

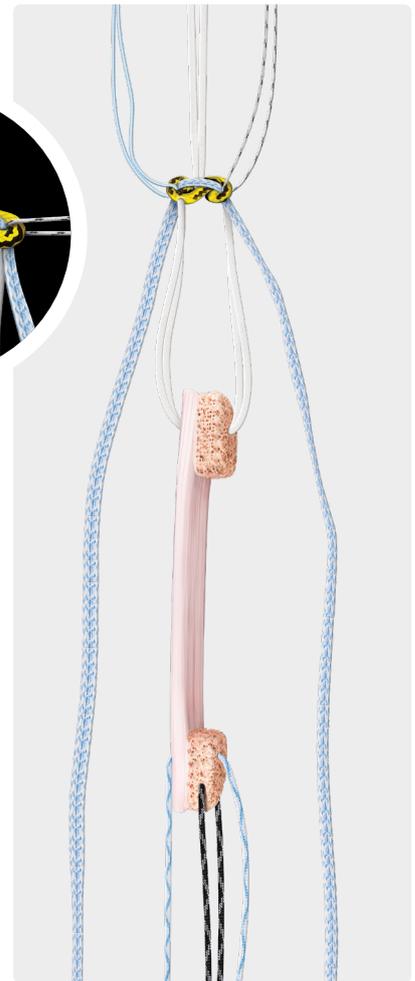
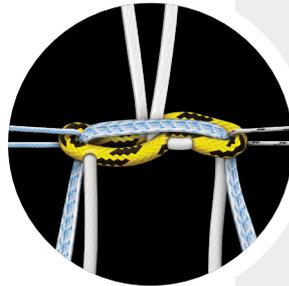
BTB ACL Reconstruction Using the BTB TightRope[®] SB Implant With the *Internal/Brace*[™] Technique

Surgical Technique



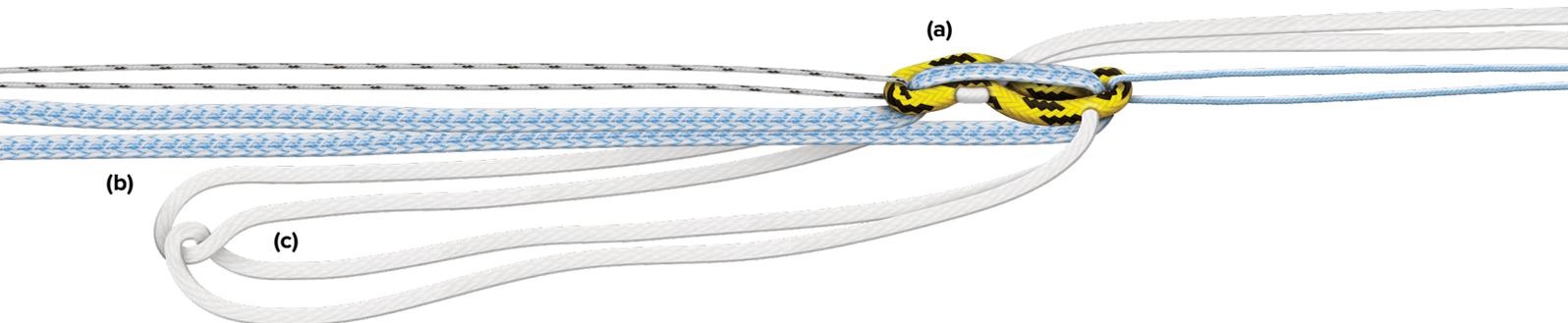
BTB TightRope® SB Implant Introduction

The TightRope® SB implant is the ultimate innovation in adjustable cortical suspensory fixation technology. Using a radiopaque, all-suture cortical button, this implant is stronger¹ with a minimally invasive, low-profile design compatible with existing socket-creation techniques for RetroConstruction™ and TightRope® drill pins. The flat-tape TightRope loop improves graft interface and handling characteristics during graft tensioning and provides greater resistance to graft abrasion.² Additionally, the TightRope SB implant features a shorter minimum loop length to maximize the amount of graft in the socket.



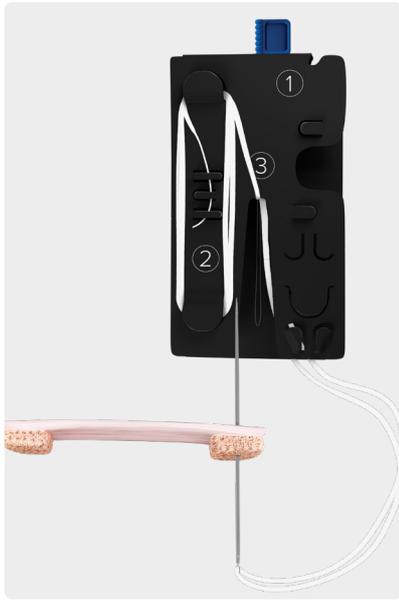
FEATURES AND BENEFITS

- › **All-suture button design:** Revolutionary all-suture, soft-button technology to eliminate metal from ACL reconstruction **(a)**
- › **InternalBrace™ technique:** Available with preloaded radiolucent or radiopaque FiberTape® suture for the *InternalBrace* technique **(b)**, proven in peer-reviewed published studies to be associated with lower ACL retear rates at 2 and 5 years,³⁻⁶ less pain, improved patient-reported outcomes, and a faster and higher rate of return to preinjury level of activity⁷
- › **Flat-Tape TightRope implant:** Offers better handling characteristics and is more resistant to graft abrasion than traditional round sutures¹ **(c)**
- › **Comprehensive options:** Available in RT, BTB, FiberTag™ suture, and repair-implant configurations



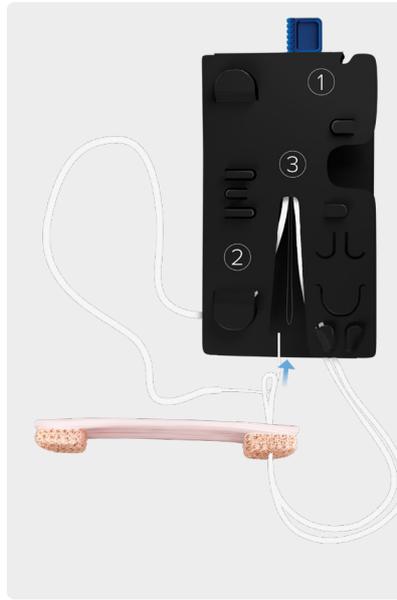
The *InternalBrace* surgical technique is intended only to augment the primary repair/reconstruction by expanding the area of tissue approximation during the healing period and is not intended as a replacement for the native ligament. The *InternalBrace* technique is for use during soft tissue-to-bone fixation procedures and is not cleared for bone-to-bone fixation.

BTB TightRope® SB Implant With FiberTape® Suture for the *InternalBrace*™ Technique



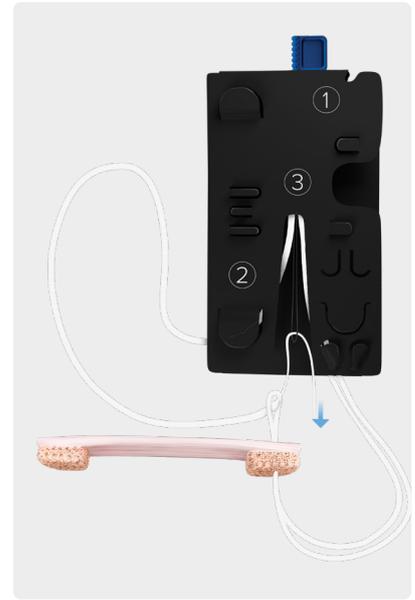
1

Use the attached needle to pass the looped limb of the BTB TightRope® SB implant through the bone block. Once passed, cut the wire off the needle and remove. Take care not to damage the implant.



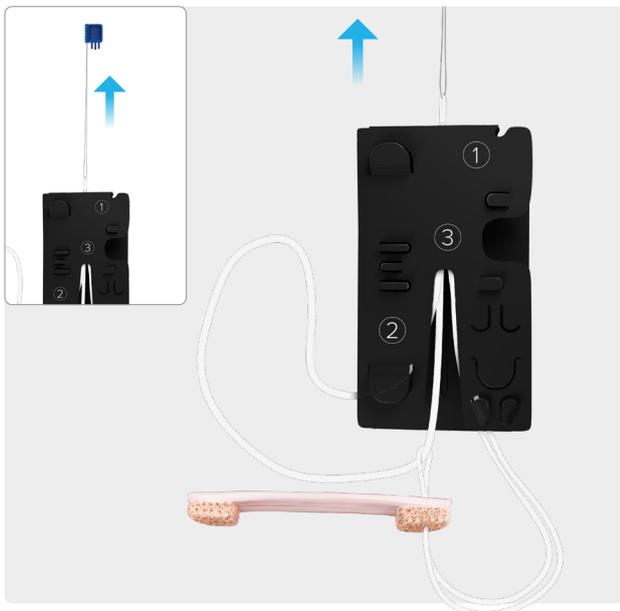
2

Pass the straight limb of the TightRope® implant through the first loop.



3

Place 3 cm to 4 cm of the tip of the straight limb into the wire snare, marked number 3 on the card, and fold it over.



4

While holding the top of the card firmly, pull the blue tab of the wire snare to deliver the straight limb through the suture splice and button.

Note: As the suture is passed through the splice, there will be resistance. Pull on the newly created shortening strand to even up the loop lengths before implantation.



5

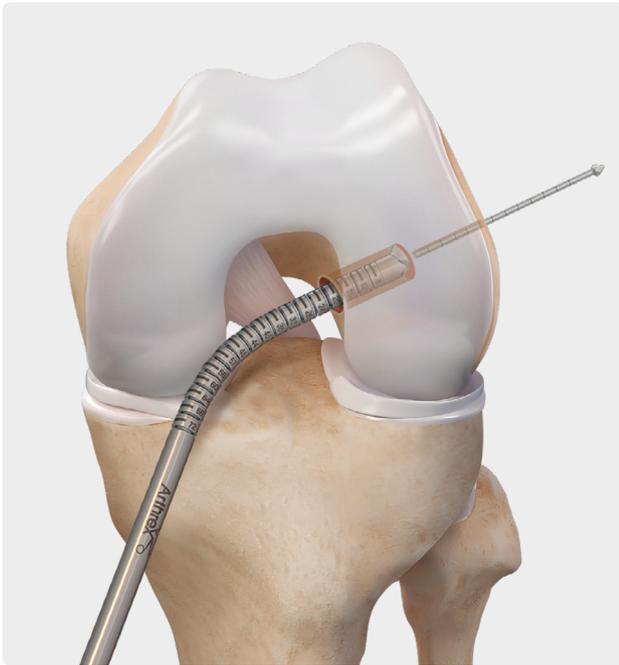
The final graft construct of the BTB TightRope SB implant with FiberTape suture for the *InternalBrace* technique.

Femoral Socket Preparation



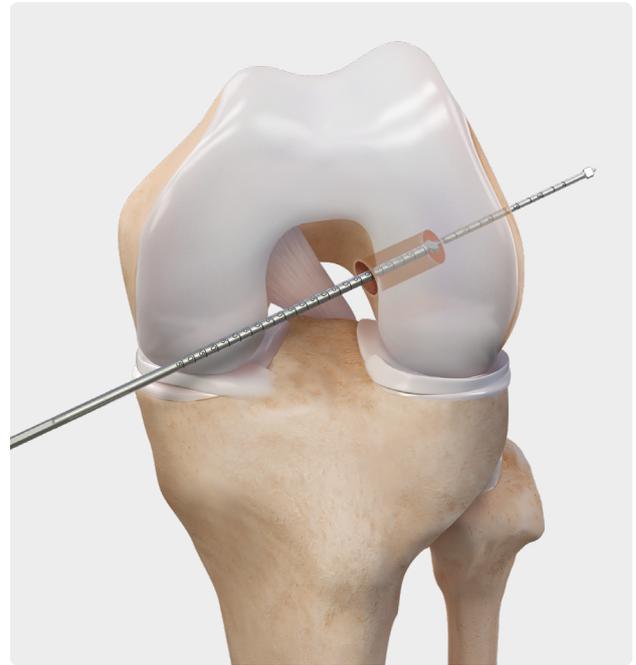
1a

FlipCutter® III drill option: Prepare the femoral socket in a retrograde fashion using the FlipCutter III drill and RetroConstruction™ guide system.



1b

Flexible reamer option: The socket can also be prepared in an antegrade fashion with the ACL TightRope® drill pin and flexible reamers.



1c

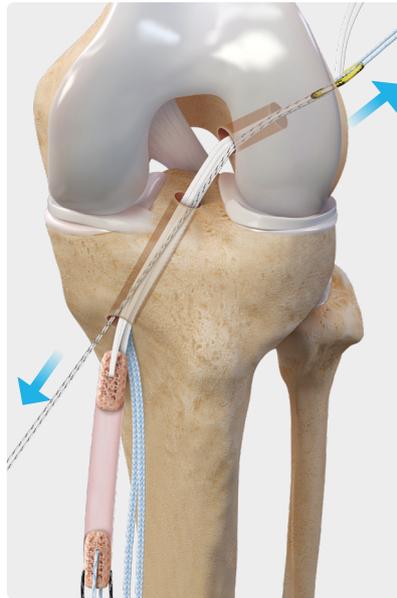
Low-profile reamer option: Additionally, the socket can be prepared in an antegrade fashion with the ACL TightRope drill pin and low-profile reamers.

Graft Implantation



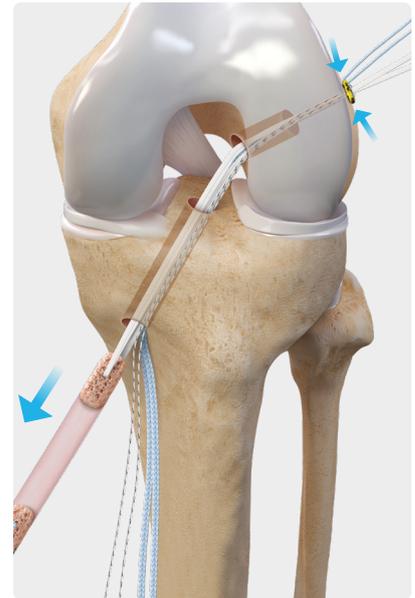
1

For proper deployment, the all-suture button should be oriented with only the blue passing suture and white tensing strands toward the femur for shuttling, leaving behind the FiberTape® and TigerWire® sutures in line with the graft.

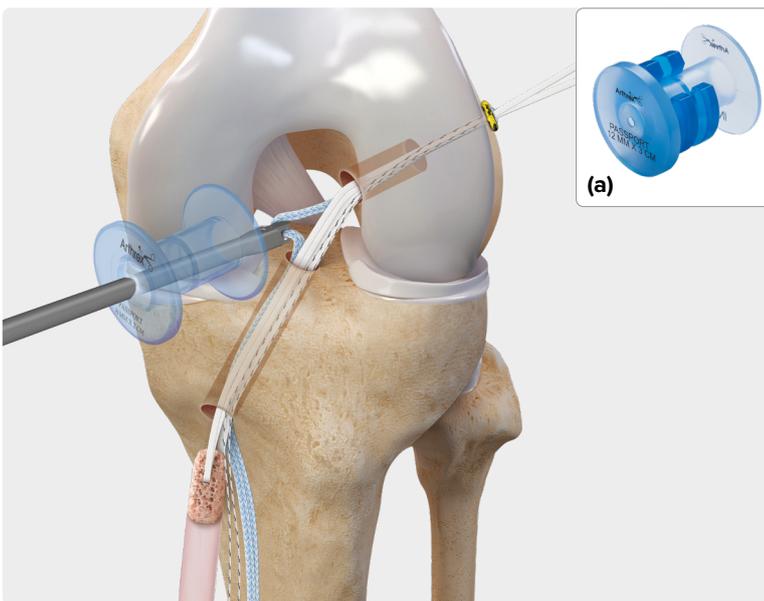


2a

Pass the blue passing suture and white tensing strands together through the femur. Keep the white-and-black TigerWire suture under tension distally to verticalize the all-suture button (2a). With equal tension, pull the blue passing suture and white tensing strands together to advance the button through the femur. Pull tension on the graft distally to deploy and fully seat the all-suture button on the femoral cortex (2b). Marking a line on the implant at the intraosseous length may be helpful to signal that the button has exited the femur. The button can also be viewed through the medial portal as it exits the femoral cortex. Once deployment is confirmed, the TigerWire suture can be discarded.



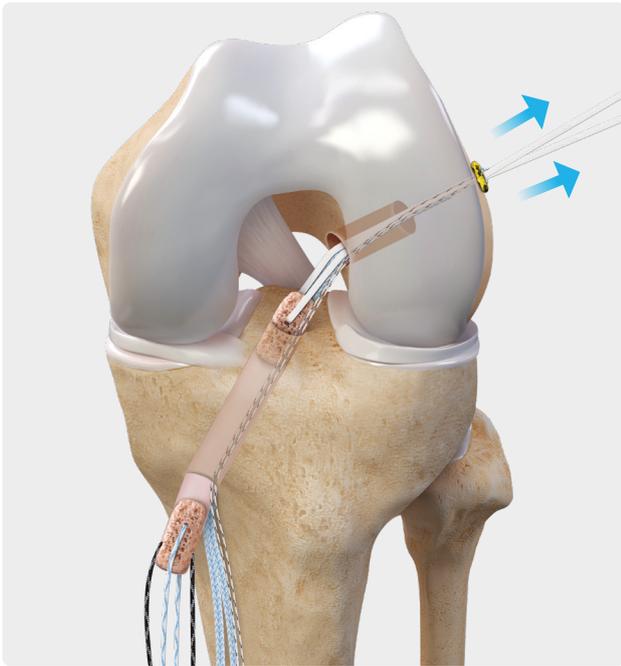
2b



3

Prior to introducing the graft to the tibial tunnel, retrieve the FiberTape sutures for the *InternalBrace*™ technique from the joint using a FiberTape retriever. A PassPort Button™ cannula (a) is recommended for suture management

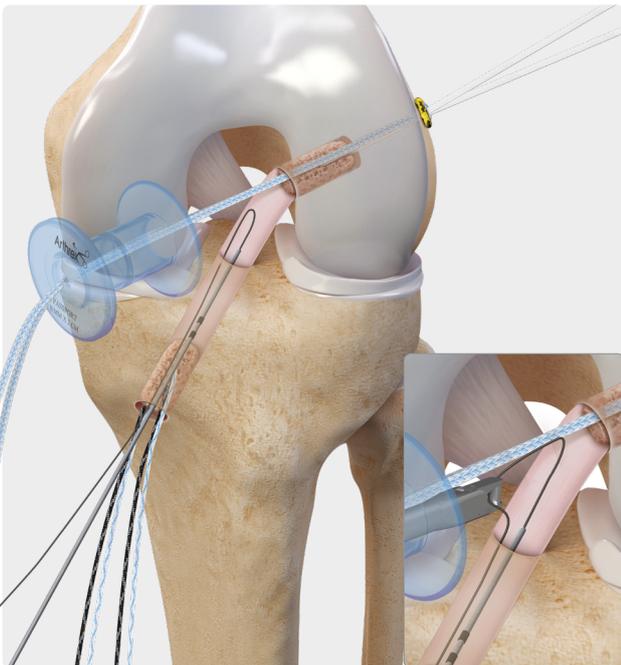




4

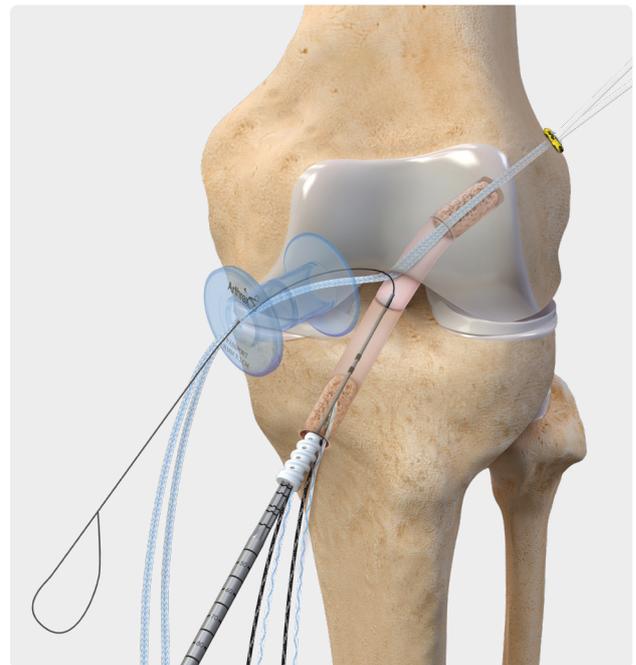
Maintain slight tension on the tibial graft sutures during graft advancement as shown in step 2a. To advance the graft, pull the tensioning strands one at a time, alternating approximately 2 cm on each side. When the femoral bone block is visible in the joint, stop advancing the graft and align the bone block with the femoral tunnel using a grasper or probe. Once the graft is fully seated, pull firmly back on the graft to check fixation.

Note: Once the graft is seated in the femoral tunnel, do not continue pulling the tensioning strands. If tunnels are divergent, it may be helpful to use a probe through the lateral portal to facilitate implant and graft passage out of the tibia and into the femoral socket.



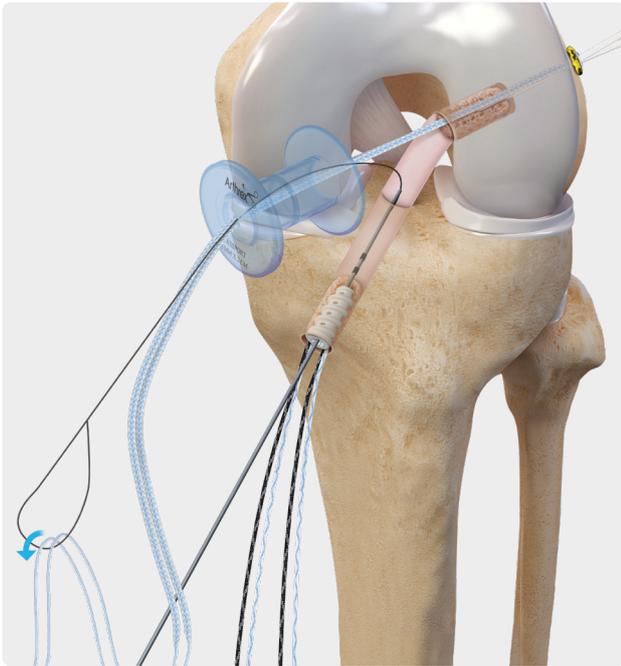
5

Introduce the FiberSnare® nitinol guidewire up the tibial tunnel between the tibial bone block and tunnel wall until it is visible in the joint. Retrieve the FiberSnare shuttle suture out of the PassPort Button™ cannula.



6

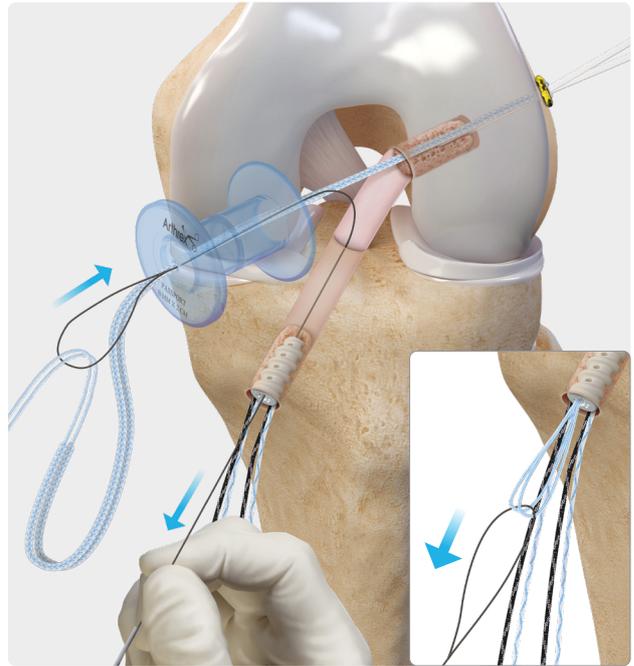
Prepare the tibial tunnel using an appropriately sized FastThread™ interference screw tap and advance until the back of the screw is flush with the end of the graft.



7

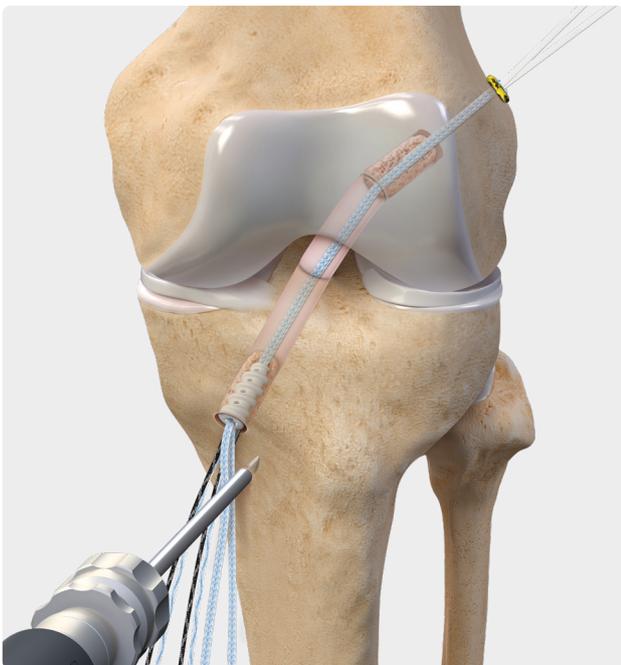
Outside the PassPort Button™ cannula, place the round ends of the FiberTape® suture for the *InternalBrace*™ technique into the loop of the FiberSnare® shuttle suture.

Note: Place the round ends of the FiberTape limbs in the FiberSnare shuttle loop to facilitate passage through the cannulation of the screw, not the flat-tape portion of the FiberTape suture.



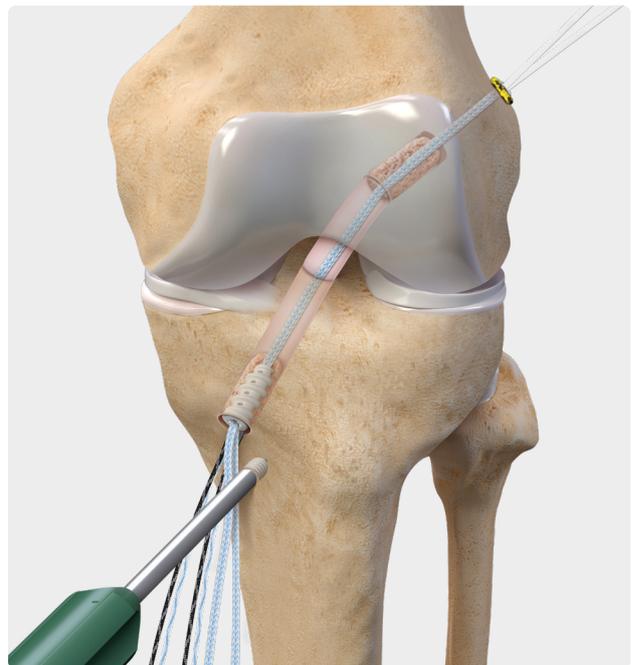
8

Remove the nitinol guidewire from the tibial tunnel and gently pull the attached FiberSnare suture distally in line with the tunnel by hand to shuttle the round ends of the FiberTape suture for the *InternalBrace* technique through the cannulation of the FastThread™ interference screw.



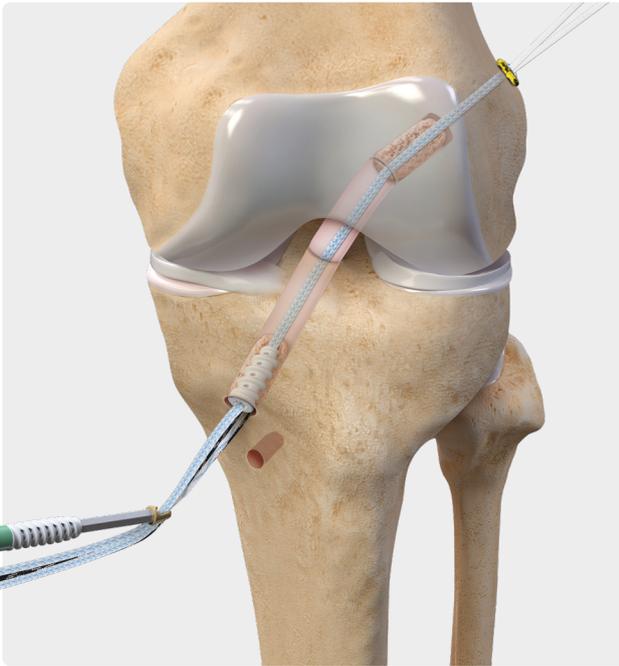
9

Advance the spade-tip drill into the tibia to the depth of the drill collar, which represents a 20 mm depth.



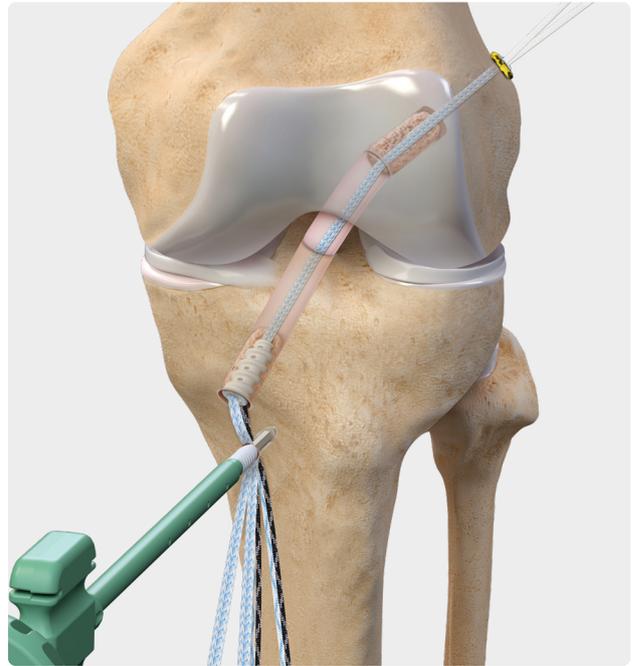
10

Use the 5.2 mm tap in the drilled hole and tap the socket.



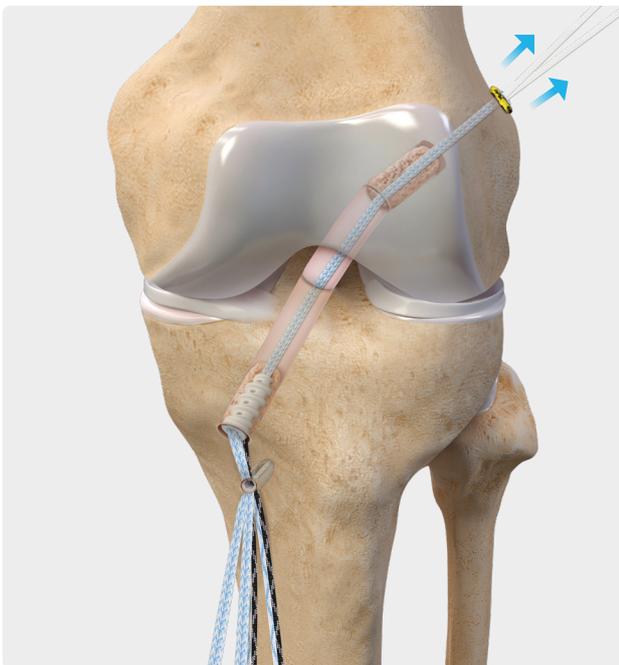
11

With the leg in full extension, pass the FiberTape® suture and graft whipstitch sutures through the eyelet of the 4.75 mm BioComposite SwiveLock® anchor.



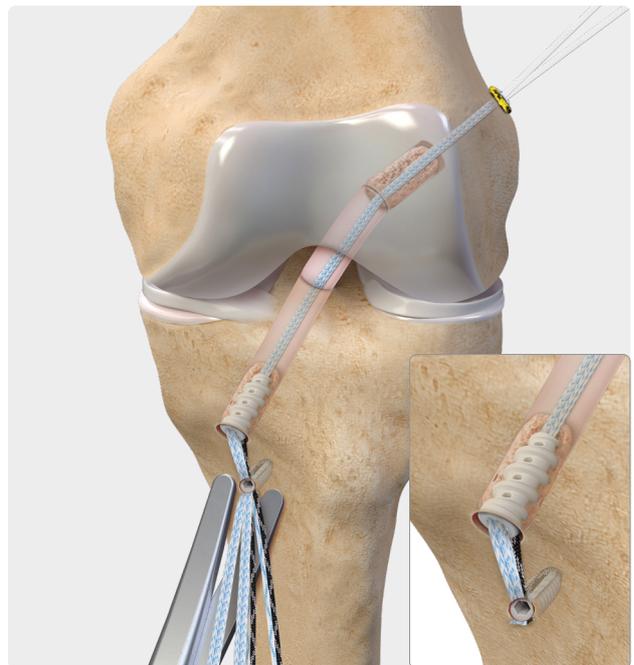
12

Push the anchor into the drill hole until the eyelet is fully seated. Maintain tension on the suture limbs and screw the biocomposite anchor into the tibia. After removing the driver, keep the knee in extension and remove the retention suture from the anchor.



13

Cycle the knee several times and then retension the femoral TightRope® sutures with the knee in extension.



14

Final fixation: Cut the excess suture flush.

Ordering Information

Implants

| | |
|--|--------------------|
| BTB TightRope® SB Implants | |
| BTB TightRope SB implant w/ radiopaque suture for <i>InternalBrace</i> ™ technique | AR-1588SBR-BTB-IBR |
| BTB TightRope SB implant w/ standard suture for <i>InternalBrace</i> technique | AR-1588SBR-BTB-IB |
| BioComposite FastThread™ Interference Screws | |
| 6 mm × 20 mm (used with 6 mm driver) | AR-4020C-06 |
| 7-10 mm × 20 mm screws | AR-4020C-07–10 |
| 7-12 mm × 30 mm screws | AR-4030C-07–12 |
| PEEK FastThread Interference Screws | |
| 6 mm × 20 mm (used with 6 mm driver) | AR-4020P-06 |
| 7-10 mm × 20 mm screws | AR-4020P-07–10 |
| 7-12 mm × 30 mm screws | AR-4030P-07–12 |
| ACL Backup Kits | |
| ACL Backup Fixation System, biocomposite | AR-1593-BC |
| ACL Backup Fixation System, PEEK | AR-1593-P |

FastThread Interference Screw Instruments

| | |
|---|--------------|
| SlapDriver, ratcheting | |
| SlapDriver, ratcheting, quick-connect handle | AR-1999SD |
| Quick-Connect Drivers | |
| Quick-connect driver, for 20 mm and 30 mm screws (hexalobe) | AR-1996CD-1 |
| Quick-connect driver, for 20 mm-length screws only (hexalobe) | AR-4020D-1 |
| Quick-connect driver, extended-length shaft (hexalobe) | AR-1996CDL-1 |
| Quick-connect driver, for 20 mm-length screws only (hexalobe) | AR-4020DF |
| Quick-connect driver, for 6 mm-diameter screws (trilobe) | AR-4019D-1 |
| Fixed SlapDrivers | |
| SlapDriver, fixed, for 20 mm- and 30 mm-length screws only (hexalobe) | AR-1996SD |
| SlapDriver, fixed, for 20 mm screws only (hexalobe) | AR-4020SD |
| SlapDriver, fixed, for 6 mm-diameter screws only (trilobe) | AR-4019SD |

FlipCutter® Drilling Options

| | |
|------------------------------------|-----------|
| FlipCutter III drill, 6-12 mm | AR-1204FF |
| RetroConstruction™ drill guide set | AR-1510S |

Flexible Reamer Option

| | |
|--|--------------------------|
| Curved guide for flexible pins | AR-1800F |
| TightRope drill pin, flexible | AR-1298FLX |
| Reamer, flexible, 7-11 mm, w/ flexible guide pin | AR-1400F-70–AR-1400F-110 |
| Reamer, flexible, 7-11 mm, w/ flexible TightRope drill pin | AR-1401F-70–AR-1401F-110 |

Low-Profile Reamer Option

| | |
|--|---------------------|
| Reamer, low profile, 5-11 mm | AR-1405LP–AR-1411LP |
| ACL TightRope drill pin, open eyelet, 4 mm | AR-1595T |
| ACL TightRope drill pin, closed eyelet, 4 mm | AR-1595TC |

Accessories

| | |
|--|------------|
| Suture retriever | AR-12540 |
| FiberWire® cutter | AR-12250 |
| TightRope suture cutter | AR-4520 |
| #2 FiberWire suture, 2 strands (1 blue, 1 white/black), 96.5 cm | AR-7201 |
| #2 FiberLoop® suture | AR-7234 |
| #2 TigerLoop™ suture | AR-7234T |
| #2 FiberSnare® suture, 26 in length w/ 2 in closed loop (white/blue) | AR-7209SNL |
| #2 FiberSnare suture, 26 in length w/ 2 in closed loop (black/white) | AR-7209SNT |
| GraftPro® graft preparation system | AR-2950DS |

Products advertised in this brochure / surgical technique guide may not be available in all countries. For information on availability, please contact Arthrex Customer Service or your local Arthrex representative.

References

1. Arthrex, Inc. Data on file (APT-06135). Naples, FL; 2022.
2. Arthrex, Inc. LA1-00038-EN_B. Naples, FL; 2017.
3. Daniel AV, Wijdicks CA, Smith PA. Reduced incidence of revision anterior cruciate ligament reconstruction with internal brace augmentation. *Orthop J Sports Med.* 2023;11(7):23259671231178026. doi:10.1177/23259671231178026
4. Daniel AV, Smith PA. Primary all-soft tissue quadriceps tendon autograft anterior cruciate ligament reconstruction with suture tape augmentation resulted in satisfactory patient outcomes and a low graft failure rate in high school and collegiate athletes. *Arthroscopy.* 2025;41(1):95-105. doi:10.1016/j.arthro.2024.02.047
5. Wilson WT, Kennedy MJ, MacLeod D, Hopper GP, MacKay GM. Outcomes of anterior cruciate ligament reconstruction with independently tensioned suture tape augmentation at 5-year follow-up. *Am J Sports Med.* 2023;51(14):3658-3664. doi:10.1177/03635465231207623
6. Daniel AV, Smith PA. Less subsequent revision anterior cruciate ligament (ACL) reconstruction following primary bone-patellar tendon-bone ACL reconstruction with suture tape augmentation—a retrospective comparative therapeutic trial with 5-year follow-up. *Arthroscopy.* 2024;40(9):2455-2464. doi:10.1016/j.arthro.2024.01.019
7. Bodendorfer BM, Michaelson EM, Shu HT, et al. Suture augmented versus standard anterior cruciate ligament reconstruction: a matched comparative analysis. *Arthroscopy.* 2019;35(7):2114-2122. doi:10.1016/j.arthro.2019.01.054

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