شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

# بسم الله الرحمن الرحيم


HANAA ALY

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# جامعة عين شمس

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# قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

# يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HANAA ALY

# Suture-Button versus Syndesmotic Screw in the Treatment of Distal Tibiofibular Syndesmosis Injury

*A Systematic Review and Meta-Analysis for Partial Fulfilment of Master Degree in Orthopedic Surgery*


By

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*Foremost, I feel always indebted to* ***Allah*** *to whom I relate any success in First and achieving any work in my life.*

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✍. *Abdelrahman Fathi*

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# List of Abbreviations

| Abb. | Full Term |
|---|---|
| **AITFL** | Anterior inferior tibiofibular ligament |
| **AOFAS** | American Orthopedic Foot And Association |
| **AP** | Antero-posterior |
| **ATFL** | Anterior talofibular ligament |
| **CFL** | Calcaneofibular ligament |
| **CT** | Computed tomography |
| **DTFS** | Distal tibiofibular syndesmosis |
| **IOL** | Interosseous ligament |
| **IOM** | Interosseous membrane |
| **ITFL** | Interosseous tibiofibular ligament |
| **MCS** | Medial clear space |
| **MRI** | Magnetic resonance imaging |
| **OMAS** | Olerud-Molander Ankle Score |
| **PITFL** | Posterior inferior tibiofibular ligament |
| **PRISMA** | Preferred Reporting Items for Systematic Review and Meta-Analysis |
| **PTFL** | Posterior talofibular ligament |
| **PTTL** | Posterior tibiotalar ligament |
| **ROM** | Range of motion |
| **TFCS** | Tibiofibular clear space |
| **TFO** | Tibiofibular overlap |

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## Suture-Button versus Syndesmotic Screw in the Treatment of Distal Tibiofibular Syndesmosis Injury: A Systematic Review of Literature and Meta-Analysis

# Abstract

**Background:** Ankle fractures are one of the most common types of fractures, comprising 18% of all skeletal injuries annually. These fractures frequently involve the distal tibiofibular syndesmosis. The syndesmosis is vital in stabilizing the ankle mortise and transmitting load during weight bearing. In this study we reviewed the literature for comparison between suture button and syndesmotic screw fixation.

**Aim of the work:** A Systematic review to compare between suture button and syndesmotic screw fixation in distal tibiofibular syndesmotic injuries.

**Methods:** This systematic review consisted of 5 RCTs, including a systematic search of literature (PubMed/medline, National Library of Medicine, and The Cochrane Library), selection of studies, extraction of study characteristics, assessment of methodological quality and bias and extraction of data on clinical outcomes and their comparisons between different surgical groups using revman 5.2.

**Results:** A total of 5 RCTs were included, 347 patients were extracted from the included studies. Of the 347 patients, 170 (48.991%) had undergone suture button fixation and 177 (51.008%) had undergone syndesmotic screw fixation. The minimum follow-up duration was 12 months. These procedures were done using standard AO technique. suture button group had significantly higher AOFAS score with less implant failure (before 8 weeks), malreduction rates and reoperation (not including routine screw removal), with higher rate of wound infection.

**Conclusion:** We concluded that the suture-button device could lead to better objective range of motion measurements and earlier return to work, besides, the suture-button fixation group had lower rate of implant removal, implant failure, and malreduction. Multicenter randomized clinical trials are needed to obtain a high-quality level of evidence for the comparison between suture button and syndesmotic screw.

**Keywords:** Syndesmosis, ankle, suture button, tightrope and screw.

# Introduction

Ankle fractures are one of the most common types of fractures, comprising 18% of all skeletal injuries annually. These fractures more frequently involve the distal tibiofibular syndesmosis. The syndesmosis is very important in stabilizing the ankle mortise and load transmission during weight bearing. [1-2]

Anatomic reduction and stabilization of the distal tibiofibular syndesmosis is vital for optimal functional outcome.[3-4]

Inadequate reduction of syndesmosis can lead to arthrosis and instability that is equal to poor subjective and objective outcomes.[1-3,5]

Methods of treatment include syndesmotic screw and suture button fixation. Optimal surgical management is a subject of debate in the literature.[3,6]

Understanding the distal tibiofibular syndesmotic biomechanics is vital in formulating treatment algorithms. There is a normal physiologic movement between the tibia and fibula at the distal tibiofibular joint during plantar flexion and dorsiflexion of the ankle, which appears to be more or less 1-2 mm of widening at the ankle mortise.[2,7-8]

However screw fixation is the gold-standard in treatment of syndesmotic injury, some important issues should be considered, such as screw loosening, breakage, discomfort, reoperation, loss of reduction due to early implant removal.[9-10]

More recently, the suture-button fixation device has awakened the attention of many orthopedic surgeons. This device has been reported with some potential advantages, such as allowing of physiological movement while withholding the required reduction, less risk of implant removal and recurrent syndesmotic diastasis, and earlier rehabilitation.[1,11]

# Aim of the Work

A Systematic review to compare between suture button and syndesmotic screw fixation in distal tibiofibular syndesmotic injuries.