COMPARATIVE STUDY OF LONG TERM OUTCOME BETWEEN TIBIAL TUBEROSITY ADVANCEMENT (ATT) AND TIBIAL PLATEAU LEVELING OSTEOTOMY (TPLO) IN DOGS

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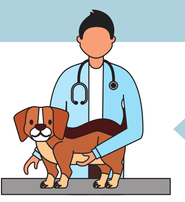
OBJECTIVES

- To Compare ATT and TPLO techniques to see if an objective can be drawn to determine the most effective treatment based on the long-term post-surgical complications of both techniques.
- To review the anterior cruciate ligament anatomy and its biodynamic, as well as, the clinical, the diagnostic methods and the aetiopathology of its injury.

INTRODUCTION

- One of the most usual causes of recurrent veterinary visits is lameness, especially in the hind limbs, being knee injuries the most common.
- The most typical cause of lameness in dogs is the rupture of the anterior cruciate ligament, which causes joint instability and degeneration of the knee joint.
- Anterior cruciate ligament rupture repair techniques are based on correcting or stabilising the knee joint by preventing its main instability: **cranial tibial translation.**

ATT



- Premise: the total force of the knee joint is approximately parallel to the patellar ligament.
- Technique: modifying the angulation between the patellar ligament and the tibial plateau by osteotomy and placement of an implant **(target angle = 90°).**
- There is no shear component in the total joint force and no stress on the cruciate ligaments.

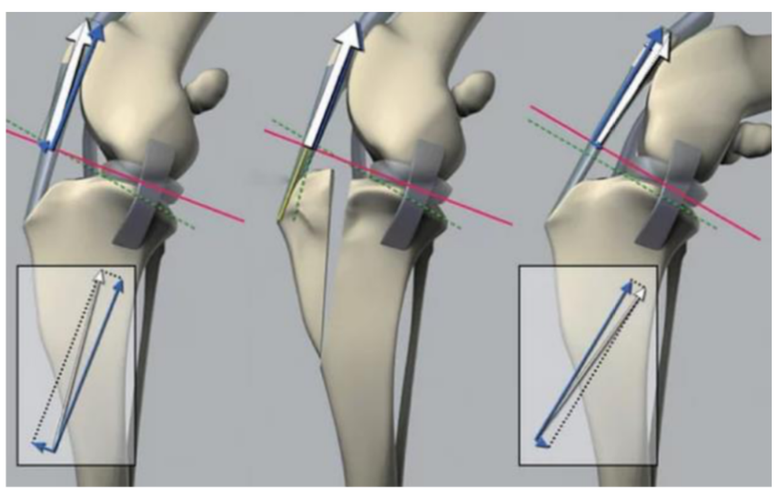


Figure 1: ATT Technique.

TPLO

- Premise: TPLO transforms the cranial translation of the tibia into a moderate caudal translation.
- Technique: radial osteotomy of the proximal tibial metaphysis and rotation of the osteomized tibial fragment to the optimal angulation where the tibial plateau is perpendicular to the longitudinal axis of the tibia.

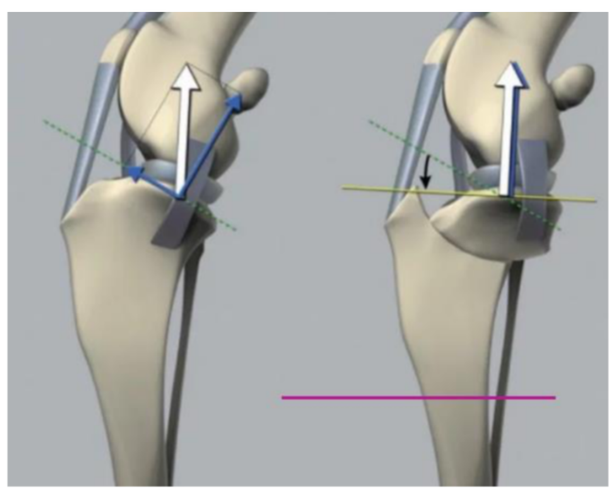


Figure 2: TPLO Technique.

COMPLICATIONS

Table 1: Complication rate depending on each technique.

Technique	%
ATT	20% - 59 %
TPLO	18% - 28%

DIAGNOSTIC TESTS

Tibial Compression Test

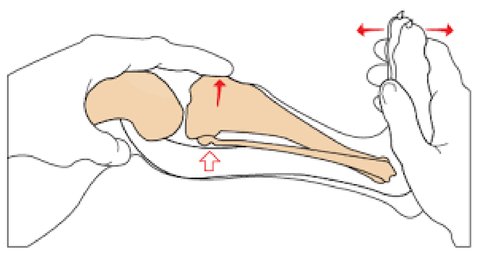


Figure 3: Tibial Compression Test.

Drawer Sign

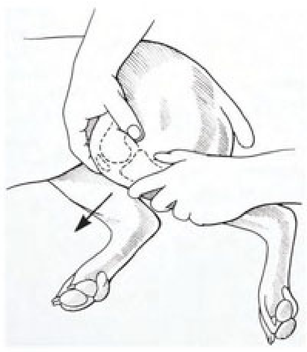


Figure 4: Drawer Sign .

Radiological Test

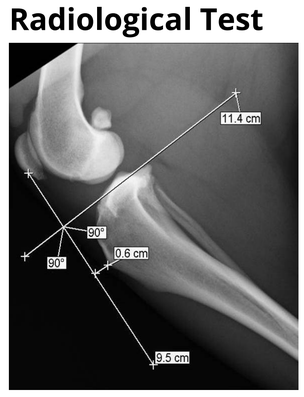


Figure 5: Radiological Test .

Results

ATT

- 55% to 67% of dogs had progressive osteoarthritis (OA) after TTA.
- The ideal tibial plate inclination angles are between 20-25º and 35º.
- It has been described an increase of postoperative complications in angles >35º.
- ATT can only be performed on patients with a minimum 6 mm advancement (minimum implant size).
- In large animals, antibiotic therapy should be used for postoperative infections.
- Perform a menistectomy on all animals treated with TTA technique.

TPLO

- 40% to 76% of dogs had progressive OA after TPLO.
- The ideal tibial plate inclination angles are between 20-25º and 35º.
- It has been described an increase of postoperative complications in angles >35º.
- In large animals, antibiotic therapy should be used for postoperative infections.
- Do not perform if the caudal cruciate ligament is damaged.
- Do not perform TPLO in animals with angles <15º.

Conclusions

After analysing all the results, It is concluded that despite of a lower rate of associated complications in TPLO, both of the studied techniques have a 90% success rate. Therefore, the final choice of the technique to be used should be made by the veterinarian surgeon, taking into account not only the individual characteristics of the dog, but also his own experience and abilities.