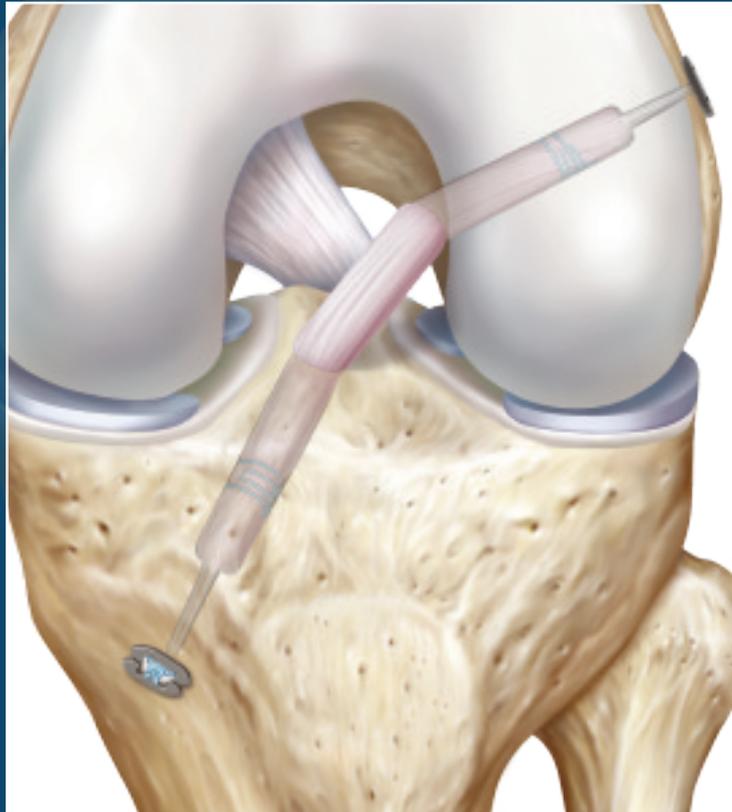




Continuous Loop GraftLink® ACL Reconstruction

Surgical Technique



# Continuous Loop GraftLink

**G**raftLink has become the standard  
for minimally invasive ACL reconstruction  
using a single hamstring tendon.

Several biomechanical and clinical studies  
have shown GraftLink to offer larger graft  
diameters, higher fixation strength and excellent  
clinical outcomes when compared to traditional  
ACL constructs.<sup>1</sup> The Continuous Loop GraftLink  
technique makes graft preparation even simpler  
by facilitating uniform graft tension and  
adding an additional limb of graft  
to the construct, which increases strength.

Using #2 FiberWire® with Straight Needles makes  
GraftLink prep simpler and faster by eliminating  
the need for a needle holder and easing suture  
passage through all limbs of the construct.

1.

- Smith PA, DeBerardino TM. *Tibial Fixation Properties of a Continuous Loop ACL Hamstring Graft Construct with Suspensory Fixation in Porcine Bone* [published online ahead of print October 27, 2014]. *J Knee Surg*. doi: 10.1055/s-0034-1394167.
- Blackman AJ, Stuart MJ. *All-inside anterior cruciate ligament reconstruction*. *J Knee Surg*. 2014;27(5):347-352.
- Benea H, d'Astorg H, Klouche S, Bauer T, Tomoia G, Hardy P. *Pain evaluation after all-inside anterior cruciate ligament reconstruction and short-term functional results of a prospective randomized study*. *Knee*. 2014;21(1):102-106.
- Nawabi DH, McCarthy M, Graziano J, et al. *Return to Play and Clinical Outcomes after All-Inside, Anterior Cruciate Ligament Reconstruction in Skeletally Immature Athletes*. *Orthop J Sports Med*. 2014;2(7)(suppl 2):1. Doi: 10.1177/2325967114S00038.

# GraftLink Minimally Invasive ACL Reconstruction

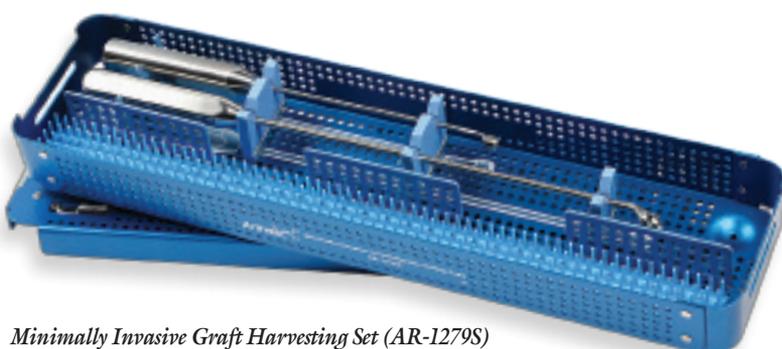
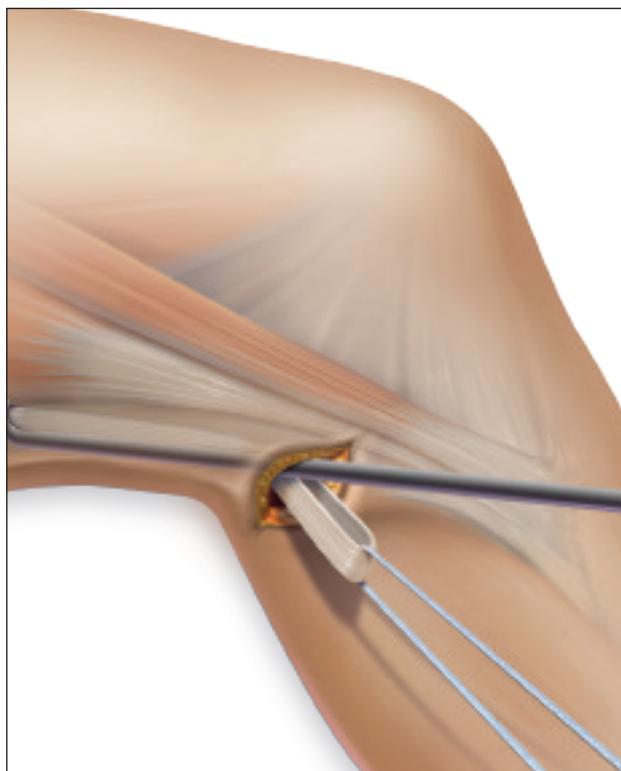
*The GraftLink technique provides the ultimate in anatomic, minimally invasive and reproducible ACL reconstruction.*

- **Anatomic** – Independent tibial and femoral socket preparation with FlipCutter® II and/or Low Profile Reamers facilitate unconstrained placement of the ACL graft.
- **Minimally Invasive** – Single hamstring harvest decreases morbidity and loss of strength.\* Socket preparation with the FlipCutter II limits soft tissue dissection and preserves bone and periosteum.
- **Reproducible** – The GraftLink workstation simplifies graft preparation. The tapered graft and adjustable femoral and tibial ACL TightRope buttons facilitate graft passing, fine tuning of graft depth and graft tensioning from the femoral and tibial sides.

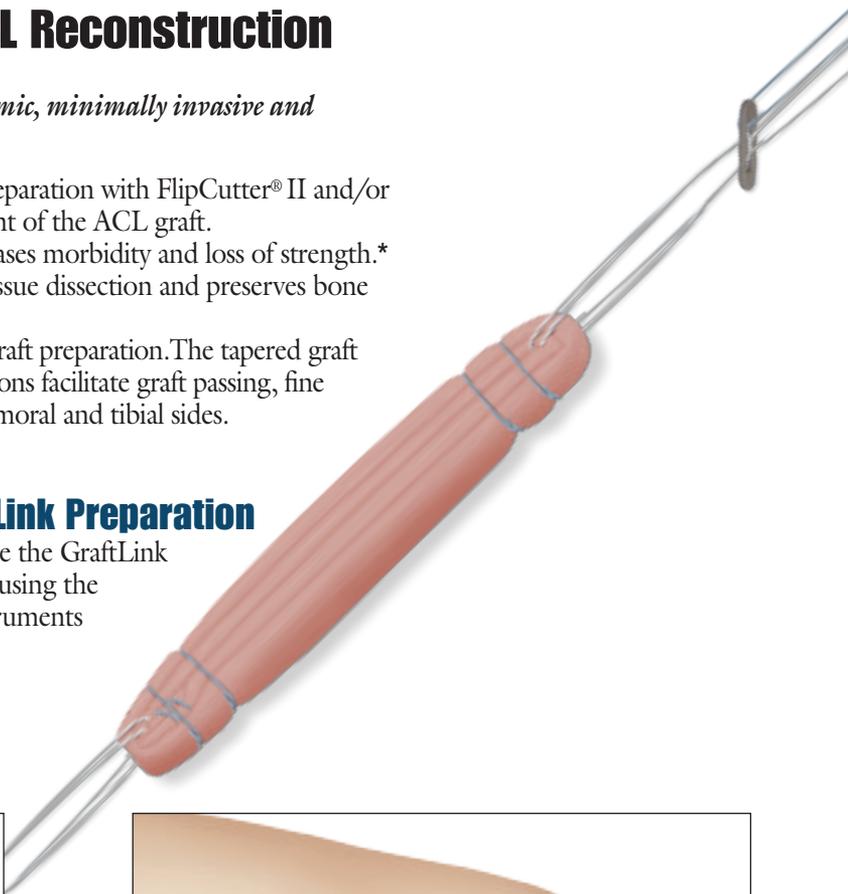
## Semitendinosus Harvesting and GraftLink Preparation

In most cases only the semitendinosus is needed to create the GraftLink construct. For a less invasive option, harvest the tendon using the minimally invasive hamstring harvest technique and instruments described in technique guide LT1-0124-EN.

*\*Data on file*



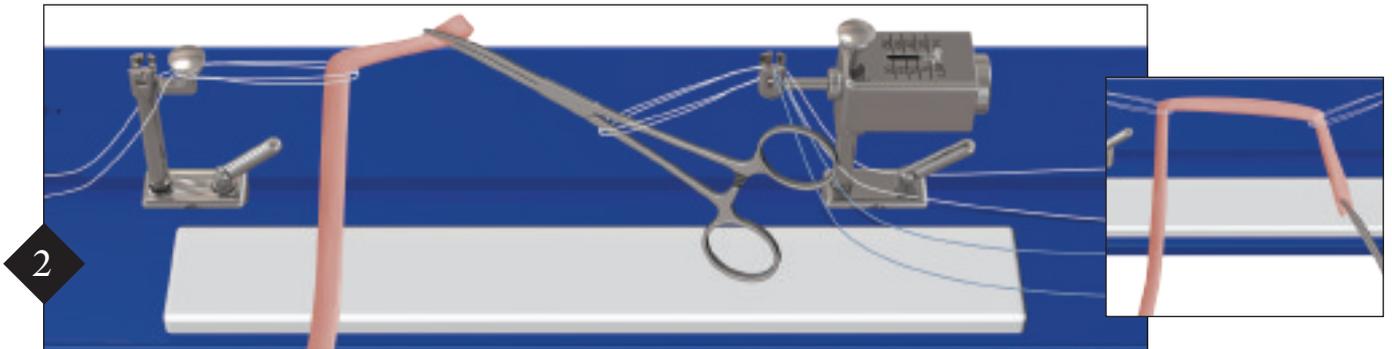
*Minimally Invasive Graft Harvesting Set (AR-1279S)*



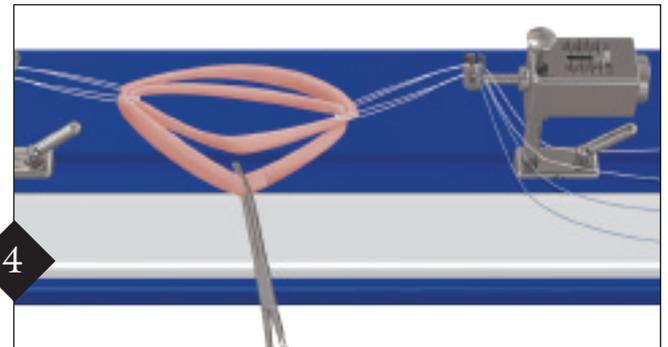
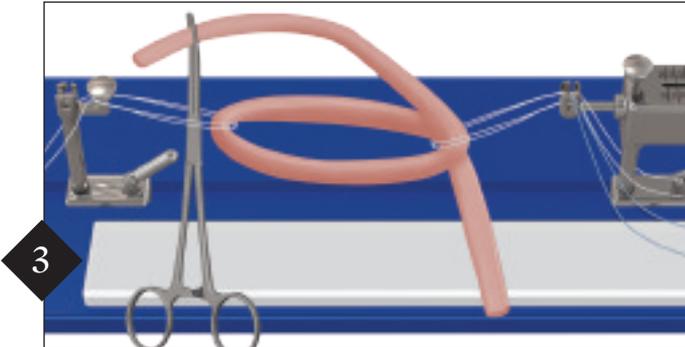
## Graft Preparation



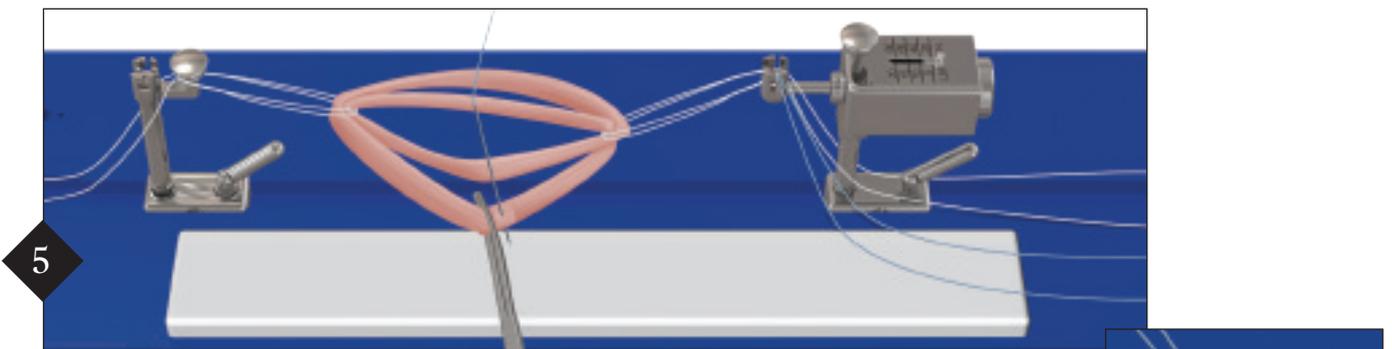
Place the ACL TightRope RT into the button holder on the GraftLink Attachment with Tensioner. This will be the femoral side. Place an ACL TightRope ABS Loop into the post of the other GraftLink attachment. This will be the tibial side.



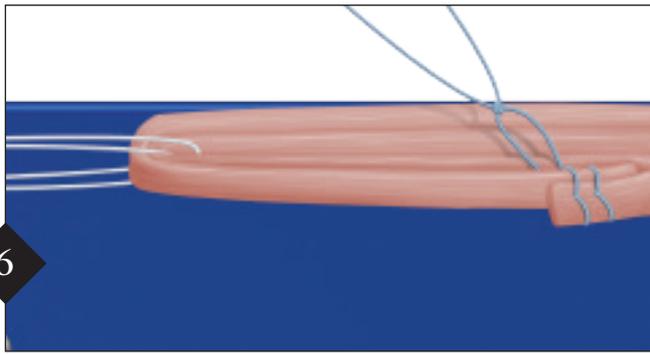
Pull one end of the graft through both of the TightRope loops leaving one “short end” and one “long end” (inset).



Pull the other “long end” of the graft through both TightRope loops in the opposite direction until both ends meet.

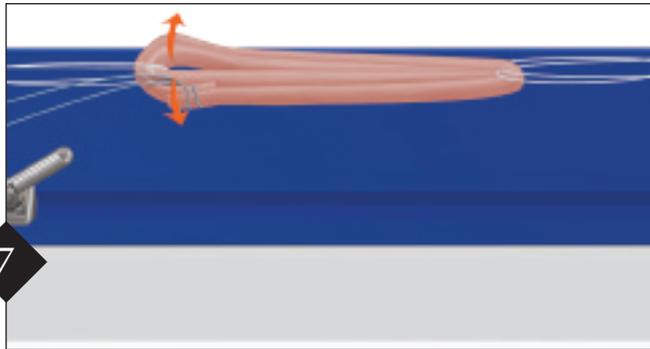
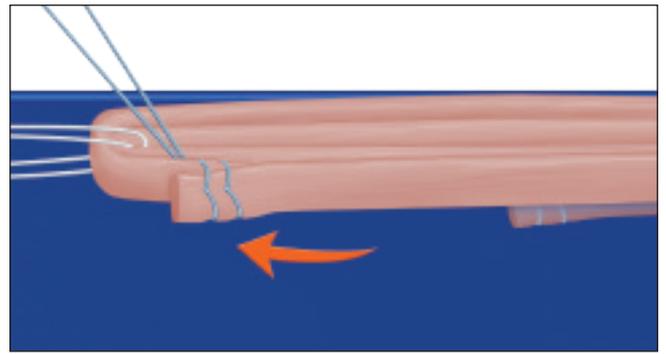


Stitch the ends of the graft together with a #2 FiberWire. This can be done by overlapping the ends or by suturing them end-to-end, depending on the length of the graft.



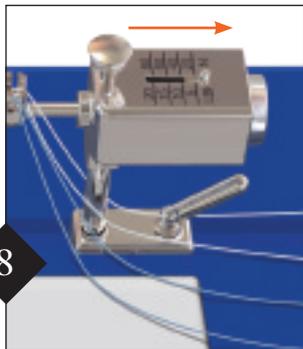
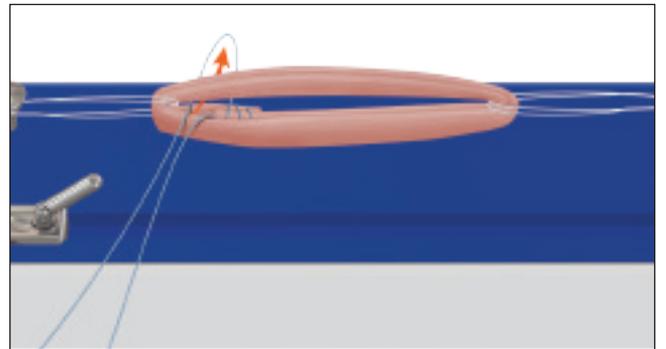
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Tie the suture tails. Rotate the graft so that the sutured portion is near the tibial end.

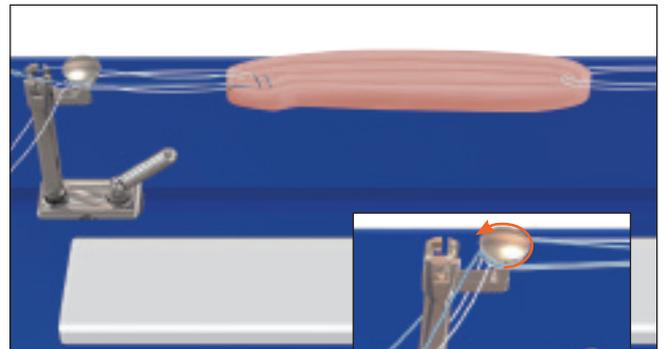


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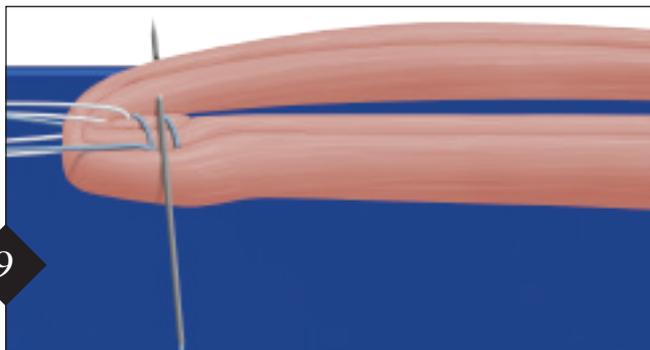
Invert the graft strands so that the sutured tendon is moved to the inside of the construct. Pass one of the suture tails through the graft construct so it exits on the opposite side.



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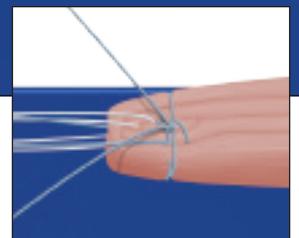
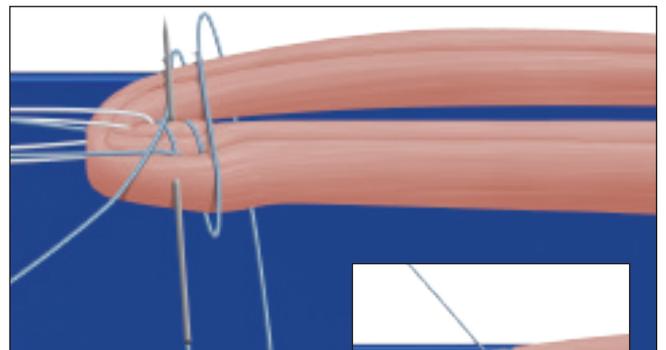


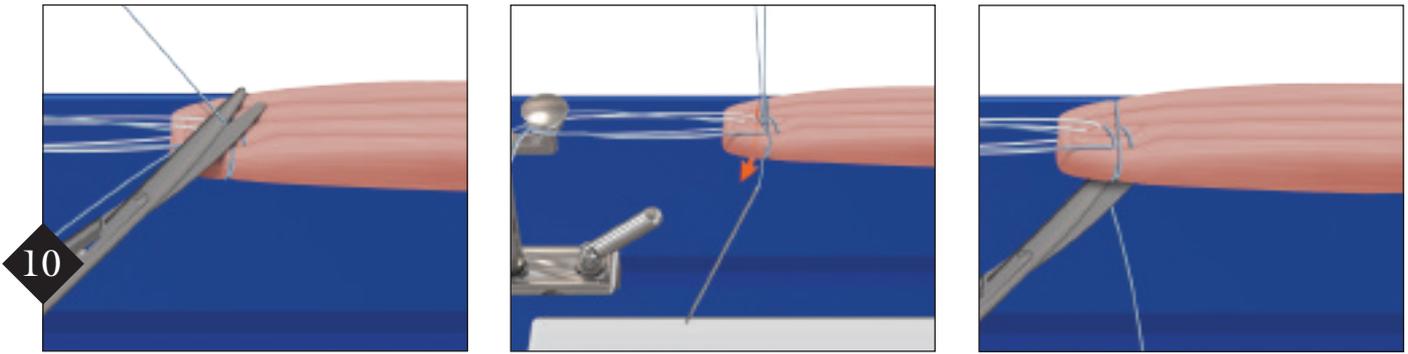
Once stitching is complete and the graft is positioned correctly, the graft prep attachments can be pulled apart to tension the graft before final stitching. Graft tension can be read off of the GraftLink attachment with the tensioner. Wrap the tails of the FiberWire suture around the attachment post 3-4 times until it is captured. These sutures can be used for backup fixation on the tibial side.



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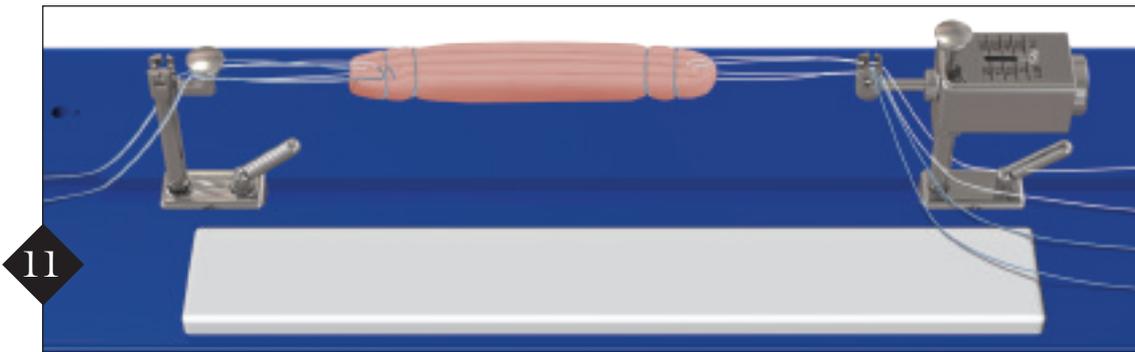
Using a #2 FiberWire on a straight needle, pass through one inner limb and one outer limb of the graft from inside/out. Wrap the suture around the graft and pass the needle through the other two limbs of graft from outside/in. This will insure that the knot is "buried" within the graft when tied.





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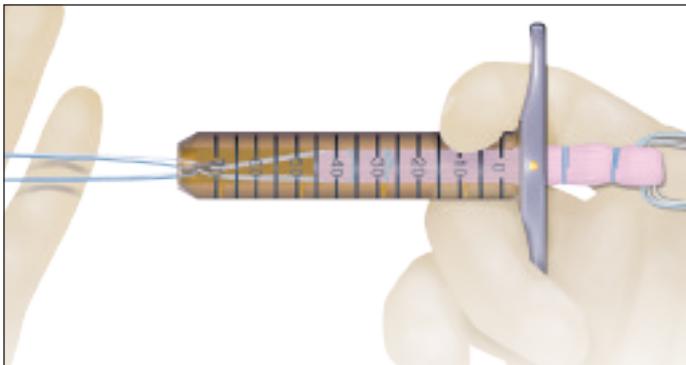
After tying a knot, cut off the suture tail without the needle. Pass the the needled end back through the graft and pull until the knot buries inside of the tissue. This will reduce suture bulk and facilitate graft sizing and passage.



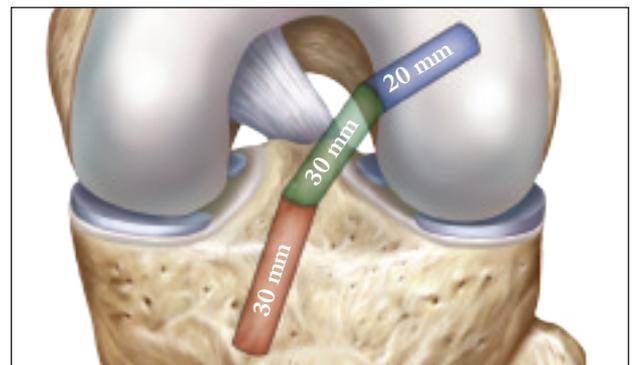
11

Repeat suturing once on the tibial end and twice on the femoral end for a total of four stitches. Additional tension can now be placed on the graft for conditioning.

## Graft Sizing



Arthrex Graft Tubes are ideal for sizing and compression of the GraftLink construct. These full circumference, full length, clear tubes facilitate graft compression, sizing and preparation. The unique transparent tubes, with an etched ruler, allow visualization of the graft during diameter and length sizing. Funneled entrance and attachable handle ease the entry of grafts into the sizer, allowing compression of up to 2 mm. Small holes in the Graft Tubes allow hydration of the graft or injection of biologics along the entire length.



## Socket Creation

The length from the end of the femoral socket to the end of the tibial socket should be at least 10 mm longer than the graft to ensure that the graft can be tensioned fully.

*Example: 70 mm graft length*

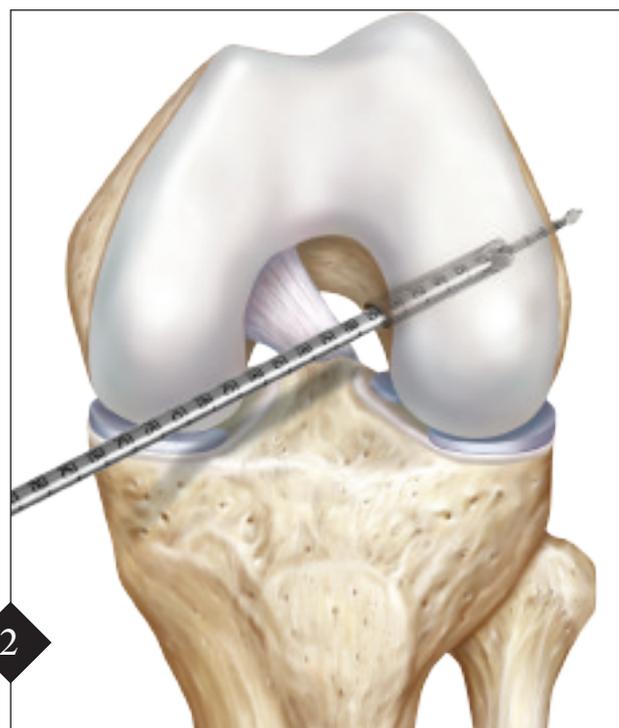
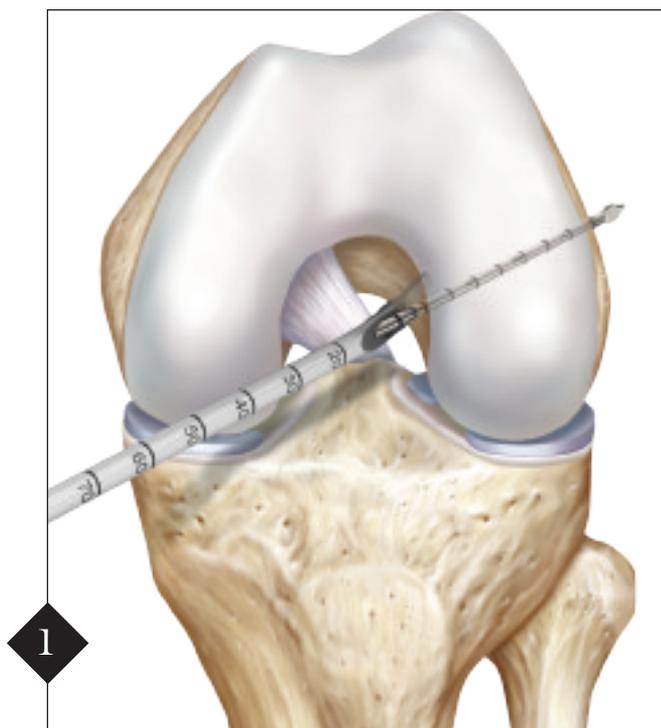
Assuming a maximum intraarticular length of 30 mm, there will be approximately 20 mm of graft in the femoral and tibial socket.

Drill the femur 20 mm deep and the tibia approximately 30 mm deep to allow an extra 10 mm for tensioning.

## Femoral Socket Preparation

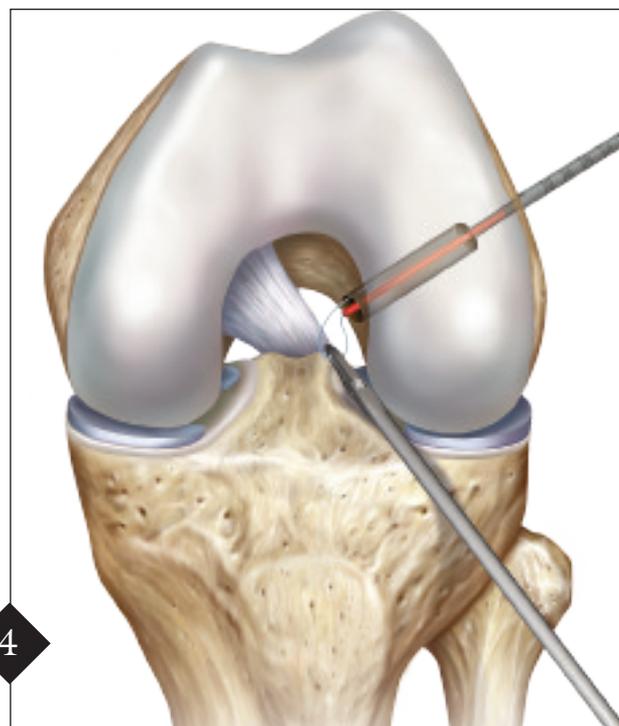
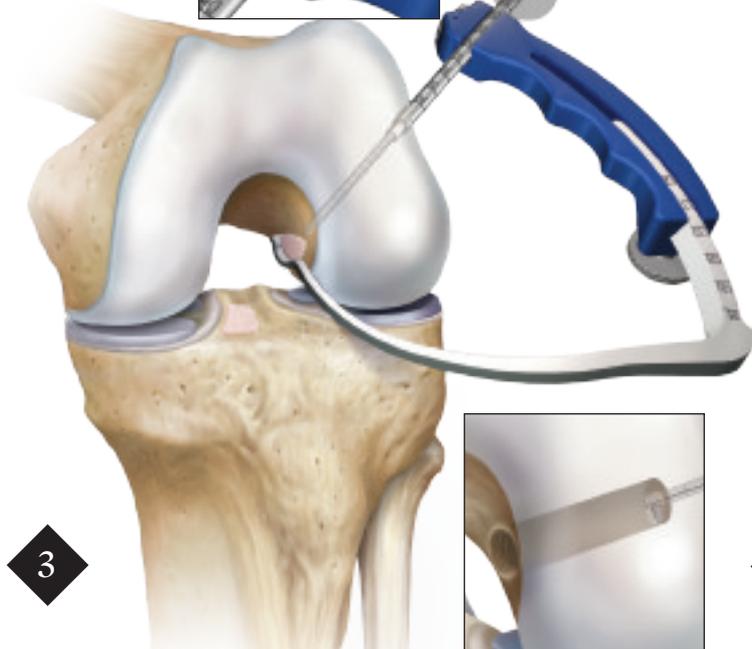
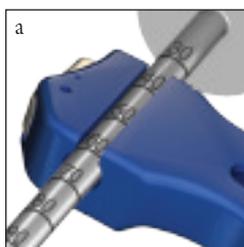
The femoral socket should be created either through the medial portal or from outside/in, using a FlipCutter® II.

### Medial Portal Option



For medial portal drilling, use the TightRope Drill Pin, Transportal ACL Guides and Low Profile Reamers. Note the intraosseous length from the TightRope Drill Pin. After socket drilling, pass a suture with the TightRope Drill Pin for later graft passing.

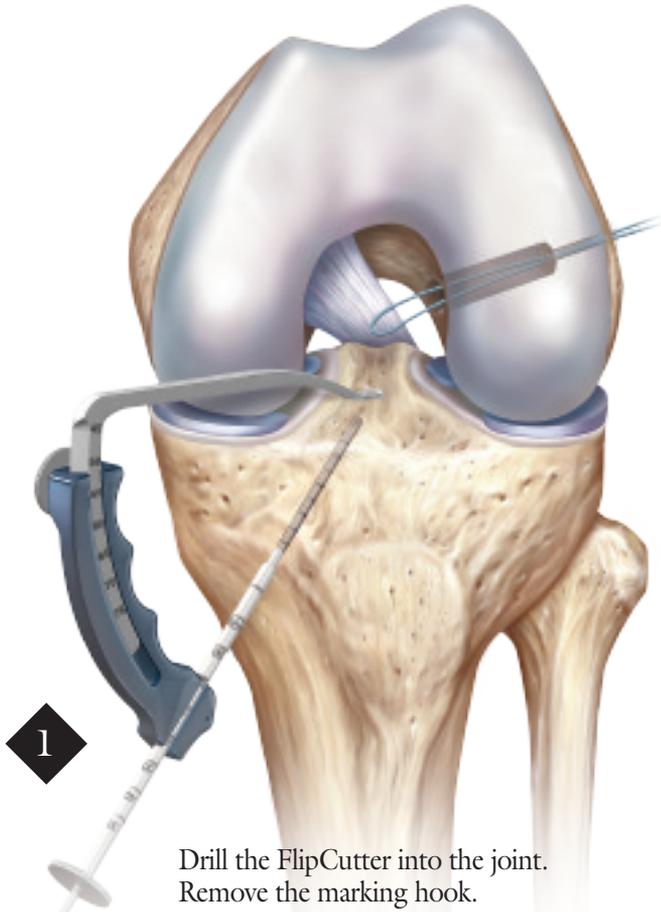
### FlipCutter Option



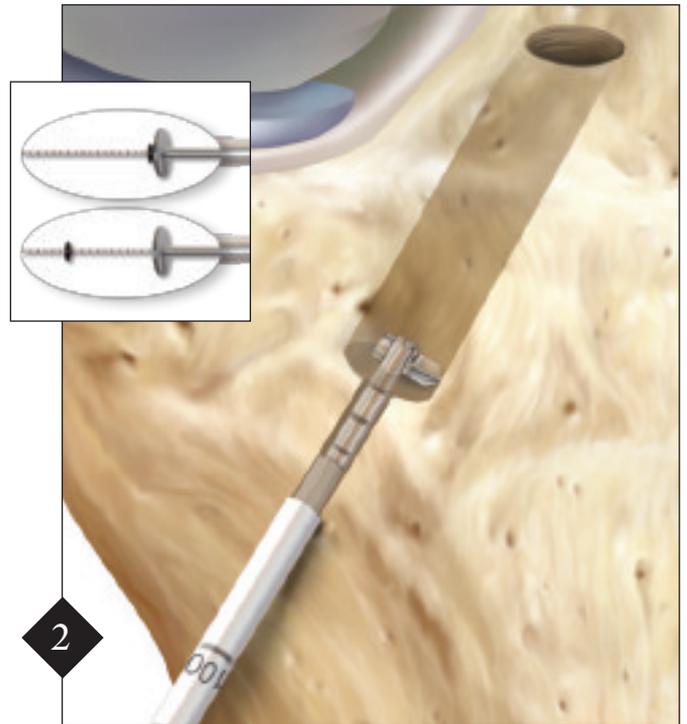
The FlipCutter may also be used to create the femoral socket. Note the intraosseous length on the drill sleeve when pushed down to bone (a).

After “flipcutting”, pass a FiberStick™ suture through the Stepped Drill Sleeve and dock for later graft passing.

## Tibial Socket Preparation

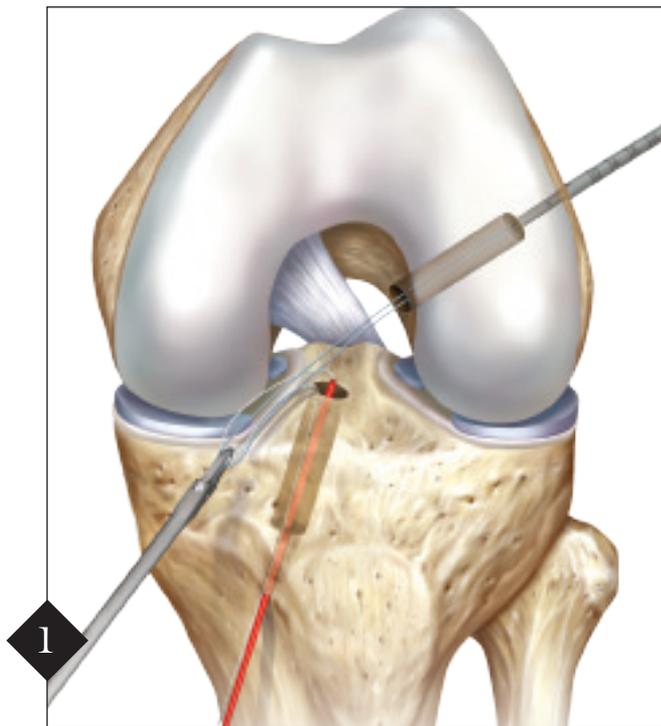


Drill the FlipCutter into the joint. Remove the marking hook.

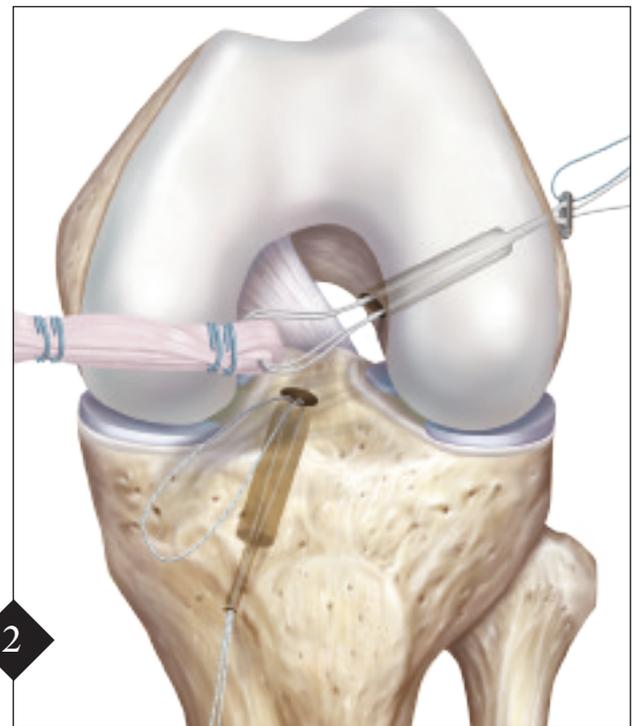


Tap in the Stepped Drill Guide Sleeve. Flip the blade and lock into cutting position. Drill on forward, with distal traction, to cut the socket. Use the rubber ring and 5 mm markings on the FlipCutter to measure socket depth (inset).

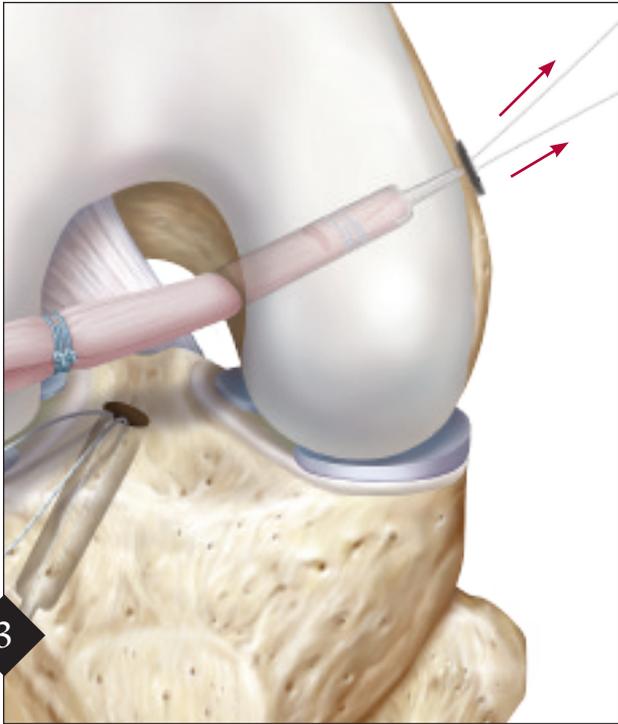
## Graft Passing



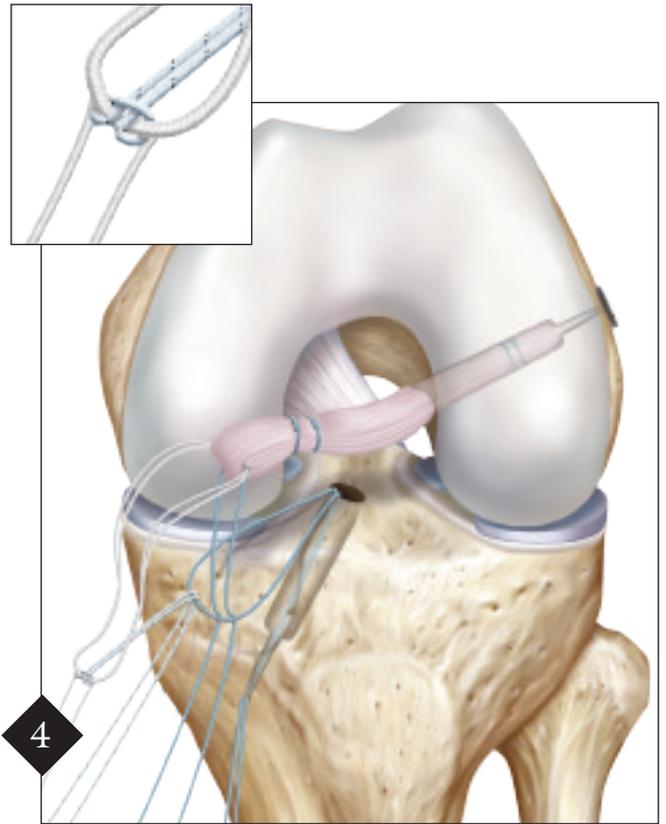
Straighten the FlipCutter blade and remove from the joint. Pass a TigerStick® into the joint and retrieve both the tibial TigerStick and the femoral FiberStick out the medial portal together with an open Suture Retriever. Retrieving both sutures at the same time will help avoid tissue interposition that can complicate graft passing.  
*Note: A PassPort Button Cannula™ may also be used in the medial portal to prevent tangling.*



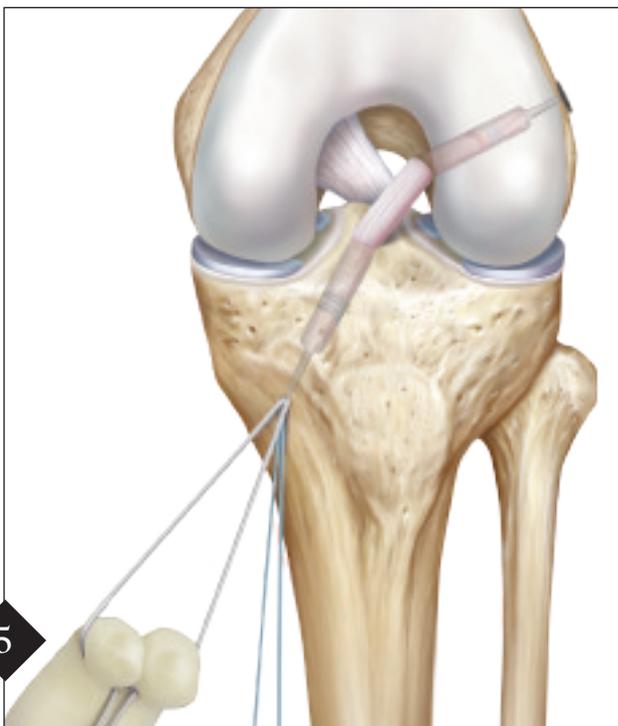
Pass the blue button suture and the white shortening strands through the femur. Remove slack from sutures and ensure equal tension. Clamp or hold both blue and white sutures together and pull them together to advance the button out of the femur. Use markings on the loop and arthroscopic visualization of the button to confirm exit from the femoral cortex. Pull back on the graft to confirm the button is seated.



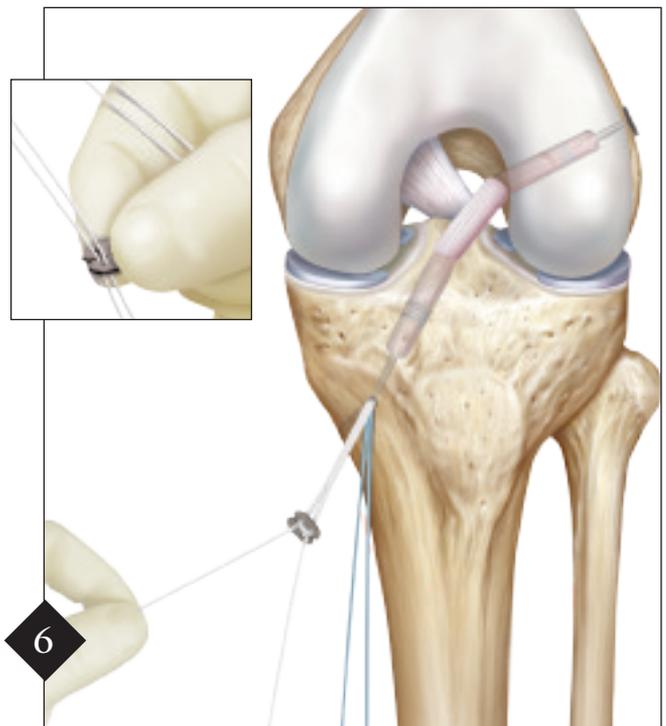
While holding slight tension on the graft, pull the shortening strands proximally, one at a time to advance the graft. Pull on each strand in 2 cm increments. *Note: The graft can be fully seated into the femur or left partially inserted until tibial passing is complete. The latter option allows fine tuning of graft depth in each socket.*



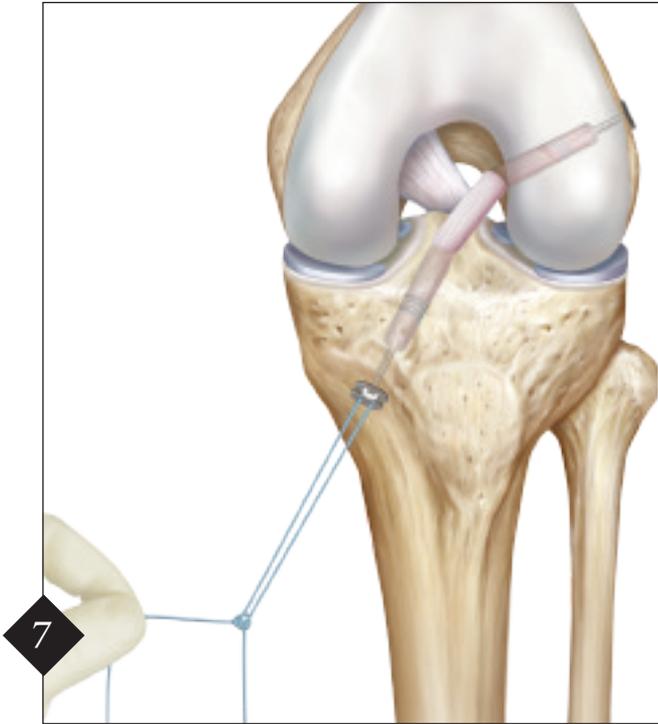
Cinch a suture around the end of the TightRope ABS loop to use for passing (inset). Load the cinch suture and the whipstitch tails from the graft into the tibial passing suture. Pull distally on the tibial passing suture to deliver both the TightRope ABS loop and the whipstitch sutures out of the tibia distally.



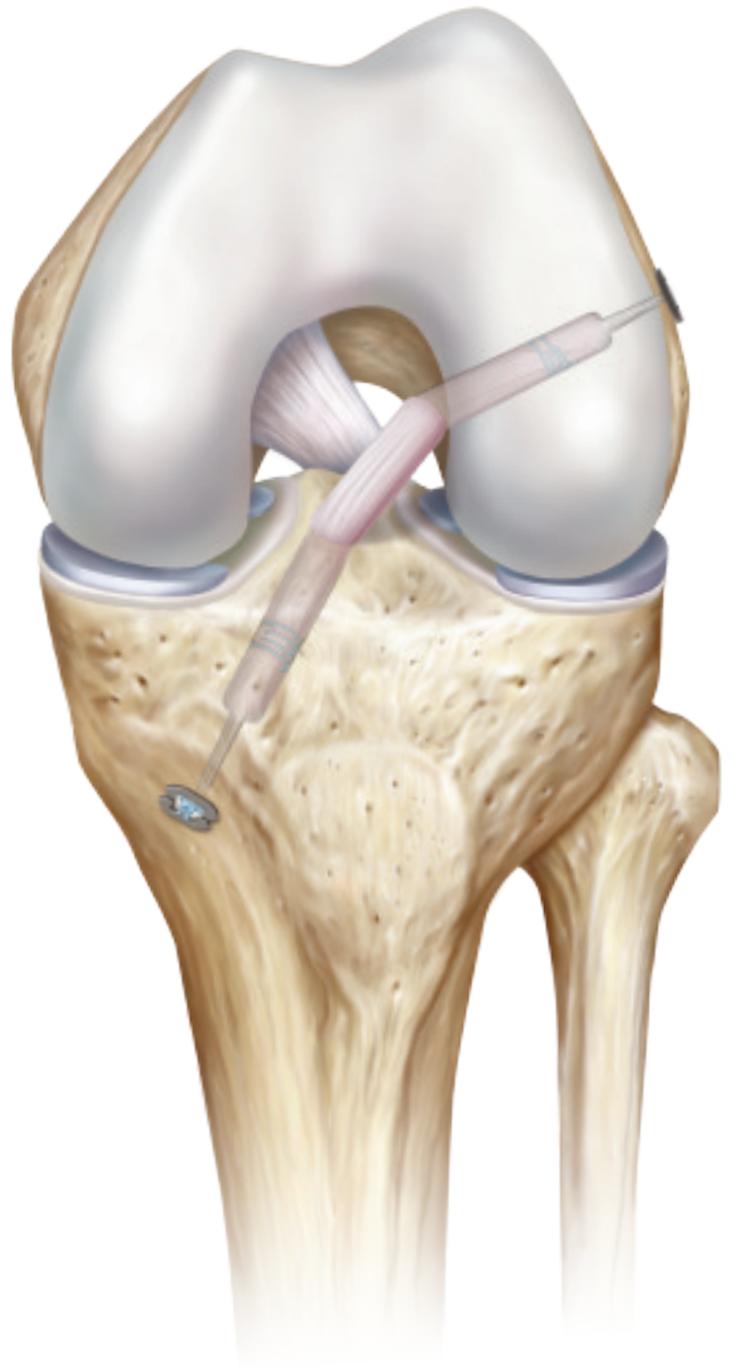
Remove the cinch suture from the TightRope ABS. Advance the graft into the tibia by pulling on the inside of the ABS loop and whipstitch sutures.



Load the TightRope ABS Button onto the loop. Pull on the white shortening strands to advance the button to bone and tension graft. *Note: Ensure the button has a clear path to bone, as to not entrap soft tissue under the button.*



Load the whipstitch sutures into the button and tie a knot for backup fixation.



## Ordering Information

### Implants

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ACL TightRope RT	AR-1588RT
TightRope ABS	AR-1588TN
TightRope ABS Button	AR-1588TB

### Instruments

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#### For FlipCutter Technique

ACL ToolBox	AR-1900S
FlipCutter IIs, 6 mm – 13 mm	AR-1204AF-60 – 130
Short FlipCutter IIs, 6 mm – 13 mm	AR-1204AS-60 – 130
Side-Release RetroConstruction Handle	AR-1510HR
Stepped Drill Guide Sleeve	AR-1510FS-7
TightRope RT Implant Systems, w/8, 9, 10, 11 mm FlipCutter II	AR-1588RT-07, 18, 11, 13

#### For Medial Portal Technique

Transportal ACL Guides (TPGs), 4 mm – 8 mm	AR-1800-04 – 08
Low Profile Reamers, 5 mm – 13 mm	AR-1405LP – 1413LP
TightRope Drill Pin, open	AR-1595T
TightRope Drill Pin, closed	AR-1595TC
ACL TightRope RT Implant Delivery System, w/ACL TightRope Drill Pin	AR-1588RTS

### Accessories

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Suture Retriever	AR-12540
Graft Tubes	AR-1886-S
Graft Prep Station Base	AR-2950
GraftLink Prep Attachment	AR-2951-1
GraftLink Prep Attachment with Tensioner	AR-2951-2
Suture Cutter for ACL TightRope	AR-4520

### Suture

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#2 FiberWire, 38" (blue) w/Straight Diamond Point Needle	AR-7246
#2 FiberWire, 38" (blue) w/two Straight Diamond Point Needles	AR-7246-02
FiberStick, #2 FiberWire, 50" (blue) one end stiffened	AR-7209
TigerStick, #2 TigerWire, 50" (white/black) one end stiffened	AR-7209T

*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.*



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