The Ohio State University
Veterinary Continuing Education

Flexural Deformities in the Young Foal

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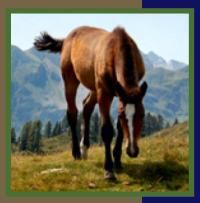

College of Veterinary Medicine

Flexural limb deformities are those that result in result in a deviation of the limb in a sagittal plane as viewed from the side. These deformities can be congenital (present at birth) or acquired. Although referred to as "contracted tendons", this is incorrect terminology because the tendons are not actually contracted. Rather it is believed the tendons do not elongate sufficiently or in proportion to growth of bones in the limb. These limb deformities can be classified as severe (rarely correctable), moderate (correctable with therapy) or mild (self-correctable). Examples of severe flexural deformities include arthrogryposis (deformities of multiple limbs and often the head and neck), and severe carpal deformities. Extraordinary methods can be utilized to correct severe deformities but are often unsuccessful.

Mild flexural deformities are those that result in an upright conformation of the limb(s), but the foal can bear weight on the limb(s) and load the flexor structures, including the superficial and deep digital flexor tendons, inferior and superior check ligaments, and the suspensory ligament. These foals generally require no specific treatment, but are managed by controlled exercise.

Moderate flexural deformities are those that make it difficult for the foal to bear weight on the limb and load the flexor structures. When these deformities occur bilaterally (common in forelimbs) the foals often cannot rise to suckle, and the lack of weight bearing worsens the flexural deformity. Examples of moderate flexural deformities include carpal and forelimb fetlock (usually occur together) flexural deformities, hindlimb flexural deformities of the fetlock, and coffin joint flexural deformities of either the hind or forelimb.

Treatment

Treatment of moderate flexural deformities is directed at achieving a normal limb orientation so that the foals' weight can stretch the flexor structures as soon as possible after birth. Splints can be very useful for restoring the limb to normal alignment and orientation, but require great attention to detail because the splints can exert excessive pressure on the soft tissues and the skin of the foal is very thin and fragile. Thus, pressure sores are extremely easy to create and at a minimum result in an extended convalescence. Severe pressure sores can result in limb necrosis and/or erosion into a joint.

The purpose of splints is to align the limb so that the foals' body weight can stretch the tight tendons and ligaments. Splints can be made of many materials including wood, cast material, PVC piping and metal. Commercial splints of many kinds have been available over the years, and present models include the Dynasplint and the Frank foal easy splint. The goal of limb alignment without damage to soft tissues can be difficult to achieve. I prefer to use polyvinylchloride (PVC) piping, and begin by applying a heavy bandage to the limb. Commercial gauze over cotton bandage material works better than sheet cotton as a bandage. The splint is made of PVC pipe cut in half or thirds. Using more of the diameter of the pipe (half versus a quarter) will result in less splint rotation. The corners of the ends of the splint should be cut or rounded and padded with cotton covered with tape. For fetlock deformities, the splint should be bent so that the fetlock can be pulled into the bend to extend the fetlock, which allows the some tension to and stretch the flexor structures. The splint should be applied or set on the palmar or plantar aspect of the limb and be taped tightly with 2-inch white tape. This requires at least two people, one to firmly extend the limb into the splint and one to apply the tape. The splint should be left in place for eight hours and then removed for eight hours. The splints should be reapplied as necessary.

In addition to splints, some medications can be of value in the treatment of flexural deformities in young foals. Oxytetracycline given intravenously appears to relax the soft tissues. The mechanism of action is unknown, and the drug is most efficacious when given in the first three days of life. The dose that is used is extremely high, but appears to be safe for healthy foals, and can be repeated at 24-hour intervals. The drug should be used with extreme caution (if at all) in foals with renal impairment. Phenylbutazone or other non-steroidal anti-inflammatory drugs can also be used on a short-term basis when the splints are used. This should only be done at the recommendation of and under the direction and supervision of your veterinarian. Some analgesia appears to relieve discomfort associated with stretching of the soft tissues and allows the foals to use the limbs. Phenylbutazone should not be used for long periods of time due to the potential of inducing gastric ulcers, and prophylaxis with gastric protectants is probably wise.

Figure 1: Flexural deformity of the coffin joint before (A) and after (B) inferior check ligament desmotomy and rasping of the heel in a foal.

Surgical treatment of congenital flexural deformities is rarely indicated. Severely affected foals rarely respond favorably to surgery, and mildly affected foals often do not require surgery if managed appropriately and in a timely manner. Surgery is most appropriately performed on foals with moderate flexural deformities that have not responded to splinting, trimming of the hooves, and tetracycline administration. The most common surgical therapy performed for congenital flexural deformities is transecting the inferior check ligament (desmotomy) for fetlock or coffin joint flexural deformities.

Rupture of the extensor tendons is commonly observed with congenital flexural deformities and results from the foal over-loading the extensor tendons. No specific therapy for the ruptured tendon is necessary. If the rupture is extensive, it can interfere with the ability to extend the fetlock and place the foot flat when walking. These foals will then tend to knuckle over, even if the flexural deformity is corrected. A firm fetlock bandage will extend the digit and assist in foot placement until the extensor tendons heal. The prognosis for foals with ruptured extensor tendons is good if there are no other problems and/or if the associated flexural deformity responds to treatment.

All foals should be examined by a veterinarian within 24 hours of birth. If limb deformities are observed at birth or during the first few days to weeks of life, a veterinarian should examine the foal to assess the likely cause, severity, recommended course of treatment and prognosis. If you have any questions regarding the information contained in this article or related to a flexural limb deformity in your foal, please don't hesitate to contact the author or one of our other board-certified faculty specialists at the Ohio State University Galbreath Equine Center.

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