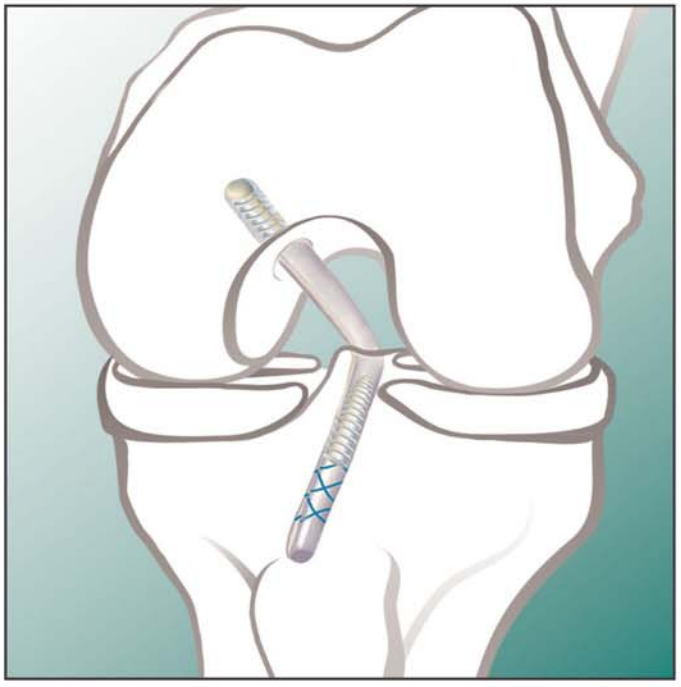
Arthrex®

Transtibial PCL Reconstruction

Surgical Technique

Transtibial PCL Reconstruction



PCL Reconstruction Set (AR-1818S) includes:

PCL Suture Pusher	AR-1263
PCL Rasp	AR-1264
PCL Popliteal Protector Cap	AR-1267
"Worm" Curving Suture Passer	AR-1268
PCL Reconstruction System Sterilization Case	AR-1818
PCL Femoral Target Marking Hook, right	AR-1846
PCL Femoral Target Marking Hook, left	AR-1847
Adapteur Drill Guide C-Ring	AR-1875
Calibrated Guide Pin Sleeve for 2.4 mm Pins	AR-1876
Drill Stop for Adapteur Drill Guide	AR-1877
PCL Tibial Adapteur Guide Marking Hook	AR-1880
PCL Femoral Adapteur Guide Marking Hook	AR-1882
Suture Retriever	AR-4030
PCL Curved Curette, closed end	AR-5013
PCL Straight Curette, closed end	AR-5014

Accessories:

Cannulated Bio-Interference Screwdriver Shaft	AR-1997
Cannulated Screwdriver Shaft for Delta Bio-Interference Screw	AR-1997D
Ratcheting Screwdriver Handle	AR-1999
Non-Ratcheting Screwdriver Handle	AR-1999NR
Suture Retriever, 3.4 mm, straight	AR-12540
Reusable Obturator for AR-1802D	AR-1807

Implants and Disposables:

Proximal Tibial Tunnel Screws:	
Bio-Cortical Interference Screw, 8 mm x 20 mm	AR-5080BB
Bio-Cortical Interference Screw, 9 mm x 20 mm	AR-5090BB
Bio-Cortical Interference Screw, 10 mm x 20 mm	AR-5010BB
Distal Tibial Tunnel Screws:	
Bio-Cortical Interference Screw, angled, 8 mm x 17 mm	AR-5080AB
Bio-Cortical Interference Screw, angled, 9 mm x 17 mm	AR-5090AB
Bio-Cortical Interference Screw, angled, 10 mm x 17 mm	AR-5010AB
Bio-Cortical Interference Screw, angled, 11 mm x 17 mm	AR-5011AB
Delta Tapered Bio-Interference Screw, 7.5 mm - 9 mm	AR-5035TB-9
Delta Tapered Bio-Interference Screw, 8.5 mm - 10 mm	AR-5035TB-10
Delta Tapered Bio-Interference Screw, 9.5 mm - 11 mm	AR-5035TB-11
Delta Tapered Bio-Interference Screw, 10.5 mm - 12 mm	AR-5035TB-12
Sheathed Bio-Interference Screw, 7 mm x 23 mm	AR-1370B
Sheathed Bio-Interference Screw, 8 mm x 23 mm	AR-1380B
Sheathed Bio-Interference Screw, 9 mm x 23 mm	AR-1390B
Sheathed Bio-Interference Screw, 10 mm x 23 mm	AR-1400B
Nitinol Guide Pin for Bio-Interference Screw, 1.1 mm	AR-1249
Guide Wire Introducer, 1.1 mm	AR-4069
Tibial Tunnel Cannula	AR-1802D
Drill Tip Guide Pin, 2.4 mm	AR-1250L
Transtibial ACL Disposables Kit without Saw Blade	AR-1898S

All implants & disposables come sterile and are single use.

References

[1] Harner CD et al: Anatomy and Biomechanics of the Posterior Cruciate Ligament and Posterolateral Corner, *Operative Techniques in Sports Medicine,* April 2001, 9:2: pp 39-46.

[2] Fanelli GC: PCL Injuries in Trauma Patients. *Arthroscopy,* 9:291-294, 1993.

[3] Fanelli GC, et al: PCL Injuries in Trauma Patients, Part II, *Arthroscopy,* 11: 526-529, 1995.

The Arthrex Transtibial PCL Reconstruction System includes unique safety features for protecting posterior neurovascular structures during tibial tunnel drilling.

Tunnel placement can be accurately positioned using instrumentation that references distances from anatomical constants on the tibia and femur.

Graft passing has been simplified by using curving suture passers to bring the graft passing sutures into the joint when introducing the graft through the tibial tunnel.

Recent literature describes a significant interaction between the posterior cruciate ligament (PCL) and the posterolateral corner (PLC)[1]. It is important to note that a significant number of PCL injuries involve combined injuries to the PLC.[2,3]

This PCL reconstruction technique relates to the correct usage of the specific PCL instrumentation presented and does not attempt to provide the entire medical indications or surgical criteria for performing this procedure.

In preparation for tibial tunnel guide pin placement, adequate visualization of the posterior aspect of the tibial plateau with a 30° or 70° arthroscope down to the insertion of the PCL should be performed.

1

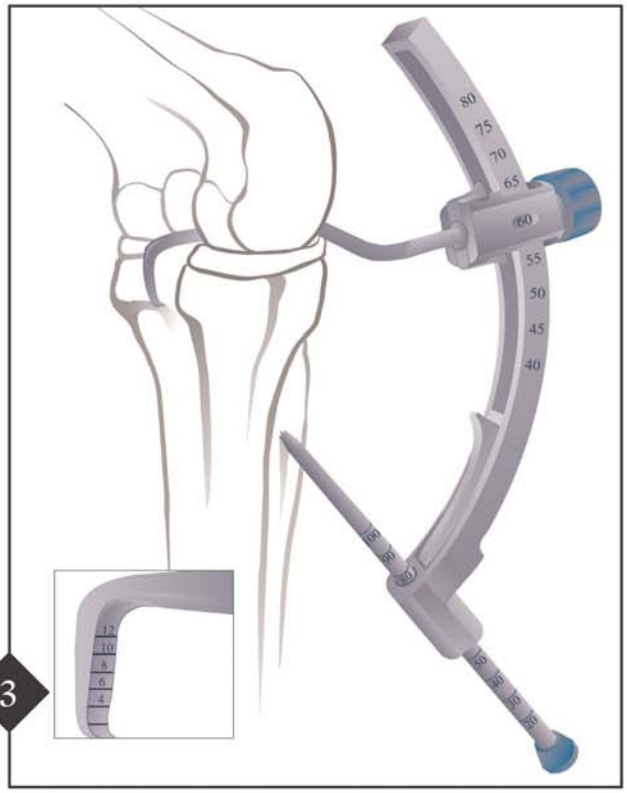
A posteromedial portal may be used to improve visualization.

A Curved PCL Rasp or Curved PCL Curette is inserted through the notch to remove the PCL remnant from the posterior slope of the tibial spine.

2

A power drill is tightened on the Drill Tip Guide Pin at a length of 22.5 cm from the guide pin tip. Inserting the guide pin into the assembled Adapteur Drill Guide prior to joint insertion can predetermine a safe guide pin drilling depth. The drill chuck should contact the end of the Drill Stop when the guide pin tip reaches the marking hook tip, preventing the guide pin tip from advancing past the marking hook.

When placing the pin, visualize it penetrating the posterior aspect of the tibia through a posteromedial or anterior portal.

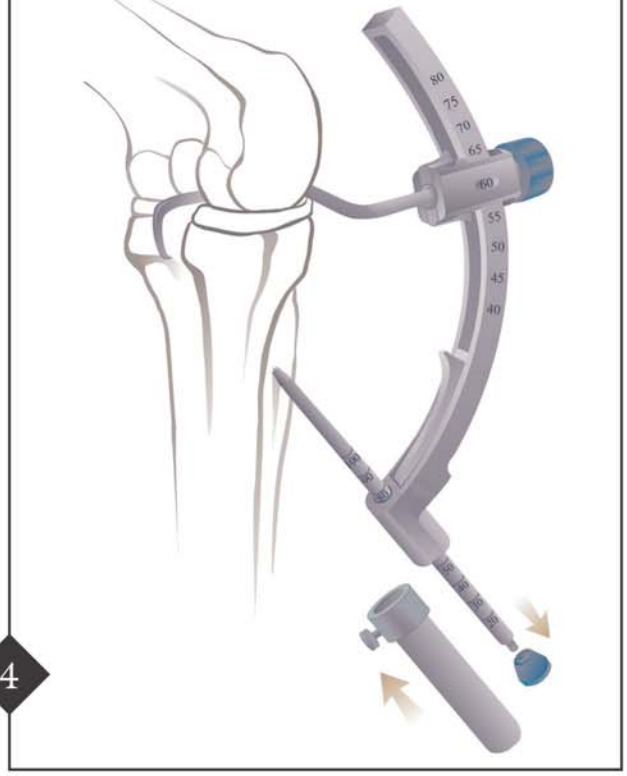


3

The PCL Tibial Adapteur Guide Marking Hook is attached to the Adapteur Drill Guide C-Ring, inserted through the anteromedial portal and used to appropriately locate the tibial tunnel exit point.

The distal end of the marking hook is placed in the trough on the back of the tibia, approximately 10 mm distal to the posterior tibial articular cartilage.

Anterior tibial tunnel entry is approximately 5 cm distal to the joint line.



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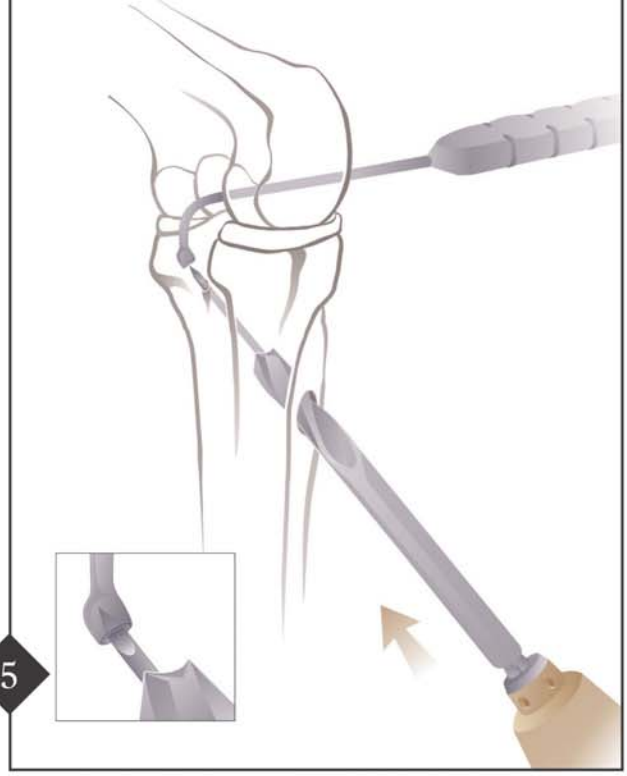
The black cap of the Calibrated Guide Pin Sleeve is removed to accommodate insertion of the drill stop over the guide pin sleeve.

The Drill Stop for Adapteur Drill Guide is advanced over the guide pin sleeve and connected to the drill guide by aligning the flat surface of the sleeve with that of the drill guide. The drill stop is locked into place with the set screw.

The drill stop establishes a constant distance to avoid potential damage of posterior neurovascular structures during guide pin drilling.



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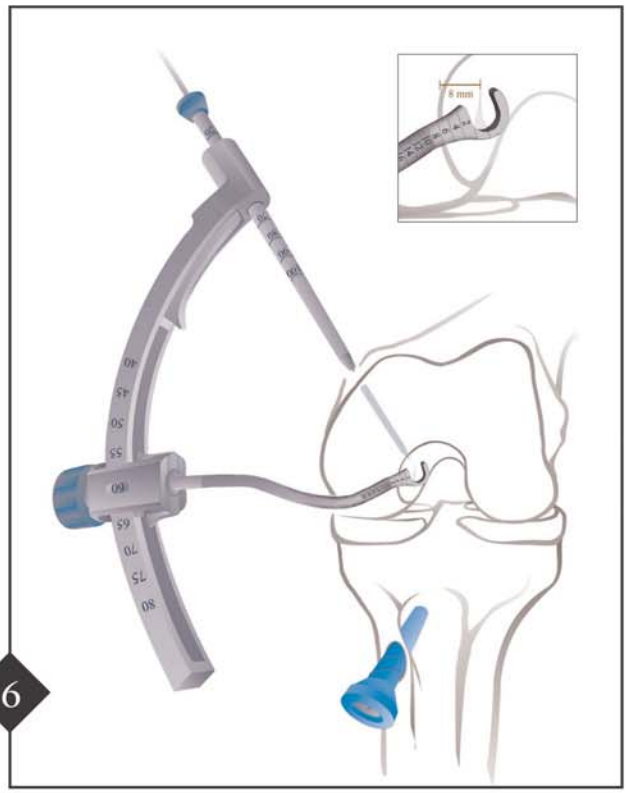
The Popliteal Protector Cap is inserted through the anteromedial portal and placed over the end of the guide pin tip to protect against pin advancement during overdrilling.

The appropriately sized Cannulated Drill is selected and the tibial tunnel is drilled until physical contact of the protector cap is confirmed.

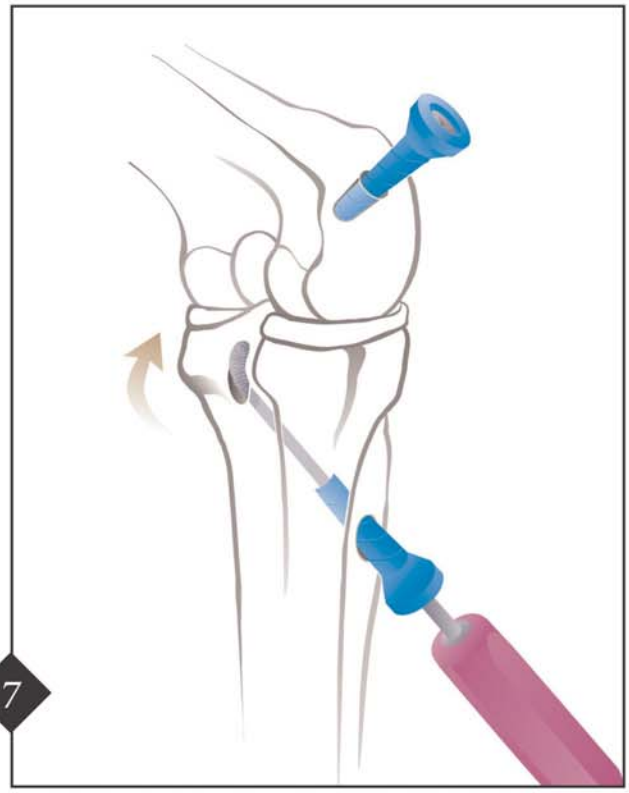
After guide pin and drill removal, a Tibial Tunnel Cannula is inserted into the tibial tunnel to prevent excessive fluid loss.



6

The PCL Femoral Adapteur Guide Marking Hook is attached to the drill guide and inserted through the anteromedial portal.

Markings on the femoral hook determine the femoral tunnel distance from the articular cartilage margin. The surgeon determines selection of the femoral tunnel distance from the articular cartilage margin and directs the tunnel posteriorly.



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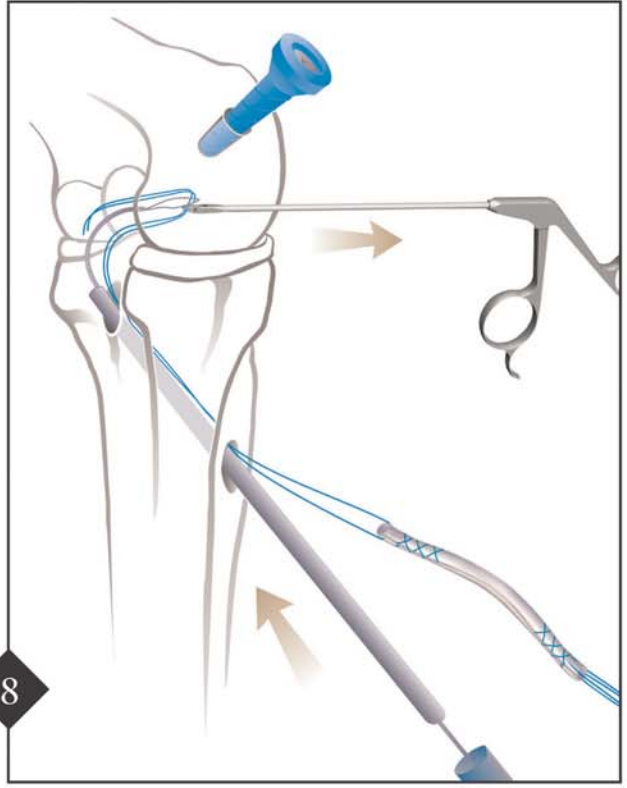
Use of the tapered Tibial Tunnel Cannula to plug the tibial and femoral tunnels allows insertion of instruments or an arthroscope through the tibial or femoral tunnel as an alternative portal to the joint, without loss of fluid distention.

Use of the Notchplasty/Tunnel Rasp to round off the promixal tibial tunnel exit is important to eliminate sharp bone tunnel edges that may impinge on the graft or restrict smooth passing of the graft.



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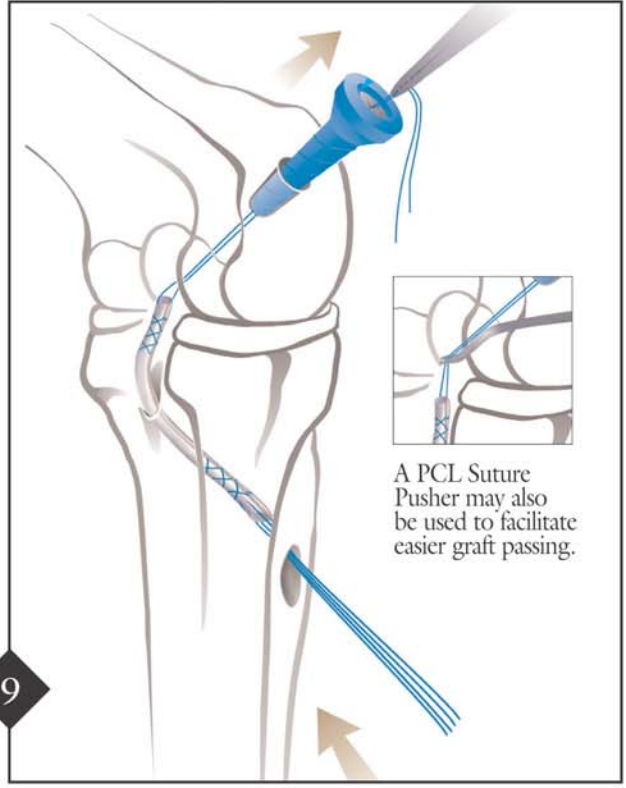
The "Worm" Curving Suture Passer wire loop end is preloaded with the ends of the graft passing suture and pulled back into the insertion tube and is inserted into the tibial tunnel. The curving wire loop with suture is pushed out of the insertion tube. The "Worm" memory wire curves up the back of the tibia into the intercondylar notch. The direction of curve is indicated by the flat edge of the "Worm" handle. A Suture Retriever is inserted through the anteromedial portal to retrieve the suture.



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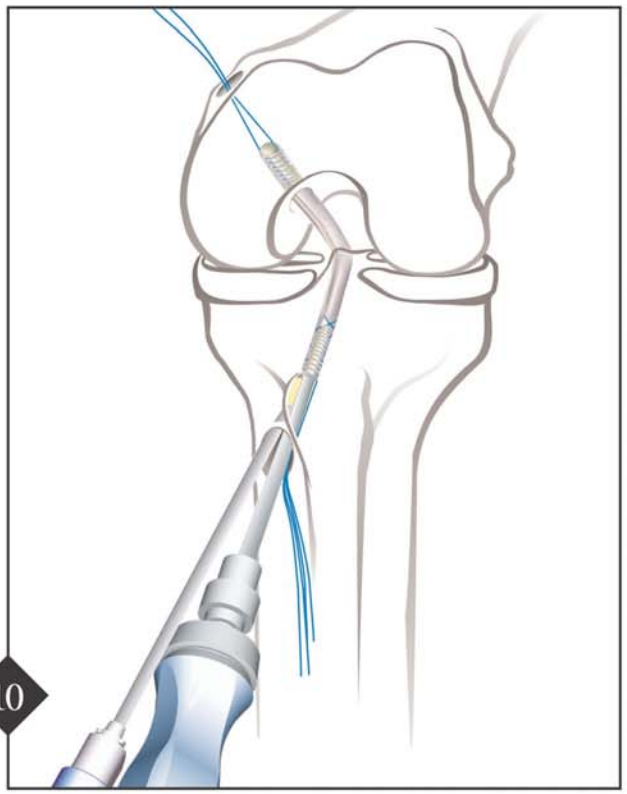
The "Worm" is removed and the suture passed on to a grasper inserted through the femoral tunnel.

The graft is pulled through the tibial tunnel, into the intercondylar notch and into the femoral tunnel. Graft passing may be assisted by utilizing instruments inserted through a posteromedial portal.



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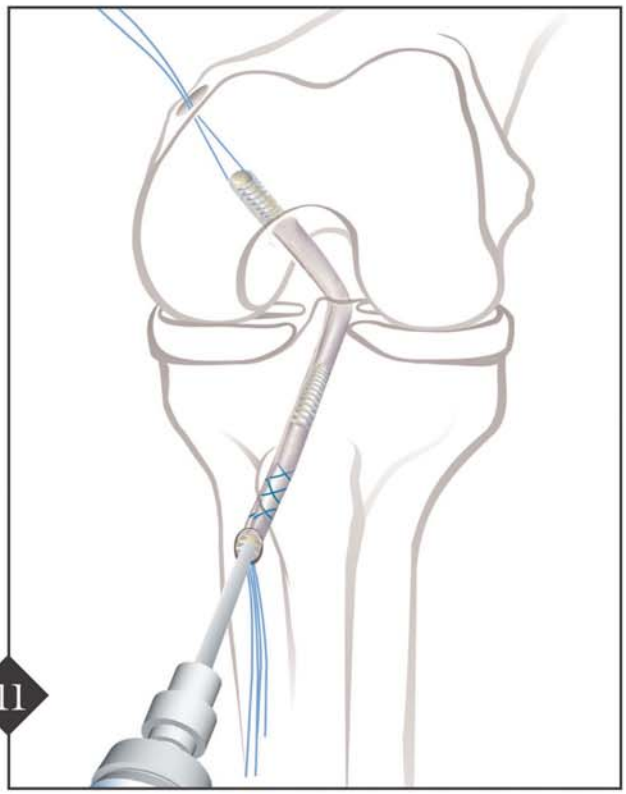
Femoral fixation is performed with a bioabsorbable interference screw equal in diameter to the graft and tunnel. The screw is placed in the distal end of the tunnel to ensure joint line fixation.

The knee is cycled repeatedly through range of motion prior to tibial graft fixation. With the knee in 90° of flexion and an anterior drawer force placed on the knee, a Delta Tapered Bio-Interference Screw 1 mm larger in diameter than the graft and tunnel size is used for tibial fixation.



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Alternatively, Bio-Cortical Screws may be used to secure the graft in the tibial tunnel. A 28 mm long screw equal to or 1 mm larger in diameter than the graft diameter is placed proximally in the tunnel to obtain joint line fixation. An 18 mm long distal screw with angled back 1 mm larger in diameter than the proximal screw is inserted until flush with the anterior aspect of the tibia.

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