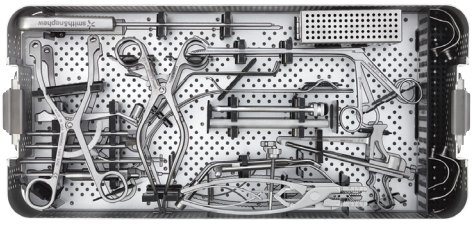
Mini-open Latarjet procedure

A shoulder technique guide as described by

Nikhil Verma, MD

Midwest Orthopedics at Rush
Chicago, Il

smith&nephew



GLENOID BONE LOSS SYSTEMS

Advanced Instability Solutions

As described by:
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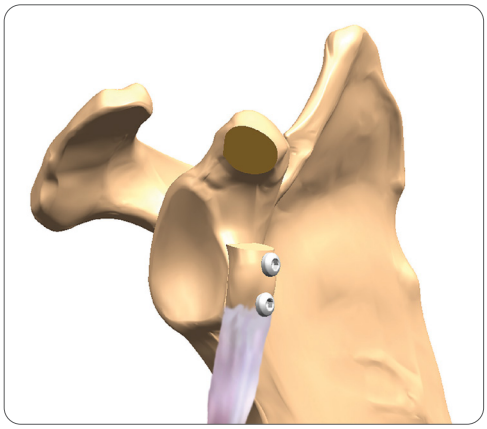
Introduction



Coracoid transfer to address anterior shoulder instability, first proposed by Michel Latarjet in 1954[1] and popularized by Gilles Walch[2,3] is increasingly used in cases of glenoid deficiency and in revision anterior stabilization.[4-10] The technique has a 2-fold advantage: (1) it allows reconstruction of the instability glenoid bone loss (static bone effect), and (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 seat-belt effect).[1,3,11] Together with the reattachment of the labrum and capsule, it allows "triple locking" of the shoulder.[12,13] The procedure yields good results with a low rate of recurrent instability, high rate of return to sports to pre-injury levels, and high rate of patient satisfaction.[2,7,13-17,19]

The following technique guide was prepared under the guidance of Nikhil Verma, MD. Created under close collaboration with the surgeon, it contains a summary of medical techniques and opinions based upon his training and expertise in the field, along with his knowledge of Smith+Nephew's products. Dr. Verma is a paid consultant of S+N.

S+N does not provide medical advice and recommends that surgeons exercise their own professional judgement when determining a patient's course of treatment. This guide is presented for educational purposes only. **Prior to performing this technique, or utilizing any product referenced herein, please conduct a thorough review of each product's indications, contraindications, warnings, precautions and instructions as detailed in the Instructions for Use (IFU) provided with the individual components.**

Patient positioning

General anesthesia with muscle relaxation should be utilized to allow adequate muscle retraction during the procedure. A regional interscalene block may be used in addition for perioperative pain management.

The patient is positioned in a modified beach chair position using the T-MAX Beach Chair Positioner with adequate padding of the lower extremities and appropriate neutral position of the neck. If an arthroscopic evaluation is to be undertaken prior to the open Latarjet procedure, the head of the bed is elevated to a 70° sitting position. For the open portion of the procedure, the head of the bed should be recessed to approximately 30°. A SPIDER2 Limb Positioner may be used to position the operative arm and facilitate proper extremity placement in slight, 20-30° forward flexion and neutral rotation. Free shoulder rotation should be allowed to facilitate intra-operative adjustment.

Posterior translation of the humerus may facilitate exposure of anterior glenoid, particularly in cases where anterior subluxation is static. This can be provided by an assistant.

A bikini strap incision is made from the base of the coracoid extending distally for five centimeters. Alternatively, an axillary based incision can be made for improved cosmesis. The incision is carried through the deltopectoral interval with mobilization of the cephalic vein.

Subdeltoid adhesions are released bluntly. The lateral border of the conjoined tendon is exposed and blunt dissection beneath the conjoined tendon allows identification, palpation and protection of the axillary nerve. Proximally the coracoid, pectoralis minor tendon insertion and CA ligament are exposed.

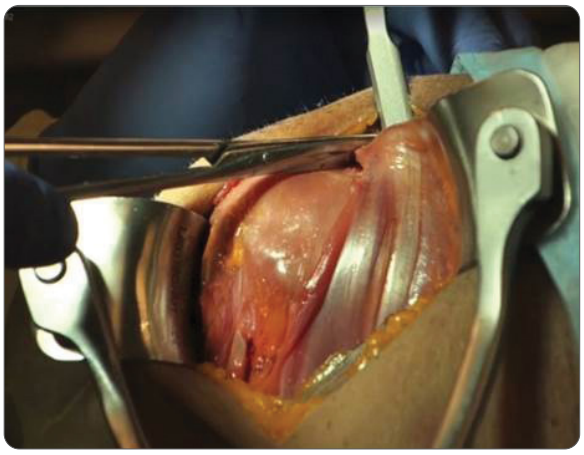


Figure 1

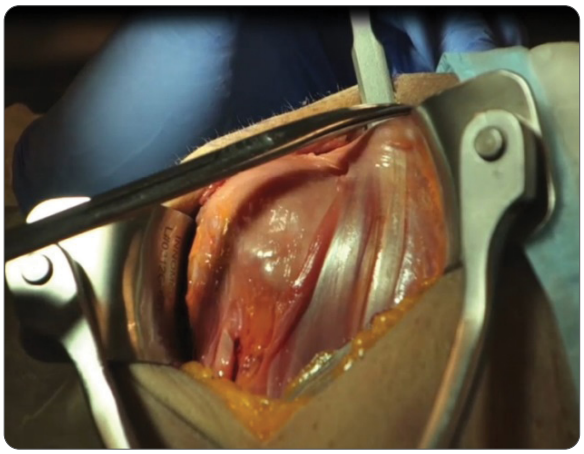


Figure 2

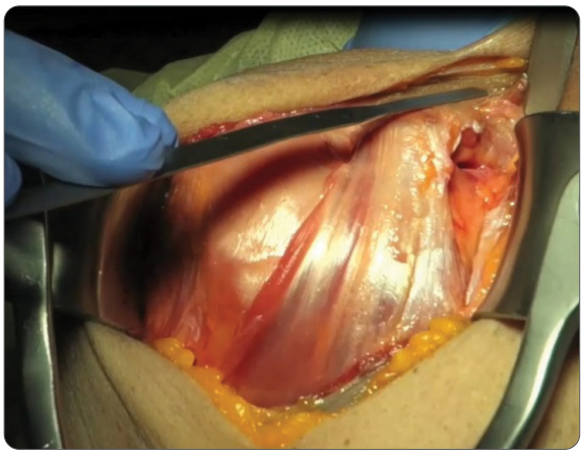


Figure 3

Surgical technique

Transection of the C-A ligament

The coracoacromial ligament is identified and transected leaving a 5-10mm stump on the coracoid for later use in capsular reconstruction if indicated. (**Figure 1**)

Identification and release of pec minor

The pectoralis minor tendon insertion is identified and tenotomized sharply off the medial border of the coracoid in a sub-periosteal fashion using Bovie cautery. Further medial dissection can be performed using a Cobb elevator. Blunt finger dissection allows palpation of the base of the coracoid and scapula. (**Figure 2**)

Graft length measurement

After coracoid process exposure, the base of the coracoid can be palpated below the conjoined tendon. On the superior surface, a ruler is used to measure the length of the coracoid and assure a minimum graft length of 20mm. A mark is placed to identify the minimal level of osteotomy. (**Figure 3**)

NOTE: The images in this guide show a larger incision to help appreciate the technique.

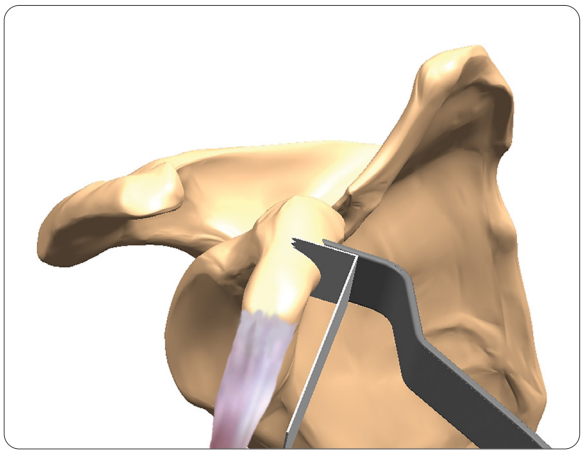


Figure 4

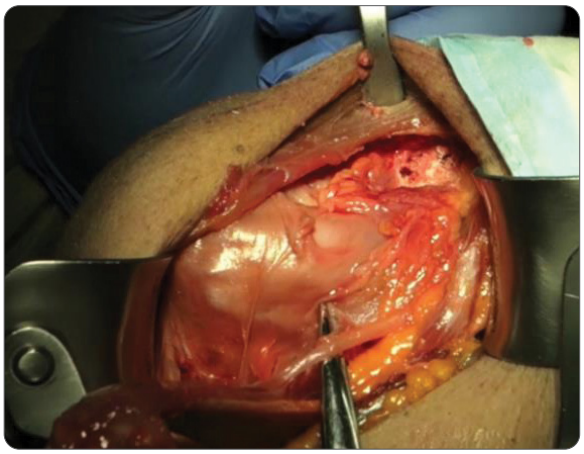


Figure 5

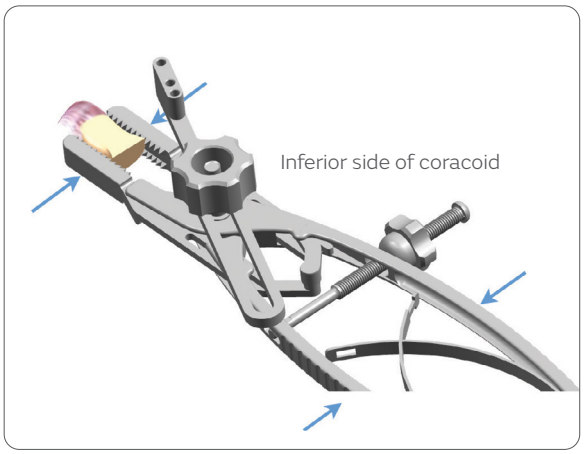


Figure 6

Coracoid osteotomy

The superior mini hohmann retractor can be used to provide medial retraction and protection of the neurovascular structures during osteotomy. Using a 90° sagittal saw or osteotome, 20-25mm of coracoid will be harvested. The osteotomy is carried out in a medial to lateral direction to protect the neurovascular structures.

Once the resection is complete, the remaining soft tissue and coracohumeral ligament tissue is dissected and sharply released from the coracoid and distal dissection is carried out to mobilize the conjoined tendon. (**Figure 4**)

Identification and protection of neurovascular structures

Care must be taken to identify and protect the musculocutaneous nerve which is generally found within 5cm of the coracoid as shown in **Figure 5**. In addition, the axillary nerve can be identified and protected as it traverses below the inferior capsule of the glenohumeral joint.

Coracoid graft prep and drilling

The graft prep tool can be used to hold and prepare the graft. The inferior side of the coracoid is oriented toward the drill guide stylus and the attachment of the conjoined tendon is seen distally as shown in **Figure 6**. Soft tissue is removed and a light decortication and planing of the graft is achieved. Healthy, bleeding cancellous bone should be exposed.

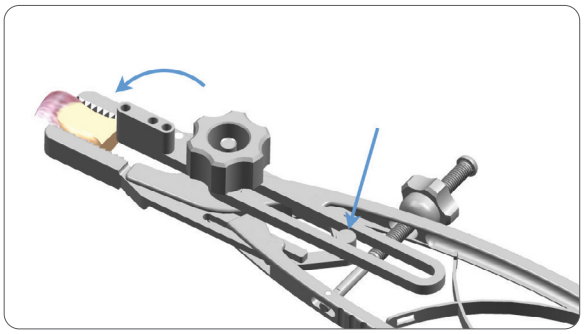


Figure 7

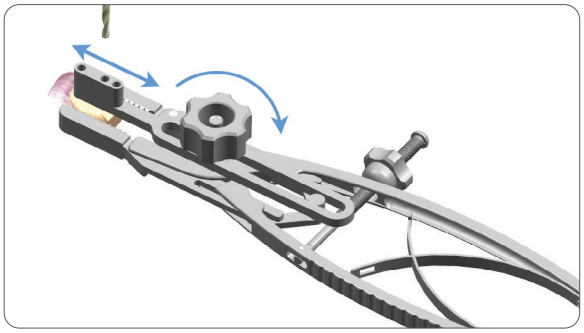


Figure 8

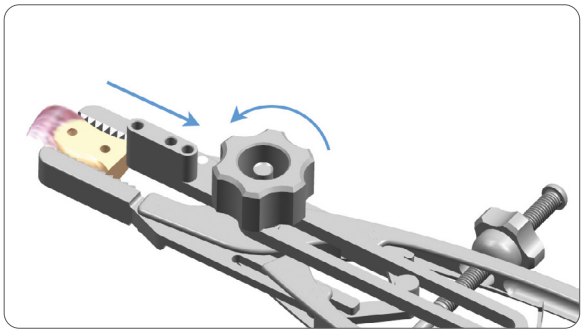


Figure 9

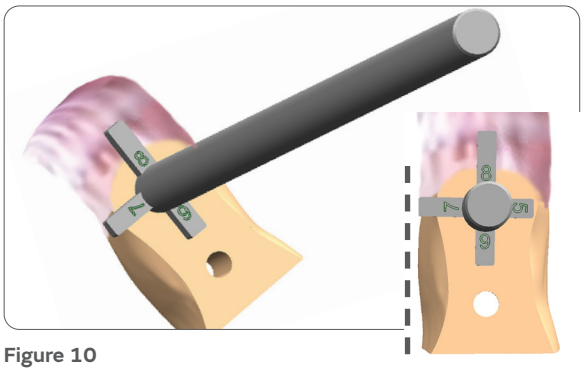


Figure 10

Coracoid graft prep and drilling

Once the cortical bone has been removed, the drill guide stylus can be rotated and aligned to be axially centered to the graft, as shown in **Figure 7**.

An alignment pin near the handles should sit within the opposite side of the drill guide stylus.

The drill guide stylus can slide along the center axis of the coracoid to align the drill holes centered over the graft, as shown in **Figure 8**. Lock the stylus in place by rotating the knob clock-wise. A 2.7mm drill is used to create two holes which are 10mm apart (center-center distance), as shown in **Figures 8 and 9**.

Holes may be made 15mm apart in cases with larger coracoid graft.

With the drill still in the second hole, you may find it beneficial to flip the graft over and mark the drill holes with a Bovie. This will make it easier to identify the holes when introducing the screw.

Inferior hole measurement

The offset measurement tool can be used to match the distance of the inferior hole in the coracoid to a corresponding glenoid drill guide used in a later step. This will ensure flush graft placement on the glenoid. The measurement is made from the center point of the inferior distal hole to the cortical margin of the coracoid which will become flush to the articular edge of the glenoid following coracoid fixation. **Figure 10** would represent the offset for a right shoulder. A left shoulder would be opposite from the shown image.

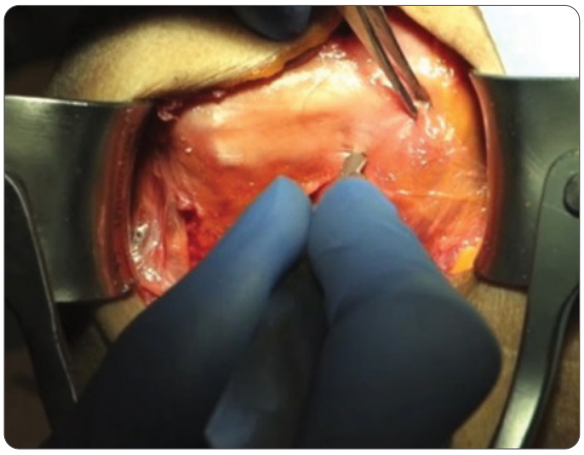


Figure 11a

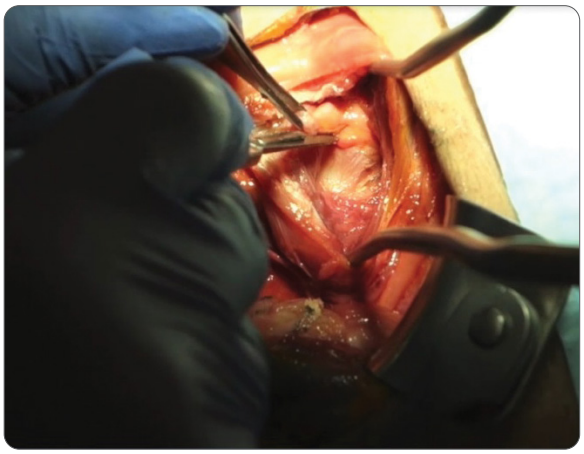


Figure 11b

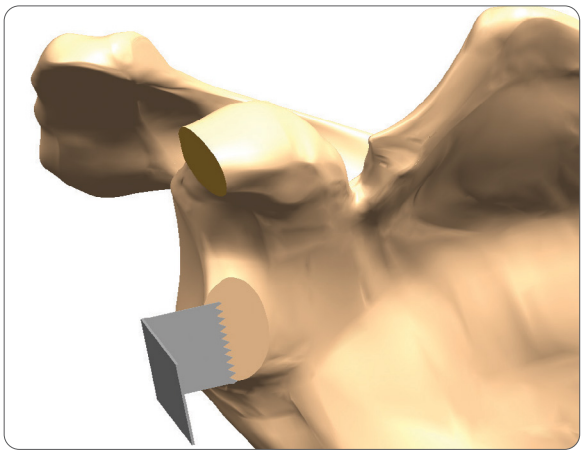


Figure 12

Subscapularis split and horizontal capsulotomy

The superior border of the subscapularis is palpated and the inferior border is defined by the anterior circumflex vessels. A horizontal split of the subscapularis is carried out in the middle of the muscle as shown in **Figure 11a**. Begin medially in the muscular portion to facilitate identification of the plane between the capsule and the muscle. Lateral dissection is carried out to allow capsular exposure. Lateral sharp dissection of the subscapularis from the capsule may be required.

A vertical or horizontal capsulotomy is made and subperiosteal exposure of the glenoid rim is carried out as shown in **Figure 11b**. A Fukuda retractor is placed within the joint to retract the humeral head; medially an anterior glenoid retractor is placed to expose the glenoid neck. A tag suture may be placed in the capsular leaflets for later identification during closure.

Anterior glenoid preparation

A 90˚ sagittal saw or burr can be used to prepare the flat surface of the anterior glenoid where the graft will be placed as shown in **Figure 12**. Healthy, bleeding cancellous bone should be exposed.

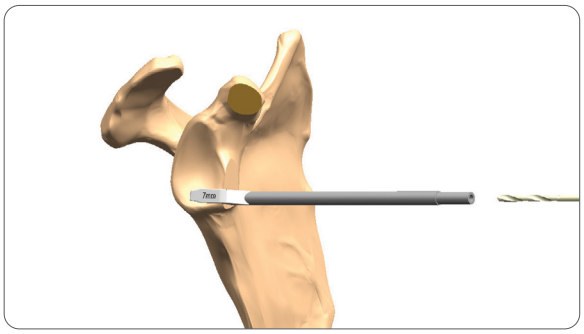


Figure 13

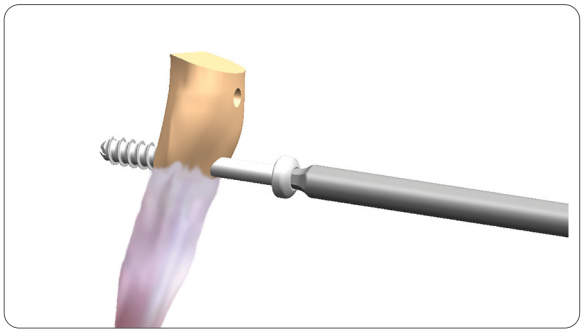


Figure 14

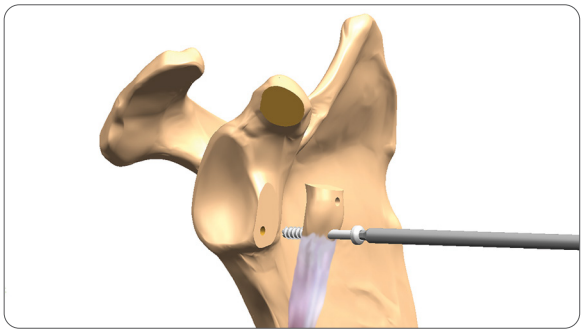


Figure 15

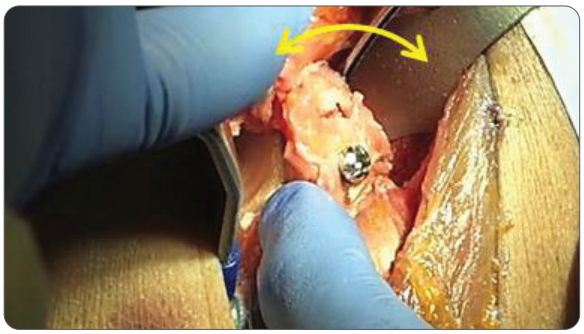


Figure 16

Glenoid drilling – inferior hole

A 2.7mm drill can be used with the corresponding offset drill guide (**Figure 13**) selected from the measurement taken off the inferior hole in the coracoid as shown in **Figure 10**. This will ensure that the inferior aspect of the graft is placed flush or slightly medial to the articular surface of the glenoid. The spade of the drill guide is placed flush on the glenoid to orient the drill hole at a 10° divergent angle from the glenoid articular surface. The inferior drill hole is generally placed at the approximate 4:30 clock face position on the glenoid face (right shoulder).

Graft placement

Using a depth gauge, screw length is determined by measuring the 1) thickness of the coracoid via the prepared drill hole, and 2) adding the depth of the prepared hole in the glenoid. The selected flat head screw can be attached to the tapered hex driver for security. The screw is inserted part way through the coracoid to facilitate control of the graft with the driver (**Figure 14**). The graft can be fixed to the anterior glenoid as shown in **Figure 15** and tightened with slight compression. A coracoid grasper can help facilitate control of the graft as well.

Graft alignment

Rotate the graft around the inferior screw to adjust for flush placement of the superior portion relative to the native glenoid articular surface as shown in **Figure 16**. Palpate the graft and glenoid surface for confirmation of proper alignment. The inferior screw may be tightened additionally to prevent movement while drilling the superior glenoid hole. Alternatively a k-wire can provide provisional fixation.

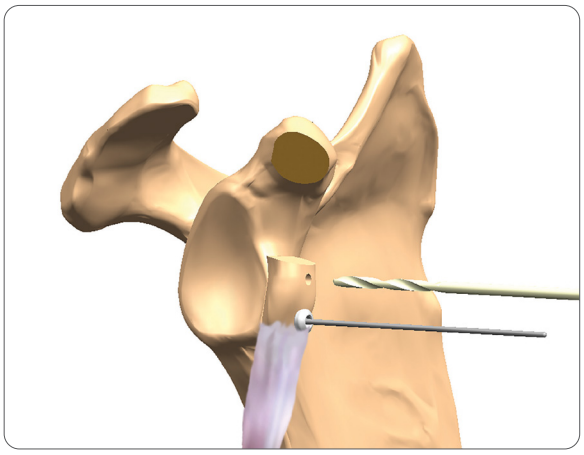


Figure 17a

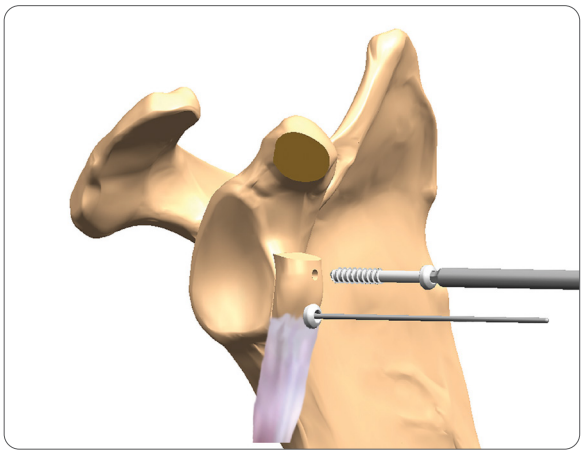


Figure 17b

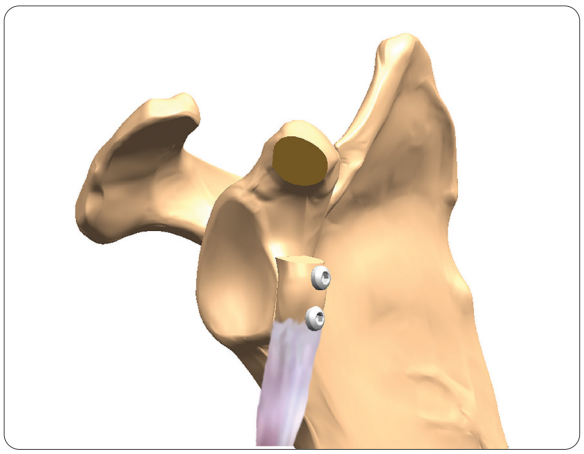


Figure 18

Superior hole drilling

Once the graft is in the correct rotational alignment, the superior hole can be drilled in the glenoid. A 1.3mm guide pin placed in the inferior screw is a good visual indication of the trajectory needed for parallel screw placement. The pre-prepared superior coracoid hole can be used as a drill guide to prepare the superior drill hole in the coracoid as shown in **Figure 17a**. A coracoid grasper can help facilitate control of the graft while drilling the superior hole.

Final graft fixation

A depth gauge can be used through the construct to establish the correct superior screw length (**Figure 17b**). After implanting the superior screw, both screws can be tightened to achieve the desired compression and stability as shown in **Figure 18**. A burr can be used to remove excess bone and assure flush articulation between the graft and native glenoid.

Capsule and labral repair can be performed at the surgeon's discretion. Anchors may be placed along the rim of the glenoid for primary capsule repair and placement of the graft in an extra-articular position. Alternatively, sutures may be used to close the capsule to the stump of the coracoacromial ligament remaining on the coracoid process.

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Ordering information

Implants	
Reference #	Description
71935421	4.0 Cannulated Screw, 2.5 Hex Drive x 30mm
71935422	4.0 Cannulated Screw, 2.5 Hex Drive x 32mm
71935423	4.0 Cannulated Screw, 2.5 Hex Drive x 34mm
71935424	4.0 Cannulated Screw, 2.5 Hex Drive x 36mm
71935425	4.0 Cannulated Screw, 2.5 Hex Drive x 38mm
71935426	4.0 Cannulated Screw, 2.5 Hex Drive x 40mm
71935427	4.0 Cannulated Screw, 2.5 Hex Drive x 42mm
71935428	4.0 Cannulated Screw, 2.5 Hex Drive x 44mm
71935429	4.0 Cannulated Screw, 2.5 Hex Drive x 46mm
71935430	4.0 Cannulated Screw, 2.5 Hex Drive x 48mm
71935431	4.0 Cannulated Screw, 2.5 Hex Drive x 50mm
71935433	4.0 Solid Screw, 2.5 Hex Drive x 30mm
71935434	4.0 Solid Screw, 2.5 Hex Drive x 32mm
71935435	4.0 Solid Screw, 2.5 Hex Drive x 34mm
71935436	4.0 Solid Screw, 2.5 Hex Drive x 36mm
71935437	4.0 Solid Screw, 2.5 Hex Drive x 38mm
71935438	4.0 Solid Screw, 2.5 Hex Drive x 40mm
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71935440	4.0 Solid Screw, 2.5 Hex Drive x 44mm
71935441	4.0 Solid Screw, 2.5 Hex Drive x 46mm
71935442	4.0 Solid Screw, 2.5 Hex Drive x 48mm
71935443	4.0 Solid Screw, 2.5 Hex Drive x 50mm
Instruments	
Reference #	Description
71933035	2.7mm Drill
128039	1.3mm Guide Pin, Trochar Point (Box of 6)

Set Number: 7193R001 Instrument part list specific to Mini-Open Latarjet Procedure	
Reference #	Description
71935449	Mini-Open Arthro Assist Latarjet Tray
71935450	Mini-Open Arthro Assist Latarjet Tray Lid
71935456	Innomed® Mini Hohmann Retractor - Inferior
71935455	Innomed Mini Hohmann Retractor - Superior
71935454	Innomed Tissue Retractor - Anterior Glenoid
71935451	Innomed Tissue Retractor Handle - Kolbel Style
71935452	Innomed Tissue Retractor Paddle - Kolbel Style
71395453	Innomed Tissue Retractor Paddle - Kolbel Style
71935458	Innomed Tissue Retractor - Gelpi Style
71935457	Innomed Fukuda Retractor with Light
71935459	Grasping Tool
71935448	Offset Measurement Tool 5mm-8mm
71935444	10-Degree Offset Drill Guide 5mm
71935445	10-Degree Offset Drill Guide 6mm
71935446	10-Degree Offset Drill Guide 7mm
71935447	10-Degree Offset Drill Guide 8mm
71935061	Bone Graft Preparation Tool
014803	ACL Drill Guide Handle
2141	ACMI Light Cable Adapter
72202567	2.5mm Hex Driver
71170039	Depth Guage
71063004	AO Connector

Contact OKC Loaner for the Mini-Open Latarjet Instrument Tray

Additional instruction

To order the instruments used in this technique, call **+1 800 343 5717** in the U.S. or contact an authorized Smith+Nephew representative. Prior to performing this technique, consult the Instructions for Use documentation provided with individual components – including indications, contraindications, warnings, cautions and instructions.

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