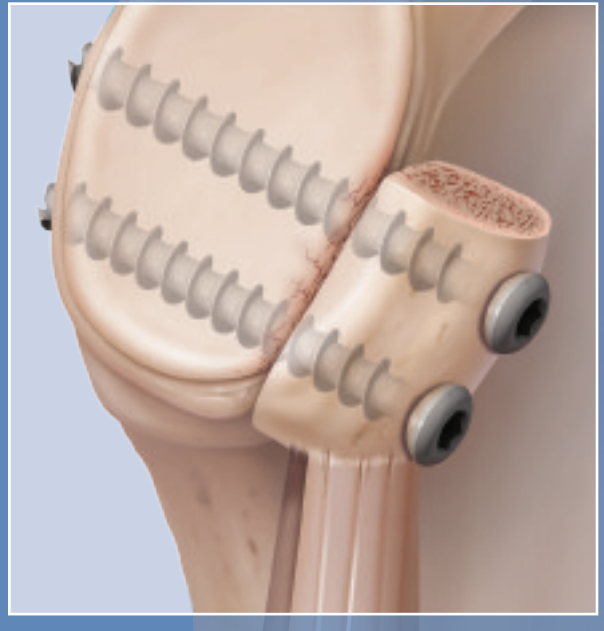
Arthrex®

Congruent-Arc Latarjet Using the Glenoid Bone Loss Set with 3.75 mm Cannulated Screws

Surgical Technique



Congruent-Arc Latarjet

The Arthrex Glenoid Bone Loss Set

The Glenoid Bone Loss Set helps surgeons address the complex issue of shoulder instability caused by bony pathology, such as anterior glenoid bone loss, bony Bankart, glenoid fracture or engaging Hill-Sachs lesions.

3.75 mm Cannulated Titanium Screws:

- Partially and fully threaded options
- Self-drilling and self-tapping
- Cannulated shaft accepts 1.6 mm guide pins
- 30 mm - 42 mm lengths
- Low profile head
- Standard 2.5 mm hexagonal drive
- Cancellous thread profile
- Washers available

Open Latarjet Instruments

Unique instrumentation to help make the Latarjet technique more consistent and repeatable:

- Osteotome Blade with Blade Shield for coracoid graft retrieval
- Grasping Coracoid Drill Guide helps control and prepare graft
- Glenoid Offset Parallel Drill Guide holds graft in position on the glenoid, while firmly fixed in place
- Retractors to ease exposure

Bony Bankart/Glenoid Fracture Instruments

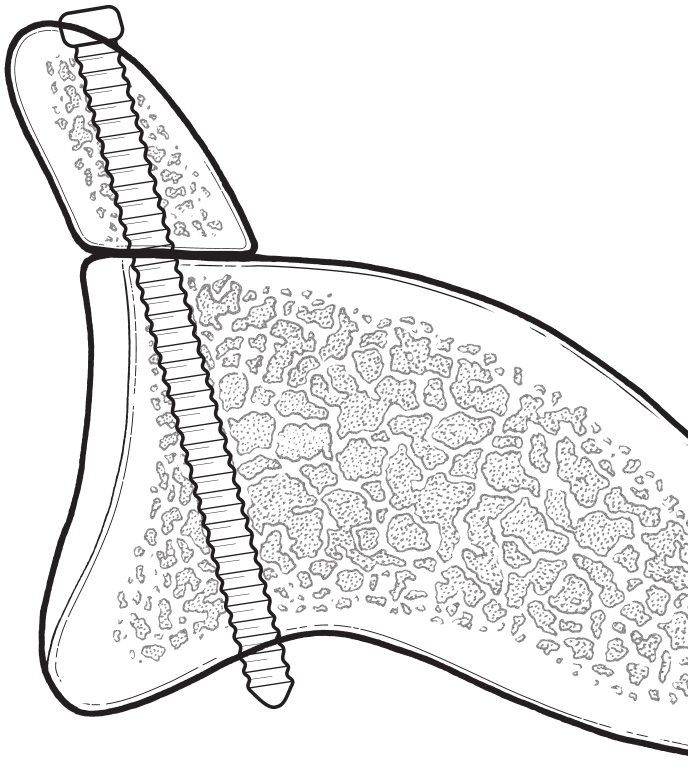
The instruments have been designed to allow placement of the partially threaded 3.75 mm cannulated screws, either percutaneously or through a standard arthroscopic cannula:

- Long Nesting Guide Sleeves
- Long 2.75 mm Cannulated Drill
- Long 2.5 mm Cannulated Hex Driver

The Glenoid Bone Loss Set was developed in collaboration with Stephen S. Burkhart, MD (San Antonio, TX), Ian Lo, MD (Calgary, Canada) and Sven Lichtenberg, MD (Heidelberg, Germany).

Congruent-Arc Latarjet Surgical Technique

As described by Stephen S. Burkhart, MD, San Antonio, TX [1,2,3]



Arthroscopy

It can be useful to perform arthroscopy first, even when certain that an open Latarjet procedure will be required. It is important to confirm the actual amount of bone loss. Also, patients that have experienced traumatic dislocations often have additional pathology which can best be addressed arthroscopically, before starting the open portion of the case. Studies have shown that associated intraarticular lesions are present in two thirds of Latarjet cases.[4]

Assessing Glenoid Bone Loss

Standard x-rays and CT scans can be useful in estimating the degree of bone loss, but an arthroscopic measurement is still the most accurate.

View the glenoid *en face* through the anterosuperolateral portal. Measure the distance from the posterior glenoid rim to the bare spot using a graduated probe through the posterior portal. Compare this to the distance from the bare spot to the anteriorinferior edge of the defect. A difference of more than 50 percent between the two measurements confirms a loss of greater than 25 percent of the inferior glenoid diameter, which is typically an indication for a Latarjet procedure. The presence of a large, engaging Hill-Sachs lesion can lower this threshold.

Patient Positioning

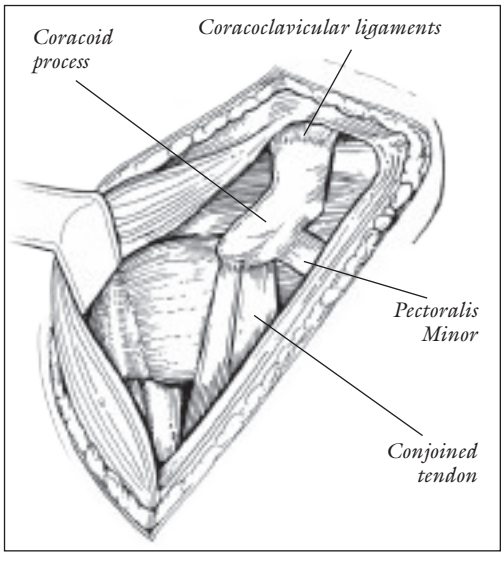
The patient is placed in a semi-beach chair position (inclined at about 40°) with the arm draped free for manipulation during surgery.

Exposure

Use a standard deltopectoral approach.

The cephalic vein is protected and retracted laterally with the deltoid muscle. The coracoid is exposed from its tip to the insertion of the coracoclavicular ligaments at the base of the coracoid.

The coracoacromial ligament is sharply dissected from the lateral aspect of the coracoid, as is the pectoralis minor tendon from the medial side of the coracoid. This medial surface of the coracoid will later be prepared for contact against the anterior glenoid neck.



Coracoid Osteotomy

A single use Osteotome Blade is provided for quick retrieval of the coracoid graft. The blade includes depth markings and a hard stop at 20 mm.

Place the Osteotome Blade Shield on the coracoid, just anterior to the coracoclavicular ligaments at the coracoid base. Protect all neurovascular structures.

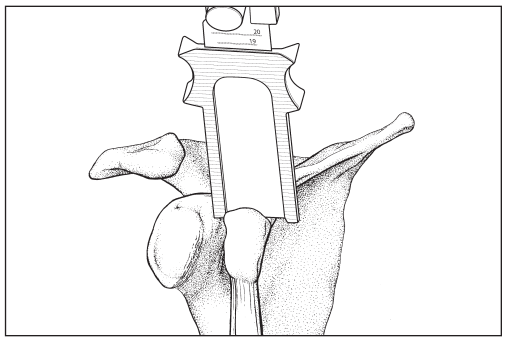
Make sure that the deltoid does not interfere with obtaining the proper angle of approach for the osteotome.

A 2.5 cm - 3 cm graft is desirable. Hold the Blade Shield and mallet on the Osteotome Handle to retrieve the graft. Discard the Osteotome Blade.

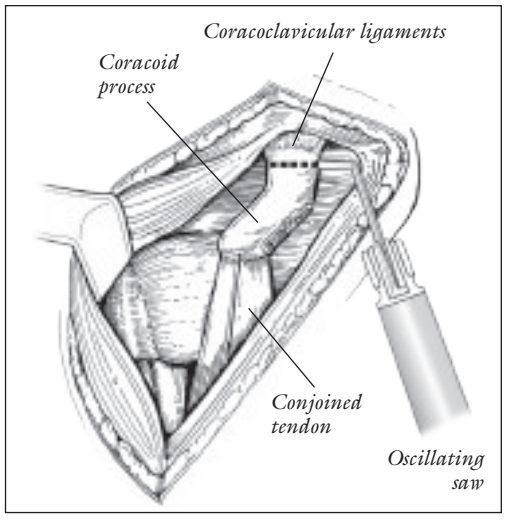
Alternatively, for patients with a large deltoid, use an angled saw blade (sold separately and not included in the set). Neurovascular structures are protected by retractors, medial and inferior to the coracoid.

The conjoined tendon is left attached to the coracoid graft to maintain vascularity of the graft and to augment stability of the glenohumeral joint by providing a sling-effect upon completion of the procedure. After mobilization of the coracoid and attached conjoined tendon, the musculocutaneous nerve is protected by retracting the coracoid medially, thereby preventing any stretch injury to the nerve.

Option 1: Osteotome



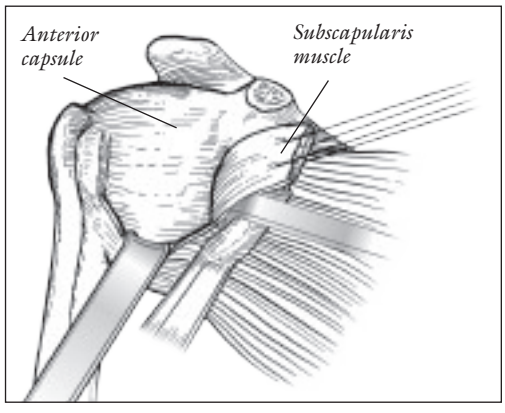
Option 2: Angled Saw Blade



Subscapularis

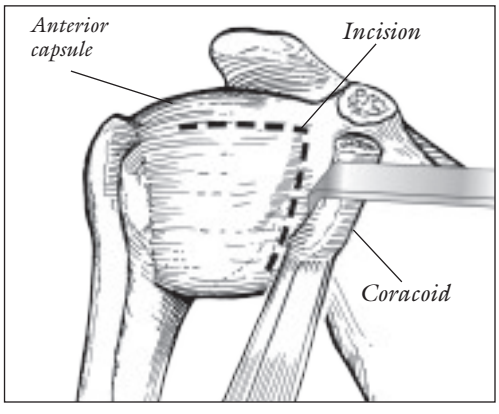
Once the coracoid has been osteotomized, there is a clear view of the anterior shoulder. The superior half of the subscapularis tendon is detached distally. Develop a plane between the inferior half of the subscapularis and the capsule, then reflect the subscapularis tendon medially.

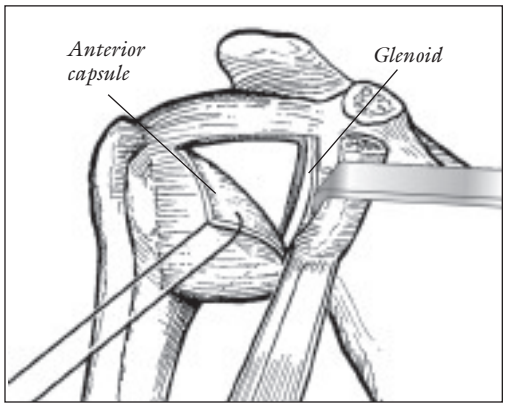
Alternatively, the glenoid may be exposed using a subscapularis split approach. A deep Gelpi Retractor is provided for this purpose. The arm is brought into abduction and external rotation and the subscapularis split is made through the muscular fibers at the junction of the superior and middle thirds. The capsule must be separated from the inferior portion of the subscapularis.



Joint Capsule

The capsular incision is carried 1 cm medial to the rim of the glenoid by subperiosteal sharp dissection, preserving enough capsular length for later reattachment. The anterior glenoid neck is prepared as the recipient bed for the coracoid bone graft by means of a curette or burr, being careful to preserve as much of the native glenoid bone as possible.





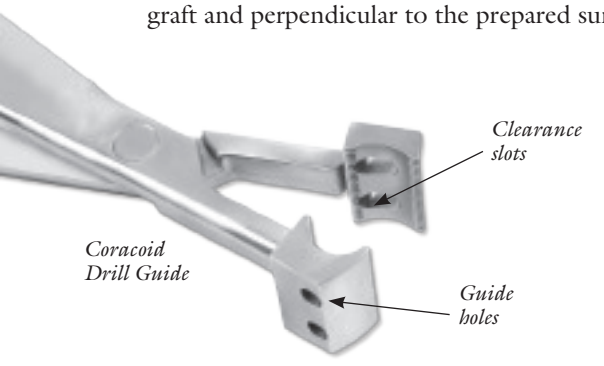
Coracoid Preparation

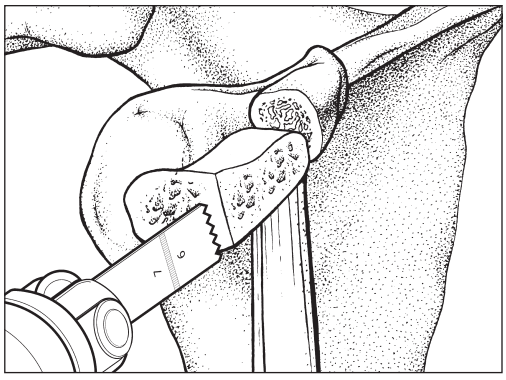
Use an oscillating saw to remove a thin sliver of bone from the medial coracoid surface where the pectoralis minor insertion had been. This is the surface that will be in contact with the anterior glenoid neck.

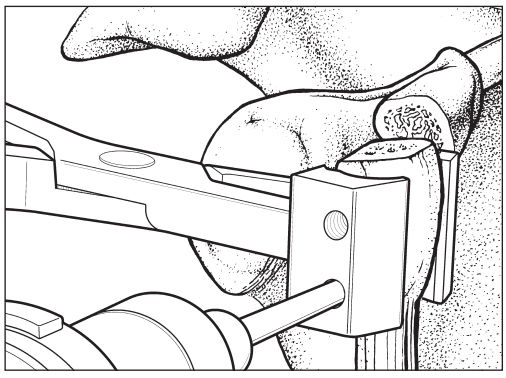
Grasp the coracoid graft with the grasping Coracoid Drill Guide. Position the guide on the graft with clearance slots adjacent to the surface of the coracoid that will eventually be in contact with the glenoid.

The Coracoid Drill Guide allows the surgeon to drill two parallel 4 mm holes through the graft.

Care is taken to ensure that the holes are centered on the graft and perpendicular to the prepared surface.



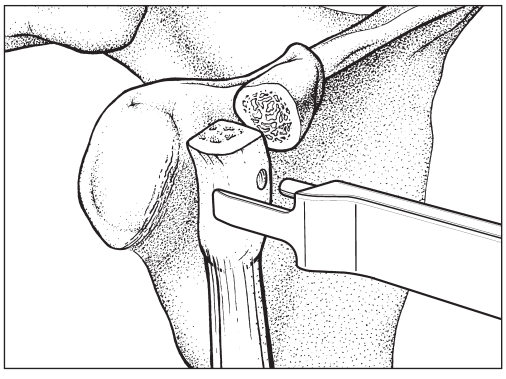




Position Parallel Drill Guide on Graft

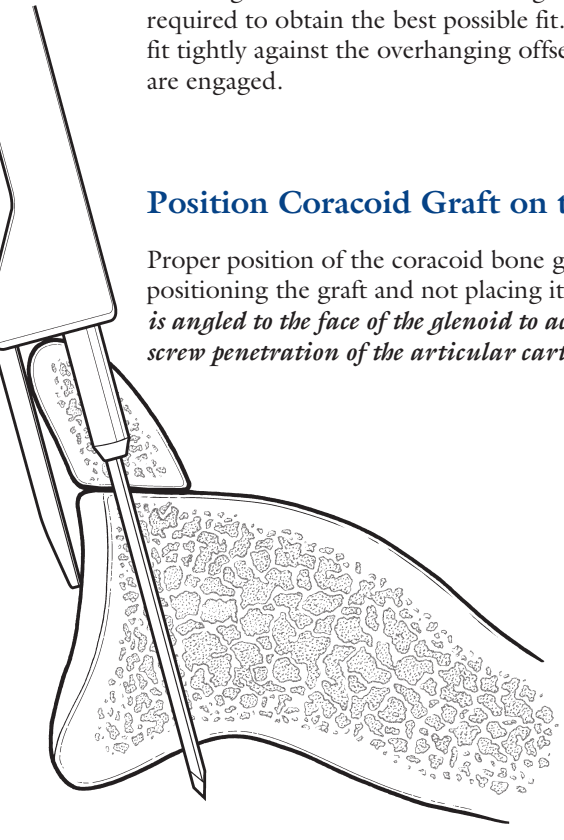
The pegs on the Parallel Drill Guide mate with the pre-drilled holes on the coracoid graft to allow for easy control and positioning of the coracoid graft onto the glenoid.

Three offsets are available (4, 6, and 8 mm) to allow for various graft sizes. Some additional graft shaping may be required to obtain the best possible fit. The coracoid should fit tightly against the overhanging offset bar when the pegs are engaged.

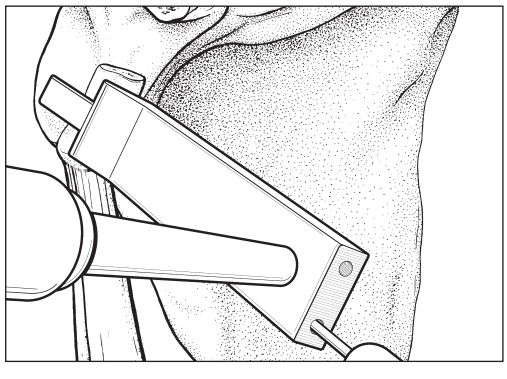


Position Coracoid Graft on the Glenoid

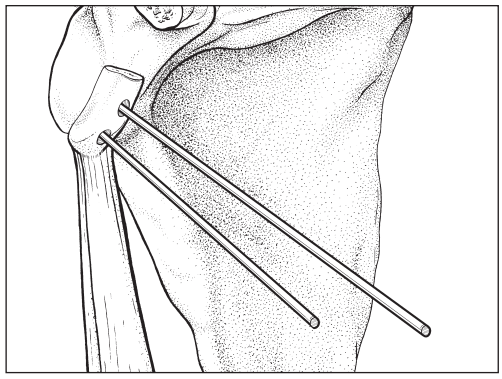
Proper position of the coracoid bone graft relative to the glenoid is critical. The guide greatly aids in properly positioning the graft and not placing it too far medially or laterally. ***It is important to make sure the guide is angled to the face of the glenoid to achieve the proper screw insertion angle and avoid any potential screw penetration of the articular cartilage.***



Use a pin driver to advance the short, 6-inch long, 1.6 mm Guide Wire directly through the guide, graft and glenoid. Note that the wires are not terminally threaded to allow for better feel when the posterior glenoid cortex is penetrated. Advance the longer, 7-inch long, 1.6 mm Guide Wire through the second guide cannulation.



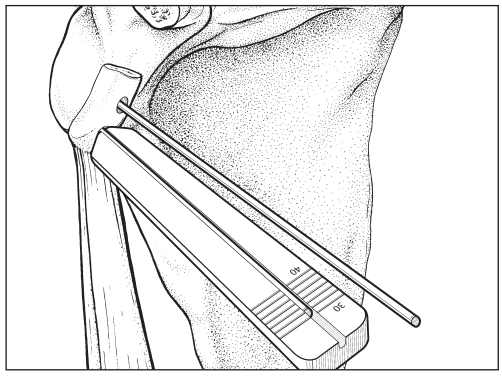
Remove the Parallel Drill Guide



Hold the graft to the glenoid firmly (as it may be tightly affixed to the guide) and remove the Parallel Drill Guide, leaving both wires in place.

Although the 3.75 mm, fully threaded, cannulated, titanium screws are self-tapping, *it is recommended to use the 2.75 mm Cannulated Drill to penetrate the near cortex of the native glenoid prior to screw insertion.*

Select Proper Screw



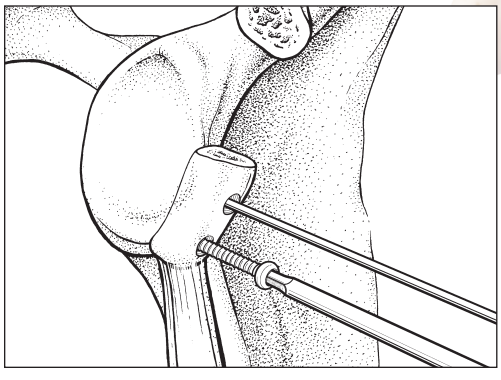
The Screw Length Sizer can help determine the proper screw length. *The sizer does not provide a direct measurement of the pin length.* It recommends a screw length that would place the screw 5 mm short of the tip of the Guide Wire, allowing the wire to remain in position during screw insertion.

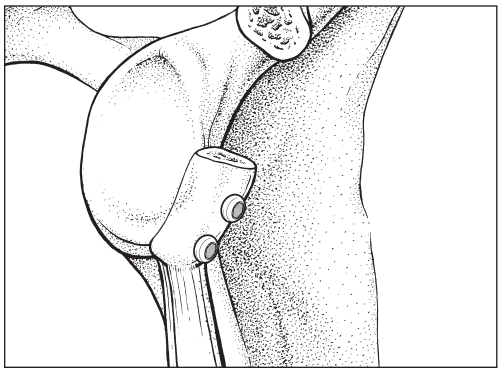
Screw length is read directly from the back of the shorter, 6-inch Guide Wire, or from the laser line on the longer 7-inch Guide Wire.

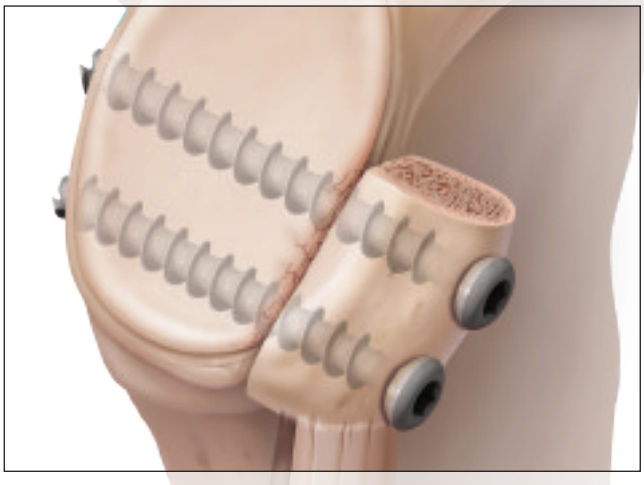
Note: 34 mm - 36 mm screws are commonly the correct length.

Insert the Screws

Place the appropriate screw over the Guide Wire and insert using the Cannulated Hex Driver. Be careful not to overtighten the screws and damage the graft. Washers are available, if desired. Remove and discard the Guide Wires.

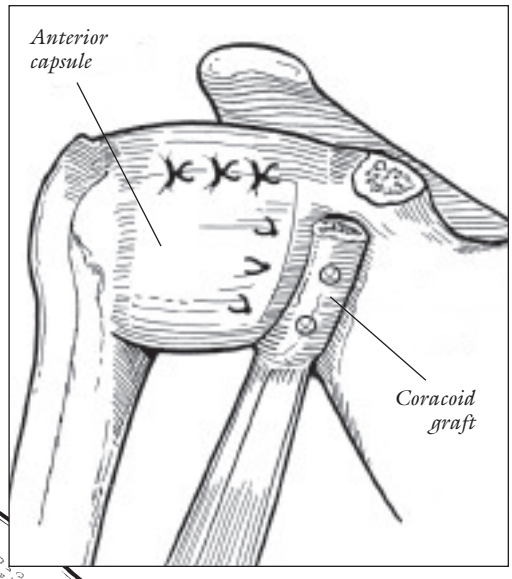


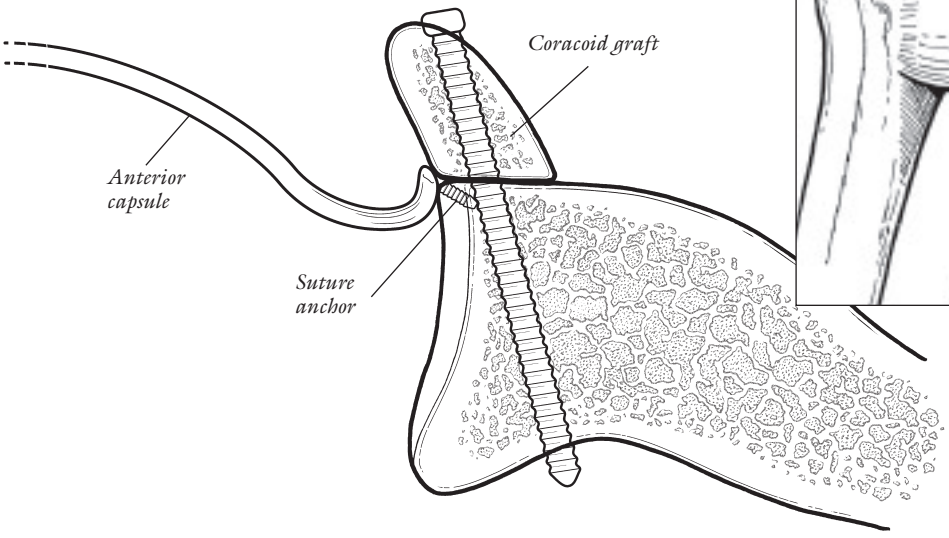




Capsular Reattachment

Place three BioComposite™ SutureTak® suture anchors into the native glenoid above, between and below the cannulated screws, to repair the capsule. This makes the graft an extraarticular structure and prevents its articulation directly with the humeral head, eliminating any abrasive effect of the graft against the articular cartilage of the humerus.





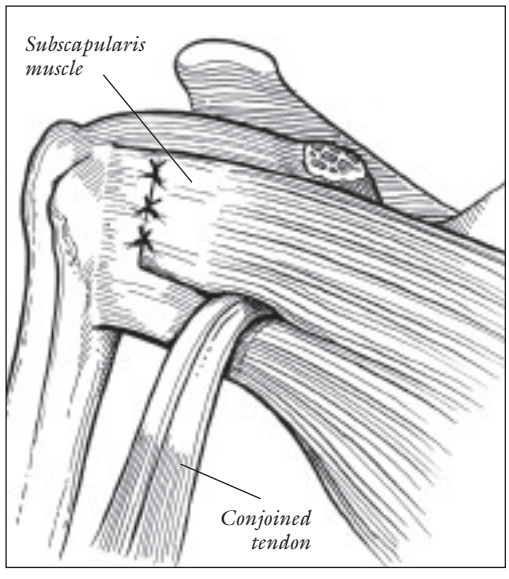
Subscapularis Reattachment

The upper half of the subscapularis tendon is typically repaired to its stump with FiberWire® alone, but suture anchors may be used, if desired.

The conjoined tendon, still attached to the coracoid graft, exits anteriorly through the split between the upper and lower halves of the subscapularis tendon.

It is not necessary to reattach the pectoralis minor to the residual coracoid base or adjacent soft tissues because it does not retract.

After subscapularis repair, a standard skin closure is performed.



Postoperative Rehabilitation

The patient uses a sling for four to six weeks, with external rotation restricted to zero degrees (0°). At this point, the sling is discontinued and overhead motion is encouraged. Gentle external rotation stretching is begun at six weeks postoperative. The goal at three months postoperative is for the external rotation on the operated shoulder to be half that of the opposite shoulder. Strengthening exercises are delayed until three months postoperative, at which time the bone graft usually shows early radiographic evidence of consolidation with the glenoid. Contact sports or heavy labor are generally allowed when the graft appears radiographically healed to the glenoid, which is usually six to 12 months postoperative.

Bony Bankart/Glenoid Fracture Surgical Technique

The instrument set has been designed to allow placement of the partially threaded 3.75 mm cannulated screws either percutaneously or through a standard arthroscopic cannula.

Insert the long Nesting Guide Sleeve through a stab incision or arthroscopic cannula and place on the bone.

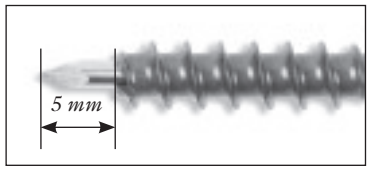
Insert the long, 12-inch, 1.6 mm, nonthreaded, Guide Wire through the fracture fragment and into the glenoid.

The 3.75 mm, partially threaded, cannulated, titanium screws are self-drilling and self-tapping. In dense bone, it may be helpful to use the 2.75 mm Cannulated Drill.

Remove the inner sleeve and use the 2.75 mm Cannulated Drill to prepare the pilot hole.

Measure for proper screw length ***before*** removal of the second nesting guide.

The Screw Length Sizer does not provide a direct measurement of the Guide Wire position. It recommends a screw length that would place the screw 5 mm short of the tip of the Guide Wire, allowing the Guide Wire to remain in position during screw insertion.



Make sure that the Nesting Guide Sleeve is in contact with the bone and that the Screw Length Sizer is in contact with the second nesting guide.

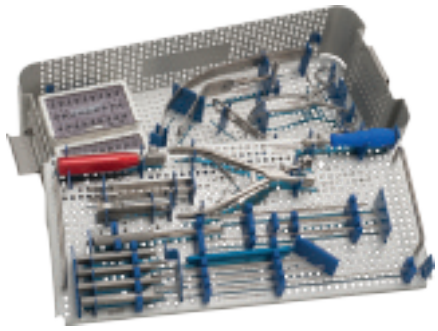
Read the recommended screw length directly from the back of the Guide Wire.

Remove the inner nesting guide and use the Cannulated Hex Driver to place the proper screw over the Guide Wire.

Remove and discard the Guide Wire.

Ordering Information

Glenoid Bone Loss Set AR-7000S



Set includes:

Osteotome Blade Shield AR-7000-02

Parallel Drill Guide, 4 mm offset AR-7000-03
Parallel Drill Guide, 6 mm offset AR-7000-04
Parallel Drill Guide, 8 mm offset AR-7000-05

Screw Length Sizer AR-7000-06

Coracoid Drill Guide AR-7000-07

Fukuda Retractor, small AR-7000-08

Glenoid Retractor AR-7000-09

Nesting Guide Sleeves AR-7000-12

Cannulated Hex Driver, 2.5 mm AR-7000-13

Cannulated Drill, 2.75 mm AR-7000-14

Drill, noncannulated, 4 mm AR-1204D

Ordering Information

Osteotome Handle AR-2961

Drill Guide Handle AR-9215-1-01

Cannulated Driver Handle w/AO Connection AR-13221AOC

Gelpi Retractor AR-8104

(not pictured)

Glenoid Bone Loss Instrument Case AR-7000C

Screw Caddy, 3.75 mm, Fully Threaded Screw AR-7000SC-1

Screw Caddy, 3.75 mm, Partially Threaded Screw AR-7000SC-2

Disposables

Osteotome Blade, Latarjet AR-7000-01

(not pictured)

.062" (1.6 mm) Guide Wire, 6" Long AR-8941-6

.062" (1.6 mm) Guide Wire, 7" Long AR-8941-7

.062" (1.6 mm) Guide Wire, 12" Long AR-8941-12

Optional Instrumentation

Parallel Drill Guide AR-7000-16

This guide is available for surgeons who prefer a guide without a locating offset finger. This can also be helpful for large coracoids, where the 8 mm Parallel Offset Guide may be too small.

Coracoid Drill Guide, Shallow Jaw AR-7000-17

This version of the Coracoid Drill Guide may be helpful for surgeons who prefer the French orientation of the coracoid or for glenoid bone loss cases where an iliac crest autograft is used.

Latarjet Saw Blade AR-300-450S

This blade was designed for use with either the Arthrex V300 Power System or the V600 Power System using the V-600SS-2 Adapter.

Mini-Open Shoulder Retractor AR-8100-21

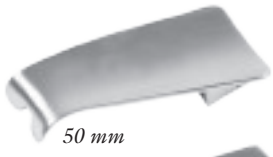
This retractor can be used in place of a Fukuda Retractor for surgeons who prefer a mini-open subscapularis splitting approach.

Ordering Information

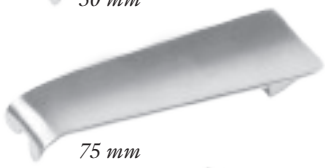
Atraumatic Paddle Retractor

These paddles were specially designed to be used with the Modular Soft Tissue Retractor Body to aid in a mini-open, subscapularis splitting approach to glenoid bone loss reconstruction.

20° Soft Tissue Atraumatic Paddle, 50 mm, left	AR-8171-50DL
20° Soft Tissue Atraumatic Paddle, 50 mm, right	AR-8171-50DR
20° Soft Tissue Atraumatic Paddle, 75 mm, left	AR-8171-75DL
20° Soft Tissue Atraumatic Paddle, 75 mm, right	AR-8171-75DR
Modular Soft Tissue Retractor Body	AR-8170



50 mm



75 mm

Titanium Partially Threaded Screws

Cannulated Screw, 3.75 mm x 30 mm, partially threaded	AR-7000-30
Cannulated Screw, 3.75 mm x 32 mm, partially threaded	AR-7000-32
Cannulated Screw, 3.75 mm x 34 mm, partially threaded	AR-7000-34
Cannulated Screw, 3.75 mm x 36 mm, partially threaded	AR-7000-36
Cannulated Screw, 3.75 mm x 38 mm, partially threaded	AR-7000-38
Cannulated Screw, 3.75 mm x 40 mm, partially threaded	AR-7000-40
Cannulated Screw, 3.75 mm x 42 mm, partially threaded	AR-7000-42

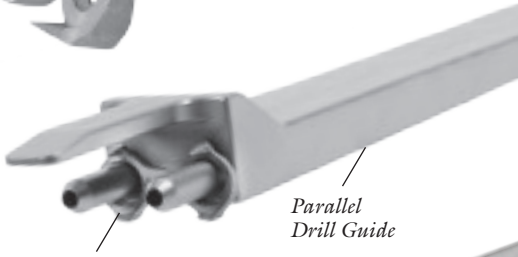
Titanium Fully Threaded Screws

Cannulated Screw, 3.75 mm x 30 mm, fully threaded	AR-7000-30FT
Cannulated Screw, 3.75 mm x 32 mm, fully threaded	AR-7000-32FT
Cannulated Screw, 3.75 mm x 34 mm, fully threaded	AR-7000-34FT
Cannulated Screw, 3.75 mm x 36 mm, fully threaded	AR-7000-36FT
Cannulated Screw, 3.75 mm x 38 mm, fully threaded	AR-7000-38FT
Cannulated Screw, 3.75 mm x 40 mm, fully threaded	AR-7000-40FT
Cannulated Screw, 3.75 mm x 42 mm, fully threaded	AR-7000-42FT
Washer	AR-7000-15
Suture Washer, Titanium with #2 FiberWire with Curved Needle	AR-7000-18T

Optional Implant

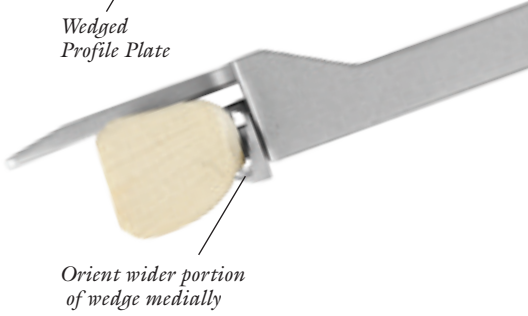
Wedged Profile Plate	AR-8111

Two-hole spiked washer designed by Dr. Giovanni Di Giacomo, Italy. Supplied sterile. Fits on standard glenoid drill guides.



Parallel Drill Guide

Wedged Profile Plate



Orient wider portion of wedge medially

References

1. Burkhart S, Lo I, Brady P. A Cowboy's Guide to Advanced Shoulder Arthroscopy, Lippincott Williams & Wilkins, 2006.
2. Burkhart S, De Beer J. Traumatic Glenohumeral Bone Defects and Their Relationship to Failure of Arthroscopic Bankart Repairs: Significance of the Inverted-Pear Glenoid and the Humeral Engaging Hill-Sachs Lesion. *Arthroscopy.* 2000;16(7):677-694.
3. De Beer J, Burkhart S, Roberts C, et al. The Congruent-Arc Latarjet. *Tech Shoulder Elbow Surg.* 2009;10(2):62-67.
4. Arrigoni P, Burkhart S, et al. The Value of Arthroscopy before an Open Modified Latarjet Reconstruction. *Arthroscopy.* 2008;24(5):514-519.

This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's Directions For Use.

This surgical technique has been developed in cooperation with Stephen S. Burkhart, MD, San Antonio, TX.