



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكرو فيلم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

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 بعيدا عن الغبار



MONA MAGHRABY

Systematic review & Meta-analysis of comparative study between saphenous vein and radial artery as a conduit in coronary artery bypass grafting surgery

THESIS
FOR PARTIAL FULFILMENT OF
MASTER DEGREE IN CARDIOVASCULAR SURGERY

By
Ahmed Magdy Mohamed Abd El-Salam
(M.B., B.CH.)
Faculty of medicine _ Ain Shams University

Under Supervision of
Prof. Dr. Ahmed Abdel Aziz Ibrahim Saleh

Professor of Cardiothoracic surgery
Faculty of Medicine _ Ain Shams University

Prof. Dr. Ayman Ammar
Professor of Cardiothoracic surgery
Faculty of Medicine _ Ain Shams University

Dr. Tamer Shahat Hikal
Lecturer of Cardiothoracic surgery
Faculty of Medicine _ Ain Shams University

Faculty of Medicine
Ain Shams University
2021

بسم الله الرحمن الرحيم



First and foremost I feel always indebted to ALLAH, the great creator and the source of all man's knowledge

*It is a great honor to me to express my deepest gratitude to my supervisor **Prof. Dr. Ahmed Abdel Aziz Ibrahim Saleh**, Professor of Cardiothoracic surgery _ Faculty of medicine-Ain Shams University, for his kind guidance, close supervision and constant encouragement.*

*My great thanks to **Prof. Dr. Ayman Ammar**, Professor of Cardiothoracic surgery _ Faculty of medicine-Ain Shams University, for his continuous advice, help, encouragement and supervision during this study.*

*Great thanks to **Dr. Tamer Shahat Hiaqa**, Lecturer of Cardiothoracic surgery _ Faculty of medicine-Ain Shams University, for his sincere supervision and valuable guidance.*

Also I am deeply grateful to my professors and my colleagues in the department of Cardiothoracic Surgery, Faculty of Medicine – Ain Shams University for their help and support.

Dedication

To my father for his support.

To my mother for her ultimate care. I owe her everything.

To my brothers, my lovely wife, and my dear friends: thanks for being in my life.

CONTENTS

Item	Page
Abstract	VI
List of abbreviation	VII
List of figures & supplementary figures	X
List of tables	XII
Introduction & historical background	1
Surgical anatomy & harvesting techniques	8
Methods	11
Results	15
Discussion	36
Conclusion	40
Summary	41
References	42
Appendices	50
Arabic summary	i

ABSTRACT

Background & Objectives:

The modern coronary artery surgery has developed on the foundation of testing several grafts and an attempt to standardize them, which has brought along the beginning of evidence-based cardiac surgery.

Multiple conduits are used and the golden standard is the left internal mammary artery to the left anterior descending artery. While the choice of the 2nd conduit is still controversial.

The aim of this work is to compare by Meta-analysis study the difference between Radial Artery (RA) & Saphenous vein (SV) as second conduits in CABG regarding long-term patency, mortality & morbidity.

Subjects & Methods:

In this study, we included data from 15 cohort & case matched studies involving 78,267 patients in aggregate with a mean follow-up of 8.25 years. We made pairwise meta-analyses of our outcomes using Comprehensive Meta-Analysis software (CMA version 3.9).

Results:

In our study, we found that the using of saphenous vein during CABG had a higher complete graft occlusion/stenosis rate, myocardial infarction rate, mortality rate, stroke rate, major adverse cardiac events (MACE) rate than the using of Radial artery. While the using of radial artery during CABG had a higher patency rate, percutaneous coronary intervention rate, coronary surgery repetition rate than the using of saphenous vein

Conclusion:

These results indicate that the radial artery has long-term beneficial & improving post-operative outcomes rather than the saphenous vein.

Keywords: Coronary Artery Bypass, Saphenous vein, Radial artery.

List of Abbreviations

Abb.	Full term
A	Artery
ART	Arterial Revascularization Trial
BIMA	Bilateral internal mammary artery
BITA	Bilateral internal thoracicartery
BRM	Brachioradialis muscle
CABG	Coronary artery bypass graft
CAD	Coronary artery disease
CI	Confidence intervals
CMA	Comprehensive Meta-Analysis
COPD	Chronic obstructive pulmonary disease
CVH	Conventional vein harvesting
DES	Drug eluting stents
DSWI	Deep sternal wound infection
EVH	Endoscopic vein harvesting
FCRM	Flexor carpi radialis muscle
FRIMA	Free right internal thoracic artery
GEA	Gastroepiploic artery
GSV	Great saphenous vein
HCR	Hybrid coronary revascularization
ICTRP	International Clinical Trials Registry Platform
IRR	Incident rate ratio
ISI	International Scientific Indexing
IMA	Internal mammary artery

ITA	Internal thoracic artery
LABCN	Lateral antebrachial cutaneous nerve
LAD	Left Anterior descending LIMA
	Left internal mammary artery
LITA	Left internal thoracic artery
MABG	Multiple arterial coronary artery bypass graft
MACE	Major adverse cardiac events
MI	Myocardial infarction
MIDCAB	Minimally invasive direct coronary artery bypass grafting
mRCT	metaRegister of Controlled Trials
NHLBI	National Heart, Lung, and Blood Institute
NIH	National Institutes of Health
OR	Odds ratio
PCI	Percutaneous coronary intervention
PRISMA	Preferred reporting items for systematic reviews and meta-analysis
QA	Quality assessment
RA	Radial artery
RAPCO	Radial Artery Patency and Clinical Outcomes
RCA	Right coronary artery
RCT	Randomized control trial
RIMA	Right internal mammary artery
RITA	Right internal thoracic artery
RRA	Recurrent radial artery
SABG	Single arterial coronary artery bypass graft
SBT	Standard bridging technique
SIGLE	System for Information on Grey Literature in Europe

List of Abbreviations

SPA	superficial palmar artery
SRN	superficial radial nerve
SV	Saphenous vein
SVG	Saphenous vein graft
TECAB	Totally endoscopic coronary artery bypass
US	United States
V	Vein
VHL	Virtual Health Library
Vs	Versus

List of figures & supplementary figures

Figure No.	Title	Page No.
Figure 1	Anatomic landmarks and skin incision.	14
Figure 2	Incising BRM and FCRM fascia.	14
Figure 3	PRISMA flow diagram of the search and review process	21
Figure 4	Meta-analysis for complete graft occlusion rate with radial a. vs. saphenous v. in CABG	23
Figure 5	Meta-analysis for myocardial infarction rate with radial a. vs. saphenous v. in CABG	24
Figure 6	Meta-analysis for mortality rate with radial a. vs. saphenous v. in CABG	26
Figure 7	Meta-analysis for patency rate with radial a. vs. saphenous v. in CABG	27
Figure 8	Meta-analysis for percutaneous coronary intervention rate with radial a. vs. saphenous v. in CABG	29
Figure 9	Meta-analysis for coronary surgery repetition rate with radial a. vs. saphenous v. in CABG	31
Figure 10	Meta-analysis for stroke rate with radial a. vs. saphenous v. in CABG	32
Figure 11	Meta-analysis for major adverse cardiac events rate with radial a. vs. saphenous v. in CABG	34
Supplementary Figure 1	Publication bias of complete graft occlusion rate with radial a. vs. saphenous v. in CABG	23
Supplementary Figure 2	Publication bias of myocardial infarction rate with radial a. vs. saphenous v. in CABG	25

List of figures

Supplementary Figure 3	Publication bias of mortality rate with radial a. vs. saphenous v. in CABG	26
Supplementary Figure 4	Publication bias of patency rate with radial a. vs. saphenous v. in CABG	28
Supplementary Figure 5	Publication bias of percutaneous coronary intervention rate with radial a. vs. saphenous v. in CABG	30
Supplementary Figure 6	Publication bias of coronary surgery repetition rate with radial a. vs. saphenous v. in CABG	31
Supplementary Figure 7	Publication bias of stroke rate with radial a. vs. saphenous v. in CABG	33

List of tables

Table No.	Title	Page No.
Table 1	characteristics of included studies	35