

TTA Surgery (Tibial Tuberosity Advancement)

TTA is a new-comer to the arena of procedures advocated to stabilize the cranial cruciate deficient knee in the canine. The theory of TTA arose out of a modification of the proposed model by Slocum, in that the net "joint reaction" is approximately parallel to the patellar tendon, and that if the patellar tendon is perpendicular to the tibial plateau (joint surface), the cruciate ligaments are not under any load. If we move the patellar tendon forward to the point that it is perpendicular to the tibial plateau in a standing angle, we relieve the load on the cranial cruciate ligament. The net result being that the patellar tendon takes over the load of the cranial cruciate ligament. The result is a stable knee. Apparent advantages to TTA when compared to TPLO include;

1. Quicker recovery ‐ as a result of less invasive surgical technique, less swelling, shorter surgical time, and improved postoperative stability. Many patients are walking better when they leave the hospital postoperatively.
2. Less implant failure ‐ the implants are made of titanium and are therefore less reactive and less likely to break. The strain put on the implants is less than what is seen with TPLO .
3. Ease of procedure ‐ less technically demanding procedures are less likely to have operator-dependent failures, resulting in better clinical results.
4. Good results with chronically arthritic knees ‐ since TTA does not require a rolling of the tibial plateau (like TPLO), stability is easily achieved even in the most chronic knees.
5. Ability to operate on both knees at once ‐ a small percentage of dogs will have the condition undiagnosed in the opposite knee.

The only real disadvantage to TTA at this point is the lack of clinical cases. New procedures mean we do not have a huge case load to reflect upon when things go wrong. No surgery is perfect, and problems can arise. Should something go wrong with a TTA procedure, the knowledge base on dealing with the outcome is limited at this point. TPLO has been around long enough that the majority of the problems that arise have more than one solution.

Postoperative recovery from knee surgery, regardless if TPLO or TTA is performed, requires that your pet be kept quiet. Bones have been cut and repositioned to alleviate the cranial cruciate ligament deficit. TTA, more so than TPLO , has resulted in such rapid recovery that many patients begin using the leg too much, too soon. It is imperative to avoid running, jumping, and rough-housing with other pets for a minimum of 8 weeks until the bone has had a chance to adequately heal. Excessive strain placed on the osteotomy in either procedure too early will result in implant failure.

In the immediate postoperative period, you will see some swelling in the mid-tibial area, just past the end of the implants. Applying warm compresses to the leg 3-4 times daily for the first week will help with this. Some dogs will have some drainage from the surgical site for up to 1 week. Staples are irritating to some dogs, and they may try and chew them out. Others will feel so good when they go home that they immediately begin to play with the other dog, or want to run in the backyard. You must keep your pet quiet during the recovery period, even if this means temporarily medicating him/her.

The 8-week postoperative follow up radiograph is important. We are evaluating the leg for proper long-term alignment of the implants, failures, and to assure adequate healing of the osteotomy site. Once healed, a regimen of increased exercise as tolerated by the dog will result in a quick recovery to full use of the limb. Generally, this is about another 1-2 months.

A postoperative x-ray of a tibial tuberosity advancement

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