Surgical treatment of patellar luxation in small animals.

- Medial patellar luxation in mature animals -

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Patellar luxation has been termed - congenital -, present at birth or subsequent to anatomical deformities. It could be considered as inherited. Medial patellar luxation is far more common than lateral luxation, representing three quarters of the cases in all breeds. Bilateral involvement is frequent. Concurrent retropatellar chondromalacia is seen present in middle-aged and older dogs as well as rupture of the cranial cruciate ligament (40% of miniature breeds), the quadriceps mechanism being ineffective in stabilizing the stifle joint. Classification grading the luxation and bone deformity based on palpation, not always consistent with the degree of lameness, is useful for diagnosis and decision for the method of surgical repair.

Surgery on the stifle joint for treatment of medial patellar luxation in mature dogs is further considered.

Bony reconstruction considered as primary stabilizing structures is essential for most grades of luxation. It consists in trochleoplasty and transposition with cranialization of the tibial tuberosity.

Our preference goes to femoral wedge recession trochleoplasty in animals older than 5 months of age. A V-shaped wedge that includes the whole sulcus is removed from the trochlea using a saw. The defect is then widened on the side of the luxation by removing an additional slice of bone. The wedge is finally replaced but lies deeper than it did originally, thus creating a deeper sulcus; the supratrochlear entrance to the sulcus can be widened using a bone file (Figure 1).

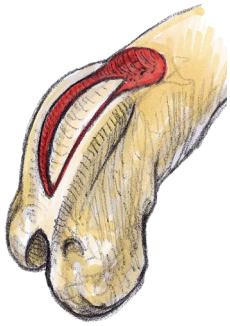

Figure 1
Femoral wedge recession trochleoplasty with widened supratrochlear entrance.

This technique has the advantage to maintain an articular surface of normal hyaline cartilage. In presence of large deformity of the sulcus, the wedge can be rotated, to elevate the edge of the sulcus medially. Other techniques, such as block recession trochleoplasty were found to increase the patellar articular contact, or also, when rotated, to widen the supratrochlear entrance.

The objective of the transposition of the tibial tuberosity is to realign the extensor mechanism and to reposition the patella within the trochlear groove. The notion of cranialization of the tibial tuberosity was introduced in conjunction with its transposition. It relocates the patellar ligament in a more cranial position, with the aim of decreasing the pressure of the patella on the femoral trochlea and reducing postoperative pain in patients with chondromalacia (Figure 2).

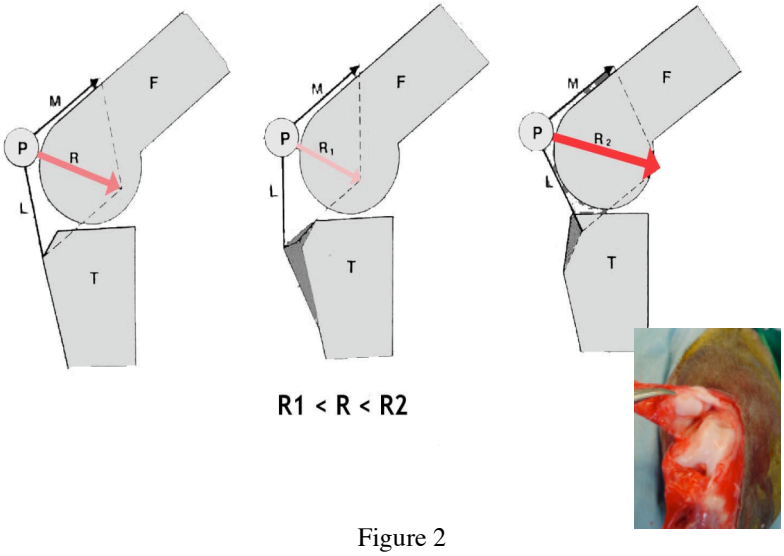

Figure 2
B. Cranialization of the tibial tuberosity causes a decrease of the retropatellar pressure.
Schmöckel HG et al: Kleintierpraxis 38 (12): 805-808, 1993

This decreases also the shear toward cranial of the joint force, protecting the cranial cruciate ligament. It involves a more caudal osteotomy of the tibial tuberosity along an oblique plane, avoiding damage to the medial meniscus and to the tendon of origin of the long digital extensor muscle (Figure 3). The proximal bone surface of the osteotomy is much larger, allowing cranialization of the fragment without twisting the ligament. The fragment also is placed slightly proximal to maintain the patella at its original level and fixated using tension band wiring (Figure 4).

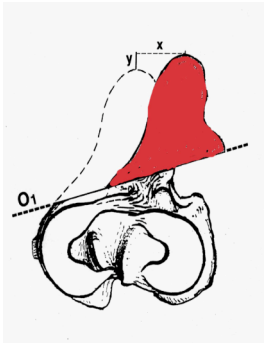

Figure 3
Proximodistal view of the oblique osteotomized and cranialized tibial tuberosity.
Koch et al: Schweiz Arch Tierheilk 139: 259-264, 1997

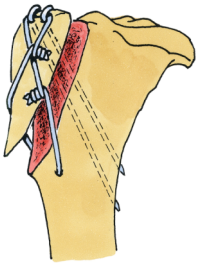

Figure 4
The oblique fragment of the tibial tuberosity is transposed, cranialized and placed slightly proximally, then fixated using tension band wiring.

A different fixation of the fragment can be made with the implant of the TTA technique, in case where the cranial cruciate ligament is ruptured.
Two examples of stabilization are shown in (Figure 5).

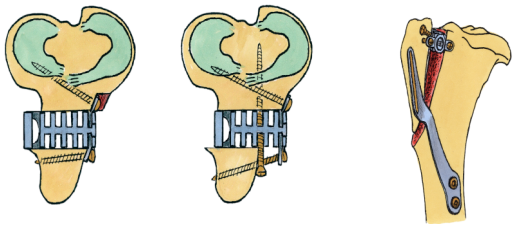

Figure 5
A longer cage is being used in the second case, with an additional perpendicular screw place through the cage in ths cranialization and latualization technique using TTA implants, where the patient suffers also from a deficit of the cranial cruciate ligament.

Additional soft-tissue reconstruction can relieve tension or imbricate structures. Desmotomies immediately exert the effect of cranialization and decrease the retropatellar pressure. Damaged synovial membrane should be sutured to prevent synovial fluid leakage. Imbrication can be performed on the opposite side of the luxation. In patients with severe patellar luxation, the vastus medialis below the cranial head of the sartorius is dissected free from the patella, respecting the genicular artery, and transposed laterally to the rectus femoris (Figure 6).

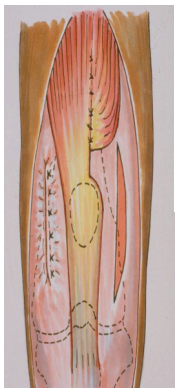

Figure 6
Medial desmotomy, lateral inbrication and transposition of the vastus medialis. Monn T; Thesis work, University of Zurich, 1996