Cranial cruciate ligament (CrCL) rupture is one of the most frequent causes of hind limb lameness in dogs (1-3). Despite the high prevalence, the exact etiology of CrCL rupture remains elusive (1, 4).

Numerous techniques have been described to resolve this problem, going from simple debridement to the more invasive osteotomy techniques such as TPLO and TTA (5, 6).

The classical TTA technique, designed by Tepic and Montavon is a technically challenging technique, involving multiple implants. Therefore, a more simplified TTA technique should decrease the amount of necessary implants, and, more importantly, should reduce surgical time and therefore reduce costs. And this is where TTA Rapid™, patented by RITA LEIBINGER, comes in ...

Materials
The implants used to obtain the advancement are laser printed titanium cages that have an open honeycomb structure. This single implant not only allows easy placement, but also provides a good incorporation of bone inside the cage, resulting in a very stable construction. The size of the cages varies from 3 to 15 mm. Every cage size comes in 3 different cage depths.

Fixation of the cage is done by 4 or 6 2.4mm titanium screws, depending on the size of the cage. Now available: “Petite cages” which are fixed by 2.0mm screws to meet the anatomy of tiny dogs and cats.

Method
Prior to the surgery itself, the needed advancement is determined using one of the described methods developed for the TTA procedure. The method of choice is prone to the surgeons’ discretion.

The technique itself is constructed to be as straightforward as possible. Two saw guides were constructed to facilitate implant placement. One for small cages up to 4.5mm advancement and the second for all bigger cages.

FIGURE 1: Different cage sizes ranging from petite cage 3mm (pink) for tiny dogs to 15mm for giant breeds. Note that every size of cage has a corresponding color to avoid size confusion. Note the open structure of the cage.

FIGURE 2: Left image: Picture of the peg and the saw guide. The vertical part of the guide indicates the needed advancement. The horizontal part is a millimeter scale. This scale makes sure your partial osteotomy ends right behind the cranial cortex.

The right image shows you how to use the guide on a bone model.

The guide is developed to make the correct osteotomy. A pin located near Gerdy’s tubercle defines the proximal end of the osteotomy. The distal end of the guide defines the distal end of the osteotomy.

Once the osteotomy is made, the tibial crest is gently spread open and the cage is placed at the top of the osteotomy. Once the cage is in place, it is fixed with the appropriate number of screws.

FIGURE 3
Left image: Spreading the osteotomy.
Right image: Implanted TTA RAPID cage.
In addition TTA Rapid™ allows to correct a patella luxation in the same surgery, by using patella luxation spacers. These spacers are available in different thicknesses.

Figure 4: The tibia is moved with the TTA RAPID Tibia Tappet instrument (right). The Patella Luxation Spacer (left) will be inserted.

Conclusion
The same end result of a classical TTA is achieved is a less traumatic way, using half of the implants.

Although some orthopedic experience is required, it opens up the osteotomy technique to repair cranial cruciate ruptures to the less experienced surgeon or makes the surgery a lot easier for surgeons who do have the experience in TTA or TPLO (and know what a struggle it can be...)

References

About the Author
Yves Samoy was born in 1979 in Izegem, Belgium. In 2003 he graduated cum laude as veterinary surgeon at Ghent University. After graduation, he stayed at Ghent University at the Faculty of Veterinary Medicine, Department of Medical Imaging and Small Animal Orthopaedics to improve his orthopedic skills. From 2008 to June 2013 he was a full time assistant in the Orthopedic department. Under the guidance of Prof. Dr. B. Van Rysven he finished his PhD on Elbow incongruity in the dog in 2011. Since July 2013 he is Assistant-Professor in the Orthopedic department and is involved in all kinds of orthopedic surgery including arthroscopy. He is the developing surgeon behind the TTA Rapid technique.

Yves Samoy is author or co-author of several orthopedic publications in international journals.