Physeal fractures of the distal femur

L.F.H. Theyse
Anicura Referral Centres Dordrecht & Rijswijk, Netherlands

Fractures of the distal physis of the femur are a common finding in juvenile cats and dogs (1). In cats castrated at an early age, delayed fusion of the growth plates can extend the period in which the cats are vulnerable for physeal fracture. In cats the most common distal femoral growth plate fracture is a Salter-Harris type I in which the fracture completely follows the physeal plate. In dogs the most common type is the Salter-Harris type II in which a part of the caudal metaphysis of the femur is included in the fracture. This means that in the cat the four peg and corresponding groove configuration of the distal femur is intact with an optimal stability after reduction. In the dog the situation is less stable as the caudal pegs of the distal metaphyseal area of the femur are involved.

In actively growing animals the best option for fracture stabilisation is by using 2 dynamic intra-medullary or Rush pins running from the medial and lateral side of the distal femoral epiphysis to proximal and ending at the base of the femoral neck region. In this way continued growth is preserved.

The size of the pins is approximately 20-25% of the diameter of the femoral intramedullary canal. In animals close to or at the ends of their active growth cross-pins can be used running from lateral and medial in the distal epiphysis to proximal and engaging the contralateral cortex of the shaft of the femur. In case it is difficult to keep the physeal fracture in reduction an intramedullary can be used either as a temporary fixation or combined with the Rush or cross pins which is inserted retrograde from the intercondyloid fossa into the intramedullary canal of the femur. Fracture healing usually is uneventful and implants are left in place as long as they do not interfere with extension and flexion of the stifle joint. In young animals damage to the growth plate can cause length deficits or growth deformities but these complications are quite rare.

References