VETLIG

SOFT TISSUE
INTERNAL
FIXATION

VETLIG

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ARTIFICIAL LIGAMENTS FOR VETERINARY USE

ABOUT VETLIG

Vetlig is a global company that has been involved in the artificial ligament business for humans and animals for over ten years. We are working with the manufacturing company STIF (Soft Tissue Internal Fixation) France, to bring new and innovative products into the veterinary market.

Vetlig supplies products mostly relevant to dogs and cats but due to the nature of the product can be cut to shape or shortened according to surgical need.

Artificial ligaments are now able to be implanted in the body to help reconstruct virtually any tendon or ligament which needs help to heal or re-grow in the correct position or be replaced completely.

Vetlig believes that these products will help veterinarians to give their patients options which have not been available before and enable them to get back to normal activities with minimal downtime.

WOVEN FABRIC

For Bone Tunnels.

LIGAMENT AUGMENTATION

Different sizes for breed types.

FREE FIBRES FOR

Fibroblastic In-growth.

BACKGROUND FOR STIF IN HUMAN MEDICINE.

The 1980s saw a growing enthusiasm for synthetic material ligament reconstruction, by the 1990s the popularity of artificial implants had declined due to high failure rates. The ligaments of the first generation were extremely brittle, ruptured early, shed lubricants or were not resistant to abrasions causing synovitis. Although the newer synthetic ligaments of the second generation were a marked improvement over the previous ones, they also caused early failures due to a lack of tissue in-growth and low resistance to abrasion and fraying.

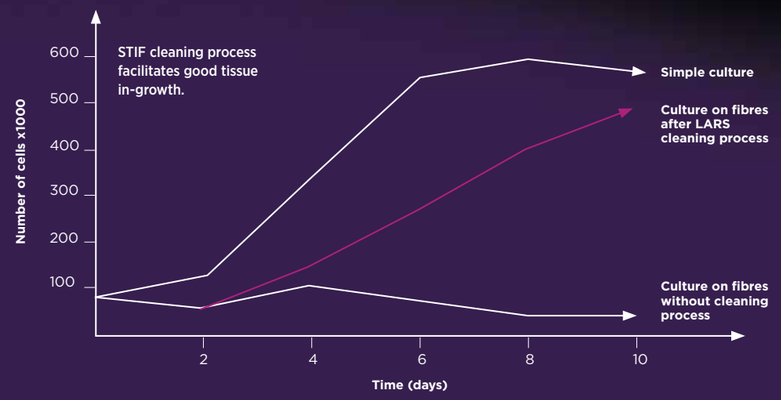
The LARS Ligament Augmentation & Reconstruction System (manufactured by LARS, Surgical Implants and Devices, Arc-sur-Tille, France) represents a third generation synthetic ligament. It incorporates a design, which takes into account the causes of earlier synthetic ligament failures. LARS has been developed with a more accurate understanding of the functional anatomy of joints, muscle-tendon units and ligaments. Combined with advanced surgical techniques, medical technologies and materials. This new generation of synthetic ligaments have been used successfully for more than 19 years in a wide variety of patients, from elite athletes to the general population. The intra -articular reconstruction is used as the technique of choice in humans for returning the knee joint as close to preoperative functional status as possible.

STIF has used the experience and technology of LARS to provide a viable option to treat tendon and muscle defects in animals.

CONSTRUCTION

The construction of the STIF ligament is the result of many years detailed research; due to the LARS success, not only in finding a suitable biocompatible material which corresponds to the material properties of native structures, but also in identifying the best way to apply this material to produce the various ligaments available.
STIF are constructed from polyethylene terephthalate (PET), an industrial-strength polyester fibre that has been selected for its characteristics for ligament scaffold applications. There are over 500 different types of PETs, each with their own specific physical and mechanical characteristics. In contrast to previous generation synthetic ligaments, STIF are extensively treated to remove residual processing aids, which were found to inhibit soft tissue in-growth, providing a more fibroblastic friendly environment *(see graph below)*.

The intra-articular portion of the STIF ligament consists of longitudinal fibres without transverse or crossing components.

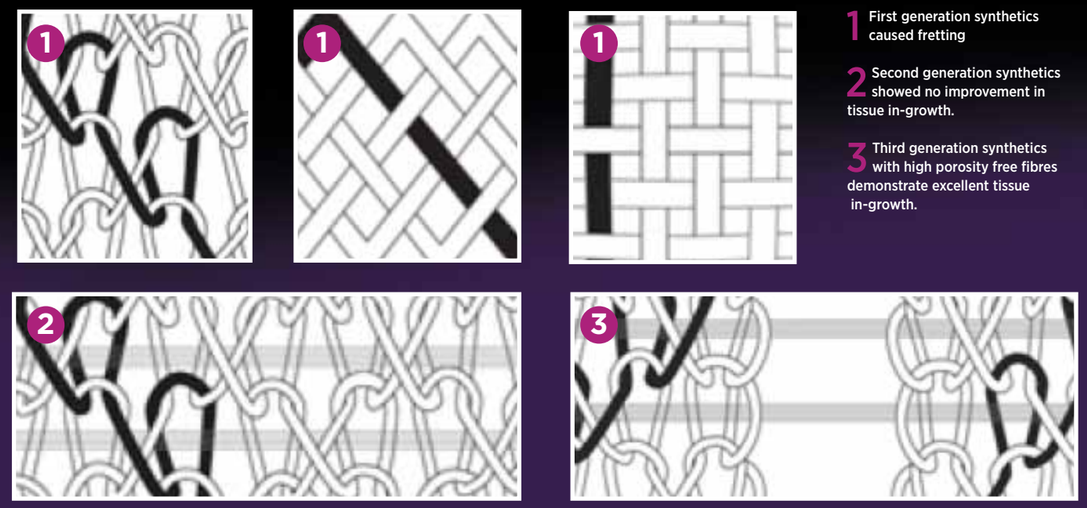


STIF REFLECTS A THIRD GENERATION LIGAMENT DESIGN

The free fibres are oriented to the ligament they are intended to be used with, mimicking the normal anatomic fibres. This patented structure allows a high resistance to fatigue, especially in flexion, as well as providing a porosity favouring fibroblastic in-growth, which then isolates the synthetic fibres.

In the extra-articular portion the same parallel fibres are kept united by a process of warp knitting. This knitting process minimises secondary elongation (as opposed to braided or woven fibres).

Regardless of the tissue or implant used for cruciate reconstruction, all are avascular at the point of implantation, this is why preserving any native remnants and the free fibres of the STIF, encourage fibroblastic in-growth and graft remodelling, without compromised mechanical strength during the initial healing phase.



1 First generation synthetics caused fretting

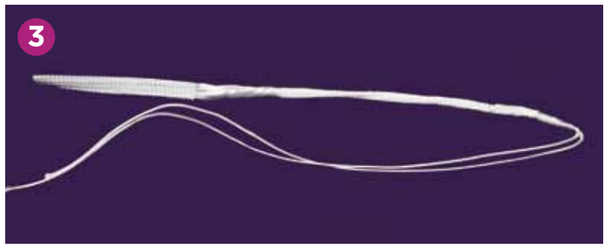
2 Second generation synthetics showed no improvement in tissue in-growth.

3 Third generation synthetics with high porosity free fibres demonstrate excellent tissue in-growth.

VETLIG THE RANGE

The material properties of ligaments designed for the various indications, correspond with the material properties of their native counterparts in regards to tensile strength. Each type of STIF ligament contains a specific number and length of fibres depending on the intended use, and varying 'leaders' to facilitate passage through the bony tunnels. Some ligaments contain free-fibres and some do not, depending on their specific indication or the specific purpose or goal of the surgical intervention. Resistance to traction varies with the number of longitudinal fibres – approximately 1500N for 30 fibres to 2500N for 60 fibres.

Vetlig have Achilles tendon, CCL and a woven mesh patch for soft tissue repair. The CCL comes in different sizes for pre and intra operative choice according to patient need.



1. Vetlig screw 2. CCL 3. Achilles 4. Mesh patch

APPLICATIONS

STIF ligaments are intended for intra or extra-articular reconstruction. STIF can be used in conjunction with suturing to the remnant of the ruptured ligament, or as an autogenous reconstruction. In both cases STIF allows the original ligament tissues to heal in the absence of traction and provides an earlier return to normal function. STIF can be used for extra-articular reconstructions in tendon repair, such as achilles tendon, patella tendon etc. These ligaments must always be placed in the joint in an anatomical or isometric position. The diameter of the bony tunnels must correspond to the specific reference for each type of ligament and as a general rule should be as small as possible. The fixation of the ligament extremities must always be extra-articular. Biological and mechanical testing on resistance, fatigue and creep has shown that STIF ligaments are highly effective ligament reconstruction and augmentation devices.

The use of the STIF artificial ligament requires a specific surgical technique, for which dedicated STIF instruments are available.

IMPLANTATION METHOD

A number of guidelines must be respected:

- Isometry is critical to the outcome
- Acute angles must be avoided in the drilling of the bony tunnels
- There must be no impingement or abrasion of the ligament in the joint
- Solid extra-articular fixation must be achieved using STIF interference screws
- Absence of tension in the synthetic ligament is important; the post-operative tension should not be more than that of the anatomical ligament being repaired
- Coverage by fibrous tissue is desirable
- Small incisions should be used to retain proprioception.

CLINICAL PAPERS

•**Gao, K. et al.** (2010). Anterior Cruciate Ligament Reconstruction with LARS Artificial Ligament: A Multicenter Study with 3- to 5-Year Follow-up. Arthroscopy. The Journal of Arthroscopic and Related Surgery. 26(4): 515-523

•**Leduc,S. et al.** (1999) Mechanical evaluation of a ligament fixation system for ACL reconstruction in the tibia on a canine cadaver. ANN Chir, 1999, 53, no 8, 735-741

•**Lopez, J et al.** (2003). Hamstring graft technique for stabilization of canine cranial cruciate ligament deficient stifles. Veterinary Surgery. 32(4): 390-401

•**Manassero, M. et al.** (2011). A novel intra-capsular stabilization technique applied in 5 dogs with cranial cruciate ligament (CrCl) rupture: a pilot study. Ecole veterinaire d'Alfort, France.

•**Mascarenhas, R et al.** (2008). Anterior cruciate ligament reconstruction: a look at prosthetics - past, present and possible future. Mcgill J Med. 11(1):29-37

•**K Tobias,Veterinary surgery:** small animal: p934-945 2012.

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