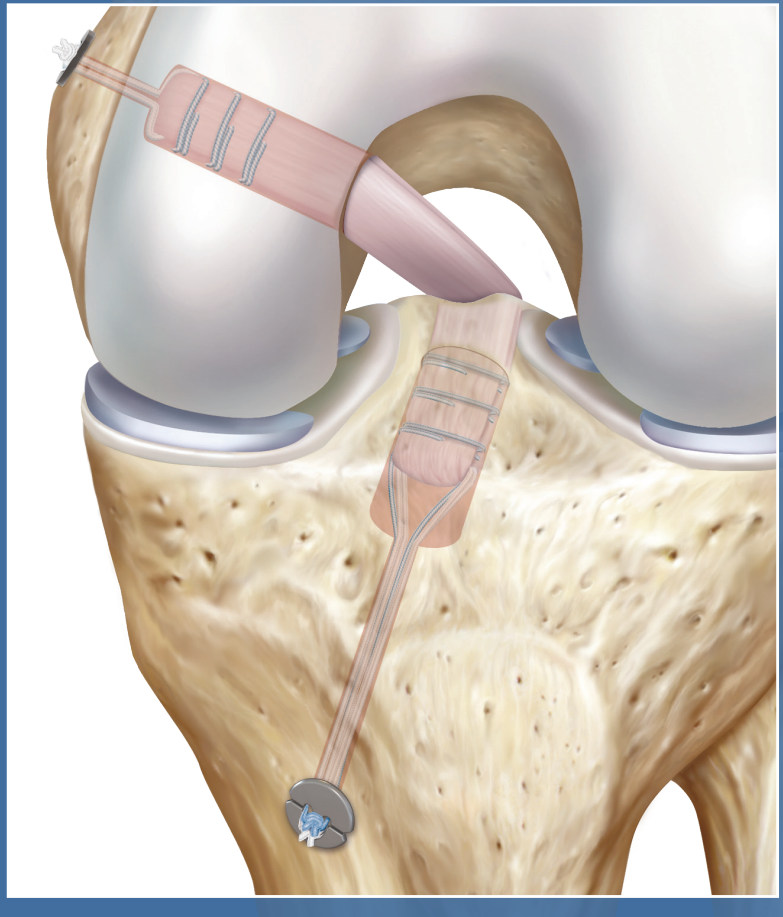
Arthrex®

GraftLink® Minimally Invasive PCL Reconstruction

Surgical Technique



GraftLink PCL Reconstruction

GraftLink® Minimally Invasive PCL Reconstruction

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

Anatomic

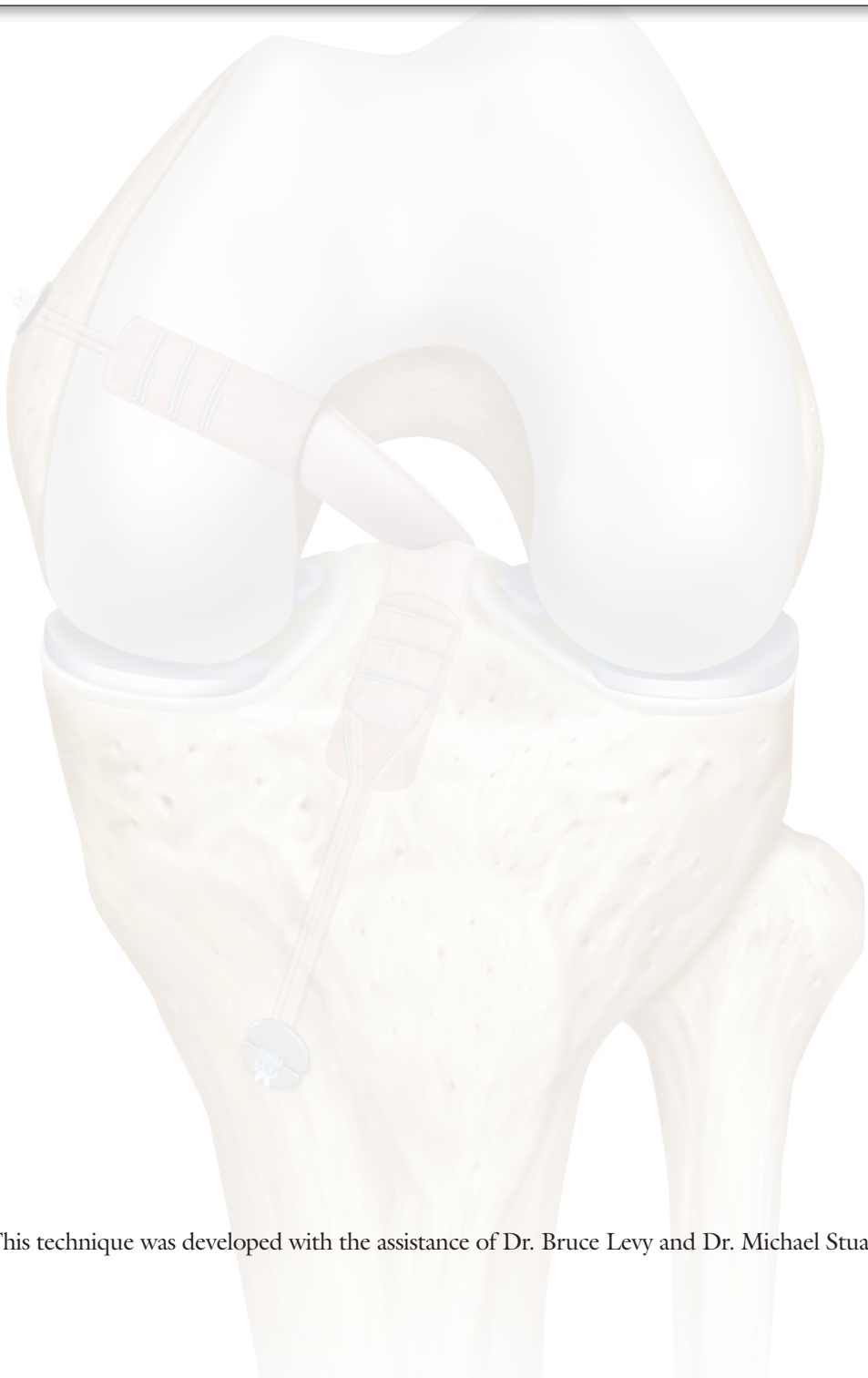
Independent tibial and femoral socket preparation with FlipCutter® II and/or Low Profile Reamers facilitates unconstrained placement of the PCL graft.

Minimally Invasive

Socket preparation with the FlipCutter II limits soft tissue dissection and preserves bone and periosteum.

Reproducible

The GraftPro™ workstation simplifies graft preparation.The tapered graft and adjustable femoral and tibial TightRope® buttons facilitate graft passing, fine tuning of graft depth, and graft tensioning from the femoral and tibial sides.

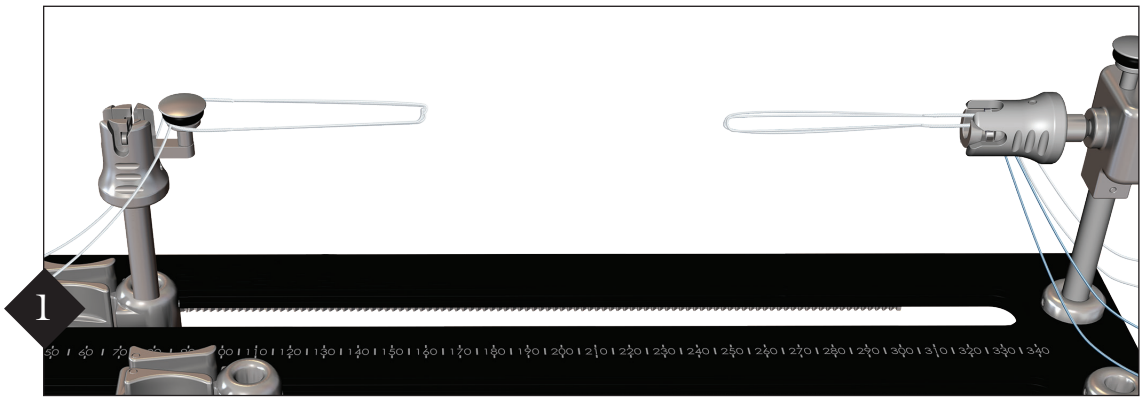


This technique was developed with the assistance of Dr. Bruce Levy and Dr. Michael Stuart

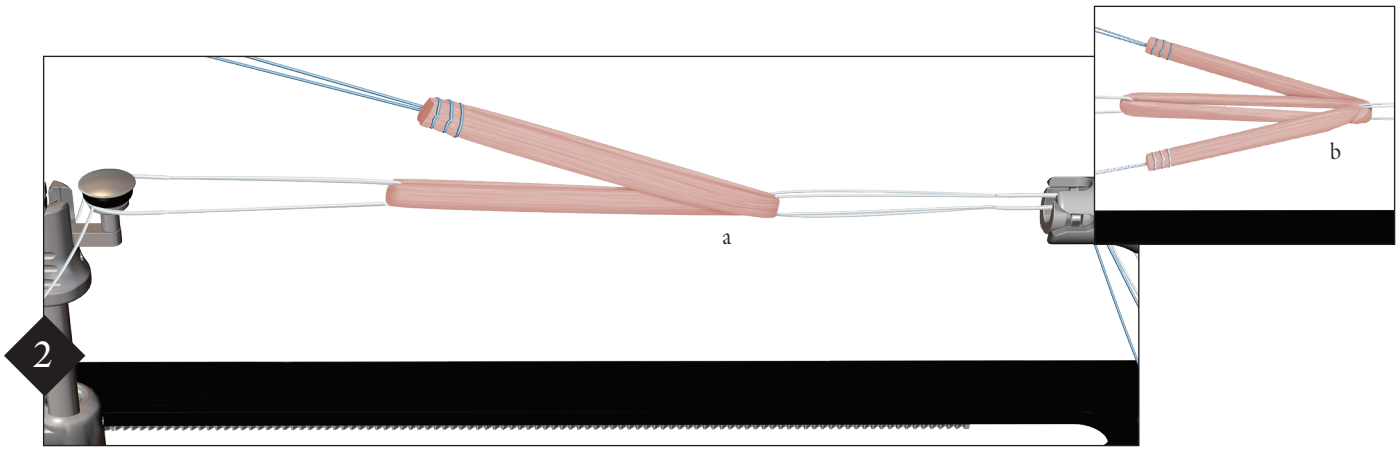
Tendon Graft and GraftLink® Preparation

In most cases, only a tibialis anterior, posterior tibialis or peroneus longus tendon is needed to create the PCL GraftLink construct.

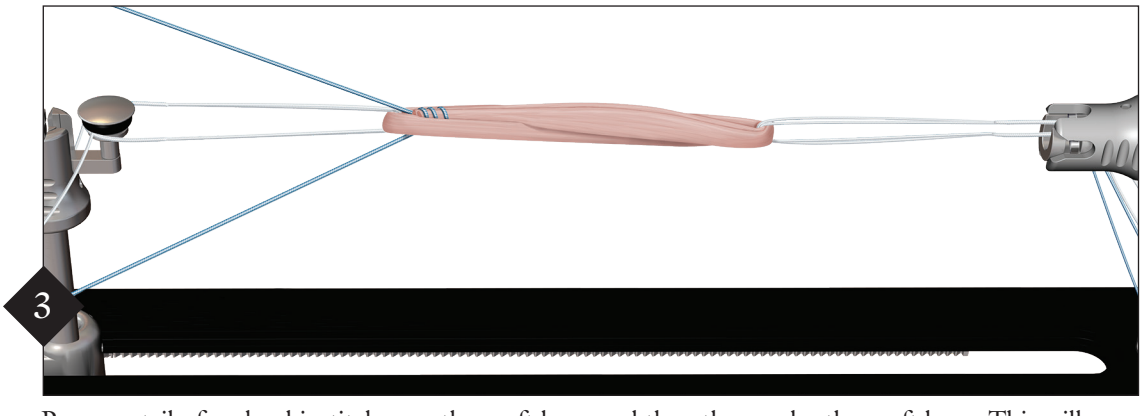
The GraftPro™ GraftLink prep attachments are placed on the base and the ACL TightRope® RT and ABS loop are loaded. The distance between the TightRope loop ends is measured. This distance should equal 10 mm less than the desired final graft length.



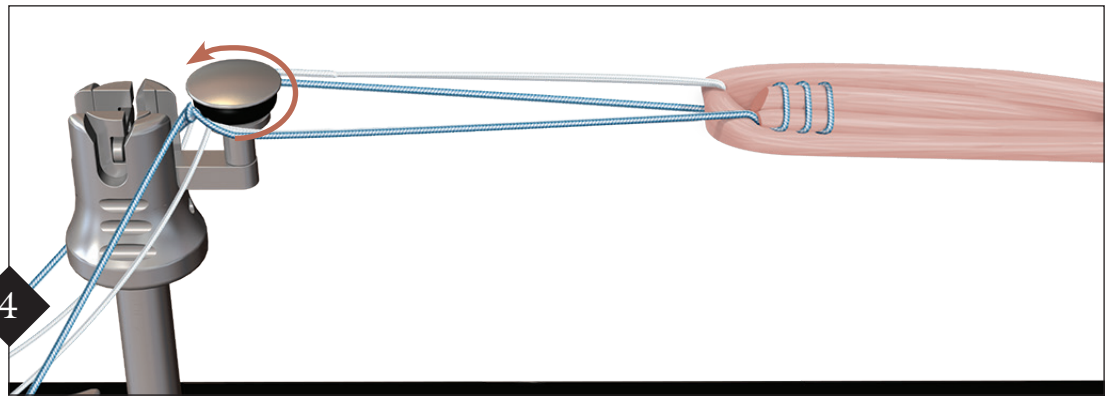
The overall graft length is measured. ***Note: A length of 36 cm will yield a four-stranded GraftLink of at least 90 cm, which will provide at least 20 cm of graft in the femoral and tibial sockets. If a 35 cm graft isn't available, a tripled GraftLink constuct may be used using the technique shown on Arthrex.com.***



Both graft ends may be stitched together with a single #2 FiberLoop after passing the graft through the PCL TightRopes (a). Load the graft through the implants by folding it symmetrically over the loops. Alternatively, stitch approximately 2 cm of each graft end with one #2 FiberLoop® and one #2 TigerLoop™ suture (b).



Pass one tail of each whipstitch over the graft loop and the other under the graft loop. This will ensure that the tails of the graft are tucked inside the loop during tensioning, which will facilitate tapering of ends and uniform thickness of the graft.



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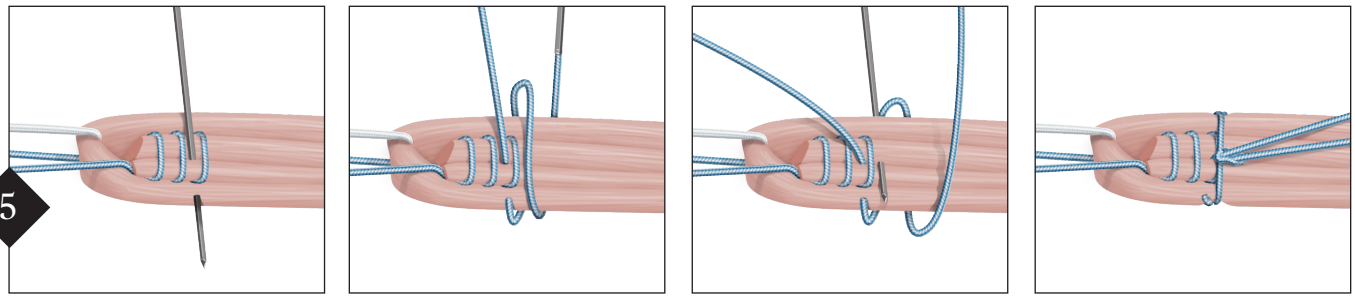
Once the graft is folded properly and the desired length is obtained, wrap the whipstitch sutures around the post and hold the construct in place.



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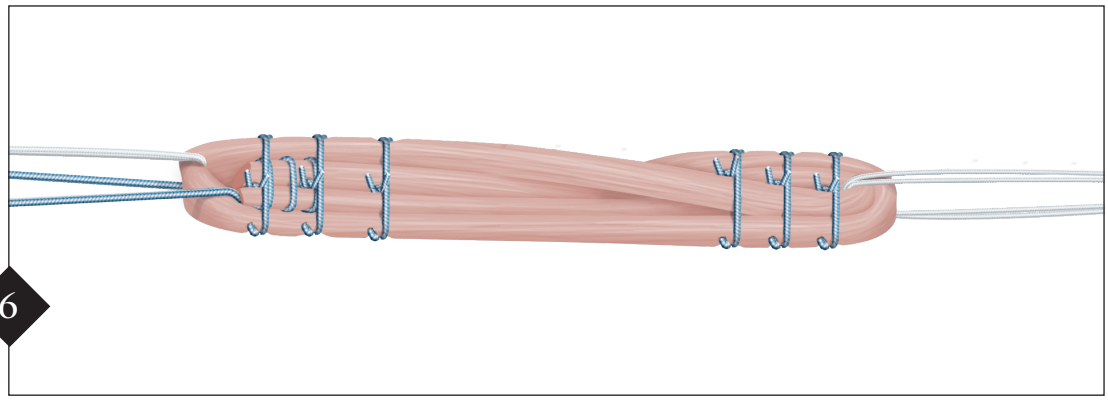
The first stitch may now be placed. Using a “buried-knot” technique, start from the inside of the graft and place the needle through the first two graft limbs. Wrap the suture around the graft then place the needle through the second set of graft limbs from outside/in. Tension the suture and tie a knot to secure the stitch.



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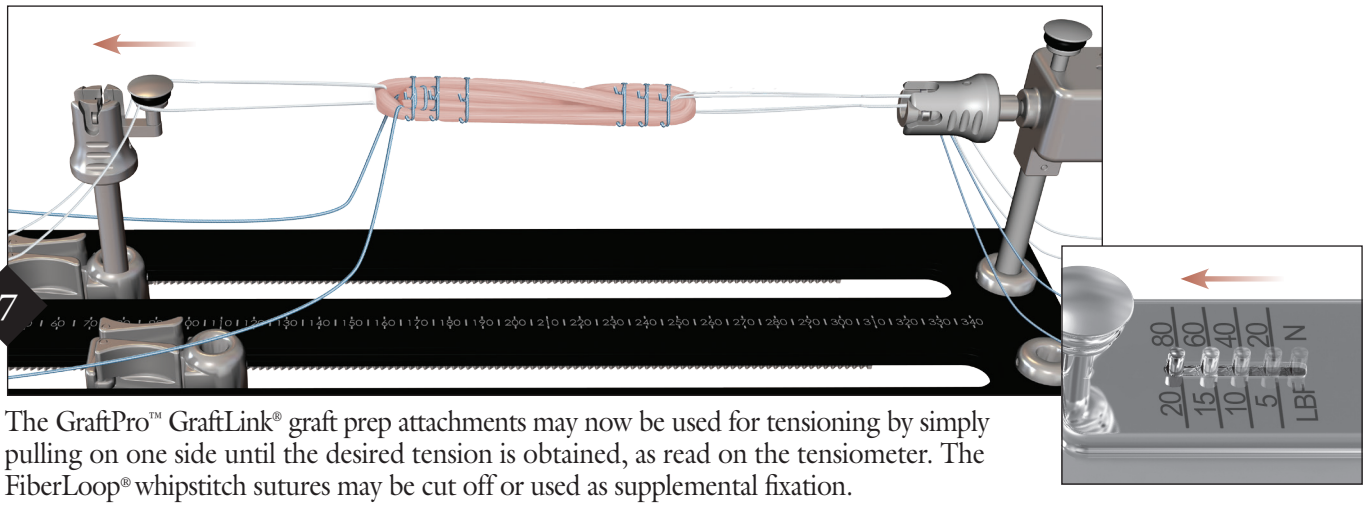
This may be repeated on either end of the graft for a total of three stitches on each end. The graft should be between 10-12 mm depending on the size of the patient. The circular stitches should be placed within 25 mm from the end of the graft.



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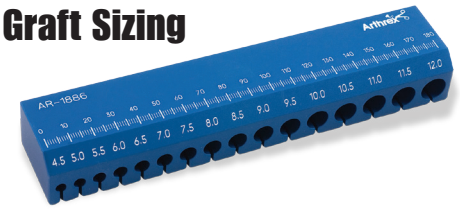
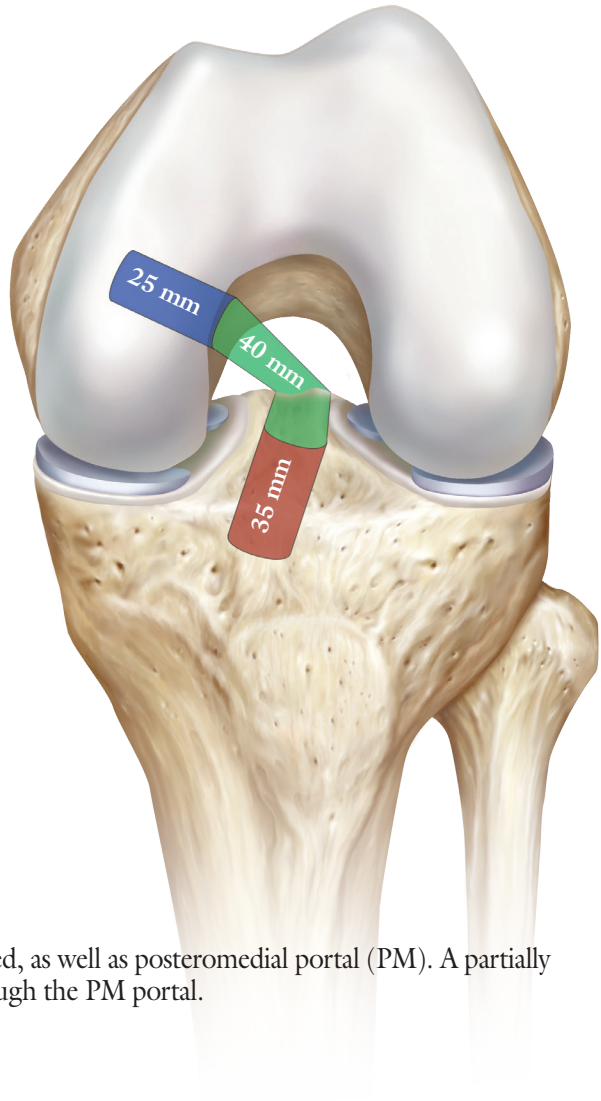
The GraftPro™ GraftLink® graft prep attachments may now be used for tensioning by simply pulling on one side until the desired tension is obtained, as read on the tensiometer. The FiberLoop® whipstitch sutures may be cut off or used as supplemental fixation.

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.



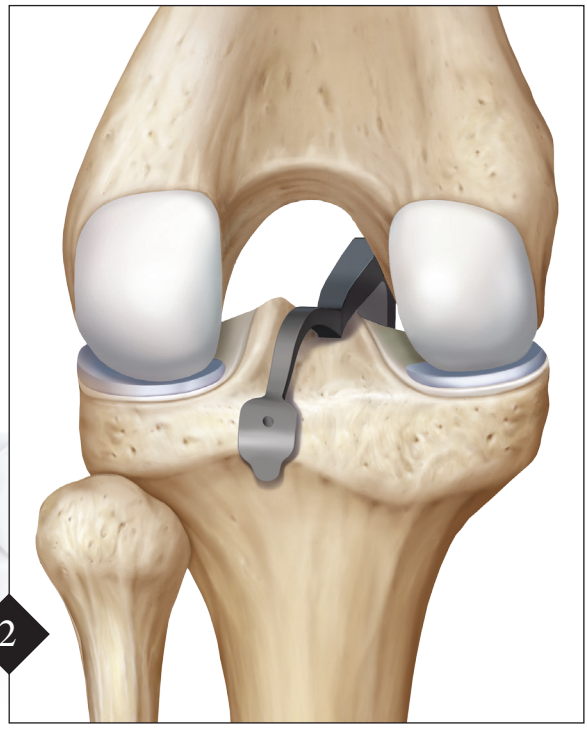
Socket Creation

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.

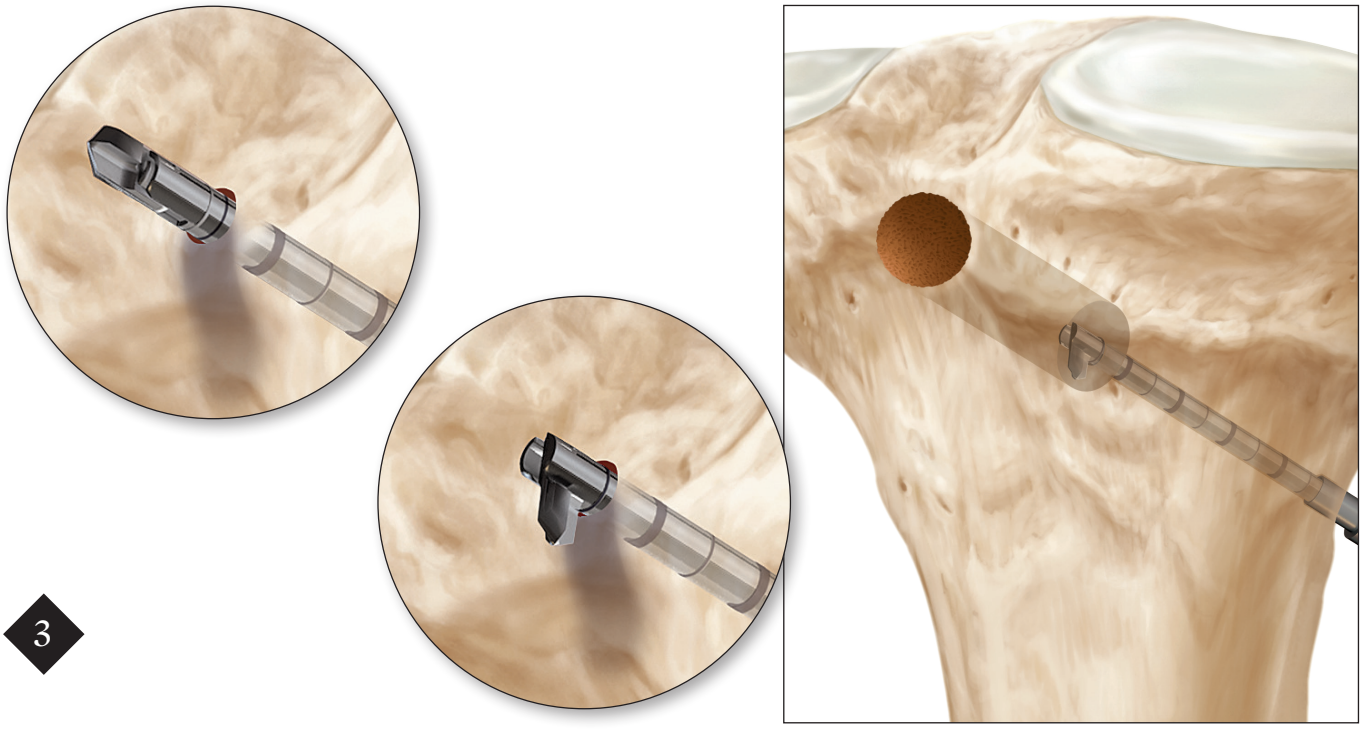
Example: 90 mm graft length

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.



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 mamillary 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.



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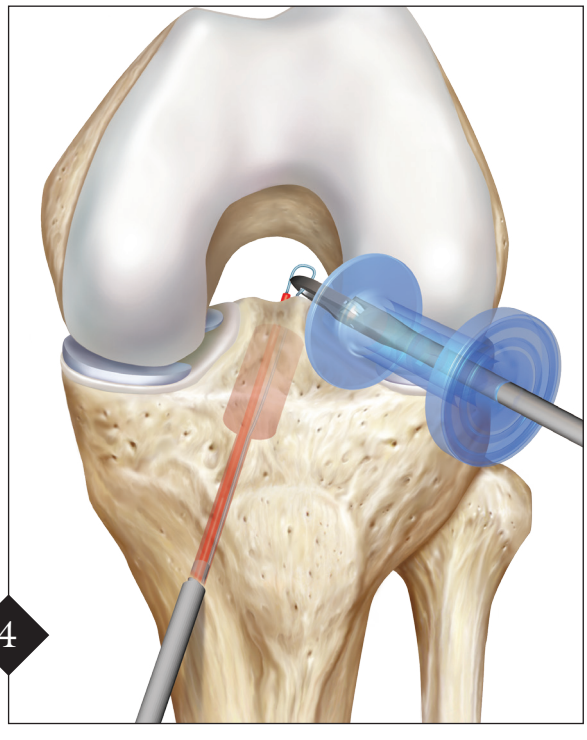
Once the FlipCutter® reamer exits the posterior cortex, push the button on the blue hub and slide forward to flip the cutting tip into the retrograde reaming position.

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.



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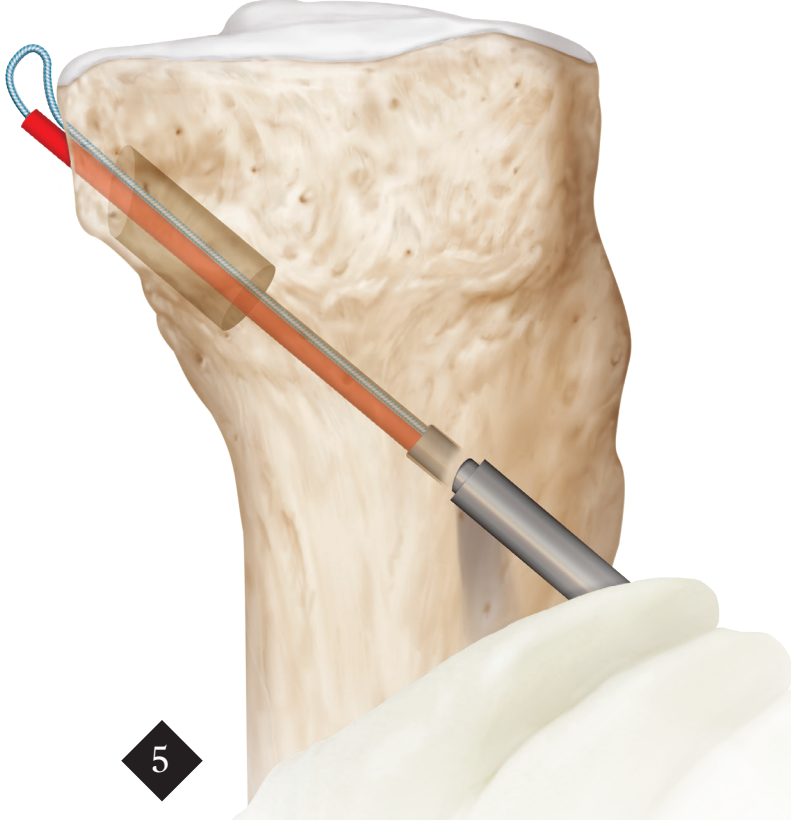
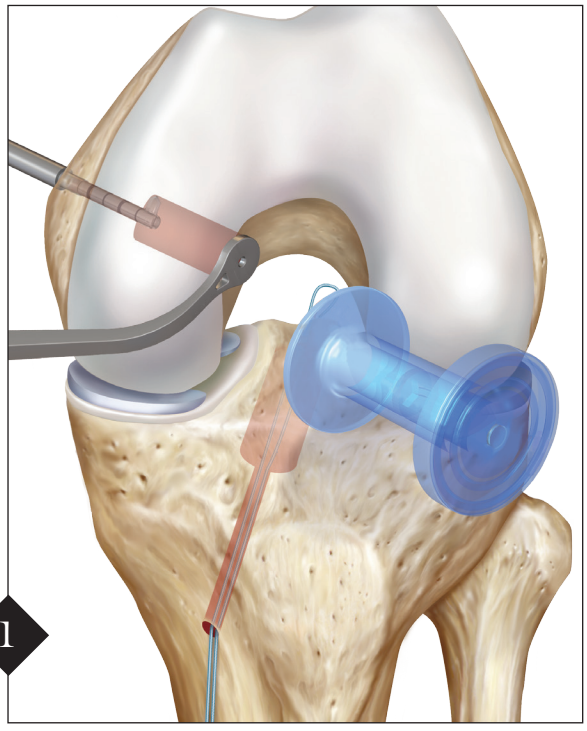


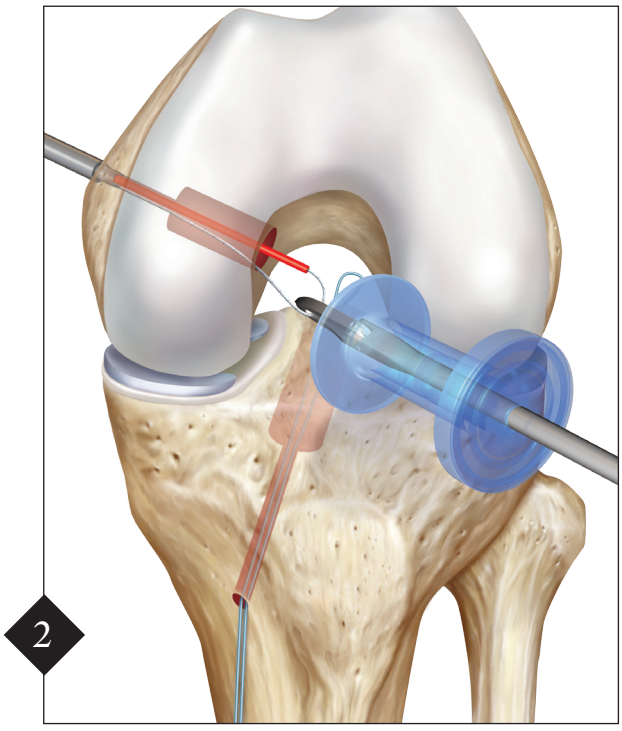
5

Remove the FlipCutter 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.

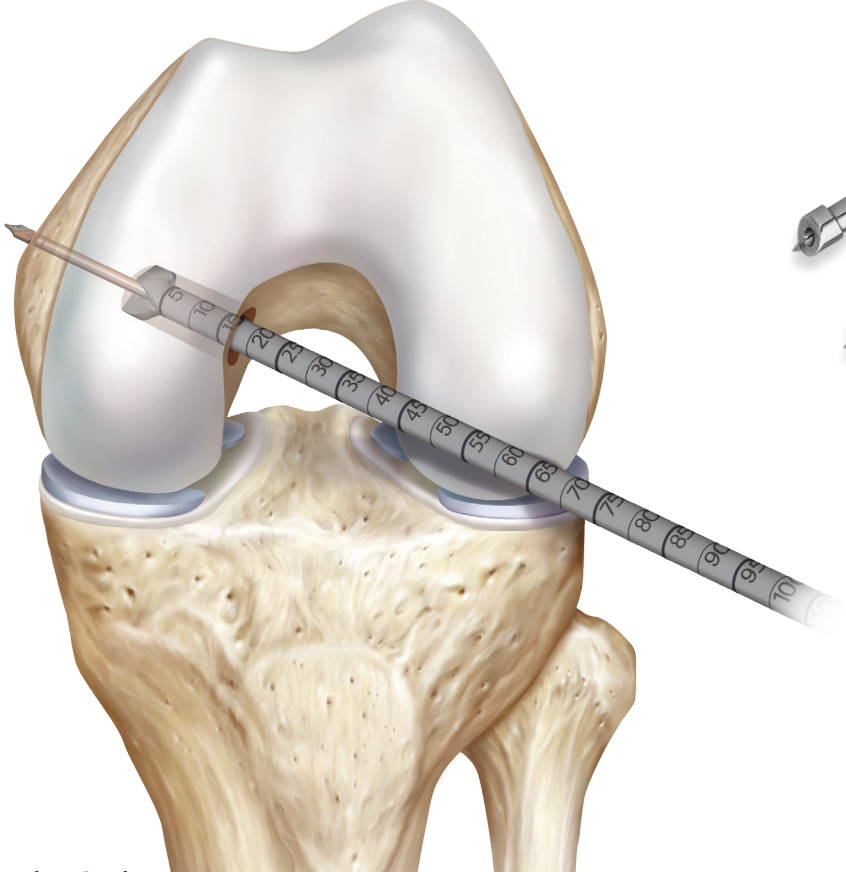
Femoral Socket Preparation w/FlipCutter® Reamer

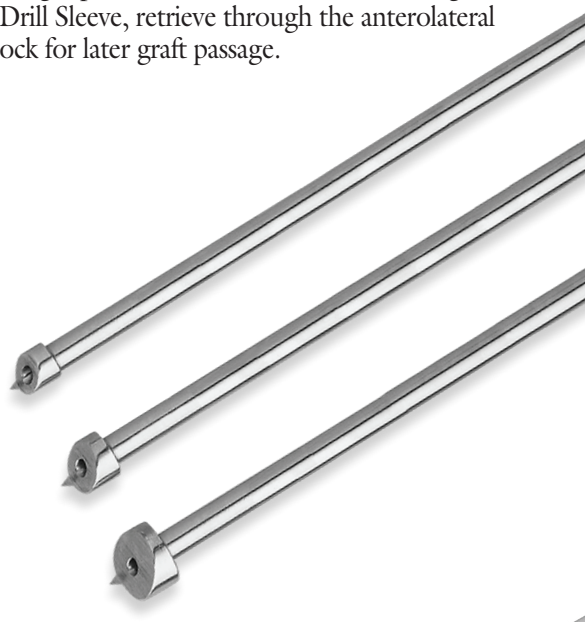


The FlipCutter may also be used to create the femoral socket. Note the intraosseous length on the Drill Sleeve when pushed down to bone.



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





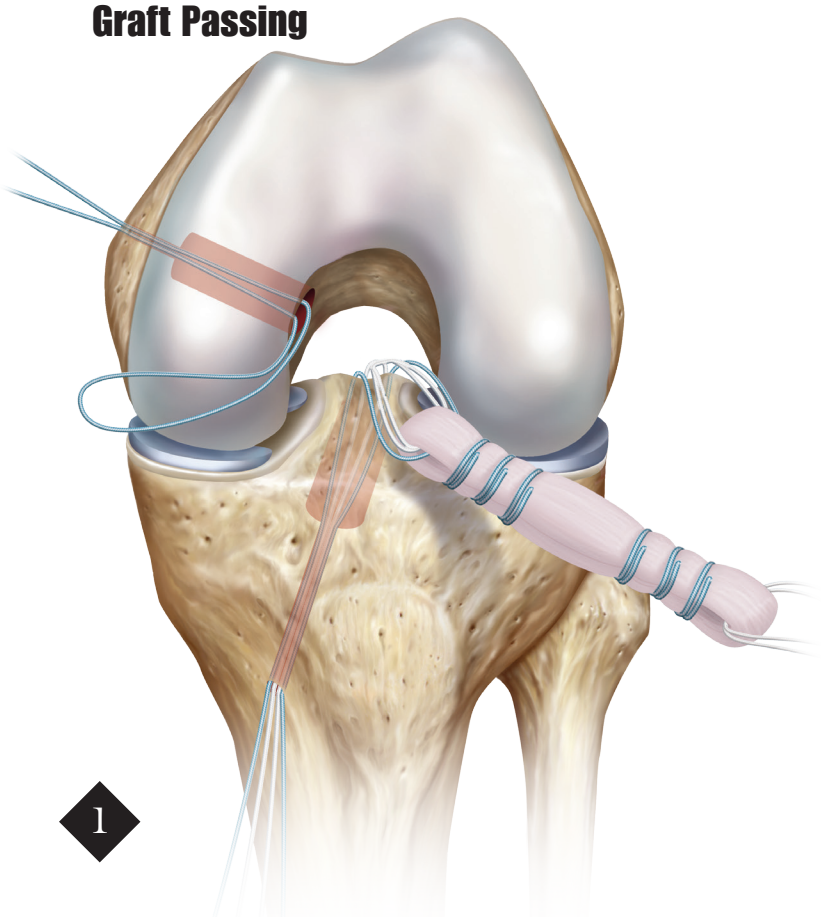
Double Bundle PCL Guides

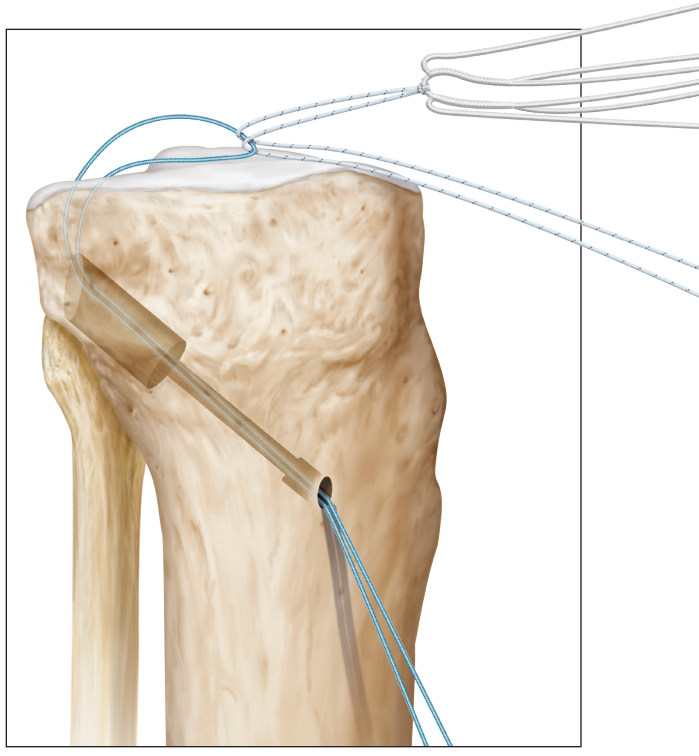
Low Profile Reamers

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





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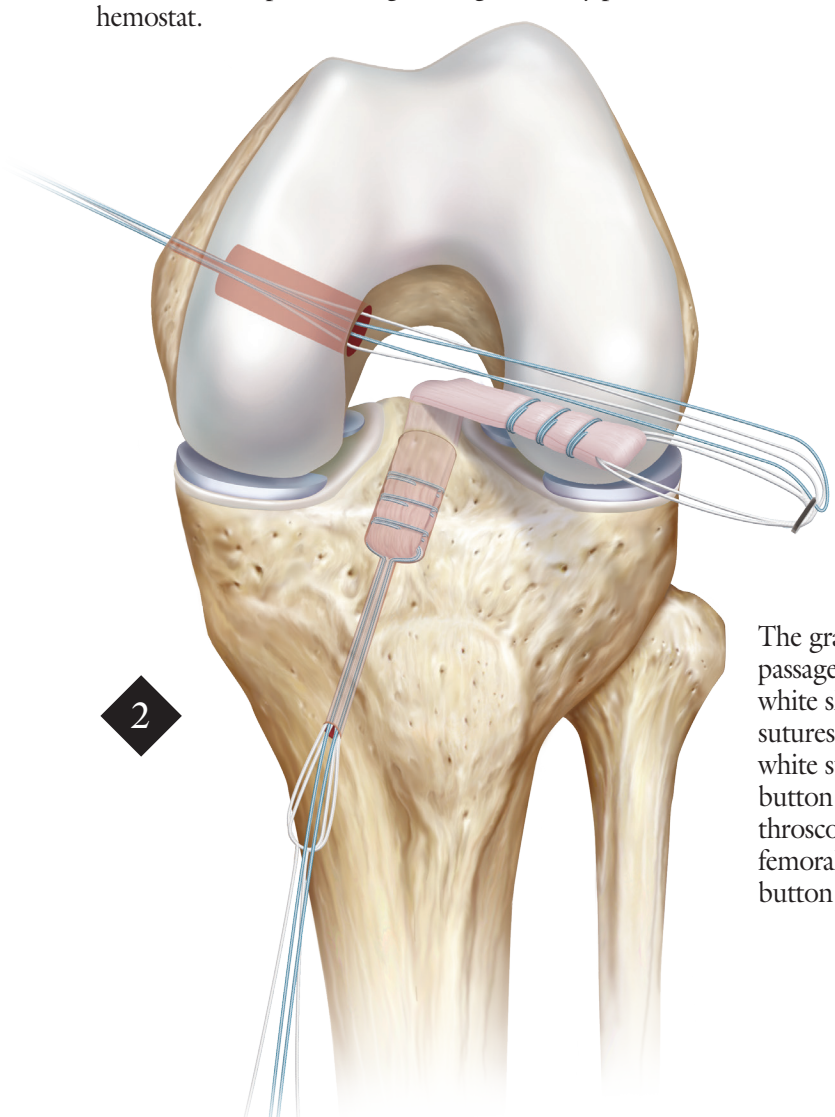
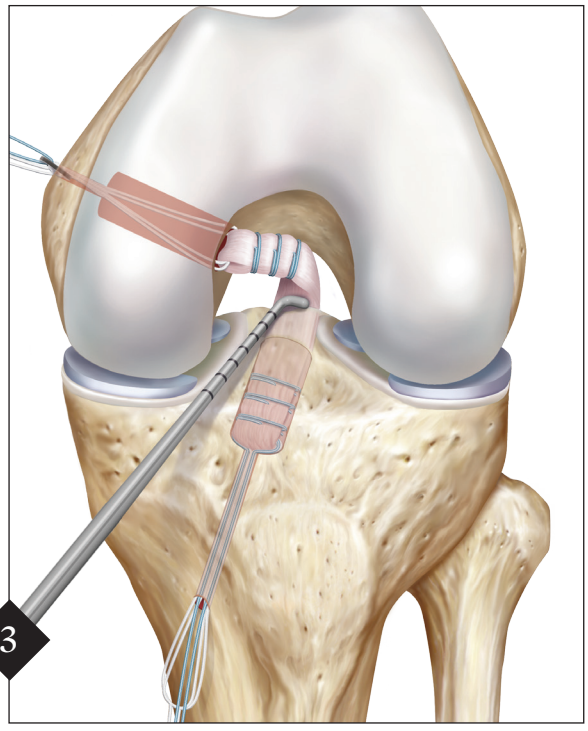
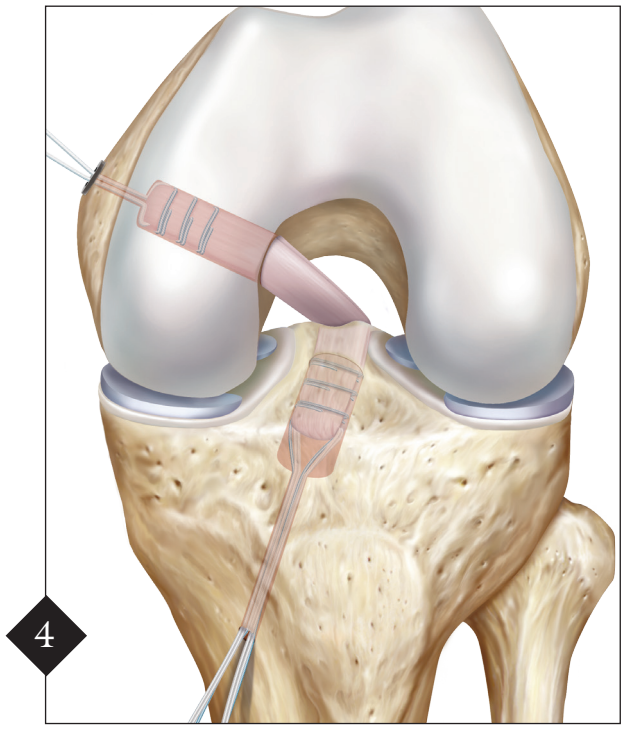
Use an additional suture cinched into the loop of the ABS TightRope® implant to act as a locking stitch to prevent premature tightening of the ABS as it is passed through the tibia. Use the FiberStick to pass the locking stitch and sutures of the ABS TightRope. Pass the TightRope through the tibia and 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.



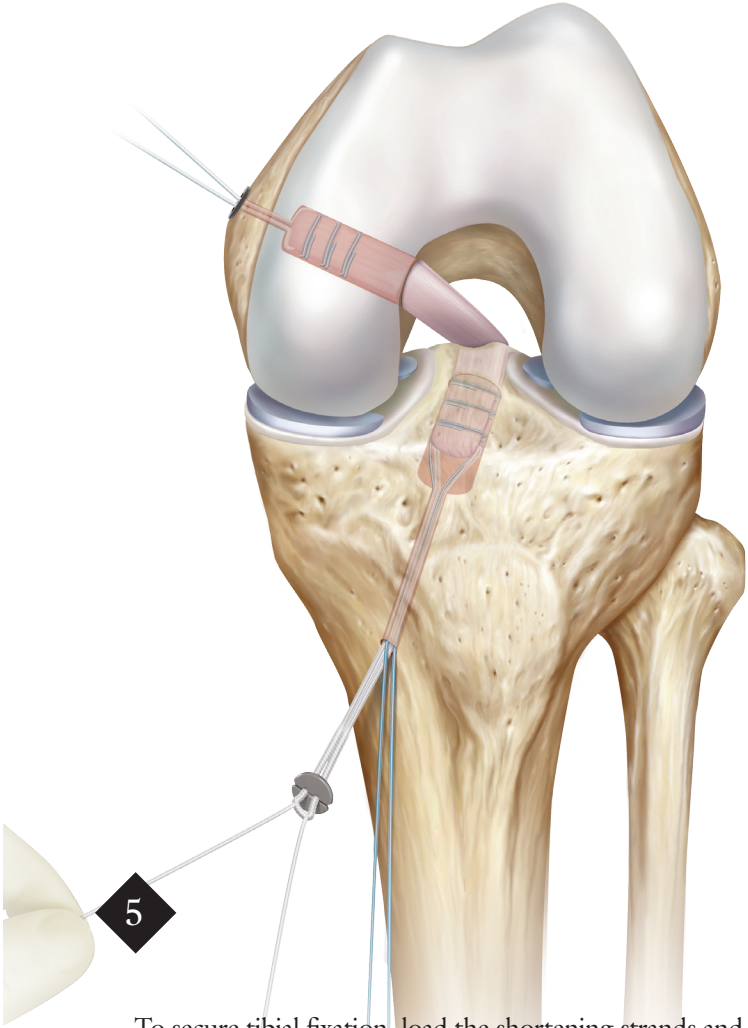
2

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.

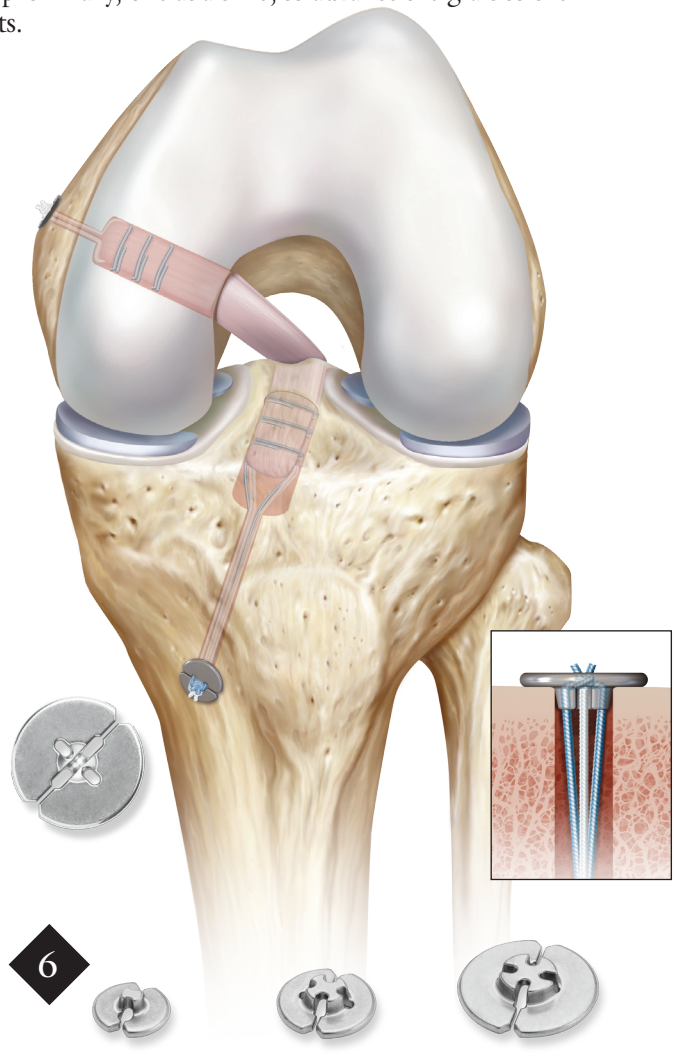




While holding tension on the graft, pull the shortening strands proximally, one at a time, to advance the graft to the desired depth of 25 mm. Pull on each strand in 1 cm increments.



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, one at a time, to tension the graft and recreate the normal anterior tibial "step-off". Pull on each strand in 1 cm increments. Tie a knot with both the shortening strands and the whipstitched sutures for backup fixation.



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 and 20 mm buttons have slots for the TightRope® loop along with two holes for additional sutures.

Ordering Information

Implants:

ACL TightRope RT	AR-1588RT
TightRope ABS	AR-1588TN
TightRope ABS Button	AR-1588TB
ACL TightRope Convenience Pack	AR-1588RTS
TightRope ABS Button, 14 mm round	AR-1588TB-1
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 IIs, 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	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

0 FiberWire, 38" (blue) w/Tapered Needle, 22.2 mm 1/2 circle	AR-7250
FiberStick, #2 FiberWire, 50" (blue) one end stiffened	AR-7209
TigerStick, #2 TigerWire, 50" (white/black) one end stiffened	AR-7209T
#2 FiberLoop w/Straight Needle, 20" (blue), 76 mm needle w/7 mm loop	AR-7234
#2 TigerLoop w/Straight Needle, 20" w/TigerWire (white/green), 76 mm needle w/7 mm loop	AR-7234T
#2 FiberWire, w/Straight Needle	AR-7246
#2 FiberWire, w/Two Straight Needles	AR-7246-02

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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