Conventional Surgery versus Endovenous Laser Ablation in Treatment of Primary Varicose Veins

Systematic Review Submitted for Partial Fulfillment of Master Degree in General Surgery

By

Mohamed Mohamed Fathi Morad Ghonium

M.B.B.Ch, Faculty of Medicine Mansoura University

Supervised by

Prof. Dr. Mahmoud Ahmed Alshafei

Professor of General Surgery
Faculty of Medicine, Ain Shams University

Prof. Dr. Shaaban Mohamed Abd Almaged

Professor of General Surgery
Faculty of Medicine, Ain Shams University

Dr. Mohamed Korayem Fattouh

Lecturer of General Surgery
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
2019


بسم الله الرحمن الرحيم
فَأَمَّا الزَّبَدُ فَيَذْهَبُ جُفَاءً وَأَمَّا مَا
يَنفَعُ النَّاسَ فَيَمْكُثُ فِي الْأَرْضِ
سورة الرعد آية (١٧)
صدق الله العظيم

Acknowledgment

*First of all, I would like to express my deep gratitude and thanks to **ALLAH,** the most merciful.*

*I had great honor that my work under the supervision of **Prof/ Mahmoud Ahmed Alshafei,** Professor of General Surgery, Ain Shams University, I would like to express my profound gratitude and sincere appreciation for his kind supervision, continuous encouragement and unlimited support in every step throughout this work.*

*I would like to express my deepest thanks and sincere appreciation to **Prof/ Shaaban Mohamed Abd Almaged,** Professor of General Surgery, Ain Shams University for his continuous support, great encouragement, great help, his patience and valuable advisement in every step throughout this work.*

*I would like also to thank **Dr/ Mohamed Korayem Fattouh,** Lecturer of general surgery, Ain Shams University for his valuable advice and encouragement throughout this work.*

Mohamed Mohamed Fathi Morad Ghonium

Dedication

Words can never express my sincere thanks to ***My Family*** *for their generous emotional support and continuous encouragement, which brought the best out of me. I owe them all every achievement throughout my life.*

I would like to express my everlasting gratitude to all ***My Professors, Colleagues and Friends****, so many of them influenced, encouraged and inspired me throughout the years. I wish them the best of all.*

List of Contents

List of Tables

List of Figures

List of Abbreviations

Abb.	Full term
ABI	*Ankle brachial index. This is synonymous with ABPI*
ABPI	*Ankle brachial pressure index*
AE	*Adverse Events*
AVVQ	*Aberdeen Varicose Vein Questionnaire.*
BMI	*Body mass index*
CEAP	*Clinical, Etiologic, Anatomic and Pathophysiologic – a system of grading the level of varicose veins with reference to the skin appearance, the cause of chronic venous insufficiency, the anatomical location of the affected veins and the pathology involved.*
CI	*Confidence Interval*
CIVIQ	*Chronic venous insufficiency questionnaire – a varicose veins-specific quality of life scale*
CVD	*chronic venous disease*
CVI	*chronic venous insufficiency*
DVI	*Deep venous insufficiency*
DVT	*Deep vein thrombosis*
EQ-5D	*EuroQol 5D – a generic quality of life assessment form*
EVLA	*Endovenous laser ablation*
EVRF	*Endovenous radiofrequency ablation*
FU	*Follow-up*
GA	*General Anaesthetic*
GSV	*Great saphenous vein*
HHD	*Hand held Doppler*
HRQL	*Health Related Quality of Life*

List of Abbreviations Cont...

Abb.	Full term
HVVSS	*Homburg Varicose Vein Severity Score. A measure of varicose vein severity based on patient reported symptoms, clinical findings and venous function/dysfunction assessed by the clinician.*
IQR	*Interquartile Range*
LA	*Laser ablation*
LASER	*Light amplification by stimulated emission of radiation*
LSV	*Long saphenous vein*
MD	*Mean difference*
MTP	*Mid-thigh perforator*
NSAIDS	*Non-steroidal anti-inflammatory drugs*
OR	*Odds ratio*
PAD	*Peripheral artery disease*
PE	*Pulmonary embolism*
PI	*Perforator Incompetence*
PIN	*Perforate invagination stripping.*
PV	*Popliteal vein*
QoL	*Quality of life*
RCT	*Randomised Controlled Trial*
RFA	*Radiofrequency ablation*
RR	*Relative risk*
SE	*Standard error*
SEPS	*Subfascial endoscopic perforator surgery*
SF-36	*Short form – 36 (a generic quality of life questionnaire)*
SFJ	*Sapheno-femoral junction*
SFV	*Sapheno-femoral vein*

List of Abbreviations Cont...

Abb.	Full term
SPJ	*Sapheno-popliteal junction*
SQOR-V	*Specific quality of life and outcome response – venous. The SQOR-V is a validated patient related quality of life outcome for Chronic Venous Disease.*
SSV	*Small saphenous vein*
UGFS	*Ultrasound Guided Foam Sclerotherapy*
VAS	*Visual Analogue Scale*
VCSS	*Venous clinical severity score*
VEINES-QOL	*Venous insufficiency epidemiological and economic study – a varicose veins-specific quality of life scale*

INTRODUCTION

References to varicose veins are found in early Egyptian and Greek writing and confirm venous disease was recognized in ancient times ***(Tully, 2017).***

Varicose veins are prominent, dilated tortuous superficial veins usually on the legs but occasionally can be found on other parts of the body such as the lower abdominal wall and perineal area. The size of varicose veins varies ranging from spider veins (telangiectasia) to large bulbous varicose veins. Telangiectasias are spider veins that often have connections with the larger reticular veins and varicose veins ***(Tan et al., 2017).***

Varicose veins are extremely common, affecting approximately 30–40% of the population to some degree. They affect men and women roughly equally although women are more likely to present to their doctor ***(Vogel, 2011).***

Varicose veins are due to defective functioning of the valves within the vein, allowing reflux of blood. They can cause symptoms of pain, ankle swelling, heaviness, and itchiness. Symptoms are often worse at the end of the day and after prolonged standing ***(Arora, 2017 a).***

Varicose veins may become more severe over time and can lead to complications such as changes in skin pigmentation, bleeding or venous ulceration. It is not known which people will develop more severe disease but it is estimated that 3–6%

of people who have varicose veins in their lifetime will develop venous ulcers ***(Tully, 2017).***

Venous insufficiency of the great saphenous vein (GSV) and/or small saphenous vein (SSV) is the most common causes of varicose veins in the lower extremities. When incompetence of saphenofemoral junction (SFJ) is detected and/or incompetence of saphenopopliteal junction (SPJ),treatment should be first directed toward eliminating this source of reflux with ablation of the incompetent venous segments ***(Boon et al., 2010).***

Duplex ultrasonography has become the gold standard imaging modality for evaluation of venous disease. It is a noninvasive test that can accurately assess all of the variables relevant to patients being evaluated for varicose veins ***(Ritchie, 2011).***

Colored Duplex ultrasonography is considered the cornerstone of varicose veins diagnosis and also can be used for interventional treatment. It is used to determine the accurate location and extent of the venous reflux and valvular incompetence ***(Werchek, 2010).***

It seems that the appearance and evolution of the disease occur due to multiple factors but mainly the modern lifestyle, characterized by sedentary, lack of exercise and obesity. Surgery is the gold standard in the treatment of varicose veins. For several decades high ligation at saphenofemoral junction

(SFJ) and stripping of the GSV was the treatment of choice in order to eradicate the diseased vein. Insufficiency of small saphenous vein (SSV) is treated in a similar way, by ligation at the saphenopopliteal junction (SPJ) and stripping. In the last years, in the era of minimally invasive surgery, new techniques in the treatment of varicose veins, such as the endovenous laser ablation (EVLA) ***(Szczeklik et al., 2015).***

Saphenous vein ligation and stripping is still the more commonly performed procedure worldwide, and it may be the preferred therapy for patients with GSVs of very large diameter (>2 cm). Complications associated with GSV stripping include ecchymosis, lymphocele formation, DVT, infection, and saphenous nerve injury ***(Desrochers, 2013).***

Aim of the Work

This review seeks to assess the role of endovenous laser ablation in comparison to conventional surgery in treatment of primary varicose veins.

Chapter 1

PRIMARY VARICOSE VEINS

In this chapter, we provide an overview on varicose veins (VV) in the lower limbs starting from the anatomy of the deep, superficial, and perforating veins in the lower extremities, risk factors for VV, pathophysiology till diagnosis and complications.

A- Anatomy of Lower Limb Veins:

I. Deep Veins:

The major deep veins of the lower extremities follow the course of the corresponding arteries. The deep venous system of the calf includes the anterior tibial, posterior tibial, and peroneal veins. In the calf, these deep veins present as pairs on both sides of the artery. The posterior tibial vein receives blood from the medial and lateral plantar vein and drains the posterior compartment of the leg and plantar surface of the foot. This vein lies behind the tibia and joins the popliteal vein at the posterior knee. The anterior tibial vein is the upward continuation of the dorsal pedal vein. It runs along the anterior compartment of the leg just above the interosseous membrane between the tibia and the fibula, and joins the posterior tibial vein to form the tibioperoneal trunk and popliteal vein. The peroneal vein runs along the posteromedial aspect of the fibula and joins the posterior tibial vein ***(Lee et al., 2017).***