SYNDESMOTIC INJURIES: SCREWS VS TIGHTROPE: WHAT’S THE EVIDENCE AND TIPS

John Ketz, MD
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Disclosures

- I have no financial disclosures

Introduction

- Poorly understood injury
- Multiple controversies
- Limited success in treatment
- Does implant selection make a difference
**Syndesmotic Reduction**

- How have we been doing?
- 25 patients with syndesmotic injury
- 6 (24%) malreduced by XRAY
- 13 (52%) malreduced by CT

*Gardner et al. FAI 2006*

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**Syndesmotic Reduction**

- How have we been doing?
- 68 patients
  - 55 treated closed (44%)
  - 13 treated open (15%)
- 64% AP plane
- 28% Rotational

*Sagi et al. JOT 2012*

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**Anatomy**

- Fibula relation to tibia
Why is anatomical reduction so important?

2 Year followup

- Worse functional outcome scores
  - SFMA
  - Olerud/Molander

The Functional Consequence of Syndesmotic Joint Malreduction at a Minimum 2-Year Follow-Up

25 patients treated with ORIF

- CT within 2 weeks
  - 9 malreductions (36%)
- HWR at 3mo
  - 8/9 (89%) reduced
Hardware Options

Screws

- Size
  - 3.5mm cortical
  - 4.5mm cortical
  - 3.5mm cancellous
  - 4.0mm cortical

No mechanical difference in cadaveric study

Thompson et al FAI 2000
Screws

- Screws provide rigid initial fixation
- Need to have it well reduced
- Good
  Best initial stabilizing force for the syndesmosis
Screws

- **Bad**
  - “Rigid” malreduction
  - Loosening/Breakage of screws does not necessarily reduce the syndesmosis
  - Loosening can occur early

Tightrope Fixation

- **Good**
  - Allows some motion
  - No need for hardware removal
  - Finds its “home”
Tightrope Fixation

- Early disadvantages
  - Prominent suture knot
  - Instrumentation was poor

- Bad
  - More expensive implant
  - Technically more difficult
  - Not as rigid as screws
Fixation of Ankle Syndesomic Injuries: Comparison of TightRope Fixation and Syndesmotic Screw Fixation for Accuracy of Syndesmotic Reduction

Gohar A, Naseh, Patricia Cunningham, Bernadette Lynch, Rose Calvin and Naseh Avaran
Am J Sports Med 2012 40(10) originally published online October 10, 2012

- 46 patients (23 Tightrope, 23 screw)
- Malreduction
- 5/23 Screw Group (22%)
- 0/23 Tightrope (0%)
- AOFAS score
  - 89.56 Tightrope
  - 86.52 Screw
- FADI score
  - 82.42 Tightrope
  - 81.22 Screw
- Malreduction only independent variable that affected the clinical outcome

A prospective randomised study comparing TightRope and syndesmotic screw fixation for accuracy and maintenance of syndesmotic reduction assessed with bilateral computed tomography

Tenko Kortekangas a, b, Olli Saastamoinen a, Tapio Rinikul a, Simo Marjaniemi a, Juha Lehtinen a, Antti Konttinen a, Harri Pakarinen a

- Randomized study 43 patients
  - 19 Screw vs. 24 Tightrope
  - 1 Case of malreduction with screw needing revision
  - 7 cases with Tightrope (no revised)
  - Postop CT showed no malreductions
  - WB CT at final followup (2yrs) showed 3 malreductions in Screw group with 1 in TR group
- Outcomes Similar
Screws vs. Tightrope

**NO DIFFERENCE**

**BOTH WILL WORK**

It is the **REDUCTION** that is important

It is the **EXECUTION OF TECHNIQUE** that is important

Screws vs. Suture Bridge

**BOTH WILL ALSO FAIL**

What Am I Doing Now?

I use both because both implants have their own benefit
Stress Positive Ankle Fractures

Maissoneuve Injuries
Revisions

- Combination
Low Demand Patients Neuropathies

- Going after fixation strength in poor bone

Summary

- Syndesmotic injuries are difficult to treat
- Implant selection should be based on the injury, patient and surgeon preference
- Both implants have strengths and weaknesses
THANK YOU