HOW ONE FARRIER AND ONE VETERINARIAN HAVE WORKED TOGETHER FOR 8 YEARS

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HOW WE APPROACH OUR INITIAL EXAMINATION AND RADIOGRAPHS.

Is this a rehab or salvage shoeing? What are the potential levels of client compliance and expectations? What additional environmental factors are at play? Basic radiographs – how to take and what measurements are important?

Initial Examination – First Impressions

- Pain level - How does the horse first come out of trailer or stall?
- Scoring - good to bad. Try to score all pain events with 0 to 5/5, then you can better appreciate improvement in the future.
- Bell curve - Realize that many clinical situations follow a bell curve; for example, too hard feet to too soft feet.
- Overweight horses - Weigh on a scale or use Body Conditioning Scoring, with #1 very thin to #9 obese.
- Foot fall – Heel or toe first, limb and foot conformation. Hoof pastern axis
- Scars, rings in feet, quality of feet, overall conformation
- Do routine examination – Palpations, walking, jogging, flexions and longeing

Psychology of the Situation

This is about the acceptance of a diagnosis and treatment plan by the owner or caretaker, ability to carry out a treatment plan, and expectations of the owner or caretaker. Evaluating these three ideas relates to the success of pain reduction in the horse.

- How long has the problem been going on?
- Environment of the horse – "all horses are out 24/7"; might be difficult??
- What is the available housing for the horse?

From your initial impressions; what is your believability of history? Mentally cataloging all the information of the owner/trainer has value no matter what you are concluding.

- Negativity toward farrier and/or veterinarian
- Obvious management flaws like thrush

Specific Foot Examination

- Pick up feet to see what kind of trimming or shoeing
- Quality of hooves, thrush, foreign bodies, nailing and other abnormalities like wet feet
- Hoof tester response
- Does the horse have difficulty standing on the opposite limb – pain, "shivers," too much concentrates in the diet?
- Will the horse need intravenous (IV) and/or intramuscular (IM) sedation for shoeing? We have used detomidine IM at twice the IV dose to prolong the effect of drug.
- Confirm or moderate our initial observations.
- Brush out feet for radiographs.

RADIOGRAPHY – TECHNIQUES

Our protocol is:

- If the horse is shod, LEAVE THE SHOES ON, so you can see the relationship of the shoe to the structures of the foot.
- The front feet blocks are constructed as mirror images of each other and the horse is stood on each block. Its height is set so when the horse's feet are placed on the block the central beam will hit the foot about 5 to 10 mm above the shoe/hoof surface. The goal is to see the bottom of the coffin bone rather than joint evaluations. This allows for the shoe to appear as one branch. Use a hind foot "tray of wooden dowels" for those horses that do not like standing on a block to get a decent perpendicular radiograph.
- The cassette should be touching the medial side of the foot.
- The beam is aimed at a point halfway between the dorsal and palmar aspect of the coronet band. (see Figure 1).
- Our film focal distance is 24 inches (61 cm).
- The ultimate film has appropriate contrast so as the horn and bone can be evaluated.
- Radiopague marker on the dorsal wall – soldering wire of fixed length (we use 75 mm) versus barium paste can be messy and not specific length, but fits all the various contours of the dorsal hoof.

Figure 1.

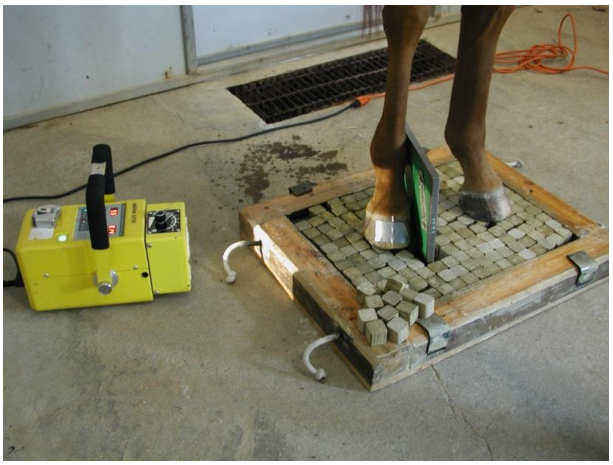

Figure 2.

- Blocks work well for front feet but many horses do not like standing their hind feet on blocks. Also many horses normally toe out behind; thus we used an idea developed by R.F. Redden, DVM,[6] making a tray of wooden dowels that can be removed in any direction to form a slot for the cassette (Figure 2).

RADIOGRAPHS – FIVE SPECIFIC MEASUREMENTS

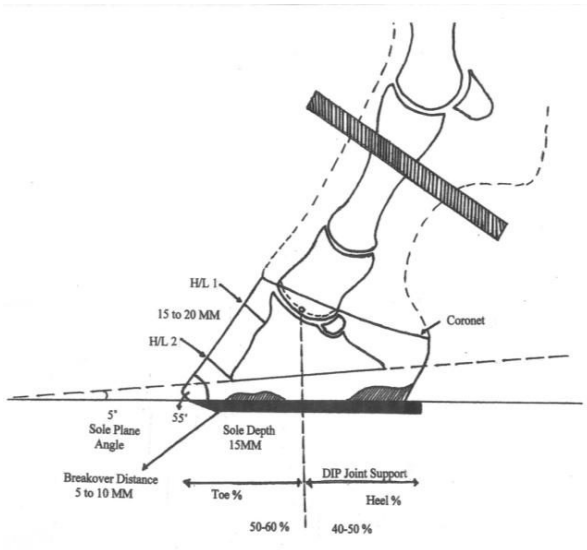

Figure 3.

Dorsal Wall Thickness or Horn/Lamellar Zone (H/L Zone)

The front wall of the hoof should be parallel to the front of the coffin bone. Its thickness is related to the size of the horse and should be the same in all four feet. Deviations with widening usually at the bottom indicate the horse has had some laminitis, whether in one foot or more feet. Where there is enough contrast in the lateral radiograph one can see the juncture between the sensitive and insensitive laminae and that line should be parallel to the coffin bone and external wall. If the horse's dorsal wall has been rasped parallel to the coffin bone the only way one potentially could tell the horse has had laminitis is to evaluate this juncture. Some horses might have rotation of the coffin bone without any history of laminitis and some long toe/low heeled horses may have a "reverse laminitis" with the distal wall narrower than the proximal wall. Significance is unknown, but this might be a reason for survey lateral radiographs on an annual basis in itself.[5]

Sole Plane Angle

This is the angle the bottom of the coffin bone makes with the ground. It should be slightly positive from plus 2 to 5 degrees. In the front feet the angle can be called the palmar angle and behind, the plantar angle. The lower the sole plane angles potentially the more tension on the deep digital flexor tendons, thus increasing stress on the entire posterior portion of the limb. Negative angles also get the wings of the coffin bone closer to the ground and thus increase soreness, bruising, and abscesses to the heel area of the feet.

Sole Thickness

Thin soles can be obvious to a farrier. But in some horses there are other problems existing that may contribute to the thinning of the soles, such as mild laminitis or long toes with low heels. Correcting some of these issues can help thicken the soles.

In our central North Carolina "control group" of 108 horses the sole depth at the tip of P-3 was 13.97 mm (203 front feet). Sole depth can depend on the contour of the distal border of the coffin bone. A convex distal border will have a thinner sole depth more palmar to the tip of the coffin bone. A coffin bone with a negative sole plane angle will have a thinner sole in the heel area.

Breakover Distance

Our measurement is from the breakover point on the trim or shoe to a line dropped down from the tip of the coffin bone. The breakover is the last point of the hoof or shoe to come off the ground. The further forward the breakover is, the more levering affect there is placed on the foot and potential strain on the entire back portion of the limbs. Reduction in breakover helped horses with navicular syndrome[4] and generally is very helpful to chronic laminitic horses. The longer the breakover is in front of the tip of P-3 potentially correlates to the length of the toe.

Support of the Coffin Joint

Protecting the coffin joint requires a balance between heel and toe support, so there would be an ideal range that would be best for a horse. Determining the center of the coffin joint probably is not precise with each "measurer." Also the potential ideal of having the shoe directly in the middle of the joint might not be practical in either a performance or turnout situation. In our control group of front feet in our study the average was 59% of the shoe in front of the joint center and 41% behind. In another study of 230 horses it was found to be 65%/35%.[7]

Evaluating each of these five measurements does not exist alone in a vacuum, but need to be looked at together when evaluating a horse's foot conformation, its relationship to soundness, and shoeing. Each horse has

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their own ideal set of these five measurements that makes for that horse's most mechanically efficient stride and works best for that horse's upper limb conformation. Just like any situation the more we look the better the opportunity of finding out helpful and healthful aids for our horses. So when a horse is having difficulties either in soundness or performance carefully examining the foot conformation and shoeing including a lateral radiograph of each foot with the shoe on can be helpful. This radiograph then produces a picture of exactly where the shoe is placed in relation to the lower limb bones and joints.

CONSIDER A PREVENTIVE FOOT CARE PROGRAM IN YOUR PRACTICE

One way to figure out how your clients' horses' feet should look like is to organize a preventive foot care program within your practice. Any preventive program within a veterinary and/or farrier practice can have obvious value to animal health and potentially to their owners. For veterinary practices these programs:

- Can be scheduled easily
- Can help develop farrier/veterinarian/owner relations
- Spread out over various months for stabilizing cash flow
- Provide time for practice building with clients under non-stressful situations
- Provide income for the "half" practices to grow from 1½ to 2 (or 3 or 4) person practices by hiring a young veterinarian
- May develop into a service that is a major profit center for a practice
- Help enhance marketing planning within a practice

Any preventive program within a practice can be tailored to the practice's veterinarians and staff's expertise and available time and their clients' needs. Ideas for various preventive foot programs in practices and on farms including various measurements that can be considered have been reviewed. With computer programs, various quality level of reports can be generated for owners, farriers, and other veterinarians.[1] Certainly farriers can develop their own tailored foot programs and both professions can incorporate the owner for data and picture collection for future evaluations.

In 1998 we began using a formalized preventive foot care program.[2] Obviously some way to evaluate the horse's external hoof conformation is critical. We used hoof angle and measuring the widest part of the front feet. Radiographs taken in a standardized fashion would enhance evaluation of the horses' feet in any fact-finding program. In evaluating front feet of 50 horses in this published program model, new information about the feet was gleaned in 64% of these horses. Consistency in taking the lateral radiograph is critical. Our protocol is:

- If the horse is shod, LEAVE THE SHOES ON, so you can see the relationship of the shoe to the structures of the foot
- The front feet blocks are constructed as mirror images of each other and the horse is stood on each block. Its height is set so when the horse's feet are placed on the block the central beam will hit the foot about ½" above the shoe/hoof surface. The goal is to see the bottom of the coffin bone rather than joint evaluations.
- The cassette should be touching the medial side of the foot.
- The beam is aimed at a point halfway between the dorsal and palmar aspect of the coronet band (see Figure 1).
- Our film focal distance is 24 inches (61 cm).
- The ultimate film has appropriate contrast so as the horn and bone can be evaluated.
- A fixed length marker (soldering wire) is applied to the front of the foot. If you want to have accurate evaluations of the actual start of the coronet band, consistent placing of the wire must be accomplished. Make sure the wire is taped flat against the hoof wall over its entire length.

Over the years we have developed additional ideas that we have included in some of our current evaluations depending on our initial clinical examination that have increased the efficacy of our evaluations.

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