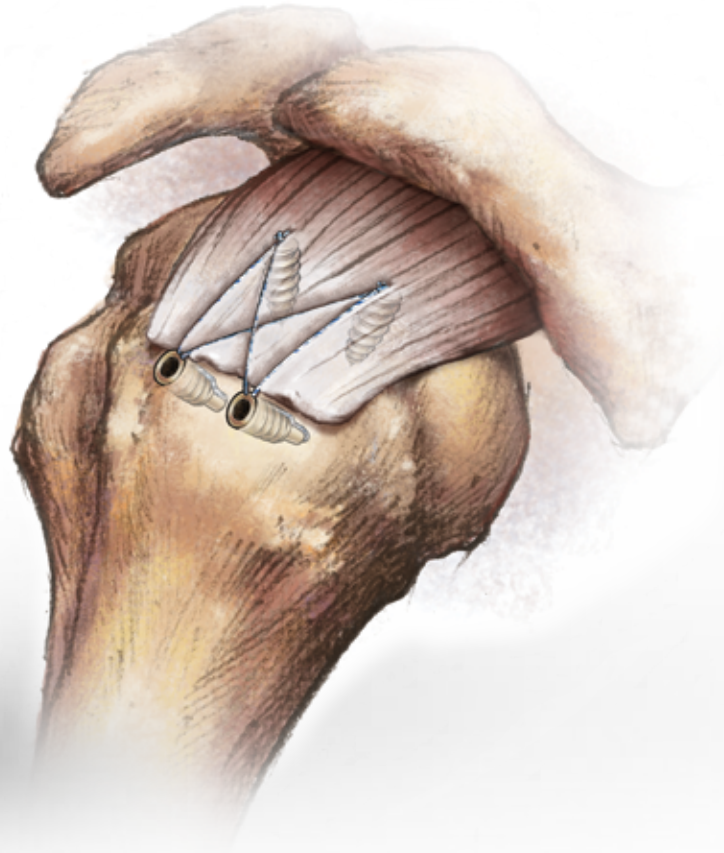
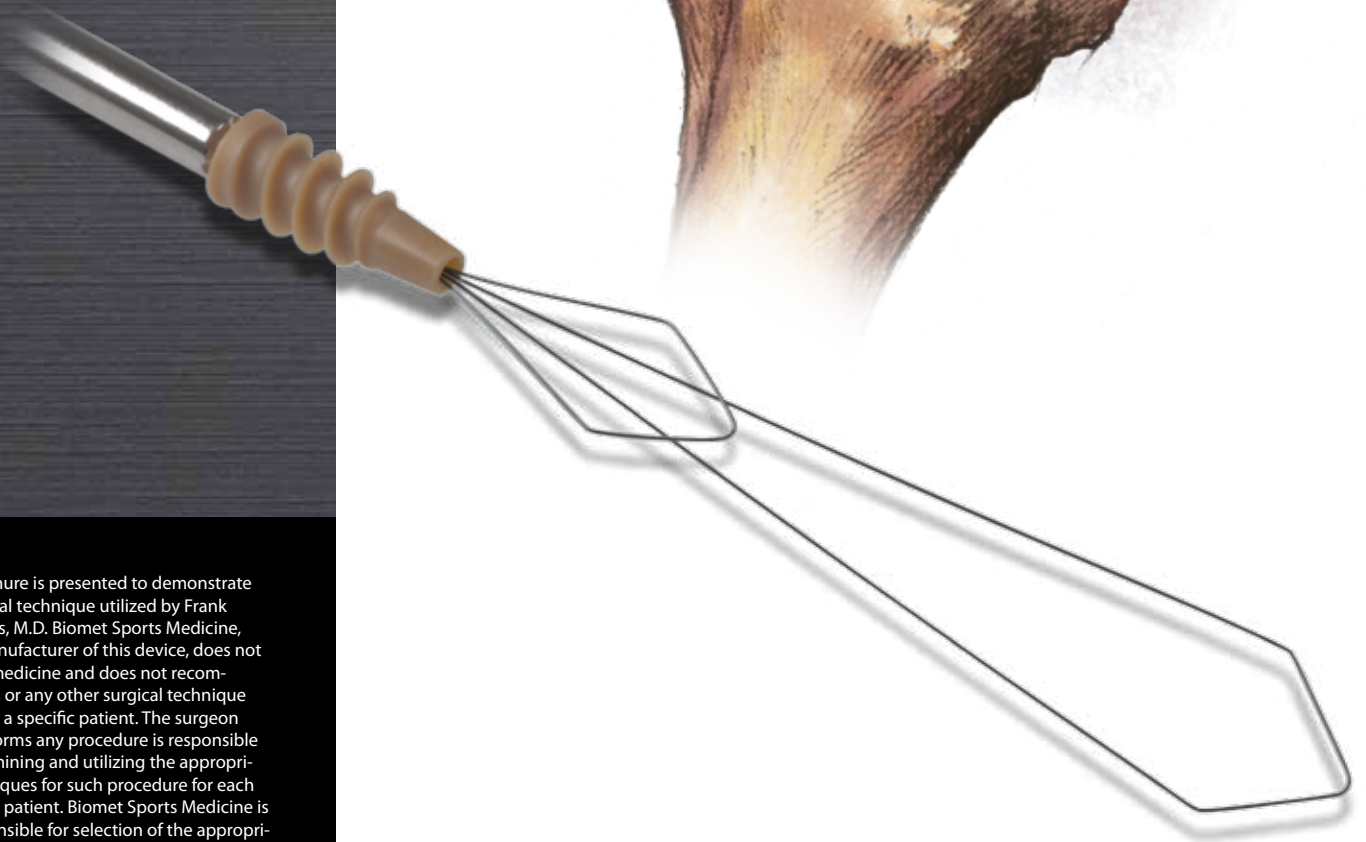
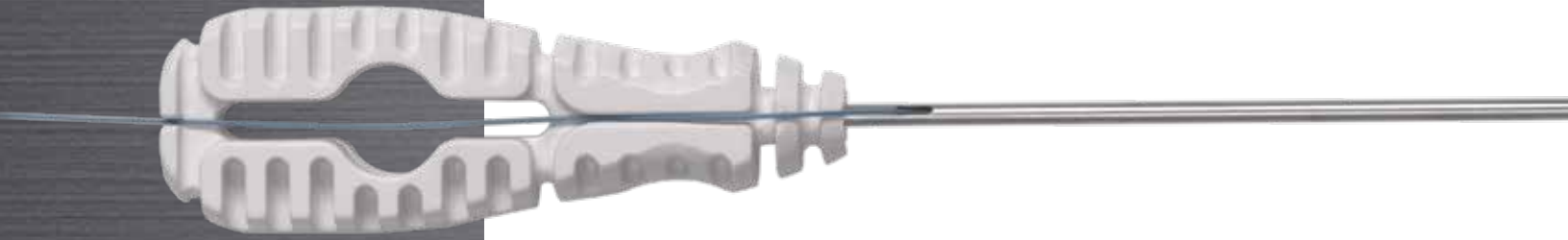


ALLthread™ Knotless
SUTURE ANCHORS



**Double Row
Rotator Cuff Repair**

Surgical Protocol by
Frank Bonnarens, M.D.



This brochure is presented to demonstrate the surgical technique utilized by Frank Bonnarens, M.D. Biomet Sports Medicine, as the manufacturer of this device, does not practice medicine and does not recommend this or any other surgical technique for use on a specific patient. The surgeon who performs any procedure is responsible for determining and utilizing the appropriate techniques for such procedure for each individual patient. Biomet Sports Medicine is not responsible for selection of the appropriate surgical technique to be utilized for an individual patient.



ALLthread™ Knotless

SUTURE ANCHORS



Features

- Single or lateral row knotless anchor
- Lower knot profile medially and completely knotless laterally
- No arthroscopic knot tying
- Compression of a larger area of rotator cuff footprint to bleeding bone bed
- Self-tensioning screw-in anchor that can be backed out if desired tension is not met
- Cannulation allows blood and platelets to be channeled through anchor body
- Up to four #2 sutures can be loaded through the inserter

Surgical Technique

Double Row Fixation with ALLthread™ Suture Anchors Placed Medially and ALLthread™ Knotless Suture Anchors Placed Laterally



Figure 1

The basic principles of arthroscopic rotator cuff repair are focused on creating an optimal environment for the tendon to heal to the bone. The biology is difficult to alter, but using it to our advantage improves the odds of success. The purpose of the second row is to increase the surface area of rotator cuff in direct contact with the bleeding bone bed.

Evaluate the Nature, Extent, and Mobility of the Tear.

Determine if releases are needed and if the repair is going to be under tension. Consider the need for converging sutures (Figure 1).

Prepare the Bone to Receive the Tendon.

Debride the soft tissue and expose the bone. A light abrasion of the bone to create a bleeding base for the tendon should be performed. There is no decortication or creation of a trough. The cortical bone needs to bleed to bond to the tendon but the cortex is needed to attain maximum strength of the suture anchor. Ensure the soft tissue is cleared laterally so that the anchor placement for the lateral row can be visualized.

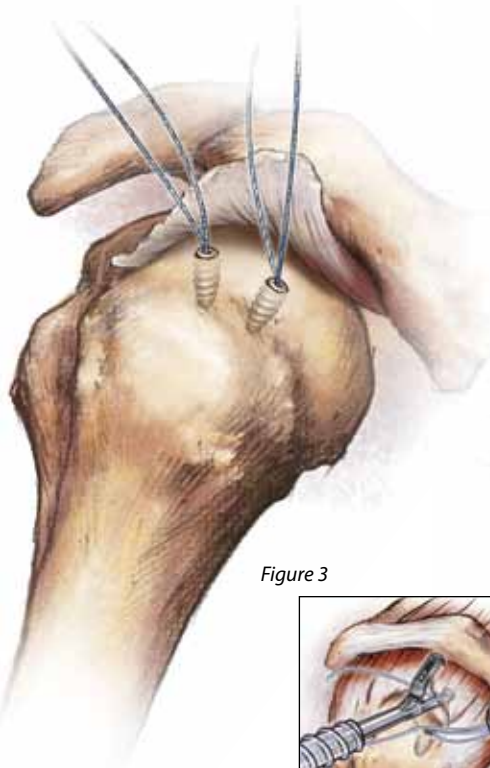


Figure 3



Figure 2

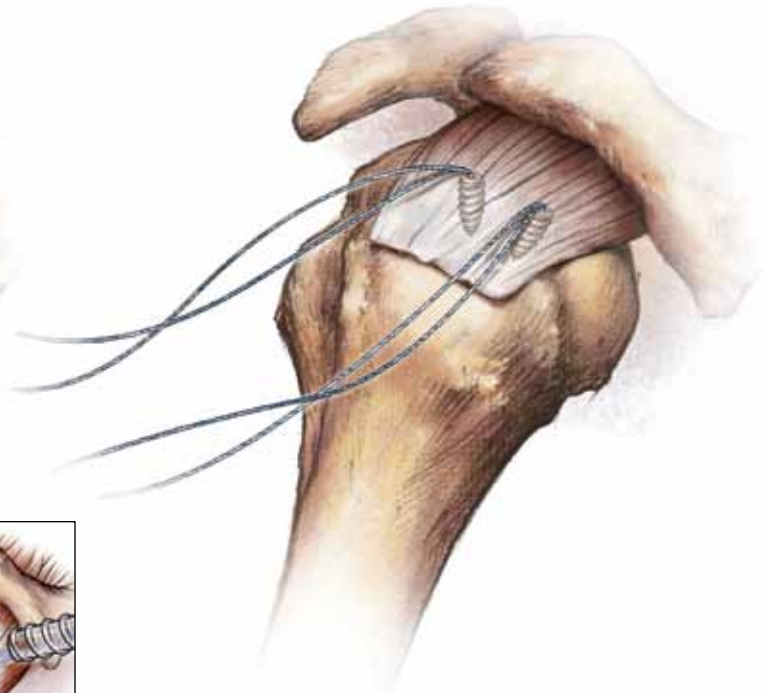


Figure 4

Reduce the Tear

Place the margin converging sutures if needed using the BiPass™ Suture Passer (Figure 2). The Vampire™ Grasper is useful in both suture management and manipulation.



Insert Medial Anchors

Make the pilot hole with the ALLthread™ punch for the medial row suture anchor through an auxiliary incision at an angle of 45 degrees. Tap if necessary. Insert the ALLthread™ Suture Anchor at approximately 45 degrees to the bone (the same angle as the pilot hole). If multiple anchors are used for the medial row they can be inserted at this point (Figure 3). **Option: the most posterior anchor can be inserted first and the following steps completed before inserting the next medial row anchor.** The second strand of suture on the ALLthread™ Suture Anchor can be removed at this point as it is not needed for this particular technique.

Pass Suture from Medial Anchors

Utilizing the lateral portal, pass the anterior most suture from a medial row anchor through the rotator cuff with the BiPass™ Suture Passer. Be sure to place a hemostat on the other end of the suture to avoid accidentally pulling it out of the anchor. Using the Vampire™ Grasper, pull the passed suture out through the anterior portal. Hemostat the end. Pass the remaining end of the suture posterior to the first strand so an inverted mattress stitch is achieved. This keeps the sutures from crossing the field where the remaining sutures will be brought through the rotator cuff (Figure 4). Both ends will be the same color. Repeat this process using the remaining suture.

Surgical Technique (continued)



Figure 5

Tie Down Suture

Pull the posterior suture ends, one at a time, through the lateral portal. They should be the same color.

Using the Nordt™ knot tightener or desired knot pusher, tie the preferred knot. If a sliding knot is being used, be sure to have four throws after the knot to lock. If a static knot is being used, use six throws. Do not sever the sutures (Figure 5). Pull the ends out of the anchor insertion incision.

Repeat these steps for the anterior sutures. There is less tension on the sutures and cuff by tying from the back to the front. Retrieve the suture ends out through the anchor insertion incision.



Figure 6



Figure 7



Figure 8

Make a Pilot Hole for the ALLthread™ Knotless Suture Anchor

Make a pilot hole for the posterior most lateral anchor through the lateral portal. Use the ALLthread™ Knotless Punch to make a pilot hole in soft (Figure 6) or intermediate bone (Figure 7). Use the ALLthread™ Knotless Tap to make a pilot hole in hard bone (Figure 8). Use a shaver to debride additional tissue from the tuberosity to ensure proper visualization for anchor insertion.

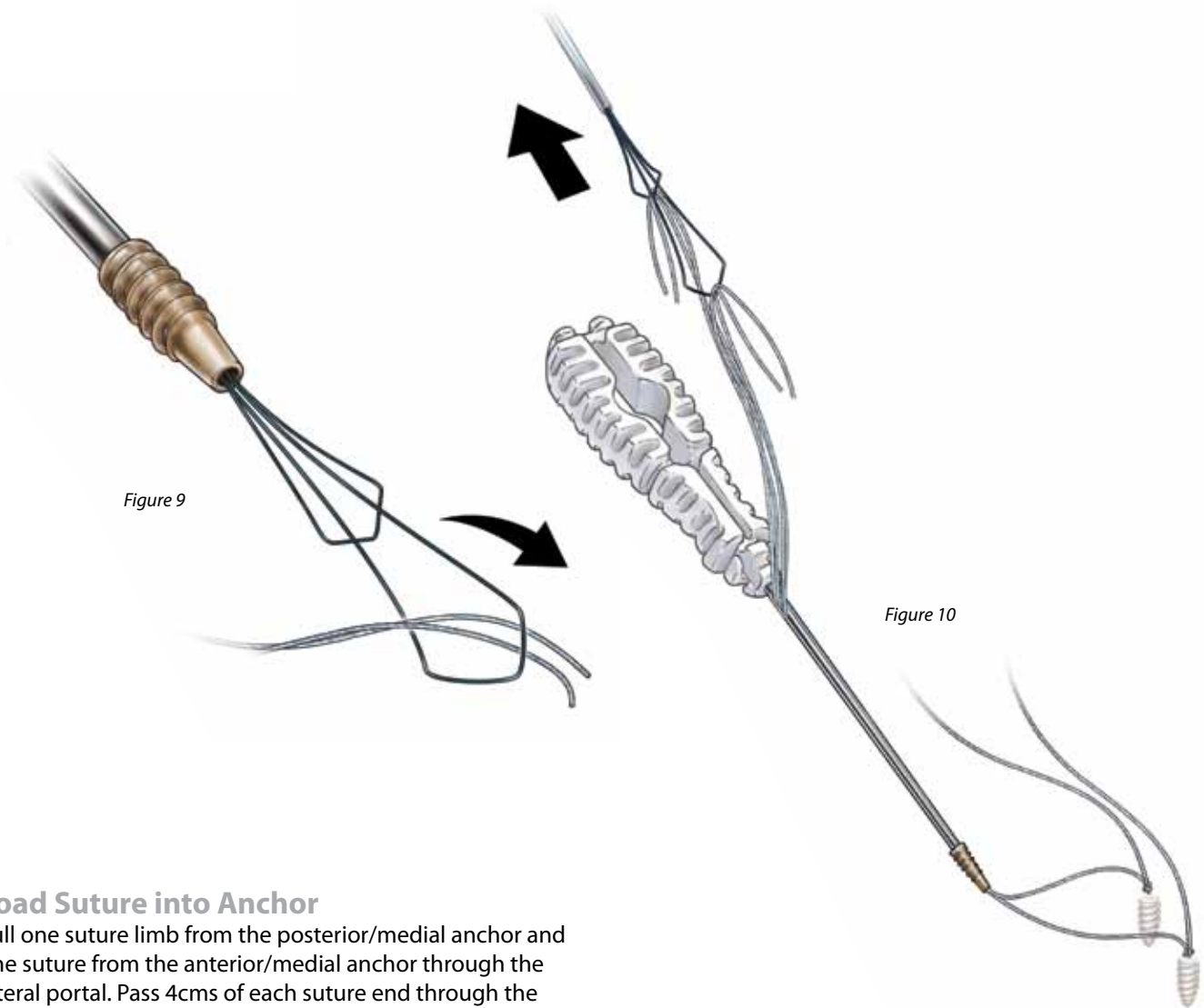


Figure 9

Figure 10

Load Suture into Anchor

Pull one suture limb from the posterior/medial anchor and one suture from the anterior/medial anchor through the lateral portal. Pass 4cms of each suture end through the passing cable at the end of the ALLthread™ anchor (Figure 9). Pull the passing cable to deliver the suture ends through the insertion handle. Pull the suture ends out of one side of the handle (Figure 10). **Up to four suture can be shuttled through the anchor.** If four sutures are shuttled through the anchor, load two limbs (2cm in length) through one Nitinol loop and the remaining two suture limbs (2cm in length) through the other Nitinol loop.

Surgical Technique (continued)

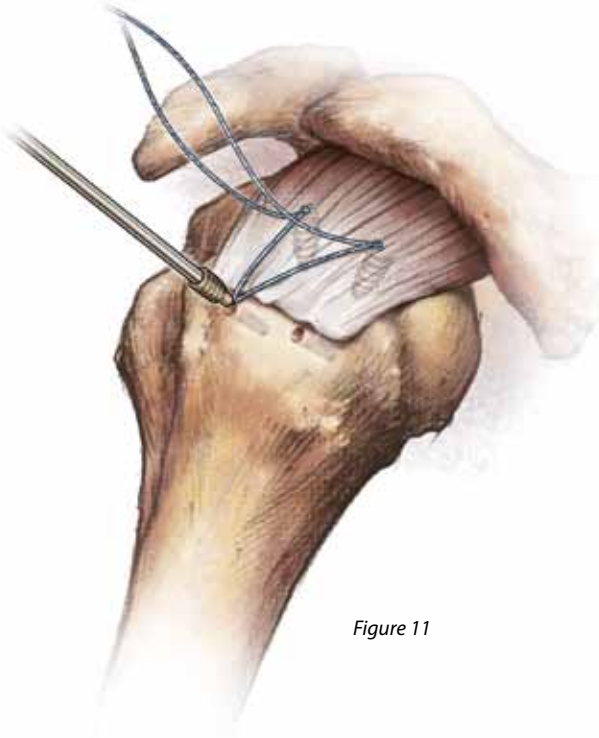


Figure 11

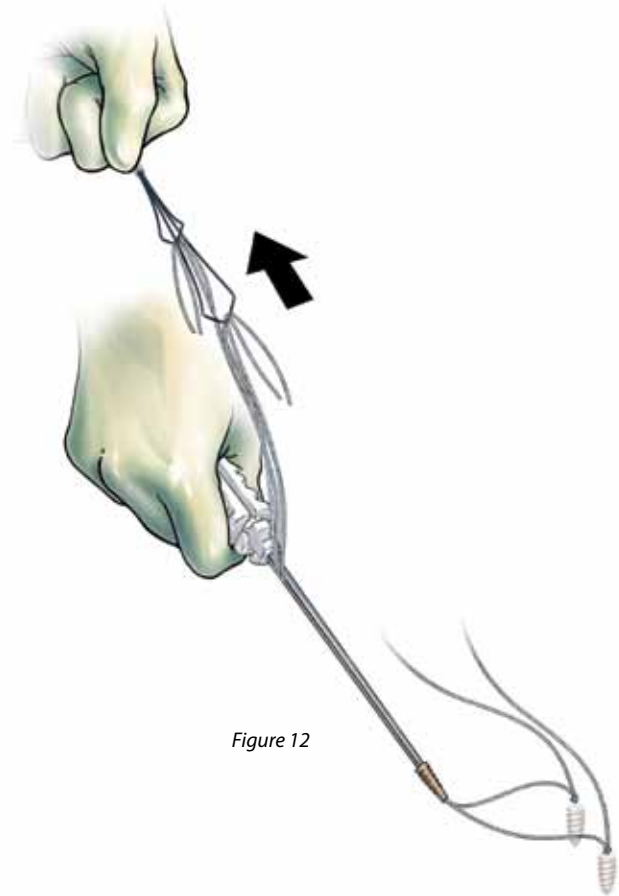


Figure 12

Insert ALLthread™ Knotless Suture Anchor

Going through the lateral portal, insert the ALLthread™ Knotless Suture Anchor into the posterior lateral pilot hole (Figure 11). Maintain the same angle of insertion as the ALLthread™ Knotless punch to ensure smooth anchor insertion. **Note: The ALLthread™ Knotless Tap may need to be used if it is difficult to find the pilot hole to insert the anchor.**

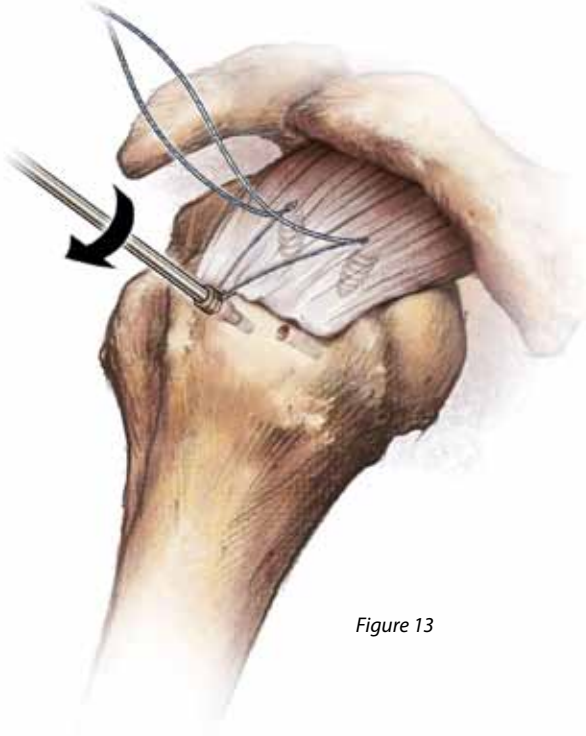


Figure 13

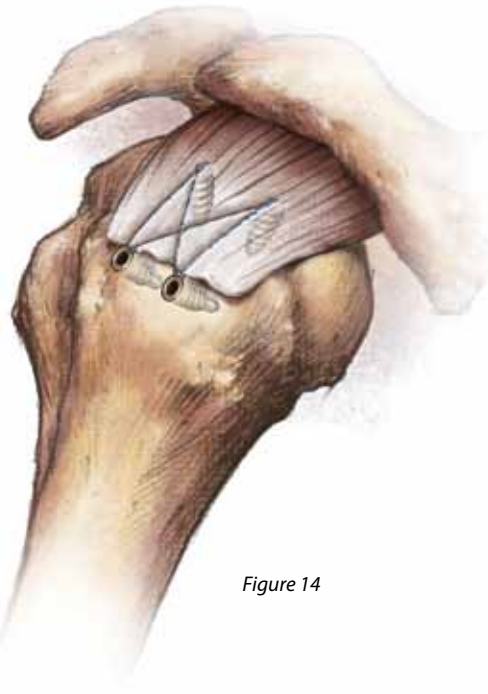


Figure 14

Pulling the suture ends away from the inserter lightly facilitates control of the suture tension (Figure 12). While maintaining gentle tension on the suture, push the nose of the ALLthread™ Knotless Suture Anchor into bone. Once the threads of the anchor have engaged the bone, release the sutures (Figure 13) and firmly screw anchor until it is flush with bone. The inserter handle can be pulled out and the sutures can be cut.

Take the remaining sutures from the medial row anchors and repeat the steps for the spanning technique to secure the lateral/anterior anchor (Figure 14). Alternative suture spanning techniques or repair configurations can be used depending on surgeon preference.

Surgical Technique

Primary Single Row Fixation using ALLthread™ Knotless Suture Anchors

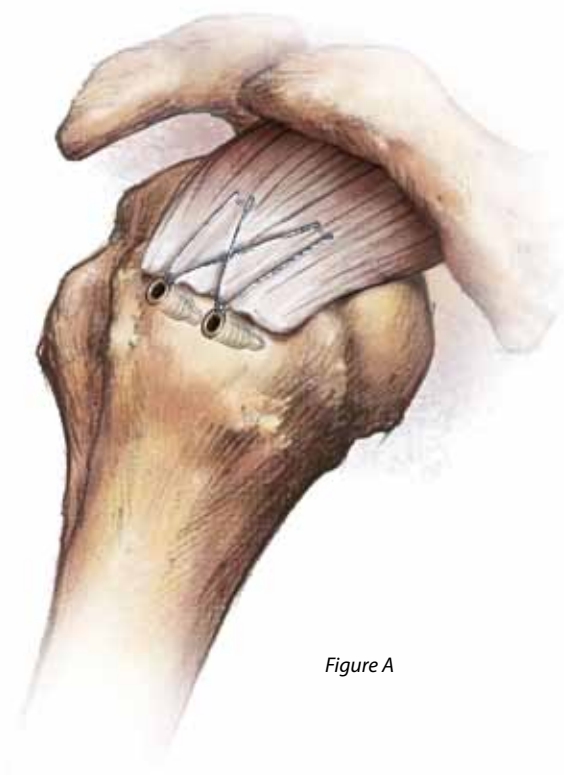


Figure A

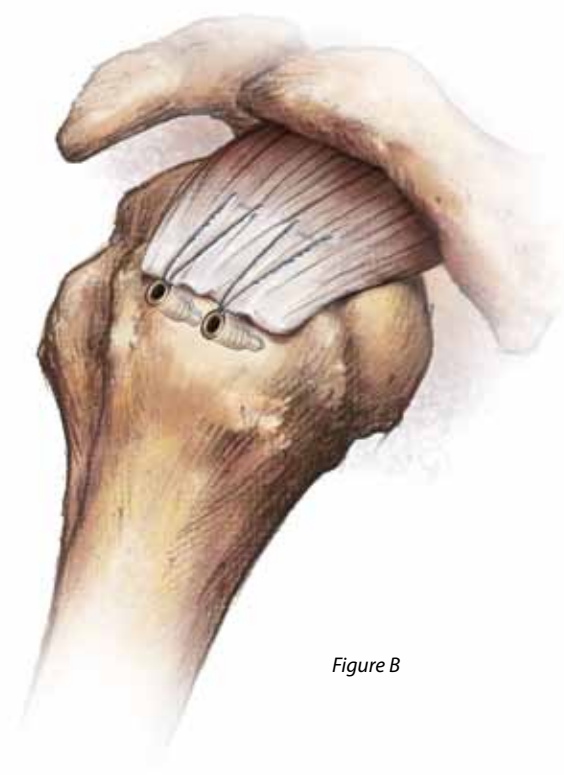


Figure B

Pass a free #2 MaxBraid™ Suture in an inverted mattress or simple stitch configuration through the tissue. Once sutures have been passed through the tissue in the desired configuration, insert the ALLthread™ Knotless Suture Anchor per the described steps in this surgical technique (Figure A). Alternative repair configurations can be used depending on surgeon preference (Figure B).

Ordering Information

ALLthread™ Knotless Suture Anchors	
904843P	5.5mm — PEEK® Optima Polymer
904844P	6.8mm — PEEK® Optima Polymer

ALLthread™ PEEK-Optima® Polymer Suture Anchors	
905940P	5.5mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905942P	5.5mm — Two #2 MaxBraid™ Suture
905943P	5.5mm — Two #2 MaxBraid™ Suture w/Tapered Needles
905941P	6.8mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905944P	6.8mm — Two #2 MaxBraid™ Suture
905945P	6.8mm — Two #2 MaxBraid™ Suture w/Tapered Needles

ALLthread™ LactoSorb® L15 Copolymer Suture Anchors	
905940	5.5mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905942	5.5mm — Two #2 MaxBraid™ Suture
905943	5.5mm — Two #2 MaxBraid™ Suture w/Tapered Needles
905941	6.8mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905944	6.8mm — Two #2 MaxBraid™ Suture
905945	6.8mm — Two #2 MaxBraid™ Suture w/Tapered Needles

ALLthread™ Titanium Suture Anchors	
902581	5.0mm — Two #2 MaxBraid™ Suture w/Tapered Needles
902582	6.5mm — Two #2 MaxBraid™ Suture w/Tapered Needles
902588	5.0mm — Two #2 MaxBraid™ Suture w/Cutting Needles
902589	6.5mm — Two #2 MaxBraid™ Suture w/Cutting Needles
902591	5.0mm — Two #2 MaxBraid™ Suture
902592	6.5mm — Two #2 MaxBraid™ Suture
902612	5.0mm — Three #2 MaxBraid™ Suture
902613	6.5mm — Three #2 MaxBraid™ Suture
902614	5.0mm — Three #2 MaxBraid™ Suture w/Tapered Needles
902615	6.5mm — Three #2 MaxBraid™ Suture w/Tapered Needles

ALLthread™ Knotless Punch

905955K 5.5mm

Tap (for LactoSorb® L15 and PEEK-Optima® Versions)

905958 5.5mm

905959 6.8mm

Awl (for LactoSorb® L15 and PEEK-Optima® Versions)

905955 5.5/6.8mm

Drill (for Titanium Version)

905961 5.0/6.5mm

BiPass™ Suture Punch

902099 Handpiece

902092 Disposable Nitinol Pusher—
Qty. 1

902094 Disposable Nitinol Pusher—
Qty. 10

AquaLoc® Cannula

900362 5 x 75mm

900366 5 x 85mm

900360 7 x 75mm

900364 7 x 85mm

900363 8.5 x 75mm

900367 8.5 x 85mm

SpeedPass™ Suture Passers

904001 70° Right Hook

904002 70° Left Hook

904003 Medium Up

Package Inserts

For description, materials, indications, contraindications and warnings, see the following package inserts at www.biomet.com/sportsmedicine:

01-50-1078 (Biomet Sports Medicine™ Non-Resorbable, Soft Tissue Anchoring Devices)

01-50-1072 (Biomet Sports Medicine Soft Tissue Anchoring Devices)

01-50-1134 (MaxBraid™ Polyethylene Suture)

01-50-149 (Biomet Sports Medicine™ Knotless Anchors)

01-50-1185 (BiPass™ Pusher Instructions for Use)

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