

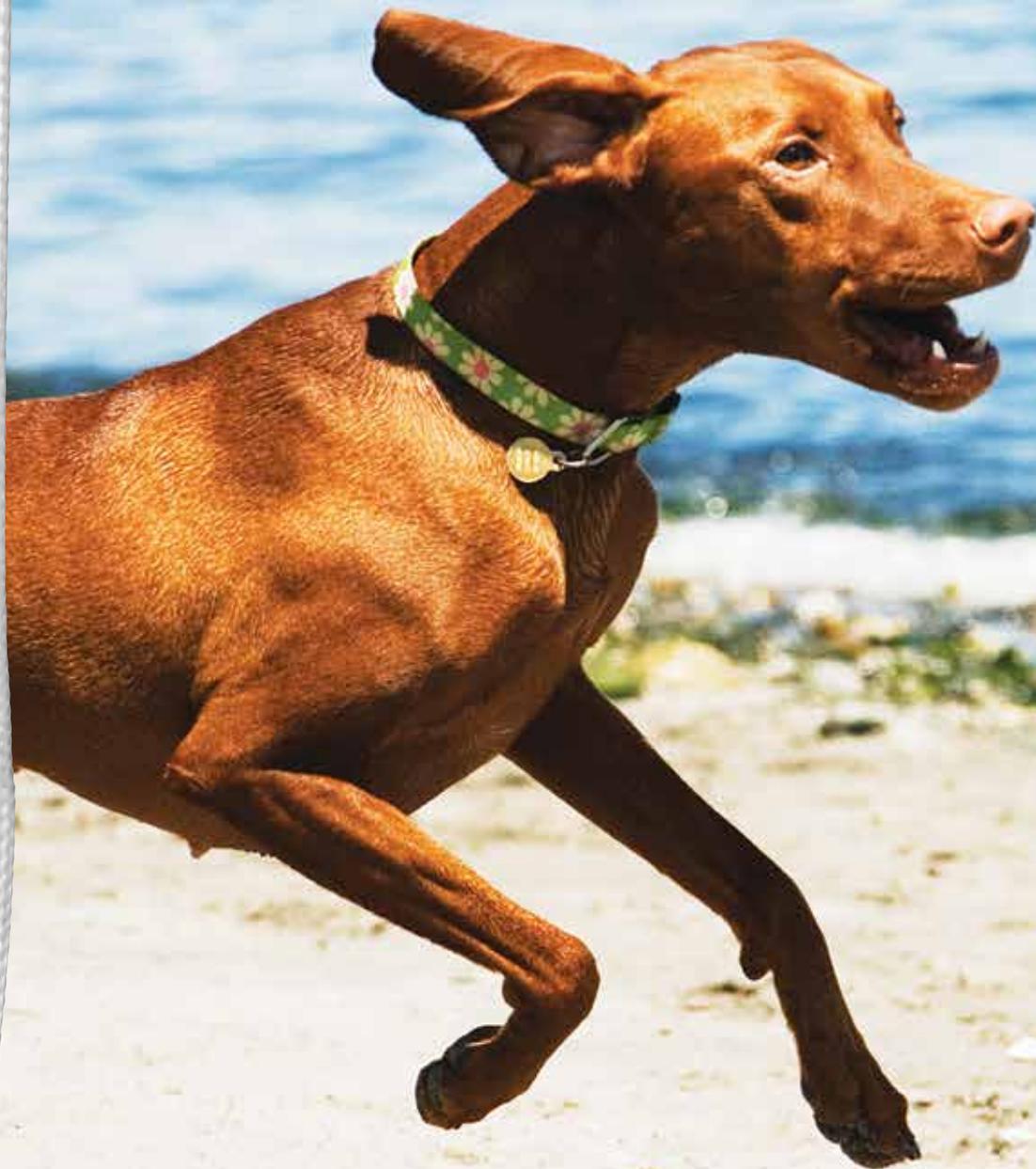
STABILITY VERSATILITY RECOVERY



GASTROCNEMIUS TENDON REPAIR

USING THE NOVETEN IMPLANT

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ARTIFICIAL LIGAMENTS FOR VETERINARY USE



GASTROCNEMIUS/ACHILLES TENDON REPAIR

CONTINUITY OF THE BRAIDED FIBRE

The braided fibres run the whole length of the tendon thus giving strength and resistance to the whole implant.

MEDICAL GRADE FIBRE

Allowing perfect biocompatibility, strength and resistance.

HIGH POROSITY

Enhancing fibroblastic in-growth.

VETLIG LTD offers a full range of synthetic ligaments and tendons. Designed specifically for veterinary use, our products are minimally invasive and mimic the original native ligament or tendon we are replacing or reinforcing. Vetlig products aim to regain quicker post operative mobility and quality of life compared to conventional repairs.

We only use human medical grade UHMWPE Fibre that comes from CE and FDA approved human manufacturing facilities in Europe.

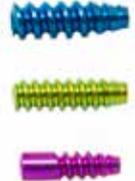
For the Achilles Tendon Reconstruction, we provide two sizes of tendon. Each has an approximate resistance in Newtons :

• **NOVATEN® 2000** : 2000 N
2.5mm tunnel 3mm screw for cats and small dogs under 10 KG

• **NOVATEN® 8000** : 8200 N
3.6mm tunnel and 4.5 to 6mm screws
Over 15 KG

• **NOVATEN® 4000** : 4380 N
3mm tunnel 4 and 4mm screws
Under 15 KG

TITANIUM SCREW



THE CHOICE OF THE TENDON DEPENDS ON ANIMAL'S WEIGHT AND ACTIVITY

The selection criteria for the size of the tendon graft to be implanted is in relation to the weight of the animal, the level of activity and to be compatible with the bone size.

No need for an external fixator or a calcaneotibial screw post op.

As an indication:

NOVATEN® 2000 fits into a 2.5mm tunnel

NOVATEN® 4000 fits into a 3.0mm tunnel

NOVATEN® 8000 fits into a 3.6mm tunnel

MANAGEMENT OF GASTROCNEMIUS TENDON DISRUPTION IN CANINE PATIENTS USING A SYNTHETIC TENDON

Introduction

Chronic degeneration and scar tissue formation at the calcaneal insertion of the gastrocnemius tendon is a common cause of disruption to the calcaneal tendon mechanism.

In order to restore a functional length, scar tissue must be excised and the gastrocnemius re-attached to the calcaneus.



PATIENT POSITIONING

The patient is positioned in sternal recumbency with the affected limb extended behind the patient. It is important to ensure the margin of the clip extends circumferentially, to the level of the proximal femur allowing adequate access for the implant to be sutured in place.

SURGICAL TECHNIQUE

The surgical technique is demonstrated in a normal cadaver, allowing clear identification of anatomical features.

STEP 1

- A caudo-lateral incision is made extending distally from the gastrocnemius muscle to the mid body of the calcaneus. Obvious scar tissue will be easily identifiable proximal to the calcaneus. (In the clinical case shown opposite, the thickened insertion of the common calcaneal tendon is visible at the base of the image.)



STEP 2

- The paratenon is incised; it is often difficult to differentiate between the insertions of the gastrocnemius and combined tendon of the gracilis, biceps femoris and semitendinosus.

The lateral retinaculum of the superficial digital flexor tendon is incised along the lateral margin of the calcaneus and luxated medially. In this cadaver image, a defect has been created in the distal gastrocnemius tendon.

- In the majority of cases, the degenerate insertion of the gastrocnemius will be detached from the tuber calcanei.

All abnormal scar tissue is excised to the level of normal tendon tissue proximally. The bridging function of the Novaten implant allows all abnormal tissue to be excised, even if this makes it impossible to appose the gastrocnemius and the calcaneus.



STEP 3

- The Novaten is placed over the common calcaneal tendon mechanism to estimate optimal positioning.



STEP 4

- The implant is positioned between the medial and lateral portions of the gastrocnemius and the myotendinous junction, sandwiched over the proximal portion as shown above.

In larger patients it is possible to pull the implant through the middle of the tendon from proximal to distal. (It is important to remember that the implant and gastrocnemius will be pulled distally to the calcaneus to restore functional length, so the implant should be secured proximal enough to allow this) Suture the Novaten® with single sutures spaced 5 mm apart to sandwich it inside the Achilles tendon. The latest study shows the use of UHMWPE Fiber tech is considered superior for tear resistance.

B. Goin et al (2020 Biomechanical comparison of two suturing techniques during Achilles tendinoplasty in dogs).

A Kessler suture or a three loop pulley suture can be made to bridge the join between both ends of the tendon when the gap between the two ends is possible. Once the suture is done, protect the ligament with a compress soaked in saline to limit the risks of contamination.

Please note the picture shown below is an acute tendon that has been split to allow suturing of the implant. With the chronic cases you will use simple interrupted sutures but not split the tendon, it is unusual to be able to split the tendon in chronic cases so suture onto the myotendinous junction of the gastrocnemius, extending distally onto the gastrocnemius tendon.



STEP 5

Tunnel 1

The first bone tunnel is made from the middle of the proximal surface of the calcaneus towards its plantar aspect. Drill with a 2mm K wire and then over drill with the cannulated drill depending on which size implant is chosen. (4000 is a 3mm tunnel and 8000 is a 3.6mm tunnel).



Tunnel 2

The second tunnel is made perpendicular to the first one (a few millimetres distally to the exit of the first hole) using the same process (K-wire and Cannulated drill bit). Drill from the lateral aspect to the medial side of the calcaneus. This second tunnel is possible only if the calcaneum is large enough to support it. To avoid any risk of fracture, drill in the middle of the surface to conserve enough bone on each side.

You must pre-tap the tunnel with the screw you are going to use, this is because the bone is so hard it makes it easier if you do this prior to passing the ligament. Use the 1mm k wire and screwdriver to do a few turns of the screw.

6



STEP 6

The synthetic tendon is passed through the first tunnel and the second perpendicular tunnel.

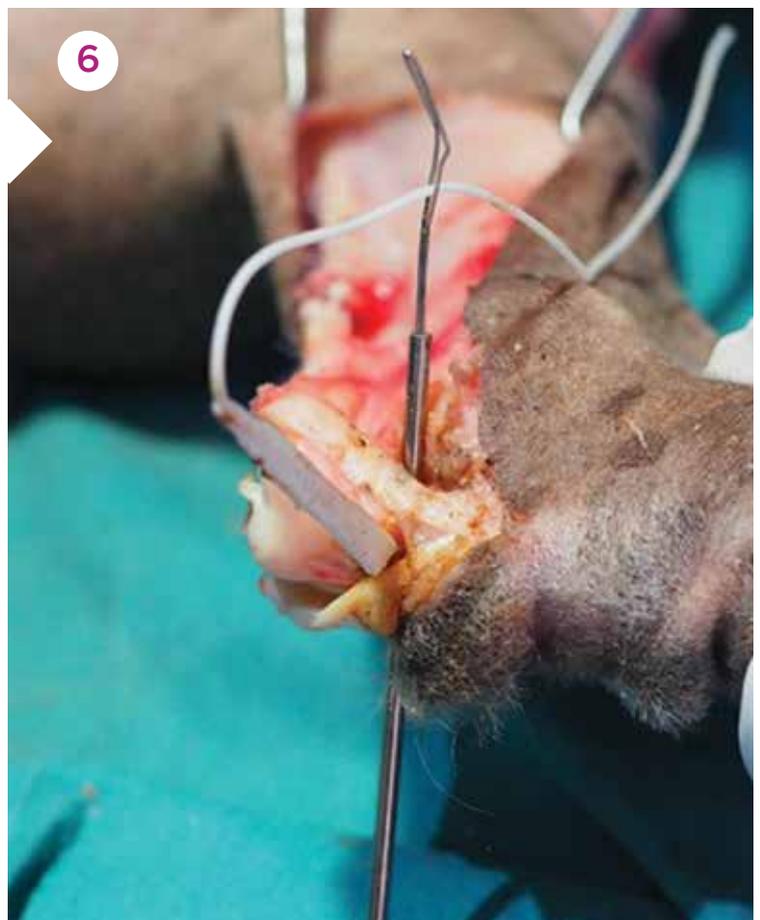
For the graft placement: insert the passing tube in the first tunnel and place the bendy wire through the tube exiting proximally. Put the Novatenw ends into the bendy wire and pull through. Use the same technique for the second perpendicular tunnel so that the wire exits medially on the calcaneus.

Use a curved Kocher forceps to pull the tendon between the two tunnels. When the correct position is found, you can quickly lock the forceps on the medial side of the calcaneus to prevent the slipping of the implant back through the tunnel while you select the screw.

Tension in the common calcaneal tendon mechanism is checked. It should not be possible to flex the hock with stifle in extension. If flexion of the hock is still possible with the stifle extended, it is possible to reposition the proximal section by removing the sutures and repositioning more proximally. (Flexion of the stifle makes this adjustment easier.)

Additional appositional sutures can be placed between the calcaneus and the end of the gastrocnemius if needed. The superficial digital flexor tendon is reduced and the retinaculum, along with the paratenon is closed over the repair. The remaining soft tissues are then closed routinely.

6





STEP 7

Measure the depth of the perpendicular tunnel in the calcaneum and choose a screw that will be bi-cortical for a better fixation for the implant.

Insert the screw using a 1 mm K-wire to beyond the cortex. Use the cannulated screwdriver over the 1mm guide wire to insert the screw.

POST-OPERATIVE CARE

- The use of the NOVATEN avoids having to use an external fixator or a tibial calcaneal screw.

A soft padded dressing is recommended with a cranial splint if necessary, (active dogs etc).

- Follow up radiographs are performed at six weeks to assess screw position.

- A further six weeks of short lead walking is advised prior to building up exercise levels.

- Physiotherapy and hydrotherapy are encouraged following dressing removal.



Improved Resistance - Improved Biocompatibility -
 increased surface area for suturing - Less Invasive -
 Easier fixation by interference screw



INSTRUMENTATION

A complete instrumentation set is available for ligament reconstruction using NOVATEN® or NOVALIG®.



SUTURE - FIBER TECH

We recommend the use of FIBER TECH to suture the implant to the tendon. It will enable a stronger and immediate biomechanical fixation of the implants.

B. Goin, P. Buttin, T. Cachon & E. Viguier (2020) Biomechanical comparison of two suturing techniques during Achilles tendinoplasty in dogs: preliminary results, *Computer Methods in Biomechanics and Biomedical Engineering*, 23:sup1, S128-S129, DOI: 10.1080/10255842.2020.1816299.



Which implant should I use per dog size?

	Tunnel Diameter	Screw Size										
			5	10	15	20	25	30	35	40	45	50+
FiberTech 3	2mm	2.5 - 3mm										
FiberTech 5	2mm	2.5 - 3mm										
Suture Tape with button	2mm	2.5 - 3.5mm										
NOVATEN 2000	2.5mm	3 - 4mm										
NOVATEN 2000 with button	2.5/3mm	3 - 4.5mm										
NOVATEN 4000 with button	3/3.6mm	4 - 6mm										
NOVALIG/NOVATEN 4000	3mm	4 - 6mm										
NOVALIG/NOVATEN 8000	3.6mm	4 - 6mm										

Achilles publications on the Novaten tendon.

- P. Buttin, B. Goin, N. Giraud, E. Viguier & T. Cachon (2020) Biomechanical analysis of an original repair of an achilles tendon rupture in dogs: preliminary results, Computer Methods in Biomechanics and Biomedical Engineering, 23:sup1, S52-S54, DOI: 10.1080/10255842.2020.1812157
- B. Goin, P. Buttin, T. Cachon & E. Viguier (2020) Biomechanical comparison of two suturing techniques during Achilles tendinoplasty in dogs: preliminary results, Computer Methods in Biomechanics and Biomedical Engineering, 23:sup1, S128-S129, DOI: 10.1080/10255842.2020.1816299
- P. Buttin, (2020) et al Repair of tendon disruption using a novel synthetic fiber implant in dogs and cats, the surgical procedure and three case reports. Veterinary medicine international, Vol 2020, ID 4146790.

On the previous CAT 30 by Lars ligaments we sold, now discontinued.

- M. Morton et al, (2015) Mechanical testing of a synthetic canine gastrocnemius tendon implant. Veterinary surgery 2015
- M. Morton et al, (2015) repair of chronic rupture of the insertion of the gastrocnemius tendon in the dog using a terephthalate implant, Vet comp traumatology 2015 (VCOT)

STABILITY VERSATILITY RECOVERY



CRYOTHERAPY BRACE

Prevention and Post-operative Care

With compression

Characteristics

- Analgesic
- Anti-inflammatory
- Vasoconstrictor
- Oedema Prevention

Applications

The indication for compressive cryotherapy is mainly acute post-traumatic disorders: sprains, muscular breakdown, dislocation, fracture, haematoma, oedema, as well as immediate post-operative care.

Cryotherapy has an analgesic, anti-inflammatory, anti-oedema and a muscle relaxant effect.

During compression a decrease in blood flow and oedema is observed, which works in synergy with cryotherapy.

*N von Freeden et al. 2017. Comparison of two cold compression therapy protocols after TPO in dogs. Tierärztliche Praxis Kleintiere 4/2017.
 *T Cachon, Compressive cryotherapy, a prime choice for stifle joint surgery in dogs? L'essentiel veterinary magazine, No 577, 8-14th October 2020.
 *L. Bietrix, The expert think, a review of cryotherapy for dogs. Abstract vet review, 71 page 9, 2020.

WWW.VETLIG.COM

STABILITY VERSATILITY RECOVERY

CRYOTHERAPY BRACE

With compression

Although compressive cryotherapy is useful for the management of musculoskeletal trauma, it is particularly indicated in the immediate post-operative period.

The brace is available in three sizes, each with a right and a left version. This makes it possible to treat all patients between 15 and 50 kg approximately.

Products Information

Designation	Size	Orientation	Ref.	Characteristics
CRYOTHERAPY BRACE WITH COMPRESSION	S	RIGHT	AC-GDS01	15-25Kg Length : 26 cm Circumference : 31 cm
		LEFT	AC-GGS01	
	M	RIGHT	AC-GDM01	25-35Kg Length : 28 cm Circumference : 35 cm
		LEFT	AC-GGM01	
	L	RIGHT	AC-GDL01	35-50Kg Length : 30 cm Circumference : 38 cm
		LEFT	AC-GGL01	

*N von Freeden et al. 2017. Comparison of two cold compression therapy protocols after TPO in dogs. Tierärztliche Praxis Kleintiere 4/2017.
 *T Cachon, Compressive cryotherapy, a prime choice for stifle joint surgery in dogs? L'essentiel veterinary magazine, No 577, 8-14th October 2020.
 *L. Bietrix, The expert think, a review of cryotherapy for dogs. Abstract vet review, 71 page 9, 2020.

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