ESPANOLA ANIMAL HOSPITAL
SETTING THE STANDARD OF CARE

Dr. PJ Rocheleau, DVM and Associates
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Canine Total Knee Replacement

Total Knee Replacement

Total Knee Replacement (TKR) has been available for humans for several decades and for dogs for about 20 years. The currently available TKR systems for dogs were developed from human implant and instrumentation systems and work quite well. The system will accommodate dogs that range in size between approximately 22-70kg lean body weight. This is a highly successful surgery in both people and dogs with a low complication rate and excellent return to normal function.

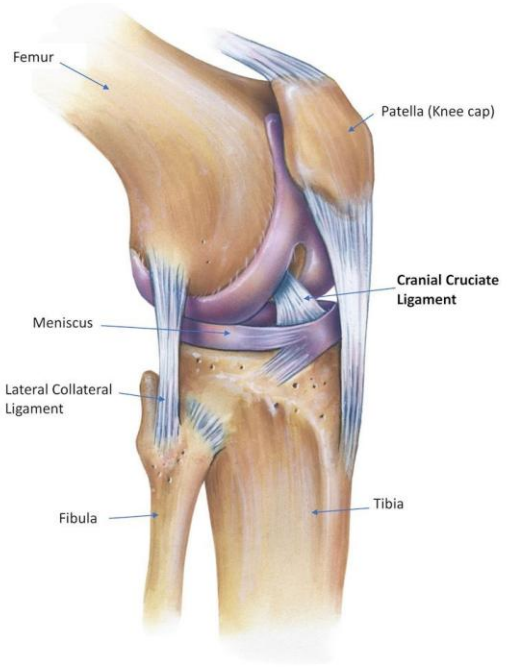


Image courtesy of McLaren Vale Veterinary Surgery. Used for educational purposes.

Indications

The current indications for TKR are severe/end-stage osteoarthritis, severe cartilage loss/damage and subchondral bone loss. Some dogs are presented to our hospital for chronic problems that have resulted in severe damage to the joint. In some cases, we see dogs for second opinions that have a history of post-operative problems, failed surgeries, or highly complex knee problems. Occasionally, during what was expected to be a routine knee surgery, arthroscopic findings may indicate severe, irreversible joint damage. For these dogs, conventional therapy may be insufficient to provide them with a good long-term outcome and TKR may be the most effective and least costly treatment option.

Good surgical candidates for TKR include patients with severe disease or damage to their knee who are not expected to have a good long-term outcome with more traditional, less aggressive treatment. It is important that these patients be free of other unmanaged orthopaedic disease, such as hip dysplasia or untreated cruciate ligament disease in the other limb.

Ideally, the dog will not have had previous surgery on the limb in question, however it is possible to use TKR to revise a failed prior surgery. It is very important that if prior surgery has occurred, that the site be free of infection. Special pre-operative testing and bacterial cultures may be necessary for dogs that have a prior surgical history.

There must be an absence of pre-operative skin infection and any dogs with a history of skin disease should be treated with extra care. A course of pre-operative antibiotics

may be prescribed as a precaution for TKR patients, as an implant infection is the most devastating possible complication.

Weight, Diet and TKR

In a patient with any orthopedic disease, the most important factor impacting the development of disease, prognosis and treatment is the weight of the patient. This is true with respect to the relative weight of the dog (St. Bernard v. Chihuahua) but especially with respect to obesity. **Regardless of the orthopedic condition, failure to recognize and address issues of diet and obesity will result in treatment failure, no matter how much is invested in treatment and surgery.**

In the case of TKR, obesity is an exclusion for surgery. Surgery cannot be performed until any weight-management issues are under control. The major concerns are collateral ligament rupture/insufficiency and implant wear due to over-loading, both of which could be catastrophic complications. It is important that the patient maintain a good body condition over their lifetime to avoid long-term complications.

If necessary, the surgeon will provide specific dietary recommendations including a specific diet(s), strict feeding guidelines that include specific measuring instructions and complete diet counselling. Any complicating medical conditions such as hypothyroidism need to be diagnosed and treated. Failure to comply with dietary recommendations will preclude surgery from being scheduled.

Please also note, among many other hazards, raw food diets have been demonstrated to be associated with increased rates of post-operative infection. Feeding of these diets will be considered an exclusion for surgery. Any dogs being fed raw food diets must be off them completely at least 8 weeks preoperatively. Failing to disclose that your pet has been on one of these diets may put them at significant risk of catastrophic post-surgical complications.

Image courtesy of Hill's Pet Nutrition

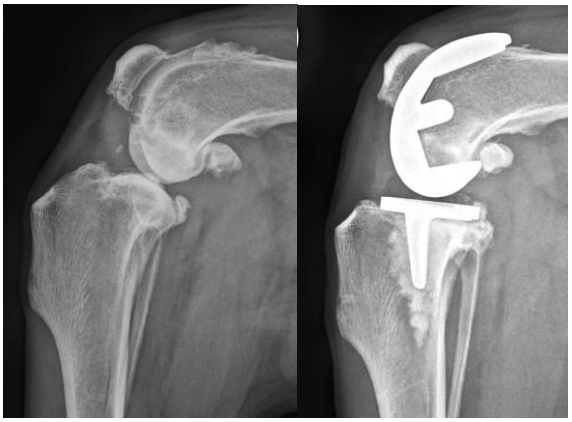
Procedure Overview

TKR involves replacement of the entire surfaces of the tibia and femur with titanium and polyethylene implants. In order to accomplish this, the cruciate ligaments, menisci and all articulating surfaces of the joint must be removed. Therefore, TKR is a “one-way street” – there is no way of reversing a knee replacement once this process has been started.

The surgery itself is extremely precise and great care must be taken during its execution, but it is relatively straight-forward. The internal contents of the joint are removed. Cutting blocks are attached to the tibia and femur via small pins. The cutting blocks precisely guide the saw blade used to remove the joint surfaces and prepare the underlying bone-

bed to accept implants. Femoral and tibial trial implants are applied to the prepared bone that allow the surgeon to assess implant fit, joint range of motion and soft-tissue balance.

The trials are then removed, and the actual implants are applied. These implants may either be cemented or cementless depending on patient and surgical parameters. In almost all cases cementless implants are preferred and employed. There are some circumstances where it may be necessary to apply a cemented implant based on specific patient factors. The joint is again checked for range-of-motion, implant stability and soft-tissue balance and then closed routinely.



Canine TKR Outcome

The expected outcome for dogs undergoing Canine Total Knee Replacement (TKR) is complete return to normal function. Just like with total hip replacement, TKR patients are free of pain, lameness and arthritis and once healed, can be treated as a completely normal dog and resume all normal activities.

In humans, TKR now exceeds hip replacement procedures by 3 to 1 and enjoys an incredibly high success rate with a low complication rate. This has to do with case selection and how surgery is managed. Patients are not scheduled for surgery until they meet the criteria for TKR, then one definitive procedure is performed in that patient. Ideally, if veterinary patients are handled in a similar manner, the same outcomes should be expected. The implants are highly wear resistant and are expected to last the lifetime of the dog.

Post-Operative Care

Client compliance with post-operative care is extremely important – **failure to meticulously follow instructions can and often does result in severe complications and treatment failure.** It is our preference whenever possible to provide complete and comprehensive case management for the entire post-op period. Dogs are admitted at 8am the morning of surgery and are discharged the following day at 8:30am. Pain management such as NSAIDs, opioids, etc, are provided as is a short course of antibiotics. Operative findings and aftercare will be thoroughly reviewed at the discharge consult, and written instructions are provided.

Rehabilitation is a crucial component of post-op management and is initiated immediately. Rehabilitation instructions are given at discharge and include icing, passive range-of-motion exercises, and controlled leash walks. Other than prescribed rehabilitation, absolute exercise restriction is necessary and off-leash activity is strictly forbidden. There is no running, jumping or playing during the recovery period and the pet is not allowed on furniture. Unrestricted access to flights of stairs in the house is to be avoided, however going up and down exterior stairs to get in or out of the house is permissible (on-leash only).

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Sutures are removed after 14 days and post-op rechecks occur at 6 and 12 weeks post-operatively in our hospital only. Further instructions for completing recovery will be given based on progress at these rechecks. For dogs with bilateral disease, the second surgery can be booked at 12 weeks post-op in most cases.

Complications

As with any surgical procedure, complications can and do occur. Great care is taken by our surgical and recovery teams to prevent complications from occurring. Some complications will still occur despite everyone's best efforts and even with perfect execution on the part of the surgery team, pet owner and pet themselves. Unfortunately, many complications that we see are induced by the owner wilfully not following the discharge instructions, so it is vitally important to meticulously follow the instructions as given. The discharge instructions are not difficult to perform but do require some regimentation and self-discipline to complete over the 12-week recovery period. Occasionally, patient compliance can be challenging but this can usually be managed with some extra assistance from our hospital staff.

Some of the more common post-operative complications of these procedures include infection, implant loosening, collateral ligament damage, patellar tendinitis, and on-going lameness. Any complication involving a TKR can be major and possibly catastrophic. A major or catastrophic complication that cannot be resolved could result in either amputation or arthrodesis (fusion) of the knee. Fortunately, this is extremely rare, and the vast majority of complications are successfully resolved.

Clients should be aware that the costs associated with the treatment of complications are the responsibility of the client and are not included in the cost of surgery. These costs may be substantial. They may also require corrective surgery and some situations may result in multiple surgeries. Clients must be aware of these possibilities and consider them carefully when electing to proceed with a TKR.

Cost

The cost of these procedures is as follows:

Orthopedic exam: $850 + HST
(includes consult, sedation and all necessary x-rays)

Total Knee Replacement - $6900 + HST

Note that post-op rechecks and x-rays are **not** included in the cost of surgery, sedation is necessary add $150 + $200+100 each x-ray + HST
Note that prices are subject to change and should be confirmed at booking.

****A non-refundable deposit of $500.00 is due at the time of booking any orthopedic work up and $1500 for surgery.**