Bio Mini-Revo®

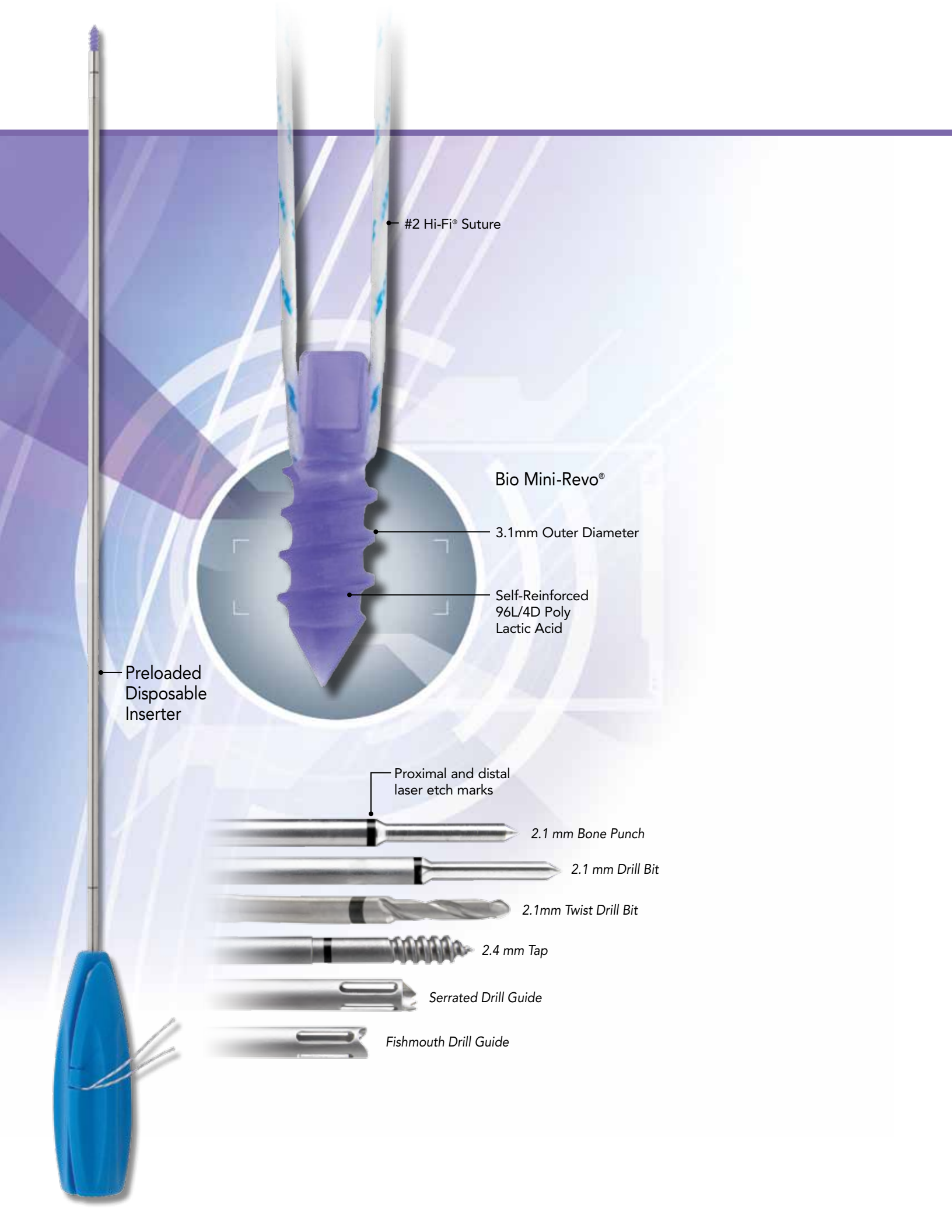
Surgical Technique

MINI SIZED, MAXIMUM PERFORMANCE

- Self-Reinforced 96L/4D Poly Lactic Acid
- Low Profile Instrument Set
- High Pull-out Strength
- Proven Screw-in Design Ensures Optimal Purchase in bone

Material Advantage™

ConMed™ Linvatec


#2 Hi-Fi® Suture
Bio Mini-Revo®
3.1mm Outer Diameter
Self-Reinforced
96L/4D Poly
Lactic Acid
Preloaded
Disposable
Inserter
Proximal and distal
laser etch marks
2.1 mm Bone Punch
2.1 mm Drill Bit
2.1mm Twist Drill Bit
2.4 mm Tap
Serrated Drill Guide
Fishmouth Drill Guide

Bio Mini-Revo®

Mini Size, Maximum Performance

SURGICAL TECHNIQUE

INTRODUCTION

The Bio Mini-Revo® suture anchor is a 3.1mm diameter screw-in implant manufactured from ConMed Linvatec's patented Self-Reinforced 96L/4D Poly Lactic Acid. The implant is pre-loaded on a disposable driver and is pre-threaded with #2 Hi-Fi® Suture. The combination of high pull-out strength and ideal bioabsorbable characteristics in a small pre-loaded implant will make it the implant of choice for all shoulder instability procedures. The unique low profile instrument set that includes drill guides, drill bit, bone punch and a self-drilling tap provides precise placement of the pilot hole and the implant for a reproducible technique.

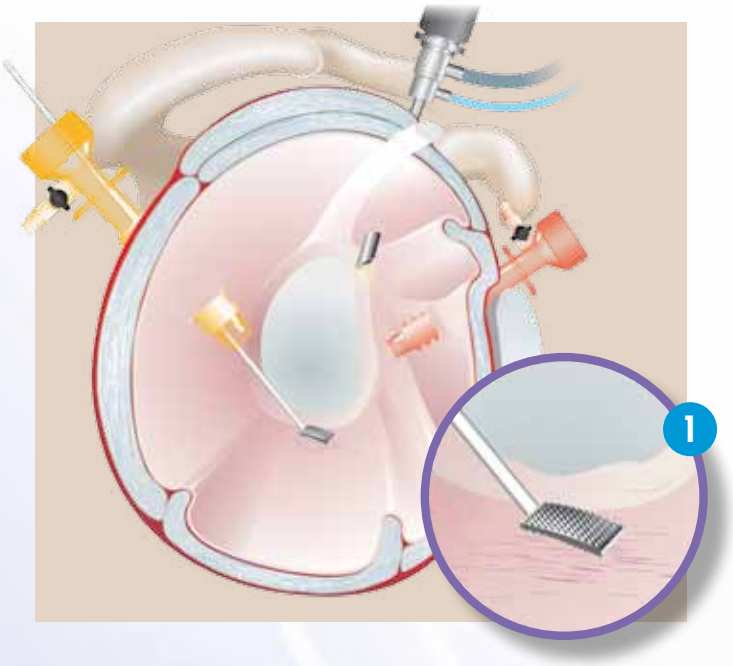
The following techniques are described
by Stephen J. Snyder, MD, Van Nuys, CA

Bio Mini-Revo® Surgical Technique

Anterior Instability Reconstruction and Posterior Capsular Plication

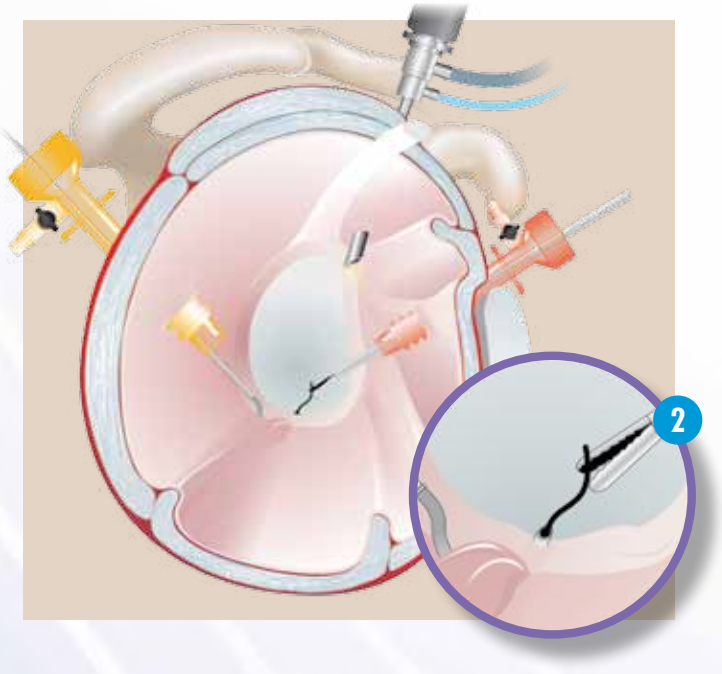
This arthroscopic shoulder instability procedure can be performed with the patient either in the lateral decubitus or beach chair position. For the lateral position, the arm is suspended in 70 degrees of abduction and 10 degrees of forward flexion using a shoulder traction device. The standard posterior mid-glenoid portal and a high anterior-superior (rotator interval) portal are established using an outside-in technique. A mid-glenoid operating portal is created by first inserting a spinal needle 2cm inferior and 1cm medial to the anterior superior portal so that it enters the joint at the superior-lateral attachment of the subscapularis tendon. A 8mm Dry-Doc® operating cannula is inserted either directly into the joint or over the guide rod (when the portal is already established). The scope is maintained in the anterior superior portal for viewing both the anterior and posterior repair.

Posterior Plication Stitches



STEP 1 –

To begin the posterior-inferior capsular plication a synovial rasp is used to abrade the posterior inferior capsule and the labral edge. A ConMed Linvatec 4.2mm UltraCut® blade is also used to debride any frayed or torn labral or synovial tissue.

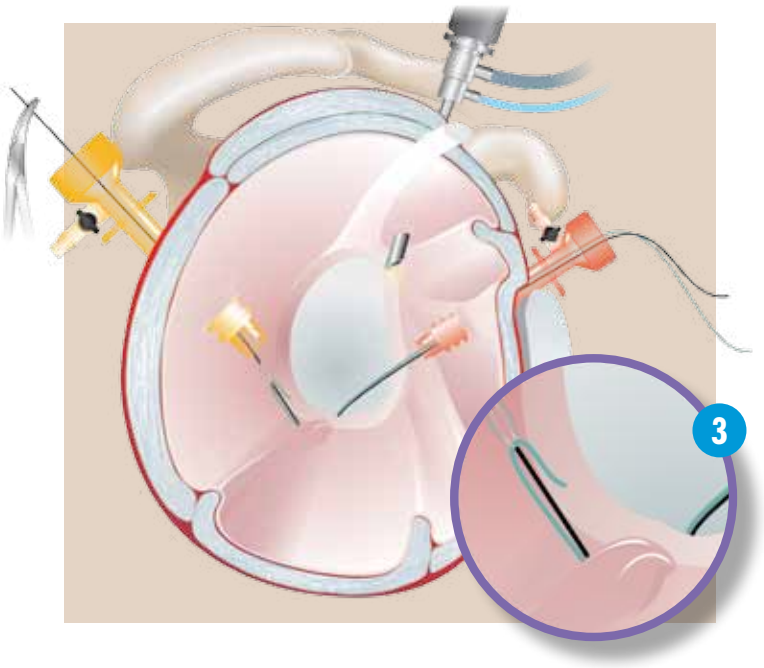


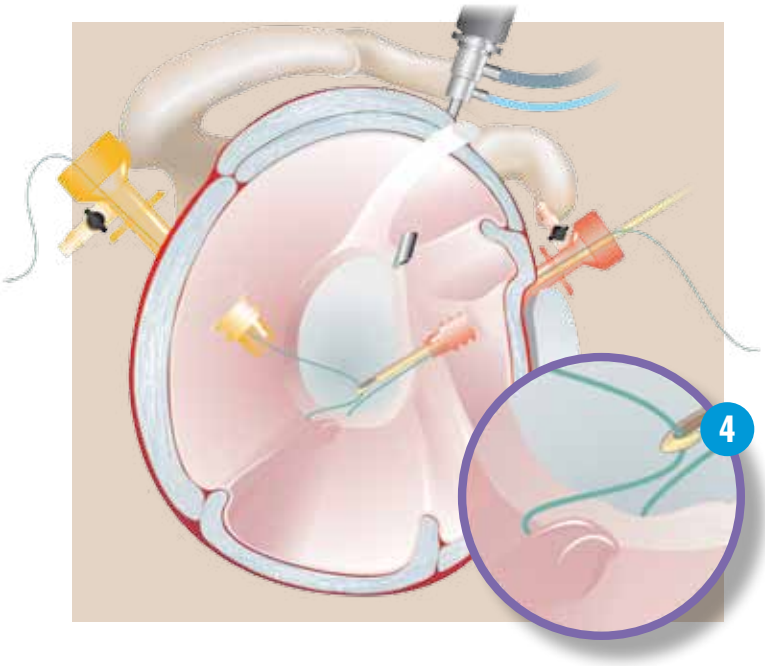
STEP 2 –

Insert an 8mm Dry-Doc® cannula into the posterior portal. Create the first posterior plication stitch by inserting a 45° or 60° degree Spectrum® II Suture Hook loaded with a Shuttle Relay™ suture passer into the posterior mid-glenoid portal. The first stitch is made at the 6:30 position about 1 to 1.5cm away from the labrum. Pass the needle perpendicularly through the capsule and rotate it to capture a 4-5mm "pinch" of tissue. Advance the needle to the labrum-capsule junction to pierce the tissue so that the needle exits near the articular cartilage. Retrieve the Shuttle Relay out the anterior mid-glenoid portal with an arthroscopic grasping forceps.

STEP 3 –

Load the Shuttle Relay™ suture passer with a #2 polyester suture and pull back through the labrum and out the posterior Dry-Doc® cannula.



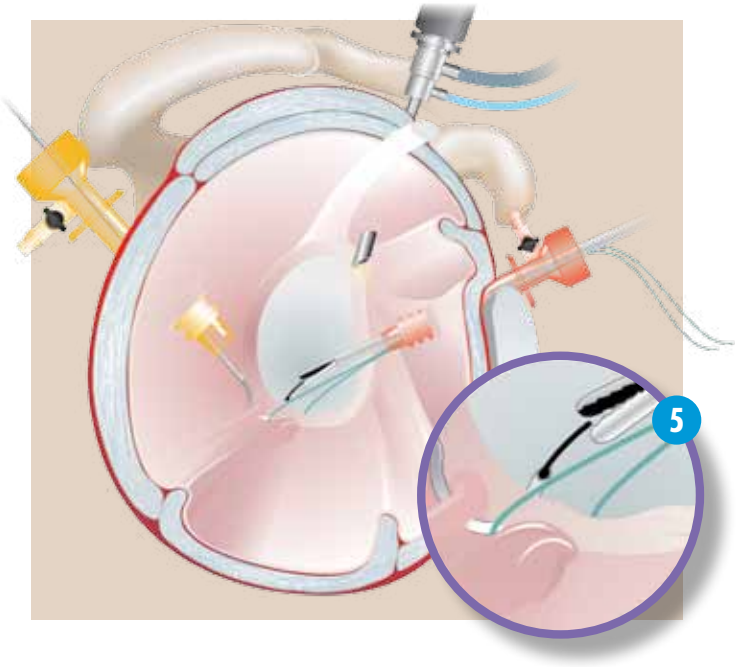


STEP 4 –

Using a crochet hook from the anterior portal, retrieve the posterior limb of the same suture out the anterior cannula and the anterior limb into the posterior cannula to prepare for a Figure–8 stitch.

STEP 5 –

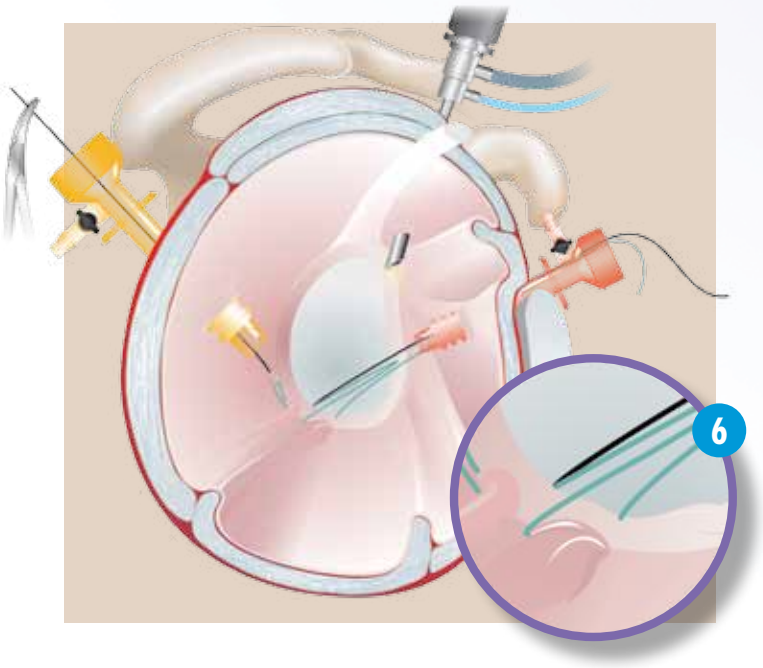
Pass the Spectrum® II Suture Hook loaded with a Shuttle Relay again through the capsule and labrum in a second "pinch-tuck" about 1cm posterior and parallel to the first pass.



Bio Mini-Revo® Surgical Technique

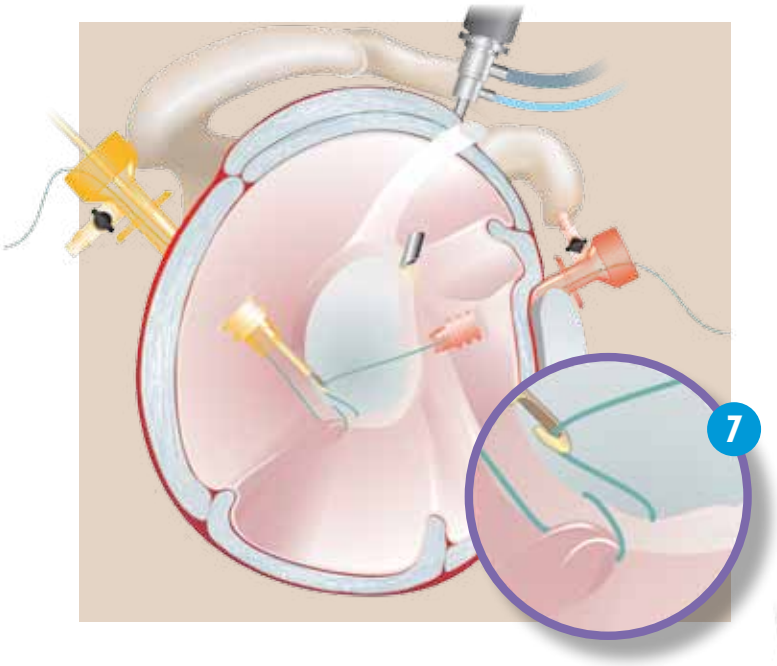
STEP 6 –

Load the Shuttle Relay™ suture passer with the suture in the anterior mid-glenoid portal and carry it back through the labrum and into the posterior cannula.



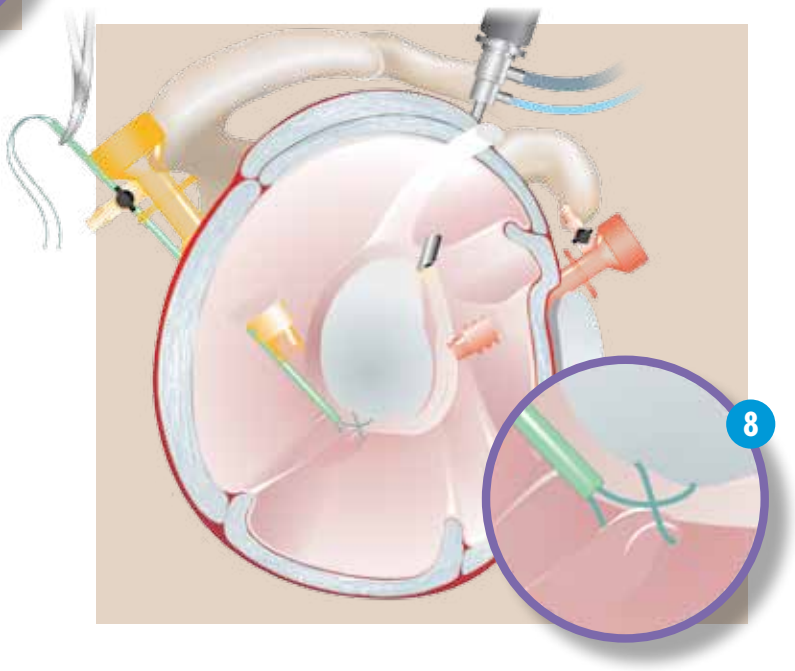
STEP 7 –

Using a crochet hook, the other limb of suture is retrieved out the posterior cannula.



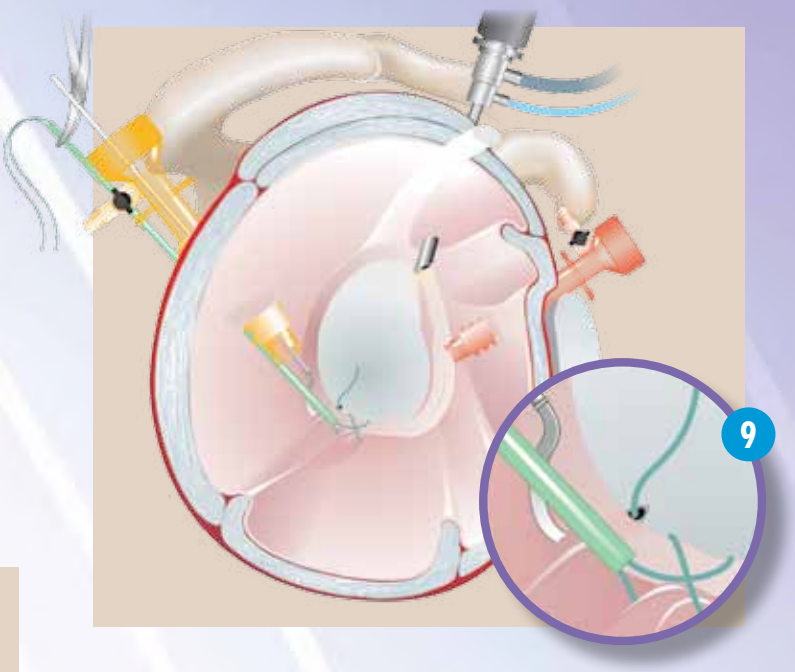
STEP 8 –

Store this pair of sutures in a green Suture Saver™ sheath outside the posterior cannula. They will be tied after the anterior stabilization is completed.



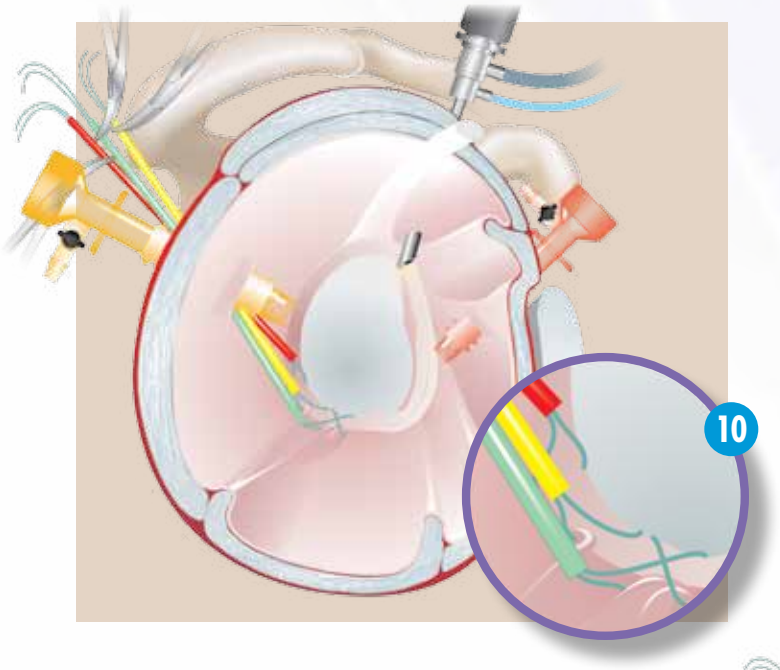
STEP 9 –

Perform additional posterior plication stitches as needed, either as simple, horizontal mattress or Figure-8 stitches and store each pair in a Suture Saver™ sheath outside the posterior cannula.



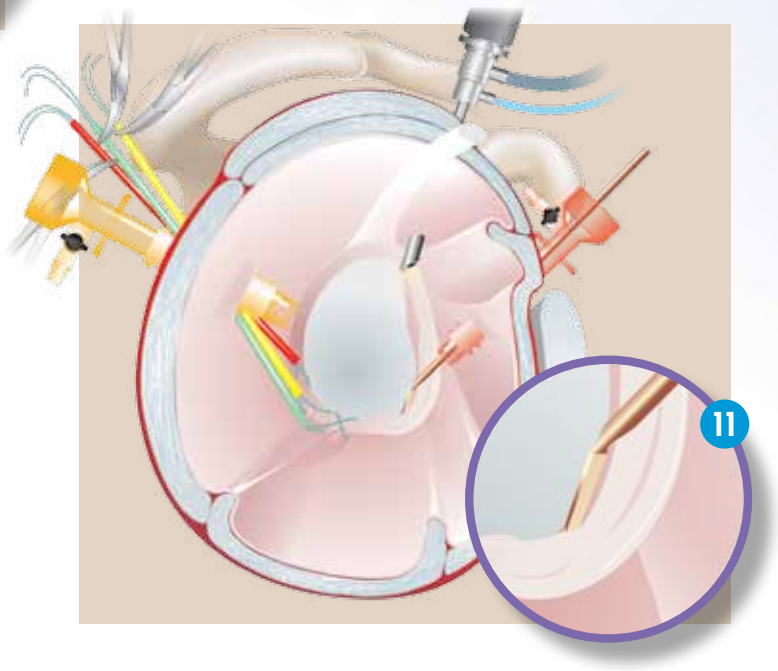
STEP 10 –

Loosen the Suture Saver sheaths and back them out a few centimeters to relax the posterior plication sutures so that capsule is not tight while performing the anterior reconstruction.



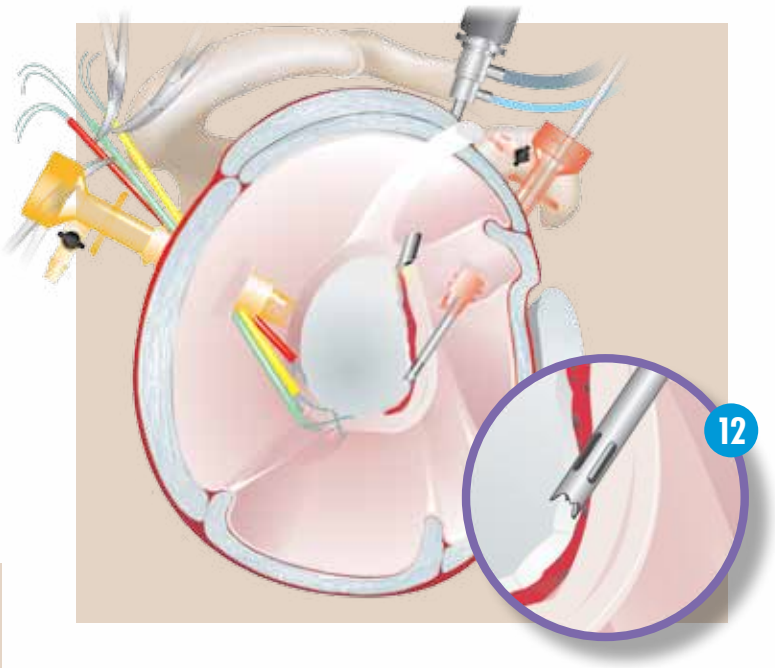
STEP 11 –

Mobilize the anterior–inferior capsule and labrum by detaching them from the neck of the glenoid using a Liberator™ knife/elevator. The bone surface is lightly debrided using a ConMed Linvatec UltraCut® shaver blade



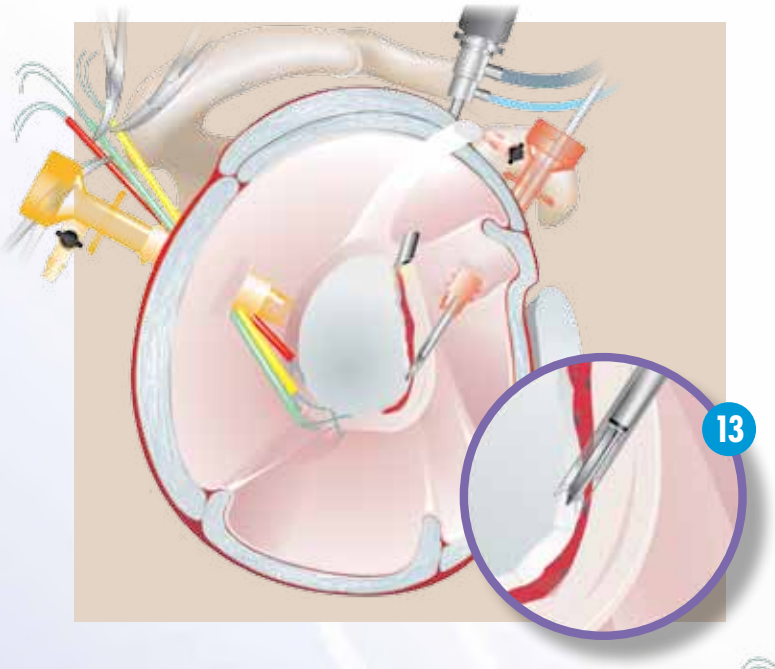
Bio Mini-Revo® Surgical Technique

Anterior Instability Reconstruction



STEP 12 –

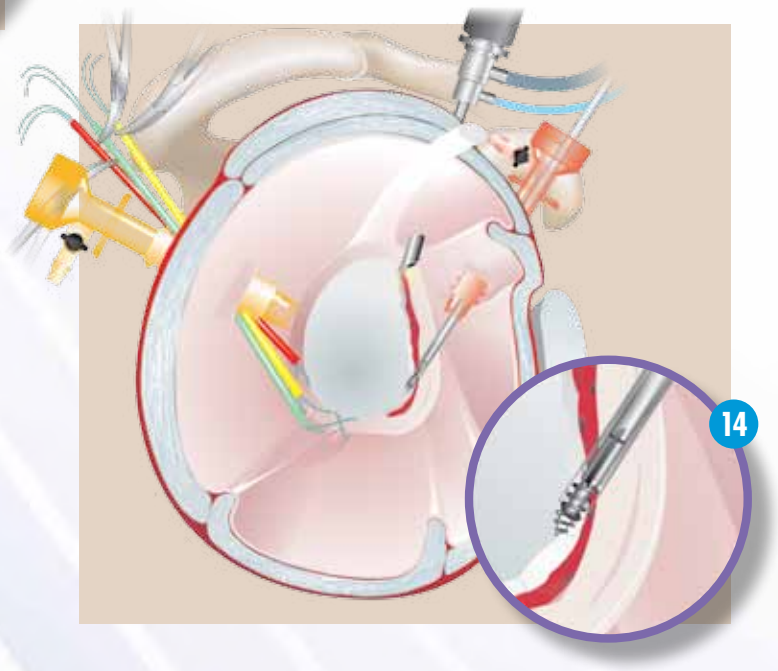
The Bio-Instability™ Fishmouth Drill Guide is inserted through the anterior mid-glenoid Dry-Doc® cannula to the desired location 1-2 mm on the articular surface around the 5:30 position.



STEP 13 –

The 2.1mm Bio-Instability Drill Bit is passed through the guide and drilled into the bone until the distal depth mark is below the bone surface and the proximal depth stop has made contact with the Drill Guide.

The 2.1mm Bio-Instability™ Bone Punch may also be used for this this step.

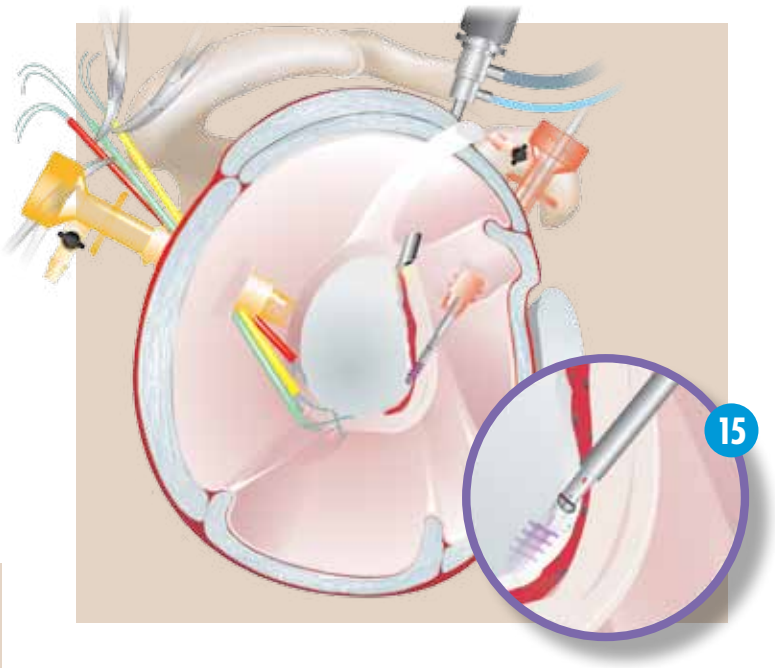


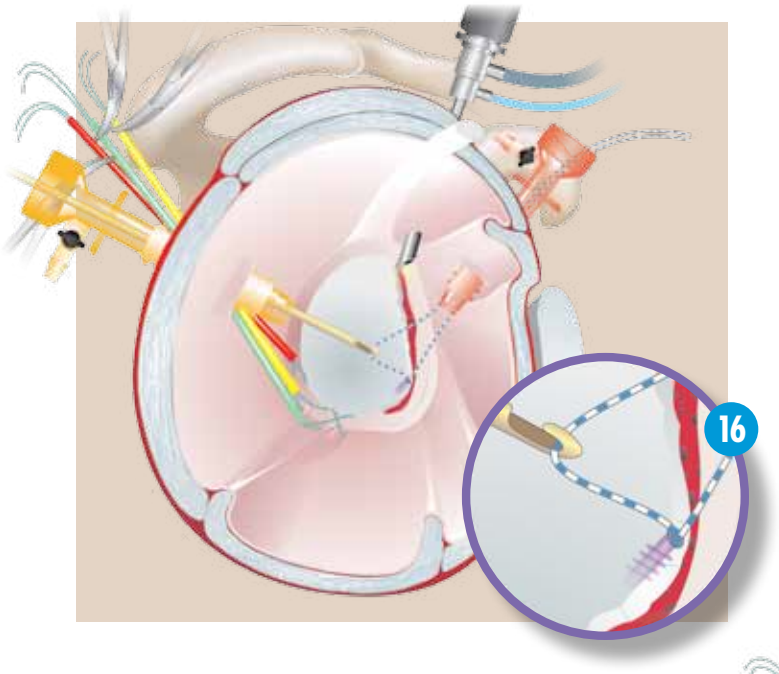
STEP 14 –

The 2.4mm self-drilling Bone Tap is inserted through the drill guide and screwed into the pilot hole until the horizontal distal etch mark is below the bone surface.

STEP 15 –

The Bio Mini-Revo® implant is inserted through the drill guide and into the pilot hole until the distal depth mark on the driver is below the bone surface. *Do not advance the driver past this point or implant breakage may occur.*
A two-finger torque insertion technique is recommended. Align the vertical etch marks toward the anterior inferior capsule to ensure that the eyelet is directed toward those tissues. Remove the driver by pulling straight back, being sure not to toggle it or change the alignment.



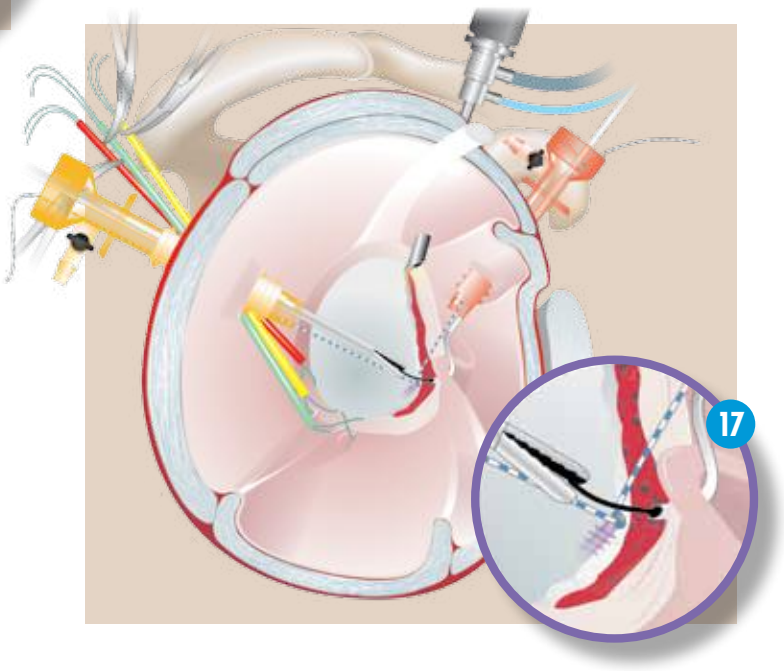


STEP 16 –

Use the crochet hook through the posterior cannula, to retrieve the suture limb from the anchor that is on the anterior inferior side of the anchor.

STEP 17 –

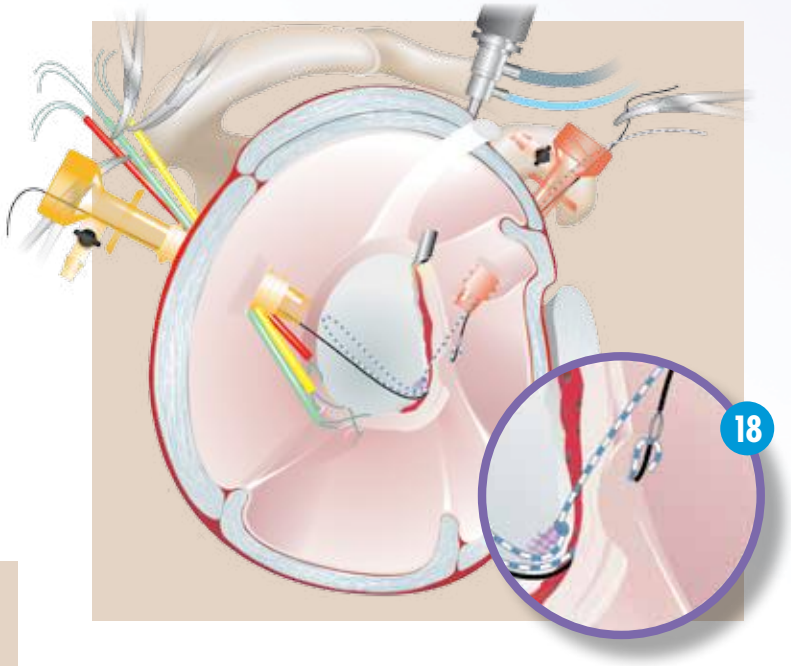
A 45° or 60° degree Spectrum® II Suture Hook loaded with a Shuttle Relay™ suture passer is passed through the capsule and "under" the labrum to form a "pinch-tuck" stitch. The Shuttle Relay is retrieved out the posterior cannula staying above the anchor with a grasping forceps.

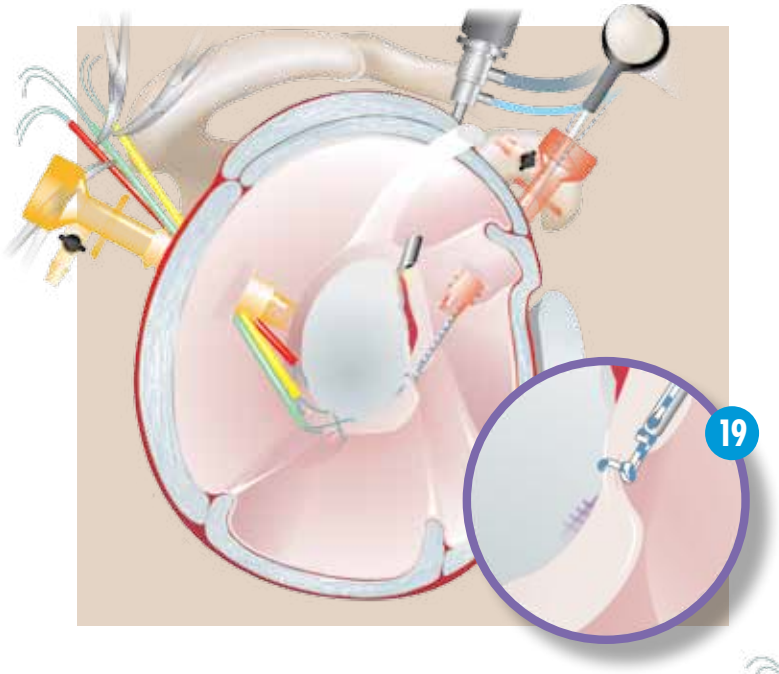


Bio Mini-Revo® Surgical Technique

STEP 18 –

The Shuttle Relay™ suture passer is loaded with the suture outside the posterior cannula and carried across the glenoid, the labrum and out the anterior mid-glenoid Dry-Doc® cannula.



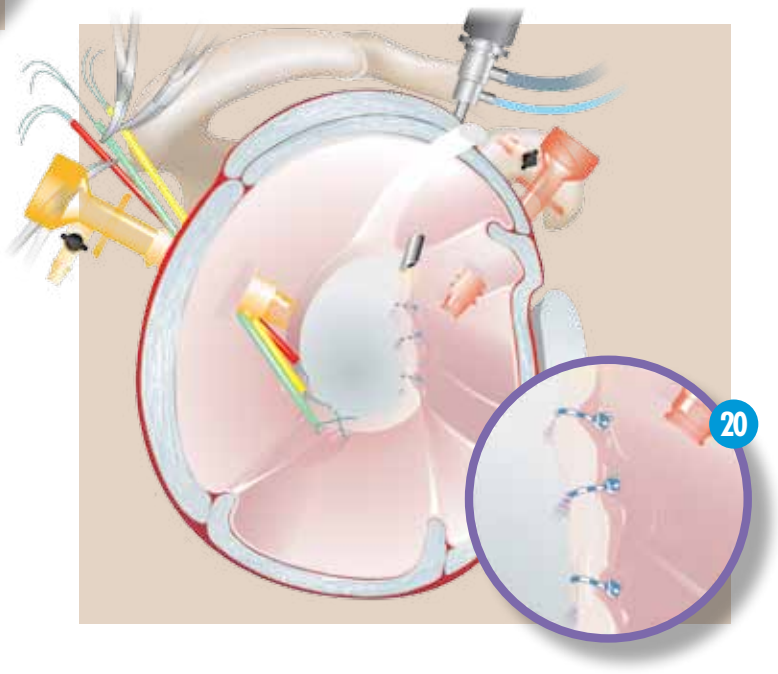


STEP 19 –

Test the mobility of the sutures to be sure they easily slide through the eyelet. If they slide easily, an SMC or other sliding knot is used. If they do not slide, a static knot such as the Revo® knot should be used.

STEP 20 –

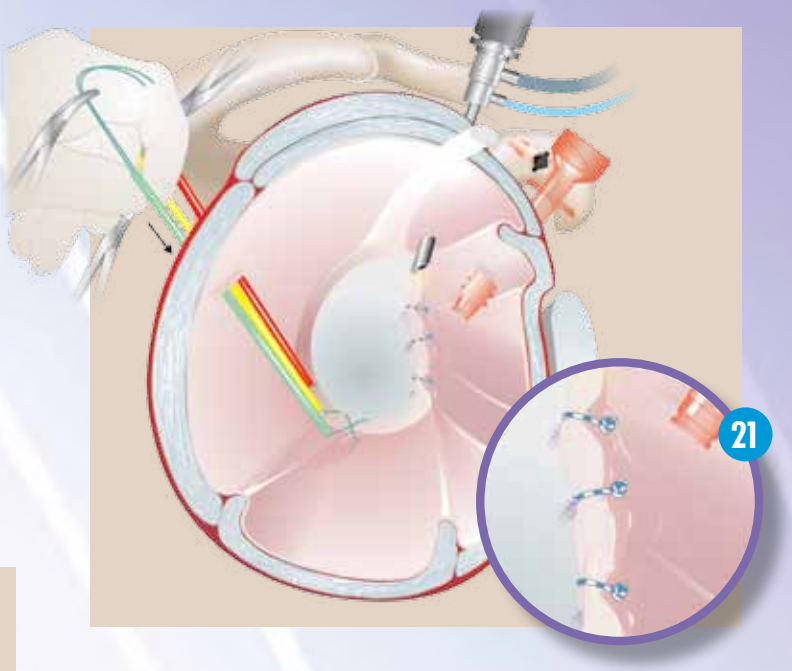
Additional Bio Mini-Revo® implants are inserted moving inferior to superior until the labrum is securely fixed to the glenoid.

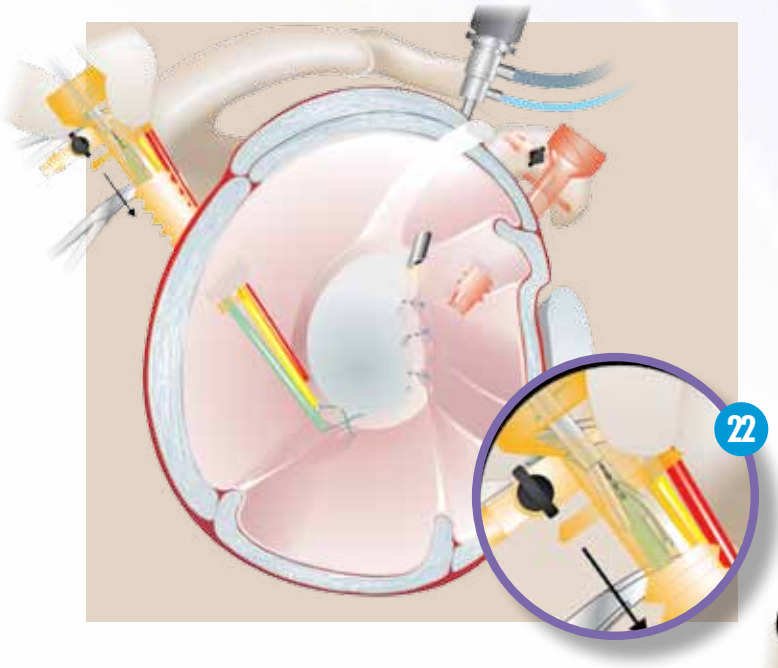


Tying the Posterior Plication Sutures

STEP 21 –

Remove the posterior cannula from the posterior portal and retighten the posterior Suture Saver™ sheaths down to the capsule and clamp them. Release the clamp from the most superior Suture Saver sheath and pull the sutures and the sheath into the cannula using an arthroscopic grasper.



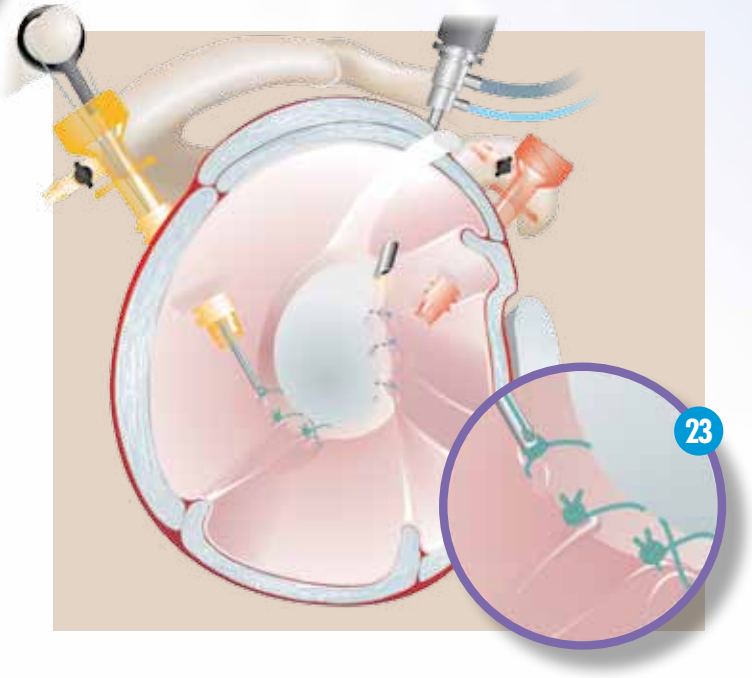


STEP 22 –

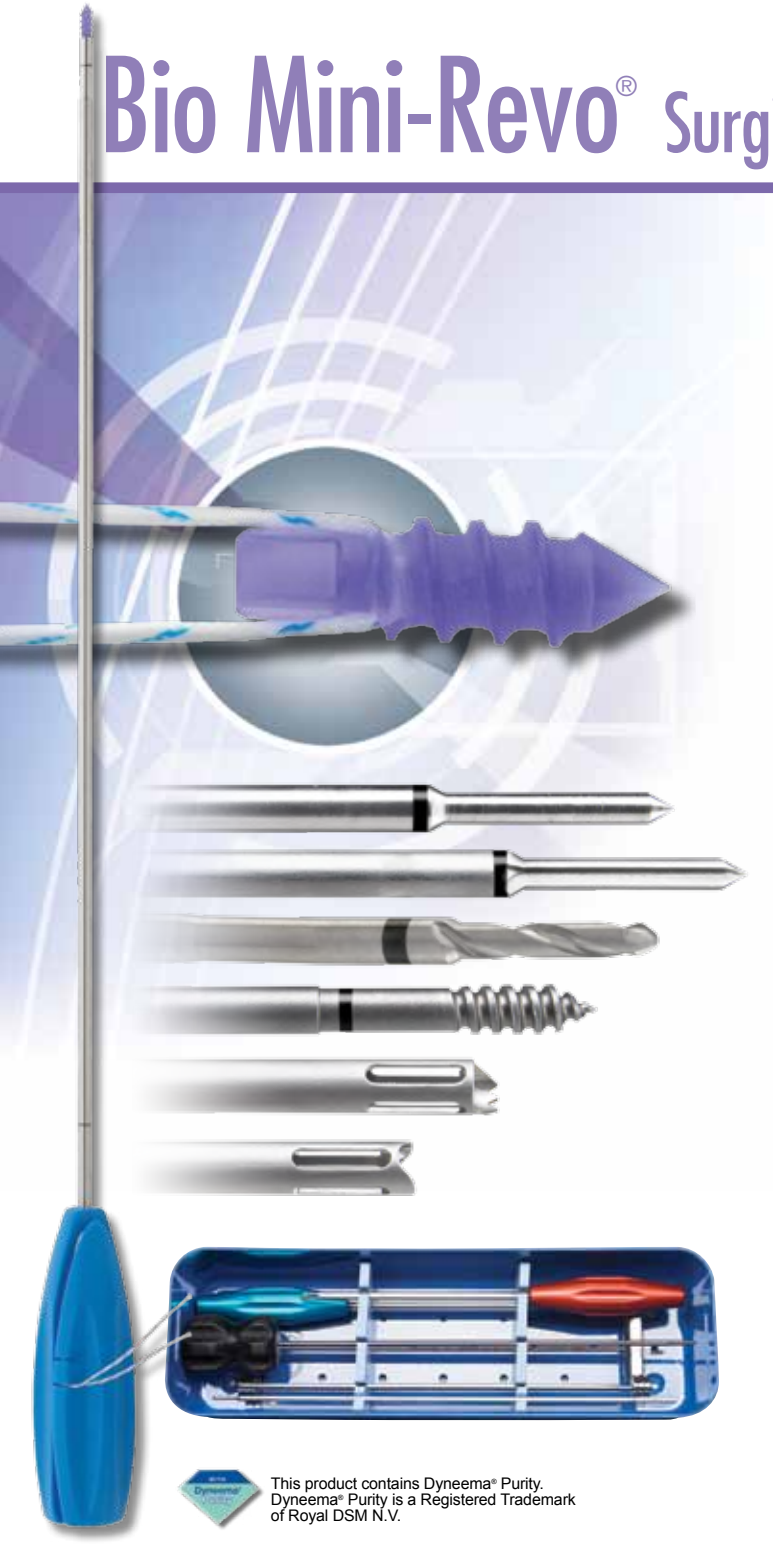
Push the Suture Saver sheath back down to the capsule and hold it straight so that it can function as a guide rod. Push the cannula back into the joint over the sheath, remove the sheath and tie the sutures using a Revo® knot.

STEP 23 –

Tie the remaining sutures using a similar technique to finish the operation.



Bio Mini-Revo® Surgical Technique



Implant Description	Cat. No.
Bio Mini-Revo®, Pre-threaded with one strand of #2 Hi-Fi® Suture, disposable driver	C6170H
Bio Instability Instrument Set	
Bio Instability Drill Guide, Fishmouth	C6171
Bio Instability Drill Guide, Serrated	C6172
Blunt Obturator	C6173
Sharp Trocar	C6174
Bio Instability Drill Bit, 2.1mm	C6175
Bio Instability Bone Punch, 2.1mm	C6176
Bio Instability Bone Tap, 2.4mm	C6177
Bio Instability Sterilization Tray	C6178
Bio Instability Twist Drill, Bit 2.1mm	C6179
Suture Passing Instrumentation	
Spectrum® II Handle	C6350
Spectrum II Sterilization Tray	C6355
Spectrum II Roller Wheel Replacement Kit	C6356
Suture Hook, 45° Right, Limited Reuse	C6360
Suture Hook, 45° Left, Limited Reuse	C6361
Suture Hook, 60° Right, Limited Reuse	C6362
Suture Hook, 60° Left, Limited Reuse	C6363
Suture Hook, 90° Right, Limited Reuse	C6364
Suture Hook, 90° Left, Limited Reuse	C6365
Suture Hook, CorkScrew, Right, Limited Reuse	C6366
Suture Hook, CorkScrew, Left, Limited Reuse	C6367
Suture Hook, Straight, Limited Reuse	C6368
Suture Hook, Crescent, Small, Limited Reuse	C6369
Suture Hook, Crescent, Medium, Limited Reuse	C6370
Suture Hook, Crescent, Large, Limited Reuse	C6371
Suture Hook, 45° Right, Sterile, Disposable (Red)	C6380
Suture Hook, 45° Left, Sterile, Disposable (Blue)	C6381
Suture Hook, 60° Right, Sterile, Disposable (Orange)	C6382
Suture Hook, 60° Left, Sterile, Disposable (Yellow)	C6383
Suture Hook, Straight, Sterile, Disposable (Pink)	C6384
Suture Hook, Crescent, Small, Sterile, Disposable (White)	C6385
Suture Hook, Crescent, Medium, Sterile, Disposable (Teal)	C6386
Suture Hook, Crescent, Large, Sterile, Disposable (Purple)	C6387
Accessories	
Loop Handle Knot Pusher	C6112
Crochet Hook	C6105
Suture Scissor, 3.4mm Diameter, Straight	GU1005
Guillotine™ Suture Cutter, 3.5mm Diameter, Straight	GU1007
Katana™ High Strength Suture Cutter, 4mm Diameter, Straight	GU1009
Grasping Forceps, 3.4mm Diameter, Straight with Ratchet	11.1001
Suture Retrieval Forceps, 3.4mm Diameter	16.1018
Liberator™ Knife	25.50014
Suture Saver™ Kit (5 kits/box)	C6180
Rasp Liberator Knife	25.50016
Rasp, 30 degree, top and bottom serrations	C8537.1
Mini-Probe, 3.5mm dia., straight	21.1001
Shuttle Relay™ Suture Passer (10/box)	C6004
Dry-Doc® Cannula, 8.0mm x 75mm, yellow (5/box)	C7367
Reusable, Cannulated Obturator, 8.0mm x 75mm	9833
Dry-Doc Cannula, 8.0mm x 85mm, red (5/box)	C7368
Reusable, Cannulated Obturator, 8.0mm x 85mm	9834

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