MENTORS IN ORTHOPEDICS

ARTHROSCOPIC GUIDED LATARJET

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AUTHORS

Pascal Boileau - Institut de Chirurgie Réparatrice, Locomoteur et Sports, Nice, France
Patrick Gendre - University of British Columbia, Vancouver, Canada
Dave Saliken - Hôpital Pasteur 2, Nice, France
Jean-François Gonzalez - Lille, France
Christophe Trojani - Institut de Chirurgie Réparatrice, Locomoteur et Sports, Nice, France
Charles-Edouard Thélu - Centre Eiffel, Lyon, France
Jérome Vogel - Hôpital Pierre-Paul Riquet, Toulouse, France
Nicolas Bonnevialle - Hôpital Pierre-Paul Riquet, Toulouse, France

SUMMARY

Background: Anterior shoulder instability associated with glenoid bone deficiency is frequently managed via the Latarjet procedure. Although this coracoid transfer provides stabilization through a triple-locking mechanism—comprising a static bone block, a dynamic sling effect, and capsular repair—traditional screw fixation is associated with significant complications. These include graft malposition, hardware-related morbidity such as screw pullout or breakage, and potential neurovascular injury during arthroscopic or open implementation.

Objective: This article describes a standardized arthroscopic Latarjet technique utilizing a guided approach and cortical-button fixation to improve the accuracy of graft placement and reduce complications associated with conventional metal screws.

Key Points: The technique employs specific coracoid and glenoid guides to ensure the bone block is positioned flush to the glenoid surface and below the equator. Fixation is achieved using a double cortical-button device and a sliding-locking Nice knot, which provides compression while mitigating risks of graft resorption or hardware failure. The five-step surgical protocol includes coracoid and glenoid preparation, a subscapularis split, graft transfer, and a concomitant Bankart repair. Arthroscopic visualization enhances the safety of the procedure by allowing direct inspection of neurovascular structures and facilitating the treatment of associated labral or capsular pathology. Clinical data from 76 patients demonstrated accurate graft positioning, reproducible bone union at six months, and an absence of neurological or hardware-related complications.

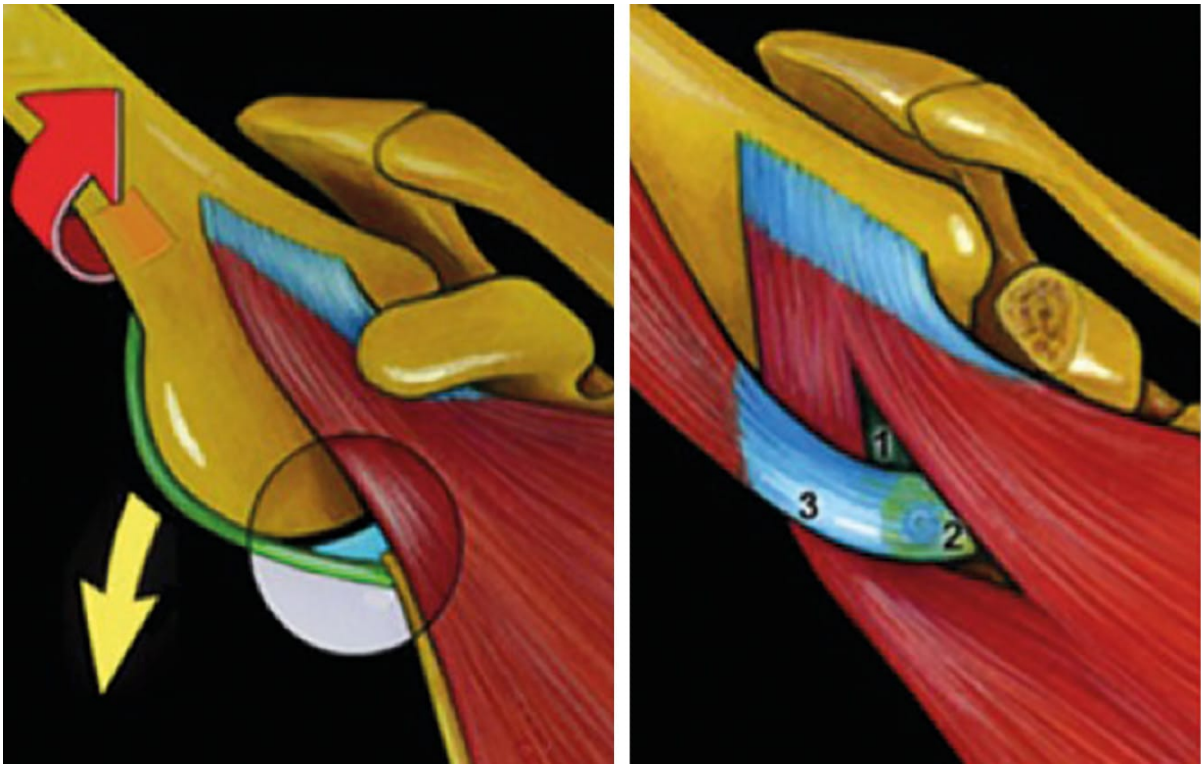
Conclusion: The guided arthroscopic Latarjet technique with suture-button fixation offers a reproducible alternative to traditional screw fixation. By optimizing graft orientation and eliminating rigid hardware, this method addresses technical challenges and improves safety in the management of recurrent anterior shoulder instability.

KEYWORDS

Shoulder Dislocation/surgery; Joint Instability/surgery; Arthroscopy/methods; Coracoid Process/transplantation; Suture Anchors

RATIONALE OF THE LATARJET PROCEDURE

Coracoid transfer to treat anterior shoulder instability, first proposed by French surgeon Michel Latarjet in 1954 and popularized by Gilles Walch, is increasingly used in cases of glenoid deficiency, hyperlaxity, and revision anterior stabilization. The technique has 2 main advantages: [1] it allows reconstruction of the glenoid bone loss by expanding the surface area of the glenoid for continued contact with the humeral head (static glenohumeral stabilization), and [2] it reinforces the weak and stretched inferior glenohumeral ligament by transferring the conjoint tendon closer to the joint and lowering the inferior part of the subscapularis (dynamic sling or seat-belt stabilization). Recent biomechanical studies have suggested that the sling effect is most responsible for the stabilizing effect of the Latarjet. Together with the reattachment of the labrum and capsule (i.e., Bankart repair), it allows "triple locking" of the shoulder (Didier Patte). The 2B3 (Latarjet+ Bankart) (Figure 1) procedure yields good results with a low rate of recurrent instability, a high rate of return to sport to preinjury levels, and a high rate of patient satisfaction.



Figures 1: A. Inferior weak point / B. Triple "Blocking" (2B3)

In the traditional Latarjet technique (open or arthroscopic), fixation of the transferred bone block is achieved with two (4.5-mm-diameter) bicortical screws. However, literature and our experience reveal at least 3 drawbacks to this technique of fixation.

First, positioning the bone block flush with the glenoid and the screws parallel is technically difficult. Many complications related to this procedure are attributed to graft malposition. The obliquity of the scapula on the thorax makes it challenging to place the screws exactly parallel to the glenoid surface. Excessive screw obliquity may cause impingement with the humeral head, leading to rapid-onset arthropathy (Figure. 2).

Figure 2: Bone block malpositionning

Second, although fixation of the graft with two bicortical metal screws is the recommended method of fixation, it is recognized as the main source of intraoperative and postoperative complications. There are several potential disadvantages of screw fixation: screw pullout (Figure 3), loosening, bending or breakage, bone block fracture, nonunion, or resorption (3%-28%), and graft migration (4%-11%). Some of these complications may be serious and symptomatic enough to warrant reoperation in young and active patients.

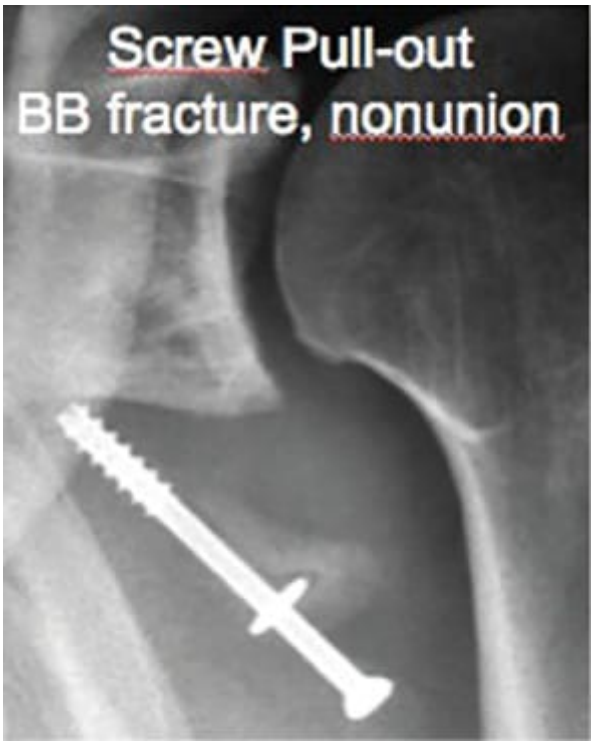


Figure 3: Hardware failure

Third, the proximity of the brachial plexus (especially the axillary and musculocutaneous nerves) means a potential risk with drilling or screw insertion performed arthroscopically anteriorly. Posteriorly, there is also a risk of suprascapular nerve injury if the drill is too medial and/or screws too long.

ARTHROSCOPIC GUIDED LATARJET

Performing the arthroscopic Latarjet procedure ought to be approached with caution. It is not only technically challenging (especially with respect to graft and screw positioning) but also potentially dangerous (because of the proximity of the neurovascular structures), and it can be associated with complications related to the use of screws as already stated. In an attempt to make the arthroscopic Latarjet procedure safer and to reduce complications associated with traditional screw fixation, we have developed a novel surgical technique and fixation method involving a guided approach for graft positioning and the use of specific suture-button fixation. This technique, including instruments and implants, has been designed over the last 10 years from our experience of more than 500 patients.

In a recent prospective study (Boileau et al., JSES 2016), we have evaluated the accuracy of graft position and healing of this guided technique and novel fixation method. Radiographs and CT-scan images were performed at 2 weeks and 6 months postoperatively in 76 patients. Our study demonstrates that:

- use of this guided technique allows accurate positioning of the coracoid bone graft (below the equator and flush to the glenoid surface),
- cortical-button fixation is an alternative to screw fixation allowing predictable and reproducible bone graft union while minimizing complications reported with screw fixation,
- neurological and hardware complications were not observed with this technique.

CORTICAL-BUTTONS FIXATION DEVICE

Two cortical-button devices were developed to facilitate coracoid graft fixation and healing. It consists of two circular metallic buttons, with a number 3-4 ultra–high molecular weight polyethylene (UHMWP) suture sling running through them (Figure 4). The coracoid (anterior) button is convex (to adapt to the coracoid shape) and pegged to prevent the suture from cutting through the bone prior to bone union. The glenoid (posterior) button has one hole allowing suture passage. The sliding-locking knot (Nice Knot), tied posteriorly, is bulky and cannot pass through the posterior button. Then bone block compression is obtained with using a tensioner.

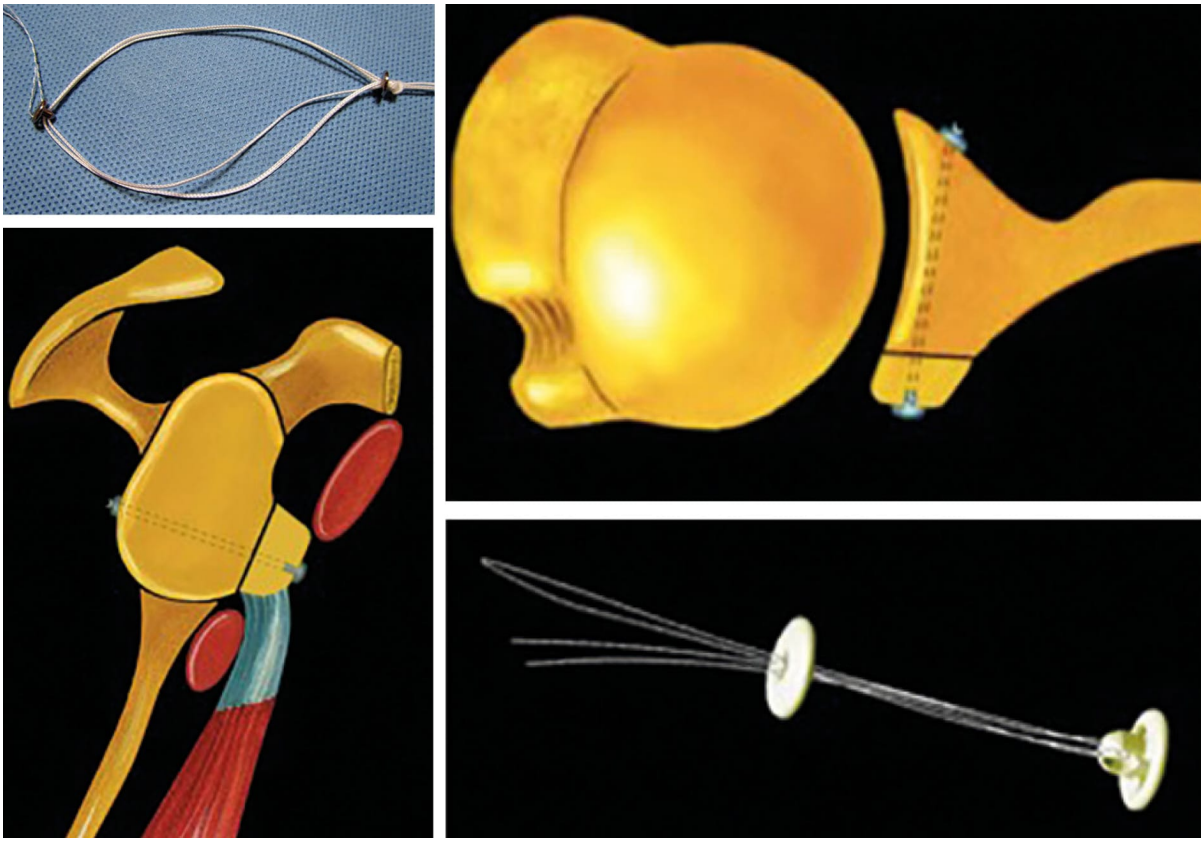


Figure 4: Double endoButton fixation – Bone-LinkTM

The anterior endobutton is a peg button; the posterior endobutton is a single hole button.

THE NICE KNOT

The Nice knot (sliding-locking knot) is tied posteriorly to obtain bone compression. Further bone compression is obtained with the help of the suture tensioner. At the end of the procedure, three additional surgeon's knots (square knots) are tied to lock the construct (Figure 5a, b, c, d).

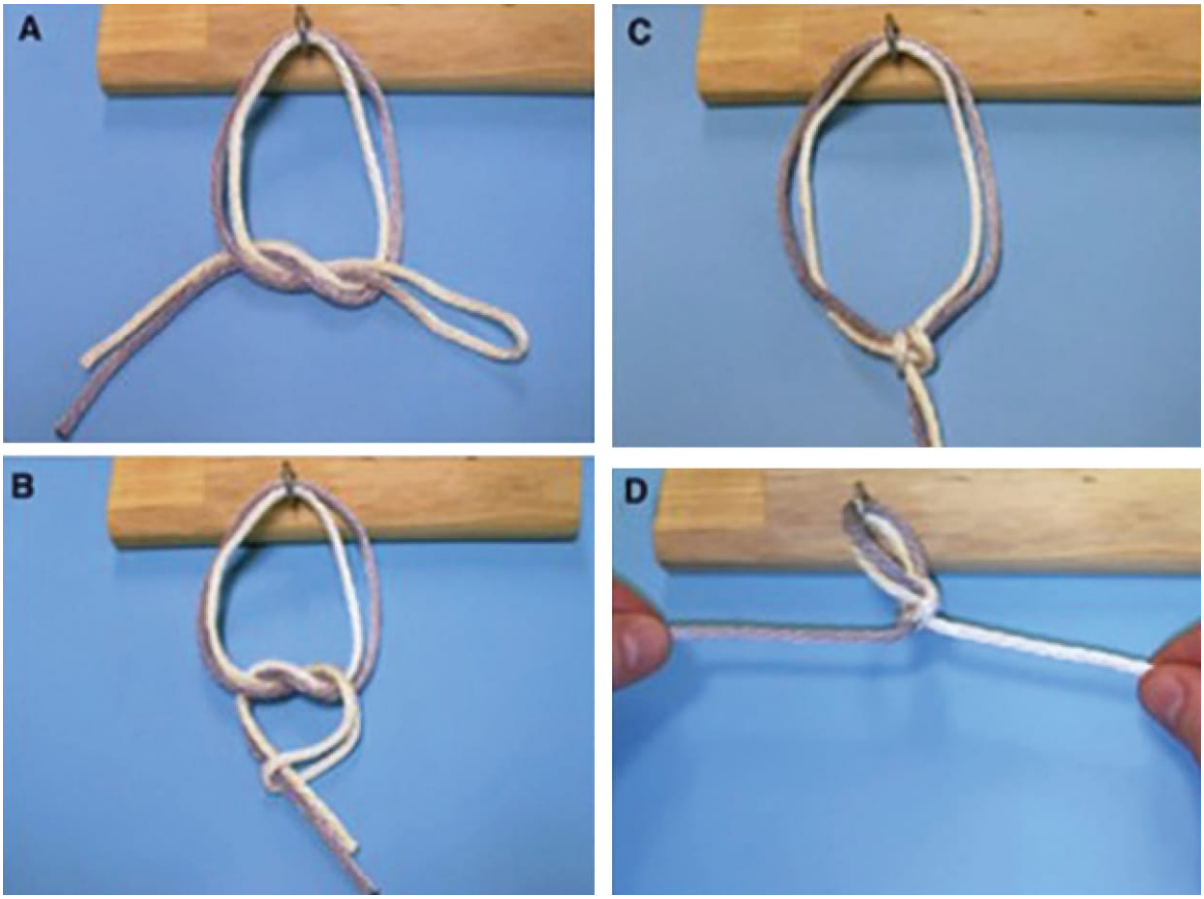


Figure 5

BENEFITS OF ARTHROSCOPIC LATARJET GUIDED TECHNIQUE

The success of the Latarjet procedure is largely dependent on accurate placement of the graft relative to the glenoid margin. Mal-positioning can lead to major complications including recurrent instability (when placed too medial or too high/low), or pain and subsequent rapid-onset osteoarthritis if positioned too lateral. (Figure 6)

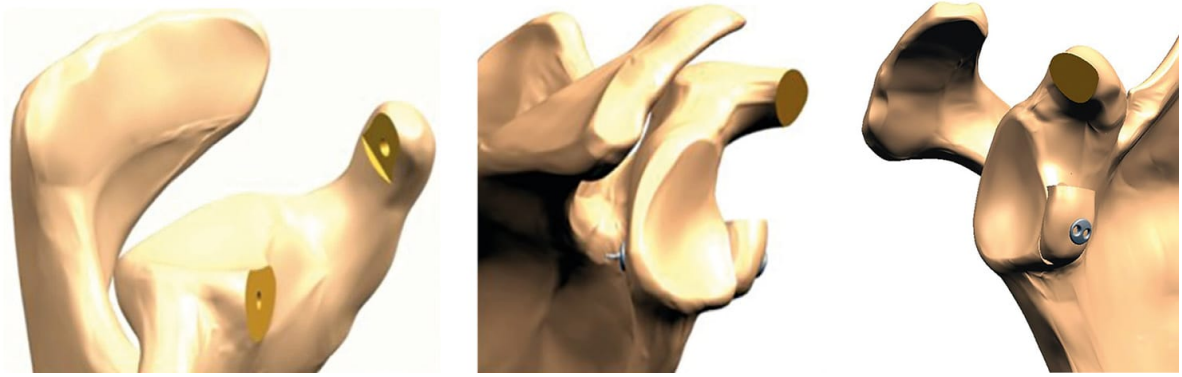


Figure 6: Mismatch between coracoid & Glenoid drilling.

In our guided technique, the use of glenoid and coracoid guides allows matching of the articular surface of the graft to the glenoid rim, thus virtually eliminating the possibility of an articular step-off. The utilization of

targeting drill guides, passing pins and cortical suspension fixation devices has reduced intraoperative challenges, and brought simplicity, reproducibility and safety to the arthroscopic Latarjet procedure.

Benefits of completing the surgery arthroscopically

The main benefit of completing the surgery arthroscopically (in addition to decreased bleeding, less postoperative pain, better cosmesis, and earlier return to sport) is the improved intra-articular and extra-articular visualization, allowing [1] accurate graft placement, [2] improved safety of the procedure because of visualization of the neurovascular structures, and [3] ability to perform an associated Bankart repair, placing the coracoid graft in an extracapsular position, and [4] possible treatment of associated pathologic processes (labrum tears, capsular distension, rotator cuff tears, biceps and SLAP lesions).

Benefits of performing a Bankart repair (in addition to the Latarjet)

The main benefits of keeping the capsule and labrum are the following: (1) it protects the humeral head from contact with the graft (which should theoretically result in a reduced incidence of arthritis); (2) it adds shoulder stability (by keeping the bumper effect); (3) it preserves proprioception (essential in sportsmen); and (4) there is no hardware inside the glenohumeral joint, which reduces the risk of reoperation for symptomatic hardware.

Latarjet Guiding System / Instrumentation

Specific instruments have been designed and developed to improve the safety and accuracy of the arthroscopic Latarjet procedure (Latarjet Guiding System, Smith & Nephew Inc, Andover, MA, USA) (Figure 7).

Figure 7 - (1) The Glenoid drill guide ensures that the cortical button suture tunnel is almost parallel (10° angulation) and 5-mm medial to the anterior glenoid rim. In addition, it allows safe intra-articular (i.e., away from brachial plexus) drilling from posterior to anterior of the glenoid.

Figure 7 - (2) The Coracoid drill guide ensures that the cortical button suture tunnel is perpendicular to the coracoid, equidistant from its margins (5 mm), and at a fixed distance from its tip (5 mm).

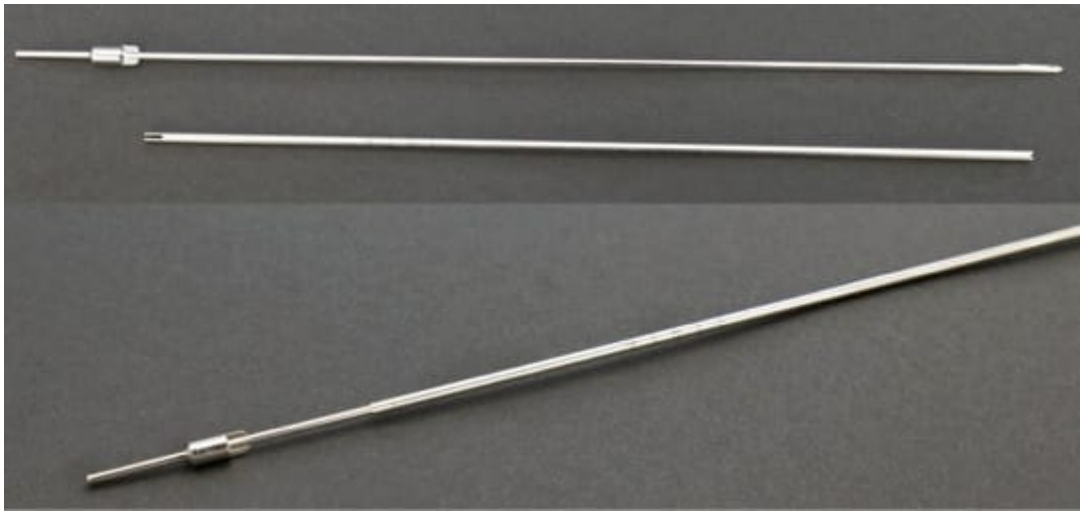


Figure 7 - (3) Two drill bits (RCG DrillTM, Smith & Nephew Inc, Andover, MA, USA), comprising an inner K-Wire and outer sleeve (2.8 mm in diameter are used for coracoid and glenoid drilling.

Figure 7 - (4) A pin puller is used for removal of the K-wires.

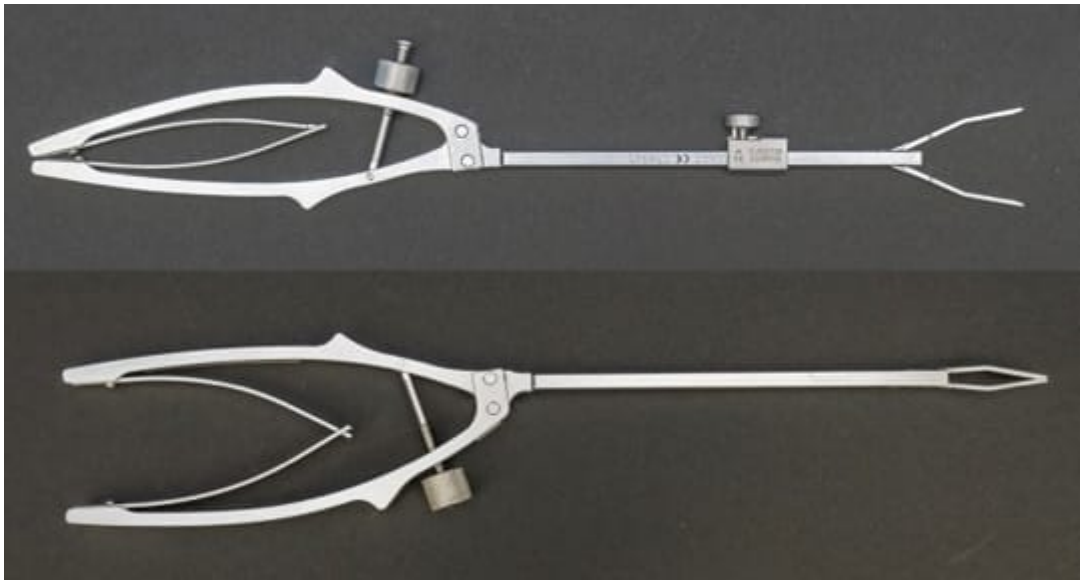


Figure 7 - (5) Two subscapularis spreaders are used. The posterior spreader is used to split the subscapularis muscle laterally, along its fibers. The anterior spreader is used to split the subscapularis muscle medially and to protect the axillary and musculocutaneous nerves at the time of coracoid transfer.

Figure 7 - (6) An oscillating rasp is used to create two opposing flat osseous surfaces of anterior glenoid and coracoid undersurfaces.

Figure 7 - (7) An oscillating saw blade is used for safe and rapid coracoid osteotomy.

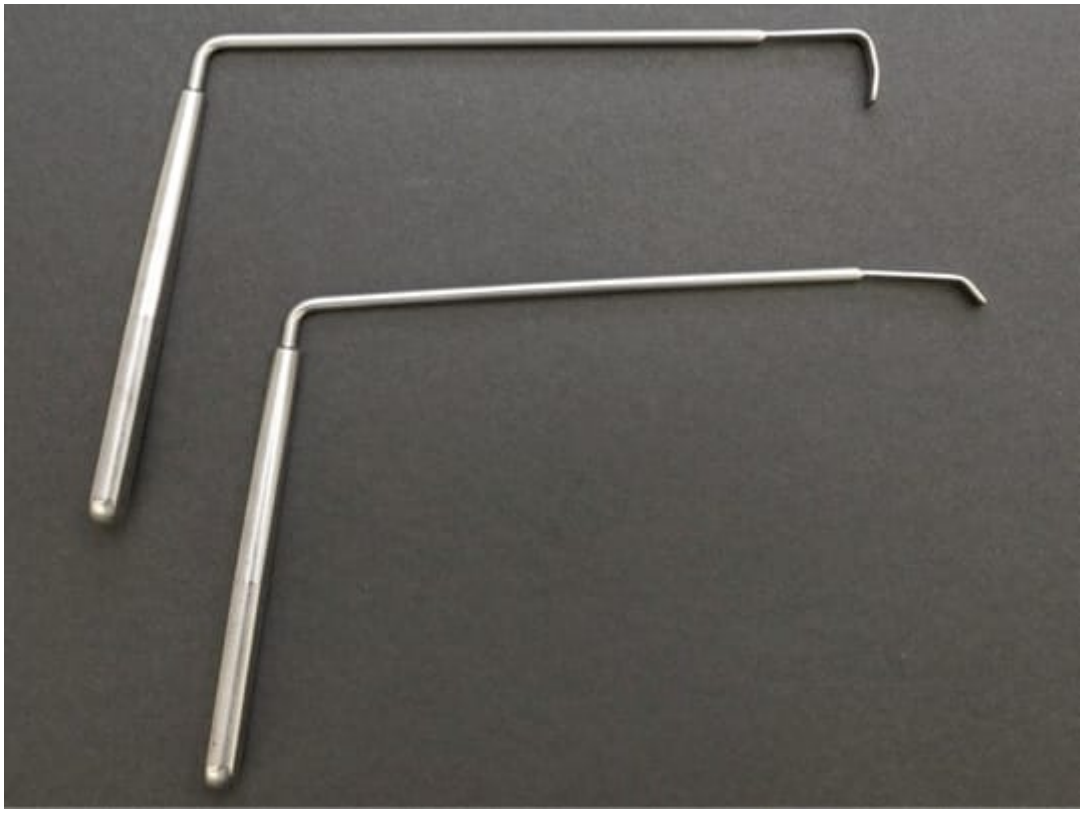


Figure 7 - (8) A pair of arthroscopic tissue retractors can be used to improve safety and visualization during the coracoid transfer: the curved (North) retractor is used to elevate the upper part of the subscapularis, and the straight (South) retractor to protect the axillary and musculocutaneous nerves and pull down the inferior part of the subscapularis.

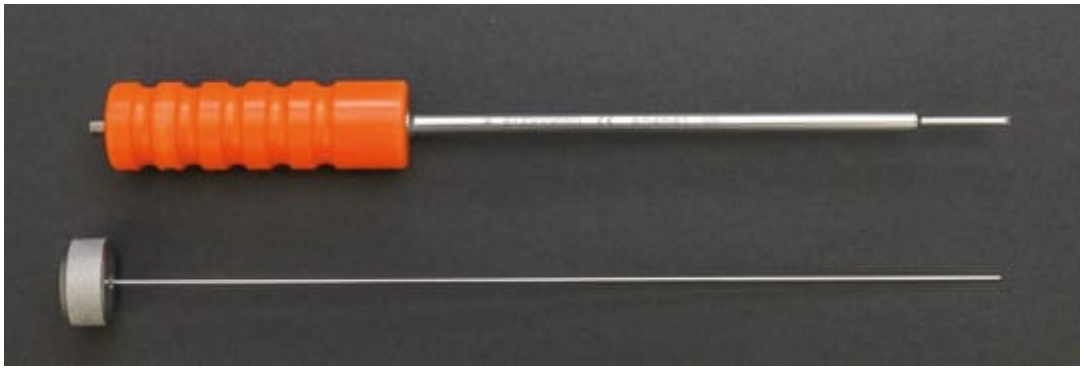


Figure 7 - (9) Alternatively, a cannulated awl can be used to create pilot hole and insert a K-wire to improve visualization of the anterior glenoid neck (by lifting up the upper subscapularis).

Figure 7 - (10) A suture tensioner is used to obtain final compression between the coracoid graft and the anterior glenoid.

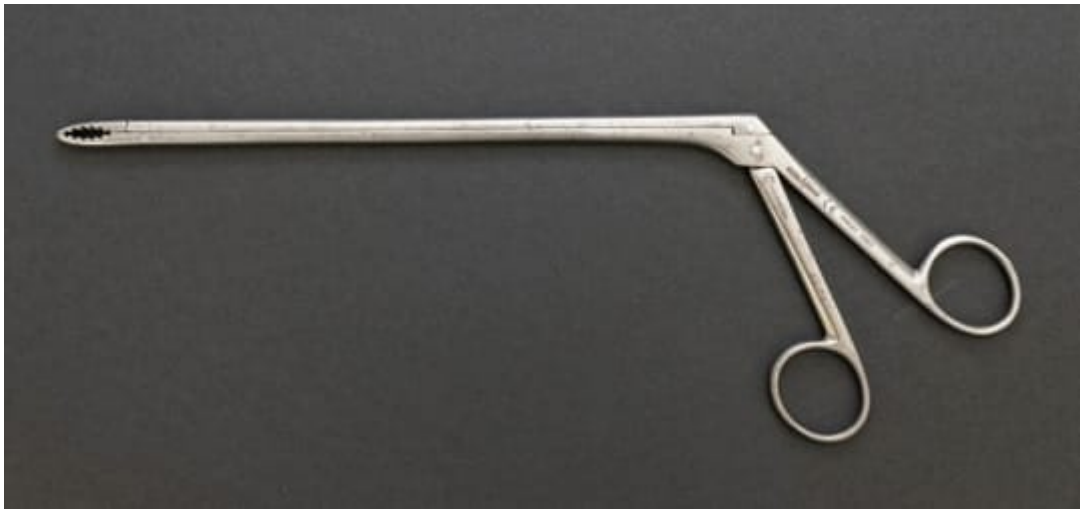


Figure 7 - (11) A coracoid grasper is used to manipulate the bone block during transfer and fixation.

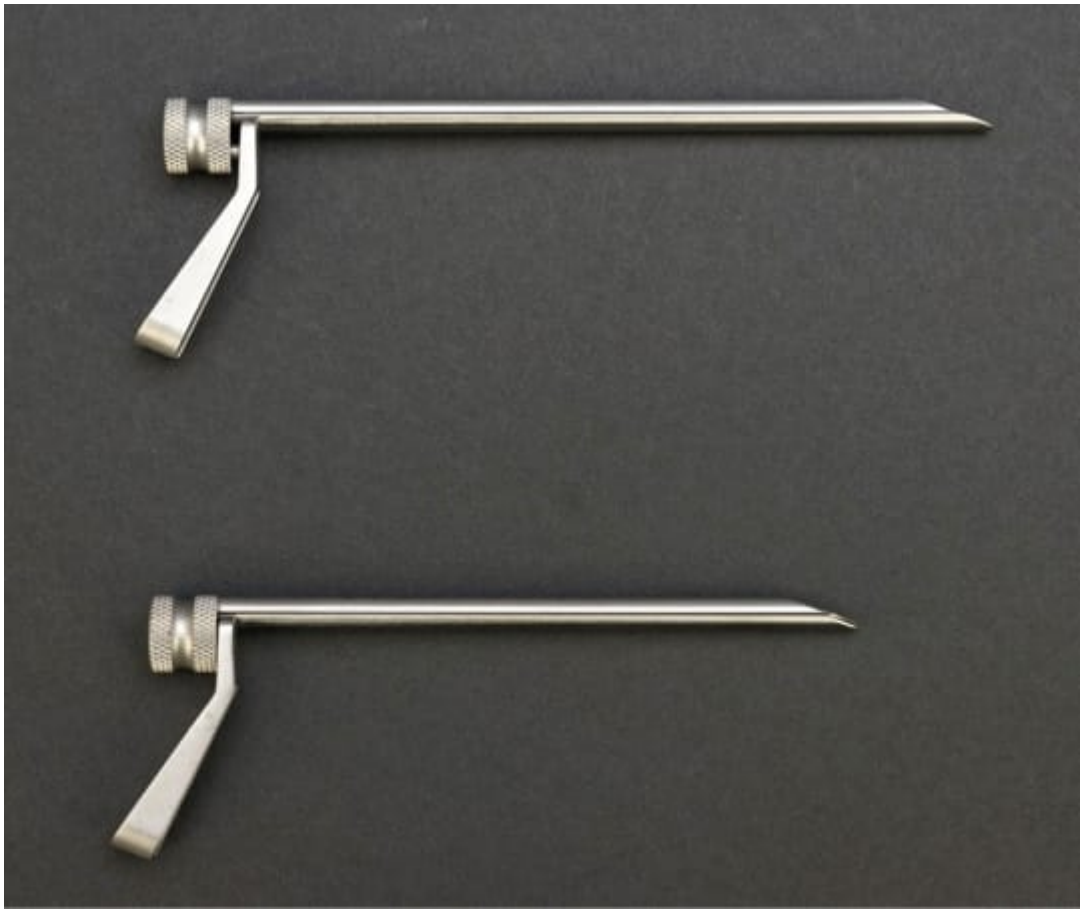


Figure 7 - (12) Two half-pipe cannulas (long and short) are used for atraumatic insertion of instruments: the short half-pipe is used to introduce intra-articular instruments while the long half-pipe is used to introduce instruments through the anteromedial portal into the anterior subdeltoid space.

A Five-Step Procedure

The surgical technique is composed of 5 surgical steps:

- Step 1 : Coracoid preparation

- Step 2 : Glenoid preparation

- Step 3 : Subscapularis split

- Step 4 : Coracoid transfer & fixation

- Step 5 : Bankart repair

PATIENT PREPARATION - PORTAL PLACEMENT

Patient preparation

Under general anesthesia and an interscalene block, place the patient in the “lazy” beach-chair position (Figure 8). This allows to get low blood pressure (90mm), but good brain perfusion. A folded sheet is placed under the blade of the scapula to make the coracoid process readily palpable.

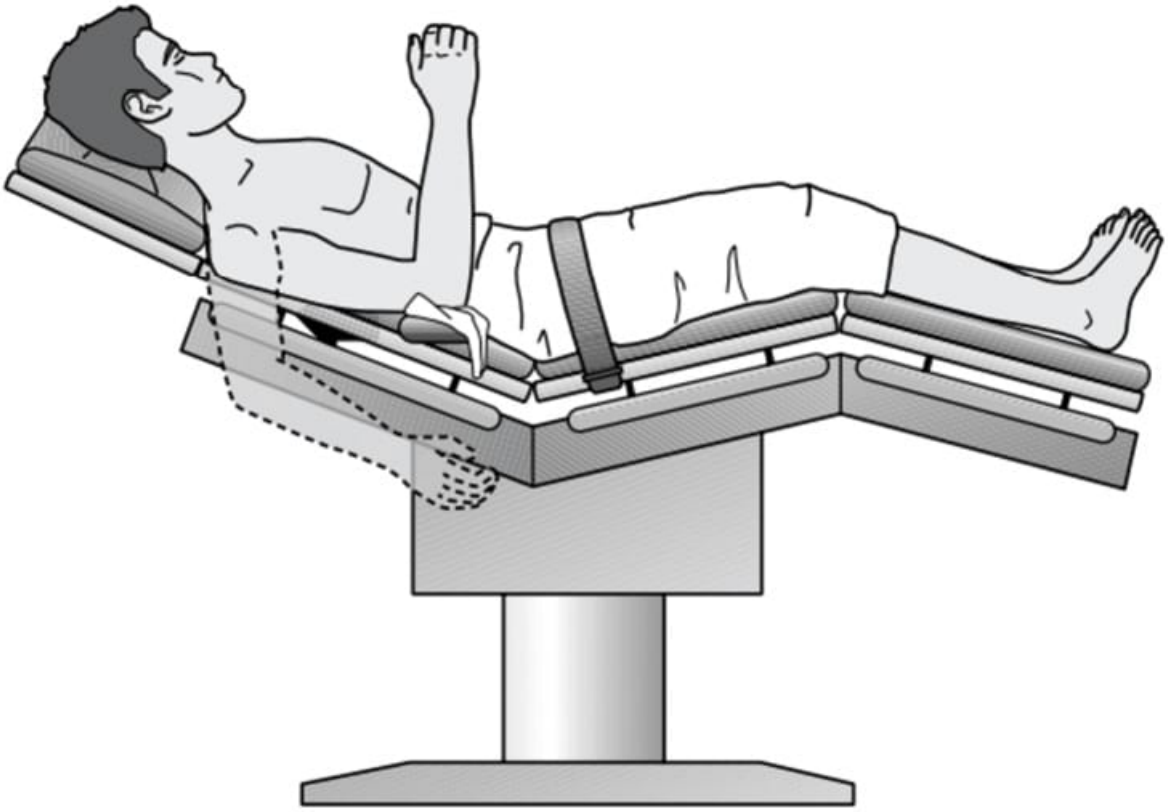


Figure 8

Using a movable arm support (SPIDER Limb Positioner, Smith & Nephew) place the shoulder in 60° of flexion (to relax the anterior deltoid) and 30° of internal rotation (to increase the space under the coracoid process and relax the axillary nerve). Place the elbow at 90° of flexion (to relax the conjoint tendon).

Beware! Shoulder abduction is contraindicated as it brings the neurovascular structures laterally (in front of the scapular neck), putting them at risk. Shoulder extension is also contraindicated as it reduces the anterior subdeltoid space and puts the axillary nerve under tension.

70° arthroscope

We use a 70° scope (instead of a 30° scope) throughout the procedure as it offers superior visualization of the anterior neck of the scapula from inside and outsid the joint. Furthermore, the advantage of viewing around ‘‘acute angles’’ with the 70° scope obviates the need for additional portals and, thereby eliminates the problem of instrument crowding.

Portal placement

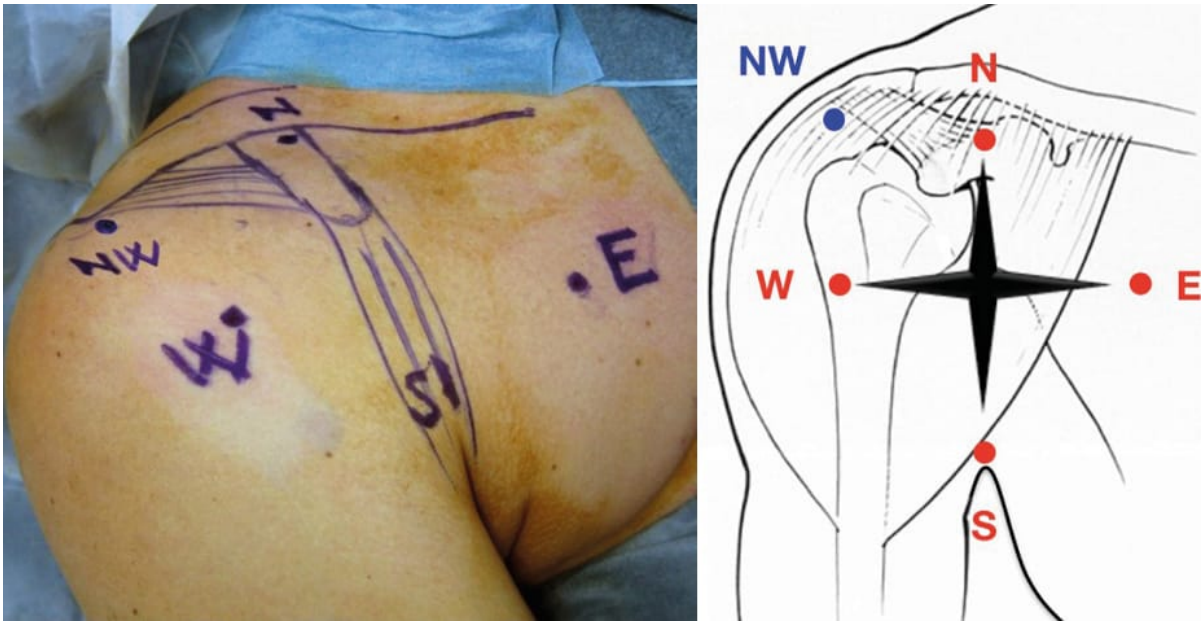


Figure 9A & 9B

In addition to a standard posterior portal for systematic joint inspection, 5 anterior arthroscopic portals are required for this procedure to work extra-aricular (Figure 9):

• North (N) : Located 1 finger-breadth proximal and medial to the tip of the coracoid process,

• South (S) : Located 2 finger-breadths distal to the tip of the coracoid process in the axillary fold,

• East (E) : Located 3 finger-breadths medial to the tip of the coracoid process, passing obliquely through the pectoralis major muscle,

• West (W) : Located 2 finger-breadths lateral to the tip of the coracoid process,

• North-West (NW) : Located at the antero-lateral corner of the acromion; this is the rotator interval portal used to work inside the joint.

SURGICAL TECHNIQUE

Step 1: Coracoid preparation

First, locate the (P) portal with a spinal needle to make sure that the scope and instruments (glenoid guide) are going to be tangent to the glenoid surface and above the equator.

Coracoid dissection

With the 70° scope in the (P) portal, now locate the (NW) portal with a spinal needle; it must be anterior to the biceps tendon, and tangent to the anterior glenoid neck and to the coracoid process. Use a coblation device to open the rotator interval and identify the under surface of the coracoid process.

Release the coracoacromial ligament from the lateral side of the coracoid and continue the dissection of the sub-coracoid space over the coracoid and lateral to the conjoint tendon.

Locate the (N) portal with a spinal needle and release the pectoralis minor from the medial side of the coracoid using the coblation device. Separate the pec minor from the conjoint tendon.

Tip: Take care not to completely devascularize the coracoid graft by limiting release to no further than 1 cm from the tip of the coracoid process. Keep small transverse vessels for the coracoid.

Coracoid abrasion

Figure 10

Through the (NW) portal, introduce the motorized rasp and abrade the under surface of the coracoid process to create a flat and cancellous surface.

Coracoid drilling

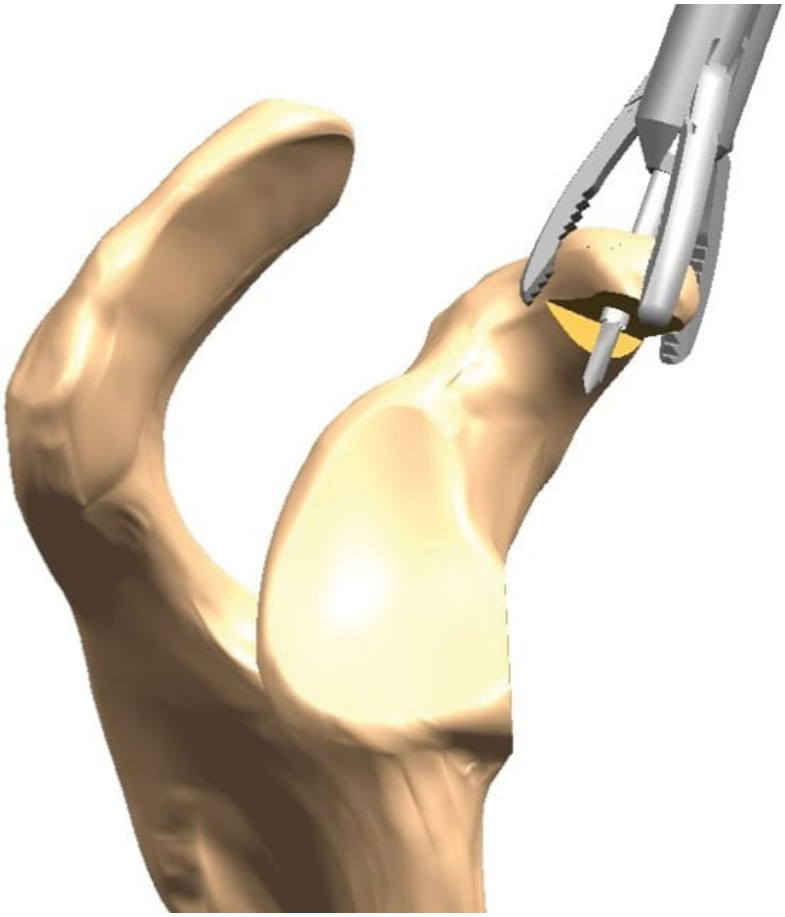


Figure 11

Introduce the Coracoid Guide through the (N) portal and grasp the coracoid perpendicular to its surface. To achieve this, the guide must be titled 45° medially (i.e., you must see the medial arm of the guide, under the coracoid).

Once the guide is stabilized on the coracoid, a 2.8mm Drill Tipped K-wire is inserted through the center cannulation of the drill guide and advanced until it exits the under surface of the coracoid.

Remove the inner K-wire and replace with a PDS suture. Pass a PDS through the coracoid (superior to inferior) and retrieve it through the (NW) portal with a grasper. Remove the Coracoid Guide and drill sleeve.

Implant placement

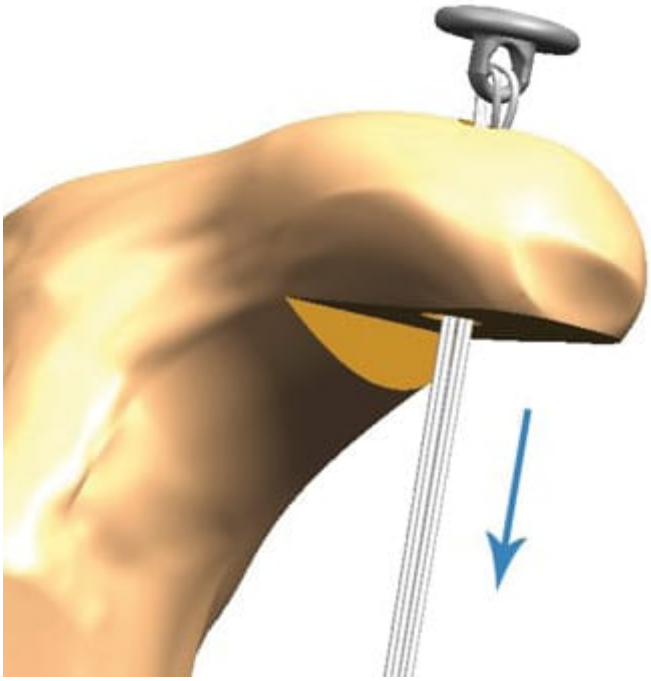


Figure 12

Tie the PDS suture coming from the (N) portal to the blue/white suture attached to the white suture loop of the Implant.

From the (NW) portal, pull the PDS suture to draw the white suture bundle and then the anterior cortical peg-button into the hole in the coracoid.

Suture management

Retrieve the white suture through the (N) portal and the blue/white Cobraid™ suture on the coracoid button through the (S) portal.

Tip: It is important to protect the sutures from the implant by storing and securing the ends through the (N) portal while ensuring the implant is protected from harm during the coracoid osteotomy.

Coracoid osteotomy

Through the (NW) portal, use the motorized saw to osteotomize the coracoid 15 to 20 mm from its tip (As a general rule, the bigger the glenoid defect, the longer the harvested bone block).

Final soft tissue release

Figure 13

Additional medial soft tissue release may be helpful to fully mobilize the coracoid bone block.

Tip : Close the (N) portal with a clip (or a plug) to avoid pressure loss and to maintain visualization.

Step 2: Glenoid preparation

Labrum detachment

The 70° scope is still in the (P) portal. Through the (NW) portal, detach the anterior labrum using the coblation device.

Tip: Use a switching stick through the (W) or (N) portal to retract the labrum and capsule from the glenoid.

Glenoid neck abrasion

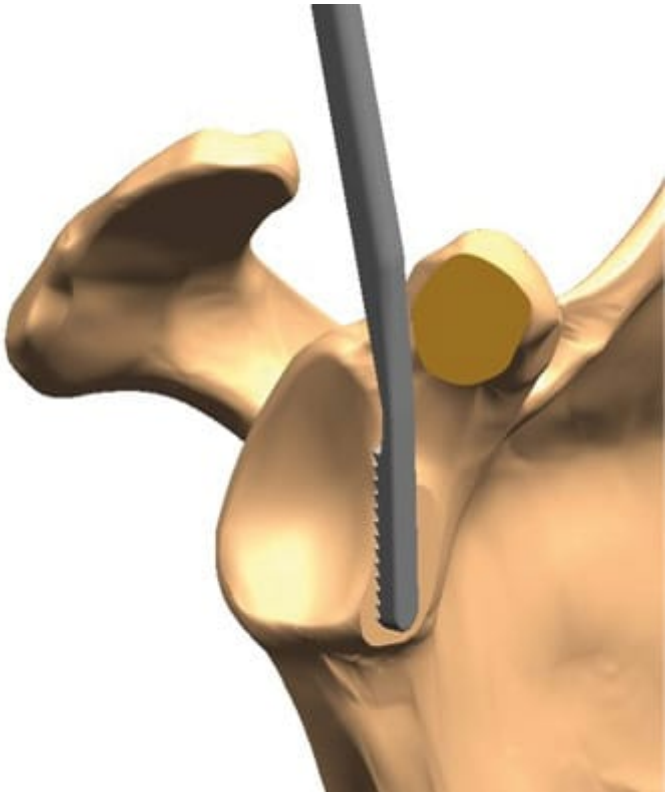


Figure 14

Using the motorized rasp through the (NW) portal, abrade the glenoid neck between 3 and 6 o'clock to create a flat cancellous surface.

3 and 6 o'clock anchors insertion

Through the (W) portal, drill two anchor holes at 3 and 6 o'clock position and insert a SUTUREFIX™ suture anchor (Smith & Nephew). Suture will be used later for Bankart repair.

Tip: This suture anchors, placed at 3 and 6 o'clock, also serves as a landmark for bone block positioning: the coracoid bone block will be placed between the two anchor (i.e., below the equator).

Glenoid guide placement

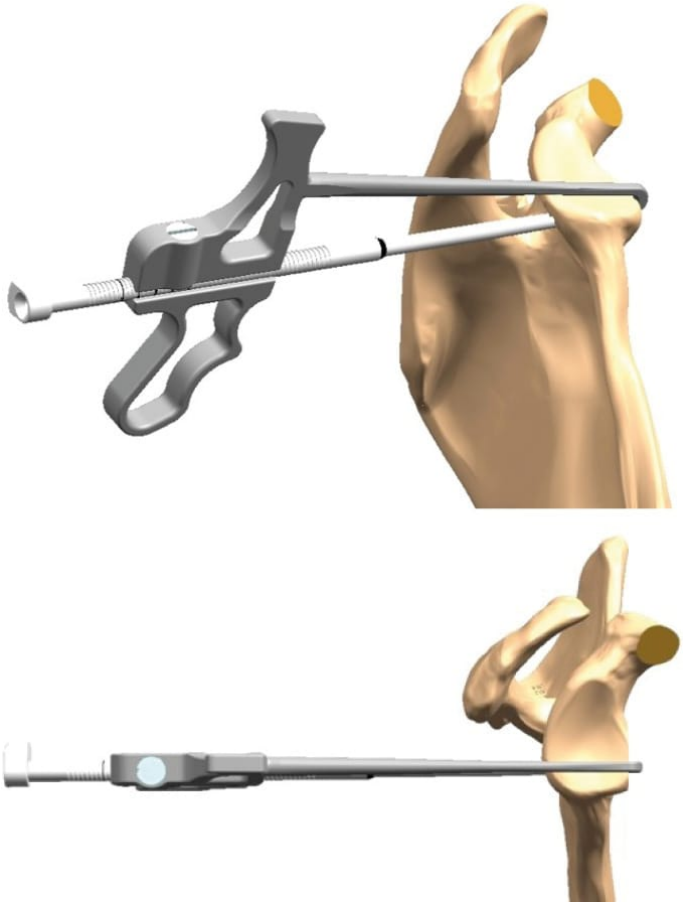


Figure 15

Using a switching stick, move the scope from the (P) portal to the (NW) portal, to view the glenoid surface and anterior glenoid neck.

Tip: Introduce the anterior spreader through the (N) portal and open it to push away the labrum from the glenoid. This allows to create a space of work and to see better the anterior glenoid neck.

Place a switching stick in the (P) portal and slide the short half-pipe metallic cannula down it. Remove the switching stick and slide the Glenoid Guide down the half pipe and then remove the half pipe.

Place the Glenoid Guide flush to the glenoid at 5 o'clock position (in a right shoulder), with the tip of the hook over the glenoid rim.

Place the bullet and make a second posterior skin incision. Push the bullet until it reaches the posterior neck of the glenoid.

Glenoid drilling

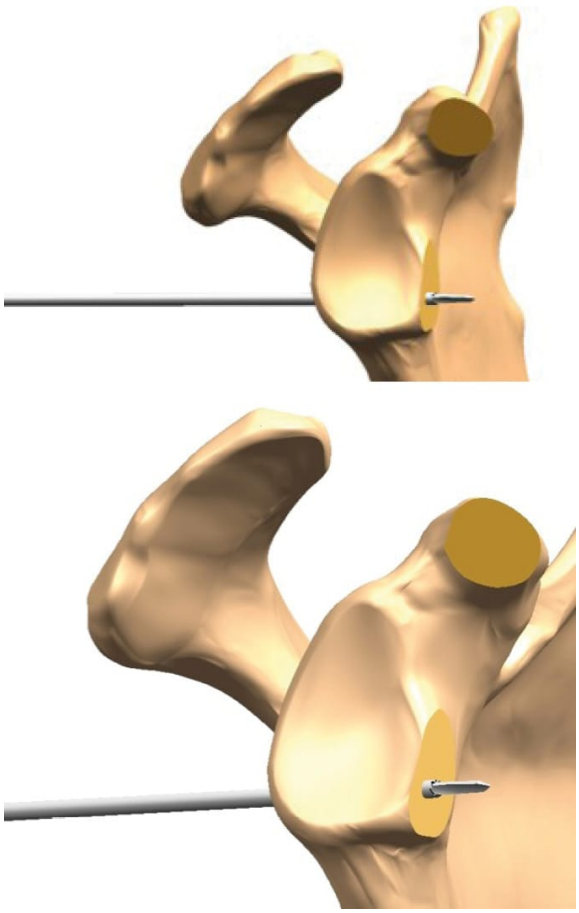


Figure 16

Turn the scope to view the anterior glenoid neck and confirm that:

(1) hook is placed at 5 o'clock (i.e., between the suture anchors), and

(2) k-wire will exit 5mm medially in the cancellous bone (just below the cartilage and cortical bone)

Using the second 2.8 mm Drill Tipped K-wire , drill from posterior to anterior through the Glenoid Guide.

Tip: The drill sleeve should exit 10mm outside the anterior glenoid neck.

Remove the inner K-wire and bullet, leaving the drill sleeve in place.

Beware! Do NOT rotate the k-wire with the pin puller when removing it to avoid removing the drill sleeve in the same time. Reintroduce the inner K-wire into the drill sleeve for additional stability.

Tip: Slightly bend the K-wire before replacing in the sleeve to prevent it from falling out of the sleeve.

Posterior spreader placement

Before removing the glenoid guide, slide the half pipe metallic cannula under the guide.

Remove the glenoid guide and replace with the posterior spreader (ensuring the spreader is closed at this stage).

Push gently the posterior spreader below the labrum, through the subscapularis muscle, at the same level of the glenoid K-wire (at 4h30 o'clock) (Figure 17).

Figure 17

Lock the spreader against the skin of the posterior aspect of the shoulder by sliding the tissue holder against the skin on the posterior side of the shoulder.

Step 3: Subscapularis split

Anterior bursectomy

With the scope placed in the (W) portal, use the coblation device (or shaver) through the (S) portal to remove the bursae of the subscapularis and identify the anterior axillary vessels (the so called " three sisters"), and identify the axillary and musculo-cutaneous nerves located 15mm medial.

Tip: "Following medially the three sisters leads to the two brothers" (i.e., the axillary and musculocutaneous nerves).

Axillary nerve protection

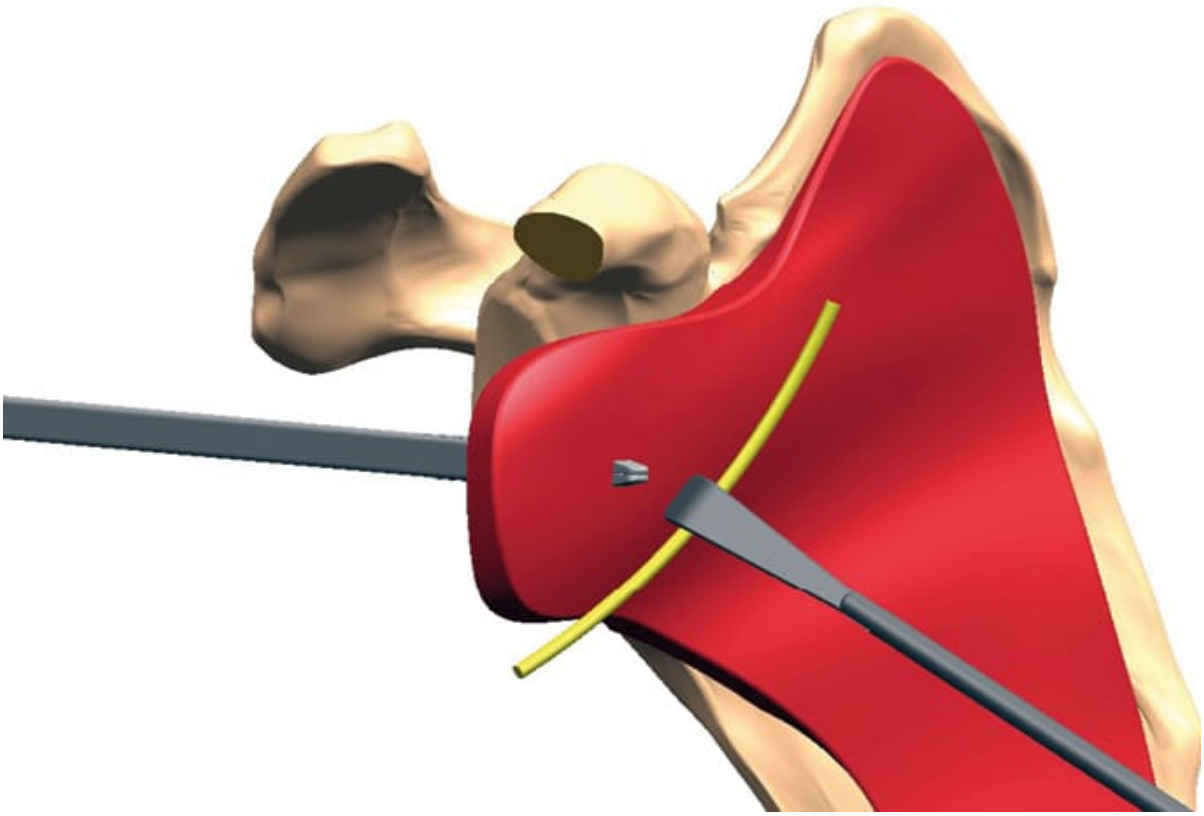


Figure 18

Look for the axillary nerve and gently retract it medially with the Nerve Protector introduced through the (S) portal.

Follow the axillary nerve proximally, look for the posterior Spreader, which is located at the 2/3 superior-1/3 inferior junction of the subscapularis muscle, always closed from the axillary nerve.

Lateral subscapularis split

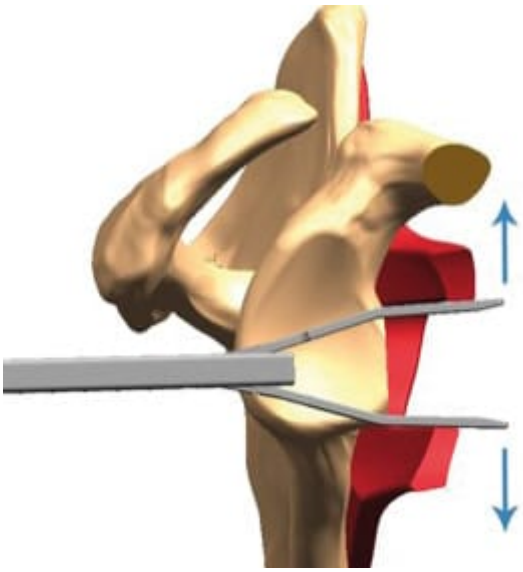


Figure 19

Make sure that the Posterior Spreader is at the right depth (or readjust) and gently open it.

Use the coblation device through the (S) portal to further open the subscapularis tendon laterally. Do not open the capsule (which will be used for Bankart repair).

Medial subscapularis split

From the medial (E) portal, introduce the long metallic half-pipe through the pectoralis major and aim towards the coracoid bone block (45° angle). Remove the trocar and slide the anterior spreader along the half-pipe. Remove the half-pipe.

Look at the subscapularis and place the anterior spreader in the muscular window. Open the anterior spreader to visualize the abraded neck of the glenoid and to get clear sight of the K-wire.

Slide the open spreader medially and under the glenoid neck. Together, the spreaders create a “safe window” through the subscapularis muscle.

Step 4: Coracoid transfer & fixation

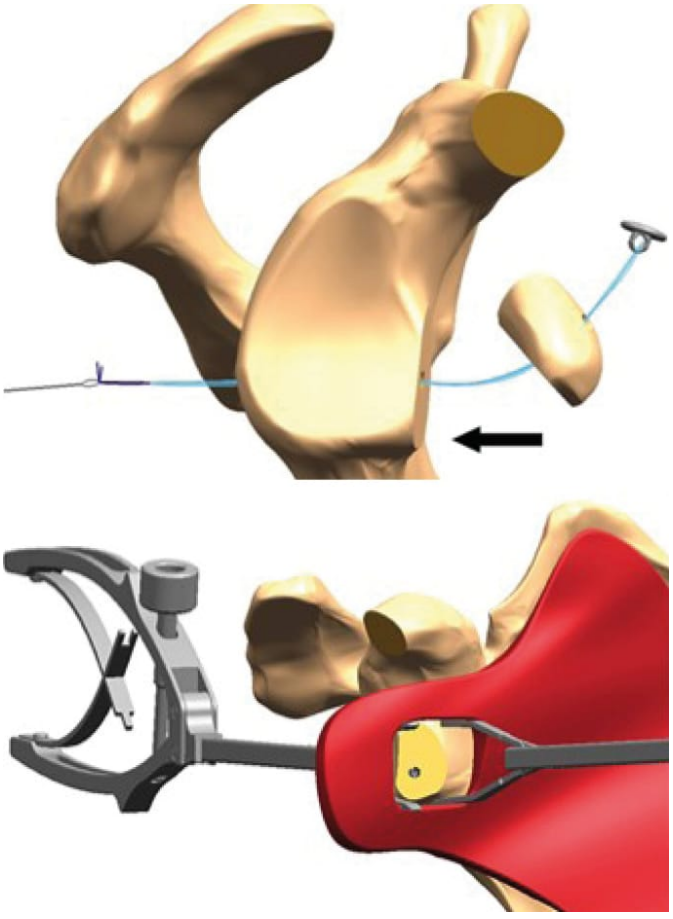


Figure 20

Suture shuttling

Remove the posterior glenoid K-wire and introduce the Suture Retriever through the Glenoid Sleeve (P) Portal.

Retrieve the PDS attached to the white suture bundle (from outside of the shoulder) through the (N) portal using an alligator grasper.

Tip: Use the short half-pipe to re-introduce the grasper and PDS to make sure no deltoid muscle bridge will be caught.

Capture the PDS suture with the Suture Retriever and pull posteriorly.

Remove the posterior sleeve with the pin-puller.

Coracoid transfer

Gently pull on the blue-white suture in the back of the shoulder to transfer the coracoid bone block at the level of the glenoid neck. There must be no resistance when pulling.

Tip: Twist the posterior spreader 45° to increase the space laterally (i.e., to open the window) and avoid catching the conjoint tendon during the transfer.

Introduce the Coracoid Grasper through the (S) portal, and use it to help for the transfer and adjust the rotation of the bone block (in order to be flush with the glenoid surface).

Once the Bone block is located against the anterior neck of the glenoid, clip the four white strands of white suture against the skin on the posterior aspect of the shoulder.

Posterior button placement & knot tightening

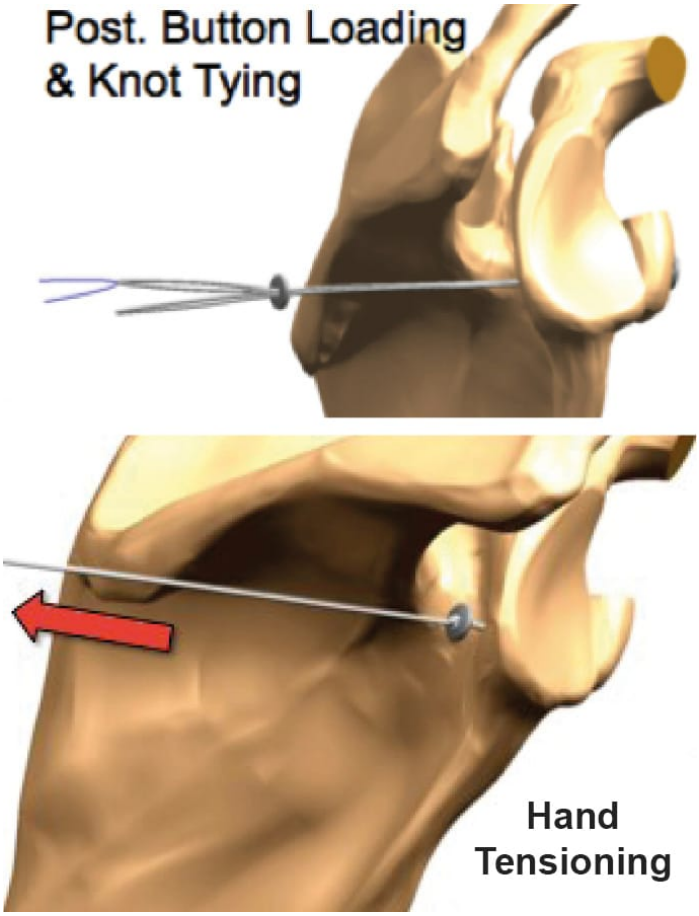


Figure 21

Using the suture retriever, pass the four white sutures through the posterior (single-hole) button.

Tie a Nice knot (sliding-locking knot) making sure that the loop with the blue-white CobraidTM remnant is the Post.

Remove the clip from the white suture and pull on the Post in order to bring the button through the skin and against the posterior neck of the glenoid.

Bone block rotation & compression

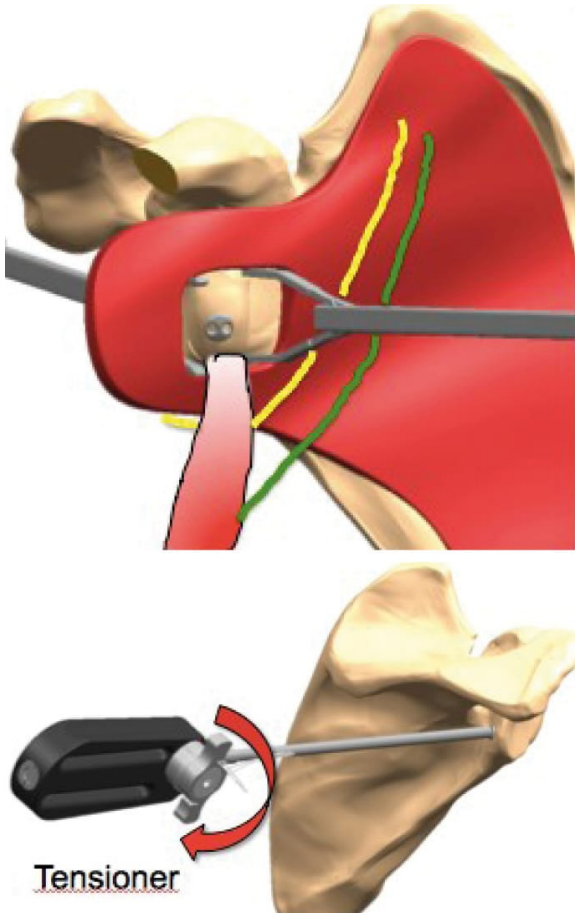


Figure 22

The Suture Tensioner is put in place in the back of the shoulder and a temporary compression of 50 Newtons is first applied. Remove the posterior spreader, slide the half-pipe metallic cannula and introduce a switching stick to reintroduce the scope inside the joint through the (P) portal in order to control placement and rotation of the bone block.

The positioning and the rotation of the coracoid graft are controlled with the help of a probe, ensuring no lateral overhang. Further compression of 50 Newtons (total 100 Newtons) of the bone graft against the anterior glenoid neck is obtained by using the Suture Tensioner. Visualization from the posterior portal and palpation with a probe confirm the absence of overhanging of the coracoid bone block and the solidity of the construct.

Step 5: Bankart repair

Labral reattachment

Retrive the suture through the (NW) portal. The remaining capsule and labrum are now reattached to the glenoid rim, placing the graft in an extra-articular position. The previously placed suture anchors (placed at 3 and 6 o'clock) are used to repair the labrum and make a capsular shift.

Tip: Use the Alligator grasper through the (W) portal to pull the labrum from South to North (South-North capsular shift).

The labrum repair prevents rotation of the bone block (Figure 23).

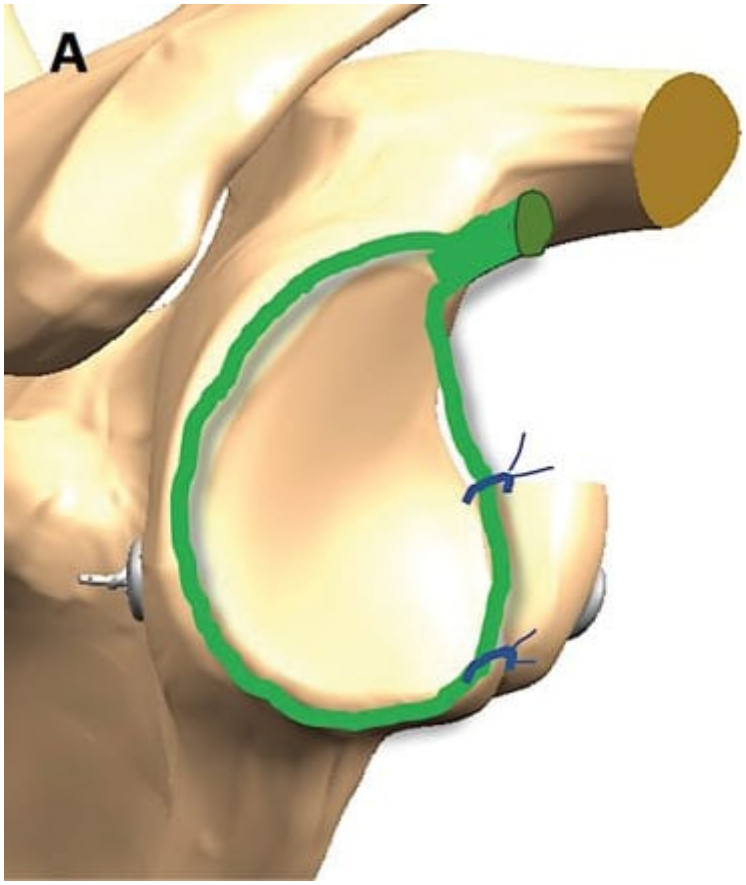


Figure 23

Final step

The dynamic sling effect of the block can now be visualized by placing the scope in the anterior subdeltoid space through the (W) portal. Remove the anterior spreader.

Remove the Tensioner and lock the construct using 3 square knots (surgeon's knots) with the help of a knot-pusher.

POSTOPERATIVE MANAGEMENT

The arm is immobilized for 2 weeks in a neutral rotation sling. This is important as it allows healing of the conjoint tendon in the muscular part of the subscapularis muscle and avoids any loss of external rotation.

Beware! If the arm is immobilized in internal rotation, the conjoint tendon will heal to the tendinous portion of the subscapularis, and this will limit external rotation (which is crucial in athletes)

After two weeks, the brace is removed and pendulum exercises are started (5 times a day, 5 minutes each session), and patients are allowed to remove the sling at night and to sleep with the operated arm inside a t-shirt.

After three to four weeks, the sling is removed and formal rehabilitation with a physiotherapist is started. Swimming pool therapy is encouraged performing breast stroke movements. No heavy lifting is allowed for the first
12 weeks. Return to all types of sports activities, including collision and contact-overhead sports, is allowed between 3 to 6 months postoperatively.

BONE BLOCK POSITIONING AND HEALING

Postoperative radiographs and/or CT-scan images are performed at two weeks and 6 months to evaluate placement, healing and remodeling of the coracoid bone block (Figure 24).

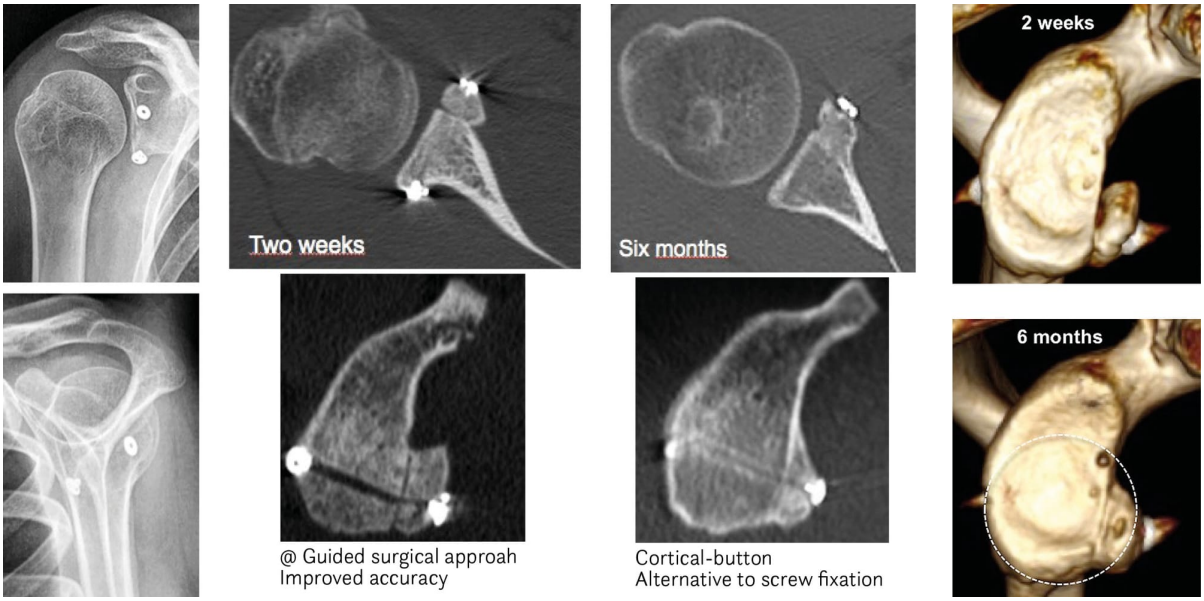


Figure 24

6 month postoperative CT- scan images show that the pear shape of the glenoid is restored with partial superior resorption of the coracoid bone block.

VARIATION OF THE TECHNIQUE (FOUR-BUTTON TECHNIQUE)

Although, we did not observe any problems withh the two buttons fixation, some surgeons may prefer to use four buttons fixation. (Figure 25)

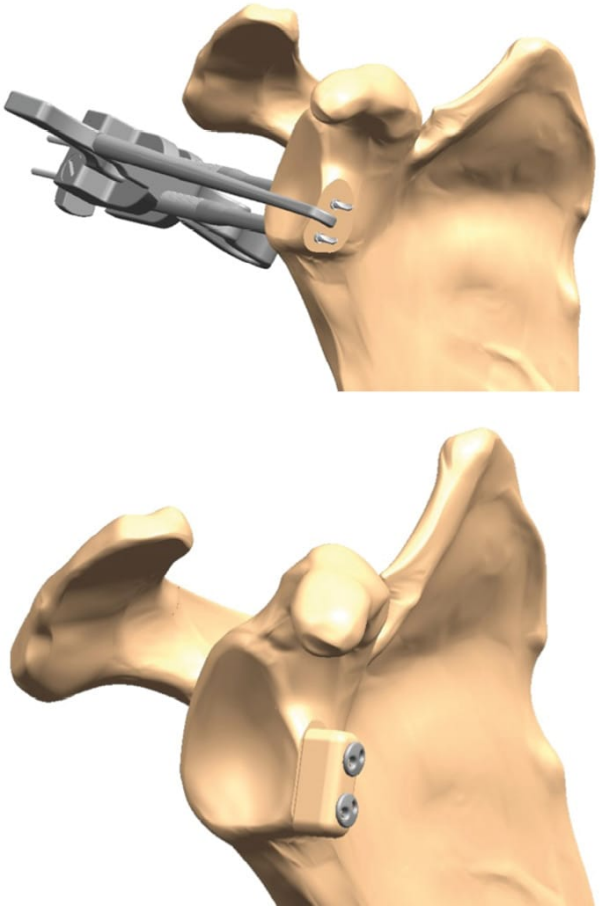


Figure 25

In such a case the double-barrel glenoid guide must be used. The technique is similar for athroscopic Eden-Hybbinette.

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