HOW TAMBORINE GOT HER GROOVE BACK

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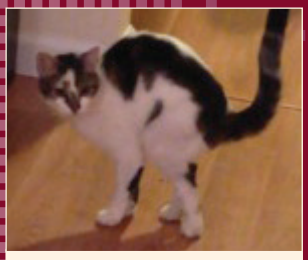

Figure 1

Figure 2

Figure 3

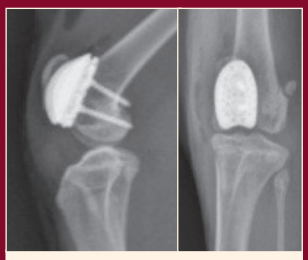

Figure 4

Figure 5

Figure 6

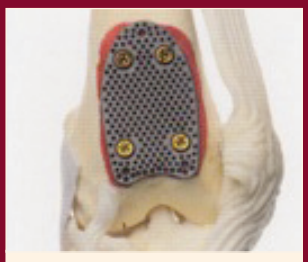

Figure 7

Figure 8

Chronic patella luxation can cause lameness, with secondary patellofemoral degenerative and remodeling changes. The objective of surgery is to restore limb function and patellofemoral joint stability through a combination of tibial tuberosity transposition, patellar groove deepening, and corrective osteotomies of the femur and/or tibia.

These standard surgical procedures can result in patellofemoral laxity or re-luxation, progressive degenerative changes, a chronically painful joint, and recurring lameness. This type of outcome often results in chronic medical management. Replacement of severely affected and/or worn-out joints is a common surgical alternative in both human and veterinary orthopedics. Prosthetic patella groove replacement is an option that can now be offered to your patients.

Tamborine is a one-year-old female spayed domestic shorthair feline that was presented to VSRC for evaluation of her stifle joints. She was diagnosed with left medial patella luxation and right lateral patella luxation. Tamborine previously had surgery at another hospital to stabilize her patellae, however her patellae subsequently re-luxated. Her general physical examination was normal. Orthopedically, she had grade IV left medial patella luxation and grade IV right lateral luxation. She was unable to extend her stifle joints, which caused her to walk and stand with her stifles flexed at approximately 90 degrees and her back arched (*Figure 1*). Her left tibia and paw were internally rotated while her right tibia and paw were externally rotated. Because her condition was bilateral and chronic, we elected to stage her surgery.

Radiographs of her left stifle confirmed a medial patella luxation (*Figures 2 and 3*). The distal third of her femur was bowed medially, the femoral condyles were torsed laterally, and the tibial tuberosity and tibia were internally rotated.

A left lateral parapatella arthrotomy was performed, along with a medial desmotomy to help with patella reduction. The trochlear groove was dysplastic, with a nearly convex surface, and the trochlear ridges were flush with the groove. The retropatellar articular cartilage was eburnated from chronically abrading on the medial side of the medial femoral condyle. As a result of the chronic luxation, a pseudotrochlear groove was forming medial to the medial femoral condyle. A coronal ostectomy of the patella groove and trochlear ridges was performed from just cranial to the insertion of the long digital extensor tendon to the proximal articular margin of the femoral condyle. A broad cancellous bone bed remained, allowing for considerable freedom in medial-lateral positioning of the prosthesis to capture the patella and improve quadriceps-to-patellar tendon alignment. Use of trial implants during surgery helped to choose the optimal position of the final implant.

In this case, the appropriately sized base plate component was positioned slightly eccentrically towards medial. The base plate was secured in place with titanium bone screws, then a custom sized prosthetic patellar groove and condylar component was anchored into the base. The patella was reduced into the Kyon Patella Groove Replacement (PGR), and the joint was placed through a full range of flexion and extension with tibial internal and external rotation. The joint was lavaged and closure was routine (*Figures 4 and 5*).

At the two-week recheck, Tamborine was walking and standing normally on her left hindlimb. Her six-week follow-up radiograph did not reveal any complications and her patella remained stable with a full pain-free range of motion (*Figure 6*). She subsequently had a PGR inserted into her right femur.

The Kyon Patella Groove Replacement provides a low friction, scratch resistant surface that indefinitely tolerates the contact pressures and gliding friction generated by the eburnated and bare articular surface of the patella. The PGR comprises two components:

1. A perforated base plate produced from CP titanium, coated with calcium phosphate to promote bony integration (Biocer®) (*Figure 7*)
2. An upper anatomically-shaped groove component produced from titanium alloy, highly polished and treated with Amorphous Diamond-Like Coating (ADLC) (*Figure 8*)

The ADLC shows exceptionally low friction against many solid surfaces, offering the possibility of maintaining heat generation below the threshold of thermal necrosis. ADLC is also very hard and scratch resistant when applied to a suitable substrate. It is chemically inert and thus biocompatible.

Functional loading of the implant leads to compression at its interface to the bone, which is mechanically favorable to the abnormal load transfer caused by conventional tuberosity transposition.

Clinical application of the Kyon PGR was initiated in 2009. With careful surgical planning, execution of the procedure is relatively simple, the risks and morbidity are minimal, and post-surgical recovery is rapid. To date, there have not been any reports of implant loosening. ***Tamborine was the first feline to receive a PGR.***

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June 2014

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