The most common cause of lameness in dogs is partial or complete rupture of the cranial cruciate ligament (CCL). The CrCL is composed of a craniomedial band (CrMB) and a larger caudolateral band (CLB). The CrMB is taut in flexion and extension, the CLB is taut in extension but lax in flexion. The CrCL functions to minimize internal rotation and hypertension of the stifle joint and prevent cranial translation of the tibial plateau relative to the femoral condyles. Full extension of the stifle is limited by contact between the CrCL and the cranial intercondylar notch of the femur. Nearly 270,000 dogs in North America rupture their CCL each year and in 2003, pet owners spent just over 1.3 billion dollars for the treatment of CCLD. [Wilke, 2005]

This disease burden on dogs and economic burden on pet owners in many respects influences evidenced based medicine in the veterinary profession. Since owners must pay for pet care, and veterinarians profit from care delivery, veterinary EBM should include careful consideration of science, clinical-experience/opinion, and economics.

Care for CCLD includes nonsurgical and surgical management. The focus of this talk is the delivery and success of nonsurgical management as well as prevention of CCLD. Historical papers suggest that dogs that weighing >15-20 kgs with naturally occurring CCLD that receive no intervention have a successful outcome 19-78% of the time. [Vasseur, 1984; Pond, 1972] The interpretation of these two papers is limited because of their retrospective nature and limited definition of outcome measures and success or failure of treatment. Providing no intervention to dogs with induced (surgically transected) CCLD was also described by Budsberg. [Budsberg, 2001] Using ground reaction forces as an outcome measure he found that in the first year after surgical transection limb function improved in the affected leg but, on average, it did not return to normal function.

To best evaluate the efficacy of an intervention a prospective, randomized clinical trial (RCT) should be performed. Recently, a RCT comparing medical management without TPLO or medical management with TPLO was completed in a group of large-breed, overweight dogs that had CCLD. The manuscript describing the findings from this study are pending but they have been described in the form of a scientific abstract. [Wucherer, 2012] DEXA was used to determine that overweight dogs provided exercise and a weight loss diet continually lost weight over the course of a year without losing muscle mass. An owner survey was used to determine that dogs in both groups significantly improved but owner with dogs in the surgery group reported a greater improvement. Force platform gait analysis was used to document that limb function in both groups significantly improved over the course of a year but dogs in the surgery group had more improvement than dogs that did not have surgery. A successful outcome for a patient was used when owners reported a 10% improvement in limb function and quality of life and the dogs ground reaction forces were within 85% of normal. Using this definition, 75% of the dogs receiving medical management and TPLO achieved success and 63.6% of the dogs receiving only medical management achieved success. These findings suggest that while surgical management provides a better prognosis, medical management is a reasonable
treatment option. However, it is also important to note that previous work has demonstrated the medical management combined with surgery improves patient prognosis compared to surgery alone. [Marsolais, 2002; Marsolais, 2003]

One great debate in the management of CCLD is what surgical technique is the best. Comparative studies that have recently been published suggest that if a difference in success exists, the difference is small. [Au, 2010; Conzemius, 2005; Conzemius, 2010; Cook, 2010; Nelson, 2012] However, one key factor that is overlooked is that determining the number of cases that had a good outcome is really only ½ of the equation; we must also look at the number of dogs that had a bad outcome. In effect, we need to calculate the Number Needed to Treat (NNT) which the number of patients who need to be treated to prevent one additional bad outcome and the Number Needed to Harm (NNH) which is the number of patients who have an adverse event because of treatment. Success should be defined as NNT/NNH. Thus, if one surgery provides a greater chance for the patient to recover but also puts that patient at more risk, that surgery may not provide the best success rate. Two other considerations when reviewing papers addressing “success” of surgery are that 1) outcome worsen as time goes on [Innes, 2000] and 2) we need objective outcome measures when determining success because care-givers are biased when determining the outcome of a patient. [Conzemius, 2012]

Historically, the veterinary profession has focused on treatment of CCLD. However, recent reports on the heritability and genetics of CCLD in the Newfoundland [Wilke, 2005; Wilke, 2006; Wilke, 2009] have provided great interest in the prevention of CCLD. Most recently, a genetic test that identifies CCLD disease association in the Newfoundland and Labrador retriever has been discovered. A genetic test may be able to reduce disease incidence by applying selection pressure on breeding methods and help owners choose pets with a lower probability of developing disease.
REFERENCES:


