Repair of a chronic triceps tendon avulsion using a UHMWPE fiber implant: Case report

BUTTIN Philippe
Surgical Referral of the French Alps
Groisy, FRANCE

Introduction

The objective is to describe the repair of a chronic triceps tendon avulsion after an olecranon fracture using a UHMWPE fiber implant (Novaten® 8000). The author has been using the same kind of implant for years to treat chronic Achilles tendon rupture in dogs. In a recent study, Morton et al. (2015) have investigated the clinical experience and outcome for this particular pathology, and they also did mechanical testing of a similar implant. The aim of such implant is to allow restoration of the function of the gastrocnemius tendon despite an important gap due to muscle retraction. The present case describes the surgical technique for implantation of a Novaten® 8000 to repair a triceps tendon avulsion and its clinical outcome.

Materials and methods

The patient is a 7 years old cocker spaniel female with an initial olecranon fracture. It had 2 consecutives haubanage fixation in the first veterinary practice which finally loosen one month after and 1 week later. No healthy bone stock was then available for reconstruction.

As a referee, the first surgery was aiming to remove the material and debide the scar which was infected due to pin’s migrations and skin ulceration. After 4 weeks, the healing was sufficient to operate in good conditions (3 months after initial trauma). Fiibrous scar tissue of the triceps tendon was excised to allow an adequate healing of the tendon. The half thickness of the tendon was then longitudinally incised up to the myotendinous junction and a 3.6 mm oblique bone tunnel was drilled (cannulated drill bit on a 2 mm kirschner wire) through the olecranon with a caudo-distal exit (3). The Novaten® (8000 Newton) synthetic tendon was placed proximally in the whole length of the half-split tendon (4). The synthetic ligament was sandwiched inside the triceps ligament and secured with 8 simple interrupted sutures of 3.5 metric polydioxanone (5). Because of line shears and weakness of the bone, a second bone tunnel was drilled in the olecranon, perpendicular and distal to the first one (6). The implant was inserted in the tunnel. The elbow was placed in extension and the ligament was tensioned. The prosthesis was temporarily secured with a Kocher clamp to test the resistance in flexion. Thus, the tension was adjusted before fixation in order to avoid flexion overstrain. A flexible and smooth wire of 1 mm was used as a guide to insert the interference screw (4.5 mm diameter x 15 mm length) (7). Soft tissue and skin were closed routinely. A padded dressing incorporating a lateral splint was applied for 8 weeks to maintain the elbow in an extended position.

Results

Reevaluation (8) was done at 8 weeks postoperatively (radiography, orthopedic control) and at 10 weeks (echography, orthopedic control). A 2 months physiotherapy program was given at 8 weeks postoperatively to enhance muscle and tendon recovery.

During the 8 weeks following the tendon reconstruction, no complication was recorded. As the padding was changed every week, we didn’t observe any scar infection nor skin irritation. When the bandage was removed at 8 weeks, the dog used immediately his forelimb with an apparent good weight bearing. The orthopedic control revealed a good tricipital tension within elbow flexion. Manipulation was pain free with a full range of motion. Muscle atrophy was still important at this point. There was no change in the implant position on elbow radiography.

The 10 weeks ultrasound control demonstrated a good tendon healing. The last recheck was done at 8 months postoperatively, with a very good tricipital muscular mass recovery. The dog was in fact able to climb mountains with his owner at 4 months postoperatively. The sportive recovery was found excellent from veterinary and owner perspective.

Conclusion

This novel ligament makes possible the repair of very chronic tendon rupture. It made possible and easily accessible a challenging surgery due to muscle contraction, muscle and tendon atrophy, exuberante mass of scar tissue leaving a large gap and bone weakness at the enthesis site. Limitations of the technique might be infections of the prosthesis and fixation interfaces.

References


ESVOT Congress BARCELONA 2018
https://www.esvot.org/