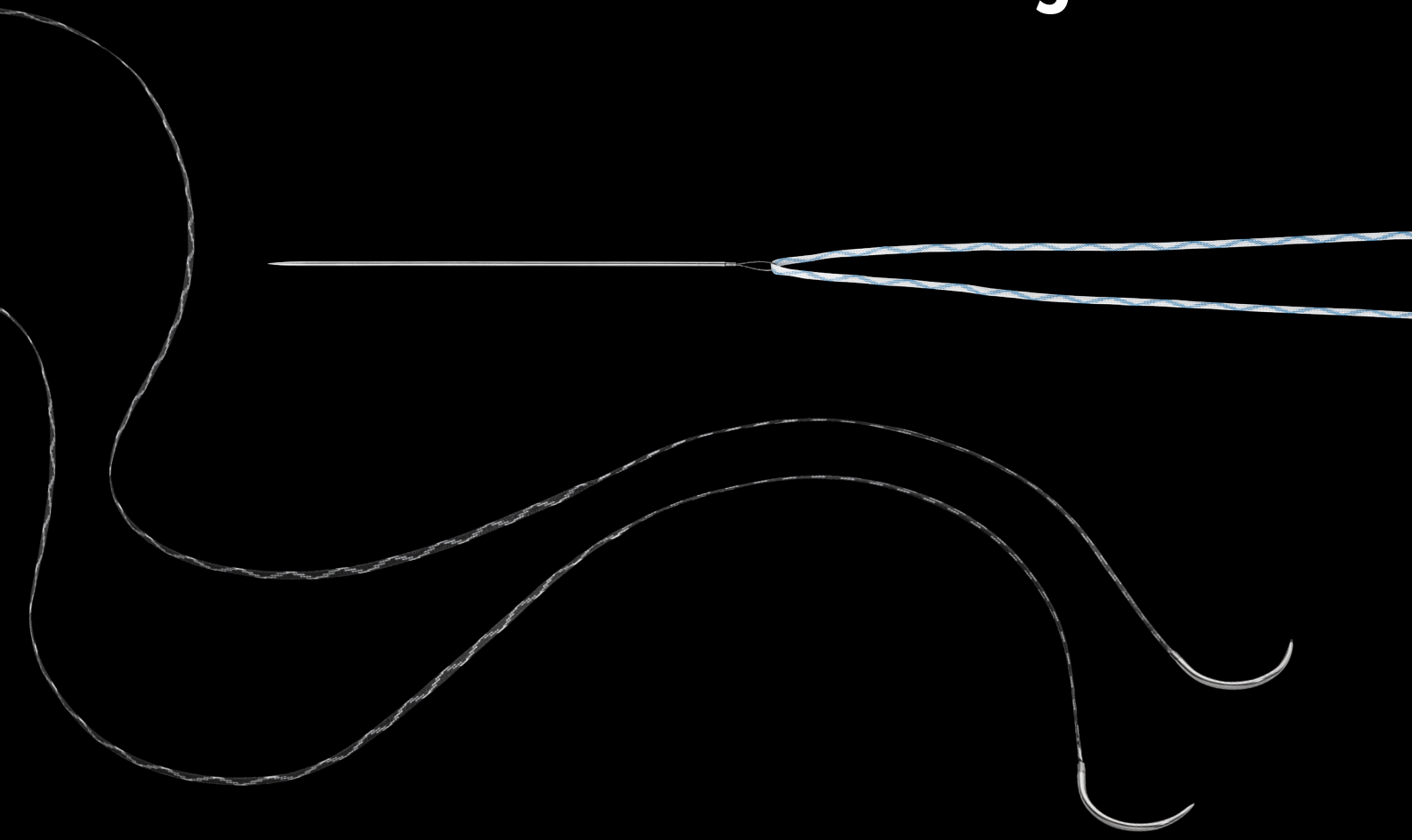
Innovation in Graft Preparation and Suture Management



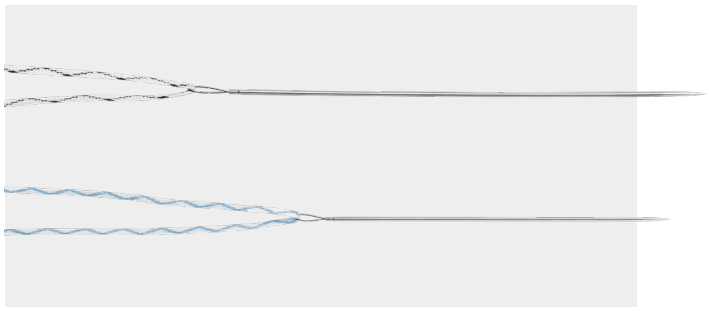
Arthrex®

Introduction

More than a decade ago, Arthrex launched the innovative FiberLoop® suture and SpeedWhip™ technique that revolutionized graft preparation, making it simpler, faster, and stronger than standard whipstitching techniques.[1] Since then, more than 2 million grafts have been prepared with FiberLoop suture.[2] The FiberWire® suture graft preparation product line has grown to more than a dozen different options for varying applications and surgeon preferences.

SutureTape FiberLoop and TigerLoop™ Sutures

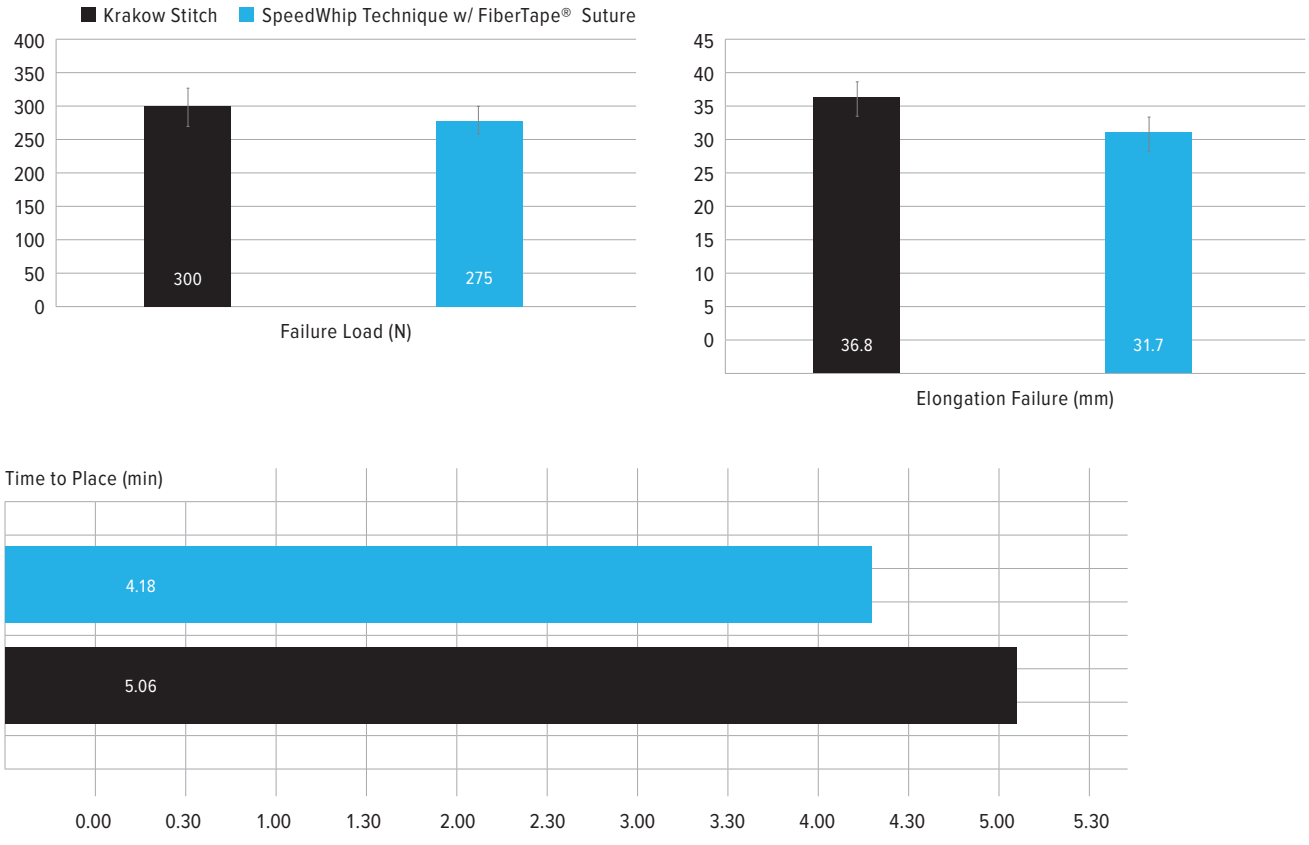
SutureTape FiberLoop and TigerLoop sutures are continuous loops of either 0.9 mm or 1.3 mm SutureTape with tapered straight needles. After passing through tissue and facilitating even tension, the easy-to-handle straight needle moves freely on the suture to reset itself.



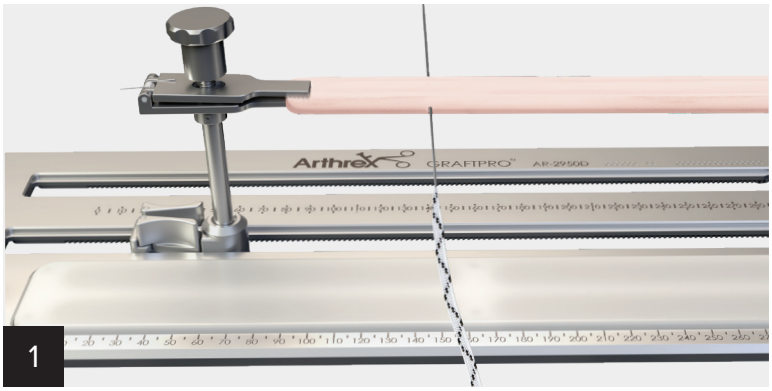
With the SpeedWhip Rip-Stop Technique for Graft Preparation:

- Drastically reduce time spent preparing grafts
- Achieve uniformly compressed and strengthened grafts[3]
- Make last-minute adjustments to graft length

Comparison of Krackow Stitch to SpeedWhip Technique for Fixation of Free Tendon Ends[3]

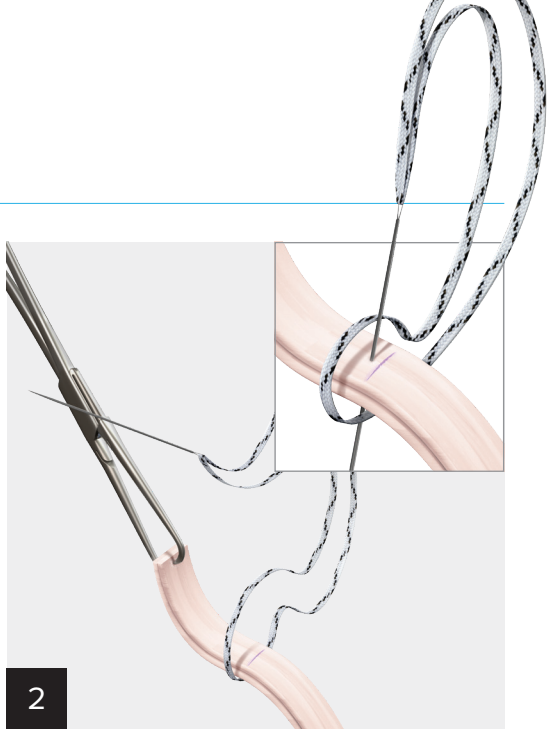


SpeedWhip™ Technique Using FiberLoop® Suture



1

Fix one end of the soft-tissue graft to the GraftPro® board attachment. Hold the opposite end of the graft by hand (using a clamp) or affix to a quick-release GraftPro attachment, allowing the graft to be easily released when passing suture over it. This technique can be performed with single- or multiple-bundle grafts.



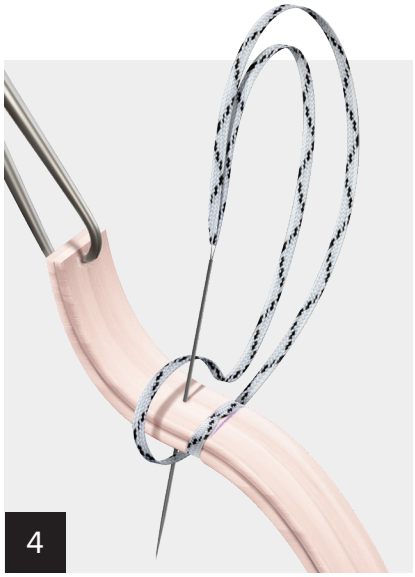
2

Pass the FiberLoop suture over the free end of the graft then pass the needle through the graft at the proximal starting point.

Note: In this technique, stitch the graft starting at a determined distance away from the end of the graft.

3

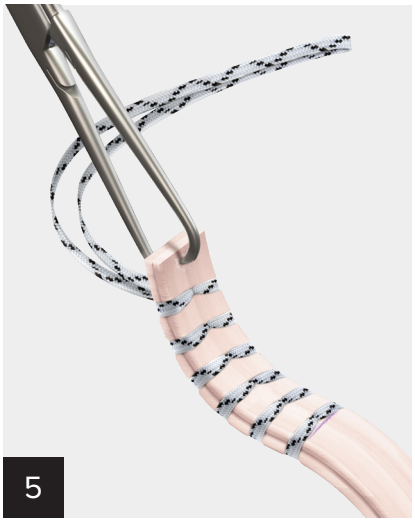
After passing and tensioning the first stitch, spread the suture strand on either side of the graft, dropping the graft between the strands.



4

Pass the needle through the graft, distal to the first pass (toward the end of the graft).

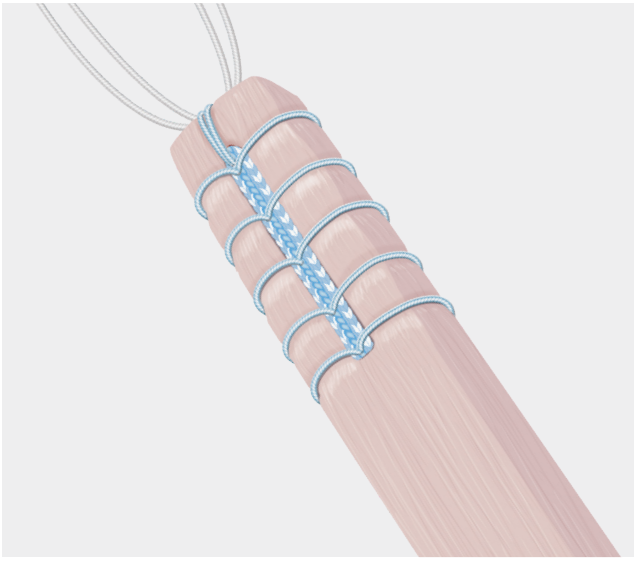
Note: Be sure the needle is inserted on the same side of the graft with each pass.

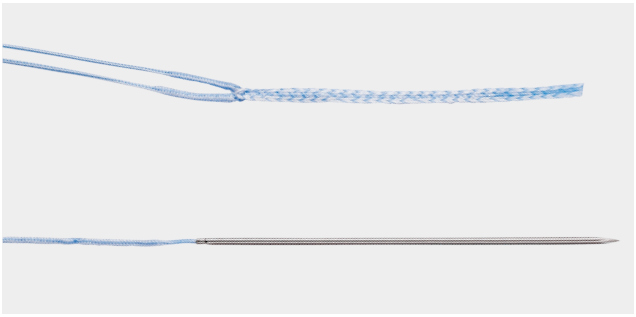


5

Repeat this process until the desired stitching length is obtained. The needle may now be cut off and the suture loop maintained, or the suture may be cut to create 2 free ends. If a last-minute change to the length of the stitched area is necessary, unthread the distal passes of suture and cut the graft to size. If a locking stitch is desired, pass the final throw around the most distal stitch to reinforce the SpeedWhip rip-stop technique.

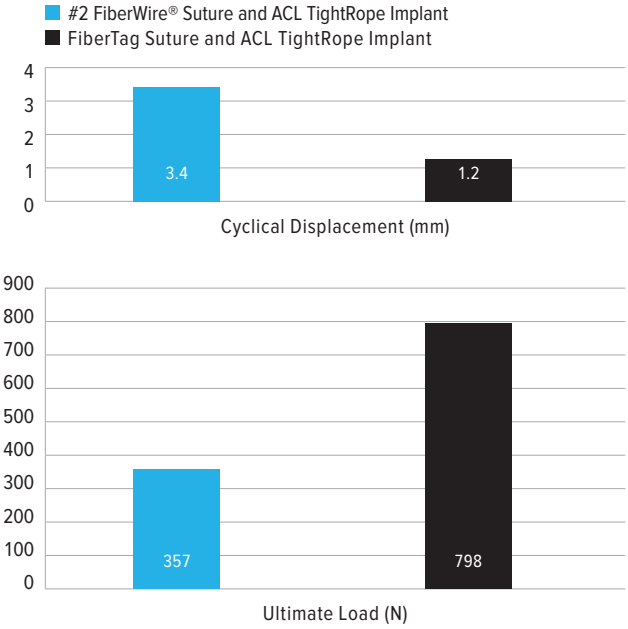
FiberLoop With FiberTag™ Suture



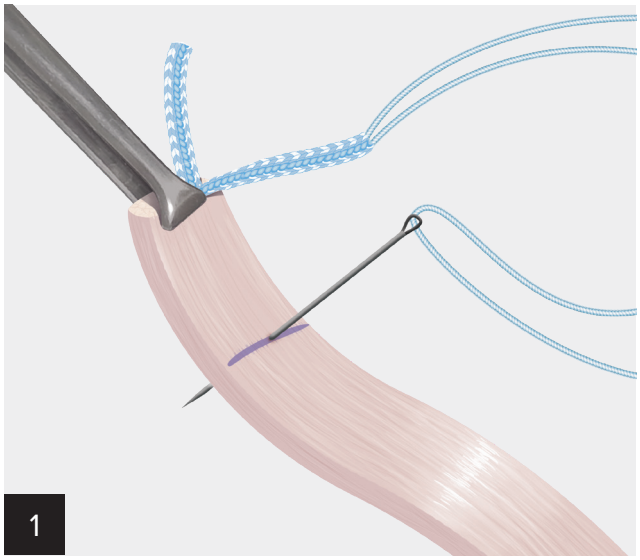


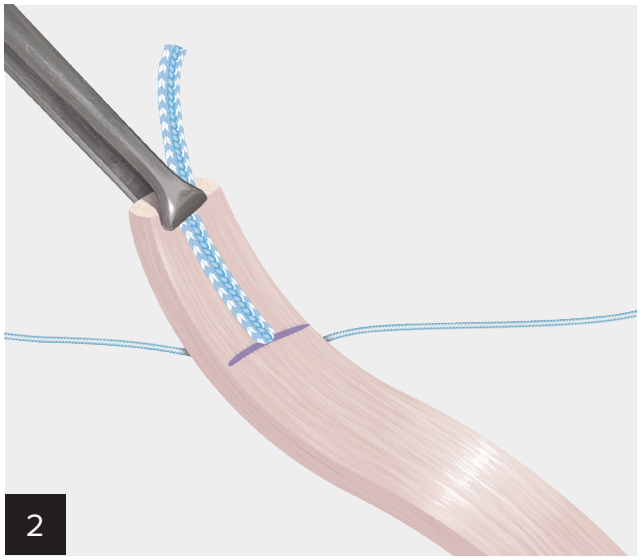
The SpeedWhip™ rip-stop technique reinforces the suture-tissue interface with FiberTag suture, eliminating the weak link in graft preparation. FiberTag suture is incorporated into the end of the FiberLoop construct so that each needle pass incorporates both graft and FiberTag suture. This construct has been shown to increase strength over standard stitching alone.[4] FiberLoop with FiberTag suture can also be used to facilitate attachment of the ACL TightRope® fixation system.

Strength Comparison of ACL TightRope Implant Attached With Locking Suture vs FiberLoop With FiberTag Suture[4]



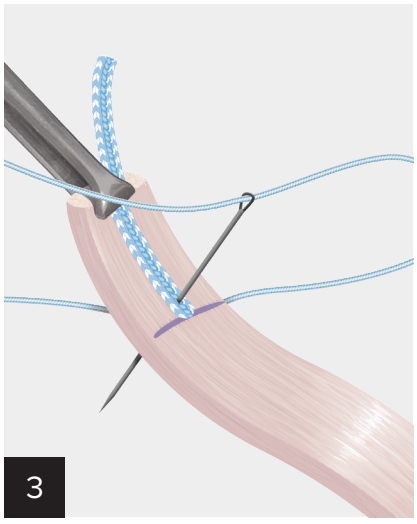
Graft Preparation With FiberTag™ Suture

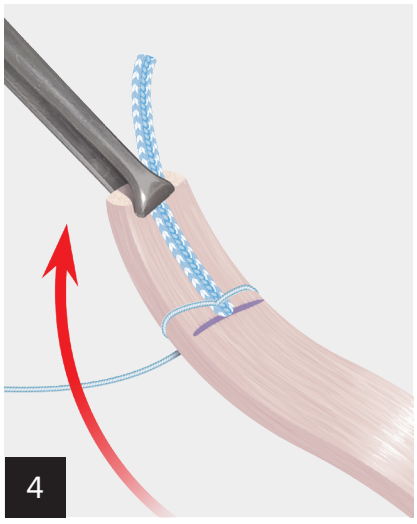




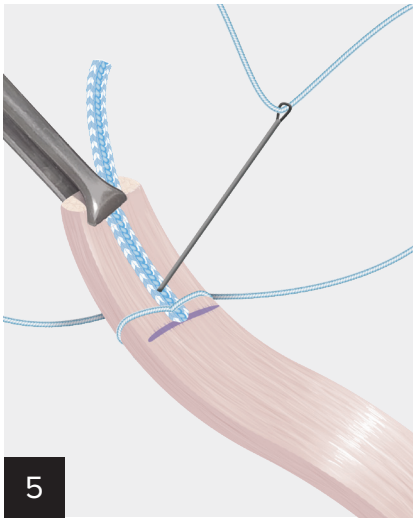
Mark the tendon at the desired length of the whipstitch. Pass the needle through the graft at the marked line. Pull the FiberLoop® suture through the graft until the FiberTag suture portion of the construct enters the tissue.

Note: A clamp may be used to hold the FiberTag suture against the graft.



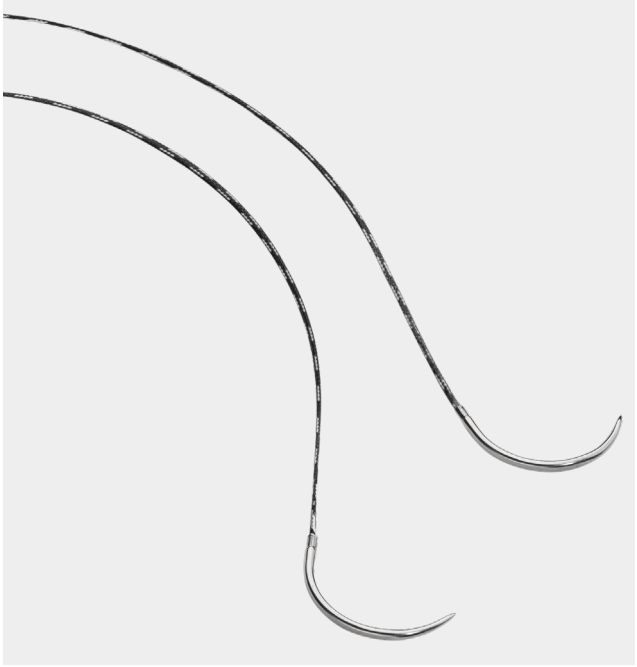


Stitch the graft using the standard technique of passing between the limbs of the FiberLoop suture, then pass the needle through the graft and FiberTape® suture.



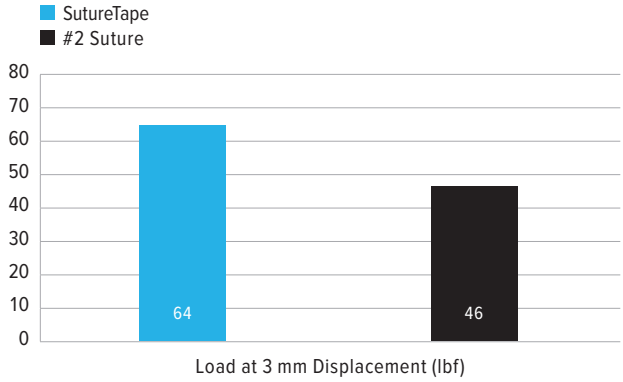
Continue stitching to the distal end of the graft. The last stitch may be passed proximal to the previous stitch to lock the construct.

SutureTape With Curved Needles



Next-generation SutureTape offers improved handling characteristics, resists tissue pull-through, and creates tighter, smaller knot stacks.[5] SutureTape is available in 0.9 mm and 1.3 mm widths with multiple color and needle options.

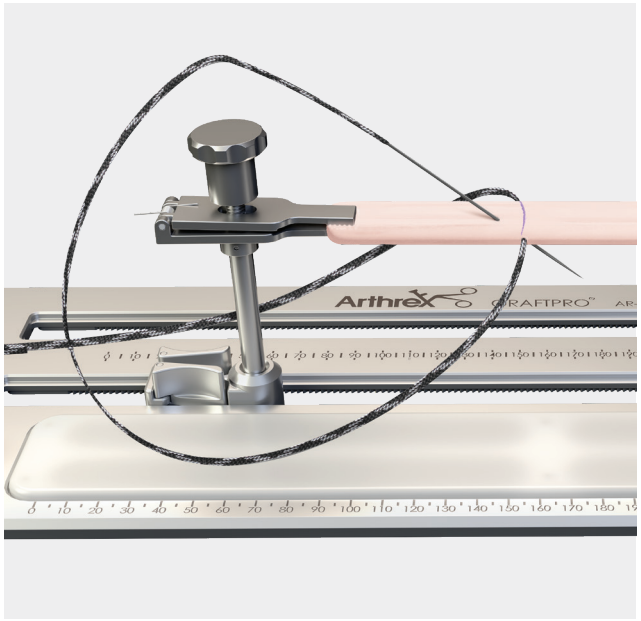
Pullout Strength With Surgeon Knot[6]

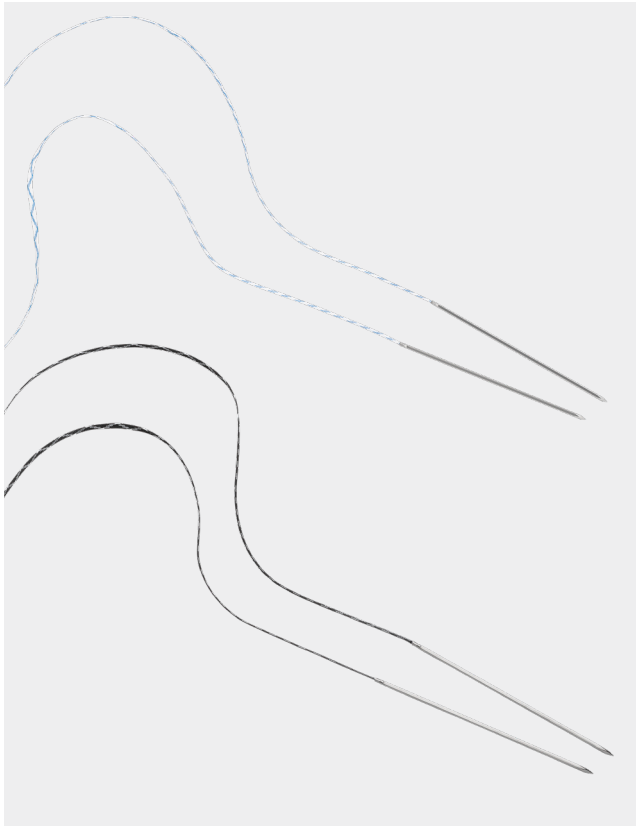


SutureTape With Curved Needles

Product Description	Item Number
SutureTape, 0.9 mm, w/ two 36.6 mm half-curved tapered needles, (white/blue)	AR-**7571-02**
SutureTape, 1.3 mm, w/ two 26.5 half-curved tapered needles, (white/blue)	AR-**7505**
SutureTape, 1.3 mm, w/ two 26.5 half-curved tapered needles, (black/white)	AR-**7505TT-02**
SutureTape, 1.3 mm, w/ two 36.6 mm half-curved tapered needles, (white/black)	AR-**7531-02**

SutureTape With Straight Needles





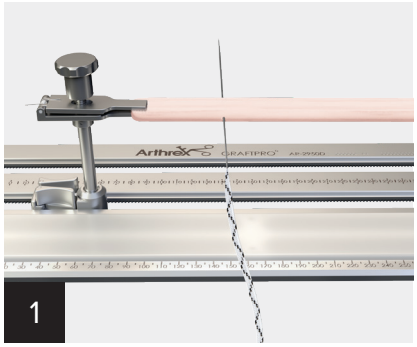
SutureTape with straight-needle constructs include a 38 in FiberWire® suture with a 64 mm straight needle on one end or a 38 in SutureTape with a 64 mm straight needle on both ends. These products are ideal for quickly creating locking stitches for graft preparation and tendon repair.

With these SutureTape and needle constructs, surgeons can create a variety of stitch patterns (without a needle holder) faster and easier with a needle attached at both ends of the suture. Additionally, the SutureTape variations are ideal for creating locking Krackow stitches for grafts and tendon repairs, including quadriceps, patellar, pectoral, and Achilles.

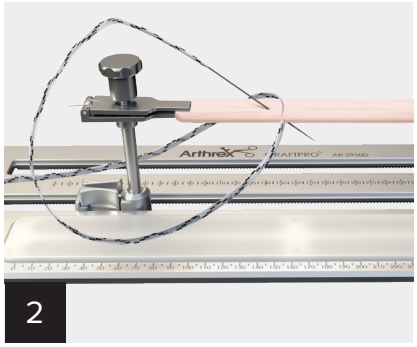
SutureTape With Straight Needles

Product Description	Item Number
SutureTape, 0.9 mm w/ 2 straight needles, (white/black)	AR-**7547T**
SutureTape, 1.3 mm, w/ 2 straight needles, (white blue)	AR-**7546-02**
SutureTape, 1.3 mm, w/ 2 straight needles, (black/white)	AR-**7546TT-02**

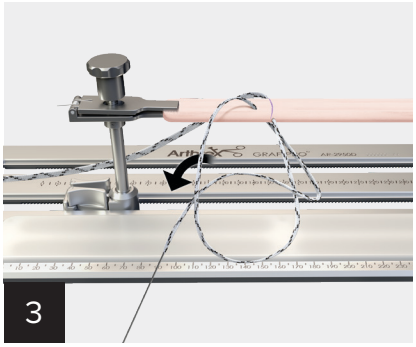
Technique Options for the Krackow Stitch



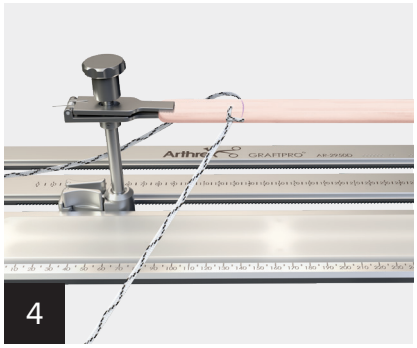
One needle transverses the tendon. Pull the first needle far enough so that it is even with the second needle.



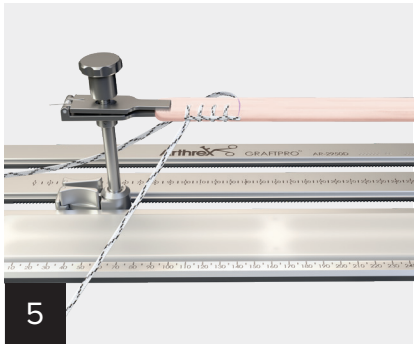
Put the needle back down through the tendon on one side. The needle enters on the lateral third of the tendon.

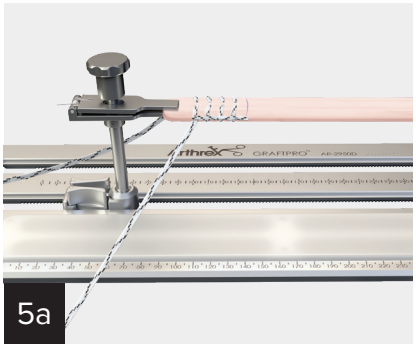


Loop the FiberWire® suture over the needle.



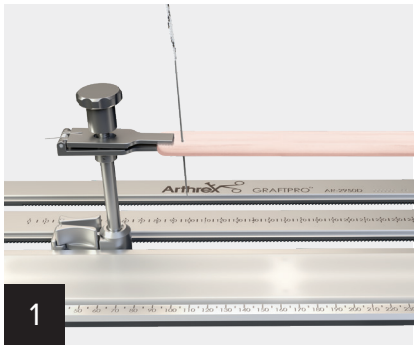
Pull the needle to create a locking stitch.



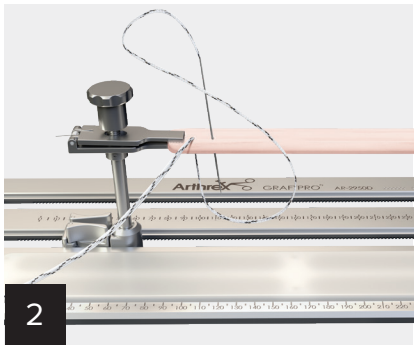


Use the first needle to create locking stitches down one side, while using the second needle to create locking stitches down the other side. This leaves 2 suture tails at the end of the tendon.

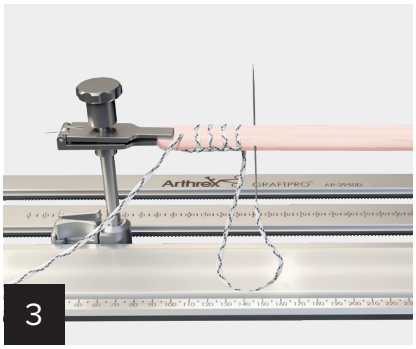
Alternative Locking Krackow Technique



Pass a single needle through the tendon near its distal end.



Pull the needle through, leaving a tail at the end of the tendon. When passing the needle through the tendon a second time, pass it through the loop to create a locking stitch.

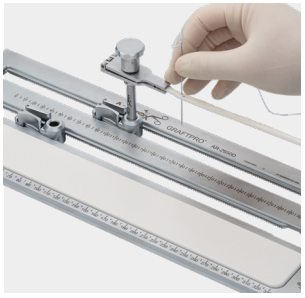


After creating several locking stitches down one side, the needle transverses the tendon. Create locking stitches down the opposite side of the tendon using the same technique. Leave the suture tails at the end of the tendon.

GraftPro® Graft Preparation System

The GraftPro system brings graft preparation and tensioning to a new level of simplicity and convenience. A unique ratcheting adjustment track system allows one-handed movement of attachments along the length of the board and locks them into place automatically. All attachments are interchangeable from the adjustable track to the fixed positions.

Two parallel rails allow simultaneous preparation and tensioning of 2 grafts at once or a single double-bundle graft. The BTB well facilitates stable cutting of patella-tendon-bone blocks and drilling of suture holes through the board. New enhanced attachments hold a variety of implants and grafts in place firmly and atraumatically.



Using the modular attachments, the graft can be repositioned into a fixed or sliding position at any angle.

The quick release of attachments facilitates graft removal while suturing.

The optional graft-cleaning board clamp holds tissue firmly against the board during tissue removal.

Enhanced button holders easily lock buttons into place to eliminate dislodging during graft preparation.

Ordering Information

Suture Configurations

Product Description	Item Number
FiberLoop® SutureTape	
0.9 mm FiberLoop SutureTape, white/blue looped w/ attached straight needle	AR-**7524**
1.3 mm FiberLoop SutureTape, white/blue, looped w/ needle	AR-**7534**
1.3 mm TigerLoop™ SutureTape, white/black, looped w/ needle	AR-**7534T**
FiberLoop With FiberTag™ Suture	
FiberLoop with FiberTag suture w/ swaged-on straight needle (blue)	AR-**7266**
FiberLoop with FiberTag suture w/ straight needle (blue)	AR-**7264**
SutureTape With Straight Needles	
SutureTape, 0.9 mm w/ 2 straight needles, (white/black)	AR-**7547T**
SutureTape, 1.3 mm, w/ 2 straight needles, (white blue)	AR-**7546-02**
SutureTape, 1.3 mm, w/ 2 straight needles, (black/white)	AR-**7546TT-02**
SutureTape With Curved Needles	
SutureTape, 0.9 mm, with two 36.6 mm half-curved tapered needles, (white/blue)	AR-**7571-02**
SutureTape, 1.3 mm, with two 26.5 half-curved tapered needles, (white/blue)	AR-**7505**
SutureTape, 1.3 mm, with two 26.5 half-curved tapered needles, (black/white)	AR-**7505TT-02**
SutureTape, 1.3 mm, with two 36.6 mm half-curved tapered needles, (white/black)	AR-**7531-02**

GraftPro® Graft Preparation System

Product Description	Item Number
GraftPro graft preparation set	AR-**2950DS**

Products advertised in this brochure / surgical technique guide may not be available in all countries. For information on availability, please contact Arthrex Customer Service or your local Arthrex representative.

References

1. Ostrander RV, Spaer MG, Juelson TJ. A biomechanical comparison of modified Krackow and locking loop suture patterns for soft-tissue graft fixation. *Arthroscopy.* 2016;32(7):1384-1388. doi:10.1016/j.arthro.2016.01.054
2. Arthrex, Inc. Data on file (sales data as of September 17, 2018). Naples, FL; 2018.
3. Botero HG, Svoboda SJ. Comparison of the Krackow locking loop stitch to a novel continuous loop suture technique for fixation of free tendon ends. Presented at: Society of Military Orthopaedic Surgeons 51st Annual Meeting; December 14-19, 2009. Honolulu, HI.
4. Arthrex, Inc. LA1-00005-EN. Naples, FL; 2017.
5. Arthrex, Inc. LA1-00038-EN_B. Naples, FL; 2017.
6. Arthrex, Inc. Data on file (APT-2799). Naples, FL; 2015.

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