Arthroscope Inlay PCL Reconstruction using the FlipCutter® and PCL TightRope®

Surgical Technique
“PCL inlay reconstruction techniques have been shown to reduce the “Killer Turn” created by transtibial constructs and may lead to less graft abrasion and better approximation of native biomechanics. The arthroscopic inlay PCL provides the benefits of both open inlay and arthroscopic transtibial techniques by combining the superior biomechanics of the open tibial inlay and the ease of visualization and decreased morbidity of an arthroscopic approach. Clinical results from our use of the arthroscopic inlay technique have shown good success over the last five years, not only returning function to patients with multi-ligament injuries, but in athletes with isolated PCL deficiency that could not perform prior to surgery.”

-R. Brick Campbell, M.D.; Jon K. Sekiya, M.D.

TightRope technology has been incorporated into the unique PCL TightRope construct greatly simplifying graft preparation and passing, while strengthening fixation.
**GRAFT PREPARATION**

A single ended bone graft such as a quadriceps tendon or Achilles tendon may be used, as well as bone-tendon-bone grafts with a minimum tendon length of 4.5 cm.

To prepare the tibial side of the graft, place a 11, 12 or 13 mm Coring Reamer (Note: Graft diameter will be 1 mm less than Coring Reamer size) at the bone/tendon junction. The diameter of the Coring Reamer allows visualization of the bone plug before cutting and acts as a guide for the 2.4 mm drill pin. After drilling through the bone block with the 2.4 mm pin, remove the pin and replace it with the Collared Pin. The Coring Reamer is drilled through the bone plug. Stop drilling before contacting the tendon. If desired, a flat osteotome may be placed at the bone/tendon junction to protect the tissue during drilling. Remove the remaining bone with a small bone saw and/or rongeur. Place the bone plug into the sizing block to confirm diameter. Length can be measured with a ruler and should be 10 mm.

Place a passing suture inside the PCL TightRope implant and pass through the hole in the bone block. Pull the button down tightly against the tendinous portion of the graft. Use the open holes in the button to stitch the button to the tendon with #2 FiberWire®.
TIBIAL SOCKET PREPARATION

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

Place the tibial PCL reconstruction guide through the AM portal and over the PCL footprint. The 11 mm marking hook may be used to visually reproduce the footprint, or the 12 & 13 mm laser line markings may be referenced off the anterior edge of the footprint. Fluoroscopy may be used to confirm placement. Note: The distal edge of the socket should be just proximal to the distal edge of the posterior facet. The guide pin should enter perpendicular to facet. The Drill Sleeve is pushed against bone and the intraosseous distance is noted where the Drill Sleeve exits the guide (a), in this case, 50 mm.

Choose a FlipCutter II equal to the size of the Coring Reamer. Insert the FlipCutter until the tip contacts the anterior cortex. It is recommended that drilling be completed under fluoroscopic control. Alternatively, the 2.4 mm Drill Sleeve may be used to place the 2.4 mm guide pin, and subsequently be “over reamed” to 4 mm. The FlipCutter may be placed by hand through the predrilled tunnel.
Once the FlipCutter exits the posterior cortex, push the button on the blue hub and slide forward to flip the cutting tip into retrograde reaming position.

Use a mallet to tap the 7 mm tip of the stepped Drill Sleeve into bone. This will facilitate drilling and insertion of the passing suture after socket has been created.
After drilling the socket, straighten the blade by pushing the button on the blue hub and pulling backwards.

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Set the rubber ring against the Drill Sleeve. Drill \textit{(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 12 mm.

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After drilling the socket, straighten the blade by pushing the button on the blue hub and pulling backwards.
Remove the FlipCutter from the Drill Sleeve while holding the sleeve in place for suture passing. Pass a #2 FiberStick™ 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.

Use the FiberStick to pass the suture placed in the PCL TightRope. Pass the TightRope through the tibia and retrieve out the anterior cortex. Remove the FiberStick. Ensure that the medial portal is large enough to easily pass the bone block. If not, increase the incision size or dilate with a hemostat.
Push the graft posteriorly until it reaches the tibial socket. To assist passage, place a blunt trocar through the lateral portal as a pulley while visualizing through the anteromedial portal, inferior to the graft. Hold light tension on the implant (not the tensioning strands) to guide the graft into position.

As the bone block moves posteriorly, place the trocar in the posteromedial portal and use as a pulley to direct the graft into the socket. When the bone block of the graft has reached the tibial socket, as seen arthroscopically and on fluoroscopy, pull distally on the implant to seat the graft.
Load the slotted button over the TightRope implant by sliding each pair of sutures into the slots of the button. Once the sutures have been loaded, slide the button distally to the end of the implant. **Note:** The suture is thicker at the end of the implant, ensuring that the button cannot become disassembled from the suture.

Tension the implant by pulling on each strand, one at a time, until the button is seated against bone. Make sure to tension the strands symmetrically and remove any slack build-up created by one strand, while pulling on the other (avoid spreading sutures during tensioning). Once the button is seated, pull on the graft to confirm complete fixation. Once the graft is seated, the tensioning strands may be cut. **Note:** A knot may be tied before cutting the sutures to protect the implant during cutting and to act as backup fixation. Proceed with femoral graft passing and fixation.
Ordering Information

**Implant:**

PCL TightRope AR-1588TP

**RetroConstruction Drill Guide Set (AR-1510S) includes:**

- RetroConstruction Drill Guide Handle AR-1510H
- Drill Sleeve for RetroConstruction Drill Guide, 3.5 mm AR-1510D
- Drill Sleeve for RetroConstruction Drill Guide, 2.4 mm AR-1778R-24
- Drill Sleeve, stepped AR-1204FDS
- Oburrator, 3.5 mm AR-1204F-OB
- Insert, 2.4 mm AR-1204F-24i
- Drill Sleeve for RetroConstruction Drill Guide, 3 mm AR-1778R-30
- Tibial ACL Marking Hook for RetroConstruction Drill Guide AR-1510T
- Femoral ACL Marking Hook for RetroConstruction Drill Guide AR-1510F
- Femoral ACL Footprint Marking Hook for RetroConstruction Drill Guide AR-1510F-01
- Tibial PCL Marking Hook for RetroConstruction Drill Guide AR-1510PT
- Femoral PCL Marking Hook for RetroConstruction Drill Guide AR-1510PF
- Multi-Use Marking Hook for RetroConstruction Drill Guide AR-1510M
- RetroConstruction Drill Guide System Case AR-1510C

**Graft Prep Station, Basic Set (AR-2950S) includes:**

- Graft Prep Station Base AR-2950
- Graft Workstation Posts for Patellar Tendon AR-1959
- Graft Workstation Adjustable Post AR-1953
- Graft Workstation Stationary Posts AR-1951
- Graft Sizing Block AR-1886
- Graft Prep Station Instrumentation Case AR-2950C

**Disposables:**

- FlipCutter II, 11 mm AR-1204AF-110
- FlipCutter II, 12 mm AR-1204AF-120
- FlipCutter II, 13 mm AR-1204AF-130
- Coring Reamer and Collared Pin Set, 11 mm AR-1226S
- Coring Reamer and Collared Pin Set, 12 mm AR-1227S
- Coring Reamer and Collared Pin Set, 13 mm AR-1229S
- Drill Tip Guide Pin, 2.4 mm AR-1250L

**Suture:**

- #2 FiberWire, 38” (blue) w/Tapered Needle, 26.5 mm 1/2 circle AR-7200
- FiberStick, #2 FiberWire, 50 inches (blue) one end stiffened, 12 inches AR-7209
- #2 FiberLoop w/Straight Needle, qty. 12 AR-7234

**Optional:**

- PCL Cruciate ToolBox Instrumentation Set AR-1269S
- Double Bundle PCL Guide Set AR-5015S
- BioComposite Interference Screws, Round Delta Tapered, 8-11 mm x 28 mm AR-5028C-08 – 11

**References:**

5. Ruberte RA, Campbell RB, Amendola A, Sekiya JK, Biomechanical Comparison of Figure-of-8 Versus Cylindrical Tibial Inlay Constructs for Arthroscopic Posterior Cruciate Ligament Reconstruction, Arthroscopy, 2010; 26(7): 977-983.
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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