Cruciates: Less Cutting, More Self-Repair

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What is it about the cruciate that makes so many want to intervene with blades and power tools? After all, the cruciate has feelings, too, and the limb has a vested interest in remaining intact.
With the lame dog, shouldn’t we investigate thoroughly to find out the facts before surgery?
We can’t uncut a tibia that has been refashioned after that of a human.

Ancillaries
Where there is a department of surgery, let us also assemble departments of wellness, rehabilitation and scientific integrative medicine. Let us foster healthy debate and critique, so that forward-thinking orthopedic surgeons and like-minded individuals are no longer accused of "making waves" and performing "surgical (or professional) suicide."

1. I agree that, "In this era, it is important to re-evaluate and modify traditional treatment approaches with information gleaned from evidence-based medicine."

2. We now have evidence that the minimally invasive extracapsular repair approach known as the TightRope, far less traumatic than the tibial plateau leveling osteotomy (TPLO) and tibial tuberosity advancement (TTA), demonstrates the highest safety-to-efficacy ratio over the long term, allowing dogs to avoid catastrophic complications and the intensive trauma of revisionist methods.

3. The time has come for a methodical, evidence-informed alternative to the rush-to-surgery mentality. First, confirm the diagnosis. Rule out trigger-point pathology as the cause of lameness. Rule out spinal cord or peripheral nerve disease, as thoracolumbar disk disease and other neurologic problems may resemble bilateral cranial cruciate ligament (CCL) injury. When attention narrows to joint angles and shear forces in the black-and-white world of orthopedic radiography, soft tissues fade to gray and are frequently forgotten.

Conversely, a pain medicine and rehabilitation practitioner evaluates joints in the context of the whole dog, often recognizing the source of the problem as also the key to the
solution: namely, proprioception. Maneuvers that provide somatic afferent stimulation, such as massage, acupuncture and therapeutic exercise, improve postural stability and motor performance. In addition, physical medicine methods counter the immunopathological and inflammatory mechanisms associated with CCLD.

Dealing with the Clients
Clients want options. While many can be convinced to schedule immediate surgery, they deserve to learn about the value of scientific integrative medicine and rehabilitation as an alternative or complement to surgery. It is better that they know up front that up to one-third of dogs after TPLO experience one or more complications, including fractured bones, heavy blood loss, implant failure, continued instability, meniscal damage and infection. Some dogs will require additional surgery. Chronic pain afflicts approximately 30 percent of dogs after CCL repair, reducing quality of life and ability to exercise. The rule of "You break it, you own it," does not apply to canine cruciate repair.

Who will pay when the surgery fails? The client and, in many ways, the dog. Since rehabilitation and pain control are usually necessary regardless of whether a dog needs surgery, why not start first with physical medicine and weight loss, which may make surgery unneeded?

Prevention Starts Early
Begin preventive measures early in a dog’s life by identifying modifiable risk factors and ways to prevent injury. Encourage activity that avoids straining the stifle with cutting and pivoting motions while fostering endurance. Inform clients that obese dogs have four times the likelihood of rupturing a cruciate as nonobese dogs. Don’t wait until the ligament ruptures in high-risk individuals and breeds. Actively intervene with physical medicine to address their pain, lameness, stifle effusion and mild osteoarthritis. If the CCL does rupture, share information from recent research that their lame, overweight dog may not need surgery if s/he loses excess pounds.

Review the anatomy of the stifle from a soft tissue enthusiast's perspective. Functional stability of the knee or stifle results from competent active and passive stabilizers of the stifle. Nerves, whether sensory, motor, or autonomic, contribute to the health and security of the stifle joint. They coordinate activity in the stabilizers of the knee, including the quadriceps, hamstrings, gastrocnemius, and popliteus muscles. Injury to the stifle as well as longstanding muscular imbalance may result from altered neuromuscular activity. The meniscus participates in proprioception and serves to maintain and improve joint health far more than acting as a shock absorber. Perhaps we should focus on fostering its wellbeing instead of injuring or removing it in surgery. About one-third of dogs demonstrate persistent
postoperative cranial tibial subluxation following TPLO; medial meniscectomy worsens the instability, by eliminating the ability of the meniscus to strengthen stifle mechanics.28 The CCL also contains mechanoreceptors that bolster endogenous repair mechanisms, including reinnervation; even as remnants of a ruptured structure.29 The pes anserine (or pes anserinus), a highly significant soft tissue structure, converges a multiplicity of nerve inputs, mechanoreceptors and tendons. It becomes tender in many dogs due to imbalance or overuse; it can mimic the pain of CCL disease. Myofascial palpation of the pes anserine and all other relevant anatomy indicates which supportive approaches might effectively and quickly resolve lameness. In contrast, in surgery, the pes is stretched and lifted out of the way en route to access, and then sever, the tibia during a TPLO, possibly making matters worse.

Time for Change

While much is changing in medicine, more still needs to change. In the words of one physician, "All too easily patients become—like machines—identical, passive, and ‘fixable.’ Medicine, as has often been pointed out, has become dominated by a mechanistic hubris, which sees machines and engineered solutions to ill health as the favourite way forward. ... Finally, there is the fact that medicine has grown out of a science governed and dominated by men and masculine patterns of thought. ... With the rising awareness that an excessively masculine style of science has had considerable costs as well as benefits for humanity comes the possibility of other more complete ways of proceeding. ... If we are to humanise medicine and encourage the full participation of patients, while offering them the best of traditional medicine, we need to incorporate new images into our thinking."30 These new images call for veterinarians to do less cutting and more cultivation of the self-healing impulses of the body. As gardeners and not just carpenters, we can partner with Nature, not just redesign her masterpieces after our own form (as in the case of the TPLO) or ideals.31

FOOTNOTES

4 Personal communication with physical medicine colleagues and fellow pain practitioners.
5 Butler JR, Syrcle JA, McLaughlin RM, et al. The effect of tibial tuberosity advancement and meniscal release on kinematics of the cranial cruciate ligament-deficient stifle during early, middle,


7 Reed-Jones RJ and Vallis LA. Proprioceptive deficits of the lower limb following anterior cruciate ligament deficiency affect whole body steering control. Exp Brain Res. 2007;182:249-260.


12 Personal communication, through email and in person, with dog caregivers wanting to avoid surgery for their lame dogs.


