بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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

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].