STIFLE DISORDERS IN CAMELIDS
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Key Points
- Stifle disorders include patellar luxation, soft tissue injury (cruciate, collateral ligament, meniscus), and osteoarthrosis (gonitis)
- Depending on circumstances, some of these disorders can be managed surgically.
- Progressive secondary arthritis may limit full function
- Camelids seem to be relatively tolerant of moderate degenerative joint disease

The camelid stifle joint involves the typical patella - distal femur - proximal tibia articulations. The articulations are contained within a single synovial compartment, supported by a medial and lateral meniscus with cranial and caudal meniscal ligaments, and are stabilized by medial and lateral collateral ligaments and a single patellar tendon. Our imaging options for this region include radiographs, ultrasound, and computed tomography (CT). A recent publication provides pertinent arthroscopic anatomy.

Stifle disorders may be apparent in camelids of all age groups and genders. Conformation, body condition, chronic joint degeneration, and trauma individually or as related etiologies may be the basis for the individual conditions.

Early castration of male llamas less than 12 months of age results in a taller animal characterized by hyperextended hocks and stifles (post-legged), rear leg valgus deformity, and predisposition for gonitis and patellar disorders. The musculoskeletal unsoundness may relate to delayed closure of growth plates in the appendicular skeleton. Review of patellar luxation in our hospital cases and those of a nearby practitioner showed younger animals which developed this condition were males castrated at less than one year of age.

Patellar luxation may occur as a congenital or developed condition in camelids and may be unilateral or bilateral. Based on the literature and our hospital cases, congenitally-affected crias are more commonly medially luxated, and bilaterally affected. Variation exists as to whether the luxation is rigid and fixed or dynamic and mobile. Acquired or developed luxation is more commonly unilateral and lateral. Surgical correction may involve extra- or intracapsular methodologies. In general the technique involves “release” of the tissues on the same side of the luxation and imbrication of the tissues on the opposite side. Release may take the form of transecting extracapsular tissues (biceps femoris fascia laterally for lateral luxation), fibrous joint capsule, or partial transection of the quadriceps insertion. Likewise, imbrication may involve a combination of extracapsular tissues and/or joint capsule. Intraarticular methods may involve tibial crest transposition, femoral trochleoplasty with or without cartilage preservation, and patellar modification. Typically, if stability can be obtained with extracapsular means, we avoid intraarticular methods which may predispose to degenerative joint disease. Use of postoperative support (sling) may support repair in older, heavier patients.

We note three types of patellar luxation at our referral hospital. The first is congenital and recognized at birth. These luxations are usually medial. The “fixed” types present with a contracted (flexed) stifle and limb, and are not as successful with surgical intervention. Congenital dynamic luxations with normal anatomy are generally responsive to extracapsular surgical methods. We also feel we see a second population of animals which were likely congenitally affected with patellar luxation but not recognized until later in life. All animals had radiographic evidence of degenerative joint disease (djd). Surgery was generally successful if it was performed. The final group encompasses two subgroups, and had acquired unilateral luxations suspected to be related to trauma in animals less than five years of age or older animals associated with degenerative joint disease and excessive body weight. In the traumatic group, luxation was associated with trochlear ridge fracture (or osteochondrosis) or soft tissue tears, displaced medial or lateral, and were successfully repaired using extracapsular techniques and trochleoplasty and/or...
tibial crest transposition. In the older group, luxations were unilateral and lateral displaced. All were overweight, had significant djd, and all methods of repair were unsuccessful. One animal with unilateral disease developed painful luxation in the opposite limb during the immediate postop period, and was euthanatized.

Frequency of referred acquired patellar luxation cases is decreasing and may be attributable to later castration, reduced llama caseload, economy, and more appropriate nutrition.

Soft tissue injuries of the stifle include cruciate ligament rupture, meniscal tears, and complete or partial collateral ligament tears. As with other species, ultrasonic examination represents a critically useful diagnostic aid. I expect the increasing prevalence of ultrasonic examination, MRI, and CT will allow us to identify partial soft tissue injury, and aid our innovative efforts to inject regenerative therapies into these incomplete injuries. Animals may have more than one type of injury. Complete cruciate rupture most commonly involves the cranial ligament and is often associated with collateral ligament and meniscal tears. Surgical repair involves multiple techniques including tibial plateau leveling osteotomy (TPLO), patellar ligament autograft supported with nylon sutures, and fascia lata autograft for a congenital cranial cruciate ligament deficiency.

Many questions exist which hopefully will be addressed in the near future. What are the best methods to manage chronic gonitis in camelids? What is the prevalence and significance of partial cruciate ligament, collateral ligament, or meniscal tears in camelids? Can we expect therapeutics such as shock wave therapy, physical therapy, regenerative techniques (stem cells, platelet-rich plasma, IRAP) to enhance healing and provide pain relief?

References

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