

Abstracts der Posterbeiträge zur 39. VÖK-Jahrestagung



Fachtierärzte Althangrund, 1090 Wien, Österreich

Modified Cranial Wedge Osteotomy following Tibial Tuberosity Advancement in a dog with persistent stifle instability: A case report

B. Frank, N. Katic

Keywords: Cranial cruciate ligament disease, meniscal injury, TPLO, TTA, TPLT.

Introduction: Cranial cruciate ligament disease is among the most frequent causes of hindlimb lameness in dogs. Tibial Tuberosity Advancement (TTA) aims to neutralize cranial tibial thrust (CTT) by achieving a patellar ligament angle (PLA) of approximately 90°. Despite positive long-term outcomes, persistent postoperative instability has been documented for both TTA and Tibial Plateau Levelling Osteotomy (TPLO) (Schwede et al. 2018; Tinga et al. 2020). In cases of failed TTA, tibial plateau levelling techniques (TPLT) such as TPLO have been used as revision strategies (Serrani et al. 2022;

Zhalniarovich et al. 2023). Published cases combine arthroscopy and angle correction. A staged approach allowing isolated assessment of TPLT is not yet described in the literature.

Case Description: An 8-year-old male Portuguese Water Dog (42 kg) was referred six weeks after TTA rapid surgery with grade 3/5 lameness. Examination revealed stifle effusion and pain on extension. Radiographs showed a tibial plateau angle (TPA) of 38°. Arthroscopy confirmed complete cranial cruciate ligament rupture and a bucket-handle tear of the caudal horn of the medial meniscus. A partial meniscectomy was performed (Fig. 1). Lameness persisted (grade 2/5) despite physiotherapy. A modified cranial wedge osteotomy (MCWO) was performed, reducing TPA to 6°. The wedge was positioned below the TTA implant, with two caudal screws removed to optimize T-plate fixation (Fig. 2).

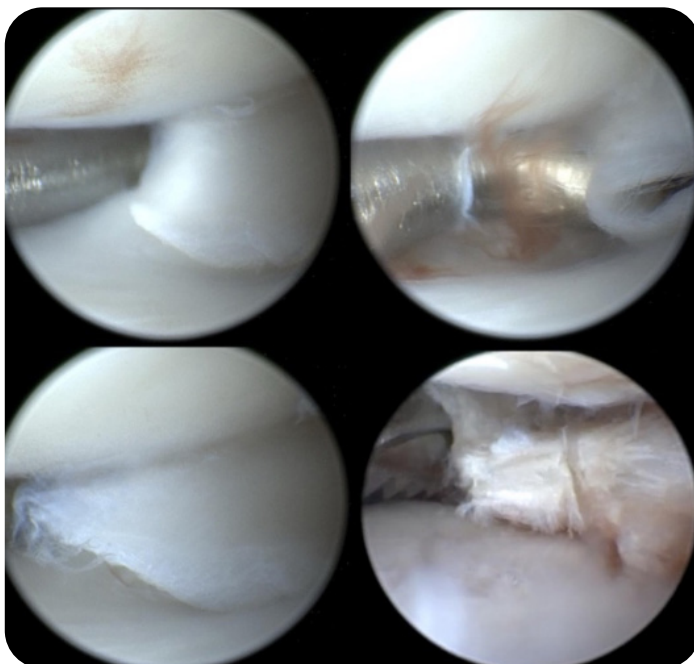


Fig. 1: Arthroscopic views of the left stifle. Top: medial meniscus tear (left) and CCL remnants (right). Bottom: Meniscal release (left) and meniscus during partial meniscectomy with arthroscopic shaver (right).

Discussion: At 15-month follow-up, the dog showed no lameness, no joint swelling, and a negative tibial compression test. Radiographs confirmed stable healing with minimal osteoarthritic progression. Unlike previous reports where MCWO was combined with meniscectomy, our staged approach allowed isolated assessment of MCWO's effect. This supports the hypothesis that residual instability—rather than unaddressed meniscal pathology—may underlie failed TTA outcomes. Furthermore, variability in stifle joint angle during preoperative planning (often assumed to be 135°) may lead to PLA undercorrection, particularly in certain breeds (Bush et al. 2011; Giansetto et al. 2022).

Conclusion: MCWO is a technically feasible and effective revision procedure following failed TTA with persistent instability. Staged correction allows

better attribution of outcomes. Planning variability and assumptions regarding stifle angle (commonly set at 135°) can affect outcomes (Bush et al. 2011; Giansetto

et al. 2022). Further research is needed to define optimal TPA targets for TPLT after TTA.

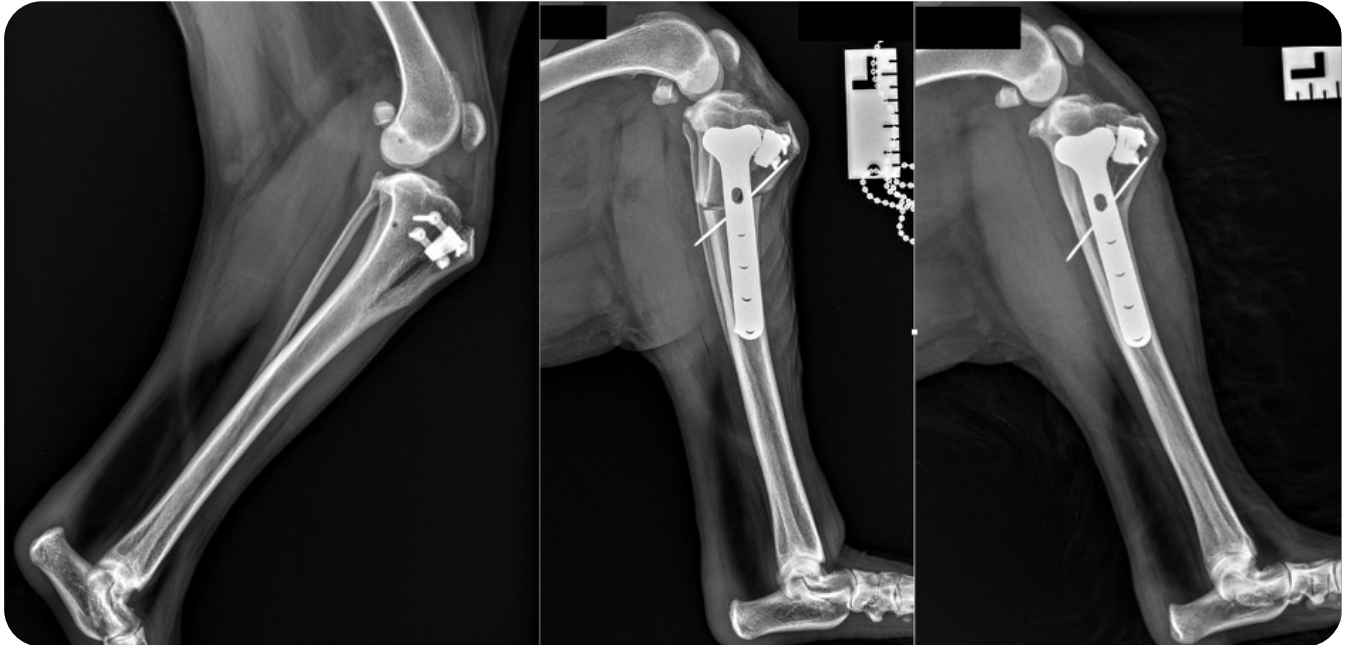


Fig. 2: Sequential mediolateral radiographs. Left: TTA implant with joint effusion. Middle: postoperative image after MCWO with T-plate fixation. Right: 15-month follow-up showing bone healing and reduced swelling.

References

- Bush MA, Bowlt K, Gines JA, Owen MR. Effect of use of different landmark methods on determining stifle angle and on calculated tibial tuberosity advancement. *Vet Comp Orthop Traumatol.* 2011;24(3):205–210. DOI: 10.3415/VCOT-10-07-0104
- Giansetto T, Picavet PP, Lefebvre M, Balligand M. Determination of the Stifle Angle at Standing Position in Dogs. *Vet Sci.* 2022;9:644. DOI: 10.3390/vetsci9110644
- Schwede M, Rey J, Böttcher P. *In vivo* fluoroscopic kinematography of cranio-caudal stifle stability after tibial tuberosity advancement (TTA): a retrospective case series of 10 stifles. *Open Vet J.* 2018;8:295. DOI: 10.4314/ovj.v8i3.8
- Serrani D, Picavet PP, Marti J, Bouvy B, Balligand M, Witte PG. Tibial Plateau Leveling Following Tibial Tuberosity Advancement: A Case Series. *Vet Sci.* 2022;9(1):16. DOI: 10.3390/vetsci9010016
- Tinga S, Kim SE, Banks SA, Jones SC, Park BH, Burtch M, et al. Femorotibial kinematics in dogs treated with tibial plateau leveling osteotomy for cranial cruciate ligament insufficiency: An *in vivo* fluoroscopic analysis during walking. *Vet Surg.* 2020;49(1):187–199. DOI: 10.1111/vsu.13356
- Zhalniarovich Y, Mieszkowska M, Morawska-Kozłowska M. Tibial Plateau Leveling Osteotomy following Tibial Tuberosity Advancement Cage Removal: A Case Report. *Animals.* 2023;13(22):3444. DOI: 10.3390/ani13223444