

Surgical Technique

NEW

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SHOULDER RESTORATION SYSTEM

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Surgical Preparation

Before the arthroscopic rotator cuff repair can begin, all glenohumeral pathology should be identified and repaired as necessary. Subacromial decompression, either with or without acromioclavicular joint excision, should be completed and the cuff carefully debrided back to viable tissue. The tuberosity should be prepared by denuding it of all extraneous soft tissue, and the margins of the rotator cuff tear should be identified. For illustration purposes, this procedure will be “viewed” through the posterior portal while working through the lateral portal. The anchors used will be inserted through separate, percutaneous incisions. The location and direction of insertion are planned using a spinal needle.

The following techniques are described
by John Randle, MD, Newmarket, Ontario, Canada

Simple Solutions for Complex Procedures

This surgical technique utilizes the following components of the Linvatec Shoulder Restoration System

Lateral Row: PopLok™

All PEEK-OPTIMA®
polymer knotless
anchor

3.5, 4.5mm
Diameter



Medial Row: CrossFT™

All PEEK-OPTIMA®
polymer fully
threaded anchor

4.5, 5.5, 6.5mm
Diameter



EM *for single and double row repair*

CrossFT™ Punch Insertion

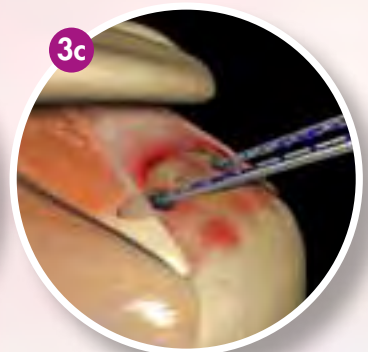
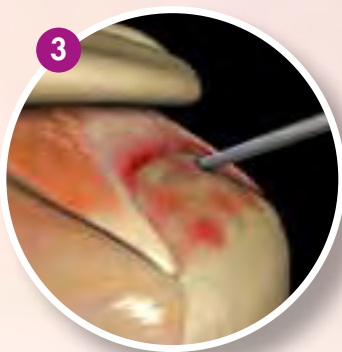
- 1 Once the ideal locations of the two medial row anchors have been determined, the Universal CrossFT™ Broaching Punch is inserted at the Dead Man's Angle, or 45 degrees to the bone, approximately 2mm from the articular margin.
- 2 The Universal CrossFT™ Broaching Punch is carefully advanced to the horizontal laser line using either hand pressure or gentle taps with a mallet.



CrossFT™ Anchor Insertion

- 3 Once the pilot hole has been created, the CrossFT™ suture anchor is inserted down to the horizontal laser line, being careful to note the eventual position of the recessed eyelet as indicated by the vertical laser line on the driver shaft.

A second pilot hole is created by the Universal CrossFT™ Punch near the posterior edge of the tear, close to the articular margin. The second CrossFT™ suture anchor is then inserted into the pilot hole.



Horizontal Mattress Suture Passage

- 4 Using the matched suture colors from each CrossFT™ suture anchor, the free ends are passed through the torn edge of the rotator cuff to fashion a horizontal mattress stitch. This is performed with paired sutures from both the anterior and posterior medial row CrossFT™ anchors.



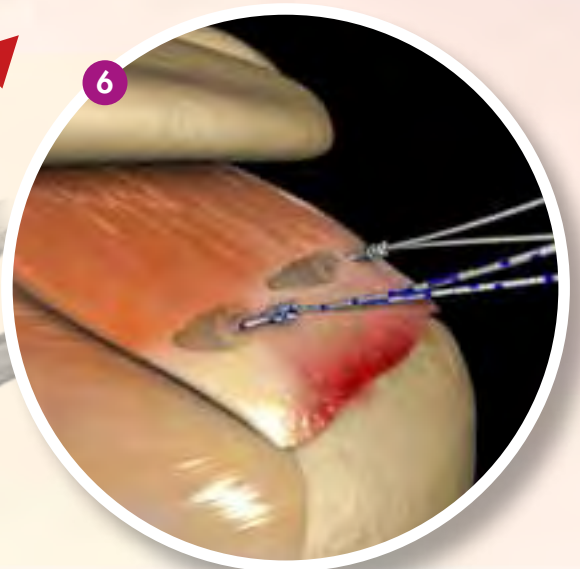
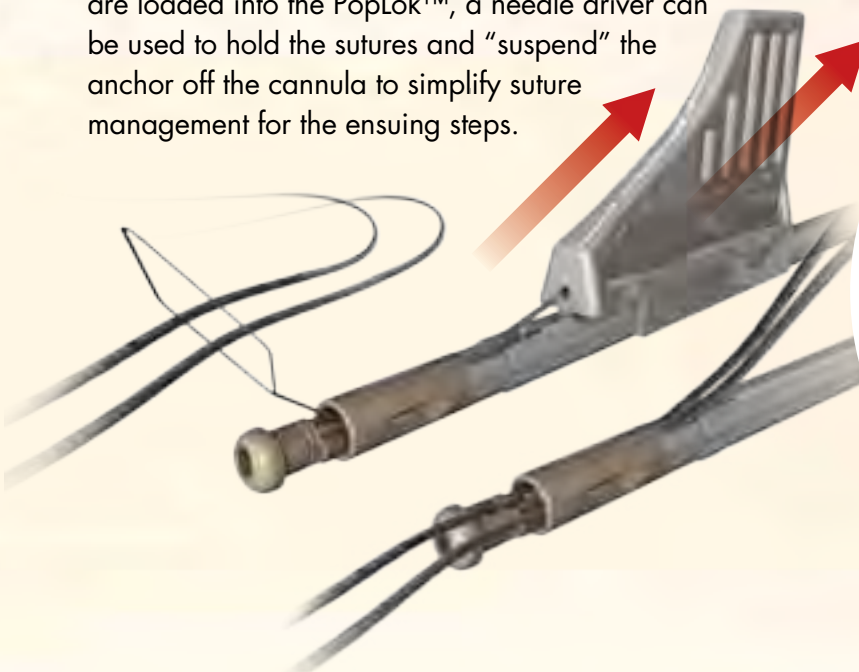
- 5 Each pair of horizontal mattresses is tied and not cut, but rather preserved by retrieving them out of their respective "anchor portal". At this point the second suture from each anchor may be removed as it will not be used for the final construct.



Lateral Row PopLok™ Anchors

- 6 The anterior-most suture from each CrossFT™ suture anchor is retrieved out of the lateral working cannula.

The pair of sutures is then loaded through the PopLok™ anchor using the suture loading tab. Once the sutures are loaded into the PopLok™, a needle driver can be used to hold the sutures and "suspend" the anchor off the cannula to simplify suture management for the ensuing steps.



PopLok™ Punch Insertion

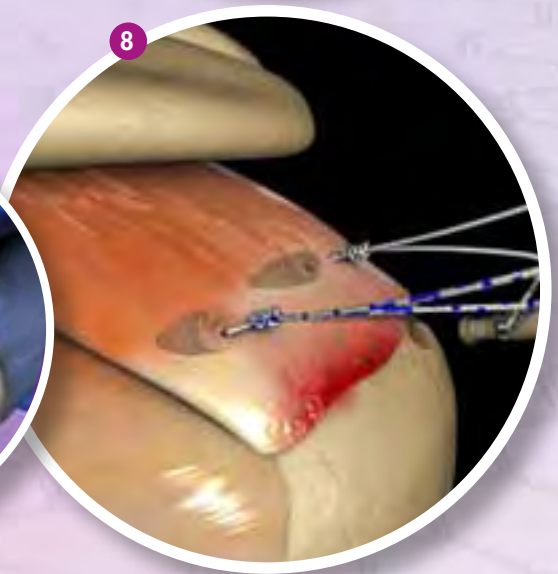
- 7 The shoulder is externally rotated to help bring the ideal point for insertion of the 3.5mm PopLok™ punch in line with the lateral working cannula. External rotation facilitates easier placement of the anterior-most lateral row anchor. The PopLok™ punch is inserted down to the laser line, creating the anterior-most pilot hole for the lateral row of anchors.



Tips for PopLok™ Insertion

- 8 Being careful to duplicate the insertion angle of the punch, the PopLok™ anchor is introduced into the same hole.

When advancing the anchor, hold the handle as shown.



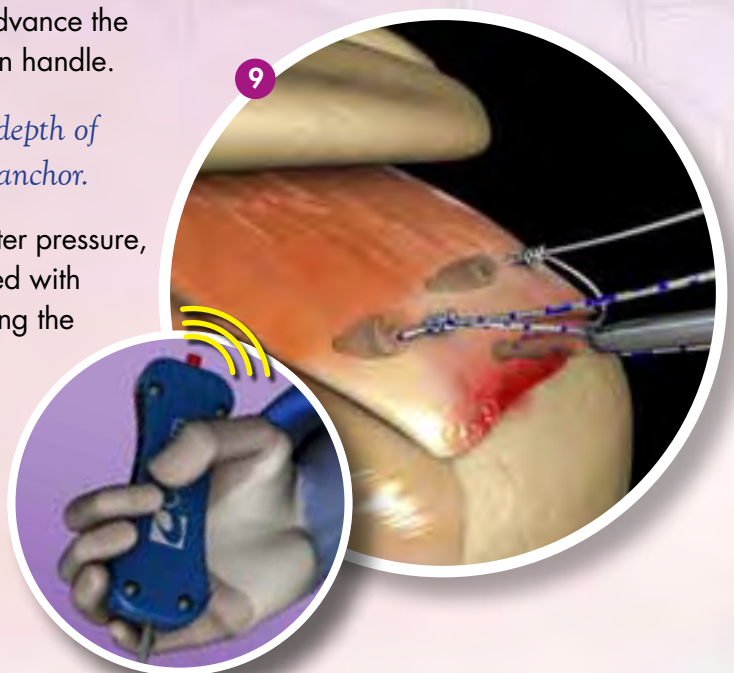
Anterior PopLok™ Insertion

- 9 Hand pressure or a mallet can be used to gently advance the PopLok™ to the horizontal laser line on the insertion handle.

Do not insert the anchor beyond the laser line as depth of insertion is critical to optimal functioning of this anchor.

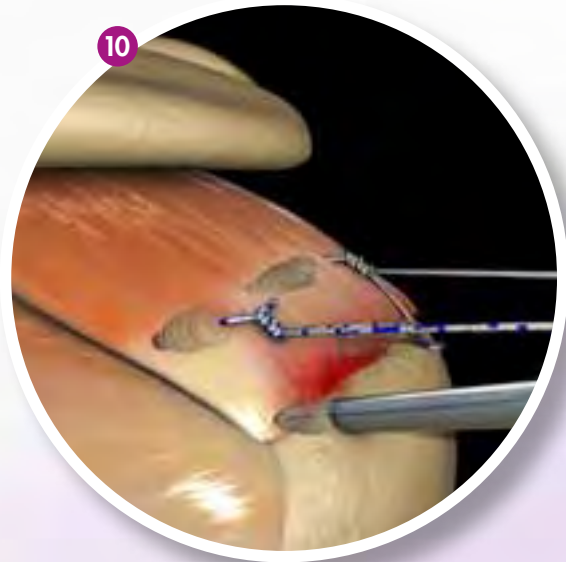
While maintaining the anchor in its hole with counter pressure, the sutures are individually tensioned. Once satisfied with suture tension, the PopLok™ is deployed by releasing the Pre-deployment Guard and applying firm and constant pressure on the deployment trigger until the audible 'POP' is heard. At that point, the insertion handle can simply be removed and the "suture tails" cut with a Katana® Suture Cutter.

The characteristic audible "POP" and the red visual indicator confirm proper deployment of the anchor.



Posterior PopLok™ Insertion

- 10 After the sutures tails are cut and removed, the posterior-most sutures from each CrossFT™ anchor are retrieved out the lateral working portal and inserted into the second PopLok™. The arm is internally rotated to facilitate the insertion of the posterior lateral row anchor. As with the previous PopLok™ anchor, the 3.5mm PopLok™ punch is used to make the posterior pilot hole. The PopLok™ anchor is then inserted to the horizontal laser line, the sutures tensioned and the anchor deployed.



Final Repair and Considerations

- 11 The Katana® Suture Cutter then cuts the remaining suture tails and the completed repair is viewed.



The completed repair should be viewed from the posterior and lateral portals, ensuring good compression across the tendon and appropriate placement of the anchors. The repair should also be viewed from the articular side to confirm that the medial row has compressed the tendon at the articular margin.

Single-Row Techniques



Simple Stitch

Pass paired stitches through the torn tendon. Place the paired suture limbs through the 4.5mm PopLok anchor and insert in the footprint of the supraspinatus. For smaller tears only a single anchor and 2 pairs of sutures (for a total of 4 suture limbs) are used. For larger tears, 2 or even 3 anchors can be used. The anchors should be spaced at least 9mm apart. Suture organization is enhanced by utilizing (suture) stab insisions.

Mattress Loop Stitch

For this stitch, the sutures are passed similarly to a horizontal mattress except both ends of the suture are brought back through the trailing loop. The loop closes around the tendon as the suture is tensioned in the anchor. Only a single pair of suture limbs (or single loop) should be used per anchor to prevent bunching of the tendon during tensioning.



Horizontal Mattress (Inverted) Stitch

A horizontal mattress (inverted) stitch provides broader compression of the tendon onto the greater tuberosity. A single horizontal mattress stitch should be used with each anchor to prevent bunching of the tendon, which can occur when attempting to bring too many different parts of the tendon down to a single anchor point.

ORDERING INFORMATION

PopLok™ Anchor

CKP-4500	4.5mm PopLok Anchor
CKP-4502	4.5mm PopLok Anchor w/two #2 HiFi® Sutures
CKP-3500	3.5mm PopLok Anchor
CKP-3501	3.5mm PopLok Anchor w/one #2 HiFi® Suture

CrossFT™ Anchor

CFP-4502	4.5mm CrossFT , 2 sutures
CFP-4503	4.5mm CrossFT , 3 sutures
CFP-5502	5.5mm CrossFT , 2 sutures
CFP-5503	5.5mm CrossFT , 3 sutures
CFP-6502	6.5mm CrossFT , 2 sutures
CFP-6503	6.5mm CrossFT , 3 sutures

Paladin™ Rotator Cuff Anchor

C5070H	Paladin 5.0mm Driver with Anchor
C6570H	Paladin 6.5mm Driver with Anchor

Super Revo®- FT & ThRevo®- FT Anchors

CF6140H	5.0mm Super Revo-FT
CF6160H	5.0mm ThRevo-FT

PopLok™ Instrumentation

PKL-35M	3.5mm PopLok Punch
PKL-45M	4.5mm PopLok Punch

CrossFT™ Instruments

PFT-00M	Universal CrossFT Broaching Punch
PFT-45M	4.5mm CrossFT Broaching Punch
PFT-55M	5.5mm CrossFT Broaching Punch
PFT-65M	6.5mm CrossFT Broaching Punch
TFT-45M	4.5mm CrossFT Tap
TFT-55M	5.5mm CrossFT Tap
TFT-65M	6.5mm CrossFT Tap

Paladin™ Rotator Cuff Instruments

C5075	5.0mm Paladin Tap
C6575	6.5mm Paladin Tap

Linvatec-SRS Sterilization Tray

RCR-TRAY	Linvatec Shoulder Restoration System Tray
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