Universitat Autònoma de Barcelona

FACULTAT DE VETERINÀRIA

CTWO vs. FUSION-TTA
AS A SURGICAL TREATMENT TO REPAIR THE CRANIAL CRUCIATE LIGAMENT RUPTURE IN DOGS

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INTRODUCTION & OBJECTIVES

Rupture of the anterior cruciate ligament (ACL) is one of the most frequent orthopedic injuries in dogs and there is much controversy regarding its surgical treatment. In this study, the tibial tuberosity advancement (TTA) using Fusion-TTA (F-TTA) and the cranial tibial wedge osteotomy (CTWO), have been compared with the objective of determining if one of them offers more post-surgical complications than the other, and if the individual characteristics of each patient should condition the choice of one technique or another, in order to restore the functionality of the injured limb and provide the animal with the best possible quality of life after the intervention.

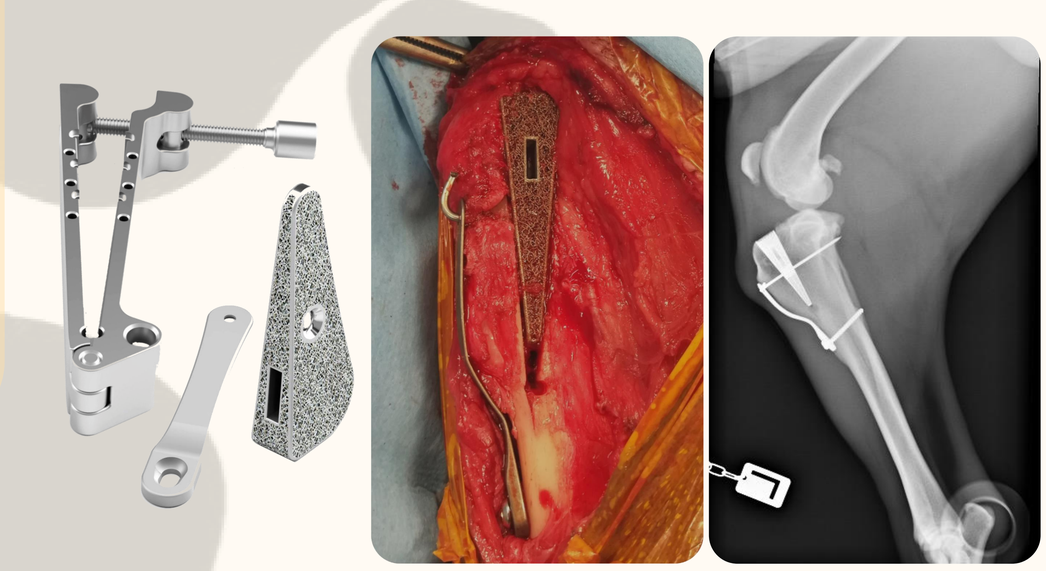

Figure 1. Surgical material, desired final intraoperative result, and postoperative radiography of the tibial tuberosity advancement (TTA) using Fusion – TTA. Obtained from *Fusion–TTA Implants. Courtesy of Drs. Jordi Franch Serracanta and Katrin Steffanie Rappe.*

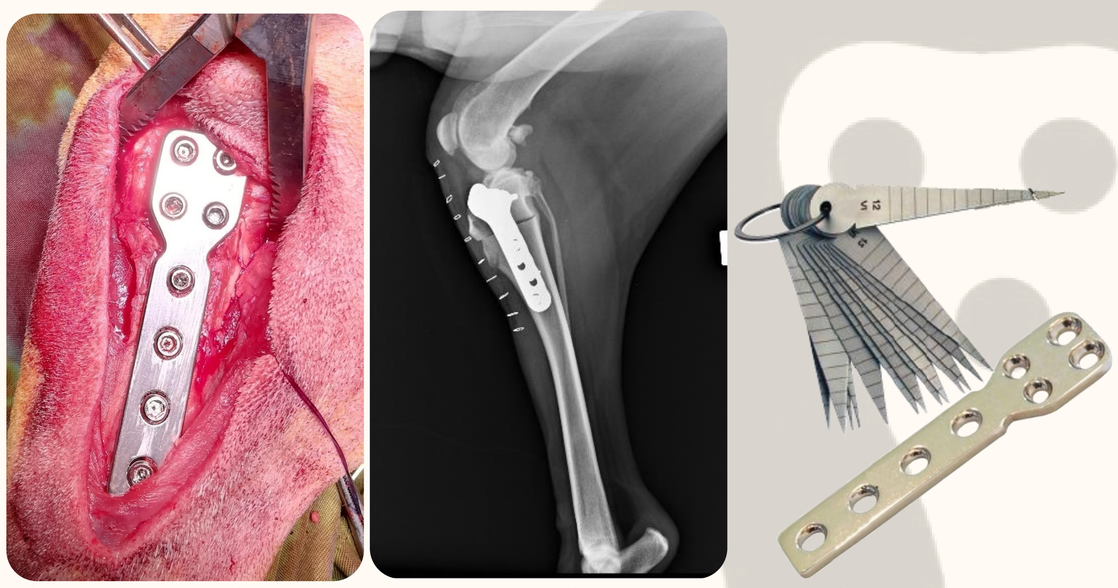

Figure 2. Desired final intraoperative result, postoperative radiography, and surgical material of the cranial tibial wedge osteotomy (CTWO). Obtained from *Insorvet SL. and Laboratorios Jorgensen Inc. Courtesy of Drs. Josep M. Tusell Monsó and Francesc Darnaculleta Caballer.*

MATERIAL & METHODS

A retrospective experimental study was carried out in which the medical records of 26 patients were reviewed between the period 2017-2020. A final sample of 30 knees was obtained, of which 15 were operated on by F-TTA and the other 15 by CTWO. Preoperative and postoperative measurements were carried out in each case (the advance distance of the tibial tuberosity and the patellar tendon angle (PTA) in the patients operated on by F-TTA, and the tibial plateau angle (TPA) in those operated on by CTWO), and the desired results of each variable were established (PTA = 90°±3° (Montavon et al. 2002; Tepic et al. 2002) / TPA = 5 – 8° (Slocum y Devine 1984, 1993)) in order to determine the percentage of success obtained in each surgical technique. Finally, the biological and mechanical complications that these knees presented after the intervention were also analyzed.

RESULTS

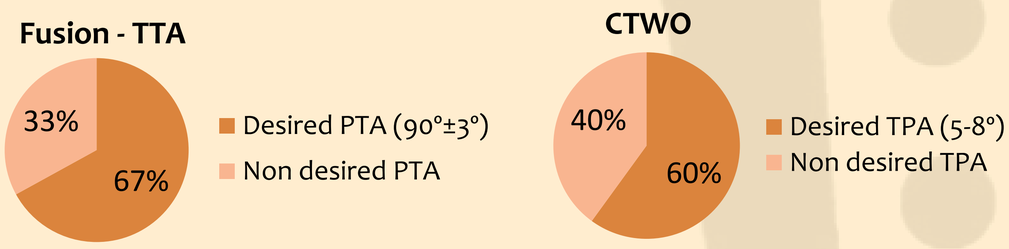

Figure 3. Percentages of obtaining the desired final post-surgical result in each surgical technique.

Table 1. Average results of the variables obtained in the radiological measurements.

	Fusion – TTA	**CTWO**
	Patellar Tendon Angle **(PTA)**	Tibial Plateau Angle **(TPA)**
Preoperative (°)	103.1°	22.5°
Postoperative (°)	92.1°	7.9°
Final (°)	91.2°	8.2°

Final (°): *Average results obtained in the measurements of the last available radiograph of the patient.*

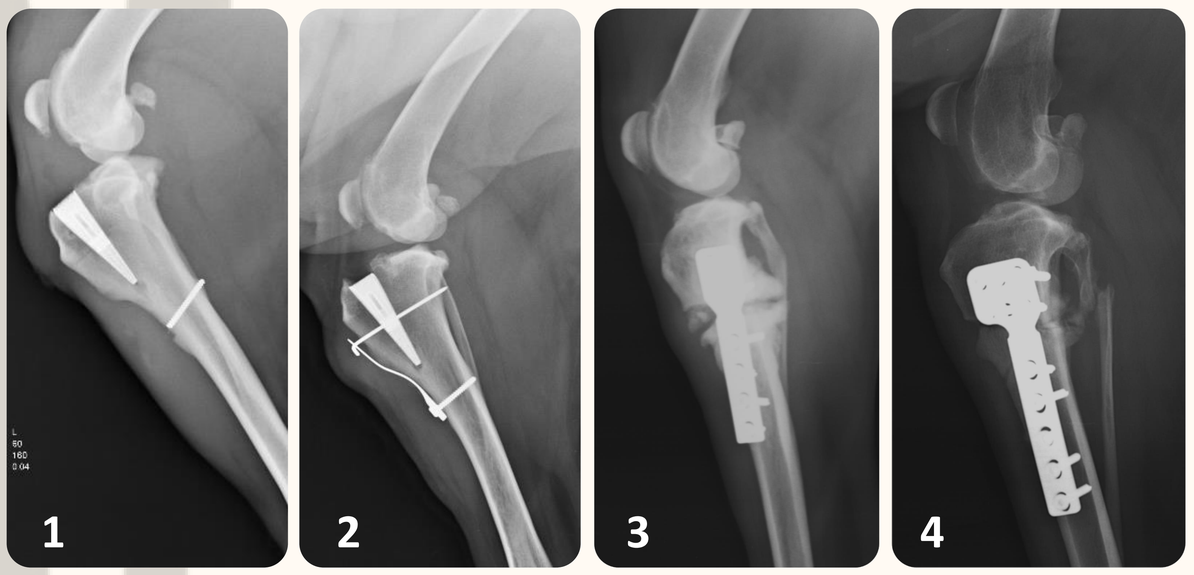

Figure 4. Complications observed in lateral radiographs of some knees intervened by the advancement of the tibial tuberosity (TTA) using Fusion - TTA (F-TTA) and by the cranial tibial wedge osteotomy (CTWO). **1)** Additional surgery to remove the Kirshcner wire (K-wire) and the dynamic tension plate (DTP) due to rupture of the distal screw head (F-TTA). **2)** Migration of the proximal K-wire (F-TTA). **3)** Delay in the consolidation of the osteotomy fracture, formation of a bone callus, and torsion of the fibula (CTWO). **4)** Fracture of the fibula (CTWO). *Courtesy of Drs. Jordi Franch Serracanta, Katrin Steffanie Rappe, Josep M. Tusell Monsó and Francesc Darnaculleta Caballer.*

CONCLUSIONS

The analysis of the observed complications indicates that no significant differences have been observed between the surgical techniques, and it has not been demonstrated whether the individual characteristics of the patients should condition the choice of the technique to be applied. Finally, it has been concluded that F-TTA and CTWO have proven to be two clearly viable and efficient surgical procedures for the resolution of LCA rupture in dogs.

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