



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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جامعة عين شمس

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MONA MAGHRABY



Systematic Review & Meta-Analysis of Conservative versus Surgical Treatment in Management of Closed Mallet Finger

*A Systematic Review/Meta-Analysis
Submitted for Partial Fulfillment of Master Degree in
Orthopedic Surgery*

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2020

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سببنا أنك لا تعلم لنا
إلا ما علمتنا أنك أنت
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgment

*First and foremost, I feel always indebted to **ALLAH**,
the Most Kind and Most Merciful.*

*I'd like to express my respectful thanks and
profound gratitude to **Prof. Dr. Ahmed
Maeem Atiyya**, Assistant Professor of
Orthopaedic Surgery - Faculty of Medicine- Ain
Shams University for his keen guidance, kind
supervision, valuable advice and continuous
encouragement, which made possible the completion
of this work.*

*I am also delighted to express my deepest
gratitude and thanks to **Dr. Amr Moustafa
Aly**, Lecturer of Orthopaedic Surgery, Faculty of
Medicine, Ain Shams University, for his kind care,
continuous supervision, valuable instructions,
constant help and great assistance throughout this
work.*

*Last but not least, I would like to express my
heartly thanks to all my family for their support till
this work was completed.*

Abd El Rahman Salah El Deen Habil

List of Contents

Title	Page No.
List of Tables	i
List of Figures	ii
List of Abbreviations.....	iii
Chapter (1): Introduction.....	1
Aim of the Work.....	3
Chapter (2): Review of Literature.....	4
Chapter (3): Patients and Methods	12
Chapter (4): Systematic Review	17
Chapter (5): Meta-Analysis	24
Chapter (6): Discussion	33
Chapter (7): Conclusion.....	37
References	38
Arabic Summary	

List of Tables

Table No.	Title	Page No.
Table (1):	Doyle's Classification.....	8
Table (2):	Summary of patients and study characteristics	17
Table (3):	Basic clinical data in all studies	20
Table (4):	Outcomes in all studies	22
Table (5):	Characteristics of the included studies	24
Table (6):	Age and sex among the included studies	25
Table (7):	Types of interventions and duration between injury and treatment.....	26
Table (8):	Meta-analysis on Pain score (VAS) on Conservative group versus Surgical group.....	27
Table (9):	Meta-analysis on DIP Extensor lag (°) on Conservative group versus Surgical group.....	29
Table (10):	Meta-analysis on DIP Range of motion (°) on Conservative group versus Surgical group.....	31

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Lateral view of plain X-ray of Bony Mallet finger.	4
Figure (2):	The mechanism that explains the sequence of the injury.	6
Figure (3):	Different Types of Orthosis.	9
Figure (4):	Intra-operative Fluroscopy imaging of the Direct pinning method.	10
Figure (5):	Anteroposterior &Lateral view of hook plate fixation.....	10
Figure (6):	Intra-operative fluoroscopy imaging of the extention block technique.....	11
Figure (7):	PRISMA flow chart for study selection.	16
Figure (8):	Forest plot for Pain score (VAS).....	28
Figure (9):	Forest plot for DIP Extensor Lag (°).	30
Figure (10):	Funnel plot for DIP Extensor Lag (°).....	30
Figure (11):	Forest plot for DIP Range of motion (°).....	32
Figure (12):	Funnel plot for DIP Range of motion (°).	32

List of Abbreviations

Abb.	Full term
<i>DIP</i>	<i>Distal inter phalangeal</i>
<i>DIPJ</i>	<i>Distal inter phalangeal joint</i>
<i>ER</i>	<i>Emergency Room</i>
<i>IQR</i>	<i>Inter quartile range</i>
<i>NS</i>	<i>Non significant</i>
<i>PIPJ</i>	<i>Proximal inter phalangeal joint</i>
<i>PRISMA</i>	<i>Preferred reported items for systematic review and meta-analysis</i>
<i>RCTs</i>	<i>Randomized controlled trials</i>
<i>ROM</i>	<i>Range of motion</i>
<i>S</i>	<i>Significant</i>
<i>SD</i>	<i>Standard deviation</i>
<i>VAS</i>	<i>Visual analogue score</i>

INTRODUCTION

A mallet finger is a common injury of the terminal extensor mechanism at the base of the distal phalanx.¹ This injury can be tendinous (avulsion of extensor tendon) or bony (fracture at the dorsum of the base of the distal phalanx). Bony mallet fingers comprise 30% of all mallet fingers.

The first bony mallet finger was described by Segond in 1880, while the first tendinous mallet finger was described by Shoening in 1887.² The initial surgical treatment of mallet finger was reported by Mason in 1930³ and then by Pratt in 1957.⁴

The conservative treatment was described by Smilie in 1936, and reflected advancements in physiopathology and the use of plaster of Paris splints to immobilize the distal interphalangeal joint (DIPJ) in extension and the proximal interphalangeal joint (PIPJ) in flexion.²

In 1962, Stack splints which leave the PIPJ free were begun to be used. They are still used despite the efforts of researchers to propose improved splints.

An example of dynamic splint was described in 1968 such as Abouna's splint,⁵ It was rapidly abandoned due to the rusting of its metal wires, and the wearing of the elastic tensor bands.

In the 1984, Crawford⁶ described a method for evaluating the therapeutic results. Since 1984, a number of surgical and conservative treatments have been described.

Traditionally, surgeons recommended surgery for fractures involving more than one third of the DIP joint articular surface⁷ and those with subluxation or displacement.⁸ Others have proposed conservative management for almost all cases of mallet finger injuries challenging the surgical indications⁹. Thus, there is no consensus regarding the indications for surgical management.

AIM OF THE WORK

The objective of this study is to systematically review and meta-analyze the outcomes of conservative versus surgical treatment in management of closed mallet finger injury, regarding the pain score (based of visual analogue score), DIP extensor lag and DIP range of motion.

REVIEW OF LITERATURE

Mallet finger is a traumatic zone I lesion of the extensor tendon with either (tendinous) isolated tendon rupture or (bony) avulsion at the base of the distal phalanx (Fig. 1).

The extensor tendon is injured at its distal insertion when the joint is forced into flexion while being actively extended¹⁰⁻¹².



Figure (1): Lateral view of plain X-ray of Bony Mallet finger.¹⁰

Some authors prefer the expression drop finger, which provides a better description of the consequences of the injury¹³ or baseball finger, which describes the mechanism of injury^{14,15}.

Bony mallet fingers comprise 30% of all mallet fingers, and forced flexion and axial loading is the most common cause this injury^{16,17}.

A displaced mallet fracture may cause disruption of the extensor mechanism of DIPJ, leading to a swan neck deformity and DIP joint extensor deficit. Also, it may lead to osteoarthritis of the DIP joint, pain, and stiffness¹⁸.

Patients with mallet finger injuries report significant short-term decrease in hand function, with 25% of patients having decreased working activities for at least 6 weeks.¹⁹

Epidemiology:

Mallet finger is a common lesion, with an incidence of 5.6% of all tendinous injuries in the hand and wrist.²⁰

The most commonly affected fingers are as follow: middle finger greater than ring finger greater than index finger greater than little finger and thumb.²¹

Tendinous mallet finger is more common than bony mallet finger.²²

Globally, No gender difference is present in the affected population, although high-energy trauma is needed for the occurrence of the injury in young males and low-energy trauma in elderly females.²¹