

2.1 method: An alternative measurement of spacer width in TTA surgery

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Background

Spacer width measurement in Tibial Tuberosity Advancement (TTA) surgery may be difficult, if the relative position of femur and tibia on the preoperative radiograph is not convenient to the template provided. Only extended stifle radiographs may lead to meaningful spacer width measurements.

Current research (Inauen et al. 2009) has shown, that the tibial tuberosity width is significantly smaller in dogs with cranial cruciate ligament (CrCL) deficient stifle ($0.78 \times$ tibia plateau length, TPL) compared to normal stifles ($0.91 \times$ TPL). TTA advances and slightly overcorrects the tibial tuberosity ($1.07 \times$ TPL) when compared to the tibia anatomy of healthy dogs. These findings support the concept of TTA as a treatment of CrCL rupture in dogs.

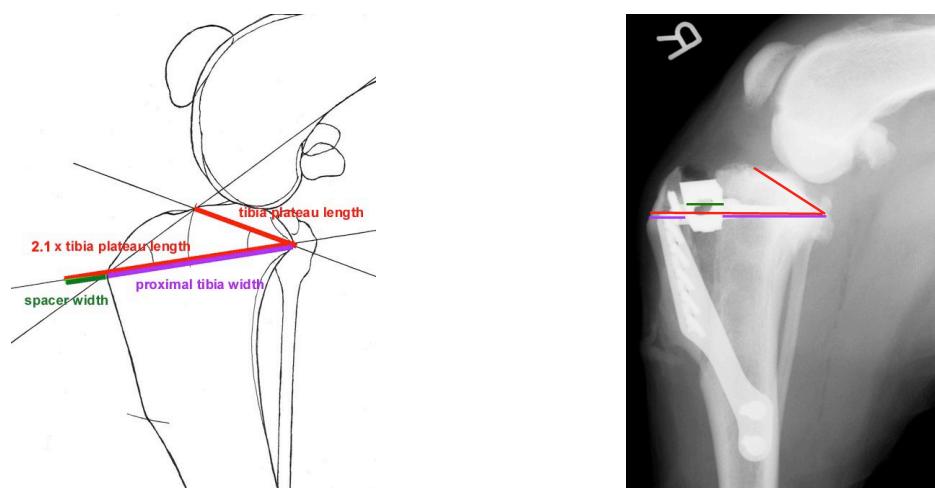
Spacer width measurement

Using the above mentioned results, the spacer width in TTA is the difference between the real tibial tuberosity width and the estimated tibial tuberosity width after TTA. To simplify the measurement, the tibia plateau length is added to the tibial tuberosity. The factor, initially set to 2.07, was increased to 2.1 to reduce postoperative meniscal damage.

Measurements of the tibial plateau length (distance between the most cranial and the most caudal point of the tibial plateau, red) and the proximal tibia width (distance between the most caudal point of the tibial plateau and the most proximal point of the margo cranialis tibiae, purple) are made on the radiograph or on digitalized radiographs. All measurements are in mm. The simple algorithm is as follows:

$$\text{Spacer width} = 2.1 \times \text{tibia plateau length} - \text{proximal tibia width}$$

The spacer width is then chosen as close to the measurement result as possible. Slight proximo-distal movement of the spacer position can correct to the calculated spacer width. Any positioning of the spacer distal to the proximal plate end should be avoided.



Inauen R, Koch DA, Bass M, Haessig M (2009). Tibial tuberosity conformation as a risk factor for cranial cruciate ligament rupture in the dog. Vet Comp Orthop Traumatol. 22:16-20

Kiefer O. Verschiedene Methoden zur Käfigmessung bei TTA, Thesis, University Zurich, 2016