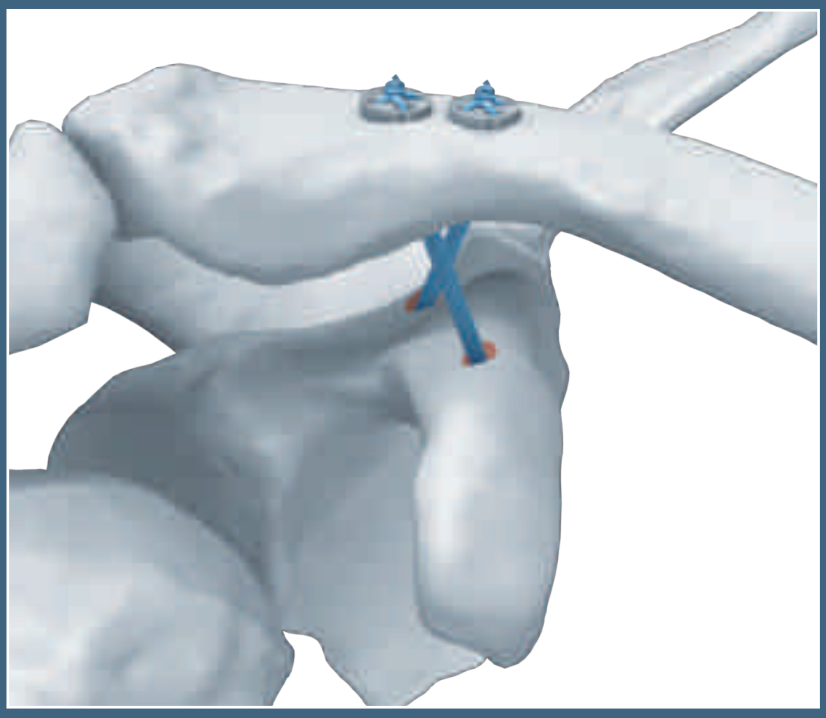
Arthrex®

Arthroscopic Anatomic Stabilization of Acute Acromioclavicular Joint Dislocation using the TightRope® System

Surgical Technique



Anatomic AC Joint TightRope Fixation

Background

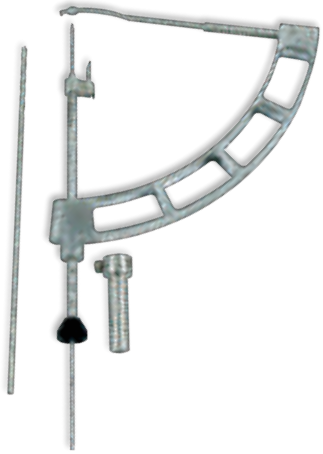
Disruption of the coracoclavicular ligaments is a common occurrence. In many cases the injury can be treated conservatively and the only residual problem is that of a mild cosmetic deformity.

Several groups of patients, however, do not tolerate the injury well. These include the very thin, the very large and the overhead athlete. If the joint is reduced acutely and held reduced during the healing phase, the native ligaments will heal restoring the stability of the joint.

The TightRope System is a device designed originally for the reduction and stabilization of the tibiofibular syndesmosis of the ankle. It is two metal buttons, one circular and one oblong, joined by a continuous loop of #5 FiberWire®.

This technique provides a simple, reproducible, minimally invasive technique for acute acromioclavicular joint stabilization which enables a rapid return to activity for the acute injury.

AC TightRope®



4 mm Cannulated Drill and AC TightRope Constant Guide

4 mm Cannulated Drill and AC-Guide left & right

Indication

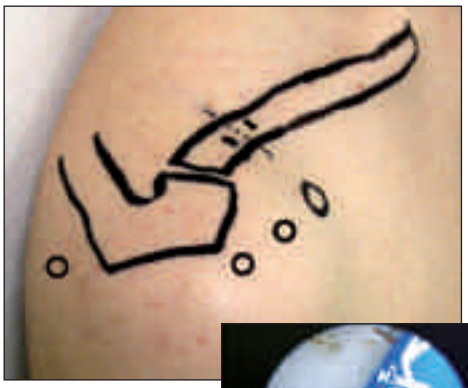
This technique is indicated for **acute** acromioclavicular joint dislocation (Rockwood type III to V).

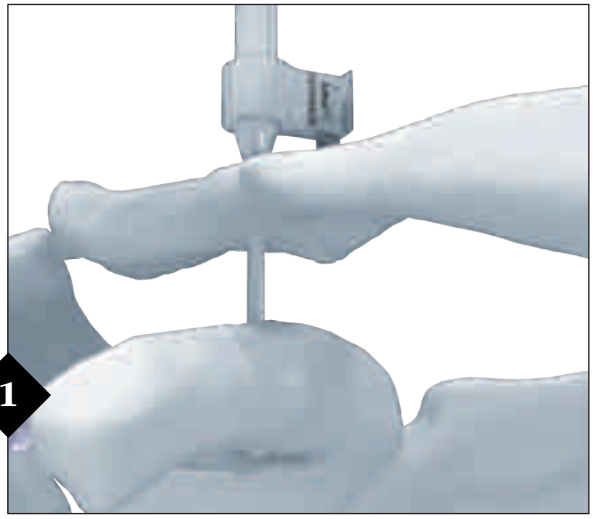
Contraindication

It is not intended that this technique be used as the sole means of reconstructing a **chronic** acromioclavicular joint dislocation.

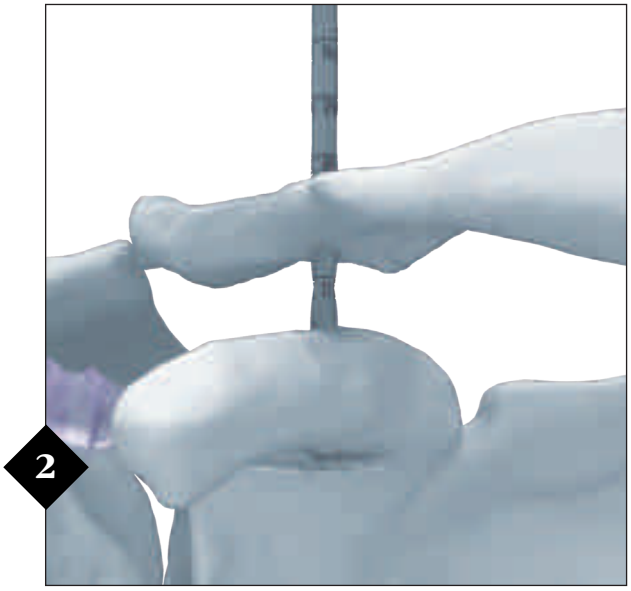
Surgical Technique

Two anterolateral portals and one mini open incision on top of the clavicula are established. The bone tunnel positions are marked referring to the anatomic insertion points of the trapezoidal and the conoidial ligaments. A diagnostic arthroscopy is carried out in a standard fashion first, using the posterior portal. Two anterolateral portals are established in an outside/in technique through the rotator cuff interval. Portal is positioned at the extension line of the anterior corner of the acromion anterior to the long head of the biceps tendon. The second portal is located anteromedial to the first portal. Changing the scope to the subacrominal space and denervate the undersurface of the acromion utilizing an OPES® ablator. Move the scope back to the anteromedial portal and into the glenohumeral joint. The OPES probe is inserted and a careful preparation of the subscapular recess and coracoidal undersurface is performed. To optimize the tunnel placement, the medial and lateral borders as well as the complete base of the coracoid has to be depicted while the apex is not prepared.

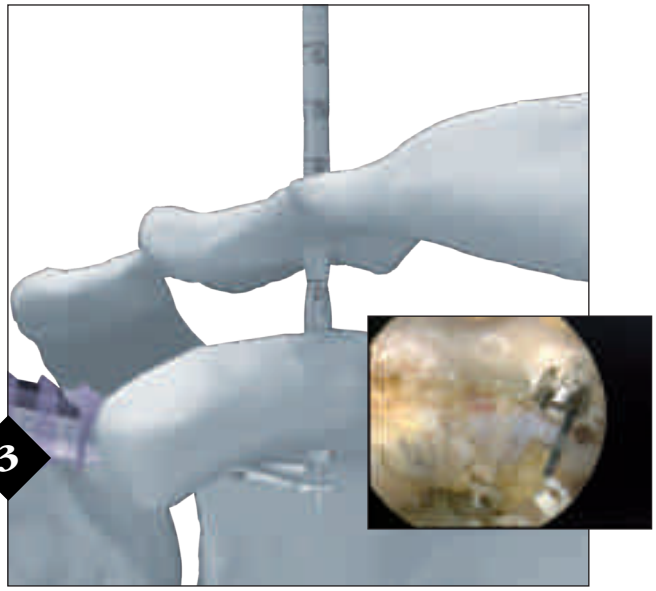




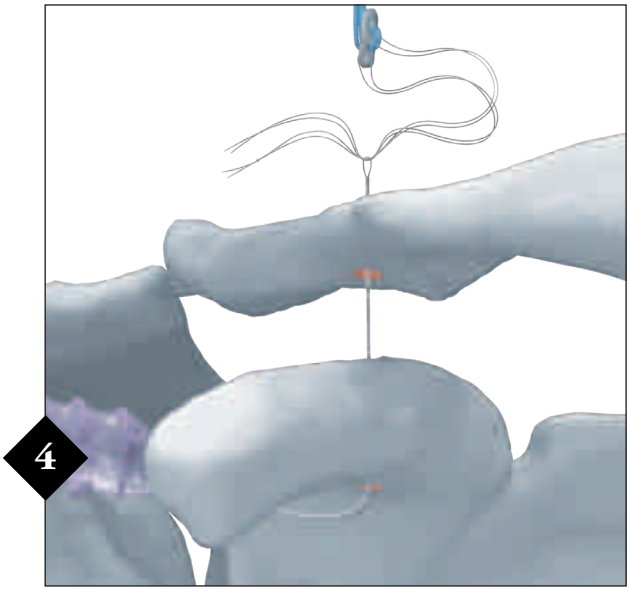
Insert the Constant Guide for AC TightRope with the Coracoid Drill Stop and Graduated Guide Pin Sleeve through the anterior/lateral portal. Position the Drill Stop tip under the base of the coracoid as close to the scapula as possible. Position the top of the Guide Pin Sleeve over the superior clavicle at its midline approximately 25 mm from the distal clavicle through a 1.5 cm incision made in Langers lines by splitting the deltotrapezial fascia. The Centering Device helps to center the drill sleeves on the clavicle.
Using a power drill, insert a 2.4 mm Drill Tip Guide Pin into the guide pin sleeve and advance it through the clavicle and coracoid. The tip of the guide pin is captured by the drill stop at the base of the coracoid under direct visualization. Check the position of the pin in relation to the coracoid and if incorrect, redrill the guide pin. Remove the Constant Guide and leave the guide pin in situ.



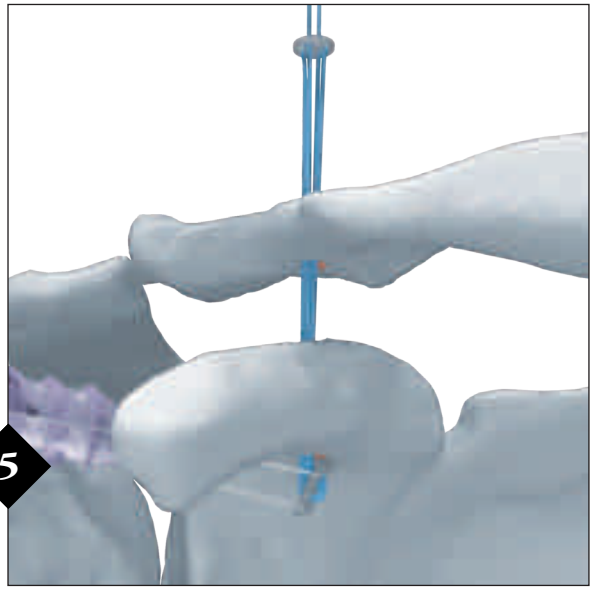
An option to prevent advancement of the guide pin while drilling is to hold the guide pin with a grasper hand instrument. Using a power drill, advance the 4 mm Cannulated Drill over the pin and through the clavicle and coracoid.
Cannulated drilling beyond the coracoid must be avoided under direct arthroscopic visualization. Remove the guide pin and leave the Cannulated Drill in situ.



Advance an 18" Nitinol Suture Passing Wire or a Nitinol SutureLasso SD™ Wire Loop down through the cannulated drill and grasp the tip with the arthroscopic grasper. Remove the drill prior to delivering the wire tip out of the anterior/inferior portal, leaving the wire loop superiorly.



Insert the two white traction sutures from the oblong button of the TightRope System through the Nitinol SutureLasso SD Wire Loop (AR-4068-05SD).



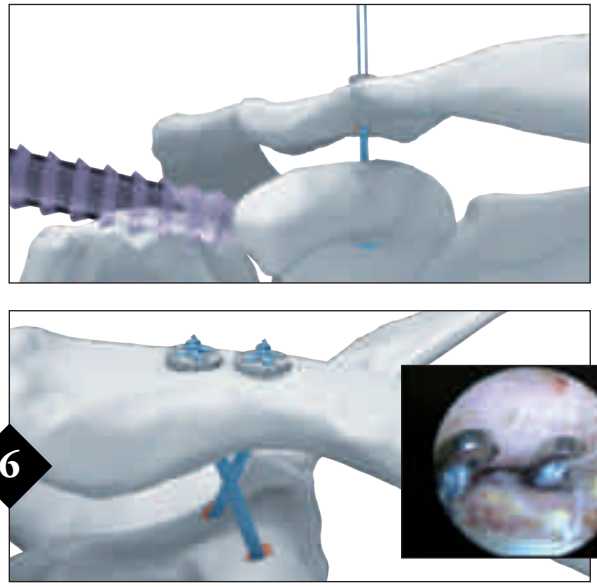
Pull the suture passing wire to retrieve the two white traction sutures out of the anterior/inferior cannula. Pull on one of the two white traction sutures to flip the oblong button into a vertical position suitable for advancement through the bone tunnels. Advance the oblong button through the clavicle and the coracoid under direct visualization until it exits the coracoid base. A grasper may be used to pull both white traction sutures down until the oblong button emerges from the bone tunnel. Independently pull on each of the white traction sutures of the oblong button to flip the button onto the underside of the coracoid base. To optimize the position of the button, a grasper can be used.

Remove any remaining white traction sutures by cutting and pulling them out of the buttons. Fluoroscopy may be used at this stage to confirm reduction.

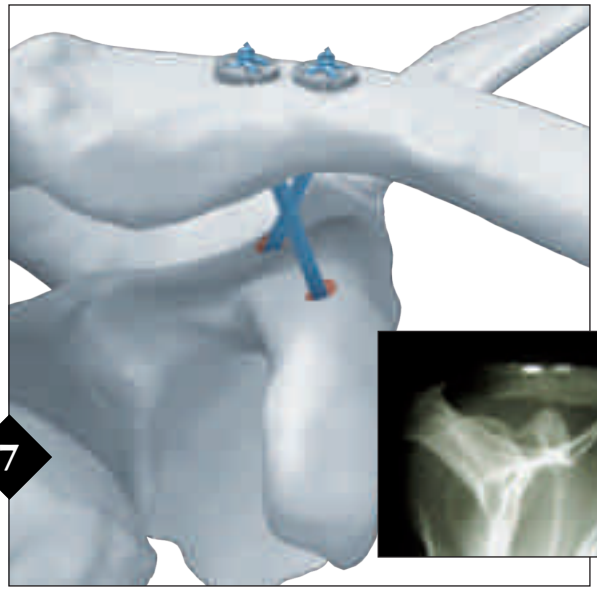
If a distal clavicle resection is not performed, the stability of the repair can be further enhanced by suturing the acromioclavicular capsule with 2-0 FiberWire before standard closure of the incision site.

Postoperative Protocol

Place the patient in a shoulder immobilizer for a period of four weeks. Allow the patient to remove the shoulder immobilizer only for washing and elbow flexion extension exercises. Motion below shoulder height is permitted until six weeks, at which time full active motion is commenced. Avoid heavy resistance work until three months post operation.



Once the security of the oblong button is confirmed, follow steps 1-6 for the second TightRope. Place the arthroscope into the subacromial bursa through the posterior portal. Reduce the clavicle until the position is felt to be satisfactory under direct visualization. Pull on both of the blue TightRope suture tails to advance the round button down to the surface of the clavicle. First the medial TightRope has to be tightened. Tie the sutures over the top of the TightRope making a surgeon's knot and four additional half-hitches, reversing posts and throws. This step completes the reduction and stabilization of the acromioclavicular joint. Perform the same steps with the lateral TightRope. The suture tails can be sewn under the deltotrapezial fascia to minimize the knot stack.



Ordering Information

AC TightRope Repair Kit (AR-2257) includes
AC TightRope Implant
18" Nitinol Suture Passing Wire

Acromioclavicular Joint Reconstruction System (AR-2255CGS)

Required Instrumentation

AC-Joint Reconstruction System (AR-2255CGS) includes:	
Constant Guide for AC TightRope	AR-2255CG
Long Drill, 4 mm Cannulated	AR-1204LX

Instrumentation (not included in AR-2255CGS)

RetroConstruction™ Drill Guide	AR-1510H
RetroConstruction™ Constant Femoral Guide Graduated Drill Sleeve, I.D. 2.4 mm	AR-1778R-24
AC Guide, left	AR-2254L
AC Guide, right	AR-2254R

Optional Instrumentation (included in AR-2255CGS)

AC Joint Coracoid Graft Passing Instrument, left	AR-2254L
AC Joint Coracoid Graft Passing Instrument, right	AR-2254R
AC Joint Tenodesis Screw Driver	AR-2255D
Cannulated Headed Reamer, 5 mm	AR-1405
Cannulated Headed Reamer, 5.5 mm	AR-1405.5
Cannulated Headed Reamer, 6 mm	AR-1406
Cannulated Headed Reamer, 6.5 mm	AR-1406.5
AC Joint Reconstruction System Instrumentation Case	AR-2255CGC

Required Disposables

Drill Tip Guide Pin, 2.4 mm	AR-1250L
PassPort Button Cannula™	AR-6592-10-20-50
Twist-In Cannula with "No-Squirt" Cap, 7 mm I.D. x 7 cm	AR-6570
Twist-In Cannula with "No-Squirt" Cap, 8.25 mm I.D. x 7 cm	AR-6530

Optional Disposable

SutureLasso SD Wire Loop	AR-4068-05SD

Developed in conjunction with Prof. Andreas B. Imhoff, MD, Munich/Germany and Duncan Tennent, MD, London/UK.

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