG HORSES

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This material was abstracted in part from
Foot Management of the Foal and Weanling (2003)
Greet TRC and Curtis SJ Vet Clin Equine (19) 501-517

Foot Management in Young Animals with Flexural Limb Deformities

1) Hyperextension of the distal limb

This is usually the result of flexor tendon laxity in newborn dysmature foals. Although weakened flexor tendons will usually strengthen quite rapidly, damage to the heels or even the palmar/plantar aspect of the fetlock may occur, in moderate or severe cases, as the result of abrasion with the ground. Whilst a very light bandage around the area is a sensible precaution, heavier support will result in greater tendinous laxity. Therefore in moderate or severe cases more effective support may be provided using a shoe with a heel extension.

This can be in the form of a glue-on shoe with extended branches or more typically by attaching an aluminium palmar/plantar extension with acrylic to the hoof; aluminium being preferred because of its strength.

2) Carpal contracture

This is usually seen in newborn foals and should be differentiated from carpal instability caused by carpal bone immaturity. In the latter situation a radiological assessment will confirm the clinical suspicion and then protective limb splints or a tube cast may be applied.

Foals with carpal contracture (barring the most severe cases where it is not possible to extend the carpus even by force) usually respond to a controlled exercise programme involving restricted access to a nursery paddock. The foot position in these cases is always normal and there is therefore no benefit in dressing the feet other than would be done for a normal foal.

Surgical section of the tendons inserting on to the accessory carpal bone (flexor carpi ulnaris and ulnaris lateralis) is unnecessary except in the most severe cases. In such cases it may also be necessary to incise the palmar carpal fibrocartilage to effect release.

3) Club foot (so-called “contracture of the deep digital flexor tendon”)

Although foals may be born with a flexural deformity of the lower limb, which is usually effectively managed by splinting, true "club foot" is usually an acquired problem at between six weeks and six months of age. Its aetiology is unknown although orthopaedic pain has been implicated in some cases.

Functionally there is excessive hoof growth at the heel because the foal does not bear as much weight on that area. This results in the development of a boxy "club foot" appearance, which is unsightly and may result in chronic foot problems throughout the horse’s life if uncorrected. The typical signs of contracture of the distal interphalangeal joint are variable but include the following (Redden 1992):

- Heels clearly growing faster than toe – diverging growth rings.
- Broken forward hoof pastern angle
- Deep lateral sulci at heels.
- Increase in width of the white line at the toe.
- Toe angle greater than 70° to the horizontal (the normal being 55-60°)
- Concave dorsal wall
- Lateral radiographs show remodelling of dorsodistal aspect of the distal phalanx
The standard method of treatment involves trimming the excessive heel growth and supplying exercise on a firm surface whilst administering non-steroidal analgesic medication to the foal (phenylbutazone @1/4g sid for 3 to 4 days whilst providing gastric mucosal protection with omeprazole at 4mgs/kg sid). The feet usually require to be redressed at two-weekly intervals but this method of correction is effective in the mild and many moderately affected foals.

However, there is some controversy about the efficacy of this approach. Some clinicians and farriers only use this trimming method if the foal’s exercise is totally restricted. The procedure usually resolves the contracture in one to two weeks, even if the heels are five to ten mm from the ground. In more severe cases the foal may be shod with an aluminium and acrylic toe extension, provided complete box rest is assured. The above methods are successful in the vast majority of mild and many moderately affected foals. However, surgical treatment is usually required for foals with unresponsive moderate, or in cases of severe contracture.

An alternative method is to assume the problem stems from pain in the deep flexor tendon or the musculotendinous junction, and to raise the heels, using a special shoe or by applying acrylic material to the heels. Whilst there may be logic in this approach, it has often failed to be effective. It appears that the best results are likely to be achieved if the process of heel lowering is taken gradually over a prolonged period.

Ultimately if podiatry alone fails to correct the problem, surgical section of the carpal head of the deep digital flexor tendon is a reliable means of resolving the contracture, even in severe cases. Trimming excess heel growth must also be carried out in surgical patients to ensure an optimal result.

4) Fetlock contracture

This is a condition seen in animals of 12 to 24 months of age (typically around 18 months) in which there is usually a sudden straightening of the fetlock. In the most severe cases the fetlock knuckles forward and the horse is unable to bear weight on the limb in an extended position.

In the vast majority of cases the foot assumes the normal weight-bearing position and is of normal shape. In mild cases of fetlock contracture, elevating heels may release the tension in the flexor tendons and allow the fetlock to sink into a more natural position. This can be achieved either by using a wedged heel shoe or by building the heels up with a hoof repair polymer.

It might appear as if there is little to be gained from using corrective farriery in more severe cases, as the foot is usually placed in a normal position on the ground. Indeed, surgical section of the radial head of the superficial flexor and the carpal head of the deep digital flexor tendons are fundamental to the correction of all but the most mildly affected horses. However in more severe cases surgical releasing procedures work most effectively if the fetlock is anchored in a more palmar position during weight bearing by a brace welded to a bar shoe.

The surgical technique of section of the radial head of the superficial digital flexor tendon can be carried out via an open approach through the tendon sheath of the flexor carpi radialis or via a tenoscopic approach through the carpal sheath. With either approach great care should be taken to avoid section of the perforating vessel which is closely associated to the ligament. Significant haemorrhage and consequent incisional problems or even synovial sepsis may result from this complication. It is generally felt that it is preferable to section both the radial head of superficial flexor and carpal head of the deep digital flexor proactively at the outset in these cases because of the relatively poor response to surgical release.

Although the prognosis for future athletic soundness is always guarded in such cases and even the most successful tend to have a straight fetlock conformation, radical surgical release combined in some cases with the brace technique allows some horses to be salvaged that otherwise would be subject to euthanasia.
5) Lateral luxation of the patella(e)

This is a condition which is seen typically in one or both hindlimbs of new born foals and miniature breeds are overrepresented. Affected foals have a characteristic crouching stance because the quadriceps femoris acts as flexor of the stifle rather than as an extensor because of the position of the patella lateral to the femoral trochlea.

The treatment is surgical and involves relocation of the patella in the trochlear groove, if one is developed and creation of a groove if it is absent or the patella does not sit in position easily. Release of the soft tissues lateral to the patella is required in most cases to ensure the patella can be repositioned without tension and this may even involve section of the lateral patellar ligament. Adequate efforts should be directed at patellar release before any attempt is made at trochleoplasty which should be avoided if possible. Finally the patella should be anchored in position by a medial joint capsular imbrication technique as is used in dogs for this problem. These may also be reinforced with additional tension sutures placed medial to the repair.

Whilst the procedure is relatively invasive it is usually possible to restore the foal to an upright hindlimb stance, there may be other complicating hip or pelvic deformities which may restrict future athletic soundness.

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3rd Edition published by Saunders Elsevier


Equine Veterinary Education 11 256-259


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