



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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التوثيق الإلكتروني والميكرو فيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكرو فيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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The Effect of Platelet-Rich Plasma (PRP) Injection in the Treatment of Plantar Fasciopathy

Thesis

*Submitted for Partial Fulfillment of
Master Degree in Orthopedics Surgery*

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2020

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سببنا انك لا تعلم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgments

*First and foremost, I feel always indebted to **Allah** the Most Beneficent and Merciful.*

*I wish to express my deepest thanks, gratitude and appreciation to **Prof. Dr. Salah Abou-Seif**, Professor of Orthopedic Surgery, Faculty of Medicine, Ain Shams University, for his meticulous supervision, kind guidance, valuable instructions and generous help.*

*Special thanks are due to **Dr. Ahmad Saeed Aly**, Lecturer of Orthopedic Surgery, Faculty of Medicine, Ain Shams University, for his sincere efforts, fruitful encouragement.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Mohamed Tarek Hassan Amer

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List of Abbreviations

Abb.	Full term
ACD.....	Acid citrate dextrose
AOFAS.....	American orthopaedic foot and ankle society
AP.....	Anteroposterior
B mode.....	Brightness mode
C.....	Celsius
CBC.....	Complete blood count
cm.....	Centimeter
EMG.....	Electromyography
ESR.....	Erythrocyte sedimentation rate
ESWT.....	Extracorporeal shock-wave therapy
EVA.....	Ethylene vinyl acetate
FDA.....	Food and drug administration
FIG.....	Figure
GI.....	Gastrointestinal
HA.....	Hyaluronic acid
HS.....	Highly significant
in.....	Inch
IPST.....	Intracorporeal pneumatic shock treatment
IQR.....	Interquartile range
km.....	Kilometer
L-PRP.....	Leukocyte-rich platelet rich plasma
mg.....	Milligram
ML.....	Microliter
ml.....	Milliliter
mm.....	Millimeter
MRI.....	Magnetic resonance imaging
No.....	Number
NPRs.....	Numeric pain rating scale
NS.....	Non significant
NSAIDs.....	Non steroidal anti-inflammatory drugs
OA.....	Osteoarthritis
OTC.....	Over the counter

List of Abbreviations cont...

Abb.	Full term
<i>PF</i>	<i>Plantar fasciitis</i>
<i>PH</i>	<i>Potential of hydrogen</i>
<i>P-PRP</i>	<i>Pure platelet rich plasma</i>
<i>PRP</i>	<i>Platelet rich plasma</i>
<i>P-value</i>	<i>Probability value</i>
<i>RCTs</i>	<i>Randomized controlled trials</i>
<i>RF</i>	<i>Rheumatoid factor</i>
<i>S</i>	<i>Significant</i>
<i>SD</i>	<i>Standard deviation</i>
<i>SI</i>	<i>Scaroiliac</i>
<i>US</i>	<i>Ultrasound</i>
<i>VAS</i>	<i>Visual analog scale</i>
<i>WOMAC</i>	<i>Western Ontario and McMaster universities osteoarthritis index</i>

INTRODUCTION

Plantar fasciopathy is a frequent disorder involving the plantar fascia. It has a bimodal distribution and occurs in both athletes and sedentary subjects ⁽¹⁾.

Usually syndromes that involve manifestation of the typical heel pain are called plantar fasciitis, but that term is not correct, because no histological evidence of inflammation is present in this condition; the terms ‘fasciosis’ or ‘fasciopathy’ are most appropriate terms to define heel pain associated with degeneration of the plantar fascia and atrophy of the Abductor digiti minimi muscle ⁽²⁾.

Muscle, tendon, ligament, and bone recover from injury in a stepwise manner depending upon the inflammatory process. The three phases of this process include bleeding/inflammation, fibroblastic proliferation, and maturation of the differentiated cells into a mature scar. In proximal plantar fasciitis, and other enthesopathies, repetitive overload on the tissues allows for insufficient time for recovery to occur. The result is degeneration of the fibroblasts along with chronic inflammatory change. The tissues cannot properly remodel and a dense inelastic scar forms, not well suited to proper function. Growth factors play an integral role in the natural process of healing. They promote the inflammatory response allowing the completion of 1 phase and progression to the next. In phase1, bleeding into the area of injury causes

platelet aggregation then coagulation so as to prevent excessive bleeding and to release growth factors ⁽³⁾.

There is an increase in vascular permeability, initiation of angiogenesis, chemotactic migration of monocytes and macrophages, and induction of fibroblasts to synthesize collagen and extracellular matrix ⁽⁴⁾.

Type III collagen peaks after several days. Monocytes elicit an immune response, which promotes fibroblasts to proliferate over the first 7 days ⁽⁵⁾.

Collagen is deposited by the fibroblasts and this takes place for several weeks. Tissues gradually transition from cellular to fibrous. Collagen type I increases and collagen type III decreases at approximately 10 weeks and the remodeling process begins, which can last up to 2 years ⁽⁶⁾.

Platelet-rich plasma (PRP) is an autologous blood product in which the platelets have been concentrated. Several preclinical studies have shown PRP to be beneficial to tendon healing, possibly because of its anti-inflammatory property and the ability of the platelets to release several growth factors upon activation ⁽⁷⁾.

Platelets contain Alpha granules and dense granules, which carry specific growth factors and proteins. Growth factors are contained in Alpha granules ⁽³⁾.