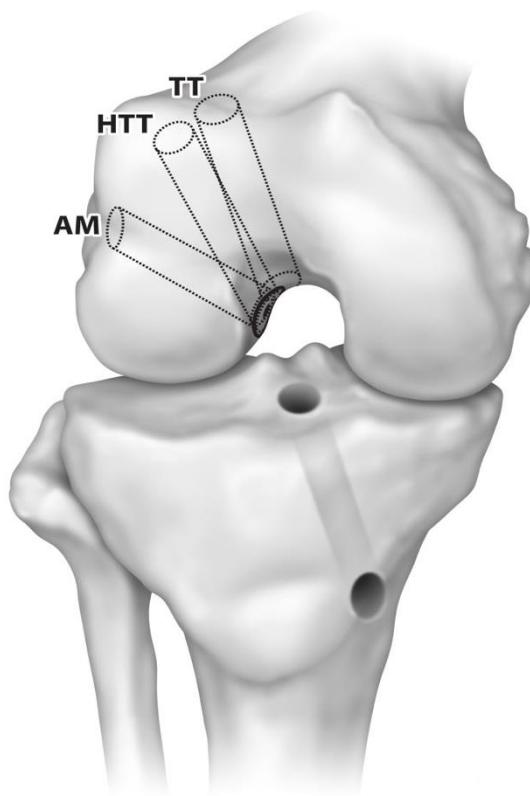


Pathfinder™ ACL Guide

SURGICAL TECHNIQUE

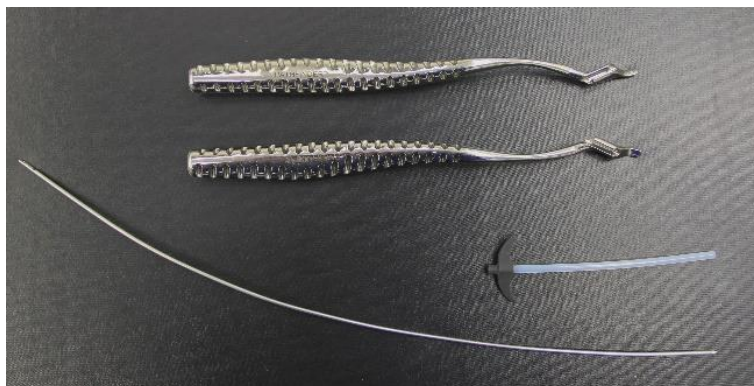


The Pathfinder™ ACL Guide anatomically directs a flexible, transtibial guide wire from the medial portal. By maintaining a transtibial trajectory for the wire and reamer, this system preserves the familiar and beneficial features of a traditional transtibial technique, including the avoidance of knee hyperflexion, the preservation of transtibial reaming of the femoral tunnel, and adequate femoral tunnel length and orientation. Likewise, the insertion of the Pathfinder through the medial portal allows tibial tunnel independent guidance of the guide wire along an anatomic path. This approach thus combines the best of both AM portal and transtibial techniques, essentially adding an anatomic femoral aperture to a traditional transtibial reconstruction without sacrificing all of its other benefits.

The Pathfinder ACL Guide is utilized after the tibial tunnel has been prepared, and will accommodate any tibial tunnel position and orientation. All steps are performed with the knee remaining at 90 degrees of flexion.

Pathfinder ACL Guide Components

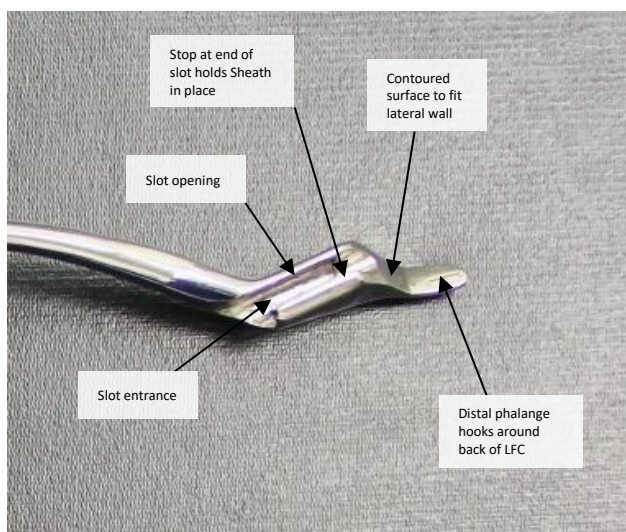
The Pathfinder ACL Guide System is comprised of 1). Pathfinder Guides (reusable), and 2). A Flexible Wire with Sheath (disposable). Pathfinder Guides are available in both right and left knee versions (one pair shown) and with 3 offset options (5.5, 7 and 8 mm). The majority of knees will be accommodated by the 7 mm offset.



The Sheath is assembled onto the Flexible Wire on the back table prior to use. The Sheath allows the wire to be temporarily mated with the Pathfinder Guide in the intercondylar notch. After the wire is drilled, the sheath is removed, allowing the Pathfinder to be extricated from the wire. Sheaths are constructed with a handle to facilitate removal.



The Pathfinder Guide is designed with an open-slot mechanism, to allow mating of the Guide with a separately inserted guide wire. This mechanism allows the Pathfinder to be inserted through the medial portal, and to capture a guide wire directed through the tibial tunnel. This feature enables tibial tunnel independent guidance of a transtibial wire. The slot holds the wire and sheath together, though the opening in the slot is just wide enough to allow the wire to pass through. In this way, once the sheath is removed (after wire drilling), the Pathfinder can be extricated from the guide wire to allow reaming.



1. Insert the Pathfinder Guide.

Insert the distal end of the Pathfinder Guide through the standard medial portal and into the intercondylar notch. The arthroscope is maintained in the standard lateral portal.



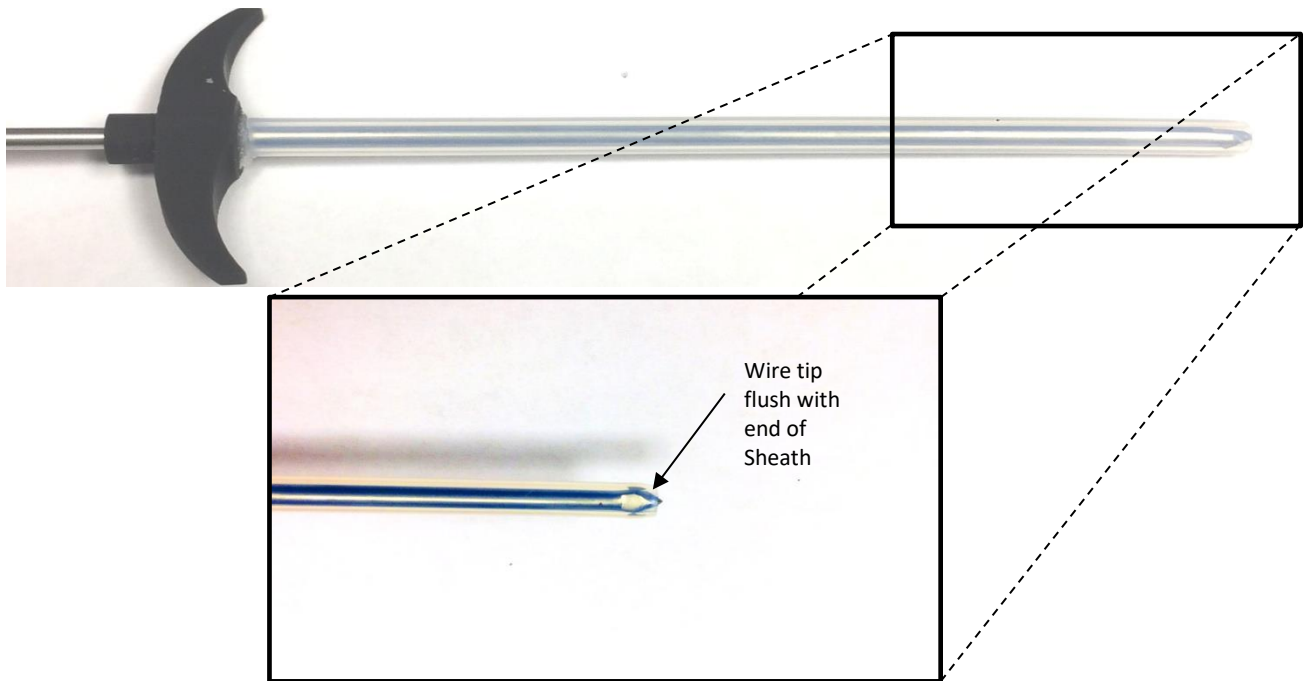
18F soccer player, left knee

Confirm that the distal phalange of the guide can be hooked around the back of the posterior wall of the intercondylar notch and the wire exit hole can be placed flush against the lateral wall. **This is facilitated by removing all residual ACL tissue from the posterior aspect of the lateral wall.**

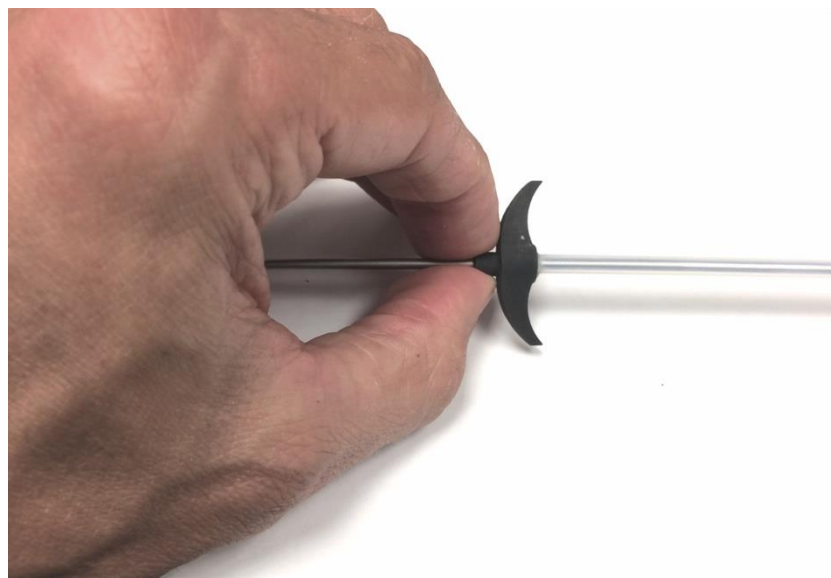


2. Insert the Flexible Guide Wire and Sheath into the Pathfinder slot.

Assemble the Sheath onto the distal end of the Flexible Guide Wire, such that the tip of the wire is at the end of the Sheath.



Hold the Flexible Wire and Sheath at the base of the Sheath to prevent them from sliding on one another during insertion.



Once completing the above, pull the Pathfinder slot entrance over the top of the tibial tunnel aperture to receive the Guide Wire from the tibial tunnel. **Have an assistant hold the scope with the light source looking down towards the tunnel aperture.**



With one hand holding the Pathfinder Guide, use the other hand to insert the Wire/Sheath combination through the tibial tunnel and into the Pathfinder slot.



Tip: If the Wire/Sheath does not easily slide into the Pathfinder slot, it may help to have an assistant extend the knee 10-15 degrees. (Once wire and sheath are inserted into slot, bring knee back to 90 degrees.)

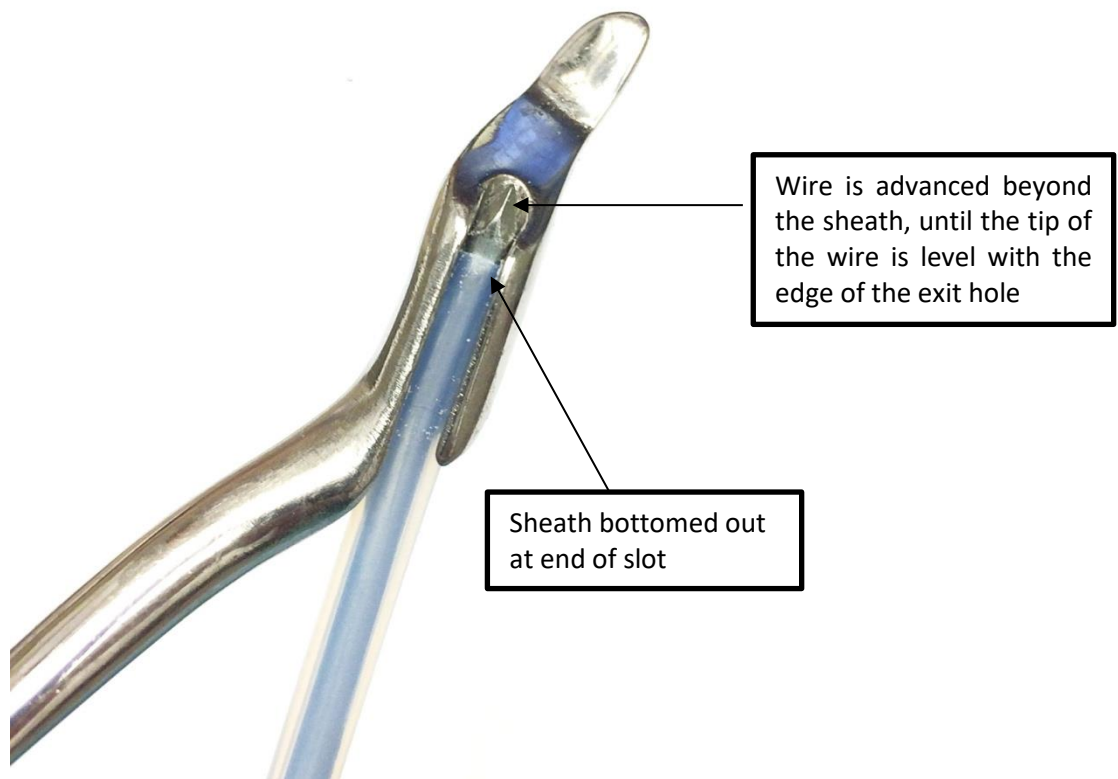
Tibial tunnels that are oriented vertically in the sagittal plane will increase the angulation of the Wire/Sheath relative to the Pathfinder slot.



Extending the knee slightly will reduce this angulation and facilitate Wire/Sheath insertion.



Advance the wire/sheath until the distal end of the sheath “bottoms out” on the stop at the distal end of the slot. Advance the wire past the sheath until the tip of the wire is flush with the exit hole of the slot.



Tip: Maintain the above relationship by continuing to apply gentle forward pressure on both wire and sheath - from the same hold on the base of the sheath as noted earlier - as the Pathfinder is advanced into the notch (see later steps). *This will prevent the wire and sheath from backing out of the slot.*

3. Position the Pathfinder on the lateral wall.

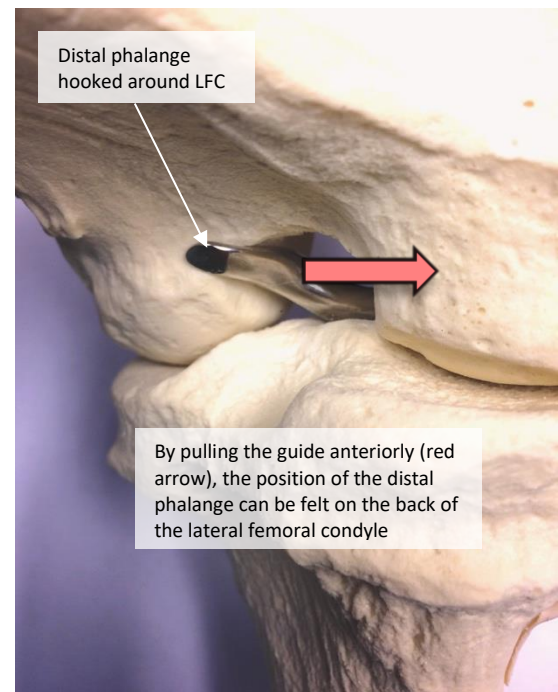
Still holding the Pathfinder Guide in one hand and the Guide Wire/Sheath in the other, advance both together to the lateral wall of the notch.

- As noted above, maintain gentle forward pressure on the wire/sheath to prevent their backing out of the slot.



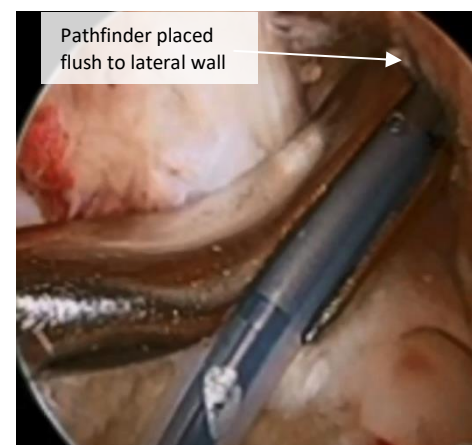
Posterior view of left knee

Confirm that the distal phalange is hooked around the posterior wall by **gently translating the guide anteriorly** (i.e. to feel the distal phalange up against the back of the lateral femoral condyle).



Next, position the remaining surface of the Pathfinder Guide flush to the lateral wall of the notch. The Pathfinder Guide is designed to fit the contour of most knees' lateral walls, and should correspondingly feel seated once the above is complete.

- In most cases, if the above positioning is performed correctly, the guide wire tip will intersect the lateral wall at the center of the femoral ACL footprint. Should adjustments be desired, however, the absence of tibial tunnel constraint allows the surgeon to move the guide and wire to any desired location.

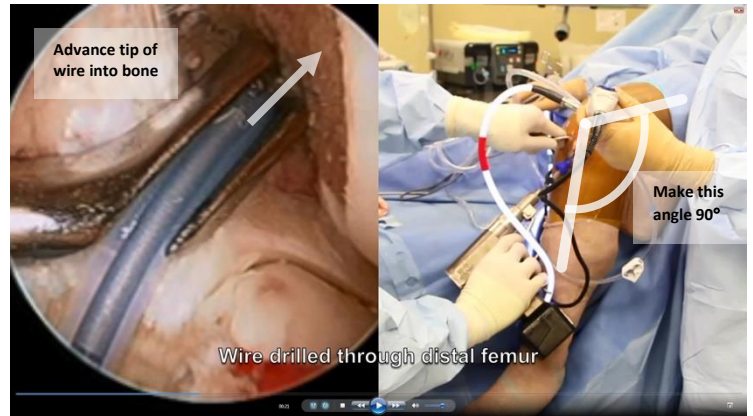


4. Drill the Flexible Guide Wire.

Still holding the Pathfinder Guide in one hand, direct the scope view to the lateral wall of the notch (light source looking lateral). Let go of the Guide Wire/Sheath with the other hand and pass a cannulated drill over the Flexible Guide Wire to **within 1 inch of the base of the sheath** (to prevent excessive bending of the wire during drilling).

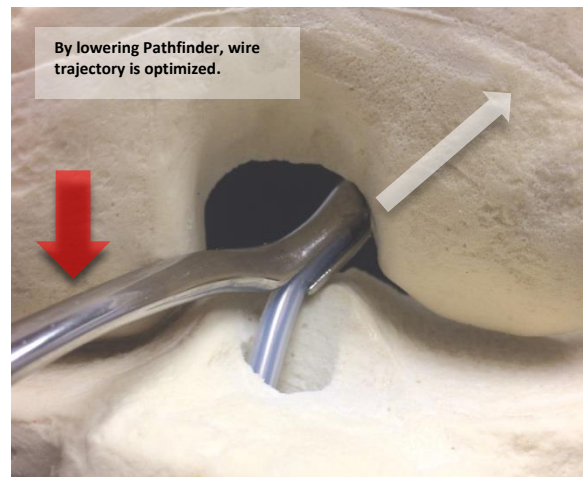
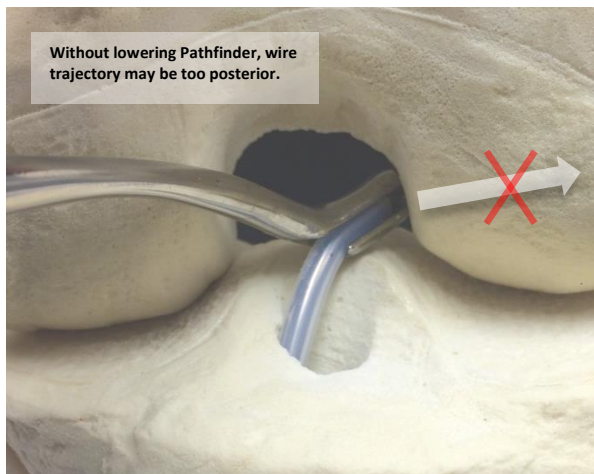
Prior to drilling:

- Advance just the tip of the wire into the bone of the lateral wall at the desired pin location; this will help maintain wire position during subsequent steps.
- Confirm that the knee is at 90 degrees of flexion (greater degrees of flexion can allow the wire to exit too posteriorly on the femur).



Begin drilling wire:

- As soon as drilling is started, maximally lower the Pathfinder towards the floor for the remainder of the drilling. This will direct the wire in an optimal upward path through the femur, creating a safe anterior exit point and a long femoral tunnel.



- Confirm that the wire exits in the anterior half of the thigh. Wire exit points that are in the posterior thigh – as for any technique – may result in shorter femoral tunnels.
 - **Note:** If wire exit point is deemed unacceptable, **redrill the wire with the knee in greater flexion to create a new and more optimal trajectory.**



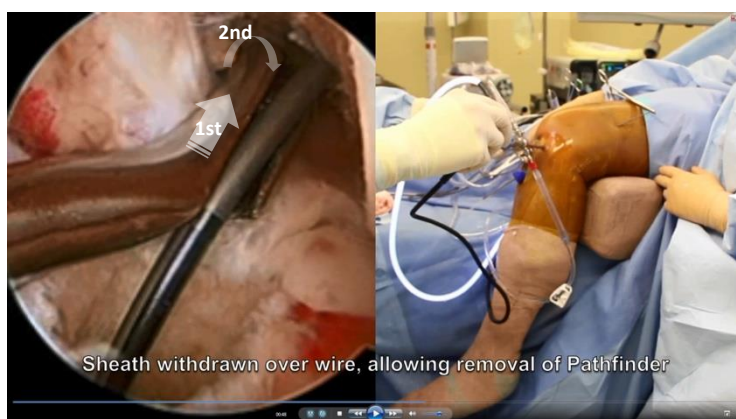
5. Remove the Pathfinder Guide.

After removing the drill from the wire, grasp the handle of the sheath and pull it distally off the wire.



With the sheath removed the Pathfinder can now be disengaged from the wire.

- **Push the Guide posteriorly past the pin, then rotate it towards the lateral wall to “unscrew” it out of the intercondylar notch.**



6. Ream the femoral tunnel with a flexible reamer, and complete the reconstruction.

The procedure is now identical to a conventional transtibial technique, except that a flexible reamer is used instead of a rigid reamer. The Flexible Guide Wire is compatible with all commercially available flexible reamers.



Tunnel position, when viewed from the medial portal.



Graft passage, identical to a traditional transtibial technique.



Final graft position.

