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The partially torn CrCL - to debride or not

Kenneth A. Bruecker, DVM, MS, Dipl. ACVS
Veterinary Medical and Surgical Group, Ventura, California USA

THE ARGUMENT FOR REMNANT RETENTION IN PARTIAL CRANIAL CRUCIATE LIGAMENT (CrCL) INJURY

Primary Joint Stabilizer
The cranial cruciate ligament is an important stabilizer of the stifle joint with reference not only to cranial tibial thrust, but also to internal rotation of the tibia. Current surgical procedures to treat the cranial cruciate deficient stifle do not address both of these stabilizing functions. Attempts to maintain this stability is the sole argument in favor of retaining the remnant for the partially torn cranial cruciate ligament.

THE ARGUMENT FOR REMNANT REMOVAL IN PARTIAL CRANIAL CRUCIATE LIGAMENT INJURY

Ineffective Healing
The etiopathogenesis of ACL injury in humans is primarily traumatic. The etiopathogenesis of CRCL injury in dogs is degenerative. In the juvenile dog, the cranial cruciate ligament is supplied by multiple central blood vessels. By one year of age only a single central arteriole persists. This vessel is absent in some patients as early as 12-13 months of age. Ligamentocytes are nourished by joint fluid and capillaries in subintimal layer of synovium and from bone attachments at either end of the ligament. In patients with an absent central vessel, the central ligamentocytes are hypoxic. These hypoxic ligamentocytes undergo degeneration and necrosis or metaplasia to anaerobic chondrocytes. The collagen fibrils breakdown, fragment and dissolve into tropocollagen molecules. The fascicles lose tensile strength and are susceptible to injury from lower loads and stresses. Thus, the partially torn cranially cruciate ligament remnant cannot heal in an appropriate manner.

Incompetent Joint Stabilizer
As mentioned, current surgical procedures to treat the cranial cruciate deficient stifle do not address both of these stabilizing functions. Thus, there is an inability of any of these techniques to adequately protect the remnant from further damage.

Persistent Pain
Likewise, since there is an inability of any current surgical technique to eliminate strain on the remnant, the result is persistent sensory nerve activation and thus persistent pain.

Nidus of Inflammation/Nidus of Degradation
The cruciate ligaments are intra-articular, but because they are covered by synovium they are essentially extra-synovial. Exposure of the ligament to the joint fluid results in a release of inflammatory mediators and degradative enzymes. Progressive degenerative changes develop.

Remnant Obscures Visibility of Menisci
A significant number of dogs with partial cranial cruciate ligament tears have concurrent meniscal damage. The remnant of the ligament obscures full visibility of the menisci resulting in missed meniscal tears and may prevent successful management of meniscal tears.

SUMMARY
The degenerative nature of cranial cruciate ligament disease in dogs supports the surgical removal of remnants of partially torn cranial cruciate ligaments. A classification scheme for better describing partially torn cranial cruciate ligaments and a better method to evaluate the core of the ligament are needed before predictable attempts at remnant retention can be made.

SELECTED REFERENCES


