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Editorial

Evaluation of Tibial Plateau Levelling Osteotomy in Cats Affected by Cranial Cruciate Ligament Deficiency

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Cranial cruciate ligament deficiency (CCLd) is the most common cause of hindlimb lameness in dogs leading to stifling joint instability, inflammation, pain, lameness and osteoarthritis development. In the last decade, different surgical procedures have been described for treating CCLd in dogs.

Tibial plateau levelling osteotomy (TPLO) is one of the most common surgical techniques used, which aims to neutralize the cranial tibial thrust, achieving a caudal displacement of the tibial plateau, levelling the slope up to get a perpendicular angle between the tibial plateau and the patellar tendon, without restoring the cranial cruciate ligament.

Cranial cruciate ligament deficiency in cats is usually treated by performing extracapsular procedures. A single case of TPLO associated with cranial closing wedge ostectomy was described with an excellent outcome in 2005 whilst in 2016, Mindner., *et al*. (2016) published a primary paper regarding TPLO application in eleven cats with CCLd. TPLO outcomes were very positive and further evaluations including longer-term clinical re-examination were encouraged by the authors [18].

The application of TPLO in cats is a controversial subject.

In 2018 an *ex vivo* study was published whose outcomes failed to demonstrate the stabilizing effects of tibial plateau levelling osteotomy on cranial tibial subluxation and tibial rotation angle in a feline model.

The authors' conclusions were that according to the model they proposed, the standard tibial plateau levelling osteotomy technique applied to stabilize the canine stifle may not be appropriate in cats.

This is contradictory to the results obtained with a similar canine model.

It is also contradictory to the good clinical results reported by Midner, although the stability of the stifle joint obtained with this technique was not assessed.

Contradictory results from cadaveric to *in vivo* study suggest the biomechanical stifle evaluation of cats needs required more assessment.

Despite feline stifle mechanism is unclear, we may assume that feline stifle joint structure are the same in dogs and cats.

In cats affected by cranial cruciate ligament deficiency tibial compression test is positive as in dogs.

So we may postulate the joint mechanism may be similar and tibial osteotomy procedures may be successfully performed.

Osteoarthritis progression was demonstrated in cats in which no surgical stabilization was performed while OA progression was not observed after TPLO surgery.

In feline stifle commonly include osteophytes, joint-associated mineralization, and cartilage damage. In particular small mineralization's were usually confined to the medial meniscus while larger mineralization's tended to be located cranially to the menisci potentially associated with osteoarthritis and CrCL disease.

Muscle activation may play a very important action in stabilization of the stifle joint in cats and may justify the discordance between *ex vivo* and *in vivo* studies.

We may postulate that in cats, stifle joint stabilization may be achieved by creating a perpendicular angle between the tibial plateau and the patellar tendon associated with proper activation of a muscle activation pattern.

Its lack may create improper joint stabilization, but further related studies would be strongly suggested for a better understanding of TPLO surgery in cats.