Management of Tendon Disorders in Cattle

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KEYWORDS

• Tendon • Congenital • Acquired • Laceration • Avulsion • Tenosynovitis

Tendon disorders are a recognized cause of locomotory dysfunction in cattle, but the prevalence of lameness caused by tendon injury presently is unknown. Survey studies estimating the incidence of lameness in dairy herds in the United States, Canada, and the United Kingdom have not identified tendon disorders as a major cause of lameness.[1–3] However, one study indicated tendon involvement in 21% of limb lesions.[4] Another study reported that muscle or tendon lesions accounted for 74% of upper limb injuries in the forelimb and 7.8% in the hindlimb.[5] Tendon injuries causing loss of a production animal or a decreased level of production result in significant economic loss to the cattle producer. Tendon disorders may be congenital or acquired. Congenital abnormalities include lax tendons, contracted tendons, and displaced tendons. Acquired tendon disorders include lax tendons, contracted tendons, luxated tendons, tendinitis, lacerated tendons, avulsed tendons, ruptured tendons, and tenosynovitis.

CONGENITAL TENDON DISORDERS

Hyperextension Deformities

Flexor tendon laxity is generally the cause of hyperextension deformities in newborn calves. Such laxity occurs more commonly in calves born prematurely and in calves that are small for their gestational age. Acquired hyperextension deformities usually result from excessive weight-bearing caused by contralateral limb lameness or occur following removal of external coaptation after a prolonged period. Unilateral or bilateral hyperextension of the tarsus can be encountered in newborn calves following forced extraction. A rupture of the peroneus tertius causes the hyperextension of the tarsus. The gait is abnormal but it does not appear to be painful.

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Mild-to-moderate hyperextension commonly responds to limited exercise (myotactic reflex) that strengthens and tones the muscles, tendons, and ligaments. If exercise is not successful, some form of heel extension can be used to prevent hyperextension of the distal interphalangeal joint and keep the toe on the ground. The authors have used a thin wooden block glued to the hoof wall with methylmethacrylate acrylic (Technovit, Jorgensen Laboratories, Loveland, Colorado) to obtain heel extension. When methymethacrylate has to be used on calves' claws, the heat from the acrylic setting must be controlled by pouring cold water onto the surface of the acrylic. Otherwise the corium can be damaged.

Flexural Deformities

Flexural limb deformities occurring in a sagittal plane reflect an inability to achieve or maintain normal extension of the limb (**Fig. 1**).[6] Because flexural deformities often involve more than one structure, it is useful to describe them in terms of joints affected, rather than in terms of the affected tendons and ligaments. Congenital contracted flexor tendon is a common defect in cattle and occurs in numerous breeds.[7] Etiologic origins for contracted flexor tendons include inherited factors, in utero malpositioning, and overcrowding caused by the size of the fetus relative to the dam. Contracted tendons may occur with other congenital abnormalities, such as cleft palate, dwarfism, and arthrogryposis. A complete physical examination should be performed on the calf to rule out other problems before treatment is initiated for contracted tendons. Older cattle may acquire contracted tendons as a result of disease of the limb (eg, fracture or radial nerve paralysis, physitis).

The majority of contracted tendons in calves are observed within the first few days after birth. If one has reason to suspect a joint lesion as well as a tendinous lesion, radiographic examination may be useful before a prognosis is made and therapy is undertaken. Flexural deformities generally are found around the carpus or fetlock (**Fig. 2**). Flexural deformities are classified as mild (if the calves are able to walk on their feet but the heels do not contact the ground), moderate (if the dorsal aspect of the hoof breaks over a vertical plane perpendicular to the ground), or severe (if the affected animals are forced to walk on the dorsal aspect of the pastern, fetlock, or carpus). Often, nutrient or colostrum intake is not sufficient because the calves are unable to walk. Colostrum should be administered orally or plasma administered intravenously if the calf has difficulty walking. Also, unless adequate bedding is used or unless

Fig. 1. Flexor tendon contracture in a Holstein calf causing hyperflexion of the metacarpophalangeal joints.