

REPAIR OF A CHRONIC PATELLAR TENDON AVULSION USING A SYNTHETIC FIBER IMPLANT: CASE REPORT

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Introduction

The objective of this case report is to describe the repair of a chronic patellar tendon avulsion using an Ultra High Molecular Polyethylene (UHMWPE) fiber implant.

There are few studies on the use of such synthetic ligament implants in animals. Morton et al. (2015) recently published biomechanical testing and clinical experience on a similar implant in the treatment of chronic Achilles tendon rupture in dogs.

The author of the present report has been using the same kind of implant for years to treat chronic Achilles tendon rupture in dogs and more recently, to repair a chronic triceps tendon avulsion (Buttin, 2018).

The present report describes the surgical procedure for implanting a UHMWPE fiber ligament to repair a patellar tendon avulsion in a cat and its clinical outcome.

Materials and methods

The patient is a 9 months old Maine Coon male which fell from height of the 4th floor. This initial trauma ruptured the patellar tendon at middle distance between the patella and its tibial crest entheses. The cat had first a tendon suture with no external coaptation 1 week after trauma. The suture finally loosened 2 weeks postoperatively and the cat had one month of cage rest. We received the cat for a second opinion 6 weeks postoperatively. The cat was still limping and the patellar tendon was loose, not providing enough support during stance phase for the leg to work with an acceptable range of motion. Before surgery, the owner of the cat signed an informed consent. He was informed about the proposed surgery, especially in that it had never been used in the particular case of his cat. First of all, fibrous scar tissue was excised to allow an adequate healing of the tendon. The half thickness of the tendon was then longitudinally incised up to the patella and then to the myotendinous junction of the quadriceps. The synthetic tendon was placed proximally in the whole length of the half-split tendon. The synthetic ligament was sandwiched inside the patellar ligament and secured with 11 simple interrupted sutures of 3.5 metric polydioxanone. Then a 3.2 mm oblique bone tunnel was drilled (cannulated drill bit on a 2 mm kirschner wire) through the tibial crest entheses with a caudo-medio-distal exit. The implant was inserted in the tunnel. The knee was placed in extension and the ligament was stretched. The prosthesis was temporarily secured with a Kocher clamp to test the resistance during indirect tibial thrust in extension and 90° flexion. A full range of motion was also tested. We assessed and adjusted the position of the patella under direct visualization through the lateral arthrotomy, aiming a good sitting in the trochlear groove. Needles positioned at the proximal and distal ends of the patella were also used as visual markers. Thus, the tension was adjusted before fixation in order to avoid patella alta or patella baja. A flexible and smooth wire of 1 mm was used as a guide to insert the interference screw (4 mm diameter x 13 mm length). After fixation of the synthetic ligament, the distal part of the patellar tendon was found in excess and thus, did not directly match to the proximal end. This excess of tissue was assessed to be composed mainly of fibrous tissue but could also be part of the original patellar tendon. Instead of removing this scar tissue, we used it to cover the ligament augmentation as far as the proximal end of the patella with a Kessler suture. Soft tissue and skin were closed routinely. A padded dressing incorporating a lateral splint was applied for 6 weeks to maintain the knee in an extended position. Reevaluation was done at 8 weeks postoperatively (radiography, orthopedic

control). Last recheck was done 6 months postoperatively (orthopedic control).

Results

When the bandage was removed at 6 weeks, the cat used immediately its forelimb with an apparent good weight bearing. During the 8 weeks following the tendon reconstruction, no complication was recorded. The orthopedic control at 8 weeks revealed a good patellar tendon tension during indirect tibial thrust, a visual symmetric stance phase on both hindlimbs as well as a symmetric carriage at rest on a standing position. Manipulation was pain free with a full range of motion. Muscle atrophy was not so important at this point. There was no change in the implant position on stifle radiography. The last recheck at 6 months revealed no difference between the two hindlimbs. According to the owner, the cat was able to jump on table at 2 months postoperatively. The recovery was considered excellent both from the veterinary point of view and the opinion of the owner.

Conclusion

This novel ligament allows effective repair of chronic tendon rupture. It makes possible and easily accessible a surgery which is inherently a challenge because of muscle contraction, muscle atrophy and exuberant mass of scar tissue leaving a large gap of inadequate tendon structure. Limitations of the technique might be a risk of infections of the prosthesis or fixation interfaces, and a difficult assessment of the patella position. This last problem can be easily fixed by using a C-arm technique preoperatively.

References

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