Proceedings of the 12th International Congress of the World Equine Veterinary Association WEVA

November 2 - 5, 2011
Hyderabad, India

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Farriery for the Young Horse - Mediolateral Limb Deformities
Simon Curtis
The Forge, Moulton road, Newmarket, CB8 8DU

Types of Mediolateral Deformity

Angular Limb Deformity
This type shows a clear angulation along a mediolateral plane in the limb. ALD usually occurs at the physes (growth plates). It arises because one side of the growth plate is growing faster than the other. Occasionally it occurs due to collapsing of carpal/tarsal bones. Without the benefit of radiographic proof to locate the exact growth plate, ALD is described by joint and type, e.g. carpal valgus, fetlock varus. It is quite normal for there to be some slight carpal valgus in foals up the age of weaning. In the case of carpal valgus, this can be seen at the walk and standing. Eyelining will confirm that the lower leg is in alignment and therefore the deformity must be at the carpus or above. (Figure 1)

Offset Knee
This is seen in the area of the carpus. The radius and large metacarpal do not appear to line up through the carpus, the large metacarpal being deviated laterally. An offset knee creates uneven stresses within the limb and hoof. It is often associated with medial splints, fetlock varus, and toeing in. The hoof capsule is distorted, being flared medially and upright or under-run laterally. Wear is on the lateral solar surface of the foot with break-over at the lateral toe quarter. (Figure 2)

Rotational Deformity
This is a rotation along a horizontal plane of part or the entire limb. It is mostly seen in the front limbs, causing a severe turning out. It is best observed at the walk where it can be confused with carpal valgus. Quite often the elbow is tighter into the chest on that limb. The hoof capsule is usually distorted, being flared laterally and under-run medially, with the medial bulb and heel shunted up. Wear and/or compression occur on the medial solar surface of the foot with break-over at the medial toe quarter. A horizontal rotation may be combined with (or causing?) an ALD. In the author's opinion, at least 50% of horizontal limb rotation deformities improve by about 12 months of age. (Figure 3)
Farrier Treatment of Mediolateral Deformities

ALD; in most cases of minor deformities, some uneven wear and slight distortion of the hoof capsule can be corrected by trimming the foot to a 90 degree plane to the long axis of the pastern up to the age of 12 weeks (Fig. 5). After 12 weeks the foot should be trimmed at 90 degrees to the cannon (Fig. 1). Trimming every 2 weeks where there is a clear though slight deformity is indicated. In severe cases, where trimming alone is ineffective or where after trimming, the foot does not fully contact the ground, a medial or lateral extension is recommended. Shoes of any type on foals are likely to restrict hoof capsule development. An extension made of composite or polymer material does not restrict the foot and has the added advantage of being able to be trimmed at a later date.

Figure 2: This foal has severe Offset Knees and the secondary effect of fetlock varus. It was euthanased the following day.

Offset knees cannot be improved by trimming or shoeing; however, their secondary effects, (i.e., splints, fetlock varus, toe in/hoof distortion), can be reduced by sympathetic trimming and/or shoeing. Trimming should aim at removing the excess growth and flare on the medial aspect and solar surface of the foot. The solar plane should be at 90 degrees to the long axis of the large metacarpal.

Rotational deformities are perhaps the most difficult to trim or shoe. Trimming to a longitudinal balance and reshaping the foot will reduce hoof capsule distortion. Many rotational cases spontaneously improve. Although it would appear that farriery plays no part in this improvement, it is important to maintain a well balanced foot in order to reduce uneven stresses that may adversely affect the limb. It is the author's experience that aggressive over-corrective trimming of rotational deformities, (i.e. reducing the lateral solar aspect does not improve these cases). The hoof capsule distorts by the medial bulb and heel shunting up more and the hoof capsule rotating medially while the limb remains rotated outward.

Joint Laxity
The articulating joints of a foal's leg have more mediolateral laxity than mature horses. This means that where there is a mediolateral deformity of any of the types previously described, the play in the joint will be exaggerated. Some improvement in alignment can be gained by holding the joint in better position while the foal matures and the collateral ligaments strengthen.
Figure 3: This foal has an outward rotation to the left fore (right side of picture) Many spontaneously correct between 8-14 months.

**Attaching Mediolateral Extensions**

Extensions may be created by many methods, e.g., aluminium nailed, Mustad Babyglu, Dalric, acrylic/composite. The author has used all these materials and the techniques needed to be successful with them. Today the authors’ choice of material for building an extension is polymer (Fastset, Equithane, Vettec). The reason for this choice is ease of use, safety and speed.

**Summary**

Most cases of ALD associated with immaturity spontaneously correct at an early age. Toeing-in is usually the result of a combination of offset knees and fetlock varus. The normal development of a foal's limbs means that a healthy, developing foal may be slightly carpal valgus at weaning. Hind fetlocks are often varus. Most improve with sympathetic trimming. Over-corrective trimming does not improve an ALD. It will almost certainly radically distort the hoof capsule. Mediolateral extension shoes work when they reposition the foot under the limb. In order for them to work they must be applied to a correctly prepared foot. ALD is unlikely to be improved in: Pl and PII after 3 months, the distal MIII after 6 months, and distal radius after 12 months. In cases of ALD, if improvement is not seen in 2 weeks, it is unlikely to occur. The most severe carpal valgus, at over 3 months, is often seen in conjunction with a limb rotation. Carpal varus, fetlock valgus, and rotation combined with an offset knee are all rare, but they do occur.

**Further Reading**

*No Foot, No Horse:* Williams G & Deacon M, 1999, Kenilworth Press.