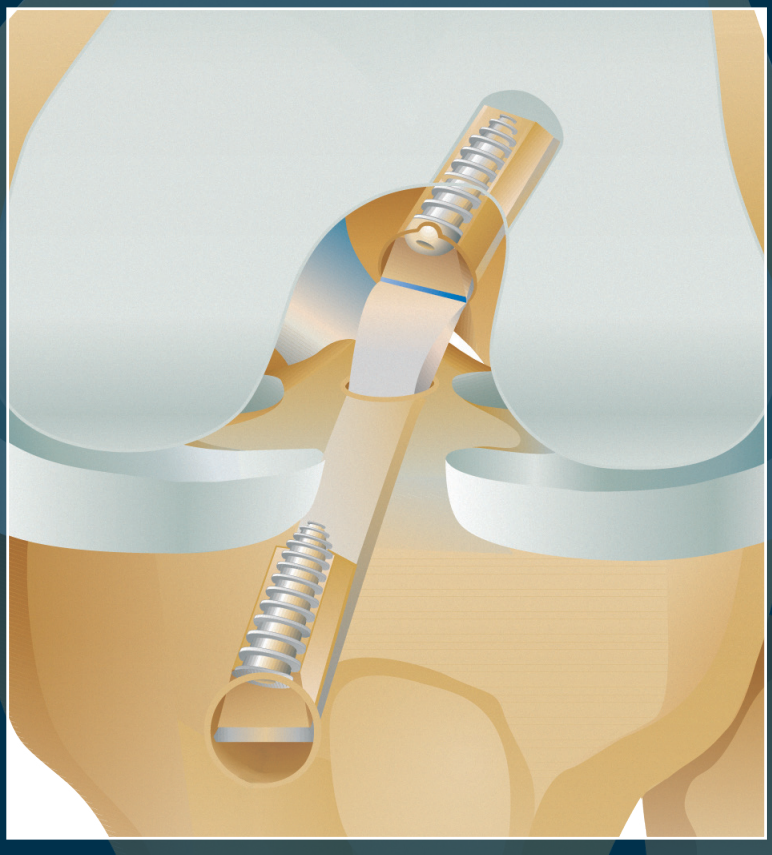
Arthrex®

Transtibial ACL Reconstruction for BTB Grafts

Surgical Technique

ACL Reconstruction for BTB Grafts



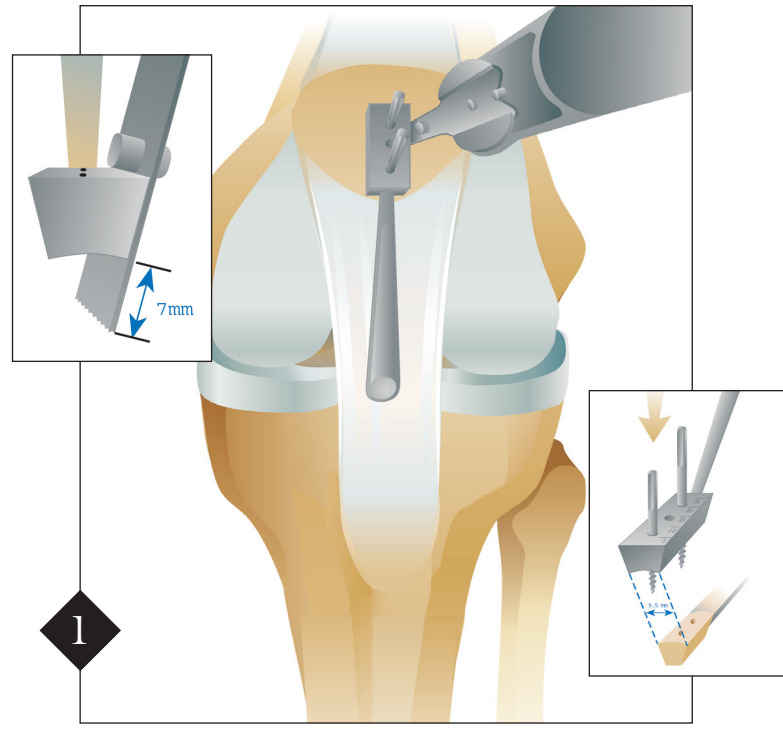
Reference Anatomical Constants for Reliable, Reproducible ACL Reconstruction

The Transtibial ACL Reconstruction System offers the orthopedic surgeon instrumentation that provides reliable, reproducible ACL tunnel and socket placement.

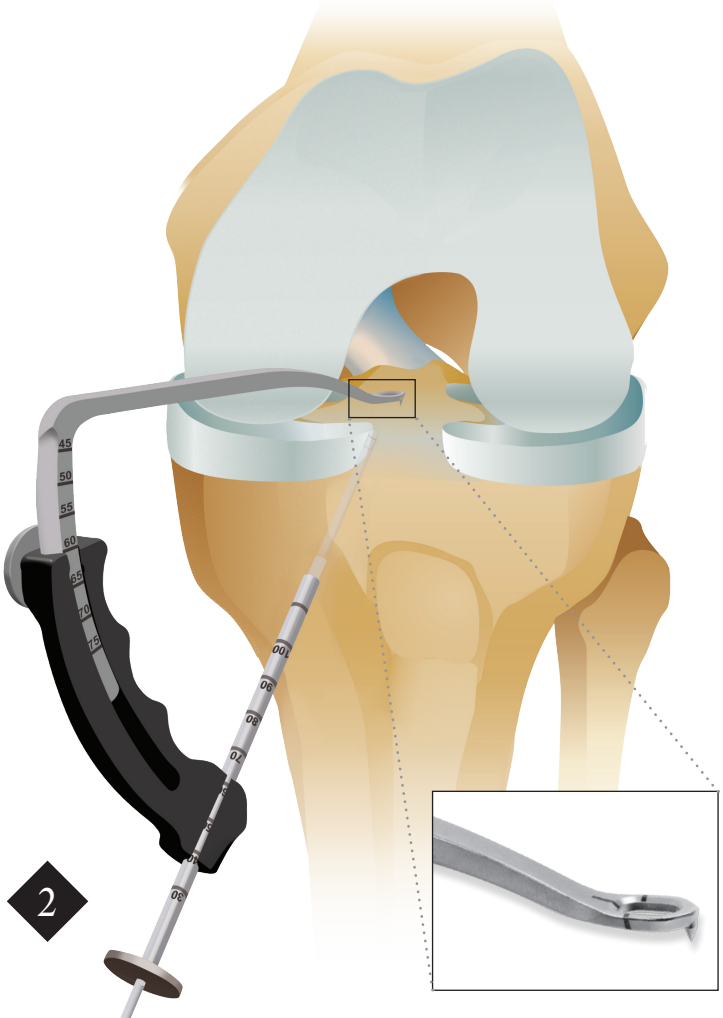
The Transtibial Femoral ACL Drill Guide allows precise guide pin placement by referencing the over-the-top position to reliably produce a femoral tunnel with a consistent cortical backwall.

Biocomposite and PEEK Interference Screws are specifically designed for the single-incision technique to help protect the ACL graft during screw insertion. Arthroscopic insertion of interference screws provides superior fixation of the graft against the posterior rim of the femoral tunnel and eliminates migration of the graft to the anterior rim of the tunnel in extension.

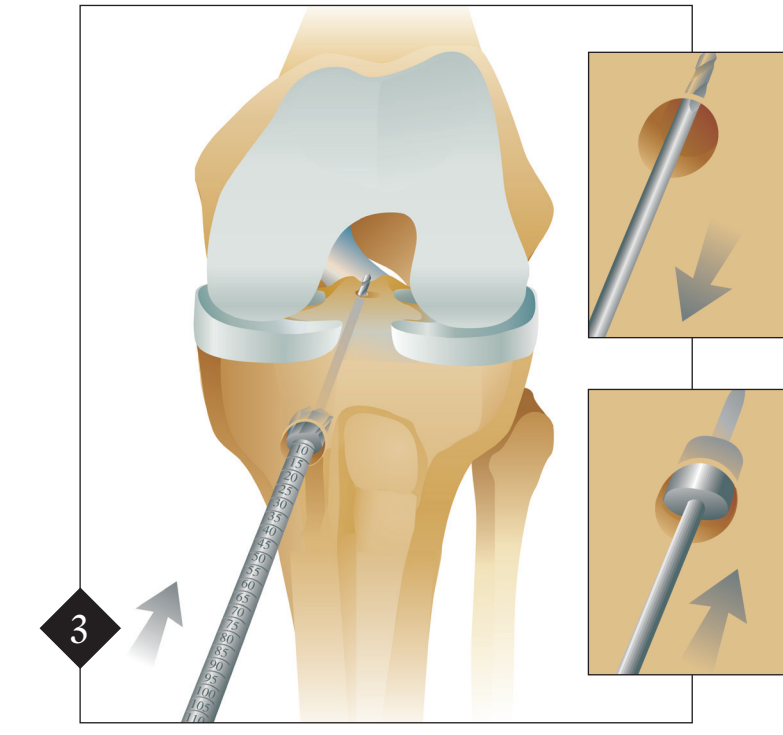
Special graft harvesting guides facilitate precise, reproducible patellar tendon harvesting. Saw blades with 7 mm depth markings provide precise depth control. If desired, round bone plugs may be harvested from the tibial or femoral tunnel to graft patellar-bone-tendon harvest sites.



Trapezoidal saw guides in 8.5 mm, 9.5 mm and 10.5 mm widths and 25 mm length facilitate precise trapezoidal-shaped bone block harvesting. The appropriately sized guide is placed on the patella and two 2 mm diameter pins with depth stop are drilled to stabilize the guide and create graft-passing suture holes in the bone block. A special saw blade with 7 mm depth stop is used to create a precisely sized bone block. The Parallel Knife Blade in 9 mm, 10 mm or 11 mm width may be used to harvest the desired width of tendon. After harvest, bone blocks are secured with #2 FiberWire® suture, graft diameter is confirmed with the Graft Sizing Block and the graft is placed on the GraftPro® workstation. A methylene blue line is created at the bone/tendon junction.



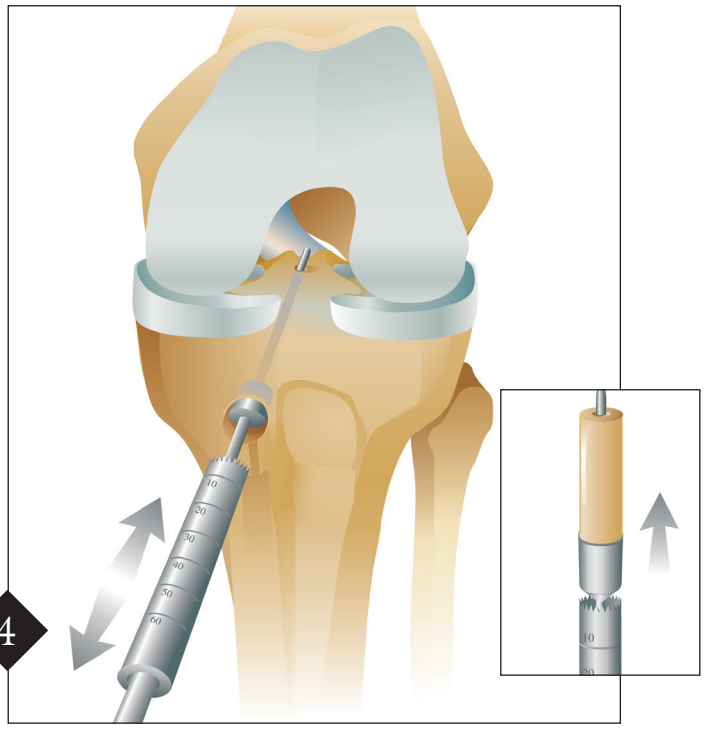
The Tibial Marking Hook is inserted through an anteromedial portal with the knee in 90° of flexion. The Footprint Marking Hook helps replicate the tunnel diameter (8 mm x 10 mm) allowing reference from anatomic constants. The guide angle is adjusted to place the guide sleeve 1 cm above the pes anserinus and 2.0 cm medial of the tibial tubercle to obtain sufficient tibial tunnel length for the graft. The 2.4 mm Drill Tip Guide Pin is introduced into the Guide Pin Sleeve with drilling initiated prior to cortical bone contact, maximizing pin accuracy. The guide pin exits through the marking hook. The guide sleeve, marking hook and guide handle are removed and correct pin position is confirmed.



If a standard tibial tunnel is desired, an appropriate diameter full-thickness Cannulated Drill *(not shown)* is used to create the tibial tunnel.

If a round-bone graft from the tibial tunnel is desired to graft patellar tendon harvest sites, a Coring Reamer may be selected.

The cortical bone is drilled to a depth of 1 cm with a Headed Reamer 1 mm larger in diameter than the desired Coring Reamer. The guide pin is removed and replaced with a collared pin.



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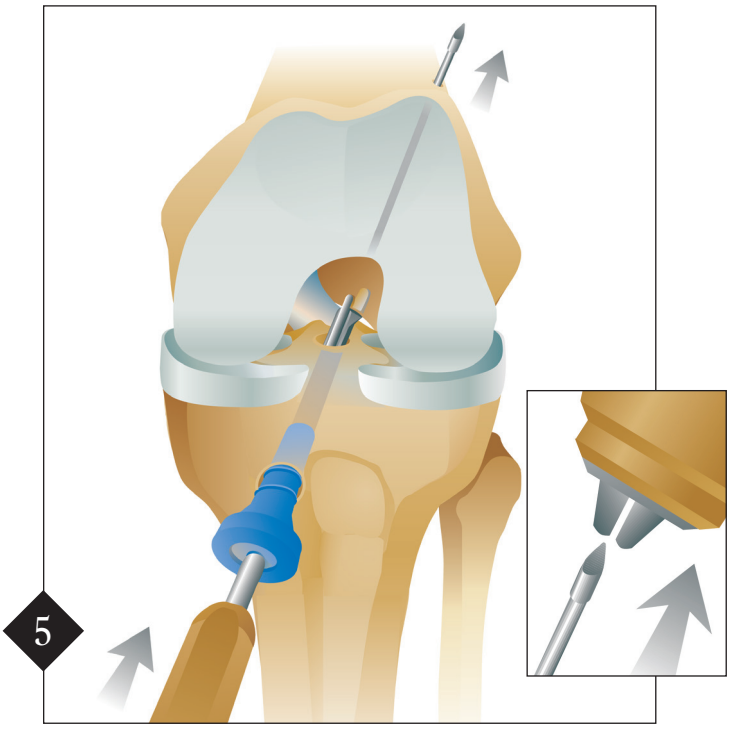
The appropriate diameter Cannulated Drill or Coring Reamer is introduced over the pin and gently drilled until the reamer exits the tibia. The Coring Reamer also eliminates bony debris in the joint while creating a smooth tibial tunnel. After the reamer is removed, the guide pin exiting the drill handpiece is tapped, extracting the round bone graft. The graft may be split for grafting tibial and patellar harvest sites. The tunnel rim may be further smoothed with a Tunnel/Notchplasty Rasp.



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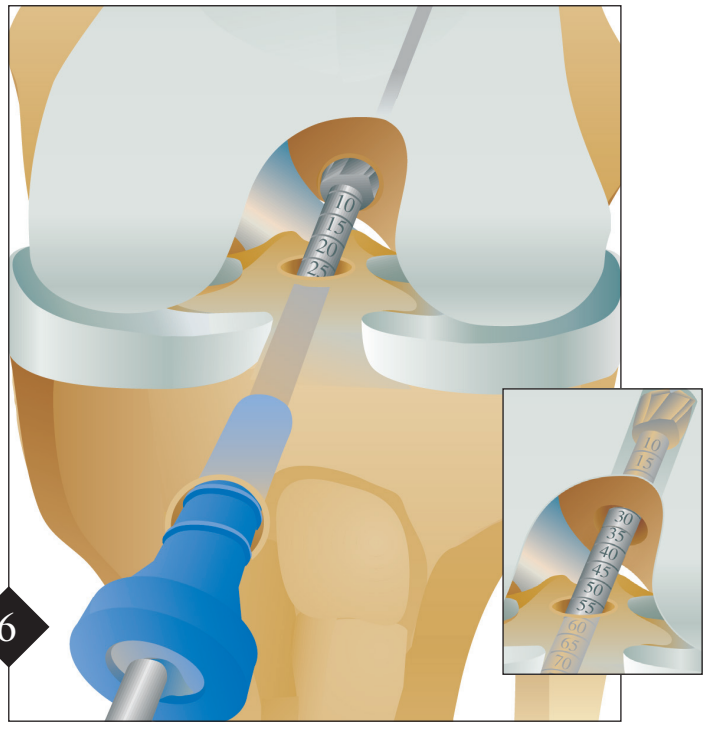
The blue tibial tunnel cannula is placed in the tibial tunnel to reduce fluid loss. The appropriate offset Transtibial Femoral ACL Drill Guide (TTG) is selected based on the required femoral socket diameter. *(For example, a 7 mm TTG is commonly selected for a 10 mm tunnel, leaving a 2 mm backwall.)*

A plastic Backflow Cap added to the end of the handle prevents fluid backflow. The femoral guide is inserted through the tibial cannula and the tip placed against the over-the-top position. Alternatively, the guide may be inserted through the anteromedial portal in maximum flexion. The 2.4 mm guide pin with suture eyelet is drilled through the guide and exits the lateral thigh. The Jacob's Chuck Handle is placed over the guide pin to aid in pin extraction.



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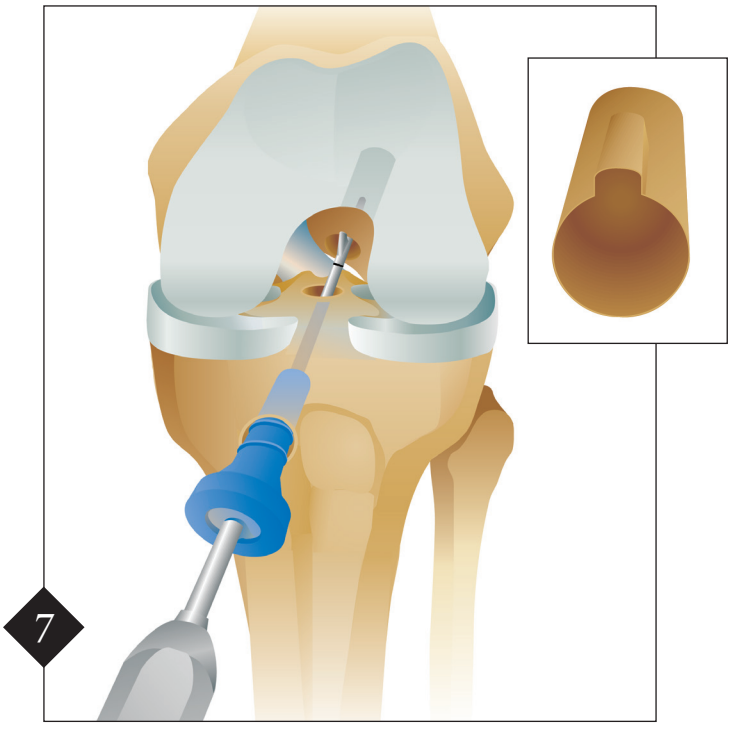
The appropriate diameter Cannulated Headed Reamer is inserted through the tibial tunnel and past the PCL. A drilling depth of 30 mm is confirmed with the 5 mm graduated depth markings to fully accommodate the 25 mm length bone block. If the guide pin is placed through the anteromedial portal, the headed reamer is inserted over the guide pin through the anteromedial portal with the knee in maximum flexion.



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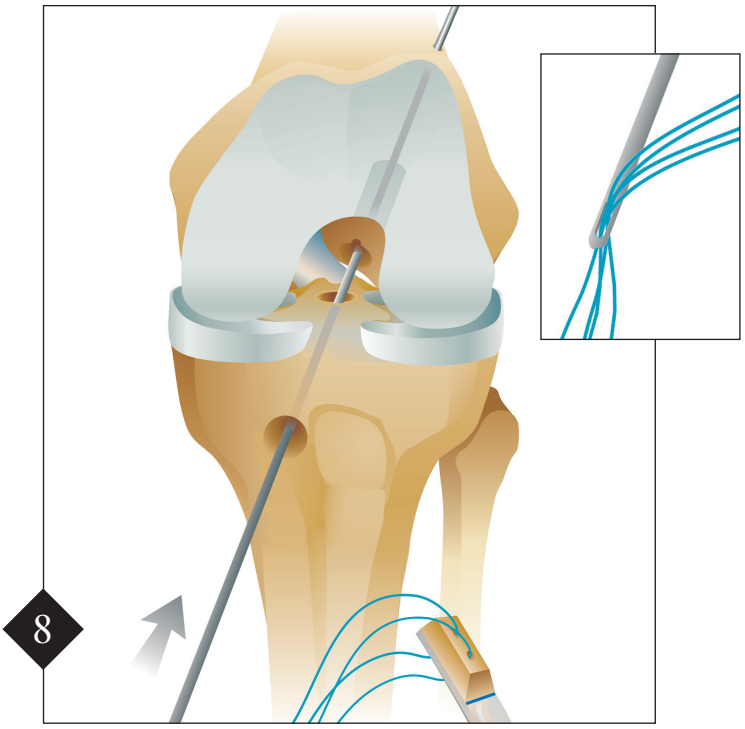
A Tap may be used at this point for Biocomposite Screws. A notch is created in the femoral socket with the Tunnel Notcher and tapped once the graft in is place for Biocomposite Screws, to ease interference screw placement. The notcher may be placed through the tibial tunnel or anteromedial portal. The notcher is tapped lightly with a mallet until the laser depth mark is flush with the femoral socket rim.



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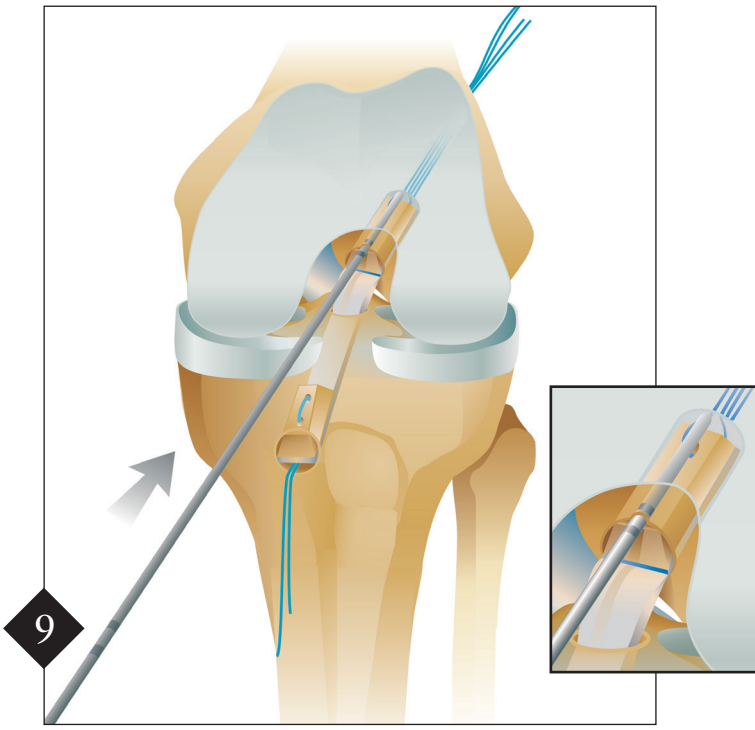
#2 FiberWire® sutures are placed in the suture eye of the graft-passing guide pin and the pin is pulled. The graft is pulled into the femoral socket through the tibial tunnel with the help of a probe. The methylene blue line should be flush with the femoral socket rim and the tendon fibers oriented posteriorly.



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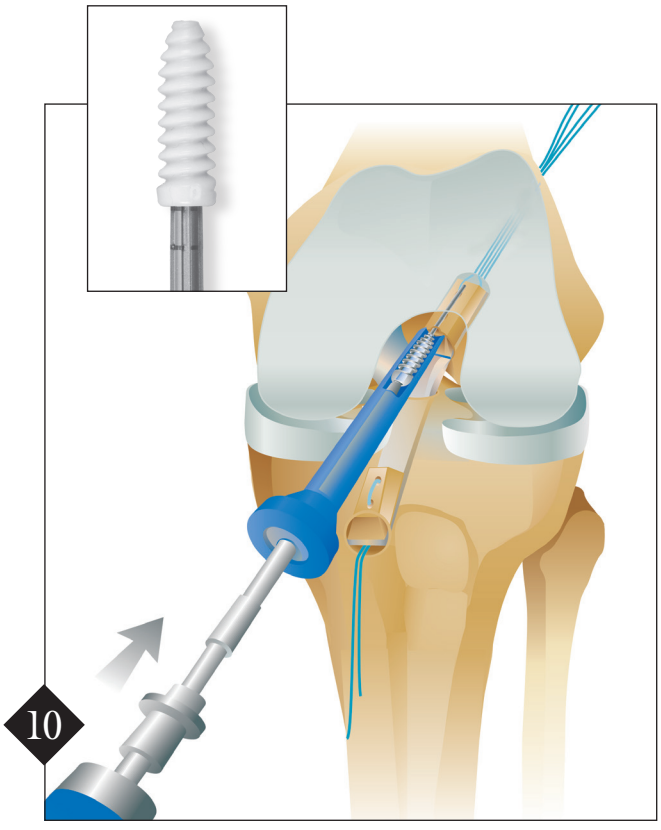
The knee is placed to at least 120° of flexion and the Nitinol guide pin is inserted through the anteromedial portal up to the second laser line. A disposable Guide Wire Introducer facilitates accurate placement of 1.1 mm diameter guide pins.



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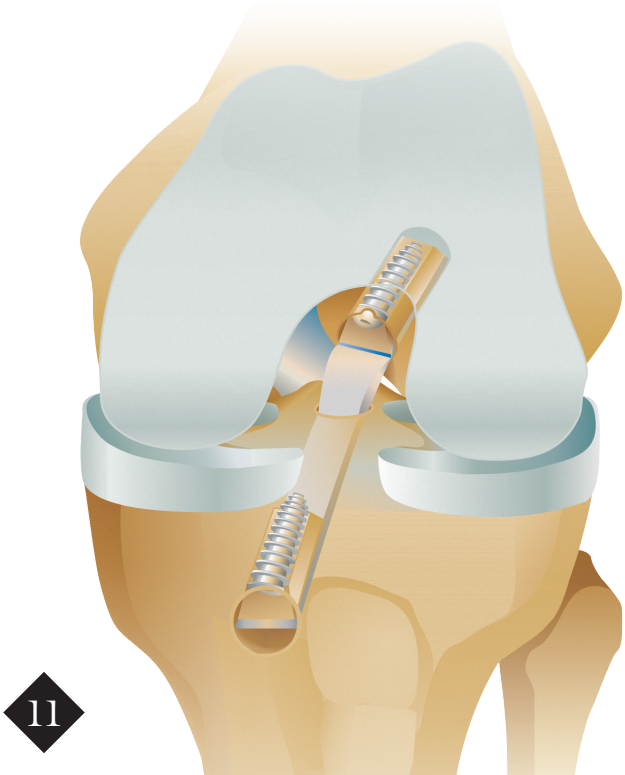
A sheathed Biocomposite Screw (inset), 2 mm - 3 mm smaller than the tunnel diameter, is placed through the anteromedial portal with the sheath positioned to protect the PCL. The sheath window is positioned superiorly to provide clear visualization during screw insertion. The cannulated Ratcheting Screwdriver Handle with appropriate shaft is inserted over the guide pin and into the sheath to engage the screw. The screw is inserted until the head of the screw is slightly countersunk into the femoral socket. The guide pin, screwdriver and excess FiberWire suture are removed.



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Following femoral fixation, a Full Thread Biocomposite Screw 1-2 mm smaller than the tibial tunnel diameter is selected. The knee should be cycled through a full range of motion to confirm graft position and to condition the graft prior to tibial fixation. The knee is placed in approximately 0°-20° of flexion and the graft is fixed in this position. Following tibial fixation, a full range of motion and ligament stability tests should be carried out to confirm a successful reconstruction.

Note: Proper technique must be followed to ensure adequate tunnel/socket and aperture preparation. Deviating from the technique may cause excessive torque on the screw during implantation and lead to damage to the graft or implant. It is also recommended to monitor the implantation depth of the screw to ensure that the tip of the screw inserted into the tibial tunnel is not protruding into the joint.

ACL ToolBox	***AR-1900S***
GraftPro® Graft Preparation System	***AR-2950DS***

Biocomposite and PEEK Screws

Biocomposite Interference Screw, w/disposable sheath, 6 mm x 23 mm	AR-1360C
Biocomposite Interference Screw, w/disposable sheath, 7 mm x 23 mm	AR-1370C
Biocomposite Interference Screw, w/disposable sheath, 8 mm x 23 mm	AR-1380C
Biocomposite Interference Screw, w/disposable sheath, 9 mm x 23 mm	AR-1390C
Biocomposite Interference Screw, w/disposable sheath, 10 mm x 23 mm	AR-1400C
PEEK Interference Screw, 6 mm x 23 mm	AR-1360P
PEEK Interference Screw, 7 mm x 23 mm	AR-1370P
PEEK Interference Screw, 8 mm x 23 mm	AR-1380P
PEEK Interference Screw, 9 mm x 23 mm	AR-1390P
PEEK Interference Screw, 10 mm x 23 mm	AR-1400P

Transtibial ACL Reconstruction Disposable Kits

ACL Disposables Kit, with Saw Blade, includes:	AR-1897S
Threaded Fixation Pins, qty. 2	
Hall Style Sagittal Saw Blade *(other blade styles available)*	
Guide Pin w/Suture Eye, 2.4 mm	
Drill Tip Guide Pin, 2.4 mm	
Guide Pin w/25 mm and 30 mm depth markings, 2.0 mm	
Nitinol Guide Pin, 1.1 mm	
Tibial Tunnel Cannula and Backflow Cap	
Marking Ruler, 153 mm and Marking Pen, sterile, single use	
ACL Disposables Kit, without Saw Blade, includes:	AR-1898S
(includes all the items in AR-1897S except a saw blade)	
Parallel Graft Knife Blades; 8 mm-11 mm, qty. 5 ea.	AR-2285-08 - 11
Guide Wire Introducer, 1.1 mm	AR-4069
#2 FiberWire® Suture, 38 inches w/Tapered Needle, box of 12	AR-7200

Tibial Tunnel Bone Graft Harvesting (optional):

Coring Reamer and Collared Pin, 9 mm, sterile, single use	AR-1223S
Coring Reamer and Collared Pin, 10 mm, sterile, single use	AR-1224S
Coring Reamer and Collared Pin, 11 mm, sterile, single use	AR-1226S

Refer to the online Product Catalog or comprehensive knee brochure (LB1-0115-EN) for additional ACL reconstruction instrumentation and accessories.

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 or outcomes.

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