

# Preliminary study of the clinical efficacy of the osteosinter® VET TTA technique, for the treatment of the anterior cruciate ligament, through clinical, baropodometric and owner's opinion analysis

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## Background and Introduction

The rupture of the anterior cruciate ligament (ACL) is one of the most common orthopaedic injuries in dogs, which if left untreated, leads to degenerative changes in the stifle joint. The treatment is only surgical. There are many surgical techniques to resolve this condition, one of the most validated is the TTA (Tibial Tuberosity Advancement), which is based on moving the insertion of the patellar tendon cranially so that it and the surface of the tibia are equal to or less than 90° in all flexion and extension positions, and that cancels the function of the ACL. Among the TTA implants that we currently find on the market we have: TTA porous®, TTA rapid®, TTA Kyon® and Osteosinter® VET-TTA.

## Objectives

The aim of the study is the complete assessment of the short-term postsurgical recovery of patients operated on with the TTA technique using the OsteoSinter® Vet TTA implant, used to resolve the rupture of the anterior cruciate ligament.

## Results

### Orthopaedic/clinical analysis

	0	10	21	42	84
Lameness 1-5	2(14,3%) 3 (85,7%)	2(71,4%) 5(28,6%)	2(85,7%) 3(14,3%)	1(71,4%) 3(14,3%)	1(85,7%) 2(14,3%)
Pain 0-3	0(28,6%) 1(28,6%) 2(42,8%)	0(42,8%) 1(57,1%)	0(71,4%) 1(14,3%) 2(14,3%)	0(85,7%) 1(14,3%)	0(100%)
Weight bearing 0-3	1(57,1%) 2(42,8%)	1(42,8%) 3(14,3%)	0(28,6%) 2(42,8%)	0(71,4%) 1(28,6%)	0(100%)
Flexion 0-2	0(42,8%) 1(28,6%) 2(28,6%)	0(57,1%) 1(42,8%)	0(85,7%) 1(14,3%)	0(85,7%) 1(14,3%)	0(100%)
Extension 0-2	0(14,3%) 1(28,6%) 2(57,1%)	0(42,8%) 1(42,8%) 2(14,3%)	0(85,7%) 1(14,3%)	0(100%)	0(100%)
Atrophy 0-2	0(42,8%) 1(57,1%)	0(28,7%) 1(71,4%)	0(14,3%) 1(85,7%)	0(14,3%) 2(28,6%)	0(57,1%) 1(42,8%)
Creptation 0-1	0(85,6%) 1(14,3%)	0(71,4%) 1(28,6%)	0(71,4%) 1(28,6%)	0(85,7%) 1(28,6%)	0(57,1%) 1(42,8%)

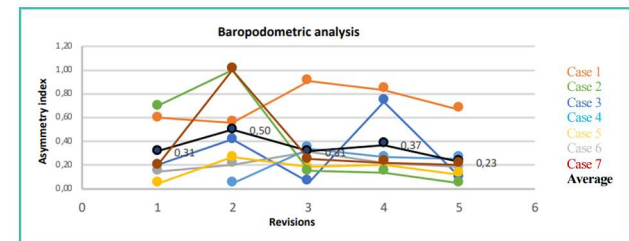
### Owner's assessment analysis:

Numerical evaluation (from 0 to 10) of the following 4 parameters:

	Revision day 10	Revision day 21	Revision day 42	Revision day 84
1-Improvement in the dog's general pain	4,71 (2-10) $\sigma = 2,56$	6,17 (4-8) $\sigma = 1,47$	7,14 (4-10) $\sigma = 1,86$	7,57 (5-10) $\sigma = 1,72$
2-Improvement in the degree of mobility of the anima	5,71 (1-10) $\sigma = 2,93$	7,00 (5-8) $\sigma = 1,55$	7,14 (4-10) $\sigma = 1,86$	8,00 (6-10) $\sigma = 1,91$
3-Improvement in the dog's quality of life	6,29 (5-10) $\sigma = 2,29$	7,50 (5-9) $\sigma = 1,38$	7,86 (6-10) $\sigma = 1,46$	8,43 (6-10) $\sigma = 1,27$
4-Evaluation of the lameness in relation to its state before the intervention	5,00 (2-10) $\sigma = 2,52$	6,43 (2-9) $\sigma = 2,64$	7,14 (3-10) $\sigma = 2,67$	7,43 (5-10) $\sigma = 1,72$

### Baropodometric analysis:

Asymmetry index through revisions of days 0, 10, 21, 42 and 84



## Discussion

The period for conducting the study has meant that the number of cases is low, unlike similar studies found in the literature. Most of the parameters in the clinical evaluation at day 84 present a complete improvement in all cases and in the evaluation made by the owners there is a very favourable assessment throughout the reviews. Clinical and owner results do not correlate with baropodometric results. The literature shows that there are still no scales that can correlate baropodometric results with clinical analysis. There is great variability in the results, among others, due to the low number of cases and non-considerable variables such as speed, the morphology of the animals, inter-daily variations, the type of gait, the character of the animal, etc. Even so, the tendency of the asymmetry index is to decrease from the reviews of days 42/84, so the animals should be re-evaluated in a longer term (10 months).

## Conclusion:

The study gives us a sufficiently clear idea of the clinical validity of the osteosinter® VET TTA technique, which is considered very positive. The implant is simple, few instruments have to be used and the technique is relatively simple and easy to learn, which is considered a great advantage. The study should be complemented with more cases and longer-term evaluations (10 months). It would also be interesting to analyse the osteointegrative capacity of the implant.

## Materials and Methods

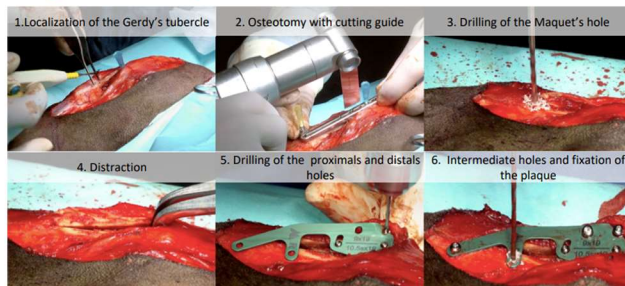
Implant: Osteosinter® VET-TTA >>>

### Cases:

Number	Age	Weight	Breeds
7	3 to 7 years $\sigma = 1,89$	20kg to 48,5kg $\sigma = 9,41$	2 Labrador 1 Pitbull 1 dogo 3 mixed



### Surgical technique:



### Evaluation:

Owners assessment	Orthopaedic analysis	Baropodometric analysis
Questionnaire that includes 4 questions to answer from 1 to 10, score where "1" means no improvement and 10 complete improvement. The 4 parameters evaluated where: <b>Pain perception, mobility of the animal, quality of life and lameness</b>	Clinical analysis of the following parameters: <b>lameness, pain, weight bearing, flexion, extension, muscle atrophy and joint creptation.</b>	10 walks were made on the Tekscan® baropodometry tape in all check-ups and an average of the walks was made. The documented parameter was the <b>maximum vertical force</b> , expressed as a % of body weight (%BW). With this parameter, an <b>asymmetry index</b> was calculated