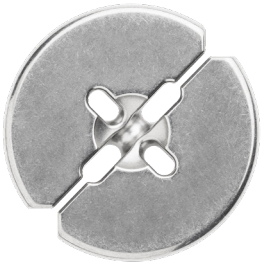
ACL TightRope® Attachable Button System

Surgical Technique

Arthrex®

TightRope® Attachable Button System (ABS)

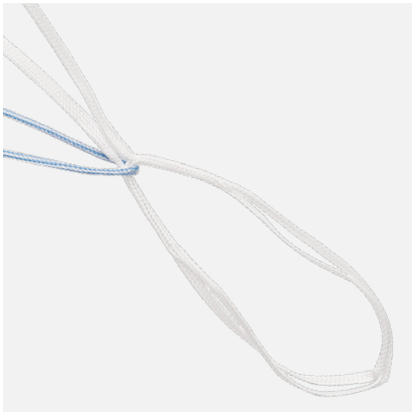
The TightRope ABS has revolutionized tibial fixation of ACL and PCL grafts used in knee ligament surgery. TightRope ABS loops can be used on all graft types and attached to a variety of button configurations for fixation over sockets created with a FlipCutter® III drill or full tunnels with concave buttons. The flat-tape TightRope II ABS loop improves handling characteristics and is designed to reduce graft abrasion.



The two-piece TightRope II ABS implant easily passes through narrow bone tunnels and allows increased cortical fixation with the assembly of a large button over the cortical bone. Use the TightRope ABS for tibial fixation during all-inside ACL reconstruction using the QuadLink™ and GraftLink® techniques or graft fixation over tunnels created during transtibial ACL reconstruction.

- Slotted buttons can be loaded onto the TightRope implant and locked into place

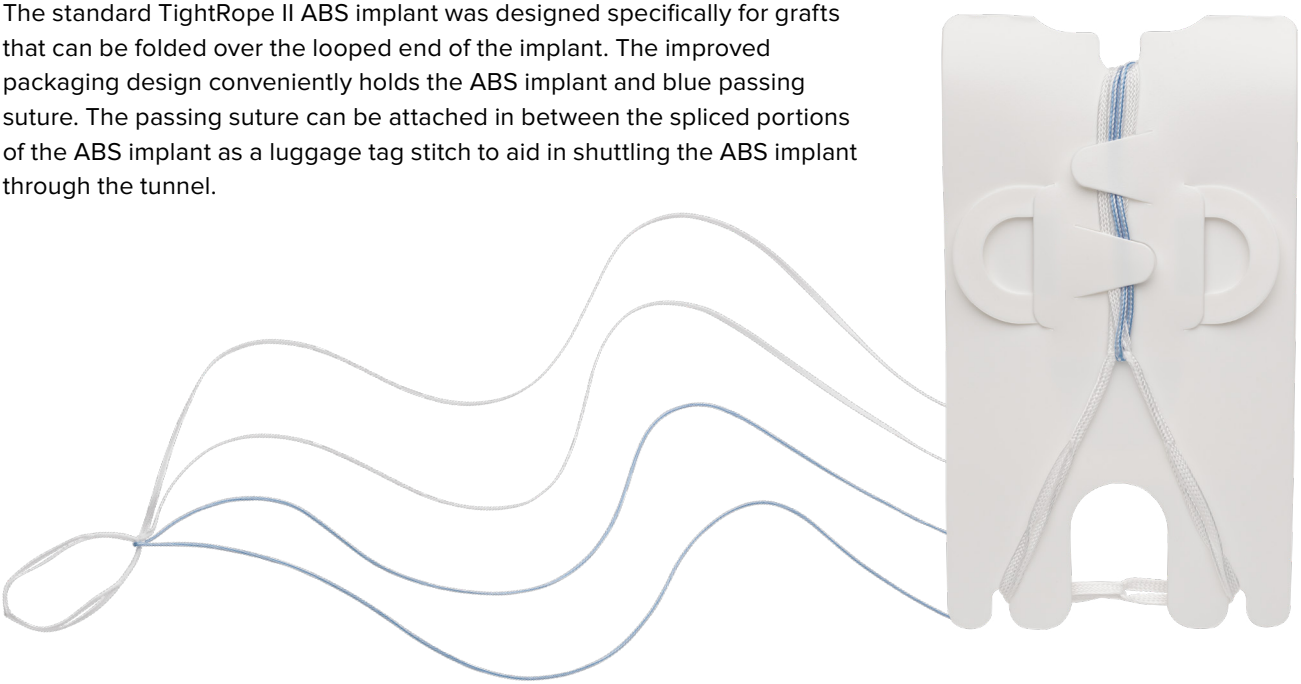
- Larger attachable button options extend the footprint, maximizing button-to-bone contact against the cortex



- Buttonless TightRope implant facilitates passing through narrow bone tunnels

TightRope® II ABS Implant (Standard)

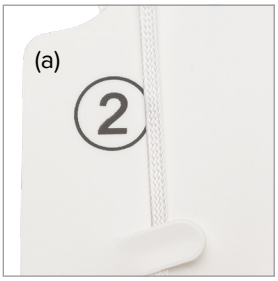
The standard TightRope II ABS implant was designed specifically for grafts that can be folded over the looped end of the implant. The improved packaging design conveniently holds the ABS implant and blue passing suture. The passing suture can be attached in between the spliced portions of the ABS implant as a luggage tag stitch to aid in shuttling the ABS implant through the tunnel.



TightRope II ABS Implant (Open)

The open TightRope II ABS implant was designed specifically for closed-end grafts such as BTB, Achilles tendon bone blocks, or presutured QuadLink™ and GraftLink® allografts. The improved packaging design conveniently holds the open ABS implant. This implant uses the same sequence to assemble the implant to the graft. The implant packaging has been reduced for ease of use, and a wire snare has been added to aid in shuttling the open TightRope strand through the splice of the implant.

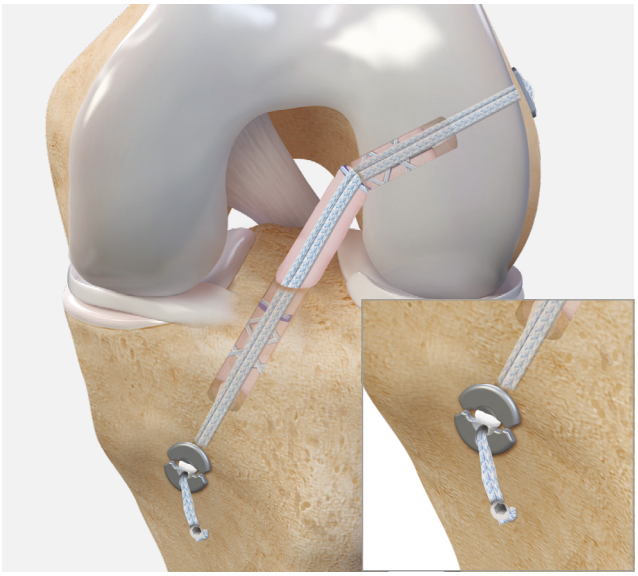
Note: Retrieve the suture for step two (2) from the cutout at the top left of the assembly card (a). The suture will dispense smoothly from the wheel inside the card. Do not unravel or try to pass the suture clipped to the back of the assembly card.



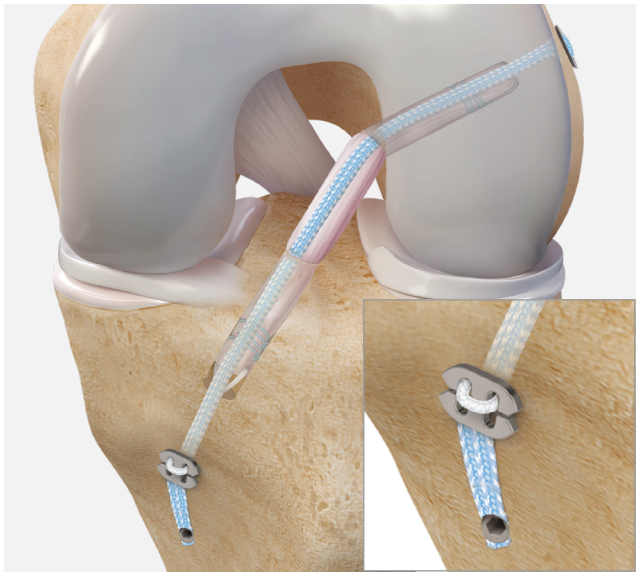
ABS Button Overview

The advantages of the TightRope® ABS implant include:

- Strong, reliable cortical fixation superior to interference screws[1]
- Maximum graft-to-bone contact improves incorporation and healing[2]
- Retension grafts after fixation and knee cycling
- Several different button options for sockets and full tunnels
- Seal off tibial tunnel to preserve blood and growth factors in tibial tunnel



Concave ABS Buttons
Ideal for both sockets (11 mm button) and full tunnel applications (14 mm, 17 mm, and 20 mm buttons). The centering feature of these buttons maintains position over the tunnel and provides a better seal at the cortex than standard flat buttons. The concave surface countersinks sutures and knots. The 14 mm, 17 mm, and 20 mm buttons have slots for the TightRope implant loop along with two holes for additional sutures.

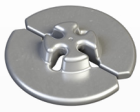


Flat ABS Buttons
For use over tibial sockets created with a FlipCutter® III drill, the ABS loops pass easily through small-diameter tunnels and allow ABS buttons to be attached against the tibial cortex. ABS buttons are available in multiple sizes and shapes and provide strong, reliable cortical fixation.

The buttons below are the actual size.

Concave ABS Button, 11 mm w/ 4 mm collar (AR-**1588TB-3IB**)

Concave ABS Button, 14 mm w/ 7 mm collar (AR-**1588TB-4**)



Concave ABS Button, 17 mm w/ 9 mm collar (AR-**1588TB-17**)

Concave ABS Button, 20 mm w/ 9 mm collar (AR-**1588TB-5**)

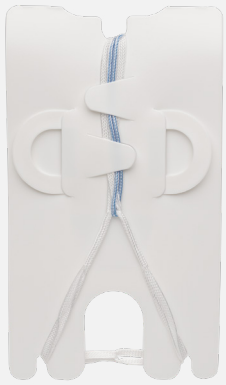
TightRope ABS Button, 8 mm × 12 mm (AR-**1588TB**)

Round TightRope ABS Button, 14 mm (AR-**1588TB-1**)

Oblong TightRope ABS Button, 3.4 mm × 13 mm (AR-**1588TB-2**)

Graft Options

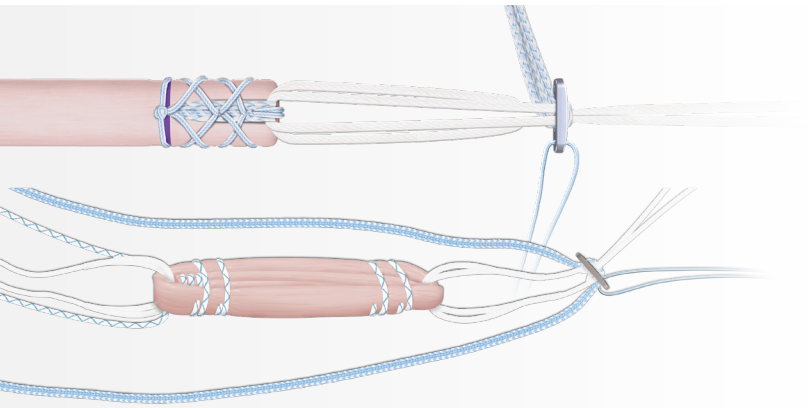
TightRope® ABS implant fixation can be used with any graft type. The TightRope II ABS loop allows the fixation of grafts that can be passed around a closed loop (hamstrings). The open TightRope II ABS loop can be assembled around closed-end grafts, such as BTB and Achilles bone blocks or allograft QuadLink™ and GraftLink® constructs.



TightRope II ABS Implant

Open TightRope II ABS Implant

FiberTag® TightRope II ABS Implant

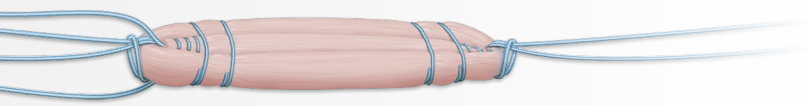


QuadLink quadriceps tendon autograft with FiberTag TightRope II implants

GraftLink hamstring tendon autograft with TightRope II RT implant and FiberTape® suture for the *Internal*Brace™ technique and ABS implant

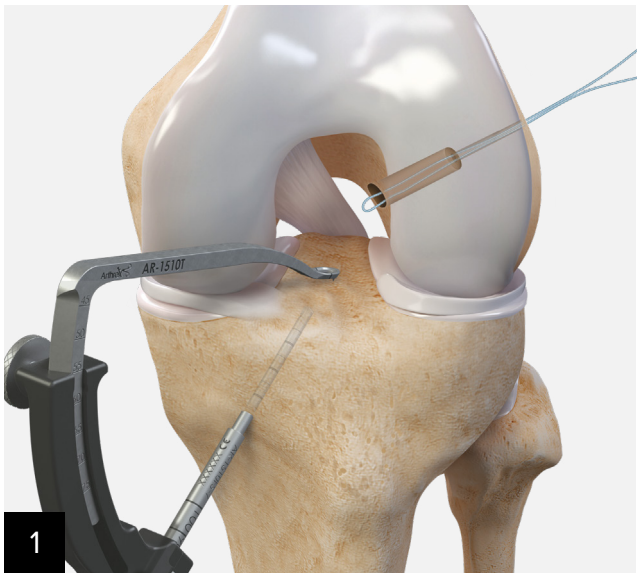
Patellar tendon autograft with TightRope II BTB implant and FiberTape suture for the *Internal*Brace technique

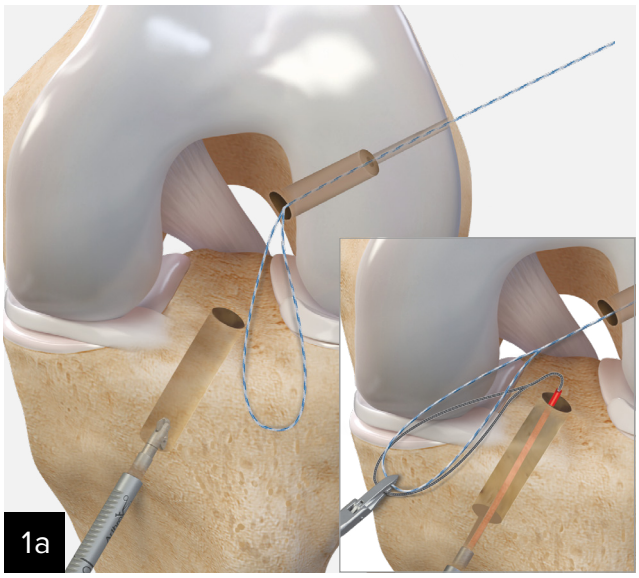
TightRope II BTB and open ABS implants can be assembled onto presutured QuadLink allografts



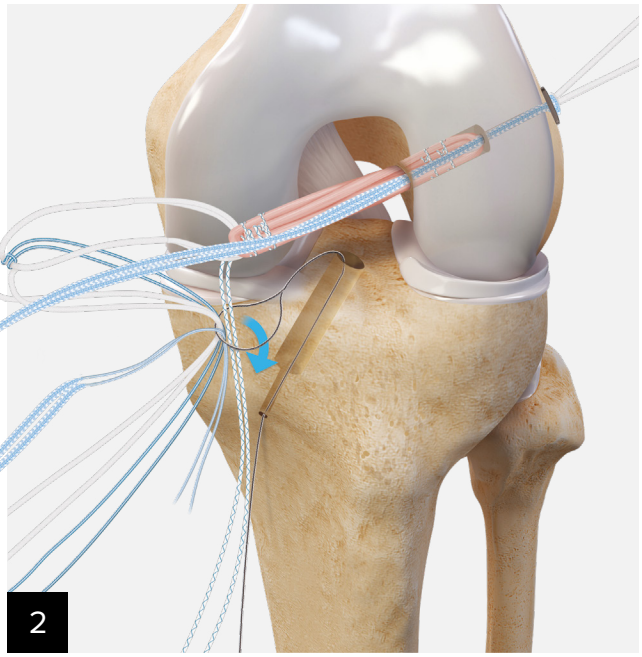
TightRope II BTB and open ABS implants can be assembled onto presutured GraftLink allografts

Technique: Fixation Over Tibial Sockets Using the *Internal*Brace™ Technique



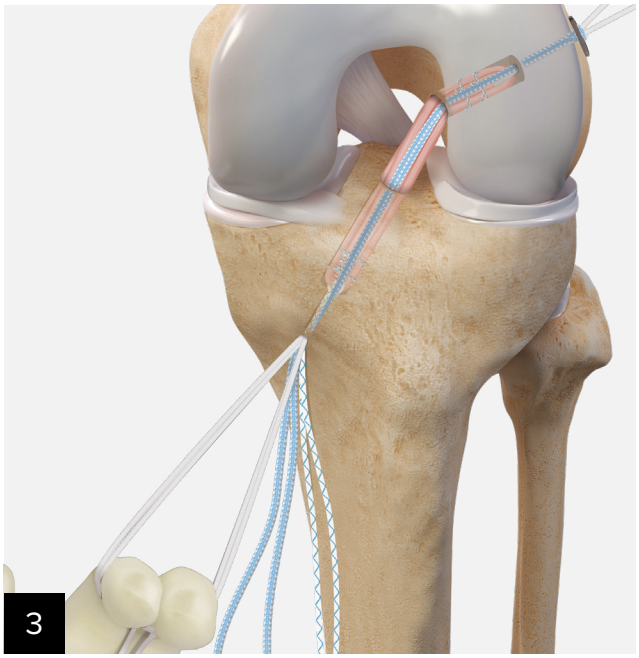


A tibial socket can be prepared with the FlipCutter® III drill and the side-release RetroConstruction™ guide. FlipCutter III drills create socket diameters from 6 mm to 12 mm while only leaving a small 3.5 mm perforation through the cortex. Use a FiberStick™ or FiberSnare® suture to shuttle the graft retrograde into the socket **(1a)**.

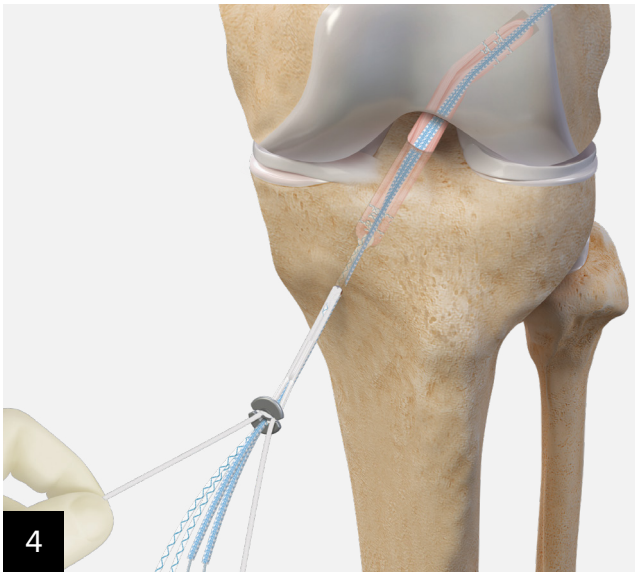


Pass the TightRope® II ABS loop through the tibial socket by attaching a passing suture to the spliced area.

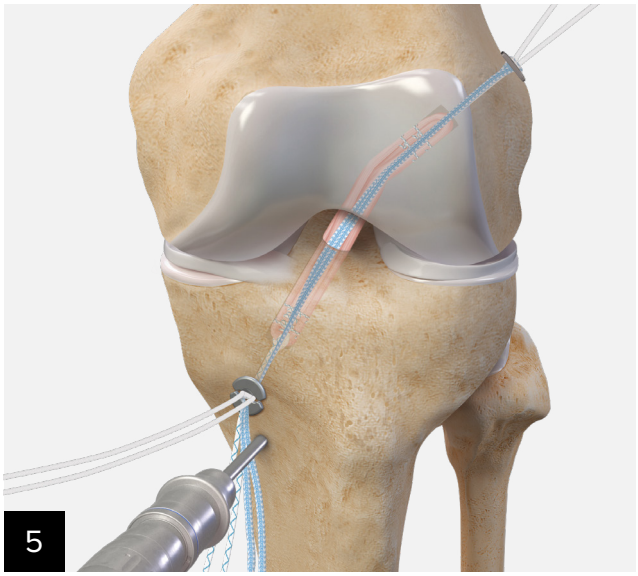
Note: Pass any backup sutures attached to the graft.



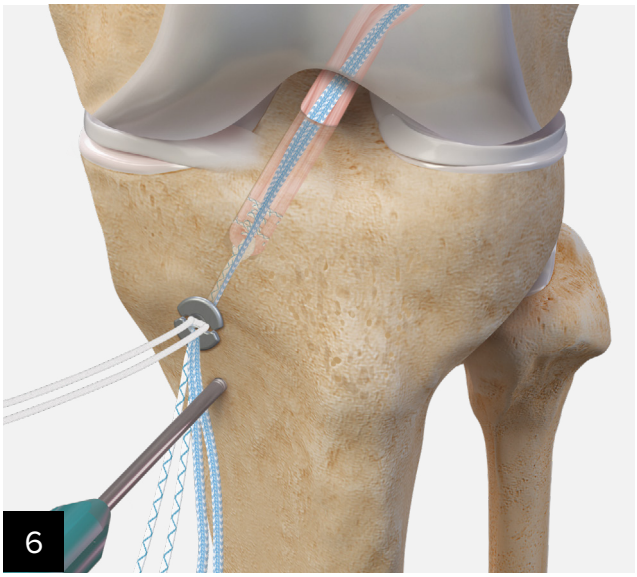
Once the ABS loop is passed, remove the passing suture and pull on the inside of the loop and backup sutures to fully insert the graft into the tibial socket.



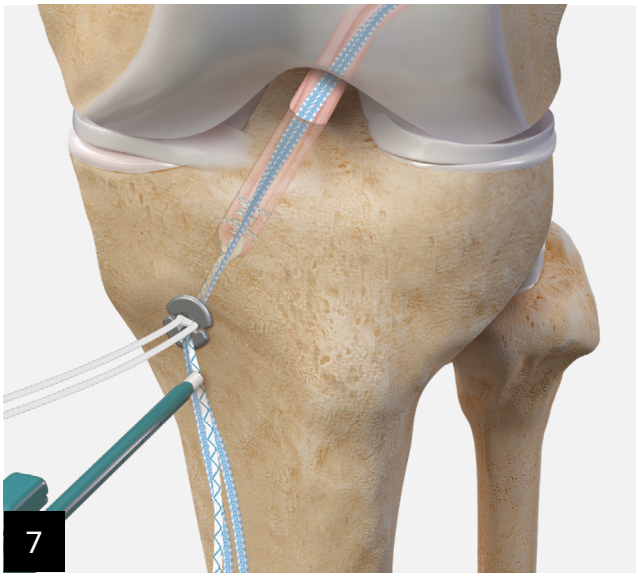
Load the 11 mm concave ABS button onto the proximal portion of the loop by passing each side through its respective slot on the button. Pull on the tensioning strands to advance the button toward the bone. Load the FiberTape® and backup sutures into the slots before the button enters the skin.



Using the spade-tip drill from the ACL Backup Kit, drill into the tibia to the depth of the drill collar. This represents 20 mm.

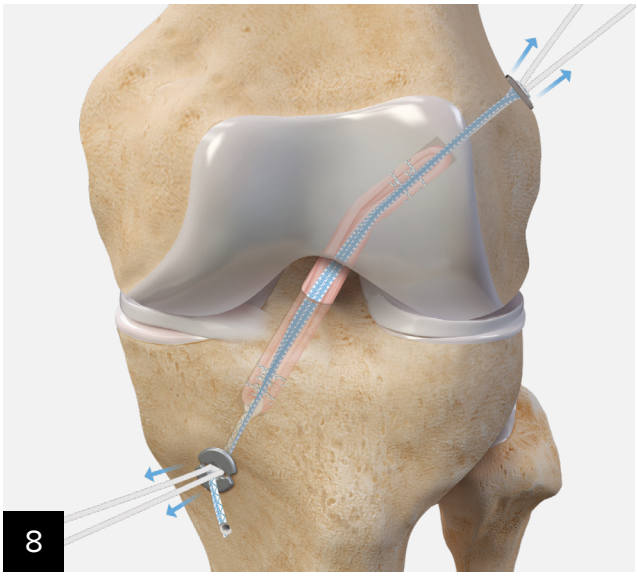


Use the 5.2 mm tap in the drilled hole and tap the socket.

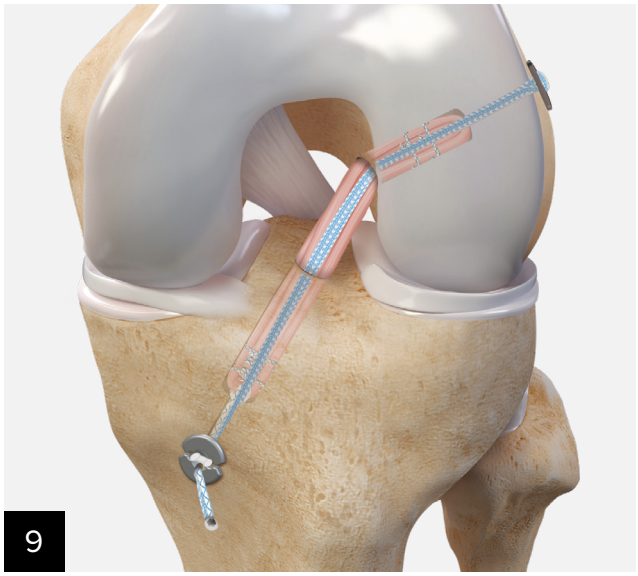


In full extension, pass the FiberTape and backup sutures through the SwiveLock® anchor. Insert the anchor into the drill hole until the eyelet is fully seated. Hold the thumb pad steady and rotate the driver handle clockwise until the anchor body is flush with the bone.

The *Internal*Brace™ 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 *Internal*Brace technique is for use during soft tissue-to-bone fixation procedures and is not cleared for bone-to-bone fixation.

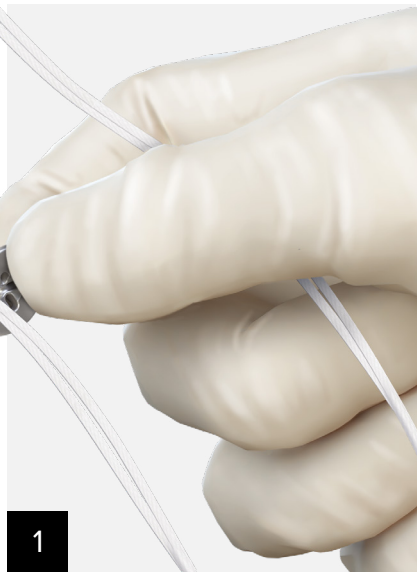


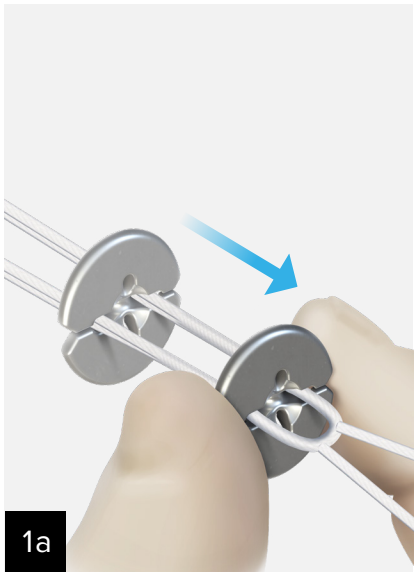
Cut the FiberTape® suture flush. Cycle the knee several times and retension the TightRope® II RT and ABS implants.

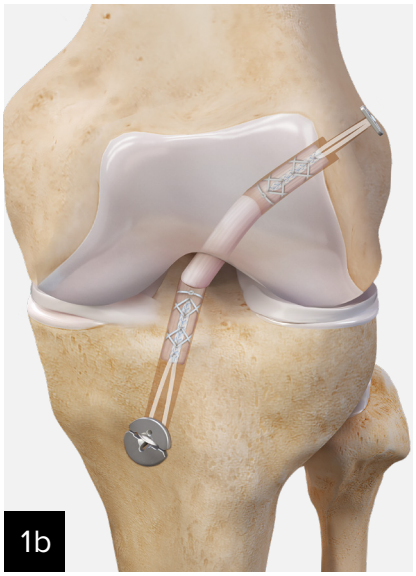


Final fixation: Tie the tensioning sutures of the tibial TightRope II ABS implant over the ABS button for additional resistance.

Technique: Fixation Over Full Tunnels

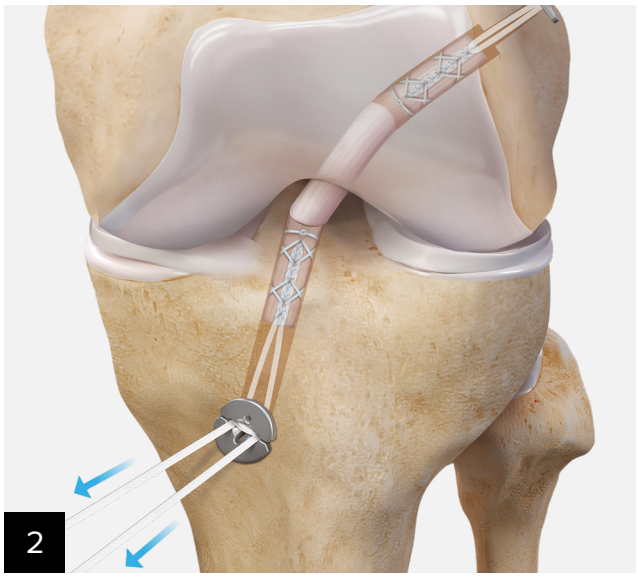




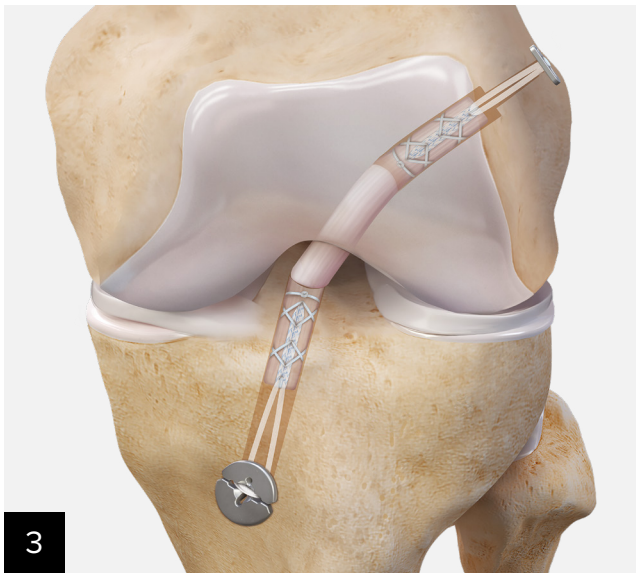


After passing the graft transtibially, attach the TightRope ABS button to the proximal ABS loop by inserting each side into its respective slot and pulling the button down to the spliced area where it will be locked onto the loop **(1a)**. If using backup sutures, place them through the additional holes in the button.

Pull the TightRope ABS implant tensioning strands to advance the button to bone. Ensure the collar of the button enters the tunnel and the button is lying on the cortex **(1b)**.



Final graft tension may now be set by pulling on the tensioning strands of the TightRope® implant. Cycle the knee and retension the implant as desired. Cut the tensioning strands flush. Alternatively, the tensioning sutures of the tibial TightRope II ABS implant can be tied over the ABS button for additional fixation.



Final fixation.

Ordering Information

TightRope® II ABS Loops

Product Description	Item Number
TightRope II ABS implant, standard	AR-**1588TN-20**
TightRope II ABS implant, open	AR-**1588TN-21**
FiberTag® TightRope II ABS implant	AR-**1588TNT2**

Concave ABS Buttons

Product Description	Item Number
TightRope ABS button, round, concave 11 mm, for *Internal*Brace™ technique	AR-**1588TB-3IB**
Concave ABS button, 14 mm w/ 7 mm collar	AR-**1588TB-4**
TightRope ABS button, round, concave 17 mm	AR-**1588TB-17**
Concave ABS button, 20 mm w/ 9 mm collar	AR-**1588TB-5**

Additional ABS Buttons

Product Description	Item Number
TightRope ABS button, 8 mm × 12 mm	AR-**1588TB**
TightRope ABS button, round, 14 mm	AR-**1588TB-1**
TightRope ABS button, oblong, 3.4 mm × 13 mm	AR-**1588TB-2**

QuadLink™ Implant Kits With Concave ABS Button

Product Description	Item Number
Each QuadLink Kit includes: QuadPro® tendon harvester, FiberTag® TightRope implant, FiberTag TightRope ABS implant, 11 mm round concave ABS button, FlipCutter® III drill, PassPort Button™ cannula, FiberStick™ and TigerStick® sutures, and FiberWire® and TigerWire® sutures	
QuadLink implant system, 8 mm	AR-**1288QIS-80**
QuadLink implant system, 9 mm	AR-**1288QIS-90**
QuadLink implant system, 10 mm	AR-**1288QIS-100**
QuadLink implant system, 11 mm	AR-**1288QIS-110**

GraftLink® Kits With Concave ABS

Product Description	Item Number
Autograft GraftLink implant system, for *Internal*Brace technique	AR-**1588AU-CP2**
Allograft GraftLink implant system, for *Internal*Brace technique	AR-**1588AL-CP2**

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. Smith PA, DeBerardino TM. Tibial fixation properties of a continuous-loop ACL hamstring graft construct with suspensory fixation in porcine bone. *J Knee Surg.* 2015;28(6):506-512. doi:10.1055/s-0034-1394167
2. Uchida R, Nakamura N, Suzuki T, et al. Excellent bone plug–socket integration at 8 weeks after anterior cruciate ligament reconstruction using an adjustable-length loop cortical fixation device. *JISAKOS.* 2019;4(1):9-14. doi:org/10.1136/jisakos-2018-000244

Notes

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 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. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level and/or outcomes.

Arthrex manufacturer, authorized representative, and importer information (Arthrex eIFUs)

US patent information

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