

Equine Pediatric Orthopedics

There are several orthopedic problems seen in young horses that horse owners should be aware of coming into foaling season. Many of these conditions can be treated with prompt response but left untreated can have lifelong repercussions. There are three main categories of pediatric conditions discussed in this article. They include: 1) tendon laxity, 2) flexural deformities and 3) angular limb deformities.

Tendon Laxity:

Tendon laxity is a term for weak flexor tendons typically seen in newborn foals. The weakness can be congenital (inherited) or acquired (induced); however congenital is more common. Signs to watch for that could indicate tendon laxity include non-weight bearing on the toes, walking on the heel bulbs and in severe cases resting fetlocks on the ground. Most commonly hind limbs are affected. Causes of congenital tendon laxity include prematurity and systemic illness. Acquired or induced weakness can be caused by lack of exercise, bandaging, splinting, or casting for extended periods. Treatment includes corrective trimming of feet; heel extension shoes in more severe cases to provide support and protect the fetlocks and heel bulbs from trauma, and exercise to strengthen the tendons. The prognosis is favorable if caught early and addressed properly.

Flexural Deformities:

Flexural deformities is a term used for contracted tendons, when the long bone grows faster than the muscles or tendons. This causes persistent hyperflexion (over flexion) of a joint. Forelimbs are most commonly affected and typically only bilateral joints (same joint on each limb) are involved. The most common joints are the coffin, fetlock, and carpus. These deformities can either be congenital (malpositioning while in the uterus or genetics) or acquired (rapid growth or chronic pain). Congenital flexural deformities most often involve the fetlock and carpus and often require hospitalization for treatment in the form of controlled exercise, oxytetracycline (antibiotic) used for its muscle relaxing and anti-inflammatory properties, non-steroidal anti-inflammatories, toe extension shoes, splinting, and surgery in severe cases. These patients are often treated in the hospital as splinting needs to be monitored carefully for the development of pressure sores and often the foals will need assistance to stand and nurse while they are splinted. The prognosis for congenital deformities varies but is better if the deformity is addressed quickly and if the limb can be straightened manually. Acquired flexural deformities can be unilateral (one sided) or bilateral (both sides effected) and most commonly involve the coffin or fetlock joint. A horse can develop an acquired deformity due to rapid growth caused by nutritional imbalances or from chronic pain in an affected limb causing contracture of tendons and ligaments over time. Coffin joint flexural deformities are caused by contracture of the deep digital flexor tendon (DDFT) and are known as "club foot". Contracture of the DDFT typically occurs between 4 weeks to 4 months of age. In the first stage the dorsal hoof wall is less than vertical but approaching vertical. In the second stage, the dorsal hoof wall is past vertical and once the deformity has reached this point, the deformity is difficult to correct and most horses will not be athletic moving forward. Treatment of "club foot" includes dietary changes, exercise, toe extension shoes, non-steroidal anti-inflammatories (NSAIDS), sometimes oxytetracycline, and sometimes surgery (distal check ligament desmotomy or

deep digital flexor tenotomy for severe stage 2 cases). Prognosis is guarded for stage 2 cases. In fetlock acquired flexural deformities, you will notice a knuckled forward appearance at the fetlock joint with the hoof in normal alignment. This is caused by contracture of the superficial digital flexor tendon and most commonly seen in horses between 9 months and 2 years old. Treatment for these deformities includes dietary changes, exercise, toe extension shoes, NSAIDs, sometimes oxytetracycline, often times surgery (proximal and/or distal check ligament desmotomy; rarely superficial digital flexor tendon tenotomy), and aggressive splinting of the limb. The prognosis for these cases is variable.

Angular Limb Deformities:

Angular limb deformities is a term used for lateral or medial deviation of a limb. The term varus is used when there is medial deviation of the limb below a joint, while valgus is used to describe lateral deviation of a limb below a joint. The most common deformities include fetlock varus and carpal valgus but the carpus (knee), fetlock, and tarsus (hock) can all be affected. These occur in young foals of any breed but in particular those with rapid growth. They can be caused by intrauterine malpositioning, joint laxity (prematurity), and incomplete ossification of the cuboidal bones (prematurity). The forelimb is more commonly affected than the hind limb. If these deformities are present at birth and mild, many self correct without any treatment. However if severe (toed in or toed out greater than 15 degrees) or no progress is made within 5-7 days of birth, treatment is indicated. Initial treatment can consist of corrective trimming of the feet; rasping the inside of the foot for toed in foals and rasping the outside of the foot in toed out cases every 5 days for a couple weeks. Shoeing can be used to place an extension on the side of the hoof that is wearing out the most. If this does not make the necessary progress and the joint affected is at the end of the physal growth (growth plate closure), surgery in the form of periosteal transection, transphyseal bridging, transphyseal screw, or wedge osteotomy may be warranted. All of the previously mentioned surgery options are used to either promote or slow growth on a particular side of the limb or across a growth plate. If the deformity involves the fetlock joint and conservative therapies have not helped in the first couple weeks of life, aggressive therapy should happen before one month of age. The growth plates of the carpus and tarsus take longer to close and this means that there is more time before aggressive treatment is needed. The carpus and tarsus should be addressed before 4 months of age.

In cases of prematurity (300 or less days of gestation) or dysmaturity (foals with normal gestation length but characteristics of prematurity) with severe angular limb deformities one should be suspicious of incomplete ossification of the bones making up the joints within a limb. The more commonly seen angular limb deformities seen in premature or dysmature foals are carpus valgus and sickle hock (when the hock is excessively angled). Early treatment in these cases is essential before abnormal ossification patterns occur or crush injury to the bones occurs. This generally involves hospitalization for a sleeve cast to protect the bones of the joint while they have time to ossify.

Some foals are born with both hind limbs curving in the same direction also known as "windswept". This is caused by ligament and tendon laxity and often controlled exercise is enough to allow the foal to self correct in a couple of weeks.

Take Home:

Owners of foals should be aware of the signs of tendon laxity, flexural deformities, and angular limb deformities and seek veterinary attention to develop a plan for correcting these issues. Prognosis for a full recovery is based on early treatment, especially in angular limb deformities involving the fetlock, carpus, and tarsus where treatment should be performed prior to a month of age in the fetlock and prior to 4 months of age in the carpus and tarsus. Severe angular limb deformities (greater than 15 degrees of rotation) have a fair prognosis if treated early. If there is any concern of prematurity or dysmaturity in addition to a deformity, one should act fast by seeking veterinary attention to prevent crush injuries to the joints. The prognosis is good in cases treated early but guarded if cases are caught late and crush injuries are already present.

References:

1. "Equine Pediatric Orthopedics Lecture." Lisa Fortier. Cornell College of Veterinary Medicine.