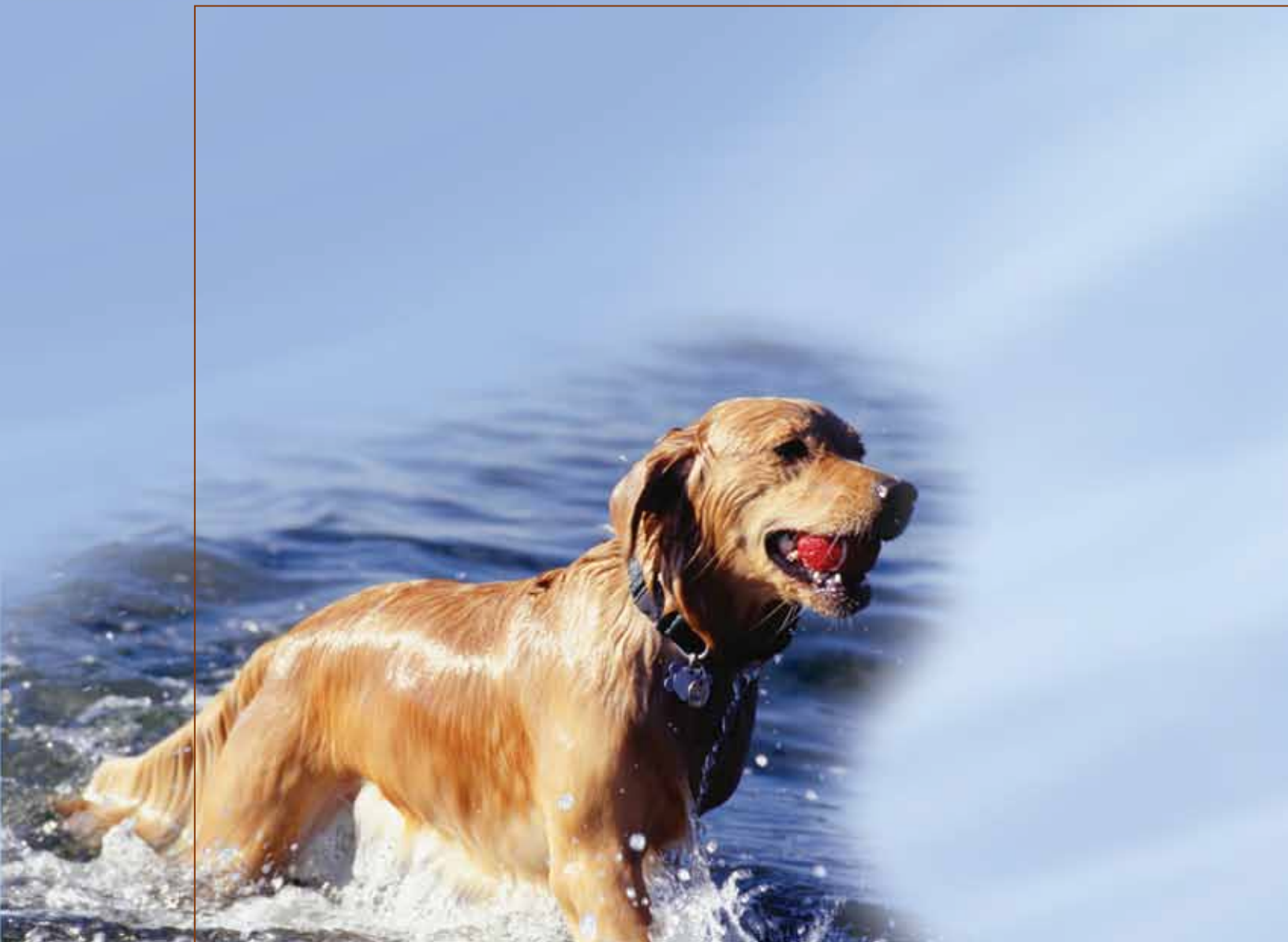




SURGICAL TECHNIQUE

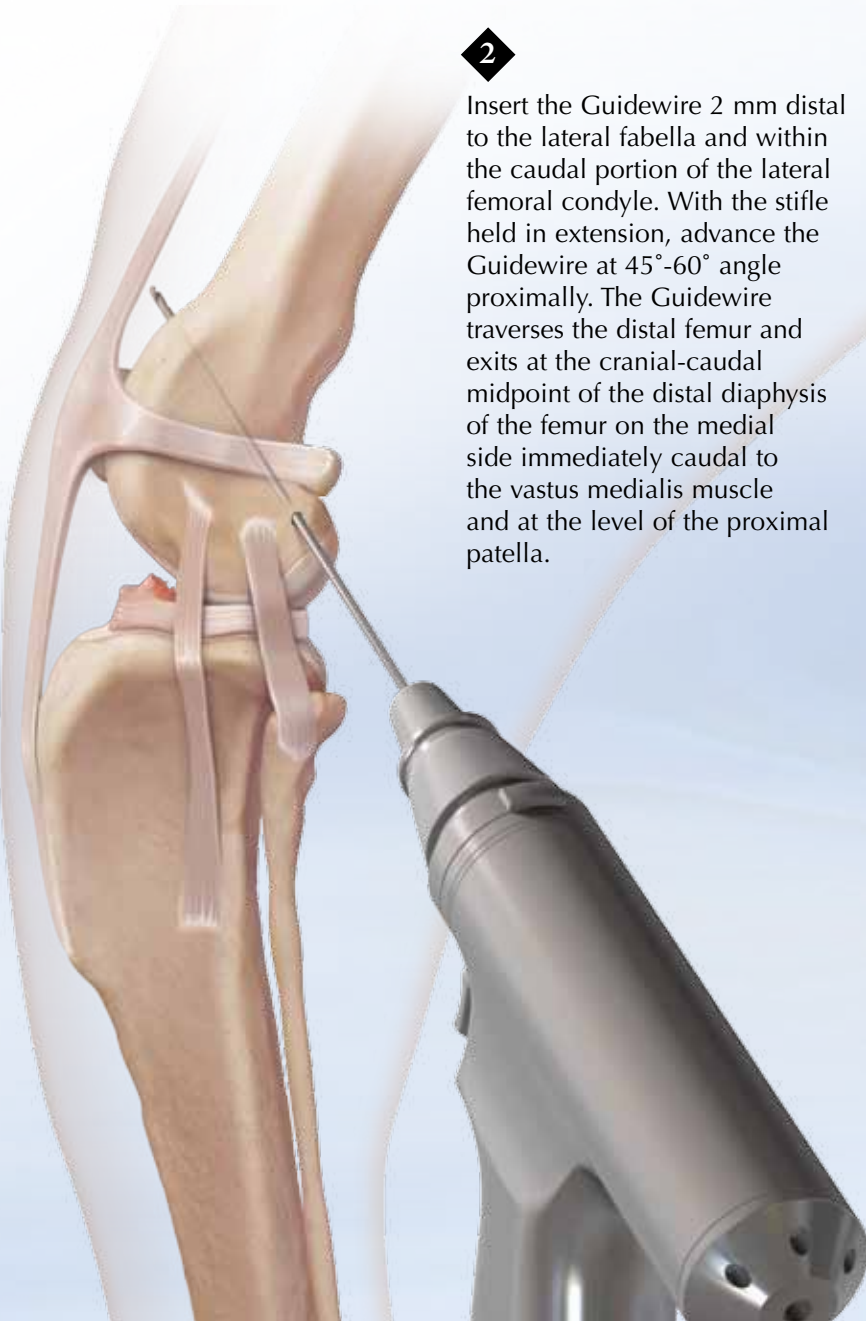
TightRope® CCL



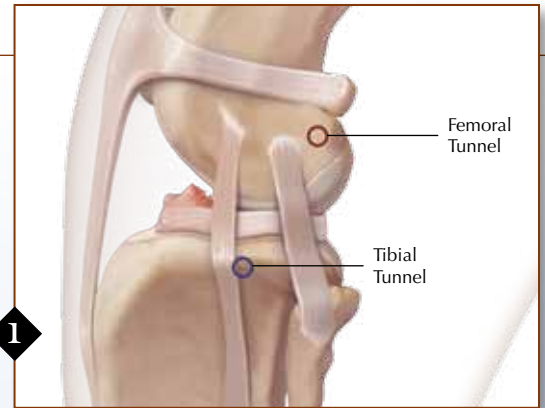
Surgical Technique

The patient is placed in dorsal recumbency and prepared for surgery of the affected stifle. Strict adherence to aseptic technique for patient preparation and surgery is critical to success. Preparation and draping such that the limb is exposed from proximal thigh to below the hock is recommended to allow for adequate stifle palpation and manipulation during surgery.

A lateral or medial parapatellar approach with arthrotomy, or stifle arthroscopy, is performed to allow for complete exploration of the stifle joint and visualization and palpation of the menisci. Pathology of ligament and meniscus should be treated appropriately. The joint is thoroughly lavaged and the joint capsule closed. The caudolateral aspect of the stifle is exposed by caudal dissection and retraction of the lateral fascial incision when an arthrotomy has been performed or by mini-incision through the skin and fascia from the lateral fabella to the tibial tuberosity after arthroscopy has been performed.



2 Insert the Guidewire 2 mm distal to the lateral fabella and within the caudal portion of the lateral femoral condyle. With the stifle held in extension, advance the Guidewire at 45°-60° angle proximally. The Guidewire traverses the distal femur and exits at the cranial-caudal midpoint of the distal diaphysis of the femur on the medial side immediately caudal to the vastus medialis muscle and at the level of the proximal patella.



1 The start site for the femoral tunnel is just distal to lateral fabella-femoral condyle junction (ie. 2 mm from the caudal edge of the lateral femoral condyle). The tibial start site is located caudally within the groove of the long digital extensor tendon.



3 The Cannulated Drill Bit is inserted onto the Guidewire and advanced through the femur until it exits through the medial side of the femur. Carefully ream the femoral tunnel back and forth with the drill bit.



4 Place the Guidewire within the tibial extensor groove proximally and resting against its caudal ridge. Advance the Guidewire through the tibia at a 45°-60° angle to exit medially within the footprint of the caudal sartorius insertion. Drill over the Guidewire with the Cannulated Drill Bit (protect the soft tissues).

TightRope CCL

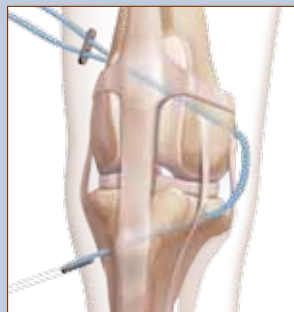
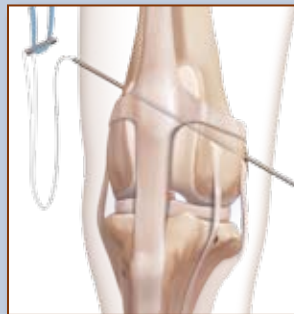
The TightRope CCL technique was developed to provide a minimally invasive method for extracapsular stabilization of the cranial cruciate ligament-deficient canine stifle. TightRope CCL seeks to optimize the lateral suture stabilization technique by employing bone-to-bone fixation, an implant with superior strength and stiffness designed specifically for ligament repair, and a method for consistent isometric implant placement. As such, TightRope CCL can counteract cranial tibial thrust, drawer, and internal rotation, while providing optimal joint range of motion.

Developed in conjunction with James L. Cook, DVM, PhD, Diplomate ACVS, Director, Comparative Orthopaedic Laboratory, University of Missouri

TightRope CCL
VAR-2800

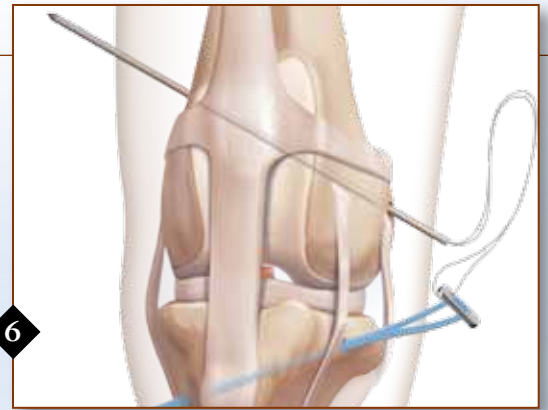
5

The TightRope needle is inserted through the tibial tunnel in a medial to lateral direction. As tension is applied to the needle and FiberTape, the toggle button will lay down to allow it to advance through the tunnel.



Femoral Button Method

6



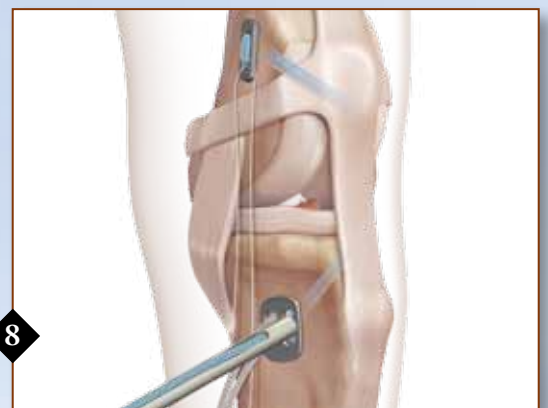
Advance the TightRope needle through the femoral tunnel in a lateral to medial direction.

7

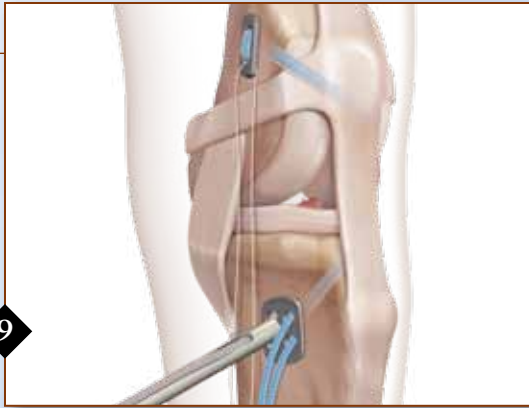


Once the toggle button has exited the femoral tunnel, the button is flipped by pulling the white suture in a slight upward direction and by pulling back on the FiberTape strands laterally. Ensure that the toggle is flipped and seated fully on medial femoral bone by direct visualization or palpation.

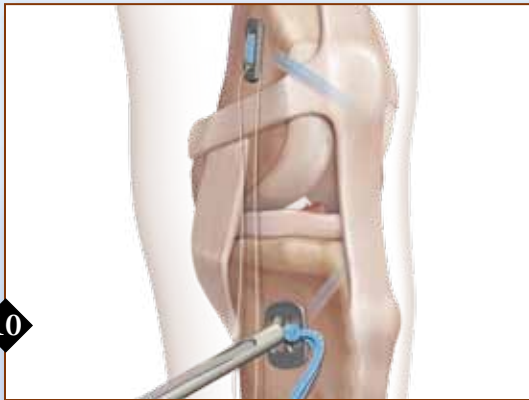
8



Advance the 4-hole button over the FiberTape strands and seat it firmly and completely against the medial tibial bone. Advance the two blue strands of FiberTape into the tensioner and tension to 10-12 lbs. Check drawer, internal rotation, and range of motion (ROM) of the stifle. Cycle the joint through a full ROM 20-30 times.



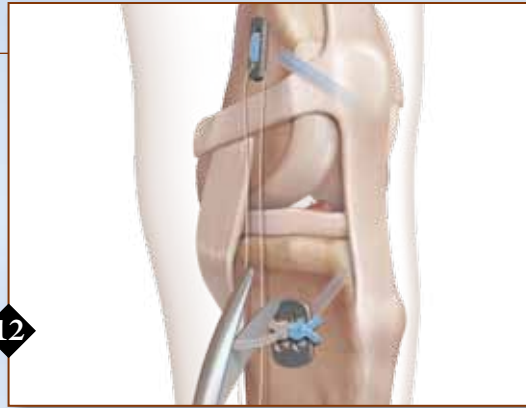
Remove the blue strands from the tensioner, advance the two white strands of FiberTape into the tensioner and tension to 10-12 lbs, confirm ROM, internal rotation, and drawer are optimized.



Put the stifle at a weightbearing angle (ie. $\sim 140^\circ$) and tie a knot (single throw) with the blue strands of FiberTape. Reinforce the knot with 4 to 5 throws.



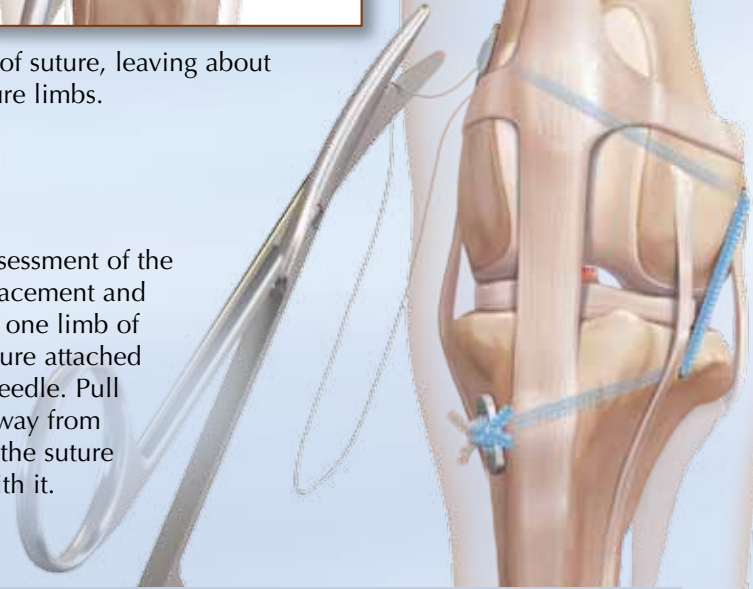
Remove the tensioner from the white strands of suture and recheck the ROM, rotation and drawer. If satisfied, tie the white strands of FiberTape.



Cut the limbs of suture, leaving about $\frac{1}{4}$ inch of suture limbs.

13

After final assessment of the TightRope placement and function, cut one limb of the white suture attached to the lead needle. Pull the needle away from the skin and the suture will come with it.



TightRope Pearls

1. When first learning the procedure, do not skimp on dissection. Visually identify all critical landmarks for optimal Guidewire placement and verify the toggle and button are firmly seated on bone by direct visualization.
2. When placing the Guidewires, you may need to start them at an angle perpendicular to the bone and then adjust to the final drilling angle to prevent them from slipping from the intended start site. Starting with the drill in reverse or using a 14 gauge needle as a sleeve may also aid in maintaining your Guidewire start sites.
3. Ream your tunnels back and forth carefully to ensure no soft tissue or bone fragments remain in the tunnel.
4. After drilling each tunnel, it is helpful to have another wire or small IM pin ready to place into the tunnel when removing the drill bit. The Guidewire typically comes out with the Cannulated Drill bit, so having something to place into the tunnel to ensure you can locate it when placing the TR is essential.
5. Do not get the TR out of the package until both tunnels are drilled in the appropriate locations and everything is prepared for its placement. Then, put on a new pair of sterile surgical gloves to handle and place the TR.
6. Hold on to the white 2-0 suture, rather than the TightRope Needle when pulling the TightRope through the tunnels to keep the suture from pulling free from the needle.
7. If tension is not able to be maintained and/or if drawer is not counteracted appropriately while maintaining good ROM, then the TR should be assessed. When this occurs, it is likely that the tunnels are not in the proper locations and/or the toggle or button was not seated directly onto the bone well. The surgeon must then decide if correction is feasible or another treatment needs to be employed.
8. Take postoperative two-view radiographs to ensure proper button placement and tunnel location. This will assist in trouble-shooting any issues should they arise.

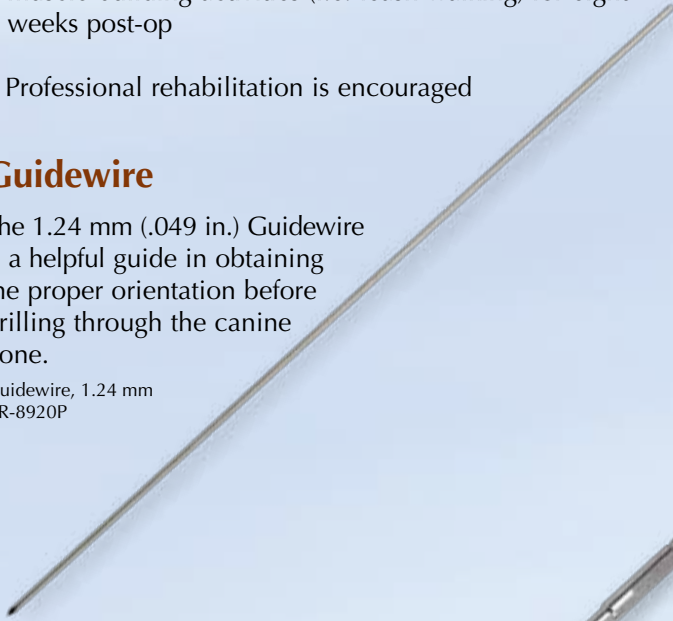
Recommended Postoperative Management:

- Cefazolin - 22 mg/kg IV 30 minutes prior to incision, 90 minutes later, then q six hours
- Cephalexin - 22-30 mg/kg per os every 8-12 hours for ten days post-op
- Bandaging at your discretion (soft-padded bandage for at least 24 hours is typical)
- Restrict to kennel rest when unobserved and controlled muscle building activities (i.e. leash walking) for eight weeks post-op
- Professional rehabilitation is encouraged

Guidewire

The 1.24 mm (.049 in.) Guidewire is a helpful guide in obtaining the proper orientation before drilling through the canine bone.

Guidewire, 1.24 mm
AR-8920P



Cannulated Drill Bit

The reusable 3.5 mm cannulated drill provides an aggressive head to drill through tough bone.

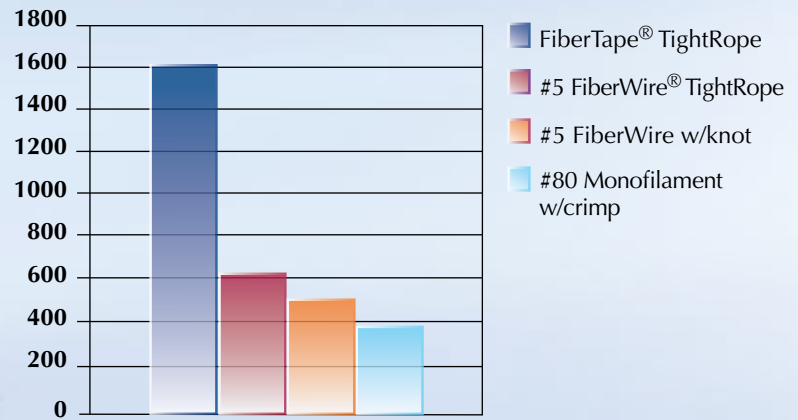
3.5 mm Cannulated Drill Bit
AR-8920DC



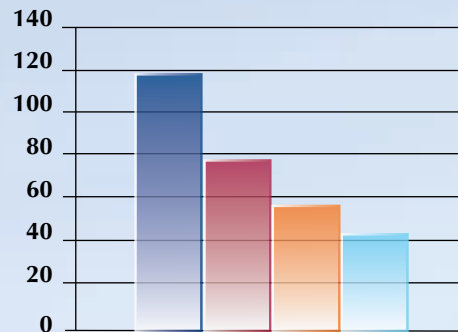
*Autoclavable
for quick cleaning*

Suture Tensioner with Tensiometer
AR-1529

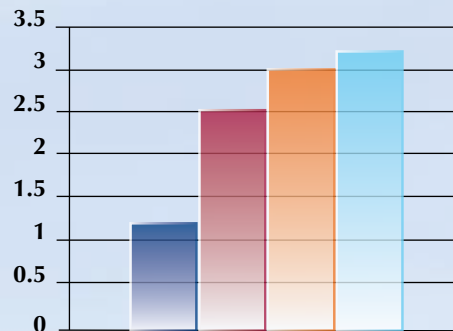
Ultimate Load (N)



Stiffness (N/mm)



Cyclic Displacement (mm)



Suture Tensioner with Tensiometer

The redesigned Suture Tensioner allows the surgeon to quickly set and control the desired tension on FiberWire and FiberTape suture. The open design allows for better visualization of the suture during suture capture and the easy to read tension markings allow the surgeon to accurately dial-in the appropriate tension setting.

ORDERING INFORMATION

TightRope CCL	VAR-2800
Mini-TightRope CCL	VAR-2801
FiberWire Scissor	AR-11796
Suture Tensioner with Tensiometer	AR-1529
Cannulated Drill Bit, 2.7 mm	AR-8911DC
Cannulated Drill Bit, 3.5 mm	AR-8920DC
Guidewire, TightRope	AR-8920P



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This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex Vet Systems products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's Directions For Use.

U.S. PATENT NO. 6,716,234 and PATENT PENDING

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