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

Surgical Technique
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.

**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 clavicle 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 subacromial 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 coracoid 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.
Surgical Technique

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 Langer's 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.

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.

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.

Insert the two white traction sutures from the oblong button of the TightRope System through the Nitinol SutureLasso SD Wire Loop (AR-4068-095SD).
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.
## 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
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Anatomic AC Joint TightRope Fixation

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- Constant Guide for AC TightRope AR-2255CG
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Instrumentation (not included in AR-2255CGS)
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- RetroConstruction™ Constant Femoral Guide Graduated Drill Sleeve, I.D. 2.4 mm AR-1778R-24
- AC Guide, left AR-2254L
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- Cannulated Headed Reamer, 5.5 mm AR-1405.5
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- SutureLasso SD Wire Loop AR-4068-05SD

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