Arthrex TightRope® and Fracture Fixation

The Knotless Syndesmosis TightRope provides fixation of syndesmosis disruptions with or without associated ankle fractures. The Knotless TightRope Syndesmosis is comprised of a #5 UHMWPE, which when tensioned and secured between metallic buttons and placed against the tibia and fibula, provides physiologic stabilization of the ankle mortise. Biomechanical testing and clinical trials have shown equivalent strength and improved patient outcome with the TightRope technique. The Knotless TightRope Syndesmosis decreases the need for a second procedure for removal and eliminates any knot prominence. Cyclic loading does not promote device failure. The “snowshoe” hold on cortical bone makes the TightRope suitable in osteoporotic bone where metallic screws can “cut-out”.

The TightRope has become an excellent option for syndesmotic repairs to prevent second surgeries for removal and may help promote quicker return to activity.

The modular, low profile Ankle Fracture Management System consists of stainless steel specialty plates in unique configurations and locking screws designed for most types of ankle fractures. Plates feature nested holes for a flush TightRope profile, minimizing implant prominence while improving stability of the button.

Fractures in the lower two-thirds of the fibula should be anatomically fixed to ensure correct fibular length and rotation. High fibula fractures (Maisonneuve injury) can be fixed with fibular shaft ORIF and concomitant syndesmosis stabilization, depending on injury pattern. This can be done using one or two TightRopes, depending on the severity of the syndesmosis disruption and surgeon preference.

Advantages:
• No need for routine removal
• Eliminates broken screw complications
• Achieves strong and anatomic fixation
• Simplifies lateral insertion technique
• Facilitates double TightRope technique for Maisonneuve fracture
• Weight-bearing may be commenced earlier than with screw fixation
• Biomechanical testing and clinical results have shown equivalent strength and improved patient outcomes

Indications
The TightRope is intended to provide syndesmosis fixation during the healing process following a syndesmotic trauma, commonly seen with Weber B and C ankle fractures.

Syndesmosis Reduction
The syndesmosis should be formally reduced prior to fixation and confirmed using fluoroscopy, direct visualization during open reduction, or both based upon surgeon preference and severity of injury. Internal rotation in moderate ankle plantar flexion is the usual method of reduction.

Stabilize all fractures prior to TightRope insertion. Drill all four cortices approximately 1.5 cm above the ankle joint, in the transmalleolar plane (~30˚ anterior to the coronal plane), using the 3.7 mm Drill Bit. The use of a guide wire and cannulated drill bit is recommended, allowing confirmation of accurate positioning prior to drilling. However, a solid drill bit is also provided. The needle and pull-through sutures are passed along the drill hole and out the intact medial skin.

Slight upward tension should be placed on the white pull-through suture, while placing downward tension on the green/white suture. The button should seat easily along the medial cortex. Confirm placement using C-arm. (Note: Toggling the two pairs of #5 FiberWire on the lateral side will also aid in seating the medial button.)

A blunt hemostat is inserted under the lateral button. Pull the white strands straight back towards the surgeon one at a time. Remove the hemostat before final tightening. The lateral button will sit flush.

The 3.5 mm screws are placed in the proximal and distal holes of the Buttress Plate. A Knotless TightRope is then placed in either the third hole (6), or both central holes (inset), if desired.

Postoperative Management

Following wound closure, immobilize the ankle in neutral dorsiflexion using a short leg, postoperative splint. Depending on fracture fixation stability and severity of syndesmosis disruption, partial weight-bearing may be permitted in a cast or walker boot, between 2 to 6 weeks based upon surgeon preference.

Full weight bearing is typically allowed at 6 weeks, transitioning to a functional brace as tolerated.

Implant Removal

Routine removal of the TightRope is not required. However, if hardware removal is necessary, using a scalpel to cut the suture over the lateral button is recommended. This facilitates using the medial button to extricate the suture strands.
Ordering Information

Knotless TightRope Syndesmosis Repair Kits:
- TightRope Syndesmosis Repair Kit, titanium AR-8926T
- Knotless, stainless steel AR-8926SS

Knotless TightRope Syndesmosis Kits include:
- Drill Bit, 3.7 mm
- Drill Guide, disposable
- Oftlong Button, 3.5 mm x 10 mm (medial side placement)
- Round Button, 6.5 mm (lateral side placement)
- Ø UHMWPE, white
- Gauze tape, 1.6 mm w/pull-through suture, white and green/white
- Gauze tape Sterile

TightRope Syndesmosis Repair Kits:
- TightRope Plus Syndesmosis Repair Kit, titanium AR-8920CDS
- TightRope Plus Syndesmosis Repair Kit, stainless steel AR-8921CDS

Knotless Syndesmosis Button Plate Kit (AR-8943D) includes:
- SBT, 43 mm length
- LPS Screw, 3.5 mm x 14 mm, qty. 2
- Pin Tip Drill Bit/Drill Guide, 2.5 mm
- Driver T15, Hexalobe
- Knotless TightRope, titanium
- Drill Bit, 3.7 mm
- Drill Bit, cannulated, 3.7 mm
- Gauze tape with Trocar Tip
- Gauze tape Sterile

For information on the full list of materials, see our Ankle Fracture Management System Brochure, LB1-0439-EN

*Note: Titanium implant to be used with titanium plates and screws.
Stainless steel implant to be used with stainless steel plates and screws.
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 technique was developed in conjunction with Brian Thornes, M.D., Dublin, Ireland

View U.S. patent information at www.arthrex.com/corporate/virtual-patent-marking
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