



## Academy Step by Step

# Iso-toggle LigaFiba®



Fig. 1



Fig. 2

Research to define ISOMETRIC points around the stifle has been generated by separate research by Don Hulse (2010) and Simon Rowe (2008) but it is unlikely that truly isometric points can be established; rather quasi-isometric points. Nonetheless, Hulse established that there was minimal change in distance between two points defined as:

1. close to the distal pole of the lateral fabella
2. the caudal border of the extensor fossa on the lateral aspect of the proximal tibia.

Rowe found that the femoral point was critical and was defined as the very caudal edge of the lateral femoral condyle adjacent to the distal border of the lateral fabella. The tibial point was less critical as long as it was placed proximally. These findings were incorporated in an extra-articular technique developed by James Cook, when a braided woven polyester tape was placed through bone tunnels and secured on the medial aspect of the femur and tibia (TightRope® technique). The Iso-toggle technique was developed utilising the principles of isometric suture

### Introduction

Stabilisation of the canine stifle using extra-articular sutures is a well established technique, although recent evidence suggests that outcome with TTA and TPLO procedures is superior. Various suture material and methods of securing the material have been used.

placement with a bone tunnel in each of the tibia and femur (Figs. 1 & 2), and using a loop of a new braided spun ultra high molecular weight polyethylene suture called LigaFiba®, secured over a toggle (Titanium slotted hole button) and a tie-down button (Titanium button with holes). LigaFiba® is very strong (2.5x the strength of equivalent nylon), has very good abrasion characteristics and is flexible.

### Packaging:

LigaFiba® Iso-toggle is supplied sterile in three sizes (150, 250 and 500lb), individually double wrapped in a see-through packet. In each pack there is a straight threading needle with a nylon loop, plus a Titanium toggle and a Titanium tie-down button (Fig. 3).

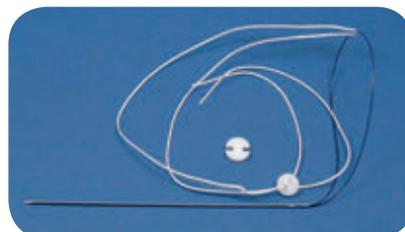


Fig. 3

### Additional equipment required:

Drills bits (2.0, 2.5 and 3.5mm) and appropriate drill guides.

### Size guide:

150lb (0.6mm) Dogs up to 15kg  
250lb (1.0mm) Dogs up to 30kg  
500lb (1.6mm) Dogs over 30kg

## Step-by-Step Technique:

**Surgical assistance is recommended.**

- 1** The patient is prepared for surgery:
- Placed in dorsal recumbency (Fig. 4)
  - Patient preparation and draping should allow adequate aseptic exposure of the affected stifle and freedom to permit manipulation of the joint.



Fig. 4

## **2** Approach, lateral para-patellar arthrotomy, cruciate & meniscal inspection.

A standard lateral para-patellar approach is made with slight extension of the skin incision proximally and distally. The skin is reflected laterally and medially to give better access to both aspects of the joint. The lateral fascia is incised along the same line as the skin incision.

The fascia is elevated from its insertion on the tibial crest to allow lateral reflection of the fascia and greater exposure of the structures in this area. The joint capsule is incised and inspected via a lateral para-patellar incision. Gelpi retractors and stifle distractors of the appropriate size are used for intra-articular inspection. The ruptured ends of the cranial cruciate are debrided. The lateral and medial menisci are inspected. Damaged meniscus, usually the caudal horn of the medial meniscus, is resected. Meniscal release or transection can be considered, but is not recommended as this completely destroys the function of the meniscus, and the majority of dogs do not suffer a late meniscal tear. The joint is lavaged and suctioned. The joint capsule is closed with interrupted or continuous sutures of a monofilament absorbable material e.g. PDS.

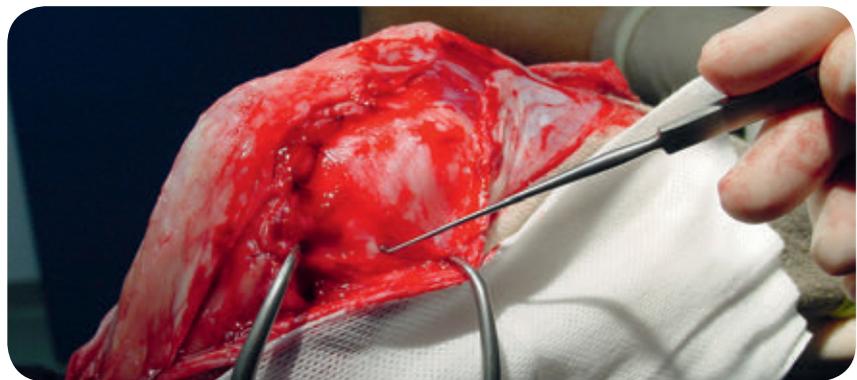


Fig. 5

## **3** Drilling of femoral tunnel.

- The incised lateral fascia / retinaculum is reflected caudally.
- The lateral fabella is identified, on the caudal proximal aspect of the lateral femoral condyle (Fig. 5).
- The femoral isometric point is identified on the caudal edge of the femoral condyle adjacent to the cranial pole of the lateral fabella (Fig. 6 & 7).
- The appropriate sized drill bit is then used to drill the femoral tunnel:



Fig. 6

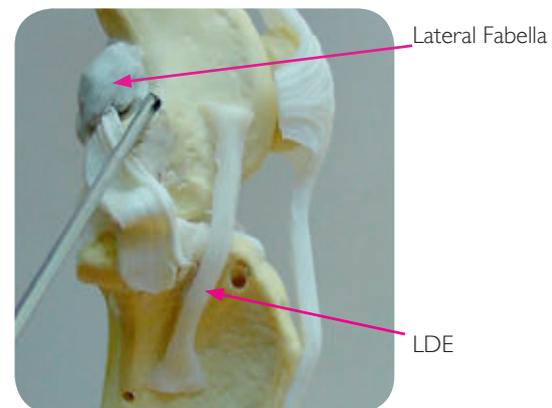
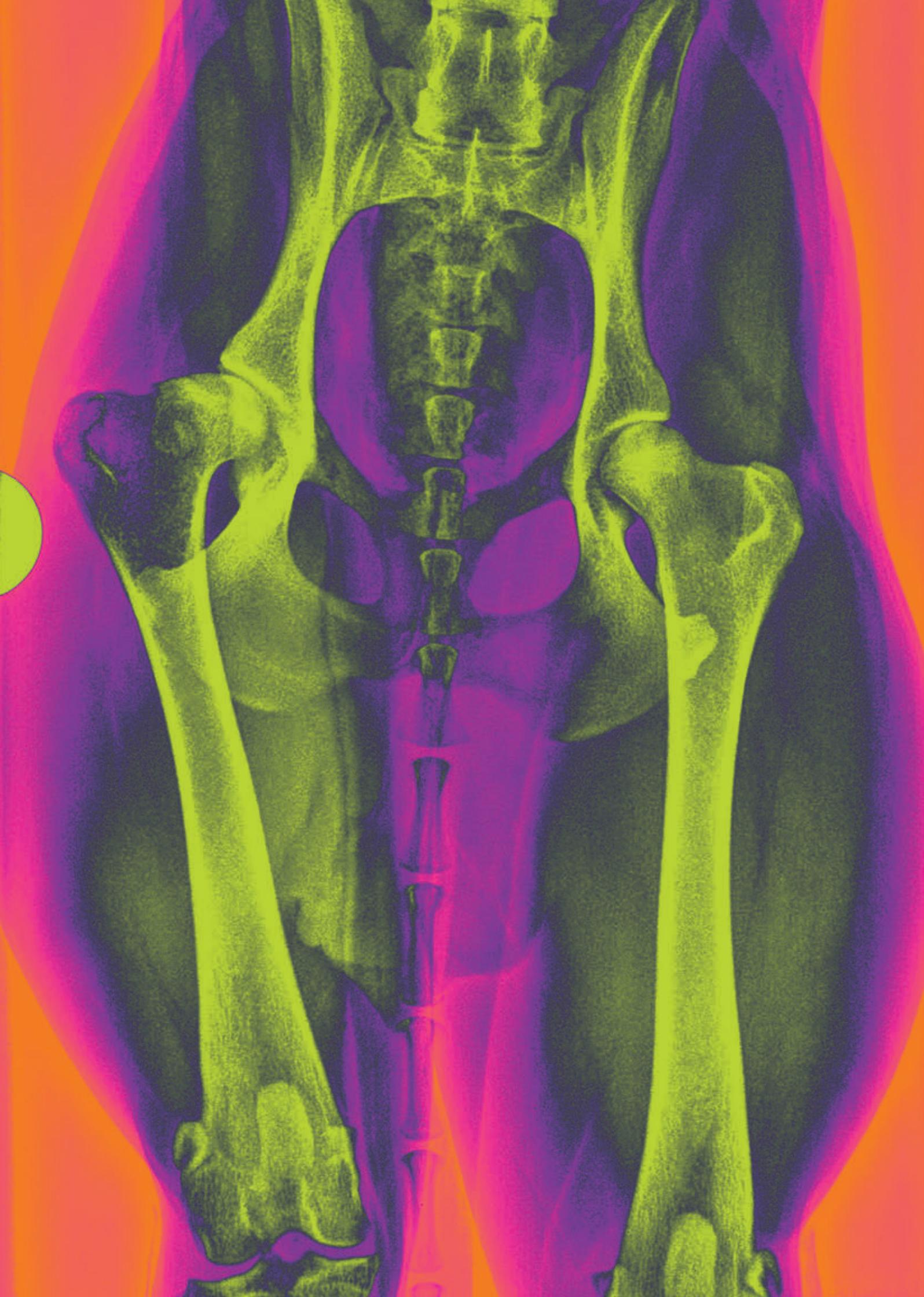


Fig. 7

150lb LigaFiba® 2mm drill (H090102AS)  
250lb LigaFiba® 2.5mm drill (H090112AS)  
500lb LigaFiba® 2mm drill (H090106SAS)



The initial direction of the drill bone tunnel is at right angles to the bone; this reduces the chances of the drill bit slipping off the caudal edge of the femoral condyle. The use of a drill guide and the anti-skid drill bit should minimise the chance of slippage. Once the drill bit has entered the cortex of the lateral femoral condyle the drill is re-directed to create a bone tunnel that emerges more proximally on the medial side of the femur just underneath the caudal edge of the medial gastrocnemius muscle belly (Figs. 8, 9 & 10).

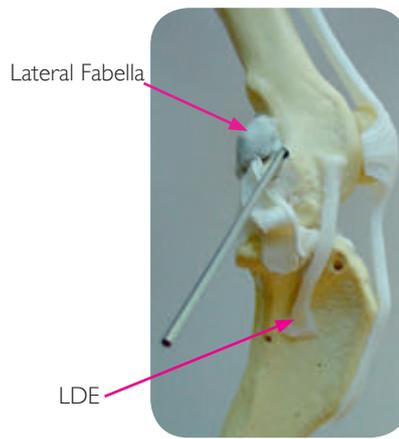


Fig. 8



Fig. 9



Fig. 10

150lb LigaFiba® 2.0mm cannulated drill (H090102CAN)  
 250lb LigaFiba® 2.5mm cannulated drill (H090112CAN)  
 500lb LigaFiba® 3.5mm cannulated drill (H090106CAN)

Use of a cannulated drill bit will allow a K-wire to be placed in the hole before withdrawal of the drill bit. This allows the hole position to be securely identified, and avoids the frustration of the hole getting lost with soft tissue movement.

The tunnel is flushed with sterile saline and the edges of the holes should be rounded off using a countersink. The soft tissues on the medial side of the femur around the drill bit/ hole/ K-wire are cleared away for a short distance to accommodate the Titanium toggle.

#### 4 Drilling of tibial tunnel.

The correct point on the lateral aspect of the tibia is identified (Figs. 11 & 12) i.e.

- Gerdy's tubercle (the prominence at the cranial aspect of the extensor fossa of long digital extensor tendon) is palpated: .
- Placing the tunnel at Gerdy's tubercle (just cranial to the fossa of the long digital extensor tendon) avoids damage to the tendon at the time of drilling and tendon interference or damage by rubbing from the LigaFiba® suture once in situ.



Fig. 11



Fig. 12

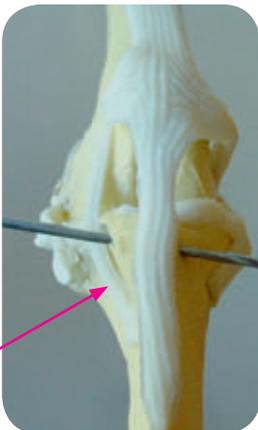


Fig. 13



Fig. 14

An appropriate sized drill bit with drill guide is positioned over this tibial drill point and a tunnel is drilled across the tibia in an oblique direction to emerge on the medial aspect of the tibia, close and cranial to the distal medial collateral ligament (Figs. 13 & 14).

## 5 LigaFiba® Isotoggle placement

The appropriate size LigaFiba® is opened, taking care not to drop the button. The long swaged threading needle (Fig. 15) with nylon loop is then used to pull the LigaFiba® through the tunnels.

The objective is to secure the prosthesis against the medial aspect of the tibia therefore threading starts from this point.

The needle will emerge on the lateral aspect of the tibia (Fig. 15). The prosthesis is carefully pulled through the tunnel (Fig. 16) until the eyed Titanium toggle which is pre-loaded on the LigaFiba® rests on the medial tibia (Fig. 17).

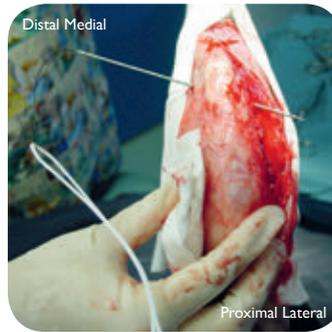


Fig. 15

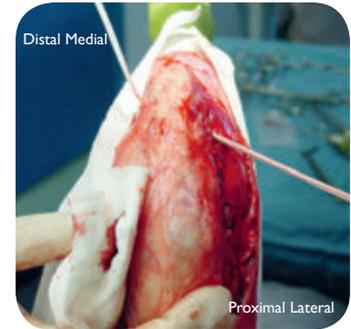


Fig. 16



Fig. 17

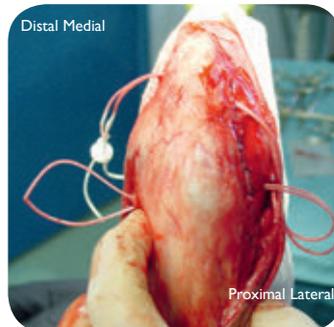


Fig. 18

The lateral aspect of the femoral tunnel is located and the threading needle is re-directed in a lateral to medial direction across the femur (Fig. 17).

The needle emerges under the medial gastrocnemius muscle belly in the space previously cleared. The prosthesis is drawn through the femoral tunnel. When complete and the LigaFiba® has emerged, the nylon loop of the passing needle is cut (Fig. 18). The Titanium toggle is inserted into the loop of the LigaFiba® over the medial femur bone tunnel (Fig. 19).

Holding this toggle in position and directly sitting against the medial femoral cortex, the LigaFiba® is pulled in reverse direction i.e. lateral through the femur and medial through the tibia.

The prosthesis is progressively tightened working backwards from the medial femur to lateral femur, to lateral tibia, to medial tibia.

As the loop is gradually tightened and made snug, the threaded toggle is secured onto the medial aspect of the tibia and the loop is temporarily tightened (Figs. 19, 20 & 21).

The stifle joint is manipulated through a full range of motion and stability is checked. A very slight residual amount of cranial draw may be present but there should be no restriction to joint movement.

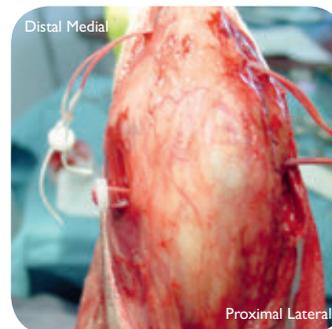


Fig. 19



Fig. 20

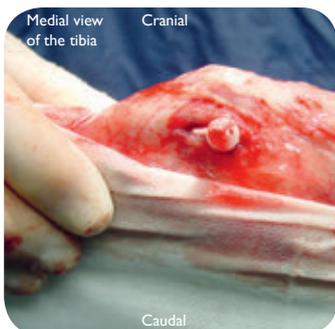


Fig. 21

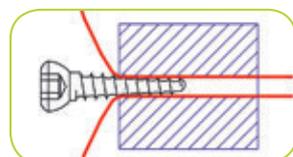


Fig. 22

Once the surgeon is satisfied with stability of the joint and the button is flat on the medial aspect of the tibia, the LigaFiba® prosthesis is secured by placing multiple throws over the button on the medial tibia (Fig. 21). The excess suture material is cut using specific scissors (LFS140TC).

An alternative locking mechanism for the suture on the medial tibia is the interference screw which screws into the bone tunnel, over the LigaFiba®, effectively jamming the suture into position. This avoids the medial button and knot (Fig. 22).

## 6 Finish and close

The entire surgical site is flushed thoroughly. The fascia is closed over the medial tibia with interrupted or continuous sutures of an absorbable monofilament material such as PDS. The lateral fascia incision is closed with a continuous suture pattern of an absorbable monofilament suture such as PDS. The wound is then closed in a routine manner. A light dressing can be applied to the surgical wound.

## 7 Post-operative care:

- Opioid analgesia for 1-3 days post-op.
- NSAIDs for 7-14 days post-op.
- Sutures are removed at 10 days.
- Physiotherapy/ passive range of movement of the joint should be started as soon as possible after surgery.
- Owners are instructed to confine the patient to leash walking only for 4 weeks.
- After 4 weeks of confinement, lead walks are increased and sit-walk exercises and hydrotherapy begin.
- Patients are expected to be starting to weight bear within a week of surgery and then show gradually improving limb use thereafter.

### LigaFiba® Iso Toggle Sutures

- LFITS150TI** 150lb Iso Toggle Suture Set with Titanium Button
- LFITS250TI** 250lb Iso Toggle Suture Set with Titanium Button
- LFITS500TI** 500lb Iso Toggle Suture Set with Titanium Button
- LFISOKIT** Iso Toggle Starter Kit

The Starter Kit comprises 2 x 250lb sutures, 2 x 500lb sutures and the required 2.5mm and 3.5mm Anti-skid Drills bits.

### LigaFiba® Iso Toggle Interference Locking Screws

- LFIS253518SS** Interference Screw 3.5 Stainless 18mm
- LFIS253518TI** Interference Screw 3.5 Titanium 18mm
- LFIS354523SS** Interference Screw 4.5 Stainless 23mm
- LFIS354523TI** Interference Screw 4.5 Titanium 23mm

### Iso Toggle Consumables

- H090102AS** 2.0mm Anti-skid Drill (150lb) 100mm
- H090112AS** 2.5mm Anti-skid Drill (250lb) 115mm
- H090106SAS/L** 3.5mm Anti-skid Drill (500lb) 180mm
- H090112CAN** 2.5mm Cannulated Drill 130mm Long 1.1mm Cannulation
- H090104CAN** 2.7mm Cannulated Drill 130mm Long 1.1mm Cannulation
- H090106CAN** 3.5mm Cannulated Drill 130mm Long 1.1mm Cannulation
- S090112CAN** 2.5mm Cannulated Drill 130mm Long 1.1mm Cannulation AO Quickfit
- S090104CAN** 2.7mm Cannulated Drill 130mm Long 1.1mm Cannulation AO Quickfit
- S090106CAN** 3.5mm Cannulated Drill 130mm Long 1.1mm Cannulation AO Quickfit
- 090065** Guide Wire 1.1mm x 178mm - Pack of 10
- TIBUT6H** Titanium Button 6mm 2 Holes
- TIBUT9H** Titanium Button 9mm 2 Holes
- TIBUT9S** Titanium Button 9mm 2 Slots
- TIBUT11H** Titanium Button 11mm 2 Holes
- TIBUT11S** Titanium Button 11mm 2 Slots

### LigaFiba® Scissors



LigaFiba® is so tough it is difficult to cut and will damage standard scissors. Use our special T.C. Scissors with a custom cutting edge.

- LFS140TC** LigaFiba® Scissors T.C. 145mm

### Iso Toggle Aiming Device



Useful for the placement of the femoral bone tunnel which can be more challenging than the tibial tunnel. Adjustable Drill Guide (ADJDG2035) with an appropriately sized drill slider may be used to pre-determine the line of the tunnel and offer protection of the soft tissues. The arms of the guide have sufficient 'spring' in them so if pre-stressed the guide is self retaining.

- ADJDG2035** Adjustable Drill Guide 175mm

Special thanks to Geoff Robins & Gareth Arthurs for the preparation of this guide.

**Please note** that this guide may feature UHMWPE buttons in the surgical images. Kits and packs as listed are supplied with Titanium buttons.

**To place an order contact our Vi Advisor Team on 0345 130 9596 or email [info@vetinst.com](mailto:info@vetinst.com)**

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