



Review

# Recent developments in the treatment of acute syndesmotic injuries

## Neue Entwicklungen in der Behandlung akuter Syndesmosenrupturen am oberen Sprunggelenk

Tim Schepers<sup>a,\*</sup>, Siem A. Dingemans<sup>a</sup>, Stefan Rammelt<sup>b</sup>

<sup>a</sup> Trauma Unit, Department of Surgery, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

<sup>b</sup> Universitäts Centrum für Orthopädie und Unfallchirurgie, Universitätsklinikum Carl Gustav Carus der TU Dresden, Dresden, Germany

Received 20 February 2016; accepted 23 February 2016  
Available online 15 March 2016

### KEYWORDS

Ankle fracture;  
Syndesmosis;  
Reduction;  
Syndesmotic screw

### Summary

*Introduction:* The syndesmosis is a dynamic stabilizer of the ankle and consists of 5 individual ligaments. In up to 20% of operatively treated ankle fractures the syndesmosis needs fixation. Below we review the literature and try to form an evidence based approach to the treatment of acute distal tibiofibular syndesmotic injury.

*Material and method:* Comprehensive literature review in Pubmed, Embase, and Google Scholar.

*Results:* Numerous clinical and biomechanical studies have been performed to improve the techniques of fixation. New techniques are increasingly used, however the syndesmotic screw remains the cornerstone in the treatment of syndesmotic disruption.

*Conclusion:* If placed correctly and malreduction is prevented the syndesmotic screw remains the 'Gold standard' in the treatment of acute syndesmotic injury. One tricortical 3.5mm screw placed within 2–4 cm of the tibial plafond is usually enough. An additional tricortical screw may be added if there is doubt considering stability or in case of poor bone stock. There is a growing body of evidence that the syndesmotic screw does not need routine removal. Only in cases with complaints of pain or stiffness, where the screws do not loosen or break, the screws might be removed after a minimum of eight weeks. Syndesmotic malreduction is associated with less favorable outcome and carries the risk of the development of chronic instability and posttraumatic ankle arthritis.

\* Corresponding author at: Academic Medical Center, Trauma Unit, Department of Surgery, Meibergdreef 9, PO Box 22660, 1100 DD Amsterdam, The Netherlands. Tel.: +31 20 5666019.

E-Mail: [t.schepers@amc.nl](mailto:t.schepers@amc.nl) (T. Schepers).

**SCHLÜSSELWÖRTER**

Sprunggelenkfraktur;  
 Syndesmose;  
 Reposition;  
 Stellschraube

**Zusammenfassung**

*Einleitung:* Die tibiofibuläre Syndesmose ist ein dynamischer Stabilisator des oberen Sprunggelenks und besteht aus 5 individuellen Bandanteilen. In etwa 20 Prozent aller operativ behandelten Sprunggelenkfrakturen ist eine Stabilisierung der Syndesmose erforderlich. In dieser Arbeit wird versucht, auf dem Boden einer aktuellen Literaturrecherche, evidenzbasierte Behandlungsrichtlinien für die Behandlung der akuten distalen tibiofibulären Syndesmosenverletzungen aufzustellen.

*Material und Methode:* Umfangreiche Literaturrecherche in Pubmed, Embase und Google Scholar.

*Ergebnisse:* Zahlreiche klinische und biomechanische Studien wurden durchgeführt um die Techniken zur Stabilisierung der Syndesmose zu verbessern. Neue Techniken werden zunehmend eingesetzt, allerdings bleibt die tibiofibuläre Stellschraube die am häufigsten angewandte Methode in der operativen Behandlung akuter Syndesmosenrupturen.

*Schlussfolgerung:* Bei korrekter Platzierung und Vermeidung von Fehlstellungen der distalen Fibula bleibt die Syndesmosen-Stellschraube der 'Goldstandard' zur Stabilisierung instabiler akuter Syndesmosenrupturen. Eine trikortikale 3.5 mm Schraube, welche 2-4 cm oberhalb des Tibiaplafonds platziert wird, ist in der Regel ausreichend. Eine zusätzliche trikortikale Schraube kann hinzugefügt werden falls Zweifel an der Stabilität bestehen bzw. bei schlechter Knochenqualität. Zahlreiche Studien legen nahe, dass Stellschrauben nicht routinemäßig entfernt werden müssen. Lediglich bei Beschwerden aufgrund von Schmerzen oder Bewegungseinschränkungen bei nicht gebrochener Schraube ist eine Entfernung nach ca. 8 Wochen indiziert. Eine Fehlreposition der distalen Syndesmose führt zu schlechteren Behandlungsergebnissen und geht mit der Gefahr der Entwicklung einer chronischen Instabilität und posttraumatischen Arthrose einher.

**Introduction**

Syndesmotic injuries occur frequently and are mostly associated with an acute ankle fracture. The disruption of the syndesmotic ligaments is more apparent in Pronation External Rotation and Pronation Abduction fractures of the ankle, but can occur in up to 40% of Supination External Rotation fractures [28,36,42,102,107].

Diagnosing the syndesmotic disruption is not always easy, as is the case in gross displacement with frank diastasis. And especially in isolated disruptions without bony injuries (high ankle sprain) it can be a diagnostic dilemma.

The distal tibiofibular syndesmotic complex, for which the term syndesmosis is often used synonymously, consists of five separate portions and provides a dynamic stabilization of the mortise [3,75,76,84]:

- The anterior inferior tibiofibular ligament (AITFL).
- The posterior inferior tibiofibular ligament (PITFL).
- The transverse tibiofibular ligament (TTFL), distal to the posterior tibiofibular ligament with a fibrocartilaginous appearance.

- The interosseous tibiofibular ligament (IOL) containing short, strong collagenous and elastic fibers that fan out into a network almost completely filling the space between the tibial incisura and the corresponding aspect of the fibula.
- The distal portion of the interosseous membrane (IOM) consisting of aponeurotic fibers that are recruited from the cranial origins of the anterior and posterior tibiofibular ligaments.

Numerous biomechanical studies with serial sectioning of the syndesmotic ligaments have been conducted. Most reveal, that a rupture of two or more ligaments results in mechanical laxity [84].

Many articles and reviews have been published on the use and shortcomings of various diagnostic tools. Conventional radiographs are sometimes insufficient and intraoperative testing is mandatory following the surgical stabilization of the bony injuries (Fig. 1). Latent diastasis is proved with stress radiographs, if necessary under regional anesthesia. External rotation stress is applied manually under fluoroscopy or lateral shift with a standardized device on radiographs [84]. Widening of the tibiofibular clear space (TCS) and medial clear space (MCS) of 2 mm and more is considered to be pathological [125].

Download English Version:

<https://daneshyari.com/en/article/2714267>

Download Persian Version:

<https://daneshyari.com/article/2714267>

[Daneshyari.com](https://daneshyari.com)