

بسم الله الرحمن الرحيم



-C-02-50-2-





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرونيلم





جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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 يعيدا عن الغيار





A Prospective Randomized Study Comparing Endovenous Radiofrequency Ablation and Conventional Surgery for Primary Great Saphenous Reflux

AThesis

Submitted for partial fulfillment of MD degree in Vascular Surgery

Presented by

Yassser Mohammed Elsayed Rezk Barakat

M. B. B. Ch., M.Sc. in General Surgery

Under Supervision of

Prof. Dr. Mahmoud Sobhy Khattab

Professor of Vascular Surgery Faculty of Medicine – Ain Shams University

Prof. Dr. Sherif Mohammed Essam Eldin

Professor of Vascular Surgery
Faculty of Medicine – Ain Shams University

Prof. Dr. Mohammed Abdelmonem Rizk

Assistant Professor of Vascular Surgery Faculty of Medicine – Ain Shams University

Dr. Hamdy Abdelazeem AboElneel

Lecturer of Vascular Surgery Faculty of Medicine – Ain Shams University

> Faculty of Medicine Ain Shams University 2021



سورة البقرة الآية: ٣٢

Acknowledgment

The most pleasant part of writing a thesis is acknowledging once gratitude to all those who have helped in its completion.

I take this opportunity to express my deep sense of gratitude although I find words inadequate to express the greatness of **Prof. Dr. Mahmoud Sobhy Khattab**, Professor of Vascular Surgery, Faculty of Medicine – Ain Shams University, who has been a pillar of discipline, courage and immense kindness and who was instrumental in guiding me throughout the course of this thesis. I consider myself fortunate and privileged to work under his affectionate guidance, superb supervision and sustained support.

I would like to express my great and deep appreciation and thanks to **Prof. Dr. Sherif Mohammed Essam Eldin,** Professor of Vascular Surgery, Faculty of Medicine – Ain Shams University, who has been a constant source of inspiration to me and whose excellent guidance, day to day help and dedication paved the way for successful completion of this study.

I am extremely thankful to **Prof. Dr. Mohammed Abdelmonem Rizk,** Assistant professor of Vascular Surgery, Faculty of Medicine – Ain Shams University, for his meticulous supervision, his patience and granting me much of his time in reviewing and correcting this work.

All thanks and gratitude go to **Dr. Hamdy Abdelazeem AboElneel,** Lecturer of Vascular Surgery, Faculty of Medicine – Ain Shams University, for the efforts and time he has devoted to accomplish this work.

Last, but not the least, I can't forget to thank all members of my family, specially my Parents and my Wife, for pushing me forward in every step of my career and my life.

💆 Yasser Mohammed Elsayed Rezk Barakat

Dedication

I dedicate this work with sincere thanks and appreciation to My Parents, and my Wife, for their constant support.

🖎 Yasser Mohammed Elsayed Rezk Barakat

List of Contents

Title	Page No.
List of Abbreviations	i
List of Tables	iv
List of Figures	v
Introduction	1
Aim of the Work	7
Review of Literature	
Surgical Anatomy	8
Etiology and Pathophysiology	27
Clinical Evaluation	38
Investigations	55
Modalities of Treatment	70
Radiofrequency Ablation	81
Patients and Methods	86
Results	100
Discussion	105
Conclusion	114
Summary	115
References	
Arabic Summary	

List of Abbreviations

Abb.	Full term
AAGSV	. Anterior accessory of the GSV
	. Anterior accessory saphenous vein
	. Air plethysmography
	. American Society of Anesthesiologists
	. Accessory saphenous vein
	. Ablation Selective varicose vein ablation
	under local anaesthesia
ATCV	. Anterior thigh circumflex vein
	. Ambulatory Venous Pressure
AVVQ	. Aberdeen Varicose Vein Questionnaire
BMI	. Body Mass Index
CEAP	. Clinical class, etiologic, anatomic, and
	pathophysiological
CFV	. Common Femoral Vein
CHIVA	. Ambulatory conservative hemodynamic
	correction of venous insufficiency
	. Chronic Venous Insufficiency Questionnaire
	. Conventional surgery
	. Chronic venous disease
	. Chronic Venous Insufficiency
DF	_
	. Diabetes mellitus
	. Duplex ultrasound
	. Deep vein thrombosis
EHIT	. Endovenous-Heat Induced Thrombosis
EIV	External iliac vein
ESCHAR	. Effect of surgery and compression on healing
	and recurrence
	. Endovenous ablation
EVLA	. Endovenous laser ablation

List of Abbreviations Cont...

Abb.	Full term
FDA	Food and Drug Administration
	Foam sclerotherapy
FV	- -
GSV	. Great saphenous vein
GV	_
HIFU	. High Intensity Focused Ultrasound
HL/S	. High ligation and stripping
HTN	Hypertension
IVC	. Inferior vena cava
IVUS	.Intravascular ultrasonography
LDS	Lipodermatosclerosis
LEED	Linear Endovenous Energy Density
MF	Muscular fascia
NHP	Nottingham Health Profile
NSAIDs	Nonsteroidal anti-inflammatory drugs
OCP	Oral Contraceptive Pills
PASV	Posterior Accessory Saphenous vein
PFV	
PPG	. Photoplethysmography
PTCV	Posterior thigh circumflex vein
PTV	Preterminal valve
Pv	Perforating Veins
QoL	. Quality of life
REVATA	Recurrence of Varicose Veins after Thermal Ablation
RFA	Radiofrequency ablation
ROC	Receiver-operating characteristic curve
RVV	Recurrent varicose veins
SC	Saphenous compartment

List of Abbreviations Cont...

Abb. Full	term
SF Saphenous fa	scia
SF-36 36-Item Short	Form Health Survey
SFJ Sapheno femo	oral junction
SSV Small saphen	ous vein
SV Saphenous Ve	ein
SVT Superficial ve	in thrombosis
TV Terminal valv	ve .
UGFSUltrasound-g	uided foam sclerotherapy
VCSS Venous Clinic	al Severity Score
VDS Venous Disab	ility core
VEINES-QOL/SymVenous Insuffic	tiency Epidemiological and Economic
Study on Qualit	y of Life/Symptoms
VSDS Venous Segm	ental Disease Score
VTE Venous throm	boembolism

List of Tables

Table No.	Title Page No.
Table (1):	Causes of recurrent varicose veins (least to most common)
Table (2):	The original CEAP classification created in 1994
Table (3):	Clinical signs "C" of original CEAP40
Table (4):	Etiologic classification "E" of original CEAP 40
Table (5):	Anatomical classification "A" of original CEAP41
Table (6):	Pathophysiological classification "P" of original CEAP41
Table (7):	Subgrouping of C4 class of CEAP classification41 $$
Table (8):	Venous Clinical Severity Score44
Table (9):	$Venous\ Segmental\ Disease\ Score\ (VSDS)45$
Table (10):	Venous Disability Score (VDS)46
Table (11):	Main morphological and hemodynamic duplex ultrasound findings after endovenous ablation of a saphenous trunk
Table (12):	Proposed classification of duplex findings at the junction (J) and at the treated trunk (T) after endovenous ablation
Table (13):	Endothermal heat-induced thrombosis
	Demographic data of patients100
	Descriptive data of study patients101
	Pain score difference between both groups 101
Table (17):	Difference in the VCSS between both groups
	preoperatively and postoperatively102
Table (18):	$CIVIQ2\ question naire\ follow-up.\103$
Table (19):	Post-operative complications 103
Table (20):	Return to normal activities104
Table (21):	Recurrence rate

List of Figures

Fig. No.	Title	Page N	Vo.
Figure (1):	Relationship between fascia and v		9
Figure (2):	Planar anatomy of the veins of the limb	e lower	
Figure (3):	The great saphenous vein (GSV) a posterior accessory great saphenou (PAGSV, dotted line)	ıs vein	12
Figure (4):	Course of great saphenous vein a major tributaries		15
Figure (5):	Topography of the valves of the SF.	J	19
Figure (6):	The Giacomini vein is a commuvein between the great saphenou (GSV) and the small saphenou (SSV)	ıs vein s vein	20
Figure (7):	Hunterian perforator connects of femoral vein in mid-thigh, perforator connects GSV to femoral in lower thigh, Boyd's perforator construction of Leon posterior tibial vein while three Connects of the connec	Dodd al vein onnects ardo to ockett's	
Figure (8):	Valves in different venous segment		
Figure (9):	Ambulatory foot venous promeasurements during exercise and	ressure at rest	
	over time in the standing position		
Figure (10):	Clinical signs "C" of original CEAP		
Figure (11):	Atrophie blanche		
Figure (12):	Scar of healed ulceration		
Figure (13):	Corona phlebectatica		
Figure (14):	Eczema		
Figure (15):	Lipodermatosclerosis		50

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (16).	Pigmentation	F0
Figure (16):		
Figure (17):	Reticular veins	
Figure (18):	Telangectasia	
Figure (19):	Varicose veins	
Figure (20):	Venous ulcer	
Figure (21):	Transverse view of common femor and artery in the right groin	
Figure (22):	The saphenous eye '—a tranultrasound image of the GSV in the showing the fascial components constitute the saphenous compartments	nsverse e thigh which
Figure (23):	Thrombus extension into the CFV after	
Figure (24):	Network of large refluxing	
11guic (24).	originating from the common femor (CFV) through a residual GSV stum the incompetent terminal valve still	al vein p with
Figure (25):	Network of large refluxing originating from the common f vein in the high ablated area versidual stump or terminal valve	veins emoral vithout
Figure (26):	Colour duplex image shows reflux in T perforating vein in the popliteal fossa	ortuous
Figure (27):	Patterns of recurrent varicose postintervention.	veins
Figure (28):	A simplified overview for the diagnot treatment of chronic venous insufficient (CVI) based on pathophy mechanism. Multiple pathophy mechanisms may contribute to CVI the same patient and requirement options	sis and ficiency siologic siologic within ire a

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (29):	Endovenous thermal ablation	78
Figure (30):	VNUS® radiofrequency generator as	
	closure fast® catheter	82
Figure (31):	Stripped great saphenous vein	92
Figure (32):	Catheter was positioned just below ostium of the superficial epigastric about 1 cm below the saphenofe	e vein, emoral
	junction (SFJ).	93
Figure (33):	Intumescent injection in perisaph fascia (US guided)	
Figure (34):	Preoperative marking of super varicosities	