Arthrex®

# Minimally Invasive PCL Reconstruction with Allograft GraftLink® TS Construct

## Surgical Technique

PCL Reconstruction with Allograft GraftLink TS

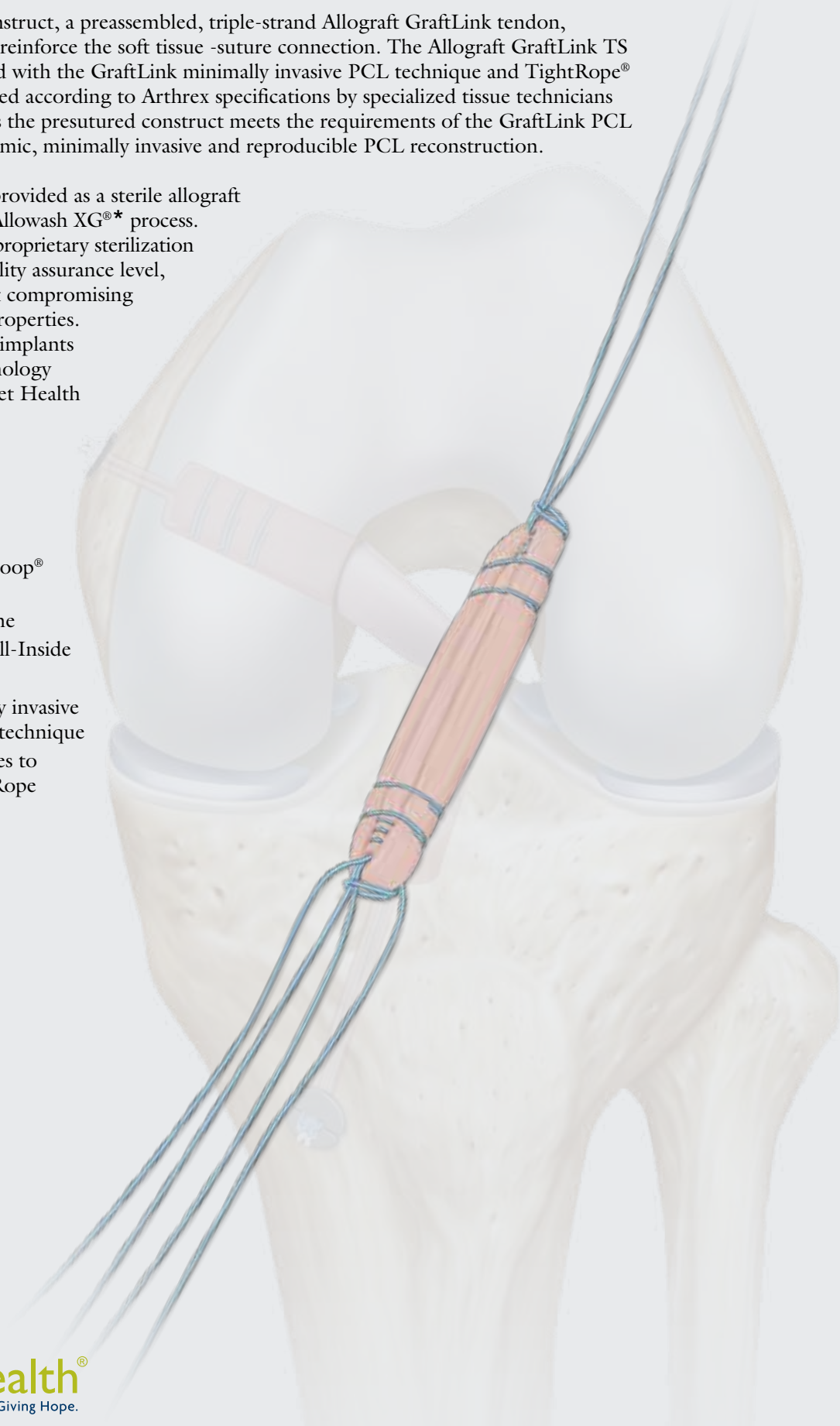
# Minimally Invasive PCL Reconstruction with Allograft GraftLink® TS Construct

The Allograft GraftLink TS construct, a preassembled, triple-strand Allograft GraftLink tendon, incorporates FiberTag® tape to reinforce the soft tissue -suture connection. The Allograft GraftLink TS construct is designed to be used with the GraftLink minimally invasive PCL technique and TightRope® implants. It is precisely assembled according to Arthrex specifications by specialized tissue technicians at LifeNet Health. This ensures the presutured construct meets the requirements of the GraftLink PCL technique to allow for an anatomic, minimally invasive and reproducible PCL reconstruction.

The Allograft GraftLink TS is provided as a sterile allograft construct via LifeNet Health's Allowash XG®* process. Allowash XG is a patented and proprietary sterilization process that achieves a $10^{-6}$ sterility assurance level, a high degree of safety, without compromising biological and biomechanical properties. Since 1995, over 5 million bio-implants processed using Allowash technology have been distributed by LifeNet Health with no disease transmission.

## Allograft GraftLink TS Construct Benefits:

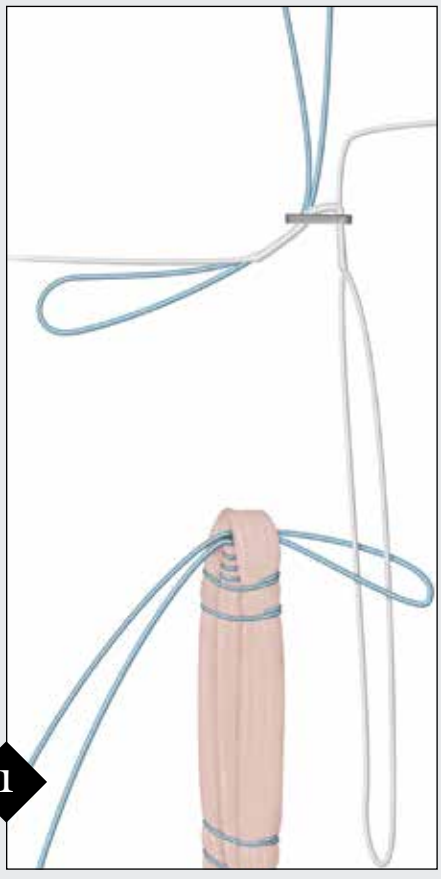
- Sterile with Allowash XG
- Preassembled with #2 FiberLoop® suture with FiberTag tape
- Minimal graft preparation time
- Presized to GraftLink PCL All-Inside specifications
- Use with GraftLink minimally invasive PCL reconstruction surgical technique
- Preloaded with passing sutures to facilitate loading with TightRope implants

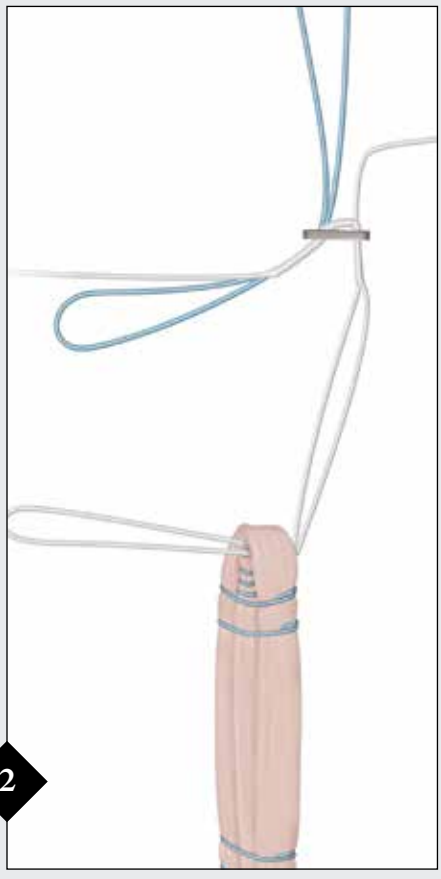


LifeNet Health®
Saving Lives. Restoring Health. Giving Hope.

*Allowash XG is a registered trademark of LifeNet Health.

## Loading of the Femoral Graft End with BTB TightRope® Implant



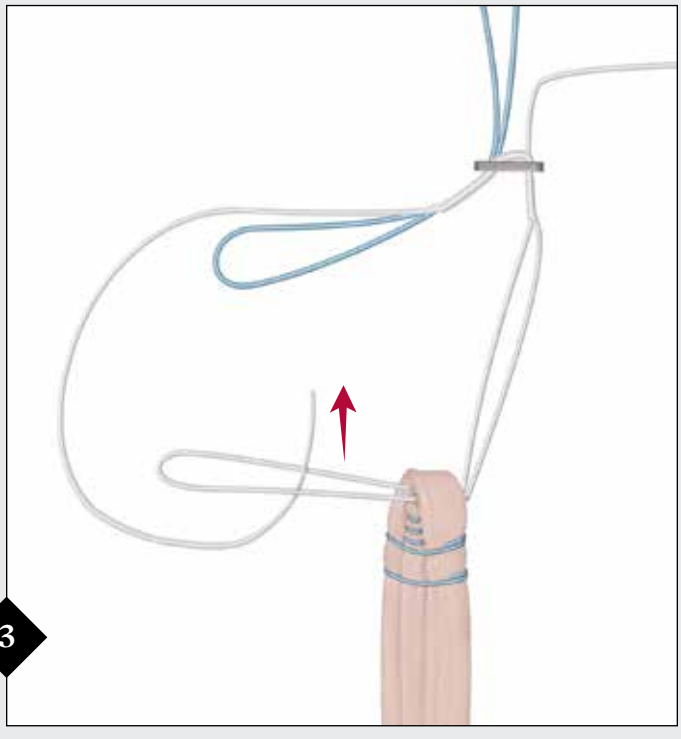



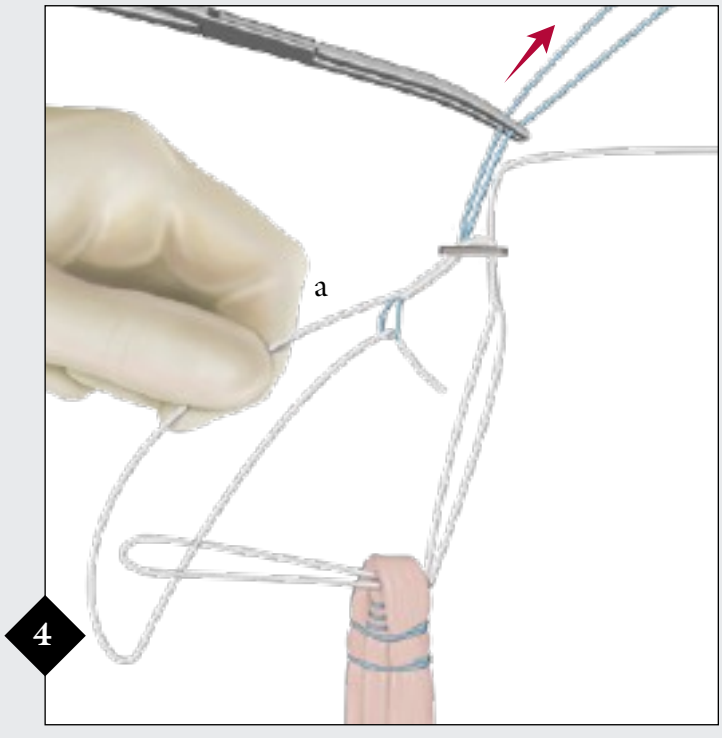

The BTB TightRope implant, an open loop construct, is used on the femoral side of the graft. Remove the needle from the BTB TightRope loop by cutting the Nitinol wire loop.

Unfold the blue passing suture of the femoral end of the GraftLink® construct, exposing a loop and 2 tails. Drop the loop of the BTB TightRope implant into the blue loop of the passing suture (1).

Pull the tails of the passing suture to pass the TightRope loop through the graft (2).

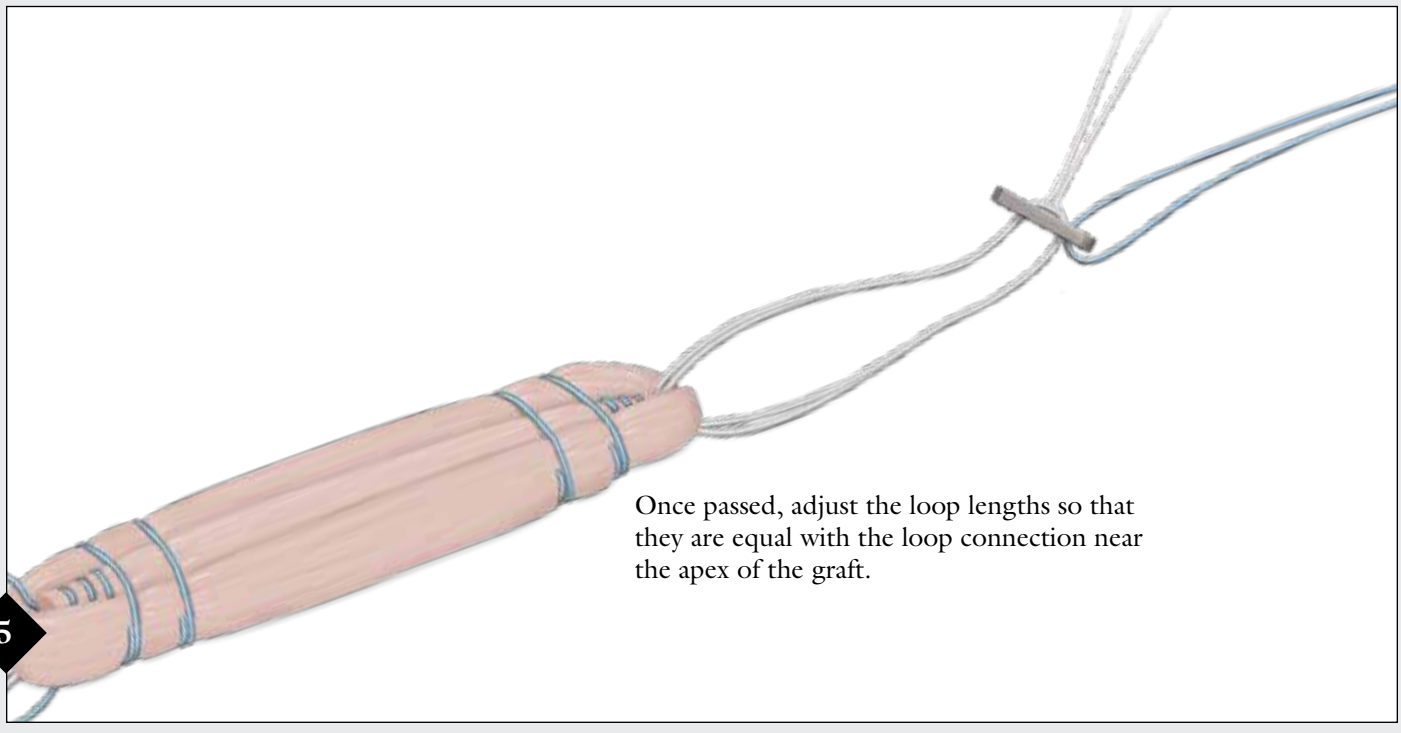
*Note: Keep the BTB TightRope implant positioned on the instrument card to assist with proper loading of the implant.*




Pass the free end of the TightRope implant through the TightRope loop (3). Pass about 2 cm of the free end of the implant through the blue passing suture. While holding the white suture in place, pull proximally on the tails of the blue passing loop until the free end is pinched against the splice of the implant *(this will prevent disassembly during passing)*.

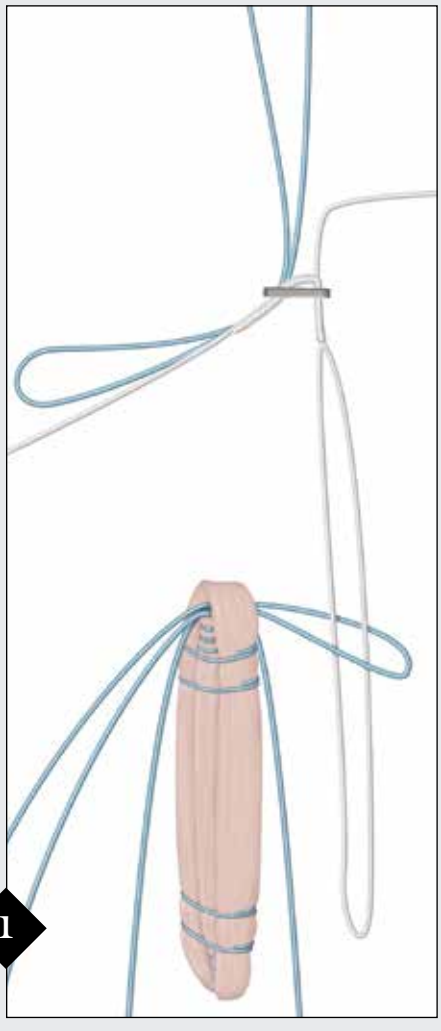
Grip the fixed end of the suture (a) with the left hand. Using a clamp, pull proximally on the blue tails to pass the free end of the implant through the splice and through the TightRope button.

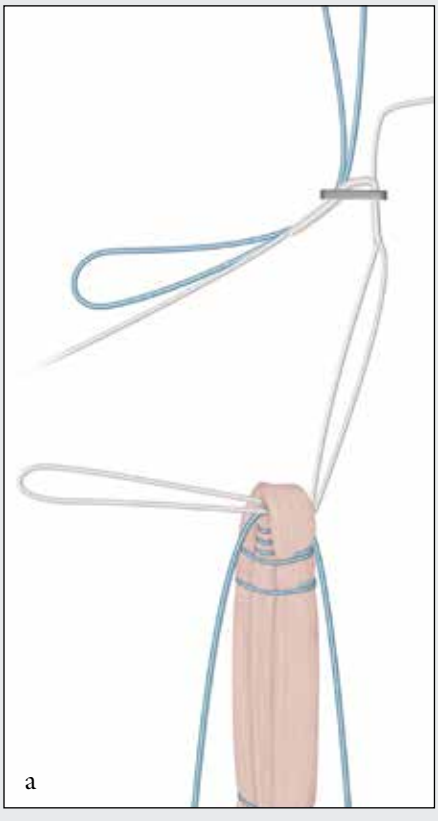


Once passed, adjust the loop lengths so that they are equal with the loop connection near the apex of the graft.

5

## Loading of the Tibial Graft End with Open TightRope® ABS





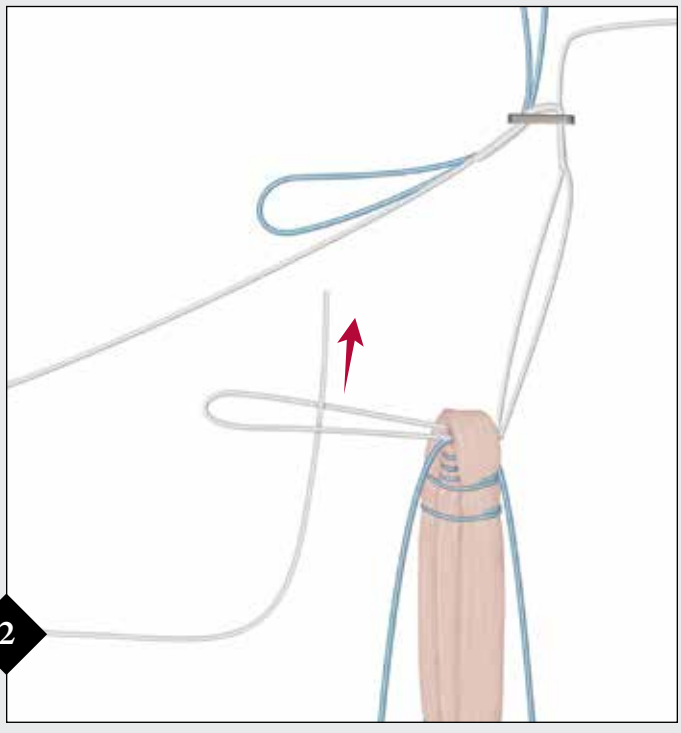
a

An open TightRope® ABS (Attachable Button System) is used for tibial fixation and loaded onto the graft in similar fashion as the BTB TightRope implant.

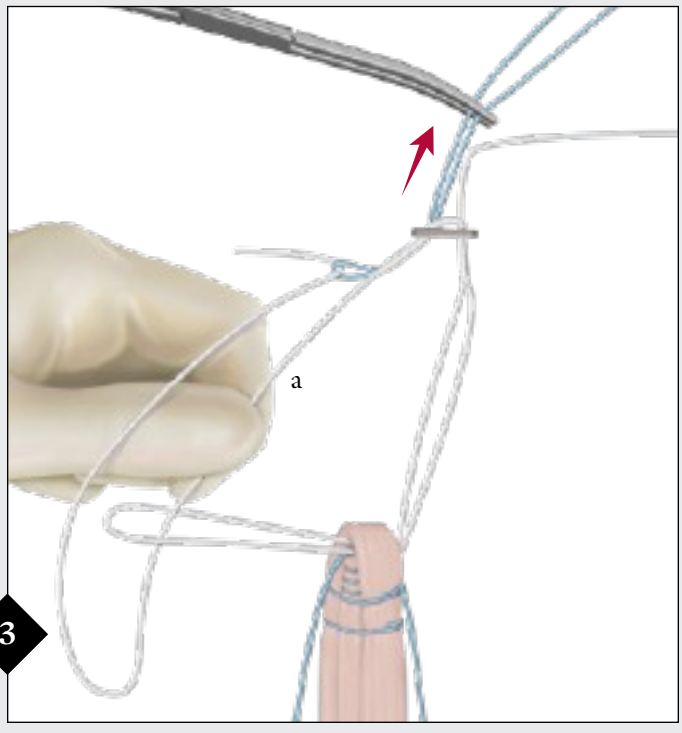
Unfold the blue passing suture of the tibial end of the GraftLink® construct, exposing a loop and 2 tails. Drop the loop of the TightRope implant into the blue loop of the passing suture (1). Pull the tails of the passing suture to pass the TightRope loop through the graft (a).

***Note: Do not cut or remove the blue #2 FiberLoop® sutures used to suture the tendon tails together. These should be used to assist with tensioning the graft, passing the graft into the tibial tendon, and as backup fixation.***

1



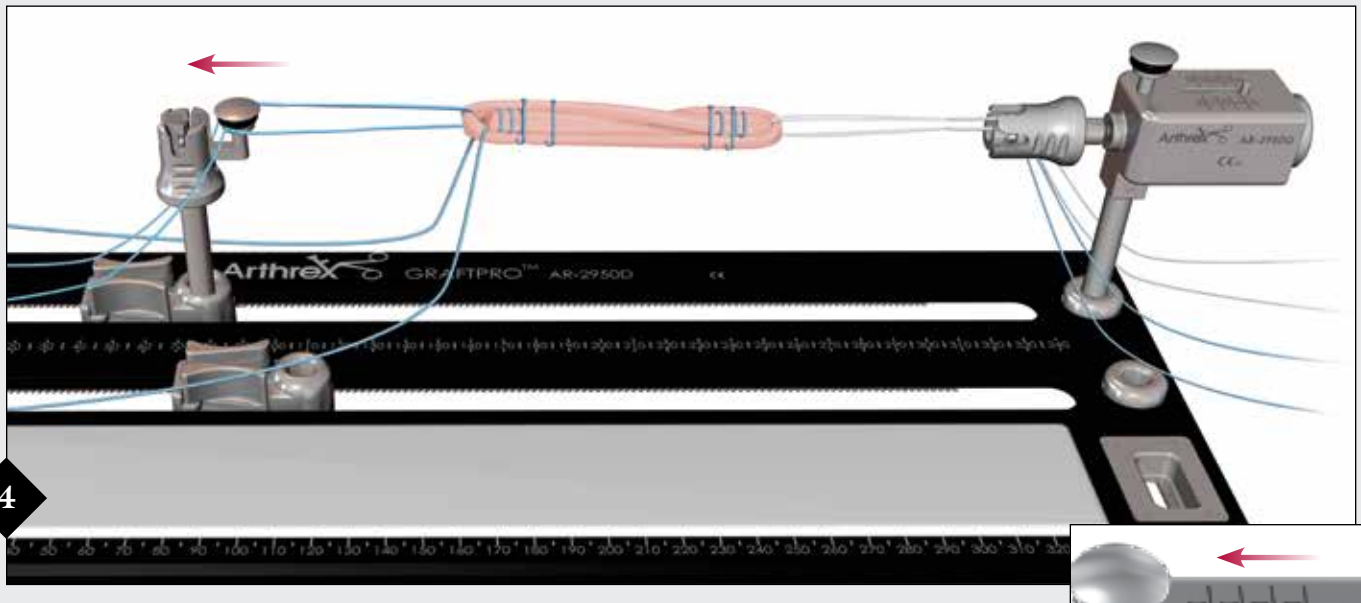
2




3

Pass the free end of the TightRope® implant through the TightRope loop (2). Pass about 2 cm of the free end of the implant through the blue passing suture. While holding the white suture in place, pull proximally on the tails of the blue passing loop until the free end is pinched against the splice of the implant *(this will prevent disassembly during passing)*.

Grip the fixed end of the suture (a) with the left hand. Using a clamp, pull proximally on the blue tails to pass the free end of the implant through the splice.

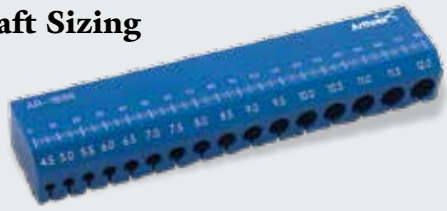



4

The GraftPro® GraftLink® graft prep attachments may now be used for tensioning by simply pulling on one side until the desired tension is obtained, as read on the tensiometer. The #2 FiberLoop® sutures may be used to assist with tensioning and may be used as supplemental fixation.

# Minimally Invasive PCL Reconstruction with Allograft GraftLink® TS Construct

## Graft Sizing

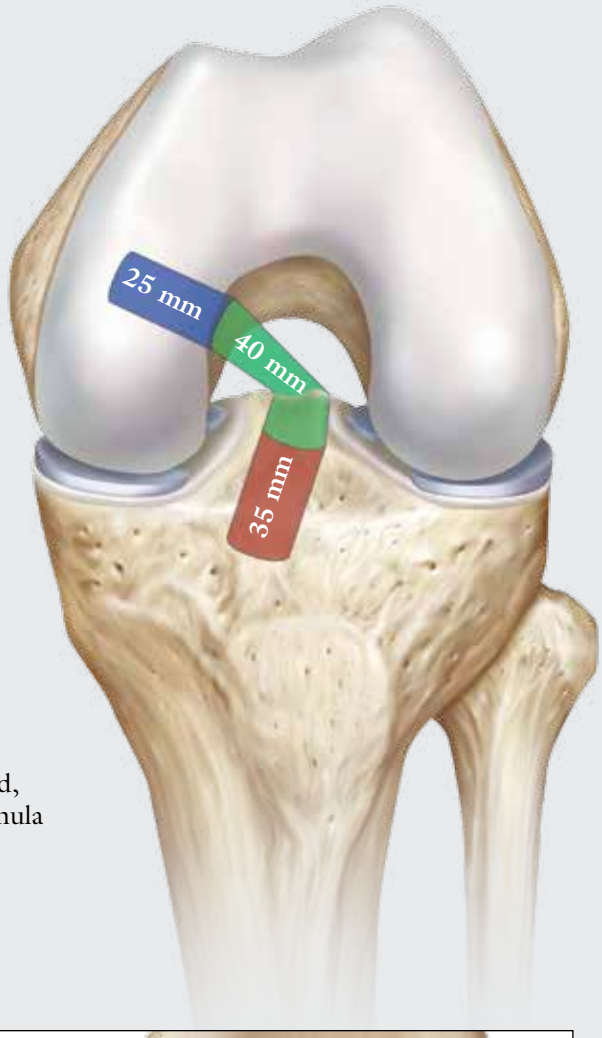


Measure the graft length and diameter. Pass both the femoral and tibial ends of the graft into the sizing block to measure diameter for socket drilling. Graft Compression Tubes may also be used for sizing and compression of the graft.

## 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.

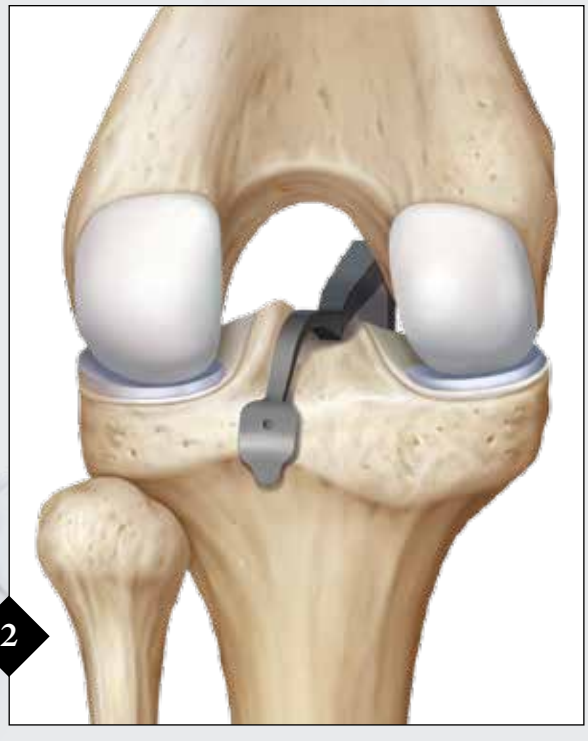
***Example: 90 mm graft length***




## Tibial Socket Preparation

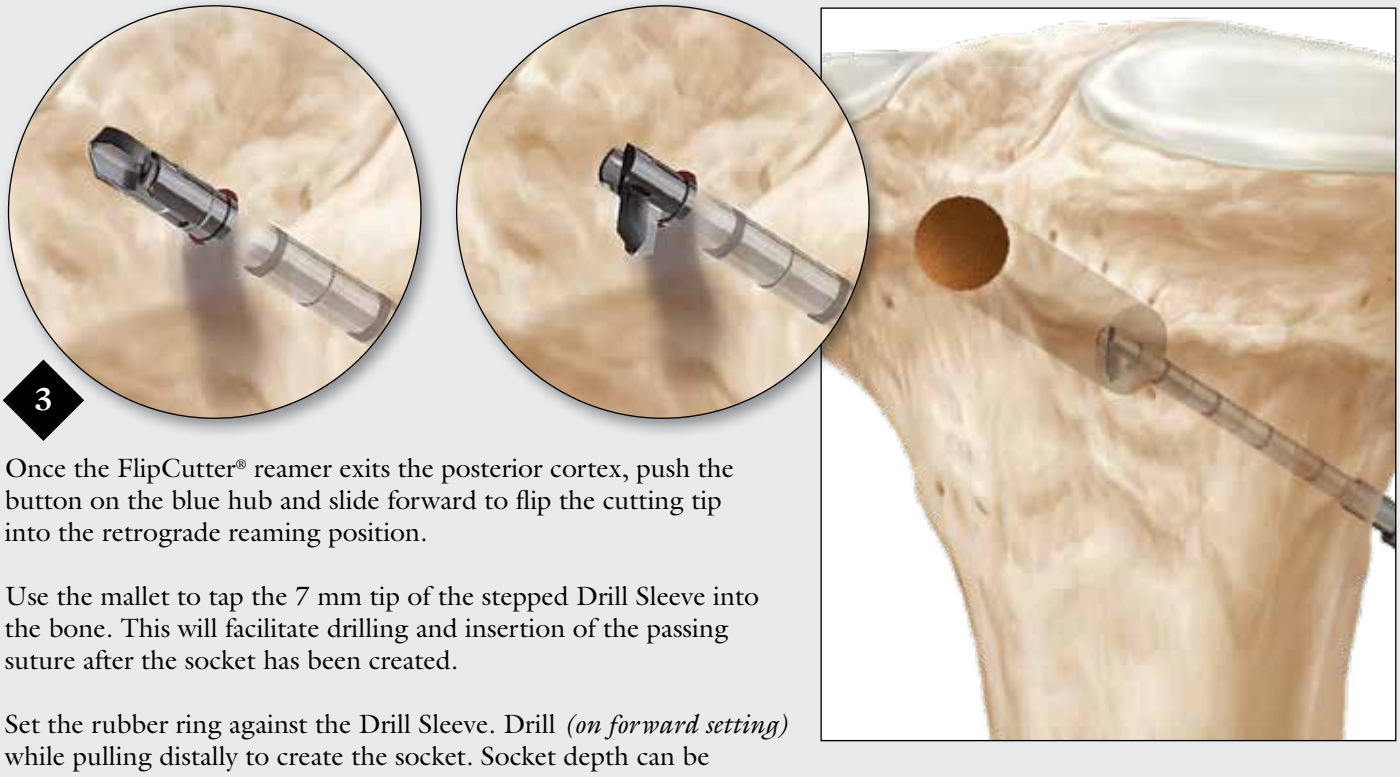
Standard anteromedial (AM) and anterolateral (AL) portals are placed, as well as posteromedial portal (PM). A partially threaded plastic cannula or PassPort Button™ cannula is placed through the PM portal.


1



2

Place the tibial Anatomic Contour PCL Guide through the AM portal and, using the "over-the-back" hook, grasp the distal edge of the posterior facet for tactile feedback. The wide, convex paddle tip helps position the guide properly in the coronal plane, between the mammillary bodies. In this position, the pin is guided to the appropriate exit point in the sagittal plane. Fluoroscopy may be used to confirm placement. The Drill Sleeve is pushed against bone and the intraosseous distance is noted where the Drill Sleeve exits the guide (a), in this case, 70 mm.

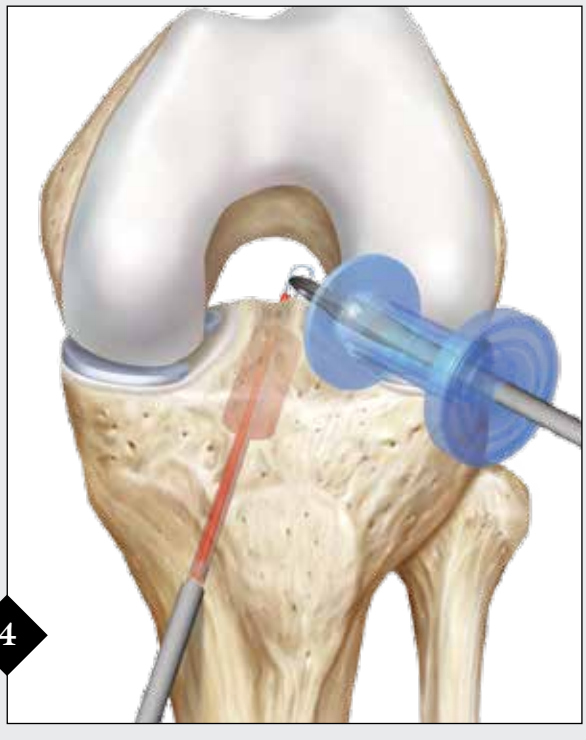


3

Once the FlipCutter® reamer exits the posterior cortex, push the button on the blue hub and slide forward to flip the cutting tip into the retrograde reaming position.

Use the mallet to tap the 7 mm tip of the stepped Drill Sleeve into the bone. This will facilitate drilling and insertion of the passing suture after the socket has been created.

Set the rubber ring against the Drill Sleeve. Drill *(on forward setting)* while pulling distally to create the socket. Socket depth can be quantified by counting the 5 mm markings between the Drill Sleeve and the rubber ring. Drill to 40 mm. After drilling the socket, straighten the blade by pushing the button on the blue hub and pulling backwards.

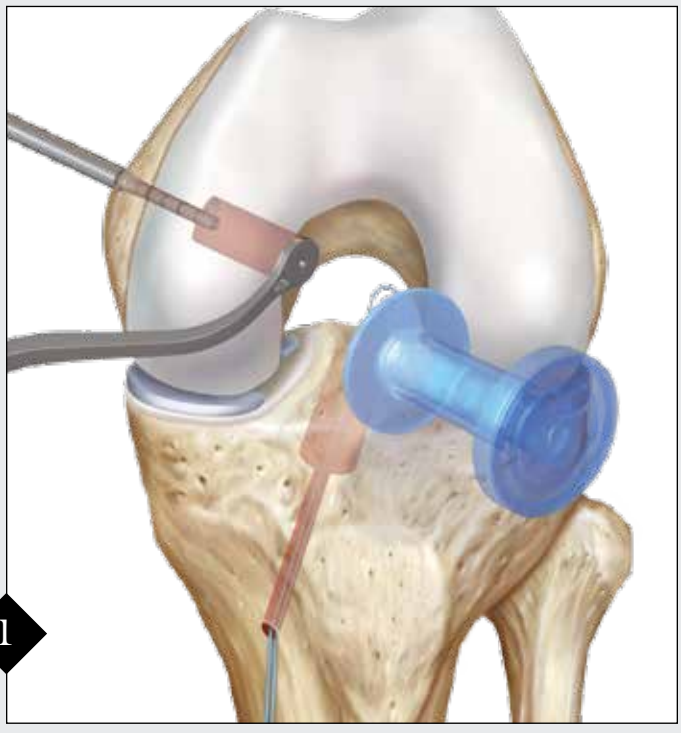


4

5

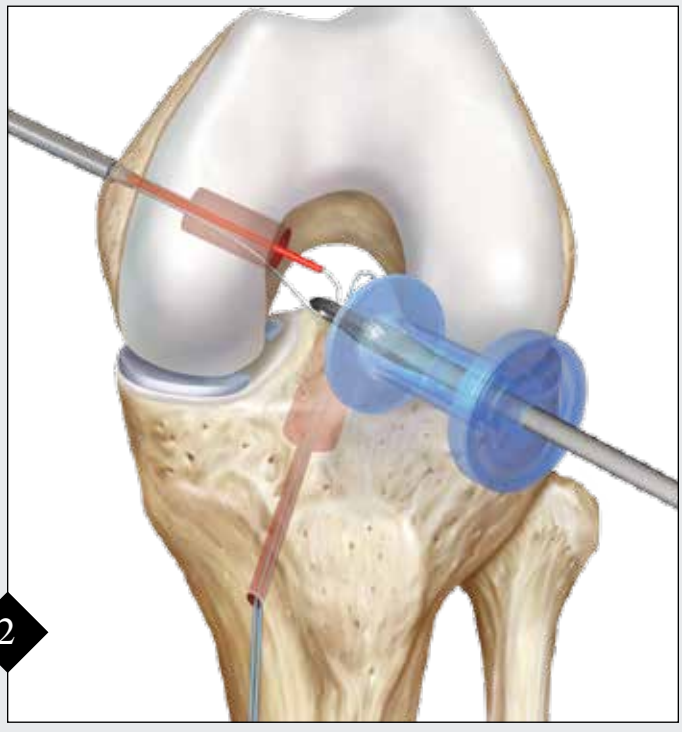
Remove the FlipCutter reamer from the Drill Sleeve while holding the sleeve in place for suture passing. Pass a #2 FiberStick™ suture through the Drill Sleeve and into the joint for retrieval. Use a grasper through the posteromedial portal to push the suture anterior, for retrieval through anteromedial portal.

## Femoral Socket Preparation with FlipCutter® Reamer



1

The FlipCutter reamer may also be used to create the femoral socket. Note the intraosseous length on the Drill Sleeve when pushed down to bone.



2

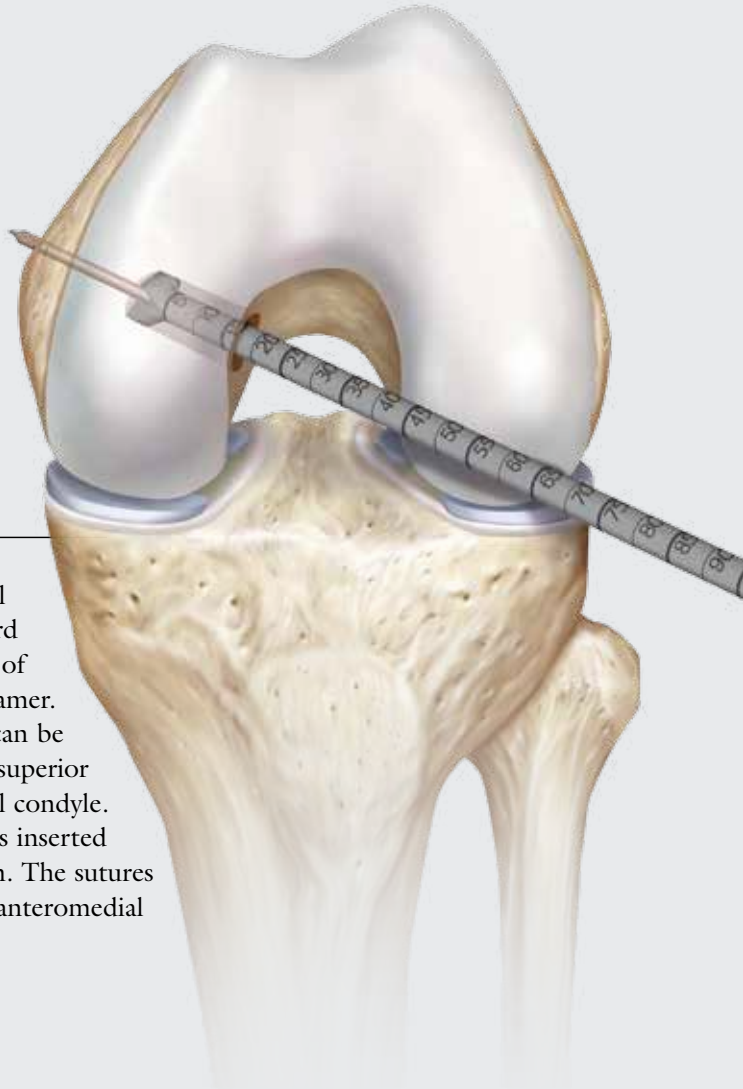
After using the FlipCutter reamer, pass a #2 FiberStick™ suture through the stepped Drill Sleeve, retrieve through the anterolateral portal and dock for later graft passage.

*Double Bundle PCL Guides*

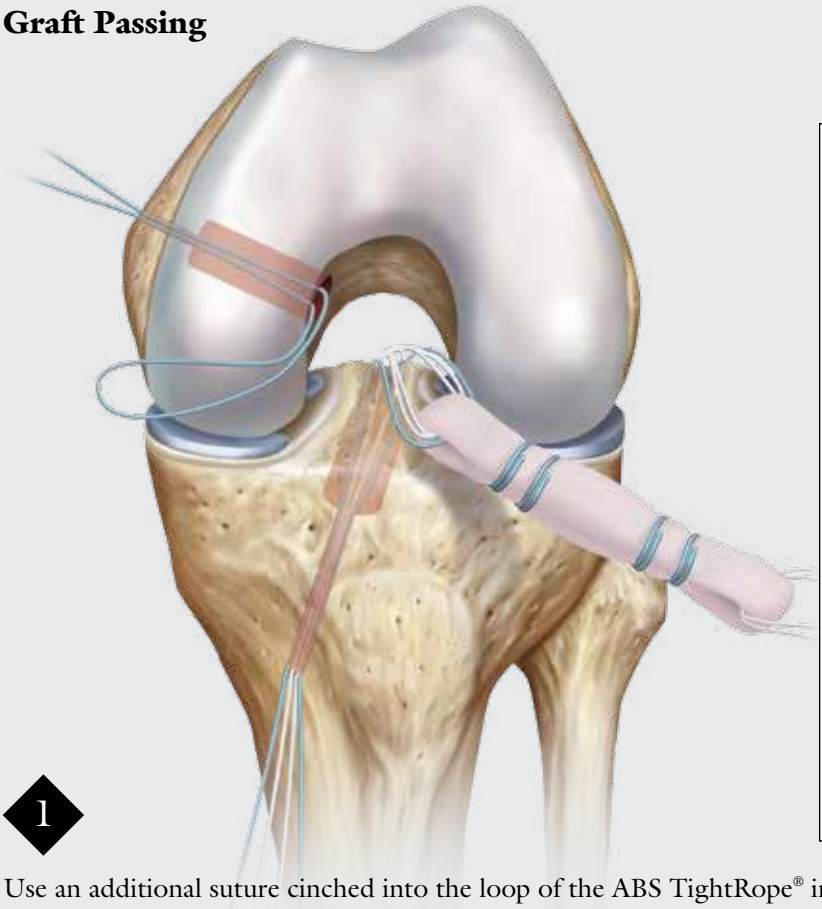
*Low Profile Reamers*

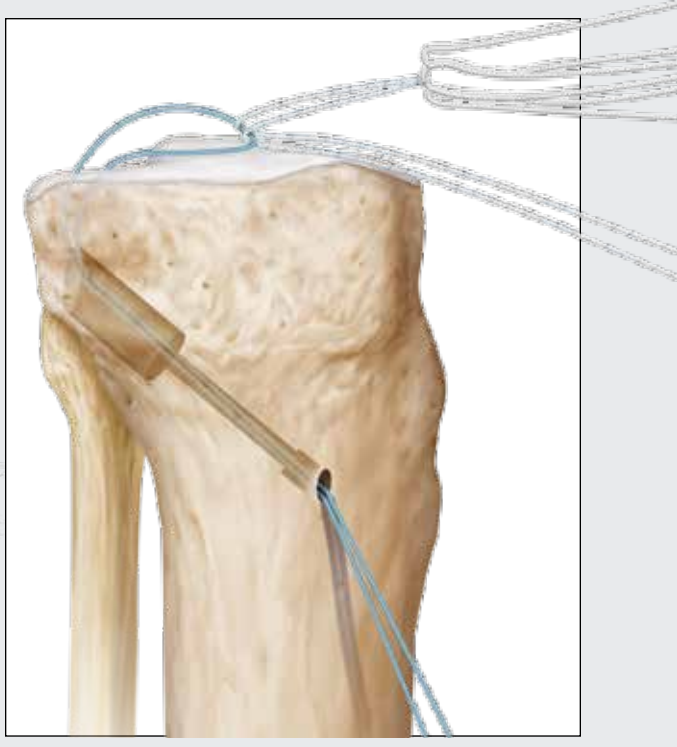
### *Alternative Option*

The femur is drilled through an accessory anterolateral portal (distal and lateral to the standard anterolateral portal) to a depth of 25 mm using a Low Profile Reamer. A Double Bundle PCL Guide can be used for placement against the superior inner wall of the medial femoral condyle. After drilling, a passing suture is inserted using the eyelet of the guide pin. The sutures are then retrieved through the anteromedial portal.



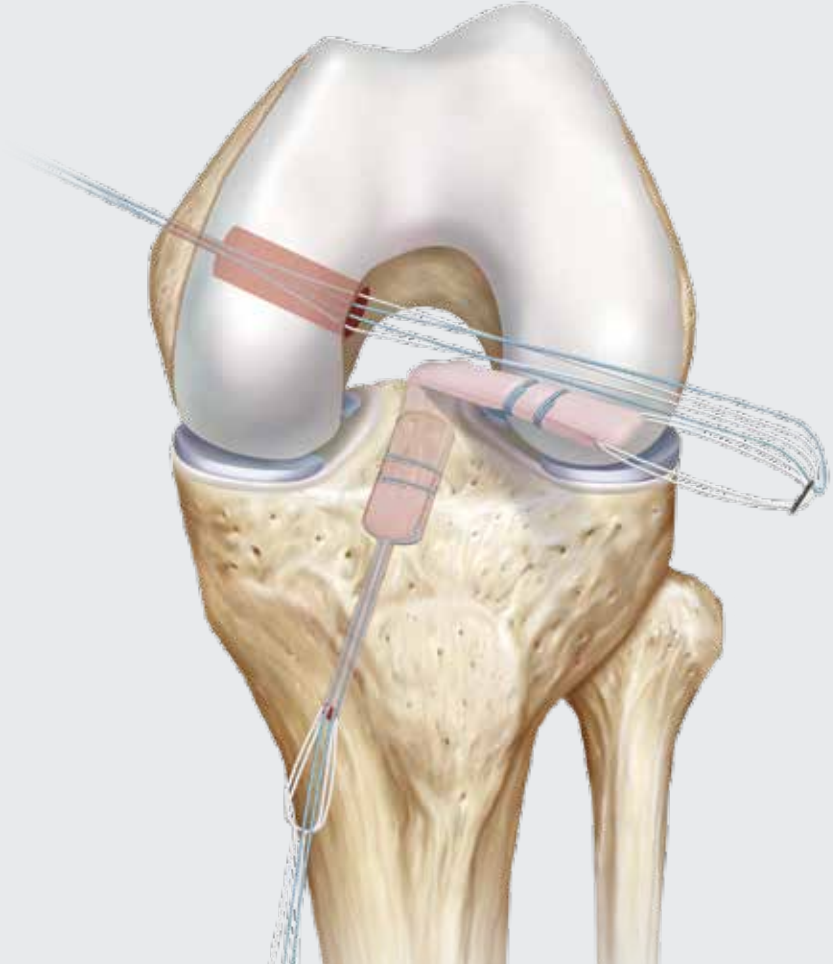
## Graft Passing





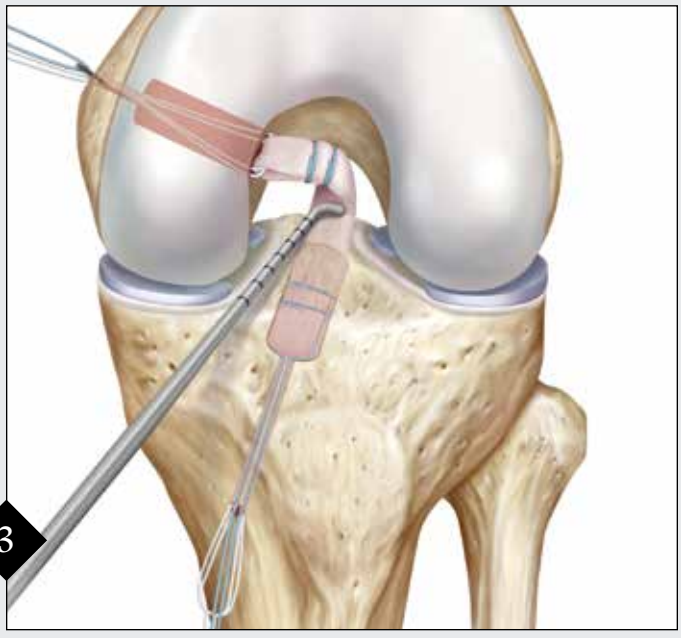
1

Use an additional suture cinched into the loop of the ABS TightRope® implant to act as a locking stitch to prevent premature tightening of the ABS as it is passed through the tibia. Use the FiberStick™ suture to pass the locking stitch and sutures of the ABS TightRope implant. Pass the TightRope through the tibia and retrieve out the anterior cortex. Remove the FiberStick suture. Ensure that the medial portal is large enough to easily pass the GraftLink® construct. If not, increase the incision size or dilate with a hemostat.



2

The graft is inserted deeply into the tibial socket to facilitate passage of the femoral end. 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 with a probe to confirm the button is seated.



3

4

While holding tension on the graft, pull the shortening strands proximally, one at a time, to advance the graft to the desired depth of 25 mm. Pull on each strand in 1 cm increments.

5

To secure tibial fixation, load the shortening strands and the whipstitched sutures into the 14 mm Button or ABS Button. With the knee flexed at 80°, pull the shortening strands distally in 1 cm increments, one at a time, to tension the graft and recreate the normal anterior tibial "step-off." Tie a knot with both the shortening strands and the #2 FiberLoop® sutures for backup fixation.

6

Alternatively, Concave ABS Buttons may be used for the tibial socket or full tunnels. The centering feature maintains button 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 and 20 mm buttons have slots for the TightRope® loop along with 2 holes for additional sutures.

## Ordering Information

| | |
|---|---|
| **Allograft GraftLink® TS Construct**<br>Diameters available: 8.5 mm – 12.5 mm (in 0.5 mm increments)<br>Lengths available: 75 mm – 95 mm (in 1 mm increments) | FGLTS |

### *Implants:*

| | |
|---|---|
| BTB TightRope® Implant | AR-1588BTB |
| Open TightRope ABS | AR-1588TN-1 |
| TightRope ABS Button | AR-1588TB |
| TightRope ABS Button, 14 mm round | AR-1588TB-1 |
| Allograft GraftLink Convenience Pack | AR-1588AL-CP |
| Concave ABS Button, 11 mm w/4 mm collar | AR-1588TB-3 |
| Concave ABS Button, 14 mm w/7 mm collar | AR-1588TB-4 |
| Concave ABS Button, 20 mm w/9 mm collar | AR-1588TB-5 |

### *Instruments:*

#### *For FlipCutter® Technique:*

| | |
|---|---|
| RetroConstruction Drill Guide Set | AR-1510S |
| Anatomic Contour PCL Guide, Left | AR-1510PTL |
| Anatomic Contour PCL Guide, Right | AR-1510PTR |
| Femoral PCL, Hook Arm | AR-1510PF |
| FlipCutter II Drills, long, 6 mm – 13 mm | AR-1204AF-60 – 130 |

#### *For Lateral Portal Technique:*

| | |
|---|---|
| Double Bundle PCL Guide Set | AR-5015S |
| Low Profile Reamer, 5 mm | AR-1405LP |
| Low Profile Reamer, 5.5 mm | AR-1405LP-50 |
| Low Profile Reamer, 6 mm | AR-1406LP |
| Low Profile Reamer, 6.5 mm | AR-1406LP-50 |
| Low Profile Reamer, 7 mm | AR-1407LP |
| Low Profile Reamer, 7.5 mm | AR-1407LP-50 |
| Low Profile Reamer, 8 mm | AR-1408LP |
| Low Profile Reamer, 8.5 mm | AR-1408LP-50 |
| Low Profile Reamer, 9 mm | AR-1409LP |
| Low Profile Reamer, 9.5 mm | AR-1409LP-50 |
| Low Profile Reamer, 10 mm | AR-1410LP |
| Low Profile Reamer, 10.5 mm | AR-1410LP-50 |
| Low Profile Reamer, 11 mm | AR-1411LP |
| Low Profile Reamer, 11.5 mm | AR-1411LP-50 |
| Low Profile Reamer, 12 mm | AR-1412LP |
| Low Profile Reamer, 12.5 mm | AR-1412LP-50 |
| Low Profile Reamer, 13 mm | AR-1413LP |
| TightRope Drill Pin, open | AR-1595T |
| TightRope Drill Pin, closed | AR-1595TC |

### *Accessories*

| | |
|---|---|
| Suture Retriever | AR-12540 |
| Graft Sizing Block | AR-1886 |
| Suture Cutter for ACL TightRope Implant | AR-4520 |
| Flexible Arthroscopy Retractor (FAR) | AR-1262 |

### *GraftPro® Graft Preparation System (AR-2950D) includes:*

| | |
|---|---|
| GraftPro Board | AR-2950D |
| GraftPro Posts | AR-2950AP |
| GraftPro Case | AR-2950DC |
| GraftPro GraftLink Tensioner | AR-2950GT |
| GraftPro GraftLink Holder | AR-2950GH |
| GraftPro Button Holder | AR-2950BH |
| GraftPro Soft Tissue Clamp | AR-2950SC |
| ***OPTIONAL*** | |
| Cutting Board Clamp | AR-2950CBC |

### *Suture*

| | |
|---|---|
| FiberStick™ Suture, #2 FiberWire® Suture, 50" (blue) one end stiffened | AR-7209 |
| TigerStick® Suture, #2 TigerWire® Suture, 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. Postoperative management is patient specific and dependent on the treating professional's assessment. I ndividual results will vary and not all patients will experience the same postoperative activity level or outcomes.*