



Modalities of Treatment of Chronic Syndesmotic Injury

A Systematic Review and Meta-Analysis

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List of Abbreviations

Abb.	Full term
AITFL.....	Anterior inferior tibiofibular ligament
AOFAS.....	The American Orthopedic Foot and Ankle Society Ankle-Hindfoot Scale
CFL.....	Calcanofibular ligament
CT	Computerized tomography
IOL.....	Interosseous ligament
LCL.....	Lateral collateral ligament
MCS.....	Medial clear space
MRI.....	Magnetic resonance imaging
N	Number
ORIF	Open reduction and internal fixation
PCFL	Posterior calcanofibular ligament
PITFL.....	Posterior inferior tibiofibular ligament
Q	Cochran Q statistic
RCT.....	Randomized controlled trial
ROM	Range of motion
SD	Standard deviation
SE	Standard error
SMD.....	Standard mean difference
TCS.....	Total clear space
TFS	Tibiofibular syndesmosis

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Abstract

Introduction: ankle sprains are commonly seen in orthopedics practice. 1-18% of the soft tissue injuries of the ankle.

Following the injury pain during activity, a feeling of instability, and weakness of the ankle are commonly experienced symptoms.

Symptomatic chronic syndesmotic injuries are not typically amenable to non-surgical treatment, and often times require surgical intervention to facilitate normal ankle function.

Screw fixation, anatomical reconstruction, arthroscopic debridement, and arthrodesis are different modalities of treatment.

Aim of the work: meta-analysis and systematic review of different modalities of treatment of chronic syndesmotic injuries.

Materials and methods: a systematic review and meta-analysis in which search strategy done from 2000 to 2018. This study is done on 14 articles with total number of participants 160. The outcome of interest are AOFAS, Karlsson score, and complications.

Results: The pooling success rate for screw fixation, ligamentoplasty, arthrodesis are 86%, 84% and 60%.

There are changes in AOFAS score with difference 28.07 and 26.40 for arthroscopic debridement and screw fixation.

INTRODUCTION

The varying complexity of the bony and ligamentous injuries of ankle joint has occupied the attention of many surgeons over the past 200 years. Ankle fractures are the most common intra-articular fractures of weight-bearing joint and are commonly accompanied by injuries to syndesmotic ligaments.⁽¹⁾

They are particularly common in sports such as basketball, soccer, volleyball, or other activities performed on uneven surface.

Stability of the distal Tibiofibular syndesmosis (TFS) is necessary for proper functioning of the ankle and lower extremity.

The ankle is a complex hinged, uniaxial joint consisting of functional articulations between the tibia and fibula, tibia and talus, and fibula and talus. Each of them supported by a group of ligaments.

The tibia and fibula form a mortise providing a constrained articulation for the talus and tendon. The articular surface of distal tibia (tibial plafond) and the mortise is wider superiorly and anteriorly to accommodate the wedge-shaped talus.

So, the shape of the joint alone provides some intrinsic stability especially in weight bearing.

Syndesmosis is made up of anterior inferior tibiofibular ligament (AITFL), posterior inferior tibiofibular ligament (PITFL), the interosseous ligament (IOL), and inferior transverse tibiofibular ligament; these stabilize the mortise by opposing the fibula in fibular notch. ⁽²⁾

The diagnosis of ligamentous injury may be overlooked because of more obvious fractures and a tendency for spontaneous reduction. This may be the underlying cause of chronic injury of the ankle and instability and prolonged disability. ⁽³⁾

Ankle syndesmotic injury doesn't necessary lead to ankle instability but the coexistence of deltoid ligament injury critically destabilize the ankle joint.

The syndesmotic injuries may be associated with variable degree of trauma to the soft tissue and/or osseous structures that play an important role in ankle joint stability.

Clinical examination: findings suggestive of injury include ankle tenderness over the anterior aspect of the syndesmosis and positive squeeze or external rotation stress test.

Radiographic examination: x-Ray, CT and MRI. ⁽⁵⁾

The pathomechanics and extent of syndesmotric injuries have been systematically described by Lauge Hansen and Weber. ⁽⁶⁾

Management: to restore and maintain the normal tibiofibular relationship to allow for healing of ligamentous structures of the syndesmosis.

1- Non-surgical management:

Non-surgical treatment begins with rest, ice, compression and elevation subsequently.

A non-weight bearing cast is used 2-3 weeks followed by progressive weight bearing as tolerated. ⁽⁷⁾

Functional, mechanical instability, chronic pain, stiffness, chronic edema, and the development of osteoarthritis are the main complication of missed diagnosis and management of this type of injury. ⁽⁸⁾

Chronic syndesmotric injuries defined as injuries that present with symptoms exceeding 6 months after initial trauma. ⁽⁹⁾

2- Surgical management:

- **Screw fixation**
- **Tight robe tensioning**

- **Anatomical reconstruction**
- **Arthroscopic debridement**
- **Arthrodesis**

AIM OF THE STUDY

Meta-analysis and systematic review of different modalities of treatment of chronic syndesmotic injuries.

Regarding the different outcomes, AOFAS, Modified Karlsson score, total clear space, and complications.