

## THE NEXT GENERATION IN ROTATOR CUFF REPAIR

### VERSATILITY

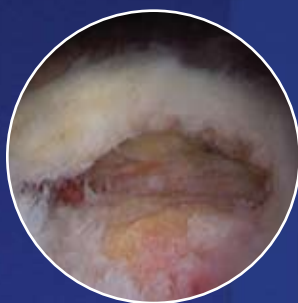
Allows a variety of suture configurations including suture spanning to meet the demands of various types of tear configurations

### STRENGTH

Engineered to precisely control tension and lock sutures within the anchor to provide strength and durability of rotator cuff repair

### SPEED

Designed to minimize insertion steps to allow efficient placement of anchors while maximizing repair strength



# VERSALOK™

## Surgical Technique for Rotator Cuff Repair

JEFFREY HALBRECHT, MD  
Designing Surgeon  
San Francisco, CA

ALLEN DEUTSCH, MD  
Houston, TX

# VERSATILE BECAUSE...



**Dual Row Fixation:**  
Suture spanning criss-cross  
utilizing SPIRALOK™ and  
VERSALOK™ anchors



**Single Row Fixation:**  
VERSALOK anchors with  
inverted mattress stitch



**Single Row Fixation:**  
VERSALOK anchors with  
simple stitch



**Dual Row Fixation:**  
Suture spanning utilizing  
SPIRALOK and VERSALOK  
anchors



**JEFFREY HALBRECHT, MD**

*Designing surgeon*

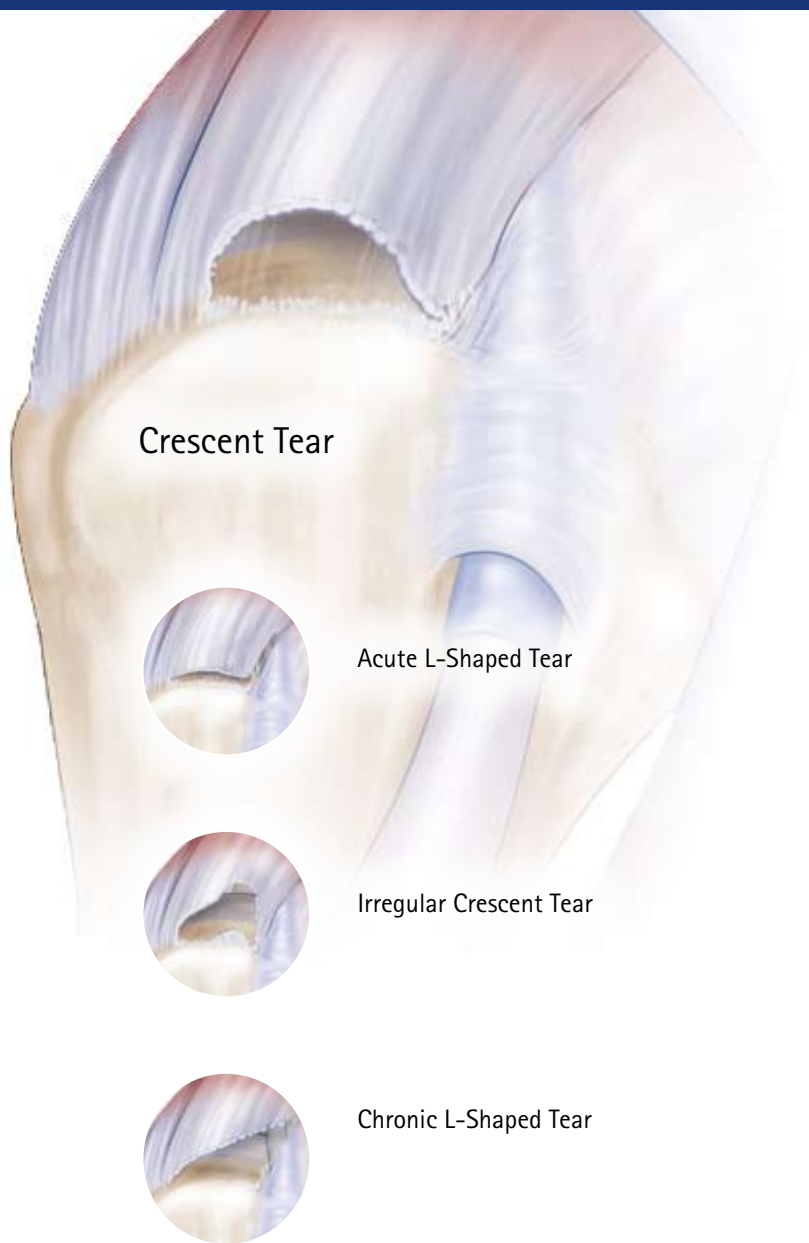
Dr. Halbrecht is a nationally recognized orthopedic surgeon specializing in Sports Medicine and Arthroscopic Surgery and has lectured extensively around the country. Dr. Halbrecht is currently the Medical Director of the Institute for Arthroscopy and Sports Medicine in San Francisco. He is the former Medical Director for the Women's Pro Ski tour, and has been a consultant for USA Soccer, USA Gymnastics, and AVP Volleyball. Dr. Halbrecht has written numerous articles and book chapters and continues to do research on new techniques in cartilage transplantation, rotator cuff repair, and arthroscopic surgery of the knee. Dr. Halbrecht has been a Master Instructor in Arthroscopic Surgery of the Shoulder at the OLC, and is a member of the AANA and AOSSM.



**ALLEN DEUTSCH, MD**

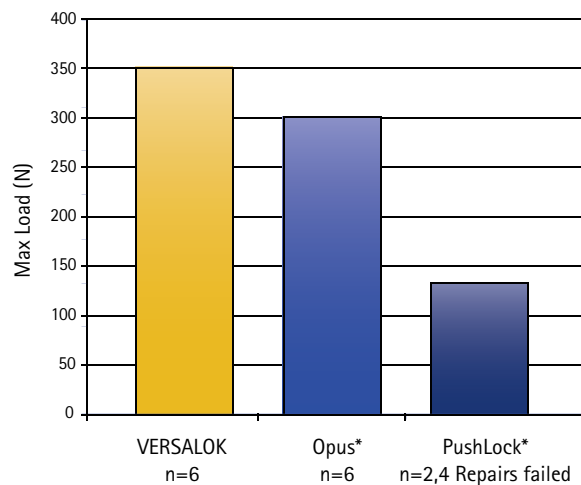
Dr. Deutsch is a diplomate of the American Board of Orthopedic Surgery. He completed his residency at Case Western Reserve University in Cleveland, OH, and a fellowship in shoulder and elbow surgery at the University of Pennsylvania in Philadelphia. He is an associate member of the American Shoulder and Elbow Surgeons organization and is a member of the Arthroscopy Association of North America. Dr. Deutsch is a Clinical Assistant Professor in the Department of Orthopaedic Surgery at Baylor College of Medicine in Houston, Texas. Dr. Deutsch is active in basic science and clinical research relating to arthroscopic rotator cuff repair.

# NO TWO TEARS ARE THE SAME.



## STRENGTH OF VERSALOK

Cadaveric Anatomical Pullout Load After 200 Cycles of Cyclic Load



\* Opus is a Trademark of Arthrocare Inc.

\* PushLock is a Trademark of Arthrex



## The new VERSALOK suture anchor

from DePuy Mitek, Inc. was designed to allow for versatile suture configurations in rotator cuff repair that includes single row, dual row, and suture spanning fixations, with the ultimate goal of footprint restoration that is consistently reproducible. The VERSALOK anchor provides the ability to precisely control the tension of the suture, and the unique design locks the suture within the anchor, providing strength and durability of the repair without the need to tie knots.

This brochure provides 3 descriptions of rotator cuff repairs using the VERSALOK anchor - a discussion of single row fixation and two double row fixation techniques. First, Dr. Jeff Halbrecht describes his single row technique followed by his traditional double row and dual row spanning criss-cross fixation technique. Next, Dr. Allen Deutsch provides a description of his dual row spanning technique in which he uses FASTIN® RC anchors in conjunction with the new VERSALOK rotator cuff anchor to recreate the anatomic footprint of the cuff.



## JEFFREY HALBRECHT, MD

### Initial Arthroscopy and Cuff Assessment

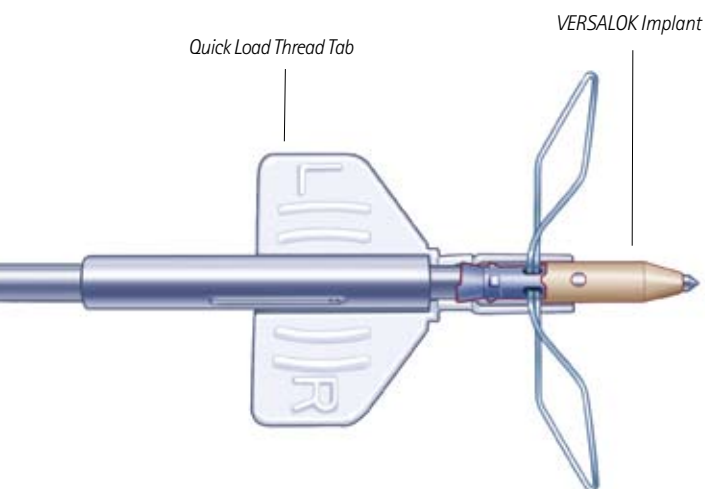
- A. The patient is placed in either the lateral decubitus or beach chair position. After diagnostic arthroscopy, subacromial decompression is performed in the usual fashion.
- B. The rotator cuff tear is prepared by gently debriding unstable fragments and degenerative tissues.
- C. The type of tear is determined, and an assessment is made as to whether a single or double row repair would be appropriate. In general, if there is adequate tissue and the cuff is mobile, a double row repair is preferred due to improved footprint fixation. We will describe both techniques.

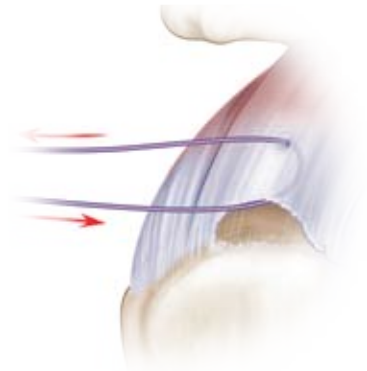
### Establish a Working Portal

- D. Our preference is to place the arthroscope in the lateral position and to establish 3 additional working portals: anterior, posterior, and a second lateral insertion portal. Clear cannulas are placed in these 3 portals.
- E. Gently abrade the bone at the anticipated site of rotator cuff attachment to promote a healing bed for the tendon.

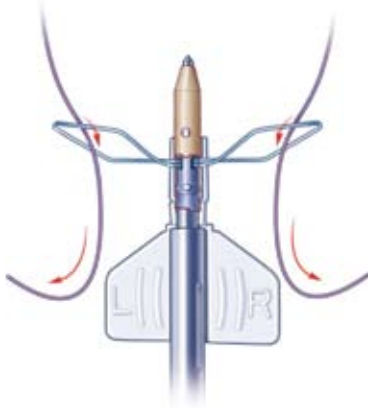
### Single Row

- F. Use a suture-passing device such as EXPRESSEW™II, CLEVERHOOK™, or CHIA PERCPASSER™ to pass a strand of ORTHOCORD™ or ETHIBOND® suture through the edge of the torn rotator cuff. (When multiple sutures are indicated, it is easiest to place all sutures at this point and retrieve them out of an accessory cannula for later use.)



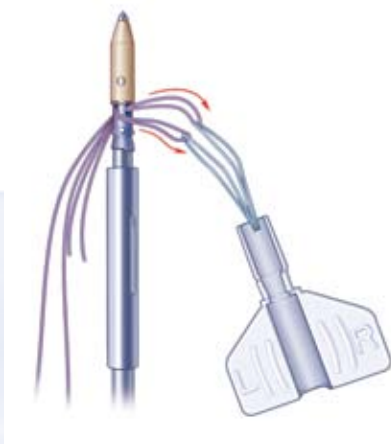


- G. Our preference is to place sutures utilizing suture shuttle from anterior and posterior portals. PDS sutures are passed and used as suture shuttles for ORTHOCORD braided sutures. We prefer to pass all sutures first, progressing from posterior to anterior and retrieve them out of the posterior cannula. Once all sutures are passed, sutures are retrieved one by one and anchored into place from anterior to posterior using the VERSALOK.

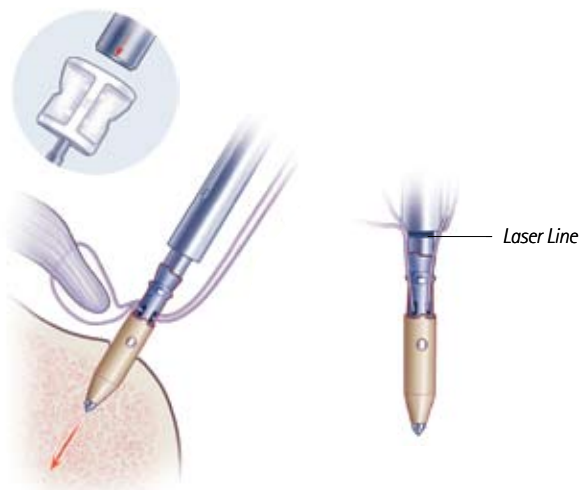


### Placement of VERSALOK

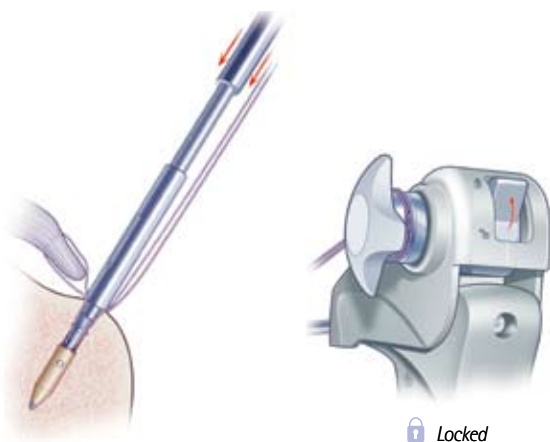
- H. The first pair of sutures are retrieved out of the clear cannula in the lateral insertion portal.
- I. Pass both ends of the suture through the VERSALOK using the Quick Load tab provided.
- J. Slide the trochar tip end of the VERSALOK anchor down the cannula and position approximately 5mm lateral to the anticipated edge of the attached tendon, taking care not to tangle sutures when advancing anchor to fixation site.



TIP: When advancing anchor into joint place nominal tension on the sutures with the opposite hand to create a "zip line" effect to guide the VERSALOK anchor into the joint while minimizing suture tangling. Once VERSALOK is in the joint you may release all tension on your sutures to position appropriately.



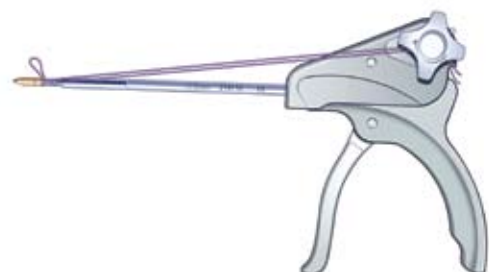
- K. Using a mallet, tap the back end of the inserter shaft into bone at the fixation site, advancing the anchor up to the distal edge of the laser line directly before the collar of the insertion device.



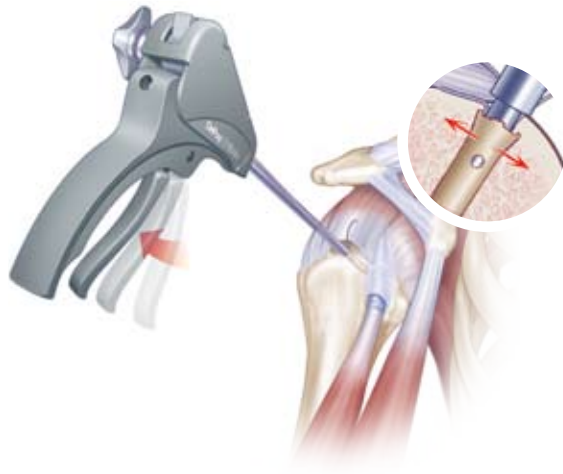
### Placement of VERSALOK Gun and Tensioning of the Sutures

*Note: Properly mobilize the rotator cuff before tensioning.*

- L. With the gun in the locked position, advance the VERSALOK delivery gun down the inserter shaft until it clicks firmly into place.
- M. Wrap both ORTHOCORD sutures over the top and one complete turn around the tensioning wheel in a clockwise direction. Once you pass over your initial sutures, give your sutures a firm tug until you here an audible click. This will confirm that your sutures are locked in place.
- N. Tension the sutures using the tensioning wheel to approximate the rotator cuff tendon to the desired location. Rotate the wheel clockwise to add tension; in case of accidental over-tensioning, you may release wheel to relieve tension by moving the switch to the unlock position and using a probe to loosen sutures and then repeat tensioning steps. Once the position is optimal, the suture will be locked into position. This locks the suture into the anchor and expands the anchor so that it locks into the bone.



*Note: This is an extremely important step. The VERSALOK will lock the suture and fixate the tendon wherever the surgeon chooses, based on how much tension is placed on the sutures. Once the anchor is deployed and locked, no further tensioning is possible.*



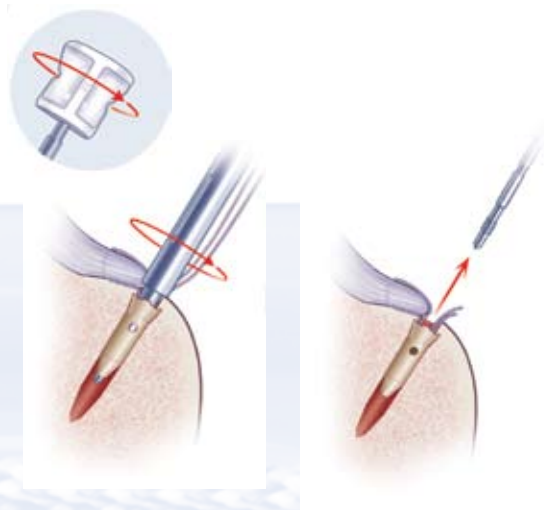
### Deployment of Anchor and Locking of Suture

- O. Fully squeeze the trigger of the delivery gun to deploy the anchor pin into the anchor sleeve until it is fully seated.



- P. Release the trigger fully and flip the switch to the unlocked position at the back of the delivery gun to release the gun, as well as to release the sutures from the tensioning wheel.

- Q. Remove the delivery gun while holding the trigger in the unlocked position with your thumb.



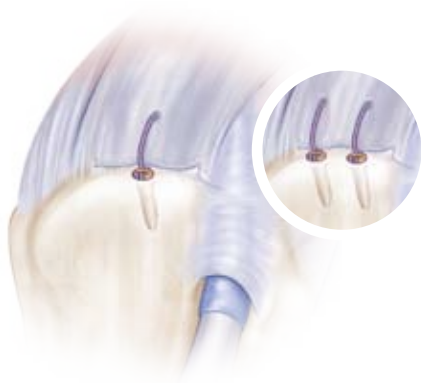
- R. Unthread the inserter shaft from the distal tip of the VERSALOK anchor by rotating the inserter shaft in a counter-clockwise direction. Use the end cap to facilitate this step. Once unthreaded, completely remove the inserter shaft.





- S. After placement of the VERSALOK, its integrity in bone and suture tension on the repaired tendon should be assessed utilizing a soft tissue probe. The suture limbs are then cut using the Cord Cutter.\*

*\*As an advanced technique, these suture limbs may be utilized again, passing one limb through additional cuff tissue and tying a non-sliding arthroscopic knot.*



- T. Completed repair.

If necessary, additional VERSALOK anchors may now be placed using the same technique

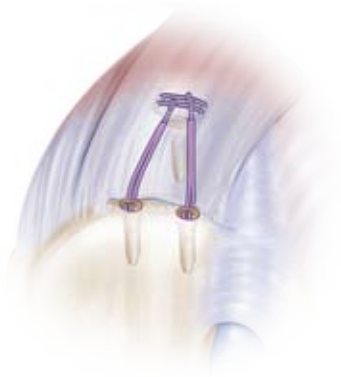


Variation: Inverted Mattress stitch or 2 Simple stitches.



## Double Row Option #1: Medial and Lateral Cuff Fixation Technique

- A. The medial row of sutures is placed utilizing an "anchor first" technique. Depending upon the size of the tear, 1 or 2 VERSALOK anchors are utilized.
- B. Load suture into the VERSALOK anchor outside the joint, then insert VERSALOK anchor adjacent to the articular margin, at the medial edge of the rotator cuff footprint. Deploy the anchor into place.
- C. Pass a suture approximately 2cm from the free edge of the rotator cuff tear utilizing the EXPRESSEW II, CLEVERHOOK, CHIA PERCPASSER or any one of a variety of passing devices. Repeat this step for the other sutures. Retrieve all four suture ends through the posterior cannula and clamp for later tying. The medial sutures are tied after the lateral row has been completed.
- D. Place lateral row sutures using a "suture first" technique. Place the lateral anchors at least 5mm lateral to the anticipated final position on the free edge of the cuff tear. Once desired position of the rotator cuff on the tuberosity is achieved, fully squeeze the trigger on the VERSALOK gun to deploy the VERSALOK anchors and lock sutures in place.
- E. After all lateral sutures are locked into place, tie the medial row of sutures using a non-sliding knot technique.



### Option #2: Double Row Medial Fixation Suture Cross Spanning Technique

- F. After placing the medial anchor and passing the sutures medially, tie the medial sutures. Then utilize these same sutures to cross over the tendon and lock the suture ends into the lateral cortex using 2 additional VERSALOK anchors. This gives a large footprint of tendon compression.



### Option #3: Double Row Medial Fixation Criss-Cross Spanning Technique

- G. For larger tears, 2 medial anchors may be placed. Two double loaded suture anchors are used and two free ends of suture from each anchor are passed and tied in a horizontal mattress configuration. The other suture limbs from each anchor are then passed in a criss-cross pattern and fixated to the lateral cortex with VERSALOK anchors to achieve optimal footprint compression.

### Open Technique Variation

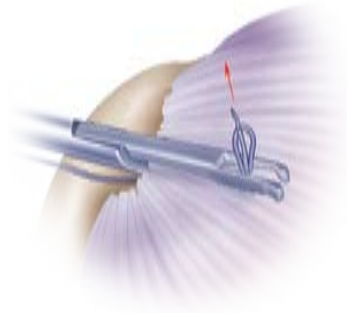
- H After the subacromial decompression is performed, a mini-deltoid splitting approach is performed. Sutures may be placed through the open incision, or placed arthroscopically and retrieved through the open incision.
- I. The procedure is performed in the same fashion as the arthroscopic technique, with elimination of the need for a cannula.

### Tips and Pearls

For hard bone, always use the awl to penetrate the cortex prior to inserting the anchor. Try to avoid twisting the sutures in the cannula when passing the anchor down the insertion cannula.

If the cuff is being over-tensioned, the anchor may start to back out a couple of mm prior to deploying. If this occurs, release the tension on the suture by releasing the tension wheel (unlocked position). Once tension is released, return the button to the locked position and then the surgeon may impact the anchor further.

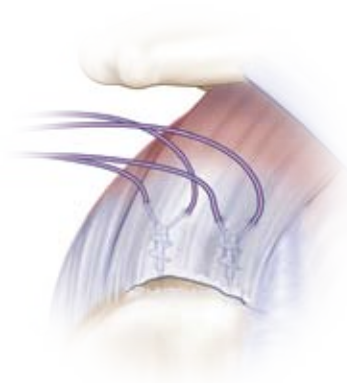
As with all anchors, try to avoid placing anchors too close to one another. It is best to leave a 5mm minimum bridge between anchors if possible.



*Alternative Suture Passage with  
EXPRESSEW II*

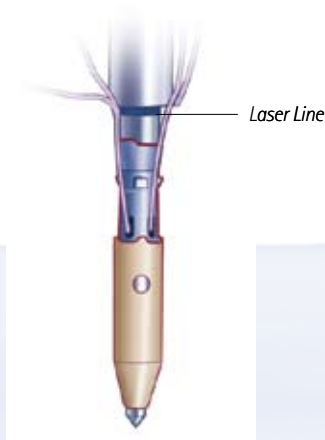
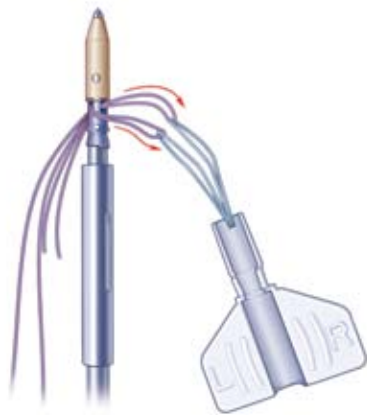
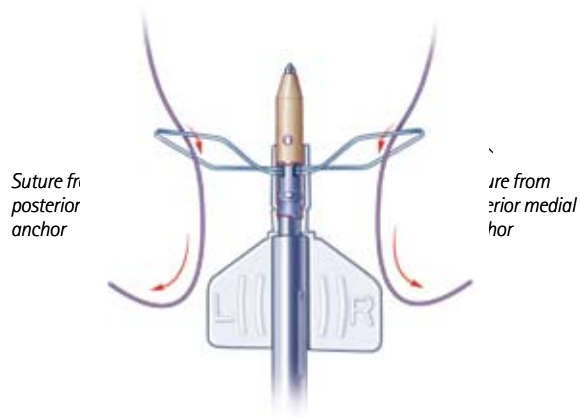
- G. Alternatively, a posterior or posterolateral portal may be used as the viewing portal and sutures may be passed in an antegrade fashion using the EXPRESSEW II. In some cases, a Neviaser portal made just posterior to the AC joint is created under spinal needle guidance and utilized for suture passage through the central portion of the cuff tear.

The spinal needle is used again to confirm that the 2nd anchor can be placed at a Deadman's angle approximately 1cm posterior to the first anchor through the same accessory portal. If this cannot be accomplished through the same portal, then a 2nd accessory portal is made.



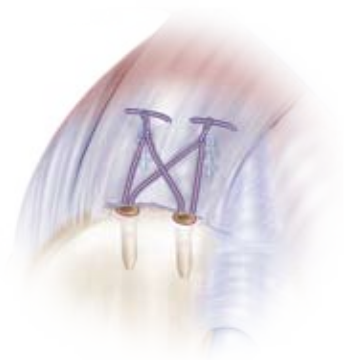
### Knot Tying—for Medial Row FASTIN RC Anchor

- H. The medial anchors are single loaded with ORTHOCORD. All 4 sutures from the 2 medial anchors should be passed prior to knot tying. The sutures from each of the medial anchors are tied in a mattress configuration using a sliding square knot. Any type of sliding knot may be used for this technique. Two alternating half-hitches are tied on the post-stitch. The post is switched and 2 additional half-hitches are tied. Do NOT cut these sutures. These suture strands are used to span over the lateral cuff to accomplish the dual row repair.



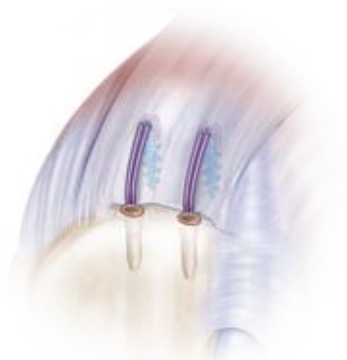
## Spanning Technique

- I. With the scope in the accessory lateral portal or the posterolateral portal, if necessary with hard bone, a 2.9mm VERSALOK Awl or drill is used to place 2 holes about 1.5cm apart in the lateral cortex of humerus approximately 1.5cm from the superior aspect of the greater tuberosity. At this point, 1 suture from the anterior anchor and 1 suture from the posterior anchor are retrieved through the lateral portal. These do not need to be retrieved through a cannula. The suture strands are passed through the VERSALOK anchor using the Quick Load tab.
- J. The anchor is malleted into the lateral humerus to the distal edge of the laser line directly before the collar of the insertion shaft. Before deployment, the suture strands should be tightened manually to remove slack. Each strand can be tightened individually, or both sutures can be tightened at once. Care should be taken not to over-tighten the sutures because this can unseat the VERSALOK anchor out of the drill hole. The sutures can be tightened using the tensioning wheel that is located on the VERSALOK gun by turning the wheel clockwise. The tension on the suture may be checked using a probe. It is possible to loosen the tension on the sutures by releasing the sutures from the tensioning wheel.
- K. Once the proper tension is obtained, the trigger on the deployment gun is pulled and this locks the inner sleeve into the outer sleeve of the VERSALOK anchor. The gun is removed and the inserter shaft is turned counterclockwise to remove it from the VERSALOK anchor. The extraneous sutures that remain sticking out from the VERSALOK may be cut with scissors or the Cord Cutter. Alternatively, the sutures may be used to pass through a portion of the cuff that sticks up in a dog-ear fashion. The same steps are repeated for the other 2 suture strands and the remaining VERSALOK anchor.



*Dual Row Criss-Cross Spanning utilizing  
VERSALOK and FASTIN RC Anchors*

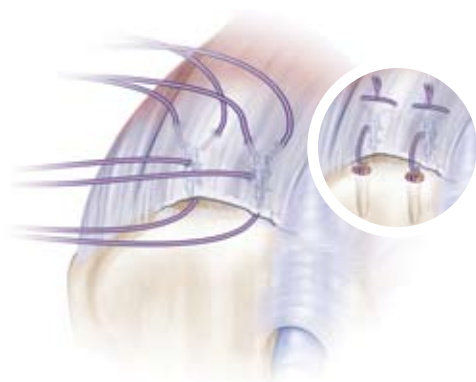
- L. **Completed repair:** In this repair, FASTIN RC anchors are secured medially with sutures from the anchor tied in a horizontal mattress configuration. These limbs are then spanned laterally in a suture criss-cross format to VERSALOK anchors laterally.



*Dual Row Spanning utilizing VERSALOK and  
SPIRALOK Anchors*

### Alternative Repair Patterns

- M. In this repair, after securing SPIRALOK anchors medially, sutures are then passed through the rotator cuff and spanned laterally and fixated in place with VERSALOK anchors.



*Traditional Dual Row utilizing VERSALOK and  
FASTIN RC Anchors*

- N. In this repair, FASTIN RC anchors are secured medially with sutures from the anchor tied in a horizontal mattress configuration. These limbs are then cut to fixate the rotator cuff medially. Sutures are then passed laterally in a suture-first technique and placed into two VERSALOK anchors laterally to secure the rotator cuff laterally.

**VERSALOK™ Anchors & Instruments**

Catalog #	Description	Quantity	Order Qty
210808	VERSALOK Anchor w/ ORTHOCORD™	1/box	
214710	Deployment Gun	1/box	
214711	2.9mm Awl	1/box	
215440	VERSALOK Caddy	1/box	



VERSALOK

**FASTIN® RC Threaded Anchors (Sterile)**

Catalog #	Description	Quantity	Order Qty
222993	FASTIN RC 5mm Anchor w/ Violet/Blue ORTHOCORD	1/box	
222994	FASTIN RC 6.5mm Anchor w/ Violet/Blue ORTHOCORD	1/box	
222723	FASTIN RC 5.0mm Anchor w/ #2 ETHIBOND Excel	1/box	
222764	FASTIN RC 6.5mm Anchor w/ #2 ETHIBOND Excel	1/box	
222743	FASTIN RC 5.0mm Anchor w/ #2 PANACRYL	1/box	
222765	FASTIN RC 6.5mm Anchor w/ #2 PANACRYL	1/box	



FASTIN RC

**SPIRALOK™ Anchors**

Catalog #	Description	Quantity	Order Qty
222985	SPIRALOK 5.0mm ORTHOCORD Violet Et Blue w/ Needles	1/box	
222986	SPIRALOK 5.0mm ORTHOCORD Violet Et Blue w/o Needles	1/box	
222987	SPIRALOK 6.5mm ORTHOCORD Violet Et Blue w/ Needles	1/box	
222988	SPIRALOK 6.5mm ORTHOCORD Violet Et Blue w/o Needles	1/box	
222960	SPIRALOK 5.0mm ETHIBOND w/ Needles	1/box	
222961	SPIRALOK 5.0mm PANACRYL w/ Needles	1/box	
222962	SPIRALOK 6.5mm ETHIBOND w/ Needles	1/box	
222963	SPIRALOK 6.5mm PANACRYL w/ Needles	1/box	
222964	SPIRALOK 5.0mm Arthroscopic ETHIBOND w/o Needles	1/box	
222965	SPIRALOK 5.0mm Arthroscopic PANACRYL w/o Needles	1/box	
222966	SPIRALOK 6.5mm Arthroscopic ETHIBOND w/o Needles	1/box	
222967	SPIRALOK 6.5mm Arthroscopic PANACRYL w/o Needles	1/box	



SPIRALOK

**SPIRALOK Instruments**

Catalog #	Description	Quantity	Order Qty
213210	Insertion Guide 5.0mm	1/box	
219077	Guide Introducer 5.0mm	1/box	
222972	SPIRALOK Awl	1/box	
222973	SPIRALOK Delivery Guide Introducer 6.5mm	1/box	
222974	SPIRALOK Delivery Guide 6.5mm	1/box	
222975	SPIRALOK Tap	1/box	

**Suture Management**

Catalog #	Description	Quantity	Order Qty
215433	Suture Management System	1/box	
214101	CHIA™ PERCPASSER Suture Passer	5/box	
214640	CLEVERHOOK™, Right	1/box	
214641	CLEVERHOOK, Left	1/box	
214642	Sixter, Right	1/box	
214643	Sixter, Left	1/box	
251720	IDEAL™ Suture Grasper 15°	1/box	
251721	IDEAL Suture Grasper 30°	1/box	
251722	IDEAL Suture Grasper 45°	1/box	
251723	IDEAL Suture Grasper 60°	1/box	
214004	EXPRESSEW™ II device	1ea	
214005	EXPRESSEW II needles	5/pk	



Suture Management System



CHIA PERCPASSER



CLEVERHOOK



IDEAL Suture Grasper



EXPRESSEW II

**Clear Cannula System**

Catalog #	Description	Quantity	Order Qty
214660	Clear Cannula System 6.0mm x 55mm (Sterile)	5/box	
214661	Clear Cannula w/ Obturator 6.0mm x 75mm (Sterile)	5/box	
214680	Clear Cannula System 8.5mm x 75mm (Sterile)	5/box	
214690	Clear Cannula System 10.5mm x 75mm (Sterile)	5/box	
214665	Reusable Obturator 6.0mm	1/box	
214685	Reusable Obturator 8.5mm	1/box	
214695	Reusable Obturator 10.5mm	1/box	
214681	Switching Stick for Clear Cannula 4.0mm	1/box	



Clear Cannulas

**Arthroscopy Equipment**

Catalog #	Description	Quantity	Order Qty
284580	FMS DUO®+ Pump	1/box	
284172	FMS 2-way Foot Pedal	1/box	
284504	Irrigation Tubing Dayset	24/pack	
284510	Sterile Zone Kit (No 1-way check valve)	24/pack	
284549	Sterile Zone Kit (With 1-way check valve)	24/pack	
225021	VAPR® 3 Generator	1/box	
225023	VAPR 3 Foot Pedal	1/box	
225370	VAPR S90	1/box	



FMS DUO+



VAPR S90



## ALLEN DEUTSCH, MD

### Introduction

The following is a description of Dual row spanning technique that uses a medial row of FASTIN RC anchors in conjunction with VERSALOK to recreate the anatomic footprint of the cuff.

### Setup and Positioning

A. We use the beach chair position, but it is possible to perform this technique in the lateral decubitus position. The important element of positioning is being able to adduct the arm to allow proper anchor placement in the Deadman's angle at the medial aspect of the footprint.

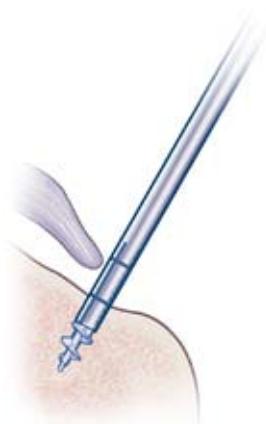
### Portal Placement

B. There are 3 main portals that are necessary to perform this technique:

- A standard posterior portal is made approximately 2cm medial and 2cm distal to the posterolateral tip of the acromion
  - An anterior portal in the rotator interval just lateral to the coracoid
  - A lateral portal which is approximately 1cm posterior and 3 to 4cm distal to the anterolateral tip of the acromion
- C. Each of these portals may be utilized both as a working portal and a viewing portal during cuff and tuberosity preparation, anchor placement, suture passage, and knot tying.

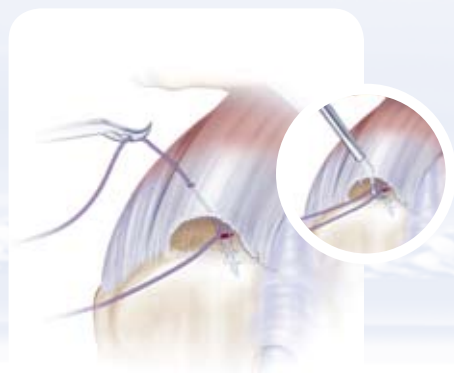
### Diagnostic Arthroscopy

D. Inspection of the glenohumeral joint is performed to diagnose the presence of concomitant pathology to the biceps tendon, labral tissue, and articular surfaces. The cuff tear is thoroughly inspected to determine tear size, tissue quality, amount of retraction, the tear pattern, and the number of tendons involved. Based on this inspection, a plan is devised to address.



### Anchor Placement

E. With the scope in the posterior or posterolateral portal, a spinal needle is used to localize an accessory skin portal that is just at the lateral aspect of the acromion and is usually at the anterior-most aspect of the acromion. The spinal needle is used to confirm that the anchor can be placed at a 45° Deadman's angle. A titanium DePuy Mitek FASTIN RC anchor is my preference, but a bioabsorbable DePuy Mitek SPIRALOK™ anchor may also be used for this technique. The first FASTIN RC anchor is placed through this accessory portal right at the articular margin of the footprint. After the anchor is seated and checked for stability, the sutures are passed through the cuff.



*Suture Passage with CLEVERHOOK*

### Suture Passage

F. The lateral portal is preferred as the viewing portal because it permits a "50-yard line" view of the cuff tear. This enables accurate placement of sutures through the cuff. This is especially important in cases of larger tears with delamination of the posterior aspect of the cuff. Sutures are passed approximately 20mm medial to the free edge of the tendon in a retrograde fashion using a penetrating suture grasper such as the CLEVERHOOK. A spinal needle and a shuttling device such as prolene suture or the CHIA PERCPASSER may also be used.

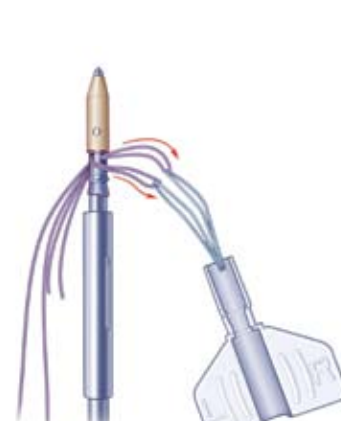
### VERSALOK™ Quick Technique



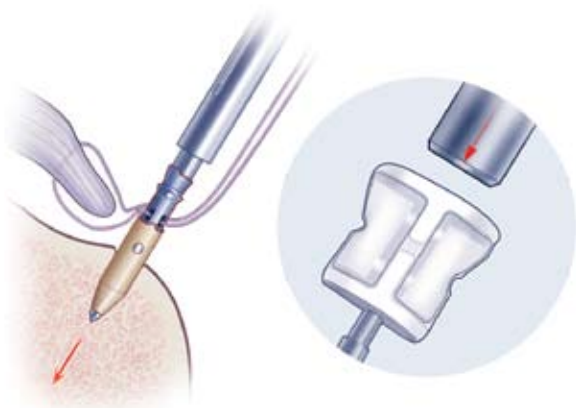
1. Position VERSALOK Anchor so that distal tip is pointing towards the patient and the L (Left) and R (Right) are oriented to your left and right.



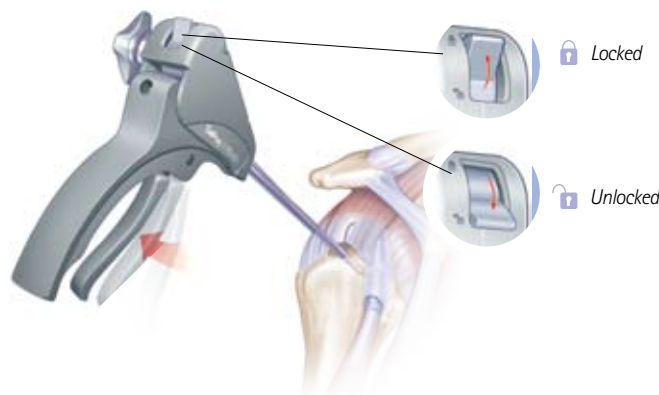
2. Load approximately 2-3 inches of free end of ORTHOCORD suture through the VERSALOK Quick Load (Threader Tab).



2. Peel Quick Load Tab off the VERSALOK shaft and straight down to load ORTHOCORD sutures through anchor pin.



4. Insert anchor into the bone by malletting anchor to the distal edge of the laser line right before the insertion collar.



5. Load VERSALOK gun with the switch in the locked position. Load sutures onto the tension wheel by placing sutures over the top and around the wheel one complete turn. Firmly pull suture ends to lock into place; audible "clicks" will be heard to confirm sutures are locked in place. Rotate the tension wheel in a clockwise direction (see arrows on tension wheel) to apply the rotator cuff to the desired position. Once adequate tension of the rotator cuff is achieved by tensioning sutures limbs manually or with the tension wheel, pull trigger completely to lock anchor and sutures in place. Release trigger fully, unlock switch, and remove gun and cut sutures to complete repair.



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