Arthroscopic Guided Latarjet and Bankart Surgical Technique

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This technique guide, used with the medical devices included herein, is not approved for use in the US or Canada.

This surgical technique was prepared with the guidance of Prof. Pascal Boileau, and contains a summary of techniques and opinions based upon his training and expertise in the field, along with his knowledge of Smith & Nephew products.

Smith & Nephew does not provide medical advice and recommends that surgeons exercise their own professional judgement when determining a patient’s course of treatment. This surgical technique is presented for informational and educational purposes only.

For more information on the products in this surgical technique, including indications for use, contraindications, effects, precautions and warnings, please consult the products’ Instructions for Use (IFU).
For illustrative purposes only. Results may vary.
Introduction

Coracoid transfer to address anterior shoulder instability, first proposed by Michel Latarjet in 1954 and popularized by Walch and Patte is increasingly used in cases of glenoid deficiency and in revision anterior stabilization. The technique has a three-fold advantage: (1) it allows reconstruction of the glenoid bone loss (static bone effect); (2) it reinforces the weak and stretched inferior glenohumeral ligament by transferring the conjoined tendon closer to the joint and lowering the inferior part of the subscapularis (dynamic sling or seatbelt effect); and (3) together with the reattachment of the labrum and capsule, it allows “triple locking” of the shoulder. The procedure yields good results with a low rate of recurrent instability, high rate of return to sports to preinjury levels, and high rate of patient satisfaction.

In an attempt to make the arthroscopic Latarjet procedure safer and to reduce complications associated with the traditional screw fixation, we have developed a novel surgical technique and fixation method involving a guided surgical approach for graft positioning and the use of specific suture buttons for fixation.

In a recent clinical study, we have evaluated the accuracy of graft positioning and healing with computed tomography (CT) assessment in 76 patients followed prospectively (Boileau et al., JSES 2016). We have demonstrated that:

(1) the use of the guiding technique does allow accurate positioning of the coracoid bone graft,

(2) cortical button fixation is an alternative to screw fixation which allows predictable and reproducible bone union and minimizes complications reported with screw fixation, and

(3) neurological and hardware complications, classically reported with screw fixation, have not been observed with this guided technique and novel fixation method.
Patient Preparation

Under general anesthesia and interscalene block, place the patient in the ‘lazy’ beach-chair position.

Using a movable arm support (SPIDER2 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 conjoined tendon). Shoulder abduction is not recommended 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.

Note:

In addition to a standard posterior portal for systematic joint inspection, 5 anterior arthroscopic portals are required for this procedure: proximal (north), distal (south), lateral (west), and medial (east) to the coracoid process and used to work mainly extra-articularly. The North-West portal (located to the antero-lateral corner of the acromion) is the rotator interval portal used to work inside the joint.

Portal Placement

- Posterior (P) Located 1cm inferior and medial to the posterior angle of the acromion
- North (N) Located 1 finger-breadth proximal 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

A 70° scope is used in preference to a 30° scope throughout the procedure.
Surgical Technique

The surgical technique is composed of 5 surgical steps.

Step 1: Coracoid preparation

1a. Coracoid dissection (Fig 1a)

Start with the 70° arthroscope in the P portal. Locate the N portal with a needle. Use a radio-frequency device to open the rotator interval and identify under-surface of the coracoid process.

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

Through the N portal, release the pectoralis minor from the medial side. Take care not to completely devascularize the coracoid graft by limiting pectoralis release to no further than 1cm from the tip of the coracoid process.

1b. Through the S portal use an ACCU-PASS™ suture shuttle (Smith & Nephew) to pass and retrieve a PDS around the conjoined tendon. This will be used to retract the tendon and coracoid distally, after the osteotomy. Clip out of the way using a Kelly forceps (Fig 1b).

1c. Coracoid abrasion (Fig 1c)

Through the N portal, introduce the Reciprocating Rasp and abrade the under surface of the coracoid process to create a flat surface.
1d. **Coracoid drilling (Fig 1d)**

Introduce the Coracoid Drilling Guide through the \(N\) portal and grasp the coracoid perpendicular to its surface ensuring one jaw sits at the tip of the coracoid as shown in Fig.1d. Advance a 2.8 mm drill and sleeve through the coracoid until both exit the prepared surface of the coracoid. Remove the Coracoid Drilling Guide.

Remove the drill (leaving the sleeve in place), and pass a PDS suture through the coracoid (superior to inferior) and retrieve through the \(W\) portal. Remove the sleeve using the Pin Puller.

1e. **Coracoid shuttling (Fig 1e)**

Tie the PDS suture coming from the \(N\) portal to the blue/white cobraid attached to the white suture loop of the ENDobutton** Fixation Device. From the \(W\) portal, pull the PDS suture to draw the white suture bundle and then the ENDobutton into the hole in the coracoid.

Retrieve the white suture through the \(N\) portal and the blue/white cobraid suture on the ENDobutton through the \(S\) portal.

1f. **Coracoid osteotomy (Fig 1f)**

Through the \(O\) portal, use the Reciprocating Saw to osteotomize 15 to 20 mm of the coracoid process. Additional soft tissue release may be helpful to fully mobilize the coracoid graft. Temporarily close the \(N\) portal with a clamp to avoid losing excess water.
Step 2: Glenoid preparation

2a. Labral dissection and elevation (Fig 2a)

Through the (N) portal, detach the anterior labrum using a radio-frequency device. Through the (W) portal, pass a PDS traction suture through the labrum at the 5 o'clock position. Pull this suture medially and clip it to the drape to create a working pouch at the glenoid neck level.

2b. Glenoid neck abrasion (Fig 2b)

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

2c. 3 o'clock anchor insertion (Fig 2c)

Through the (W) portal, drill an anchor hole at 3 o'clock position and insert a SUTUREFIX™ ULTRA suture anchor (Smith & Nephew) to be used later for the Bankart repair.
2d. **Glenoid Drill Guide placement (Fig 2d)**

Using a switching stick, move the scope to the \( \text{O} \) portal to view the glenoid surface and anterior glenoid neck.

Place a switching stick in the \( \text{P} \) portal and slide the Short Half Cannula down it. Remove the stick and slide the Glenoid Drill Guide down the cannula and then remove the cannula. Place the Glenoid Drill Guide flush to the glenoid at the 5 o'clock position (in a right shoulder), with the tip of the hook over the glenoid rim.

Make a second posterior skin incision and push the “bullet” into the joint until it reaches the posterior neck of the glenoid.

2e. **Glenoid drilling (Fig 2e)**

Advance a second 2.8 mm drill and sleeve from posterior to anterior through the Glenoid Drill Guide until both are visible from the anterior glenoid.

Remove the drill and “bullet”, leaving the sleeve in place. Reintroduce the drill into the sleeve for additional stability and reduced water leakage.

2f. **Posterior spreader placement (Fig 2f)**

Slide the half cannula under the Glenoid Drill Guide, remove the guide, and replace with the Subscapularis Spreader with Sliding Block (ensuring the spreader is closed at this stage). Remove the cannula. In a lateral direction, gently push the Subscapularis Spreader through the subscapularis muscle, below the labrum and at the same level as the drill and sleeve (5 o'clock). Lock the Subscapularis Spreader against the skin of the posterior aspect of the shoulder.
Step 3: Subscapularis split

3a. Anterior bursectomy and “three sisters” identification
With the scope in the W portal, use a radio-frequency device through the S portal to remove the bursae of the subscapularis and identify the anterior axillary vessels (the so called “three sisters”).

3b. Axillary and musculo-cutaneous nerves identification and protection
Following medially, the “three sisters” lead to the “two brothers”: the axillary and musculo-cutaneous nerves. Introduce the Tissue Retractor through the S portal, to retract the nerves medially.

3c. Lateral subscapularis split (Fig 3a)
After checking the position of the Subscapularis Spreader (correct at the 2/3 superior 1/3 inferior junction of the subscapularis tendon), gently open it. Use a radio-frequency device through the S portal to further open the tendon.

3d. Medial split (Fig 3b)
From the E portal, introduce the Long Half Cannula through the pectoralis major and aim towards the base of the coracoid graft. Slide the Subscapularis Spreader along the cannula. Open the Subscapularis Spreader to visualize the abraded neck of the glenoid and to get clear sight of the drill and sleeve. Slide the open Spreader medially and under the glenoid neck. Together, the two Spreaders create a “safe window” through the subscapularis muscle.
Step 4: Coracoid transfer and fixation

4a. Suture shuttling (Fig 4a)

Remove the glenoid drill from the sleeve and introduce a Suture Retriever. Introduce a suture grasper through the N portal to retrieve the PDS suture (attached to the white suture) and direct it to the mouth of the Suture Retriever. Capture the PDS suture with the retriever and pull posteriorly through the glenoid. Before transferring the white suture through the glenoid, remove the sleeve from the glenoid using the Pin Puller.

4b. Coracoid transfer (Fig 4b)

Pull on the blue/white cobraid suture from the P portal to transfer the coracoid bone graft. There must be no resistance when pulling. Introduce the Bone Grasper through the S portal, and use it to adjust the rotation of the graft in order to be flush with the glenoid surface. (Check for a smooth pulley by alternating pulls on the two suture loops).
4c. **Posterior button placement & knot tightening (Fig 4c to 4d)**

Using the Suture Retriever, pass the four white sutures through the posterior ENDOBUTTON®. Tie a Nice knot (sliding locking knot) making sure that the loop with the blue/white cobraid remnant is the post. Advance the Suture Tensioner through the \( P \) portal and apply a tension of 50 Newtons. Reintroduce the scope through the \( P \) portal to control placement and rotation of the bone block, ensuring no lateral overhang. The positioning and the rotation of the coracoid graft are controlled with the help of the Bone Grasper through the \( S \) portal if needed. Further compression of 50 Newtons (total 100 Newtons) on the bone graft against the anterior glenoid neck is obtained by using the Suture Tensioner. Remove the tensioner and lock the construct using 3 square knots.

**Step 5: Bankart repair (Fig 5)**

Using the previously placed SUTUREFIX ULTRA S anchor, reattach the capsule and labrum to the glenoid rim, leaving the bone graft in an extra-articular position.
Postoperative Management

The arm is immobilized for 2 weeks in a neutral rotation sling; this allows healing of the conjoint tendon in the muscular part of the subscapularis muscle and avoids loss of external rotation.

Pendulum exercises start after two weeks (5 times a day, 5 minutes each session). Patient is allowed to remove the sling at night and to sleep with the operated arm inside a t-shirt.

After four weeks, the sling is removed and formal rehabilitation with a physiotherapist is started.

Swimming pool therapy is encouraged. 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 post-operatively.

* The views and opinions expressed for postoperative care are solely those of the surgeon and do not reflect the views of Smith & Nephew, Inc. In no event shall Smith & Nephew, Inc., be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability to use the expressed views.
INDICATIONS FOR USE

Double ENDOBUTTON™ Fixation Device
The Double ENDOBUTTON Fixation Device is intended for the secure fixation of soft tissue to bone for the following indications:

- **Deltoid repairs**
- **Capsular repairs**
  - Capsular shift or capsulolabral reconstructions
- **SLAP lesion repairs**
- **Acromioclavicular separation repairs**
- **Deltoid repairs**

SUTUREFIX™ Ultra Suture Anchor
The Smith & Nephew SUTUREFIX Ultra Suture Anchor is intended for the secure fixation of soft tissue to bone for the following indications:

- **Deltoid repairs**
- **Capsular shifts or capsulolabral reconstructions**
- **SLAP lesion repairs**
- **Acromioclavicular separation repairs**

REFERENCES

## ORDERING INFORMATION

### Instrument part list Arthroscopic Guided Latarjet and Bankart Procedure

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<tr>
<th>Reference #</th>
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### Implant part list Arthroscopic Guided Latarjet and Bankart Procedure

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### Specific disposables for Implant part list Arthroscopic Guided Latarjet and Bankart Procedure

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## SYSTEM COMPATIBILITY WITH EARLIER AVAILABLE INSTRUMENTS

### Instrument part list Arthroscopic Guided Latarjet and Bankart Procedure

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### Specific disposables for Implant part list Arthroscopic Guided Latarjet and Bankart Procedure

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