

SwitchCut™ All-Inside ACL Reconstruction

utilizing ToggleLoc™ with ZipLoop™ with autograft hamstring

Surgical Technique

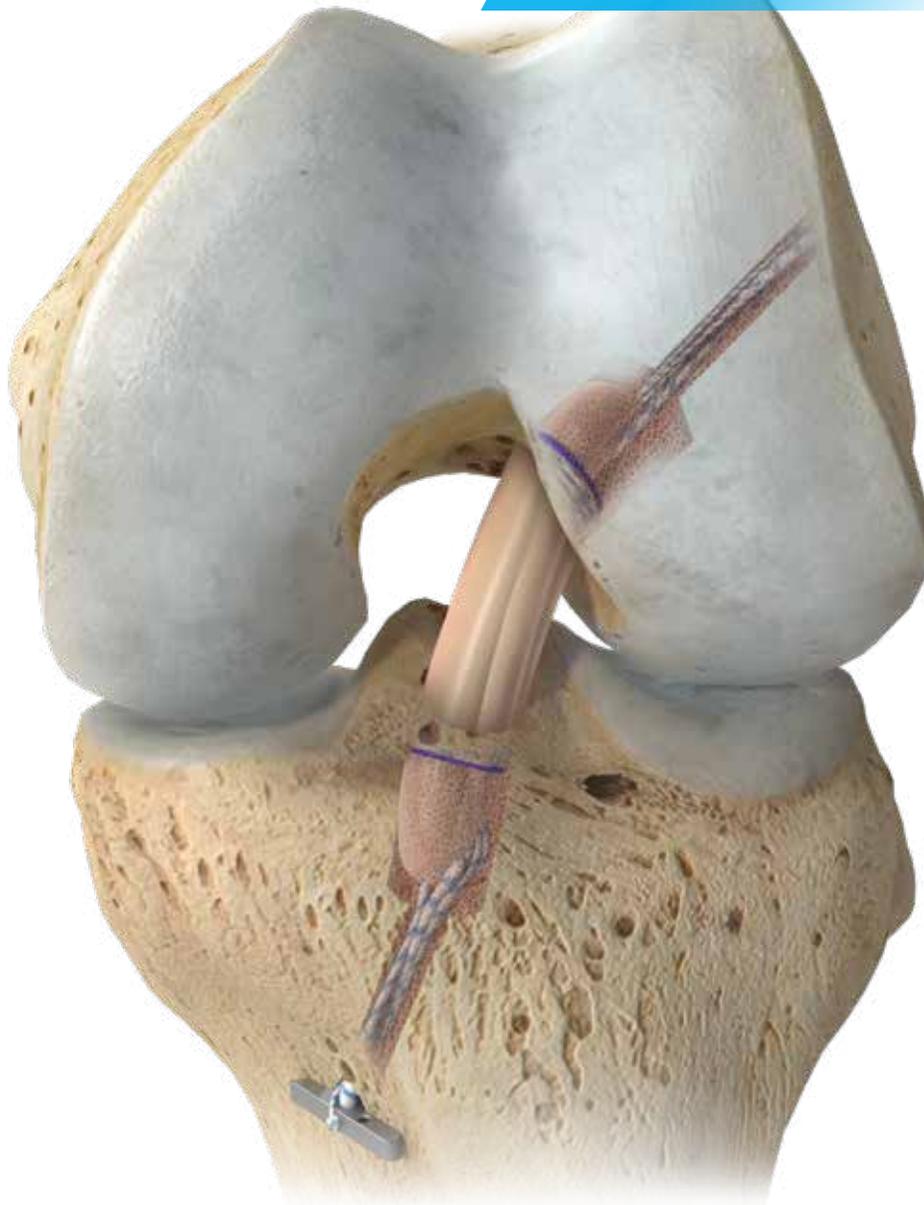


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Figure 1a

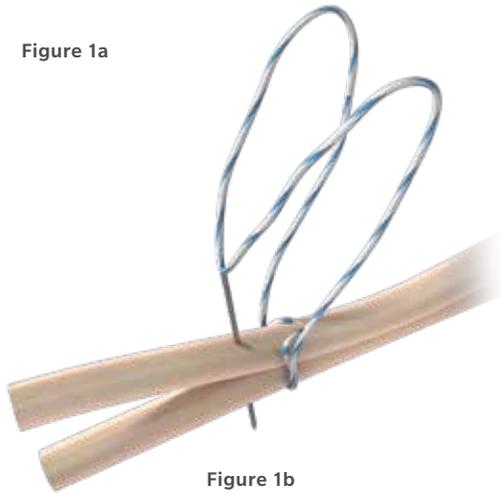


Figure 1b

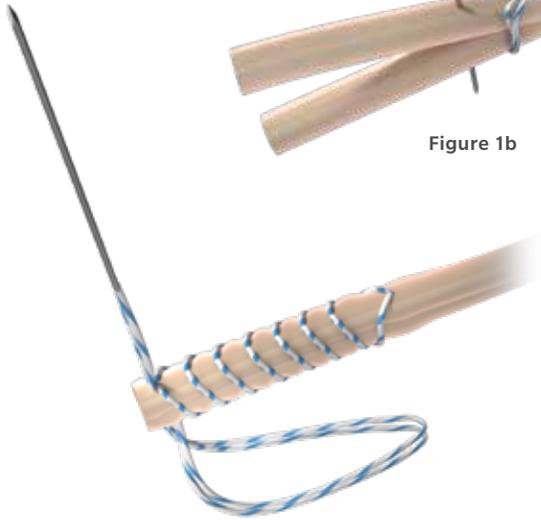


Figure 1c

Graft Harvest

Make an oblique incision anteriorly over the hamstring, this will allow for better visualization and hamstring mobilization. To help achieve a minimum of 270 mm of graft length, use the periosteal stripping technique.

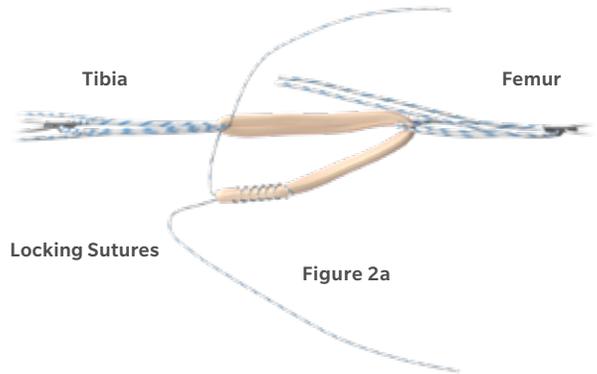


Figure 2a

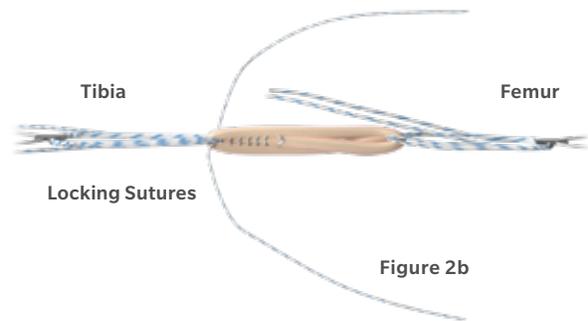


Figure 2b

Graft Preparation

The graft is loaded through the tibial ToggleLoc Fixation Inline Device with ZipLoop Technology and folded in half. The two free ends of the hamstring graft are whip stitched together using the ExpressBraid™ suture (Figure 1). Cut the suture at the crimping of the ExpressBraid needle, leaving two free strands that will be used as the locking stitch.

The hamstring graft is then loaded through the preferred femoral ToggleLoc with ZipLoop (standard or inline) and folded over, creating a quadrupled hamstring graft (Figure 2).



Figure 3a

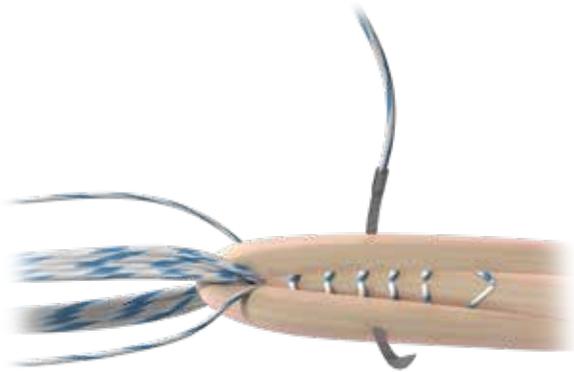


Figure 3b



Figure 3c

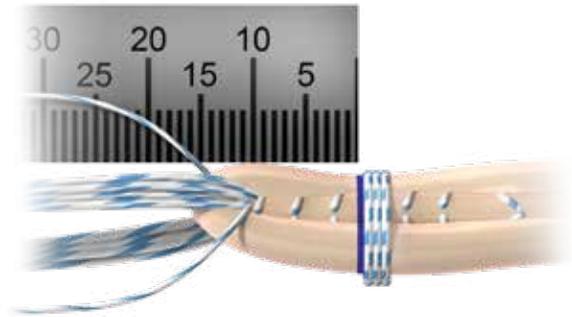


Figure 4

Graft Preparation (cont.)

The whip stitched free ends of the hamstring grafts are saved and docked into the core of the graft by passing one strand of the ExpressBraid suture to the center of the graft and then attaching to the graft tensioner post. Proceed by doing a single pass-triple circlage-single pass compression stitch utilizing two MaxBraid™ #2 sutures about 15 mm from each end of the quadrupled hamstring graft (Figure 3).

Size the quadrupled hamstring graft using the Zimmer Biomet graft sizing block. Use the Zimmer Biomet graft prep table to apply 10–15 lbs of tension to the graft construct. Leave under dampened gauze until ready to implant into patient.

ⓘ **Note:** Mark the graft 15 mm from each end of the graft and at the mid portion of the graft (Figure 4).

Portal Preparation

The lateral portal is placed just off the patella at the level of the distal patella pole. The medial portal is established by inserting a spinal needle just above the anterior horn of the medial meniscus. After portals are placed, remove the fat pad and the ACL remnant. Widen the notch if warranted by patient anatomy to better visualize the I.D.E.A.L.™¹ femoral tunnel position and easier access for the SwitchCut Femoral guide.

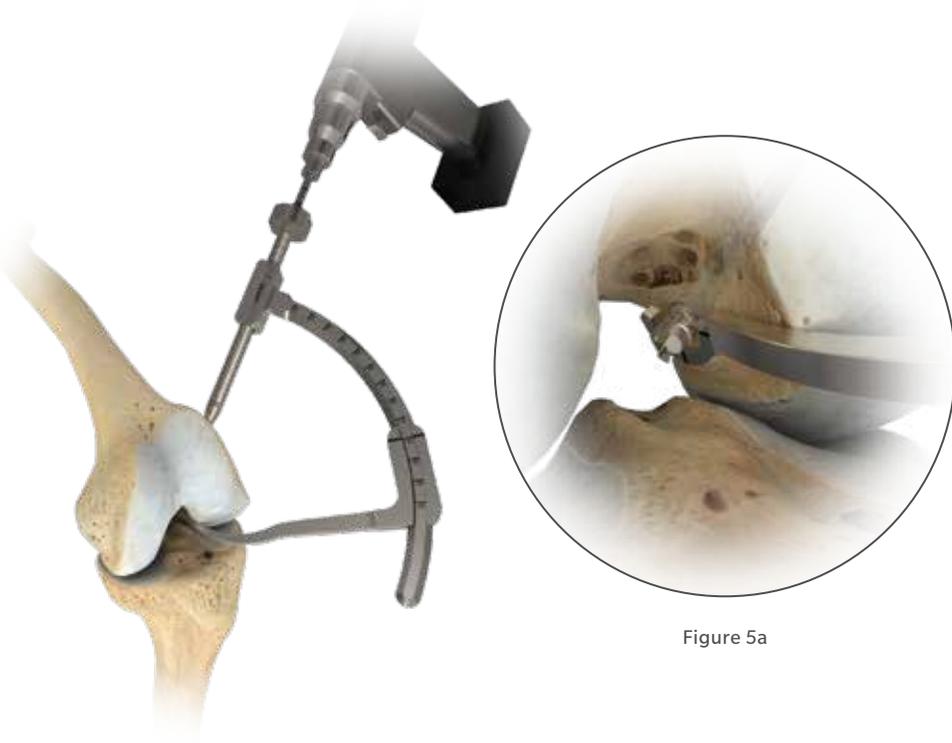


Figure 5

Figure 5a



Figure 6

Create a Femoral Tunnel with the SwitchCut Reamer

Ream in a clockwise forward direction through the lateral cortex into the joint space (Figures 5 & 5a).

Once the SwitchCut tip has penetrated the entrance of the joint, as shown in Figure 5a, then rotate the bullet 90°. Remove the SwitchCut guide from the joint space, leaving the bullet in place (Figure 6).



Figure 7

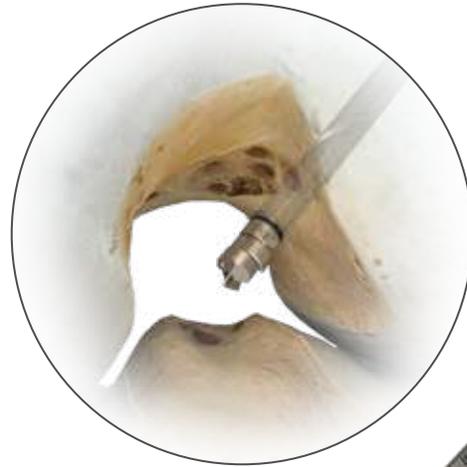


Figure 8

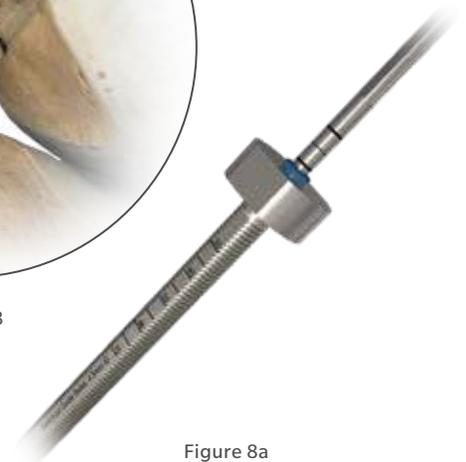


Figure 8a

Create a Femoral Tunnel with the SwitchCut Reamer (cont.)

Take the SwitchCut 4.5 mm bullet until it hits the femoral lateral cortex bone bring down to cortex, measure, and ream back leaving 5–7 mm of cortical bone (Figure 7).

Advance the tip of the SwitchCut reamer to the bold black line. This will zero out the SwitchCut reamer (Figure 8). Once the black etched line is aligned with the intra-articular entrance, slide the O-ring to the back of the bullet (Figure 8a).



Figure 9



Figure 9a

Ream the Femoral Socket

Ream in a counterclockwise (reverse) direction to drill the femoral socket. The arm on the SwitchCut reamer will automatically deploy as soon as it contacts bone (Figure 9). Ensure the drill is running at a maximum counterclockwise speed and maintain a constant and slow retro reaming motion. While retro reaming, count the etch marks on the SwitchCut reamer to determine the femoral socket depth, knowing that each etch line represents 5 mm (Figure 9a).

If desired, retro-ream until the SwitchCut reamer bottoms out on the bullet tip, which will leave a 7 mm bone bridge. **Do NOT continue to ream once the reamer makes contact with the bullet, as this may cause the tip of the reamer to break.** Then disconnect the Jacobs® Chuck from the SwitchCut reamer.



Figure 10



Figure 10a

Shuttle the Nitinol Loop Passer

Remove the blue handled k-wire by twisting counterclockwise (reverse) (Figure 10) and pass the Nitinol loop passer, kite side first, down the SwitchCut reamer as shown (Figure 10a).

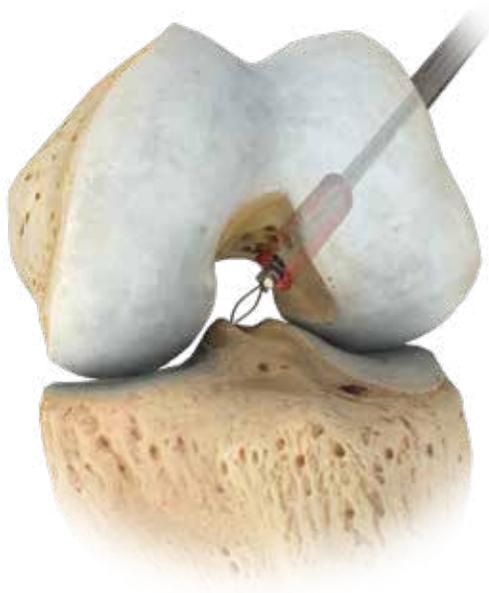


Figure 11

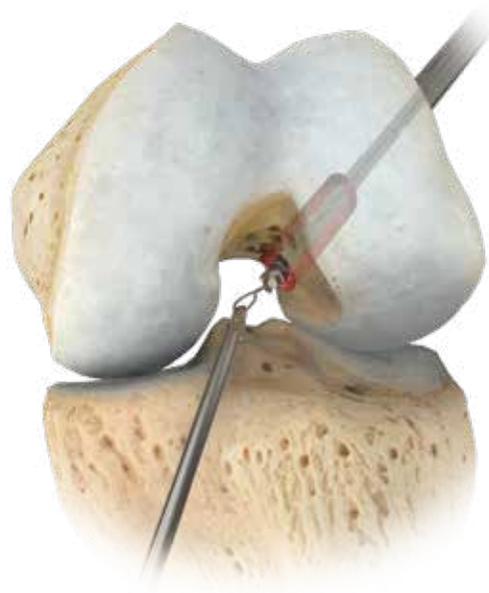


Figure 11a

Shuttle the Nitinol Loop Passer (cont.)

Pass the Nitinol loop passer until it is seen in the joint space. Use a suture retriever to pull the loop passer out of the joint space (Figures 11 and 11a).

- Note:** Once the loop passer is out of the joint space, gently remove the SwitchCut reamer by hand with a clockwise twisting motion. When the SwitchCut reamer has been withdrawn, bring both ends of the Nitinol wire together and clamp them using a hemostat.

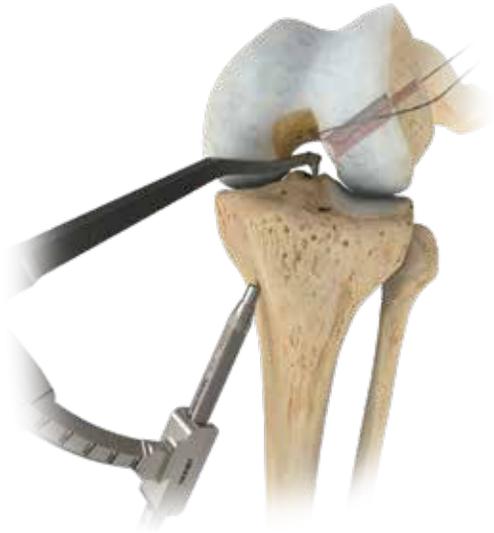


Figure 12

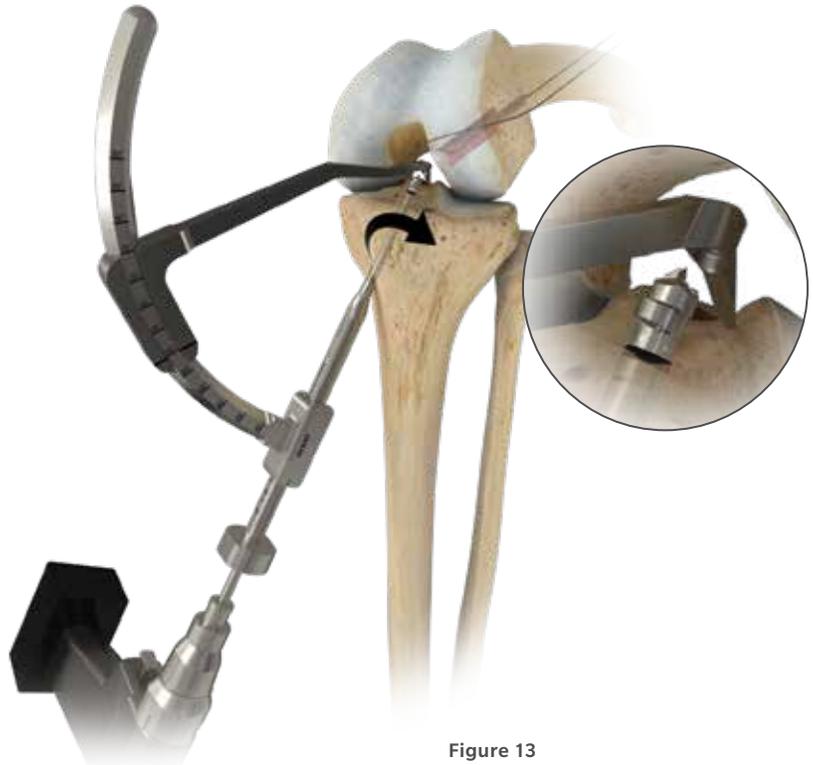


Figure 13

Tibial Tunnel Drilling

Before inserting the SwitchCut Tibial guide into the patient make sure the tibial guide is set between 50 and 60 degree based on patient's anatomy to accommodate a minimum tibial tunnel length of 30 mm. The SwitchCut Tibial guide is then placed in the heart of the tibial footprint in the medial half of the notch at the level of the anterior horn of the lateral meniscus. The SwitchCut Guide bullet is then locked into place on the tibial cortex through the hamstring harvest incision site. Read the laser etch marking on tibial bullet to determine the overall tibial tunnel length (Figure 12). Utilize the SwitchCut Drill that matches the diameter of the quadrupled hamstring graft. Drill in clockwise direction until the SwitchCut drill exits the tibial plateau and is capture by the elbow of the tibial guide (Figure 12 and 13). Rotate the bullet 90 degrees and remove the Tibial guide from joint space.

Set the blue grommet at the back of the bullet to monitor your tibial socket depth. The SwitchCut drill is run in reverse to the desired socket depth, aiming for a 5–10 mm bony bridge. Remove the blue handled k-wire from the SwitchCut drill and pass the nitinol kite through the reamer into the joint space. Use a retrieving instrument to pull the kite out the medial portal.

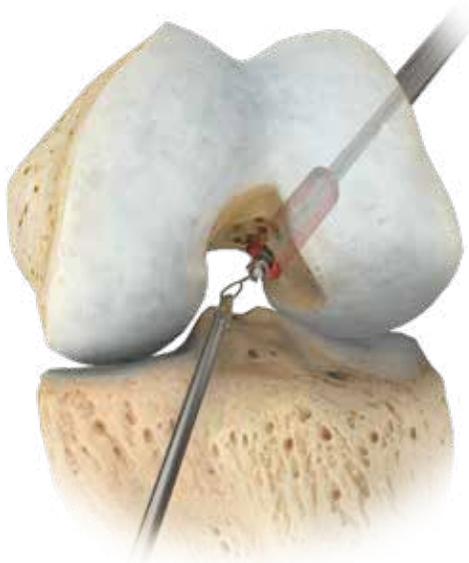


Figure 14

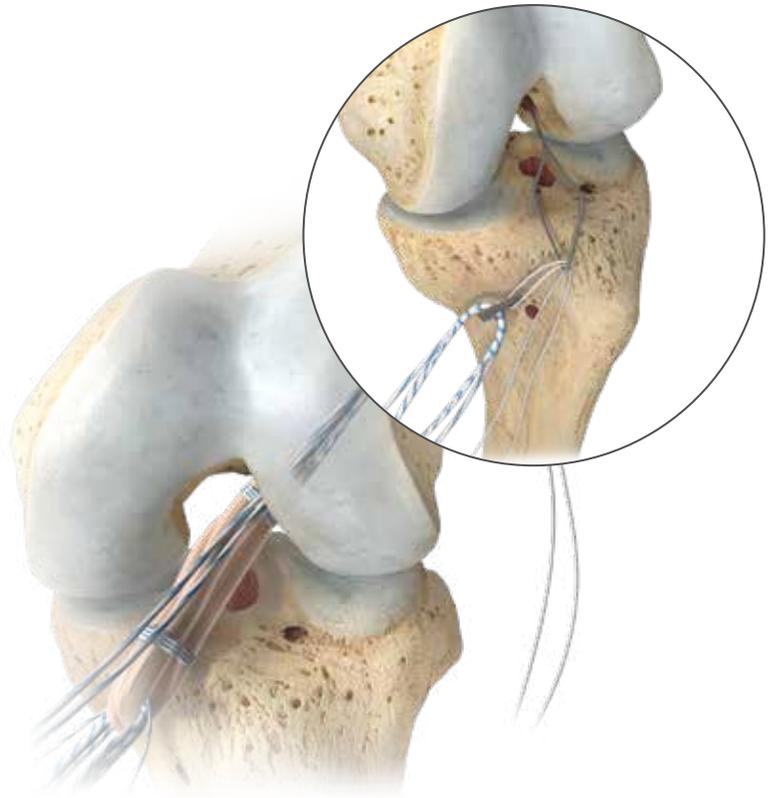


Figure 15

Graft Passage and Tensioning

Load the ToggleLoc w/ ZipLoop standard passing suture into the SwitchCut nitinol kite that is passing through the femoral tunnel and outside the medial portal standard (Figure 14). Pull proximally on the kite to pass the ToggleLoc passing suture through the portal and out the femoral tunnel to the lateral thigh. Use the ToggleLoc passing suture to advance the ToggleLoc femoral button through the medial portal and onto the lateral cortex. Placing a mark on the ZipLoop strands equaling the interosseous tunnel length will help indicate that the button is beyond the lateral femoral cortex and ready to deploy (Figure 15).

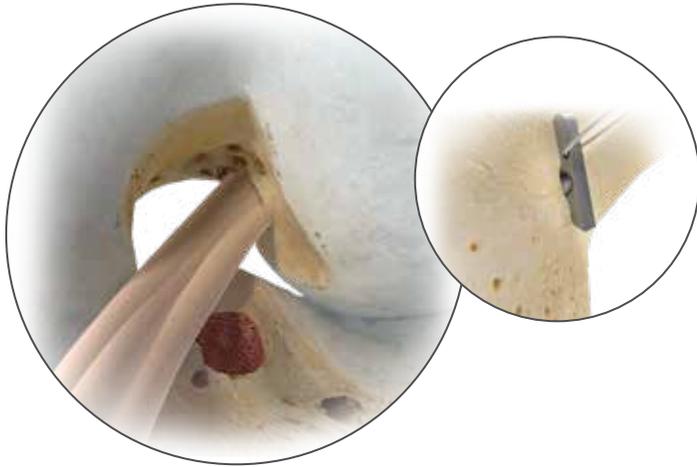


Figure 16

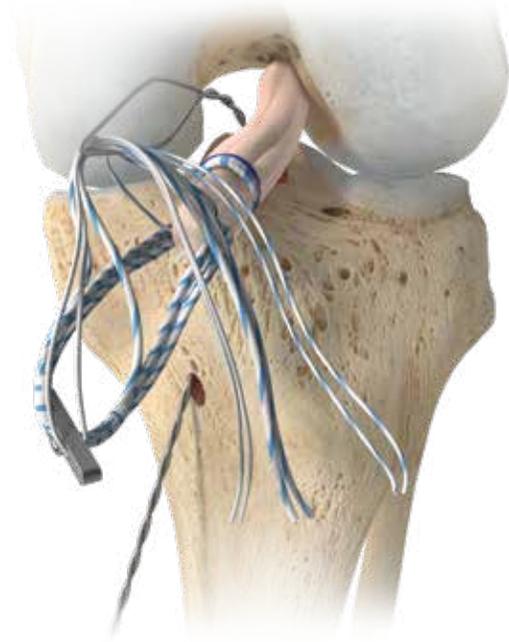


Figure 17

Graft Passage and Tensioning (cont.)

Advance the graft into the femoral socket using the zipping strands of the standard or inline ToggleLoc device w/ ZipLoop Technology while maintaining slight back tension on the graft until 10 to 15 mm of graft fills the femoral socket (Figure 16).

Using the tibial SwitchCut kite, pass the white pull strands and the blue white inline zipping strands from the tibial ToggleLoc Inline device into the medial portal and down through the tibial tunnel. Then pull on all 6 strands delivering the ToggleLoc button through the medial portal and down through the tibial cortical hole.



Figure 18

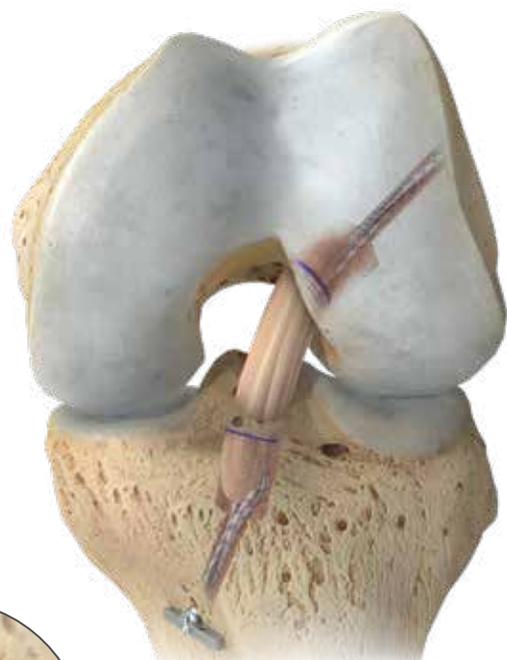
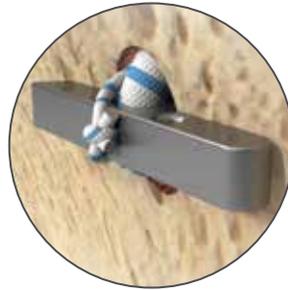


Figure 19



Graft Passage and Tensioning (cont.)

Hold the ToggleLoc button perpendicular to the tibial hole with needle drivers and slowly advance the button down to the tibial cortex by pulling on the ToggleLoc w/ ZipLoop inline zipping strands (Figure 18). Continue this tensioning until the ToggleLoc button is flush to the tibial cortex (Figure 19). Adjust final tension on the femoral and tibial side using the zipping strands to ensure that the middle purple mark on the graft is approximately centered in the notch and the desired graft tension is achieved. Tie the core strands over the tibial button.

Ordering Information

Product Description	Size	Part Number
SwitchCut Reamer Kit	4.5 x 6.0 mm	110027674
	4.5 x 6.5 mm	110027675
	4.5 x 7.0 mm	110027676
	4.5 x 7.5 mm	110027677
	4.5 x 8.0 mm	110027678
	4.5 x 8.5 mm	110027679
	4.5 x 9.0 mm	110027680
	4.5 x 9.5 mm	110027681
	4.5 x 10 mm	110027682
	6.0 x 11.0 mm	110027684
6.0 x 12.0 mm	110027686	
SwitchCut Universal Guide Body	–	110026899
SwitchCut Femoral guide Arm Right	–	110026900
SwitchCut Femoral guide Arm Left	–	110026901
SwitchCut Tibial Guide to Point	22 mm	110026903
SwitchCut Guide Bullet	4.5 mm ID	110026898
	6.0 mm ID	110026902
ToggleLoc Fixation Device with ZipLoop Technology	–	904755
ToggleLoc with ZipLoop Inline	–	110005087
ExpressBraid Single White	–	110003540
ExpressBraid Single Blue/White	–	110003539
MaxBraid CO-Braid Suture #2-0, AT-2 Half Circle Tapered NDLS	–	BX/12 900336

INDICATIONS FOR USE

The ToggleLoc System devices, except the ToggleLoc XL device, are intended for soft tissue to bone fixation for the following indications:

Shoulder

Bankart lesion repair
 SLAP lesion repairs
 Acromio-clavicular repair
 Capsular shift/capsulolabral reconstruction
 Deltoid repair
 Rotator cuff tear repair
 Biceps Tenodesis

Foot and Ankle

Medial/lateral repair and reconstruction
 Mid- and forefoot repair
 Hallux valgus reconstruction
 Metatarsal ligament/tendon repair or reconstruction
 Achilles tendon repair
 Ankle Syndesmosis fixation (Syndesmosis disruptions) and as an adjunct in connection with trauma hardware for Weber B and C ankle fractures (only for ToggleLoc with Tophat/ZipTight Fixation Devices)

Elbow

Ulnar or radial collateral ligament reconstruction
 Lateral epicondylitis repair
 Biceps tendon reattachment
 Knee ACL/PCL repair / reconstruction
 ACL/PCL patellar bone-tendon-bone grafts
 Double-Tunnel ACL reconstruction
 Extracapsular repair: MCL, LCL, and posterior oblique ligament
 Iliotibial band tenodesis
 Patellar tendon repair
 VMO advancement
 Joint capsule closure

Hand and Wrist

Collateral ligament repair
 Scapholunate ligament reconstruction
 Tendon transfers in phalanx
 Volar plate reconstruction
 The ToggleLoc XL device is used for fixation of tendons and ligaments in cases of unanticipated intraoperative complications such as cortical breaching during orthopedic reconstruction procedures, such as Anterior Cruciate (ACL) or Posterior Cruciate (PCL) Reconstruction.

CONTRAINDICATIONS

1. Infection.
2. Patient conditions including blood supply limitations, and insufficient quantity or quality of bone or soft tissue.
3. Patients with mental or neurologic conditions who are unwilling or incapable of following postoperative care instructions.
4. Foreign body sensitivity. Where material sensitivity is suspected, testing is to be completed prior to implantation of the device.

References

1. I.D.E.A.L. ACL Philosophy: Isometric, Direct fibers, Eccentric, Anatomic, Low tension Howell, S. M., McAllister, D., Pearle, A. D. 5 Points on Rationale for Strategic Graft Placement in Anterior Cruciate Ligament Reconstruction: I.D.E.A.L. Femoral Tunnel Position. The American Journal of Orthopedics. June; 2015 (1): 253–258.

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