PushLock®
Knotless Instability Repair

Arthrex®
**Introduction**

The PushLock is a knotless suture anchor designed for arthroscopic glenohumeral joint instability repair. The anchor provides the ability to independently pass the suture through a desired amount of tissue prior to anchor implantation. This feature allows the surgeon to properly capture the amount of capsule or labrum required for the pathology being treated. The unique two-piece PushLock design allows the surgeon to visualize and adjust tissue tension prior to final implant installation. The anchor is tapped into its final position and the sutures are cut flush.

The PushLock is available in 2.9 and 3.5 mm diameters. The body of the anchor is available in a bioabsorbable material, poly(l-lactide)acid (PLLA), a biocomposite that combines PLLA with ß-TCP, and a nonabsorbable thermoplastic material, polyetheretherketone (PEEK). All are strong, revisable and radiolucent implants, with no MRI artifact. Each version uses a PEEK eyelet for superior strength during insertion to allow firm tissue tensioning and shifting.

This guide will provide a stepwise approach to use the PushLock for Bankart and SLAP repairs.

**Advantages:**

- New 2.9 mm PushLock, designed specifically for glenoidal labral repair, maximizes the preservation of glenoid bone
- No knot impingement on hyaline cartilage surfaces
- "Suture First" technique allows for multiple stitch configurations
- Variable suture loop size allows any depth of tissue bite
- Suture tension is visualized and adjusted prior to anchor insertion
- Multiple material options

Please visit [http://pushlock.arthrex.com](http://pushlock.arthrex.com) to view detailed videos and animations of all techniques described in this guide.
A Tissue Elevator is used to mobilize the labrum. Create a bleeding bed using a Glenoid Rasp or mechanical shaver to enhance tissue healing to bone.

Load a FiberStick (#2 FiberWire® with 12 inches that are stiffened to allow easy passage through most cannulated instruments) directly into a SutureLasso™ SD and advance it through the labrum. Retrieve the FiberStick through the anterosuperior portal using a KingFisher®.

Retrieve both FiberWire tails through the anteroinferior cannula.

**Surgical Pearl:** Preload the FiberWire tails through the PushLock eyelet and place a hemostat on the suture tails to speed insertion of the PushLock after bone socket creation.

Pass the spear through the same cannula and place it on the glenoid rim. The spear should be positioned superiorly to the previously passed FiberStick. Create a bone socket for the anchor by advancing the drill through the spear until its collar contacts the spear’s handle.

If desired, an Offset Guide can be used to place the PushLock 1.5 mm onto the face of the glenoid to help create a larger labral bumper.

Advance the PushLock driver into the joint, while maintaining tension on the FiberWire tails. Tension the FiberWires to approximate the labral tissue to the eyelet and then advance both to the edge of the bone socket.
The PushLock can be combined with a FiberStick for a very quick and secure labral repair. The FiberStick is a stiffened #2 FiberWire that can be passed directly through a SutureLasso SD without the need for a separate suture shuttling step using monofilament sutures or wire loops.

Advance the PushLock into the bone socket, while releasing the FiberWire tails, until the anchor body makes contact with the bone. This maneuver reduces the labral tissue to the glenoid rim. If additional tension is desired, pull on the FiberWire tails, while keeping a firm grasp of the driver. If less tension is desired, back the PushLock out of the bone socket and correct the tissue tension by adjusting the slack in the FiberWire prior to reinsertion.

Cut the FiberWire sutures flush using an open-ended FiberWire Suture Cutter.

Tap the button on the proximal end of the driver handle to advance the anchor body into the bone socket until the second laser line is flush with the bone. Remove the driver by rotating it counterclockwise for six full revolutions.

Repeat steps one through seven for each subsequent anchor.
A tissue elevator is used to mobilize the labrum. Create a bleeding bed using a glenoid rasp or mechanical shaver to enhance tissue healing to bone.

Insert a curved SutureLasso SD (right curve for right shoulder) into the anteroinferior cannula and pass it through the capsulolabral tissue inferior to the intended position of the anchor. Advance the Nitinol wire loop into the joint. Retrieve the wire loop through the anterosuperior portal using a KingFisher.

Retrieve the FiberLink tail through the anteroinferior cannula. Pass the FiberLink tail through the FiberLink loop to create the cinch stitch. Pull on the FiberLink tail to position the cinch stitch on the labrum.

Load the looped end of the FiberLink (#2 FiberWire with one looped end) through the Nitinol wire loop. Retract the wire loop, through the SutureLasso SD, to pull the FiberLink to the distal end of the SutureLasso SD inside the joint. Remove the SutureLasso SD and wire loop together to shuttle the FiberLink through the labral tissue.

Surgical Pearl: Preload the single FiberLink tail through the PushLock eyelet and secure with a hemostat.

Pass the spear through the same cannula and place it on the glenoid rim. The spear should be positioned superiorly to the previously passed FiberLink. Create a bone socket for the anchor by advancing the drill through the spear until its collar contacts the spear’s handle. If desired, an offset guide can be used to place the PushLock 1.5 mm onto the face of the glenoid to help create a larger labral bumper.
**The PushLock can be combined with a FiberLink to create a quick cinch stitch that allows for a secure grasp of labral tissue. The FiberLink is a #2 FiberWire that transitions from a single strand to an extended loop on one end.**

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Advance the PushLock driver into the joint, while maintaining tension on the FiberLink tail. Tension the FiberLink to approximate the labral tissue to the eyelet and then advance both to the bone socket.

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Advance the PushLock into the bone socket, while releasing the FiberLink tail, until the anchor body makes contact with the bone. This maneuver reduces the labral tissue to the glenoid rim. If additional tension is desired, pull on the FiberLink tail, while keeping a firm grasp of the driver. If less tension is desired, back the PushLock out of the bone socket and correct the tissue tension by adjusting the slack in the FiberWire prior to reinsertion.

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Tap the button on the proximal end of the driver handle to advance the anchor body into the bone socket until the second laser line is flush with the bone.

Remove the driver by rotating it counterclockwise for six full revolutions.

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Cut the FiberWires flush using an open-ended FiberWire Suture Cutter.

Repeat steps one through seven for each subsequent anchor.
Posterior SLAP Repair  *Mattress Stitch*

1. Establish a lateral acromial portal for suture passage and anchor insertion. A tissue elevator is used to mobilize the labrum. Create a bleeding bed using a glenoid rasp or mechanical shaver to enhance tissue healing to bone. Load a FiberStick directly into a straight, 90° SutureLasso SD and advance it through the labrum with a deep medial bite. Retrieve the FiberStick through the anterior portal using a KingFisher.

2. Reload the SutureLasso SD with its Nitinol wire loop. Advance the SutureLasso SD through the labrum in a more lateral position (*closer to the face of the glenoid*). Retrieve the Nitinol wire loop through the anterior portal.

3. Remove the SutureLasso SD, leaving the Nitinol wire loop in place. Outside the lateral acromial portal, load the tail end of the FiberStick through the tail end of the Nitinol wire loop.

4. Gently retrieve the Nitinol wire and FiberStick tail through the anterior portal, completing the mattress stitch.
Mattress stitches can be used to minimize suture exposure. This can be especially helpful in SLAP repair where limited glenohumeral space combined with the bulky knots of traditional repair techniques may be a cause of discomfort. The PushLock Mattress Stitch technique eliminates the potential for knot related complications and better recreates the normal meniscoid appearance of the superior labrum.*

Retrieve both FiberWire tails through the lateral acromial cannula. **Surgical Pearl: Preload the FiberWire tails through the PushLock eyelet and place a hemostat on the suture tails to speed insertion of the PushLock after bone socket creation.**

Pass the spear through the same cannula and place it on the glenoid rim. Create a bone socket for the anchor by advancing the drill through the spear until its collar contacts the spear’s handle.

Tap the button on the proximal end of the driver handle to advance the anchor body into the bone socket until the second laser line is flush with the bone. Remove the driver by rotating it counterclockwise for six full revolutions.

Advance the PushLock while maintaining tension on the FiberWire tails. Tension the FiberWires to approximate the labral tissue to the eyelet and then advance the PushLock into the bone socket, while releasing the FiberWire tails, until the anchor body makes contact with the bone. If additional tension is desired, pull on the FiberWire tails while keeping a firm grasp of the driver. If less tension is desired, back the PushLock out and increase slack in the FiberWires prior to reinsertion.

Cut the FiberWires flush using an open-ended FiberWire Suture Cutter.

Repeat steps one through seven for each subsequent anchor.

* Joshua D. Dines, M.D.; and Neal S. ElAttrache, M.D., Horizontal Mattress with a Knotless Anchor to Better Recreate the Normal Superior Labrum Anatomy, Arthroscopy, December 2008
Ordering Information

2.9 mm PushLock

**Implants:**
- BioComposite PushLock, 2.9 mm x 10.7 mm AR-1923BC
- Bio-PushLock, 2.9 mm x 10.7 mm AR-1923B
- PEEK PushLock, 2.9 mm x 10.7 mm AR-1923PS

**Required Instruments:**
- Spear, Trocar and Blunt Tip Obturator, for 2.9 mm PushLock AR-1949
- Drill, for 2.9 mm PushLock AR-1923DL

**Optional Instruments:**
- Offset Guide, for 2.9 mm PushLock AR-1934R
- Spear w/Circumferential Teeth, Trocar Tip Obturator, for 2.9 mm PushLock AR-1946
- Disposables Kit for 2.9 mm PushLock (w/metal spear and drill) AR-1923DS
- Metal Cannula for 2.9 mm PushLock (e) AR-1923MCS

(Allows for percutaneous placement of the 2.9 mm PushLock.
Sutures are passed. Spear is inserted along with Metal Cannula.
Bone socket is drilled. Spear is removed leaving Metal Cannula behind. Suture Retriever is used to retrieve sutures through Metal Cannula and PushLock is inserted.)
- Disposable Silicone Dam for AR-1923MCS AR-1923MC-03

3.5 mm PushLock

**Implants:**
- BioComposite PushLock, 3.5 mm x 14 mm AR-1926BC
- Bio-PushLock, 3.5 mm x 14 mm AR-1926B
- PEEK PushLock, 3.5 mm x 14 mm AR-1926PS

**Required Instruments:**
- Spear, Trocar Tip Obturator, for 3.5 mm PushLock (c) AR-1907
- Drill, for 3.5 mm PushLock AR-1912

**Optional Instruments:**
- Offset Guide, for 3.5 mm PushLock (b) AR-1909R
- Spear w/Circumferential Teeth, Trocar Tip Obturator, for 3.5 mm PushLock (d) AR-1906
- Spade Tip Drill, for 3.5 mm PushLock (a) AR-1911
- PushLock Metal Cannula, for 3.5 mm PushLock AR-1926MC
- Disposables Kit for 3.5 mm PushLock (w/metal spear and drill) AR-1926DS
- Disposables Kit for 3.5 mm PushLock (w/offset guide and drill) AR-1926DS-2

**Recommended FiberWire**
- #2 FiberWire, 38 inches (blue) AR-7233
- #2 TigerWire, 38 inches (white) AR-7203

**FiberStick™ and TigerStick®**
The 12” stiffened section of the FiberStick suture allows convenient and easy advancement through most cannulated instruments, alleviating the need for a monofilament suture or wire suture shuttle.

- FiberStick, #2 FiberWire, 50 inches (blue) one end stiffened, 12 inches (f) AR-7209
- TigerStick, #2 TigerWire, 50 inches (white/black) one end stiffened, 12 inches AR-7209T

**FiberLink™**
FiberLink is constructed from #2 blue FiberWire and transitions from a single strand to an extended loop. This design is intended to allow easy creation of a cinch stitch.

- FiberLink, #2 FiberWire w/loop (blue) (g) AR-7235
- FiberLink, #2 FiberWire w/loop (white/black) AR-7235T
Accessory Instrumentation

**SutureLasso SD**
The small diameter SutureLassos feature a stiff shaft and a sharp, atraumatic tip with an outer diameter of only 1.8 mm. The SutureLasso SD is available in a variety of tip configurations and is pre-loaded with a Nitinol wire shuttle loop. A thumb pad is used for easy, one-handed wire advancement.

Skip a shuttling step during margin convergence suturing by loading a FiberStick directly through the SutureLasso SD in place of the Nitinol wire loop. The FiberStick is a #2 FiberWire with 12 inches stiffened to allow easy advancement through most cannulated instruments.

**Micro SutureLasso**
These 1.25 mm diameter instruments work well for percutaneous suture passing for rotator cuff repairs and glenoid labrum repairs.

**FiberWire Grasper**
This new fully toothed grasper easily retrieves multiple strands of FiberWire.

**KingFisher**
The KingFisher Suture Retriever/Tissue Grasper enables the surgeon to perform multiple tasks with one tool, improving the speed and efficiency of the procedure. The KingFisher is the optimal tool for arthroscopic tissue grasping/reduction, foreign body removal as well as suture retrieval/management. The jaws feature a self-releasing locking mechanism to aid in clamping tissue. The low profile jaws of the KingFisher allow the surgeon to reach tight areas easily.

**BirdBeak**
The BirdBeak has an extremely sharp tip to penetrate soft tissue easily and a stiff shaft that resists bending during tissue shifting procedures.

**Rhino™ Suture Passer**
The Rhino Suture Passer is the next generation in reusable suture passing devices. The extremely sharp, small diameter tip will easily penetrate soft tissue and the ridged 3.4 mm shaft will resist bending and flexing during tissue shifting procedures. The configurations include straight, left and right curve with an up tip. The novel bottom opening jaw design is conveniently positioned to capture the suture from an anchor eliminating the need to rotate the instrument. The uniquely designed WishBone style handles allow for easy operation from virtually any hand position, or standard ring handles are also available.

**Penetrator™ Suture Retriever**
This unique instrument combines a small penetrating tip with a suture grasper to allow suture delivery or extraction in one step. The 2.7 mm diameter tip slides easily through the tissue with the suture either sliding or grasped within the self-ratcheting mechanism.

**FiberWire Cutter**
The Suture Cutter was designed to facilitate arthroscopic cutting of FiberWire. The uniquely designed cutting jaws remain sharp throughout repeated use.