

Knotless TightRope



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Positive scientific support for the Syndesmosis TightRope® suture continues to grow with over 21 published articles. The Syndesmosis TightRope for syndesmosis repair has been used successfully for the past twelve years. To date, there have been numerous reports of early return-to-activity and less morbidity, and the technique also eliminates the need for second surgery screw removal. It has been used for many NFL, professional soccer, and college athletes, and they have seen excellent results once returning to sport.

New scientific articles highlighting the benefits of TightRope:

“Suture Button Fixation Versus Syndesmotic Screws in Supination-External Rotation Type 4 Injuries: A Cost-Effectiveness Analysis”
American Journal of Sports Medicine, January 2017.

- Syndesmosis TightRope was a dominant treatment strategy, because patients spent on average \$1,482 less compared to syndesmotic screws
- Syndesmosis TightRope patients had a higher quality of life by 0.058 QALYs over an 8 year time period
- Second surgery cost for screw removal was \$14,768 per case
- Syndesmotic screw fixation required 2 extra clinic visits and \$389 in ankle x-rays
- Syndesmotic screw fixation had lower quality of life measurements

“Better Clinical and Radiographic Outcomes with Suture Button Compared to Syndesmotic Screw in Treatment of Syndesmotic Injury - A Randomized Control Trial”
Orthopaedic Trauma Association 2016 Annual Meeting Research Presentation, Oct. 2016

- One year follow up with better outcome scores, better range of motion, earlier mobilization and better radiographic results
- Suture button is a better alternative than one quadricortical screw in the treatment of syndesmotic injuries below 70 years of age, because it provides better anatomical restoration and superior clinical results

“A prospective randomized multicenter trial comparing clinical outcomes of patients treated surgically with a static or dynamic implant for acute ankle syndesmosis rupture”
Journal of Orthopaedic Trauma, May 2015

- TightRope gives better clinical and radiographic outcomes without breakage, loss of reduction or re-operation
- TightRope outperformed screws clinically with 0% failure, 0% loss of reduction and higher AOFAS scores.

“The Effect of Suture-Button Fixation on Simulated Syndesmotic Malreduction: A Cadaveric Study”
The Journal of Bone and Joint Surgery, Oct. 2014

- With deliberate malreduction, TightRope fixation results in less post-fixation displacement compared with screw fixation
- TightRope appears to take advantage of distal tibiofibular anatomy in achieving improved reduction
- The TightRope’s ability to allow for natural correction of deliberate malreduction was greatest with posterior off-axis clamping

ANKLE TIGHTROPE® FOR SYNDESMOSIS SCIENTIFIC UPDATES

Tyler J. Van Heest, BA
Paul M. Lafferty, MD

Injuries to the Ankle Syndesmosis

The Journal of Bone and Joint Surgery: Current Concepts Review, Apr. 2014

- The so-called gold-standard syndesmotic screw fixation is being brought increasingly into question as new fixation techniques emerge
- Suture-button fixation represents a promising alternative

Gohar A. Nagvi, MRCSI, MCH
Patricia Cunningham, FFR (RCSI)
Bernadette Lynch, DCR, HDipCT
Rose Galvin, PhD
Nasic Awan, FRCS, FRCSI

“Fixation of Ankle Syndesmosis Injuries – Comparison of TightRope Fixation and Syndesmotic Screw Fixation for Accuracy of Syndesmotic Reduction,”
The American Journal of Sports Medicine, Nov. 2012.

- TightRope had 0% syndesmosis malreduction compared to 22% malreduction with screws.
- TightRope was significantly better at maintaining the reduction, even after a mean duration of 30 months after surgery.
- TightRope provides a more accurate method of syndesmotic stabilization and obviates the need for a second procedure for routine removal

Ryan B. Rigby, DPM, AACFAS
James M. Cottom, DPM, FACFAS

“Does the Arthrex TightRope Provide Maintenance of the Distal Tibiofibular Syndesmosis? A 2-year Follow-up of 64 TightRopes in 37 Patients,”
The Journal of Foot & Ankle Surgery, Jun. 2013.

- TightRope was advantageous because it rarely required removal, allowed for physiologic motion of the syndesmosis and resulted in early return to weight-bearing.
- TightRope provides long-term stability (24 months), confirmed by radiographic criteria and excellent AOFAS scores.

Faisal Qamar, MBBS, MRCS
Anish Kadakia, MBBS, MS, MRCS
Balachandran Venkateswaran,
MS, FRCS

“An Anatomical Way of Treating Ankle Syndesmotic Injuries,”
The Journal of Foot & Ankle Surgery, Nov. 2011.

- TightRope allows for accelerated rehabilitation and improved outcome
- No failures of fixation despite the early postoperative weight-bearing.
- Advantageous in older, obese patients, or patients who cannot comply with a non weight-bearing regimen that is required with screw fixation.
- Cost-effective because it does not require retrieval with a second surgery.

Henry DeGroot, MD, FAAOS
Ali A. Al-Omari, MD
Sherif Ahmed El Ghazaly, MD,
FRCS, PhD

“Outcomes of Suture Button Repair of the Distal Tibiofibular Syndesmosis,”
Foot & Ankle International, Mar. 2011.

- The suture button device represents a viable alternative to screw fixation for syndesmosis injuries.
- Because of the ease-of-use of the device and the ability to allow full weight-bearing without concerns about implant breakage, we feel that suture button fixation is superior to conventional metallic screws.

ANKLE TIGHTROPE FOR SYNDESMOSIS SCIENTIFIC UPDATES

Daryl C. Osbahr, MD

[“Faster return to play seen after lateral ankle vs. syndesmotic sprains in NFL players,”](#)
[Orthopedics Today](#), Aug. 2012; 47-48.

- 70% of team physicians recommend hardware removal before return to sport. No need for removal and second surgery with TightRope.
- No need for removal in cases with obvious diastasis, return to play was 9-16 weeks.

Claude H. Sagi, MD
Anjan R. Shah, MD
Roy W. Sanders, MD

[“The Functional Consequence of Syndesmotic Joint Malreduction at a Minimum 2-Year Follow-Up,”](#)
[Journal of Orthopaedic Trauma](#), July 2012; 26(7): 439-443.

- Studies have shown that between 24-39% of syndesmosis are malreduced.
- 1 mm loss of syndesmotic reduction results in 42% increase in joint contact pressure.

Tim Schepers, MD

[“Acute distal tibiofibular syndesmosis injury: a systematic review of suture-button versus syndesmotic screw repair,”](#)
[International Orthopaedics \(SICOT\)](#), Feb. 2012

- Rate of implant removal is lower than in the syndesmotic screw group.
- The TightRope system has a similar outcome compared with syndesmotic screw or bolt fixation, but might lead to a quicker return to work.

Robert Klitzman, MD
Hen Zhao, PhD
Li-Qun Zhang, PhD
Greg Strohmeier, BS
Anand Vora, MD

[“Suture-Button Versus Screw Fixation of the Syndesmosis: A Biomechanical Analysis,”](#)
[Foot and Ankle International](#), Jan. 2010; 31: 69-75.

- Rigid fixation of the syndesmosis with screw fixation may be problematic in allowing physiologic motion of the syndesmosis

Sandeep P. Soin, BS
Trevor A. Knight, BS
A. Feroz Dinah, MRCS

[“Suture-Button vs. Screw Fixation in a Syndesmosis Rupture Model: A Biomechanical Comparison”](#)
[Foot and Ankle International](#), April 2009; 30: 346- 352

- No difference vs. syndesmotic screw in terms of overall fibular motion
- Provides similar fixation to that of a four-cortices 3.5 mm screw

James M. Cottom,
DPM, AACFAS
Christopher F. Hyer,
DPM, AACFAS
Terrence M. Philbin, DO
Gregory C. Berlet, MD

[“Transosseous Fixation of the Distal Tibiofibular Syndesmosis: Comparison of an Interosseous Suture and Endobutton to Traditional Suture Fixation in 50 Cases,”](#)
[Journal of Foot & Ankle Surgery](#), Nov. 2009; 46: 620-630

- Late diastasis is avoided since the device remains in place while ligaments continue to heal.
- Advantageous in older, obese, or polytrauma patients that may have difficulty remaining nonweight-bearing postoperatively.

D. McMurray
B. Hornung
Ali Z. Venkateswanen

[“Walking on a TightRope: Our experience in the treatment of traumatic ankle syndesmosis,”](#)
[Injury Extra](#), May 2008; 39: 182

- TightRope shows favorable results when used to repair syndesmosis.
- Patients are able to being full weight-bearing sooner.

ANKLE TIGHTROPE FOR SYNDESMOSIS SCIENTIFIC UPDATES

Chris J. Coetzee, FRCSC, MD
Patrick Ebeling, MD

“Treatment of Syndesmosis Disruptions with TightRope Fixation: A prospective, randomized study comparing conventional screw fixation versus TightRope FiberWire fixation – medium term results,”
Techniques in Foot and Ankle Surgery, Sept. 2008; 7: 196-202.

- TightRope fixation gives a significantly better overall range of motion than conventional screw fixation.
- Better AOFAS scores at 6, 12, and 27 months.

James M. Cottom,
DPM, AACFAS
Christopher F. Hyer,
DPM, AACFAS

“Treatment of Syndesmotic Disruptions with the Arthrex TightRope: A Report of 25 Cases.”
Foot & Ankle International, August, 2008; 29.

- Radiographic reduction maintained.
- Faster time to full weight-bearing; no second surgery.

Brian Thornes, FRCSI
Damien McCartan, MB

“Ankle Syndesmosis Injuries Treated with the TightRope Suture-Button Kit,”
Techniques in Foot & Ankle Surgery, Mar. 2006; 5(1): 45-53.

- Rehabilitation is faster and allows the athlete or patient to return to sport or work sooner.
- TightRope allows physiological micromotion, while resisting diastasis and may be more preferable than a rigid screw.

Hugh J.S. Pelc
Michael R. Carmont, MBBS
Paul M. Sutton, MD
Christopher M. Blundell, FRCS

“TightRope stabilization of proximal & distal tibiofibular syndesmosis rupture,”
Injury Extra, 2009; 40(1): 16-18.

Brian Thornes, FRCSI
Fintan Shannon, FRCSI
Anne-Marie Guiney, ARFCSI
Paul Hession, FRCR
Eric Masterson, FRCSI

“Suture-button Syndesmosis Fixation: Accelerated Rehabilitation & Improved Outcomes,”
Clinical Orthopaedics and Related Research, Feb. 2005; 431: 207-212.

- Better AOFAS scores at 3 and 12 months.
- Return to work faster; no second surgery.

Brian Thornes, FRCSI
Alan Walsh, FRCSI
Matt Hislop, MB
Paraic Murray, FRCSEd

“Suture-Endobutton Fixation of Ankle Tibio-Fibular Diastasis: A Cadaver Study,”
Foot & Ankle International, Feb. 2003; 24(2).

- TightRope did give a significantly more consistent performance than screw fixation.
- TightRope would provide obvious cost savings to both the patient and health service, free up OR time, and eliminate the need for the patient to go through a second procedure.

William H. Seitz Jr., MD
Evan J. Bachner, MD
Leon J. Abram, MD
Paul Postak, MD Geordie
Polando
A. Seth Greenwald,
D. Phil. (Oxon)

“Repair of the Tibio-Fibular Syndesmosis with a Flexible Implant,”
Journal of Orthopaedic Trauma, Mar. 1991; 78-82.

- Provides a more physiologic solution than rigid fixation.
- Allows weight-bearing without damage to surrounding bone, while providing reliable fixation of the healing syndesmotic ligaments.