The Hoof Redevelopment Center

A Division of Horses In Symmetry Farrier Services
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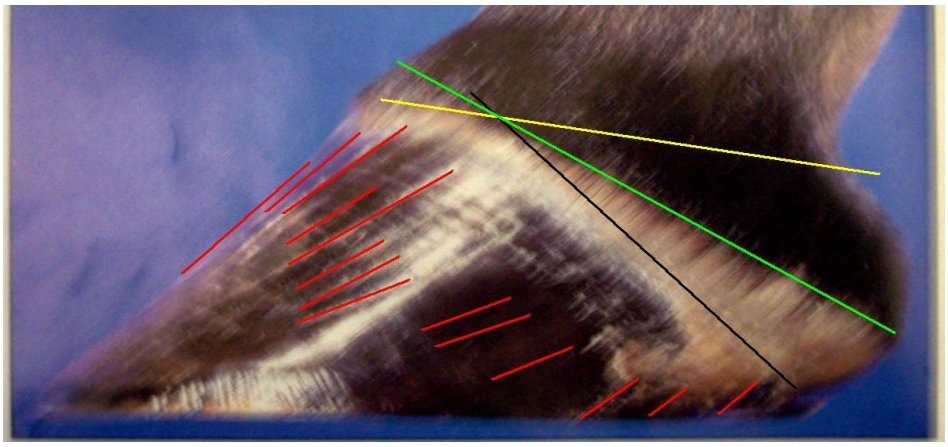
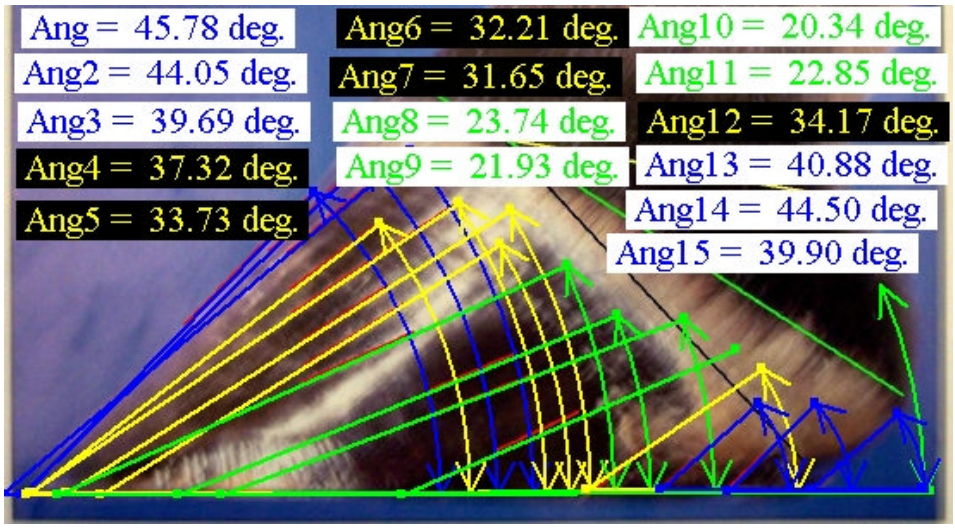
For centuries, farriers have been studying the toe and heel angles. We have to look further than that to understand how the hoof capsule actually distorts. It NEVER simply gets a low heel or long toe configuration.

In this document I will attempt to provide a glimpse of the thought process that I have undertaken in order to fully understand the hoof capsule and how it distorts. I will show you very specific ways that I have looked at the individual tubules that make up the hoof capsule and the process that occurs in order for distortion to actually occur. Until a farrier or vet understands this process, it is impossible to reverse deformation with any reliable degree of success.

The next foot that I will show in 4 separate modes as well as the composite of those 4 modes; is a photo that The American Farriers Journal graciously gave me permission to use for this purpose. It was a photo from the special report that they printed called, "Strategies For Overcoming Long-Toe Underrun Heel Concerns." The angles marked on the photo I used are not from that report, but instead a part of my research.



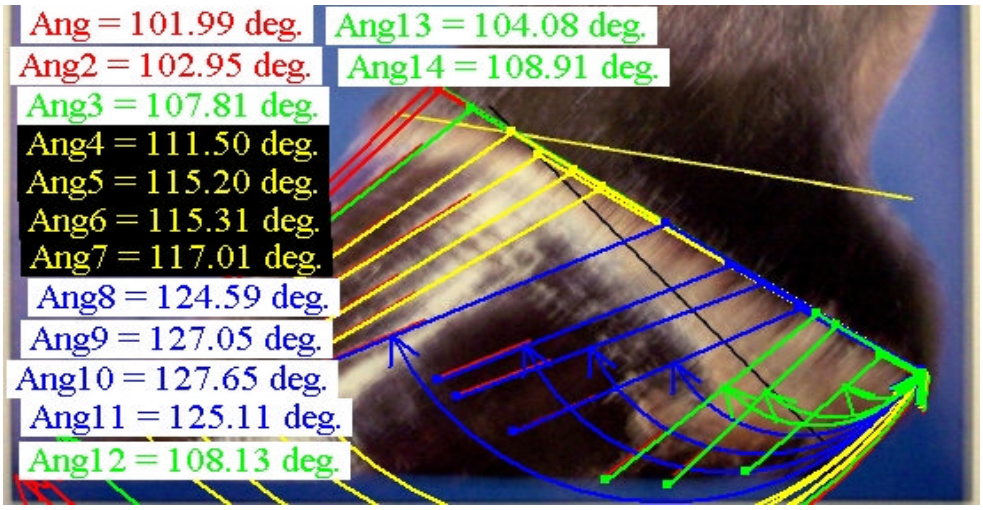
I first took this photo and isolated individual tubule lines by marking them with the red lines. Then I marked the toe hairline angle (yellow line), and the main hairline (green line).



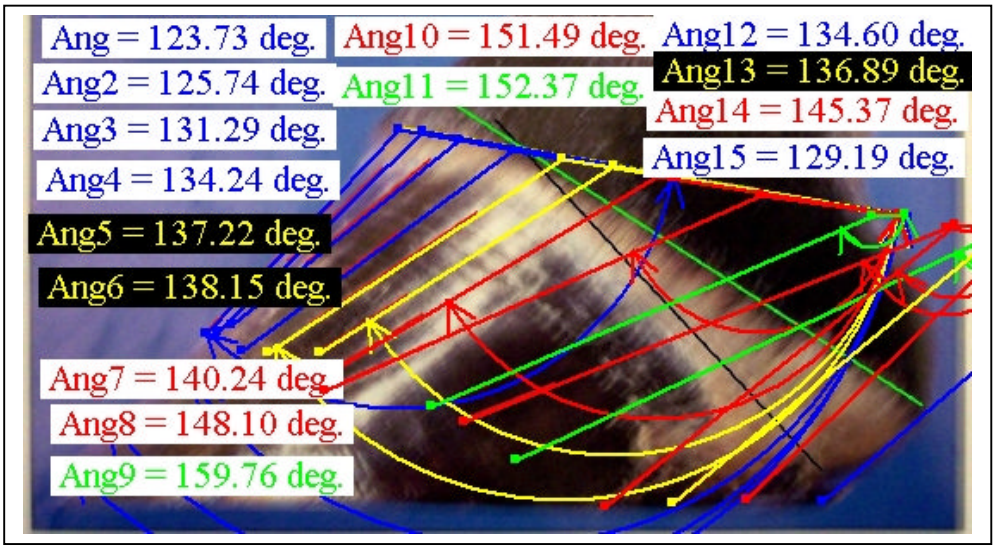
Then I used Metron ® software and measured the angle of those liens as they relate to the ground surface. I color coded the results in groupings that showed the angles in 3 separate groups. Blue lines are 39-45 degree range. Yellow lines are 30-38 degree range. Green lines are 20-29 degree range.

It is interesting to note here that the mid quarter tubules show a lower range than toe or heel areas.

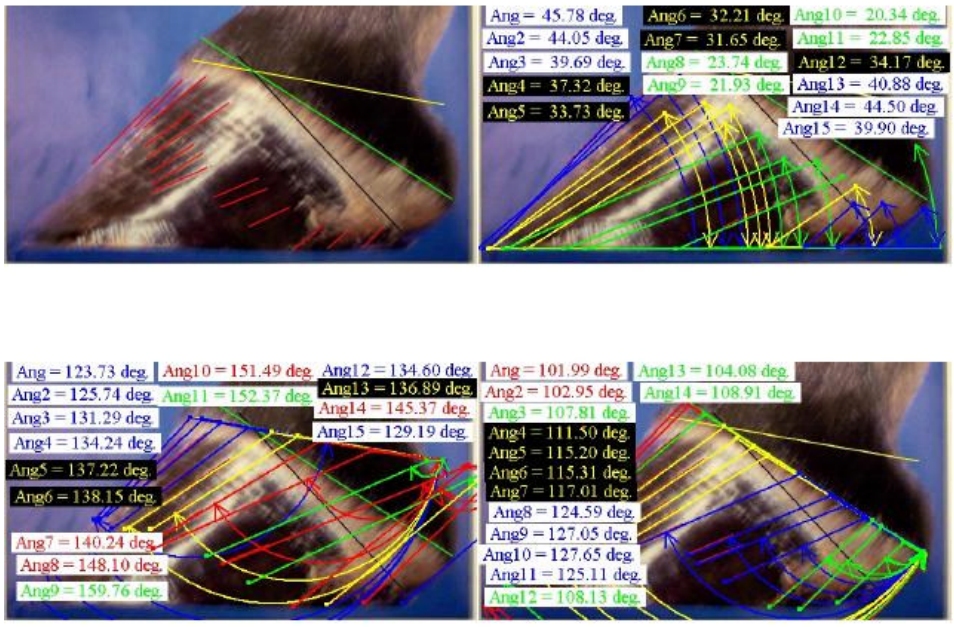
It is also interesting to note that the highest angles are actually at the extreme toe region and the extreme heel region.



Next I measure the angle created by those tubules as compared with the main hairline (marked green in original layout on first page)
I color coded these angles as follows. Red lines are 100-103 degrees. Green lines are 104 -110 degrees. Yellow lines are 111-119 degrees. Blue lines are 120-130 degrees.
When comparing these 4 groups of degree references, we see much the same patter as we did when measuring in reference to the ground surface on the last photo comparison.



Next we use the toe hairline angle (yellow line on original layout in first photo) and compare the marked tubules to that angle.
This produces an entirely different perspective of this foot. Again I grouped the angles according to the following. Blue lines are tubules from 120-135 degrees. Yellow lines are 136- 139 degrees. Red lines are 140-152 degrees . Green lines are 153-160 degrees.
While we see the pattern is the same, the difference between high and low angles is a full 36.03 degrees with this observation point, vs.
a high and low difference of angles
at 25.44 degrees when comparing to the ground (second photo)
and 25.66 degrees when comparing to the main hairline in last (third) photo



Here we see a composite of all the information above. I don't intend on going into the entire information gleaned from this exercise here, but it will give you an idea of just how intricate that we must take into consideration more than simply the toe and heel angles.
With Symmetrical Hoof-care Protocol (SHP) it is possible to get the tubules all going in the same general angle. That is the key to reversing hoof capsule distortion, as opposed to simply dealing with it the way we have in the past.

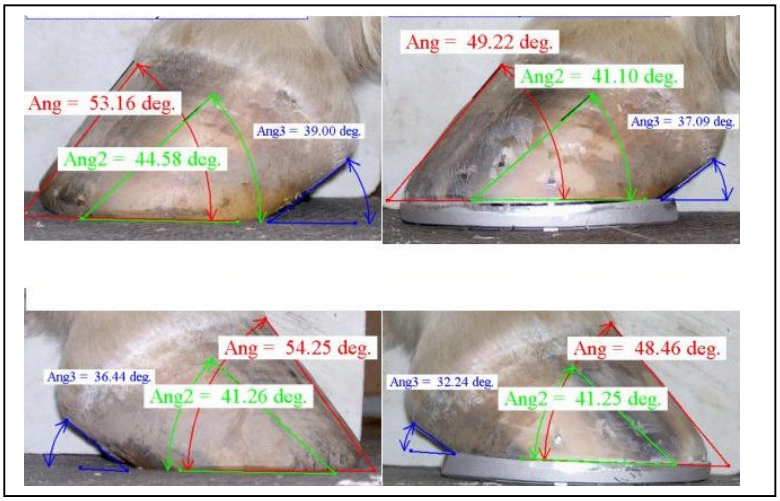
We have to take into consideration the bending of the hairline as we attempt to correct a foot such as this. To not understand that aspect of feet such as this dooms us to failure to ever revers this type of foot.

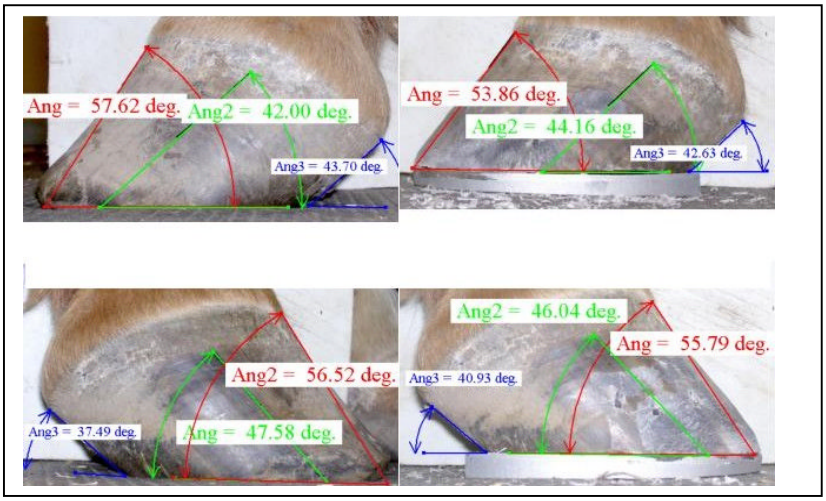
One very important thing to look at here is this…. Compare the 3 sets of angles above. Now you can see why simply adding a wedge to a foot to change the toe angle will make the foot even more distorted in the future. No matter what the immediate results are by doing that practice.

So let's look at some of this on a live horse.

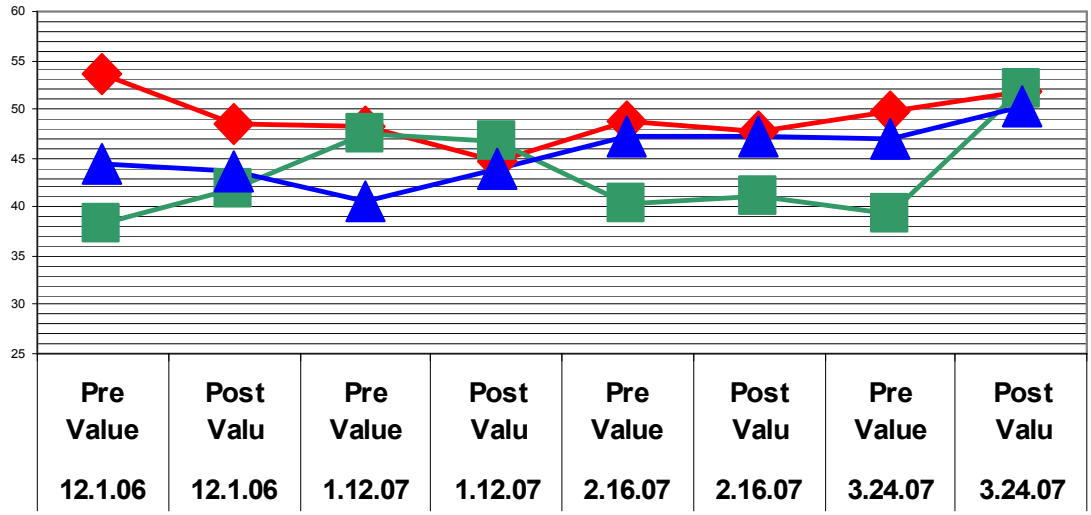
Until now, we have not understood that the toe, quarter tubule and heel angles need to be reasonably close in angle in order to assure the hoof capsule works in the best possible manner. The two groups of photo to the right are all on same horse.
The Top group is the lateral and medial sides of the left front.
The bottom group is the medial and lateral sides of the right front.

Compare the toe (red) angles on before and after trimming and shoeing photos (all at same visit.. only 30 minutes apart) to those angles (and changes of) the Tubule angles (green) and heel angles (blue).
You can see how it is not only possible but necessary to adjust each individually in order to ever get the angles to all eventually match up.





As an example look at bottom row, you can see how we lowered toe and quarter angle by less than 1 degree, while at the same time INCREASED the heel angle by over 3 degrees.



Lets look at the left front foot lateral side and compare the changes in Toe (red) angles, Quarter (green) angles and heel (blue) angles as we adjust the foot over an 84 day time span. Pre values are when horse entered the clinic to be shod. Post values are after he was shod and on the way out the door.

You will notice that the foot changes over time between shoeings and we keep tweaking the loading mechanism until at 84 days we finally see all 3 areas of measurements come into alignment with each other. Now we have a stable hoof capsule.

More importantly we now have a horse that had been lame for 2 years with no diagnosis turn sound.

These are two slides I used in the 2008 International Hoof-Care Summit
The top one looks at changes in toe angles toe angles when the foot is not loaded, vs. 50% loaded (both front feet on ground) and 100% loaded (opposite foot off the ground) Note the changes. What does this mean when we attempt to match up to an x-ray that we do not know if foot is 50% or 100% loaded?

Now when looking at this slide, notice how the Quarter Tubule angles and heel angles change with the zero load, 50% load and 100% load.
Again, if we are to match feet to x-rays, we MUST know how the foot was loaded when x-rays were taken.

The changes with load changes are substantial and as farriers and vets we need to begin to understand those changes in order to best deal with obscure lameness issues as well as we must if we are to avoid such lameness issues.