

# Notes on Congenital/Acquired Joint Angulation Deformities of the Extremities Secondary to In Utero Malposition of the Cria

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I recently had a cria born with probable congenital/acquired joint angulation deformities of the forelegs secondary to malposition In Utero. This is the second cria (incidence <1%) born at our farm with a deformity that required our intervention. The first cria presented with severe windswept forelegs, knuckling over of the metacarpophalangeal joints joint, and ankylosis of both knees at a 25 - 30 degree angle. Amazingly, her recovery progressed rapidly utilizing splints and physical therapy. Her deformities were so severe that she was unable to stand for two days. Ninety-five percent recovery was achieved within two weeks and today, her conformation and gait is correct and she has gone on to lead a productive life.. This recent cria was not nearly so severe as our first cria, so it is our anticipation that his recovery will also progress rapidly and fully.

The incidence of congenital/acquired joint angulation deformities of the extremities due to malposition in utero is defined as angulation greater than 10% of normal and is relatively high(1). The range of severity is very broad as well, encompassing minor joint angulation deformities that will correct without intervention to more severe one that require aggressive intervention including surgery. Most of the documentation of angular joint deformities is found in the equine literature. Given that the female reproductive anatomy of the horse and the alpaca are similar, and that the long extremities of both the horse and alpaca are similar, I believe it possible to interpret some of the research in equine literature and apply it to the cria.

The major differential is a fusion of the bones, which is an abnormality that would not be possible to correct without surgery. Key to the differential is the ability to extend or flex the joint in at least one direction. A totally fused joint will not flex nor extend whereas, a joint angulation deformity that is not fused can be extended, hyperextended or flexed in at least one direction.

For this cria, the key to getting him mobile, was to stabilize the metacarpophalangeal joints joint so that it didn't knuckle over. I've used a couple of "homemade" splints depending on the cria size. With all splints, I take them off and reapply twice daily to perform stretching exercises and to check the skin. I also wrap legs to prevent pressure points. PVC pipe will work but sometimes it's heavy or too cumbersome for a small cria. A lighter option is the plastic outer case from the 60cc irrigation tip syringes. They work well to stabilize the metacarpophalangeal joints joint. I cut them to size, smooth and cover any sharp edges, and cut them longitudinal just to the flange point. Then I tape the bottom so that the splint cannot ride up the leg. I've also used paint

rollers, especially if you can find the ones with cardboard on the interior. They do not have a flange end, so they work better for a knee (carpus). See photos.

Key to splinting is to increase mobility, so if the splint makes it too difficult for the cria to stand on it's own, then you'll have to rethink and try a different option. I splint the joint that seems to be the key one to getting them to stand. So our goal in splinting is to make it easier for them to stand and apply pressure of their weight. I've found that I could splint both metacarpophalangeal joints at the same time, but if I splinted both knees (carpus) at the same time, it made it too difficult for them to rise to a standing position.

With our first cria, I had a Physical Therapist evaluate and offer suggestions for her therapy, which was performed twice daily. One of their suggestions was to include stretching on the shoulder joints. Although not readily obvious, the shoulder can also be windswept and starting the correction in the shoulder turned out to be key to recovery with our first cria. Stretching exercises involved simply holding the stretch in various positions that were opposite to their fixed flexion or extension.

Of note is making sure that the cria is safe from other crias and moms until recovery is complete. I've heard anecdotal success by using Vitamin D injectable to aid recovery. I'm a big advocate of Vitamin D and provided that the dosage is correct and that I'm mindful of the toxicity that can occur with administering Vitamin D, I see no reason not to give it.

I find it amazing how quickly these crias recover from angulation deformities.



Cria day of birth (left) unable to stand due to knuckling over and windswept knees that could not fully extend.

At 48 hours (right) Note splint on left foreleg photo. Splint on right removed at 48 hours.





Case from 60 cc Irrigation syringe (above). Flange end with tape across bottom rests against foot pad for support and to provide stabilization to metacarpophalangeal joint and prevent knuckling over.



Paint roller with cardboard lining, cut to size and split longitudinal works well for knee (carpus) stabilization.