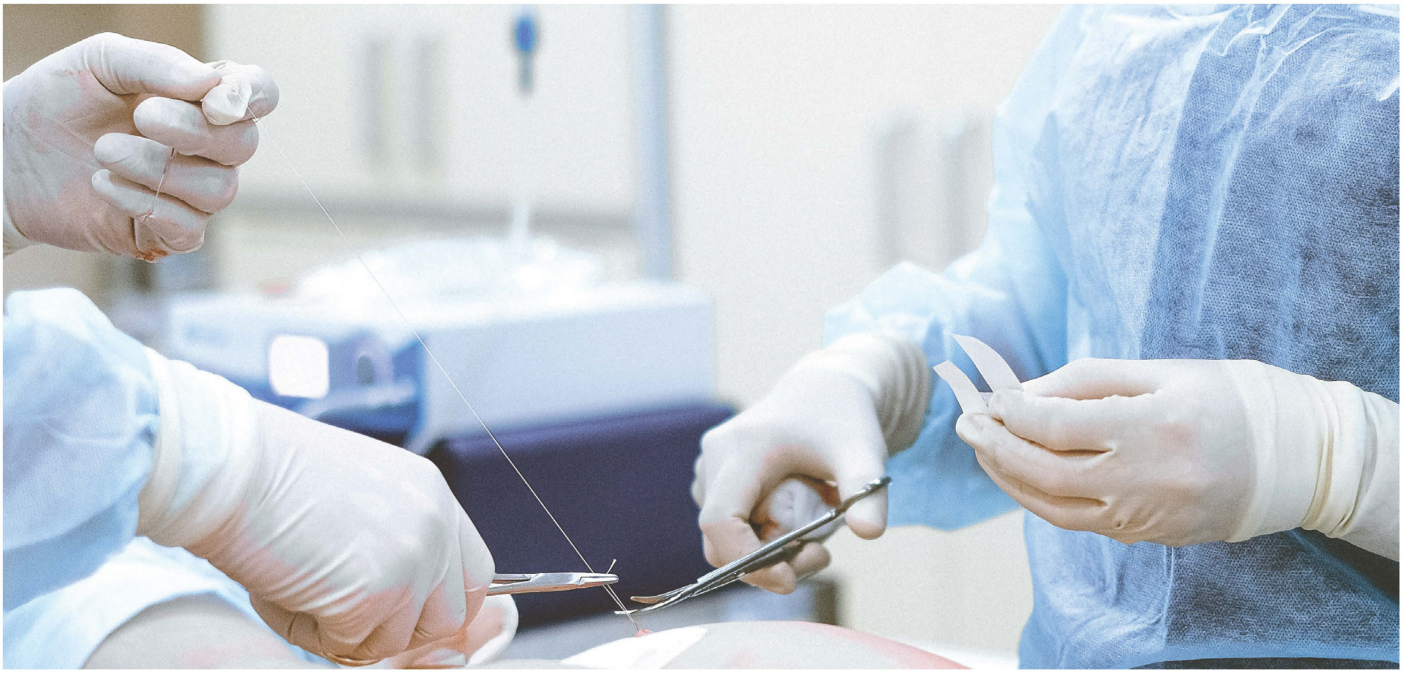

STABILISATION OF MULTIPLE LIGAMENT-INJURED STIFLE USING AN ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE (UHMWPE) LIGAMENT IN ONE DOG AND THREE CATS

Presented at ESVOT, 2022 by P. Buttin, DMV, DESV[1], R. Vallefuoco, DMV, Dipl. ECVS[2], H. Le Pommellet, DMV, Dipl. ACVS[3]

« The Novalig system (UHMWPE ligament, interference screws and cortical button) is an effective procedure to simultaneously reconstruct both cruciate ligaments and a collateral ligament. »

Abstract

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Introduction:

Multiple ligament-injured stiffle is a rare nonetheless debilitating injury in dogs and cats causing major instability of the joint. Surgical treatment is associated with a high rate of short-term complications (62.3%), with 50% of them being major.2 The use of post operative immobilization has been questioned, as it was not associated with better outcome in cats and can be associated with higher rate of complications as with trans-articular pin.2,4 It also increases duration of surgery, and post operative cares are more demanding for the patient and the owners. If long term outcome is good to excellent in about 62.3% of cases, this can probably be improved.3

The use of synthetic ligament made of UHMWPE has been reported for tendon replacement in Achilles and triceps tendon repair in dogs and patellar tendon repair in a cat.1,5

The objective of this short case series is to describe the stabilization of multiple ligament-injured stifle using a synthetic ligament made of Ultra High Molecular Weight Polyethylene (UHMWPE) in a dog and 3 cats.

Material and methods:

Three cats and one dog with multiple ligamentous injuries of the stifle were included in this study. All patients had a full orthopedic and pre-operative radiographic examinations of the affected stifle.

All ligaments were assessed intra-operativeley. The menisci were inspected, and meniscectomy was performed as needed. All patients were treated surgically using intra-articular stabilization of the cranial and the caudal cruciate ligaments with a UHMWPE ligament. If needed, the collateral ligaments were also replaced with the synthetic ligament. A modified Robert jones was placed for 1 to 6 weeks in some cases.

Patients were released on a strict controlled activity for 8 weeks (cage rest if possible); passive range of motion was encouraged during the first weeks.

Case report:

Of the 3 cats the lesions noticed were as followed: case 1 had a complete CdCL and CrCL rupture; case 2 had a complete CdCL and CrCL rupture and an elongation of the lateral collateral ligament; case 3 had a complete tear of its CrCL, CdCl and medial collateral ligament. The dog (Age: 11 year-old, Body Weight: 12 kg) had a complete tear of the cruciate ligaments, a complete disruption of its joint capsule and complete rupture of its menisco-tibial and menisco-femoralligaments. In all cases the cruciate ligaments were repaired using an UHMWPE ligament (Extratape or Novalig 2000N, Novetech Surgery, Monaco).

https://doi.org/10.5281/zenodo.7273740

Surgical technique:

The injured ligaments were replaced using either Extra-tape, Novalig 2000 or Novalig 2000 platine. The ligaments were secured to the bone with the use of titanium interference screws and with cortical button. The size of the screws were adapted to the size of the ligament used and the size of the bones

In case 1, a medial hemimeniscectomy wes required. A 2 tibial tunnels and 3 femoral tunnels technique was used. The UHMWPE implant (Extra-tape) was secured with its cortical button and two interference screws (diameter 3mm- length 11mm). Tension was applied progressively as the ligament was inserted in the tunnels. Once the stability of the joint was satisfying, the fixation system was positioned as described above.

In case 2, a medial hemimeniscectomy was required. A 2 tibial tunnels and 2 femoral tunnels technique was used. The UHMWPE implant (Novalig 2000) was secured with 3 interference screws (3mmx11mm). The tibial tunnel for the origin of the CdCL was not filled with a screw. After strabilization the cat presented partial instability in varus and a lateral fabella suture was placed to reinforce the lateral collateral ligament.

In case 3, a 3 tibial tunnels and 3 femoral tunnels technique was used. The UHMWPE implant (Extra-tape) was secured with 3 interference screws (3mmx11mm) and its cortical button.

In case 4, a medial and lateral subtotal meniscectomy were required. A five tunnels technique was used (same technique as case 1). A Novalig 2000 was used with 5 interferences screws (3 screws of 3mmx11mm + 2 screws of 3.5mmx11mm).

Positionning the ligament and applying the appropriate tension on both ligament was very straightforward. A residual craniocaudal instability was eliminated by a lateral fabella suture.

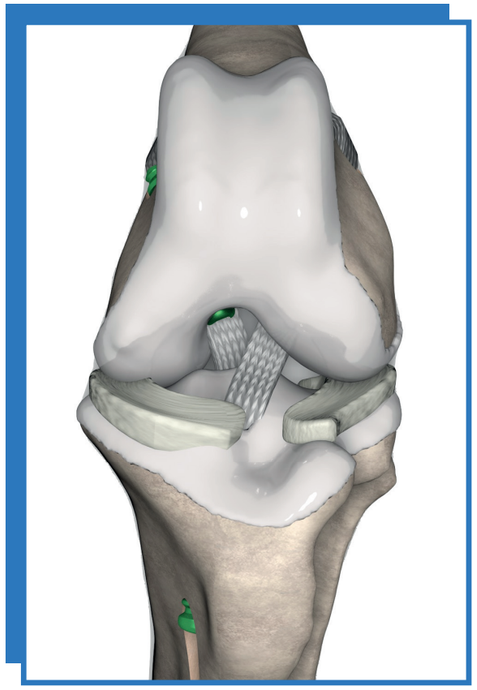
Follow up:

No major complications were reported during surgery and in the post operative period. At 2 months post op, all cases presented full weight bearing at walk, no decrease range of motion. One cat had intermittent lameness when running. At 6 months post op, the dog had no lameness and the joint was stable.

Conclusion:

The Novalig system (UHMWPE ligament, interference screws and cortical button) is an effective procedure to simultaneously reconstruct both cruciate ligaments and a collateral ligament. The implants allow multiple technical options. The cranial cruciate ligament can be stabilized with an intra-articular and also an extra-articular technique.

The absence of post operative trans-articular fixation limits the comorbidities usually associated with the use of those techniques, allows the early use of the limb decreasing muscle atrophy, ankylosis and potential pain associated and should therefore shorten the recovery period for a quicker return to full function. More cases are needed, and long term follow up to confirm the advantages of this technique over classical techniques.



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Implants used:

Novalig® - Platine

Interference screw

References:

1. Buttin P: Repair of a chronic triceps tendon avulsion using a UHMWPE fiber implant: case report. ESVOT congress poster (2018)

2. Coppola M, Das S, Matthews G, et al.: Traumatic strifle injury in 72 cats: a multicentre retrospective study. J Feline Med Surg. 2021 Jul 13;1098612X211028834.

3. Jaeger, GH, Wosar, MA, Marcellin-Little, DJ, et al. Use of hinged transarticular external fixation for adjunctive joint stabilisation in dogs and cats: 14 cases (1999–2003). J Am Vet Med Assoc 2005; 227: 586–591.

4. Keeley, B, Glyde, M, Guerin, S, et al. Stifle joint luxation in the dog and cat: the use of temporary intraoperative transarticular pinning to facilitate joint reconstruction. Vet Comp Orthop Traumatol 2007; 20: 198–203.

5. Morton M.A., Thomson D.G., Rayward R.M., Jiménez-Pelaez M., Whitelock R.G. (2015). Repair of chronic rupture of the insertion of the gastrocnemius tendon in the dog using a polyethylene terephthalate implant. Early clinical experience and outcome. Vet Comp Traumatol 28(4), 282-287.