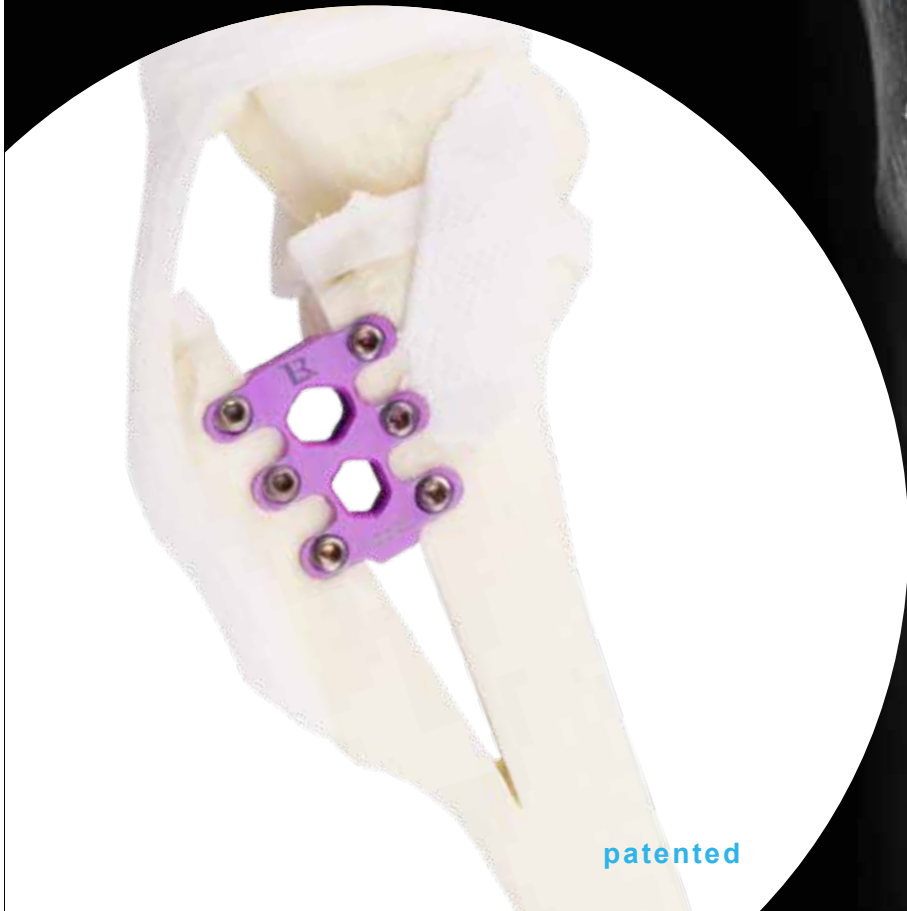




TTA[®] RAPID

It's firm, it's safe, it's RAPID.



patented



Special Thanks to
Dr. Caroline Huisman-Wildeman

TTA RAPID[®]

R RITA
LEIBINGER
MEDICAL

TTA RAPID® Technique

TTA RAPID®

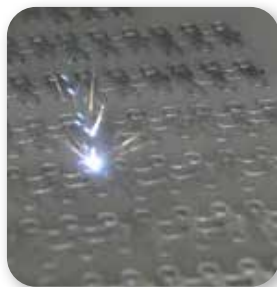
Tibial Tuberosity Advancement (TTA) as a technique for the surgical management of cranial cruciate ligament insufficiency has gained increasing acceptance and popularity in recent years. As we learn more, efforts are being made to simplify the technique, to make it more user-friendly and overcome some of the pitfalls of the original technique.

Developed in collaboration with Dr. Yves Samoy, University of Ghent, TTA RAPID® is one of the newer developments in both implant technology and technique.

The Implant

The manufacture of TTA RAPID® cages has only been made possible with advances in materials and manufacturing technology. The cages are made by an additive manufacturing (AM) 3D printing process known as selective laser sintering (SLS). The process is interesting to watch. Although other materials can be used in the process, TTA RAPID® Cages start life as a very fine, commercially pure titanium powder. A very thin layer of titanium powder is deposited on the working bed of the SLS machine and a modified print head carrying a high intensity laser is used to selectively melt the powder to bond (sinter) regions together. As further layers of powder are applied and the laser sintering process repeated, a solid three dimensional structure begins to form within the 'sand-pit' of metal powder. Electron beam melting (EBM) is a similar procedure that uses an electron beam instead of a laser.

Once the full structure has been created, the cages are separated from the powder and various chemical and other finishing processes are performed to leave the cages in their final, implantable state. Through this process, shapes can be created that would either be impossible to produce using more conventional technologies or cost prohibitive.



In the case of TTA RAPID®, a very porous honeycomb titanium lattice with a modulus similar to that of cancellous bone is generated permitting very rapid bony ingrowth to occur. Titanium is also very biocompatible, MRI compatible and typically needs to be inoculated with 10 times as many infectious

units for an implant associated infection to develop when compared to Stainless Steel.

The lattice found in the TTA Rapid cages is bound on 4 sides by an anatomically shaped, rigid shell of the same material with one side carrying lugs with screw holes in them. With the



lattice, cage and screw lugs being one piece, the cages are very stable in situ.

The constructs are so stable that auxiliary implants such as plates, wires, forks and staples are rarely indicated. This has a number of benefits:

- Reduced morbidity and biological cost that may be associated with the dissection and placement of additional implants.
- Reduced potential for cold conduction with superficially sited metallic implants.
- Fewer additional holes created in the tibial diaphysis which may contribute to crack propagation and failure of the tibial shaft.
- Metals of different electro-potentials are avoided in the same construct. Theoretically this reduces the potential for galvanic corrosion to occur (all components are titanium).
- Simplified inventory management.
- Potential time savings in the placement of implants.

CAUTION: TTA RAPID® patients are often subjectively more comfortable in their early post-operative recovery compared to those undergoing other osteotomy surgeries. Nevertheless, TTA RAPID® still involves a major osteotomy, and both appropriate patient selection and appropriate client education for post-operative management are indicated.

TTA RAPID® TECHNIQUE

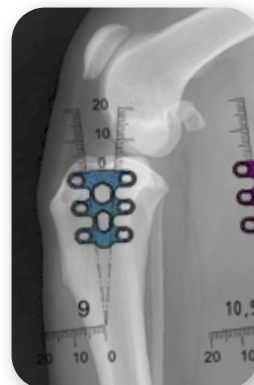
Pre-Operative Planning

Calculating the Advancement

Calculating the advancement can be done in different ways (classic TTA template; common tangent technique (Dennler); 2.07 x Tibial plateau Length (Inauen); Ness; ...). However, none of these techniques are perfect. A critical mind is advised when applying those measurements.

Using the TTA RAPID® Template

1. Where possible, calibrate the radiograph on the screen to the actual size.
2. Place the template over the radiograph and select the appropriate cage width.
3. Adjust the template position until the cage sits about 3mm below the proximal cortex on its caudal edge. Now measure the thickness of the cranial tibial cortex in the region of the black dot. Note these values as you will need them during surgery: XX / YY / Z



XX = Size of Implant from Template

YY = Implant Depth (can be measured after the saw cut)

Z = Thickness of the cranial tibial cortex in the region of the distal end of the osteotomy.



TTA RAPID® TECHNIQUE

Surgery Protocol

The dog is positioned in a dorsal recumbency, with the affected limb suspended from a stand. Make sure that the dog's paws are not fixed too tightly, since the affected limb will be put against the table later in the surgery. Preferably, the joint is thoroughly examined to assess the condition of the menisci and cranial cruciate ligament remnants. Remedial action is taken as necessary.

The TTA RAPID® Procedure is initiated through a medial skin incision.

Joint Surgery

If performing a lateral arthrotomy, leave about the last centimeter of the joint capsule closest to the tibia open. This allows enough slack to later perform the advancement.

Sawing the Crista Tibiae

- 1 A 2.5mm pin is placed through the joint capsule at the intersection of the femoral condyle and the tibial plateau. On the lateral side, the pin should start slightly in front of the level of "Gerdy's Tubercle". This pin is used as the proximal fixation of the saw guide.

Using the Saw Guide



The saw guide is an L-shaped device developed to facilitate the correct positioning of the osteotomy. It was designed to ensure that a sufficiently large cranial fragment is created for screw placement. The vertical arm of the guide has 2.5mm holes placed at strategic points, over a 1mm wide slot. The numbers next to these holes correspond with the size of the cage. This will prevent making a too distal osteotomy. The horizontal arm of the guide is a scale in millimeters. This will prevent making a too caudal osteotomy.

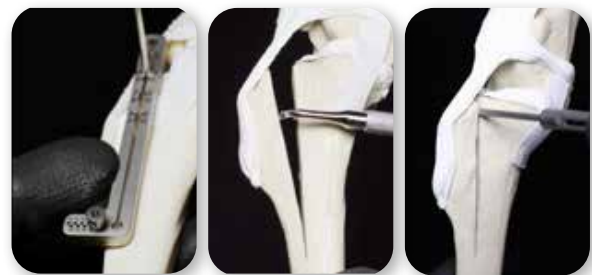


- 2 The guide is dropped over the pin using one of the numbered holes in the vertical arm, corresponding with the size of the cage measured during pre-operative planning.

- 3 A peg is placed into one of the holes in the horizontal arm of the drill guide, selecting the number of millimeters measured during pre-operative planning.
- 4 Press the saw guide against the medial aspect of the tibia with protruding peg forced up against the cranial side of the tibia. Hold it in that position. Correct use of the saw guide will place the osteotomy just caudal to the cranial cortex of the tibia. (As a guide: In a large dog the cortex is approximately 5mm thick and in a small dog approximately 3mm.)

IMPORTANT: Do not press the horizontal arm against the bone, as this will cause an oblique Osteotomy!

- 5 Use the saw guide to create the osteotomy. Optionally, a blade can be used to open the fascia/periosteum prior to the osteotomy.



Opening the Osteotomy

- 1 Depending on the required cage size, different osteotomy spreaders can be used to spread and hold open the osteotomy. Provided this is done carefully and slowly, allowing the bone time to adjust, the hinge is unlikely to fail. This being the most critical point of the surgery, the spreaders should be used with great caution!
- 2 Start with the 3mm spreader held sideways (thinnest part) located at the most proximal part of the osteotomy and gently turn it to spread open the osteotomy. Always turn the spacer downwards to minimize the forces on the fragment. A second spacer/spreader held sideways in the distal region of the osteotomy can be used to maintain the displacement.

CAUTION: Do not use this second spreader to increase the displacement as this will cause breaking of the cortex!

Repeat these steps until the required displacement is reached.

- 3 The depth of the osteotomy is measured with a drill depth gauge at the proximal extent of the osteotomy. This measurement is rounded up to select the correct cage Length.

TTA RAPID® TECHNIQUE

Fitting the Cage

- 1 The ears of the TTA RAPID® Cage need to be bent using the bending iron. Ears on the caudal side (tibia) should point slightly upwards, while the ears on the cranial side (crista tibiae) should be tilted slightly downwards. Slight under-bending of the caudal ears and slight over-bending of the cranial ears will help compress the osteotomy against the cage.
- 2 Elevate the periosteum from the bone in the region where the cage will be fixed.
- 3 Insert the cage into the osteotomy. Use bone forceps to make sure the ears of the cage are in close contact with the bone.



- 4 Once the cage is in place, check if the height of the cage is correct. This can be done by palpating the proximal tibia with the tip of a small mosquito clamp. You should feel about 3mm of bone above the top of the cage. More bone means a more distal placement of the cage and thus subsequently a more cranial displacement of the tibial tuberosity.
- 5 Large bone forceps can be used to give extra compression on the cage. This step is not essential if the distal cortex is still intact, but will result in a better bone contact with the cage.
- 6 Titanium screws are then inserted into the cage. Start with the most cranial, most proximal screw. The orientation of the screws should be medio-proximal to latero-distal (similar as the orientation of the fork in a standard TTA). The second screw is the caudo-proximal screw. The orientation of this screw is cranio-medio-proximal to caudo-latero-distal ("Away from the joint, away from the osteotomy site"). The rest of the screws are placed in the same fashion starting with the most proximal screws.

Once all screws are inserted, remove the bone forceps and re-tighten all screws.

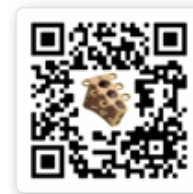
- 7 Application of Hydroxyapatite Paste inside and underneath the cage will accelerate healing of the osteotomy. Close the fascia where possible.
- 8 Close the wound using standard techniques.



Aftercare

- 1 Casting/bandaging is generally not required.
- 2 A light dressing can be applied for 3 to 5 days.
- 3 NSAIDs are provided for 3 to 4 weeks.
- 4 With the application of Hydroxyapatite Paste, clinical union can generally be anticipated within 6 weeks.

*Y. Samoy, DVM, PhD and P. Verleyen, DVM
Department of Medical Imaging and Small Animal Orthopedics
Faculty of Veterinary Medicine, Ghent University*



rapid.leibinger.vet



STUDIES ABOUT TTA RAPID®

Comparison of Outcomes Associated with Tibial Plateau Levelling Osteotomy and a Modified Technique for Tibial Tuberosity Advancement for the Treatment of Cranial Cruciate Ligament Disease in Dogs: A Randomized Clinical Study

University of Lyon, VetAgro Sup, Marcy l'Etoile, France
Véronique Livet, Arnaud Baldinger, Éric Viguier, Mathieu Taroni, Mathieu Harel, Claude Carozzo, Thibaut Cachon;
VCOT 2019

TTA RAPID: Description of the Technique and Short Term Clinical Trial Results of the First 50 Cases

Ghent University, Faculty of Veterinary Medicine,
Department of Veterinary Medical Imaging and Small
Animal Orthopaedics
Yves Samoy, DVM, PhD, Geert Verhoeven, DVM, PhD,
Diplomate ECVS, Tim Bosmans, DVM, PhD, Elke Van der
Vekens, DVM, Diplomate ECVDI, Evelien de Bakker, DVM,
PhD, Piet Verleyen, DVM and Bernadette Van Ryssen, Prof,
DVM, PhD; Vet Surg 2014

Tibial tuberosity advancement in small-breed dogs using TTA RAPID implants. Complications and outcome

Evidensia Strömsholm Small Animal Referral Hospital,
Sweden; Dyall B A R, DVM, Spec SWE. Schmökel H, DVM,
DECVS, PHD; 2016

TTA RAPID in the treatment of the canine cruciate deficient stifle: short- and medium-term outcome

S. J. Butterworth & D. M. Kydd, Weighbridge Referral Centre
& Kydd & Kydd Vets; Journal of Small Animal Practice 2017

TTA RAPID for treatment of cranial cruciate ligament injuries in dogs. Clinical results 50 cases

Kydd and Kydd Veterinary Health Centre, Wimbledon
David M Kydd BVetMed CertVR CertSAO MRCVS;
Orthopaedic News from Kydd & Kydd 2014

Postoperative infection with a multiresistant Staphylococcus aureus (MRSA) in a Bernese mountain dog with a rupture of the cranial cruciate ligament

Ghent University, Faculty of Veterinary Medicine,
Department of Veterinary Medical Imaging and Small
Animal Orthopaedics; F. Vandael, E. de Bakker, D. Paepe,
L.Mosselmans, Y. Samoy, G. Verhoeven, B. Van Ryssen;
Flemish Veterinary Journal, 2015, 84

TTA RAPID: an interesting alternative operation method of an injured cranial crucial ligament

Lecznica Weterynaryjna Arwet w Wieliczce; lek. wet. Rafał
Korta; VETERYNARIA W PRAKTYCE 2014

Bone Regeneration in Critical-Sized Bone Defects Treated with Additively Manufactured Porous Metallic Biomaterials: The Effects of Inelastic Mechanical Properties

M. Koolen, S.A. Yavari, K. Lietaert, R. Wauthle, A.A. Zadpoor,
H. Weinans; Universities of Utrecht & Delft, 3D Systems
Healthcare; MDPI Journals (Materials) 2020

TTA RAPID® with porous structure stimulates bone ingrowth

"TTA RAPID is made from pure titanium using innovative additive manufacturing (3D printing) technologies that allow to create complex geometries like porous structures. These porous structures stimulate bone ingrowth through the open porosities, have an improved fixation thanks to the high roughness and corresponding coefficient of friction, and have, in addition, a lower stiffness and thus avoid stress-shielding. The mechanical and clinical performance of the dodecahedron unit cell – also used in TTA RAPID – has been reported in literature, showing superior dynamical properties¹ and bone regeneration² compared to standard Ti-6Al-4V porous structures. These research-based innovations are the cornerstone of TTA RAPID, leading to over 80,000 TTA RAPID cages successfully implanted since 2011."

¹ Wauthle et al., Revival of pure titanium for dynamically loaded porous implants using additive manufacturing. Mater. Sci. Eng. C Mater. Biol. Appl. 2015, 54, 94–100.

² Koolen et al., Bone Regeneration in Critical-Sized Bone Defects Treated with Additively Manufactured Porous Metallic Biomaterials: The Effects of Inelastic Mechanical Properties. Materials 2020, 13, 1992.

NEW

TTA RAPID® Giant Set

Perfect for giant dog breeds!

Contains the big cage sizes 13.5mm and 15mm with depths ranging from 19 to 28mm, as well as the **new giant cage sizes 16.5mm and 18mm** with depths from 22mm up to 31mm.

TTA RAPID® Giant Set

Contains:

- Sterilization Tray with Lid
- 3x 2.4mm Screws of each length (6-40mm, 54 pcs. total)
- 2x 2.7mm Screws of each length (10-50mm, 36 pcs. total)
- 1 Cage of each size from 13.5 to 18mm (16 cages total)

Set with LeiStar Screws

132-6200-00

Tray without contents

132-6200-10



TTA RAPID® Premium Set

Contains:

- Sterilization Tray with Lid
- 5x 2.4mm Screws of each length (6-40mm, 90 pcs. total)
- 1 Cage of each size from 3 to 12mm
- Plus: 1 additional cage each of the short and very short cages (42 cages total)

Set with LeiStar Screws

132-6012-00

Set with Hexagonal Screws

132-6002-00

Tray without contents

132-5000-00/A





TTA RAPID Starter Sets

TTA RAPID Starter Sets I, II, III

TTA RAPID® Starter Split Set I

Contains:

Sterilization Tray with Lid

5x 2.4mm Screws of each length
(6-40mm, 90 pcs. total)

1 Cage of each size from 3 to 12mm
(28 cages total)

Set with LeiStar Screws

132-6013-00

Set with Hexagonal Screws

132-6003-00

Tray without contents

132-5000-00/A



TTA RAPID® Starter Set II

Contains:

Sterilization Tray with Lid

5x 2.4mm Screws of each length
(6-40mm, 90 pcs. total)

1 Cage of each size from 6mm to 10.5mm

Plus: 1 additional cage each of the short and very short
cages (24 cages total)

Set with LeiStar Screws

132-6014-00

Set with Hexagonal Screws

132-6004-00

Tray without contents

132-5000-00/A



TTA RAPID® Starter Set III

Contains:

Sterilization Tray with Lid

5 pcs. 2.4mm Screws of each length
(6-40mm, 90 pcs. total)

1 Cage of each size from 6 to 10.5mm
(16 Cages total)

Set with LeiStar Screws

132-6015-00

Set with Hexagonal Screws

132-6005-00

Tray without contents

132-5000-00/A



TTA RAPID® Starter Set IV

Contains:

- Sterilization Tray with Lid
- 5 pcs. 2.4mm Screws of each length (6-40mm, 90 pcs. total)
- 1 Cage of each size from 6 to 10.5mm, not including the longest versions (12 Cages total)

Set with LeiStar Screws

132-6016-00

Set with Hexagonal Screws

132-6006-00

Tray without contents

132-5000-00/A



TTA RAPID® Instrument Kit

Contains:

- Sterilization Tray
- Petite Saw Guide (not Tiny) + K-Wire
- Standard Sawguide + K-Wire
- 1 Pin
- Lever-Spreader 3/9 + 6/12
- Twist Drill 1.8
- Depth Gauge
- Screwdriver Handle
- Screw Driver Shaft 2.4 + Holding Sleeve
- Drill Guide
- Plate Holding Forceps

Set with LeiStar (Holding Sleeve not included)

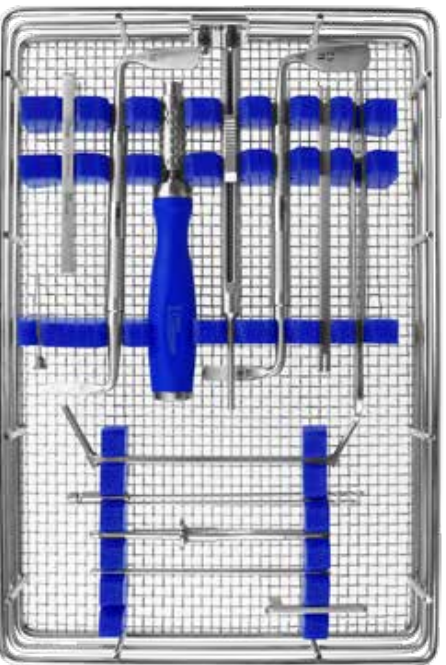
132-6010-00

Set with Hex

132-6000-10

Tray without contents

132-5000-10/A



Sterilization Container

See Sterilization Containers for Implants and Instruments Trays on [Page 204](#).



TTA RAPID® TINY SYSTEM

TTA RAPID® Tiny Set

Specially developed for tiny patients

The TTA RAPID® Tiny System is specifically designed for our smallest companions, including cats, toy breed dogs, and dogs with short legs. Engineered to address the delicate anatomical nuances of these patients, the set features 1.5mm and 2.0mm cages and screws. Accompanying instrumentation includes a "tiny" sawguide and spreader, allowing short osteotomies and ensuring meticulous surgical precision for the tiniest patients.



TTA RAPID® Tiny Set

Contains:

- 1 Sterilization Tray with Lid
- 1 of each TTA RAPID® Tiny Cage (12 total)
- 1 of each 2, 3 & 4mm Patella Spacer (6 total)
- 1 Rapid Luxation Plate "Petite"
- 5 of each 1.5mm Screw (6-20mm, 40 total)
- 5 of each 2.0mm Screw (6-26mm, 55 total)
- 1 Tibia Tappet Petite
- 1 Plate Holding Forceps
- 1 Tiny Sawguide with Pin & K-Wire
- 1 Depth Gauge
- 2 Drills (1.1 & 1.5mm)
- 2 Screw Driver Shafts (T6 & T8)
- 1 Screwdriver Handle
- 1 Drill Guide

Set with LeiStar Screws

132-6500-00

Tray without contents

132-6500-10

Complete Solution for CrCL + Patella Luxation

The TTA RAPID® Tiny Set includes Patella Spacers, a RAPID Luxation Plate, and the essential instruments to treat a cruciate ligament rupture and a concomitant Patella Luxation in one surgery.

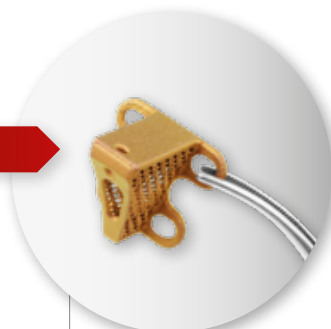
Learn more about this procedure on **Page 21**.



NEW

Suture Holes for More Rotational Stability

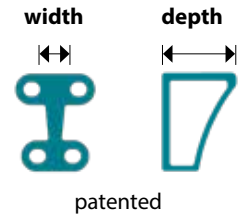
The TTA RAPID® Tiny cages now feature a suture hole that allows passing a suture material through the cage and a bone anchor in the distal femur.



TTA RAPID® Tiny Cages

Titanium

	Product Code	Size in mm (width/depth)	Screw Size
	132-0152-06	2/06	for 1.5 screws
	132-0152-08	2/08	for 1.5 screws
	132-0152-10	2/10	for 1.5 screws
	132-0153-07	3/07	for 1.5 / 2.0 screws
	132-0153-09	3/09	for 1.5 / 2.0 screws
	132-0153-11	3/11	for 1.5 / 2.0 screws
	132-0245-08	4.5/08	for 2.0 screws
	132-0245-10	4.5/10	for 2.0 screws
	132-0245-12	4.5/12	for 2.0 screws
	132-0026-09	6/09	for 2.0 screws
	132-0026-11	6/11	for 2.0 screws
	132-0026-13	6/13	for 2.0 screws



NEW

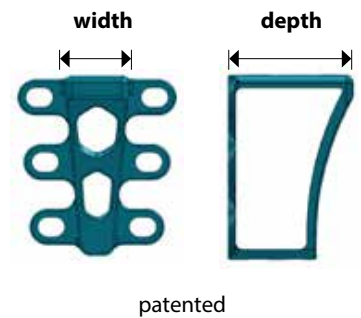
Suture Holes for More Rotational Stability

The TTA RAPID® Tiny cages now feature a hole that allows passing a suture material through the cage and a bone anchor in the distal femur to temporarily increase the post-operative rotational stability in highly unstable stifle joints with a CrCL rupture and pivot shift.

TTA RAPID® Cages

Titanium

	Product Code	Size in mm (width/depth)	Screw Size
	132-0023-08	3/08 (petite)	for 2.0 screws
	132-0023-10	3/10 (petite)	for 2.0 screws
	132-0023-13	3/13 (petite)	for 2.0 screws
	132-0003-08	3/08	for 2.4 screws
	132-0003-10	3/10	for 2.4 screws
	132-0003-13	3/13	for 2.4 screws
	132-0003-16	3/16	for 2.4 screws
	132-0045-09	4.5/09	for 2.4 screws
	132-0045-12	4.5/12	for 2.4 screws
	132-0045-15	4.5/15	for 2.4 screws
	132-0045-18	4.5/18	for 2.4 screws
	132-0006-13	6/13	for 2.4 screws
	132-0006-16	6/16	for 2.4 screws
	132-0006-19	6/19	for 2.4 screws
	132-0006-22	6/22	for 2.4 screws
	132-0075-13	7.5/13	for 2.4 screws
	132-0075-16	7.5/16	for 2.4 screws
	132-0075-19	7.5/19	for 2.4 screws
	132-0075-22	7.5/22	for 2.4 screws





TTA RAPID Giant Cages



TTA RAPID® Cages

Titanium

Product Code	Size in mm (width/depth)	Screw Size
132-0009-16	9/16	for 2.4 screws
132-0009-19	9/19	for 2.4 screws
132-0009-22	9/22	for 2.4 screws
132-0009-25	9/25	for 2.4 screws
132-0105-16	10.5/16	for 2.4 screws
132-0105-19	10.5/19	for 2.4 screws
132-0105-22	10.5/22	for 2.4 screws
132-0105-25	10.5/25	for 2.4 screws
132-0012-19	12/19	for 2.4 screws
132-0012-22	12/22	for 2.4 screws
132-0012-25	12/25	for 2.4 screws
132-0012-28	12/28	for 2.4 screws



TTA RAPID® Giant Cages

Titanium

Product Code	Size in mm (width/depth)	Screw Size
132-0135-19	13.5/19	for 2.4 / 2.7 screws
132-0135-22	13.5/22	for 2.4 / 2.7 screws
132-0135-25	13.5/25	for 2.4 / 2.7 screws
132-0135-28	13.5/28	for 2.4 / 2.7 screws
132-0015-19	15/19	for 2.4 / 2.7 screws
132-0015-22	15/22	for 2.4 / 2.7 screws
132-0015-25	15/25	for 2.4 / 2.7 screws
132-0015-28	15/28	for 2.4 / 2.7 screws
132-0165-22	16.5/22	for 2.4 / 2.7 screws
132-0165-25	16.5/25	for 2.4 / 2.7 screws
132-0165-28	16.5/28	for 2.4 / 2.7 screws
132-0165-31	16.5/31	for 2.4 / 2.7 screws
132-0018-22	18/22	for 2.4 / 2.7 screws
132-0018-25	18/25	for 2.4 / 2.7 screws
132-0018-28	18/28	for 2.4 / 2.7 screws
132-0018-31	18/31	for 2.4 / 2.7 screws

NEW



NEW



1.5 Cortical Screws, Titanium

LeiStar head, self tapping,
with three flute cutting edge



Length (mm)	LeiStar
6	245-515-06
7	245-515-07
8	245-515-08
9	245-515-09
10	245-515-10
12	245-515-12
14	245-515-14
16	245-515-16
18	245-515-18
20	245-515-20

See more screw lengths on **Page 126.**

Screw Racks on **Page 198.**

2.0 Cortical Screws, Titanium

Hexagonal or LeiStar head, self tapping,
with three flute cutting edge



Length (mm)	Hexagonal	LeiStar
6	245-220-06	245-520-06
8	245-220-08	245-520-08
10	245-220-10	245-520-10
12	245-220-12	245-520-12
14	245-220-14	245-520-14
16	245-220-16	245-520-16
18	245-220-18	245-520-18
20	245-220-20	245-520-20
22	245-220-22	245-520-22
24	245-220-24	245-520-24
26	245-220-26	245-520-26
28	245-220-28	245-520-28
30	245-220-30	245-520-30

2.4 Cortical Screws, Titanium

Hexagonal or LeiStar Head, self tapping,
with three flute cutting edge



Length (mm)	Hexagonal (Standard)	LeiStar (Standard)
6	245-224-06	245-524-06
8	245-224-08	245-524-08
10	245-224-10	245-524-10
12	245-224-12	245-524-12
14	245-224-14	245-524-14
16	245-224-16	245-524-16
18	245-224-18	245-524-18
20	245-224-20	245-524-20
22	245-224-22	245-524-22
24	245-224-24	245-524-24
26	245-224-26	245-524-26
28	245-224-28	245-524-28
30	245-224-30	245-524-30
32	245-224-32	245-524-32
34	245-224-34	245-524-34
36	245-224-36	245-524-36
38	245-224-38	245-524-38
40	245-224-40	245-524-40

2.7 Cortical Screws, Titanium

Hexagonal or LeiStar Head, self tapping,
with three flute cutting edge



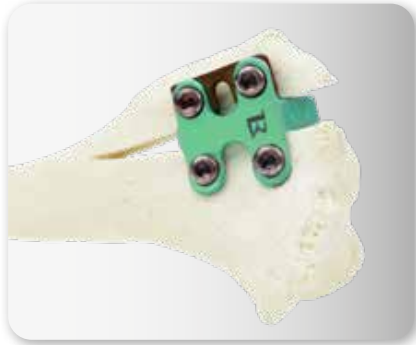
Length (mm)	LeiStar (Standard)
10	245-527-10
12	245-527-12
14	245-527-14
16	245-527-16
18	245-527-18
20	245-527-20
22	245-527-22
24	245-527-24
26	245-527-26
28	245-527-28
30	245-527-30
32	245-527-32
34	245-527-34
36	245-527-36
38	245-527-38
40	245-527-40
45	245-527-45
50	245-527-50



TTA RAPID® & RAPID PATELLA LUXATION SYSTEM

Correction of a Patella Luxation during a TTA RAPID® Surgery

This technique is suitable for dogs suffering from patella luxation with a simultaneous cruciate ligament tear, a partial cruciate ligament tear, or when a cruciate ligament tear is imminent.



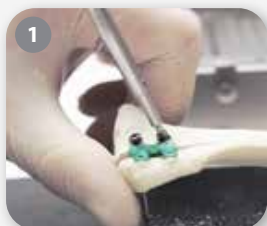
tta.leibinger.vet

TTA + PATELLA LUXATION (TTTA)

Dr. Hugo Schmökel

When a dog suffers from a cranial cruciate ligament rupture with a simultaneous patellar luxation, this can be addressed with a modified TTA RAPID® procedure. Prior to the TTA RAPID® surgery itself, it should be determined if the dog would benefit from a trochleoplasty. If so, this should be performed before the actual TTA RAPID® procedure¹.

The osteotomy used for the TTA RAPID® procedure can also be used to achieve a medial or lateral tibial tuberosity transposition (TTT), depending on the kind of patellar luxation. The further described procedure focuses on a lateralization of the crest, needed for the correction of a medial patellar luxation.



After performing the osteotomy, the appropriate cage is inserted into the osteotomy and all of the caudal screws are inserted in the tibia (Image 1). Take care to choose a cage that has a bigger medio-lateral length than measured after the osteotomy, as both cortices of the transposed crest need to be supported! Usually, the longest cage is advised.

Consecutively, the tibial crest is slightly advanced, so that it can be moved laterally with the tibia tapper instrument (Image 2).



Be very careful performing this and restrict the advancement to the absolute minimum to avoid crest avulsion. Once the desired position is reached, a corresponding washer is placed between the crista tibiae and the ears of the cage (Image 3).

If the transposition is sufficient to prevent dislocation of the patella, the remaining screws are inserted and the operation finished as described (Images 4 and 5).

In case of a lateral luxation, the tibial crest is shifted medially in a similar manner after fixing the cranial part of the cage in the tibial crest.

1. Samoy Y, Verhoeven G, Bosmans T, Van der Vekens E, de Bakker E, Verleyen P, et al. TTA RAPID: Description of the Technique and Short Term Clinical Trial Results of the First 50 Cases. *Vet Surg.* 2014;n/a-n/a.

Patella Luxation Spacers

For RAPID LUXATION and TTA RAPID, Titanium



Product Code	Specifications	For Cage Sizes
132-8030-01L	1 mm height, 2 holes, left	Tiny / Petite
132-8030-01R	1 mm height, 2 holes, right	Tiny / Petite
132-8030-02L	2 mm height, 2 holes, left	Tiny / Petite
132-8030-02R	2 mm height, 2 holes, right	Tiny / Petite
132-8030-03L	3 mm height, 2 holes, left	Tiny / Petite
132-8030-03R	3 mm height, 2 holes, right	Tiny / Petite
132-8030-04L	4 mm height, 2 holes, left	Tiny / Petite
132-8030-04R	4 mm height, 2 holes, right	Tiny / Petite
132-8020-02L	2 mm height, 2 holes, left	3 - 7,5 mm
132-8020-02R	2 mm height, 2 holes, right	3 - 7,5 mm
132-8020-03L	3 mm height, 2 holes, left	3 - 7,5 mm
132-8020-03R	3 mm height, 2 holes, right	3 - 7,5 mm
132-8020-04L	4 mm height, 2 holes, left	3 - 7,5 mm
132-8020-04R	4 mm height, 2 holes, right	3 - 7,5 mm
132-8010-02L	2 mm height, 3 holes, left	9 - 15 mm
132-8010-02R	2 mm height, 3 holes, right	9 - 15 mm
132-8010-04L	4 mm height, 3 holes, left	9 - 15 mm
132-8010-04R	4 mm height, 3 holes, right	9 - 15 mm
132-8010-06L	6 mm height, 3 holes, left	9 - 15 mm
132-8010-06R	6 mm height, 3 holes, right	9 - 15 mm

Tibia Tappet

For inserting Patella Luxation Spacers.



Product Code	Description
132-4071-00	Petite / Tiny 2.0 mm
132-4070-00	Standard 2.4 mm

Patella Saw

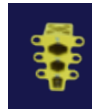
With standard sawblade, incl. Allen Wrench 1.5mm

23-1005-90

Replacement Saw Blade

23-1005-20





TTA RAPID® & RAPID LUXATION SYSTEM INSTRUMENTS

TTA RAPID® Spreader

With tensioning and fixation screw

Product Code	Description
132-4080-12	12 cm (Tiny)
132-4080-16	16 cm (Standard)



TTA RAPID® Lever-Spreader

Product Code	Description
132-4000-13	3 mm & 9 mm (Tiny)
132-4010-13	6 mm & 12 mm
132-4015-13	13.5 mm & 15 mm



TTA RAPID® Saw Guide

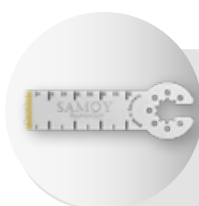
Product Code	Description
132-4042-00	For Tiny cage sizes 2 - 6 mm
132-4041-00	For cage sizes 3 - 4.5 mm
132-4040-00	For cage sizes 6 - 15 mm



TTA RAPID® Saw Guide Pin

Ø 1.0mm

132-4030-10



Saw Blades

See saw blades on **Page 190**.



Calibration Ball

See Radiography Calibration Ball on **Page 81**.

OTHER ESSENTIAL INSTRUMENTS

Depth Gauge



Product Code	Description	Compatibility
164-1520-20	150mm in length, scale up to 40mm	for 1.5/2.0/2.4 mm screws
164-2735-60	150mm in length, scale up to 60mm	for 2.4/2.7/3.5 mm screws

Drill Guide

Product Code	Size (mm)	Length (mm)
164-0070-20	1.1/1.5	100 mm
164-0070-18	1.5/1.8	100 mm
164-0070-27	2.0/2.7	100 mm
164-0070-35	2.5/3.5	100 mm



K- Wires, Single Trocar

Product Code	Description
144-1015-10	1.5 mm x 100 mm
144-1025-10	2.5 mm x 100 mm



See more K-Wires on [Page 136](#).

Plate Holding Forceps

90 mm, curved

164-0050-09



Plate Holding Forceps

160 mm, angulated

164-0050-16



Bone Holding Forceps

21,5 cm - with spin lock

128-0525-21



TTA Bending Iron

120 mm

132-4020-00





Twist Drill

Screwdriver Shaft

Screwdriver Handle

Twist Drill



Product Code	Ø (mm)	for Screw Ø (mm)	Length (mm)	Connection
148-0080-11	1.1	for 1.5 screws	45	round shaft
148-0080-15	1.5	for 2.0 screws	70	round shaft
148-0080-18	1.8	for 2.4 screws	125	round shaft
148-0080-20	2.0	for 2.7 screws	85	round shaft



Product Code	Ø (mm)	for Screw Ø (mm)	Length (mm)	Connection
148-0081-11	1.1	for 1.5 screws	60/35	AO QC
148-0081-15	1.5	for 2.0 screws	85/60	AO QC
148-0081-18	1.8	for 2.4 screws	125/25	AO QC
148-0081-20	2.0	for 2.7 screws	100/75	AO QC

See more Twist Drills on **Page 199**.

Screwdriver Shaft LeiStar

AO connection, self-holding
(no Holding Sleeve needed)



Product Code	Description
128-1520-15	T6, for 1.5 mm Screws, 60 mm in length
128-1520-20	T8, for 2.0 / 2.4 mm screws, 60 mm in length
128-2024-08	T8, for 2.0 / 2.4 mm screws, 100 mm in length
128-2735-10	T10, for 2.7 / 3.5 mm screws, 100 mm in length

Screwdriver Shaft Hexagonal

AO connection (Holding Sleeve recommended)



Product Code	Description
128-0900-15	for 2.0 mm Screws, 100 mm long
128-0900-20	for 2.4 mm Screws, 100 mm long

More Screwdriver Shafts on **Page 200**.

Holding Sleeve

for Hexagonal Screwdriver Shafts

Product Code	Size
128-0940-24	2.0 / 2.4 mm



Screwdriver Handle

Silicone, AO-Connection
sterilizable up to 134°C / 273°F



247-0103-00