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## Preliminary Evaluation of the Tibial Tuberosity-Trochlear Groove Measurement

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Reliable, validated objective criteria for preoperative and postoperative evaluation of medial patellar luxation in the dog are lacking. The tibial tuberosity-trochlear groove distance (TTTG) is a sensitive, reliable CT or MRI measurement of distal quadriceps mechanism alignment in humans that can guide surgical treatment. The TTTG measures tibial tuberosity position relative to the axis of the femoral trochlea. A preliminary investigation of TTTG measurement was performed using the red fox (*Vulpes vulpes*) cadavers as a morphologically similar and homogenous substitute for dog cadavers. CT scanning was performed in ventral recumbency with the hind limbs extended caudally.

Following CT scanning, 3 reconstructions were made using custom guidelines for each of 24 limbs. Blinded and randomized images were measured 3 times each using ImageJ by one observer for each reconstruction. Reconstruction repeatability was assessed by calculating the central angle for the tilt and spin for each reconstruction, and then determining the repeatability coefficient. Measurement reliability was assessed for each reconstruction and between reconstructions using the repeatability coefficient.

Results indicated that 95% of paired reconstructions made using our guidelines were aligned within 5.2° (95% CI: 3.6–6.5°) of each other. For intra-reconstruction measurements, 95% of measurement pairs should lie within 0.7 mm (0.5–0.9 mm) of each other, for inter-reconstructions measurements the expected range is 1.7 mm (1.2–2.1 mm). The mean TTTG value was 0.26 mm medial to the femoral trochlear axis (SD 1.8 mm) in this population.

Repeatability coefficients represent the lowest detectable clinical difference. Further work is required to normalize TTTG measurements to animals with different body masses, define the typical TTTG in normal and patellar luxation affected dogs, and identify the optimal position for CT scanning. TTTG measurement, if refined, may prove useful in patient selection for procedures such as distal femoral osteotomy in management of medial patellar luxation in large breed dogs.

### SPEAKER INFORMATION

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