Endovascular Versus Open Surgical Reconstruction In Long Segment Superficial Femoral Artery Occlusive Disease

Thesis

Submitted for the Partial Fulfillment of the Requirements of M.Sc. Degree in General Surgery

By

Ahmed Ashraf Kamel

(M.B., B.Ch.)

Under the Supervision of

Prof. Dr. Ayman Ahmed Talaat

Professor of General surgery,
Faculty of Medicine, Ain Shams university

Dr. Ramez Mounir Wahba

Lecturer of Vascular Surgery,
Faculty of Medicine, Ain Shams university

Faculty of Medicine
Ain Shams university
2018

Acknowledgement

A research project like this is never the work of anyone alone. The contributions of many different people, in their different ways, have made this possible. First of all, I would like to thank ***ALLAH,*** *who gave me everything.*

I would like to express my sincere gratitude to my advisor ***Professor/ Ayman Ahmed Talaat,*** *Professor of General surgery, Faculty of Medicine, Ain ShamsUniversity, for his continuous support, patience, motivation and enthusiasm. I could not have imagined having a better advisor and mentor.*

I am also extremely indebted to my guide ***Dr. Ramez Mounir Wahba,*** *Lecturer of Vascular surgery, Faculty of Medicine, Ain Shams University, for offering necessary infrastructure to accomplish my research work. Without his helpful suggestions and corrections, I would never have finished my research.*

It's my fortune to gratefully acknowledge the care of all members of my family, my professors, my seniors, my colleagues and friends. Your understanding, faith, patience and support to me throughout my whole life are invaluable.

Ahmed Ashraf

سورة البقرة الآية: ٣٢

List of Contents

Title Page No.

List of Tables

List of Figures

Fig(42)	2 Angiographic pictures show total occlusion distal part of left SFA
Fig(43)	2 Angiographic pictures show Ballon dilatation of left SFA of the same case
Fig(44)	2 Angiographic pictures show good filling of left SFA after Ballon dilatation of the same case
Fig(45)	2 Angiographic pictures multiple stenoses of right SFA & Popliteal arteries
Fig(46)	Angiographic picture shows Ballon dilatation
Fig(47)	Angiographic picture stent deployment
Fig(48)	2 Angiographic pictures show good filling of right SFA after Ballon dilatation and stenting of the same case
Fig(49)	2 Angiographic pictures show total occlusion of left SFA
Fig(50)	2 Angiographic pictures show Ballon dilatation of left SFA of the same case
Fig(51)	Angiographic picture show stent deployment
Fig(52)	Angiographic picture shows filling of SFA after 2 stent deployment

List of Abbreviations

ABI	=	Ankle-brachial index
ACC/AHA	=	American college of cardiology/American heart association.
ACE	=	Angiotensin converting enzyme.
CABG	=	Coronary artery bypass graft
CAD	=	Coronary artery disease
CB	=	Cutting balloon
CFA	=	Common femoral artery
CHD	=	Coronary heart disease
CL	=	Crossed leg
CLI	=	Chritical limb ischemia
CRF	=	Chronic renal failure
CRP	=	C-reactive protein
CTA	=	Computed tomography angiography
CTO	=	Chronic total occlusion
DBP	=	Diastolic blood pressure
DSA	=	Digital subtraction angiography
ESRD	=	End stage renal disease
FDA	=	Food and drug association
HDL	=	High density lipoprotein
HERS	=	Heart Estrogen Progesterone replacement
IDL	=	Intermediate density lipoprotein
ISR	=	In stent restenosis
IVUS	=	Intravascular ultrasound
LDL	=	Low density lipoprotein
LE	=	Lower extremity
LMWH	=	Low molecular weight heparin
IC	=	Intermittent claudication
MRA	=	Magnetic resonance angiography
NCEP	=	National cholesterol education programme
NICE	=	National institute of clinical evidence
NSF	=	Nephrogenic systemic fibrosis
PAD	=	Peripheral arterial disease
PAOD	=	Peripheral arterial occlusive disease

PFA	=	Profundafemoris artery
PFCI	=	Profunda popliteal collateral index
PP	=	Pulse pressure
PVR	=	Pulse volume recording
PTA	=	Percutaneous transluminal angioplasty
PTFE	=	Polytetrafluoroethylene
RSEFA	=	Remote superficial femoral endarterectomy
SBP	=	Systolic blood pressure
SFA	=	Superficial femoral artery
SIA	=	Subintimal angioplasty
SL	=	Straight leg
SMC	=	Smooth muscle cells
SVS	=	Society of vascular surgery
TASC	=	Trans-Atlantic inter-society consensus
VLDL	=	Very low density lipoprotein
WIFI	=	Wound infection foot ischemia

AIM OF THE WORK

The aim of the work is to compare the safety and effectiveness of endovascular treatment versus open surgical bypass in treatment of superficial femoral artey occlusive disease.

Chapter 1

SFA ANATOMICAL AND PATHOPHYSIOLOGICAL CHARACTERISTICS

Surgical and Radiological Anatomy of L.L. Arteries:

The common femoral artery (CFA) is the continuation of the external iliac artery after it passes beneath the inguinal ligament. The common femoral artery gives rise to the superficial circumflex iliac artery and the pudendal branches. The common femoral artery then bifurcates into the superficial femoral artery and the profunda femoris. The femoral profunda artery comes off posterolaterally, and thus the femoral bifurcation is best seen angiographically with a 30° ipsilateral anterior oblique view. The superficial femoral artery courses along the medial aspect of the thigh and continues on as the popliteal artery when it exits the adductor canal via the adductor hiatus. Prior to passing through the adductor canal, it gives rise to the superior genicular artery. It provides the superior, middle, and inferior genicular arteries which have anastomoses with genicular branches from the superficial femoral and femoral profunda arteries **(Figures 1 and 2)** ***(Gray et al., 2007).***

The popliteal artery continues below the knee until it bifurcates into the anterior tibial (lateral takeoff) and tibioperoneal trunk, which subsequently bifurcates into the peroneal artery and the posterior tibial artery, which is the most medial artery **(Figures 1, 2 and 3)** ***(Gray et al., 2007).***

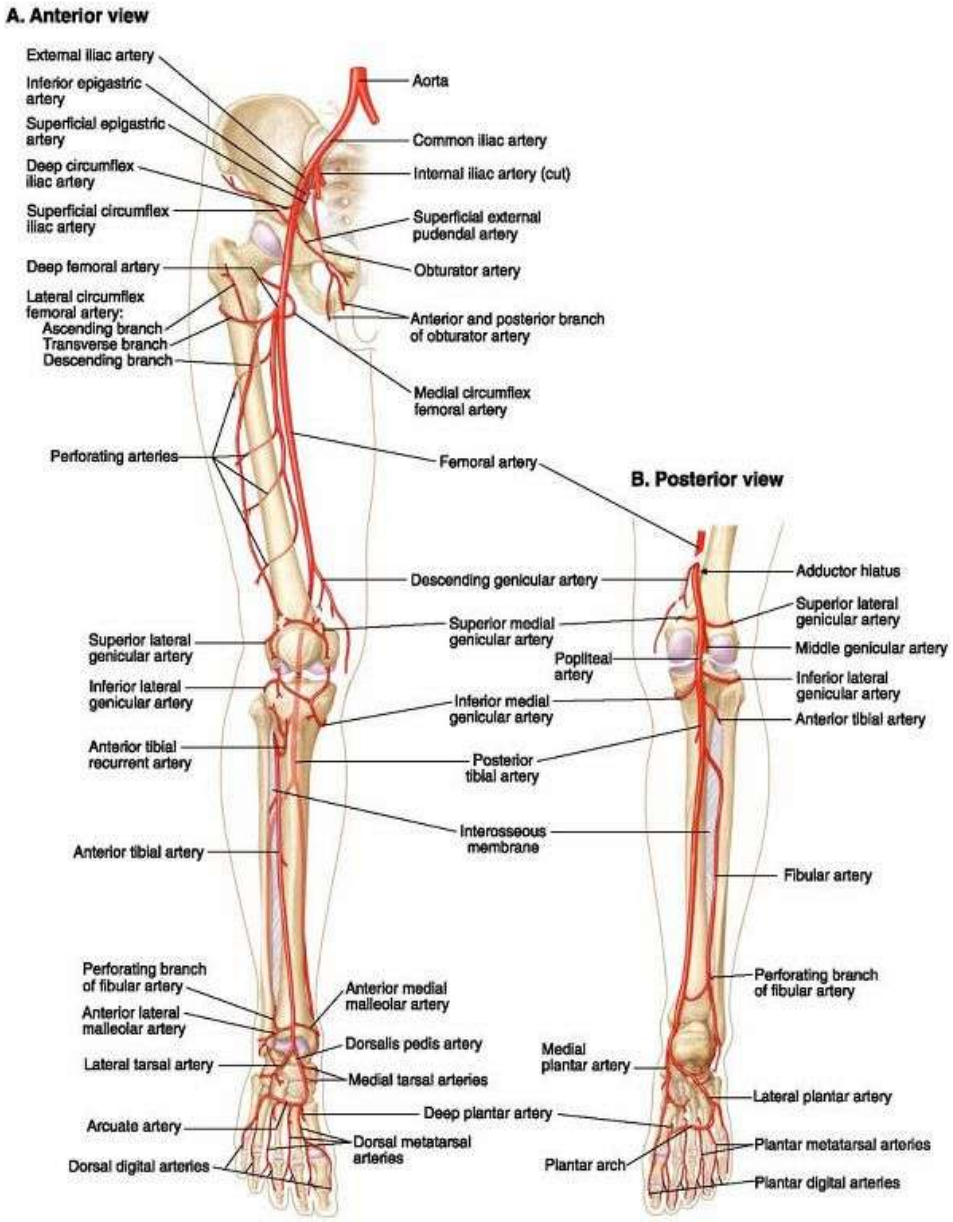

Fig. (1): Detailed anatomy of lower limb arteries ***(Patric et al., 2009).***

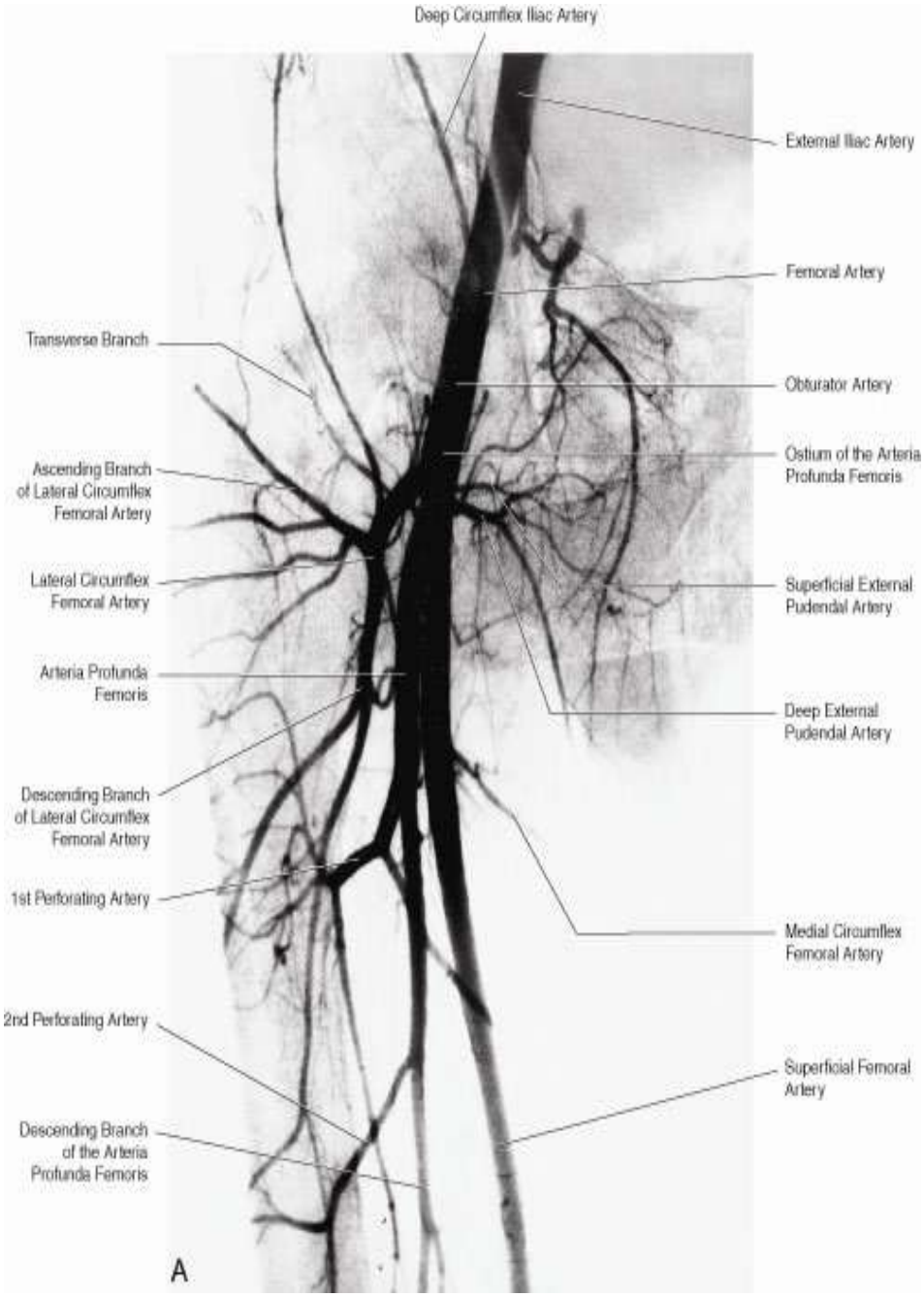

Fig. (2): Angiogram of femoral artery and its main branches ***(Renan, 2007).***

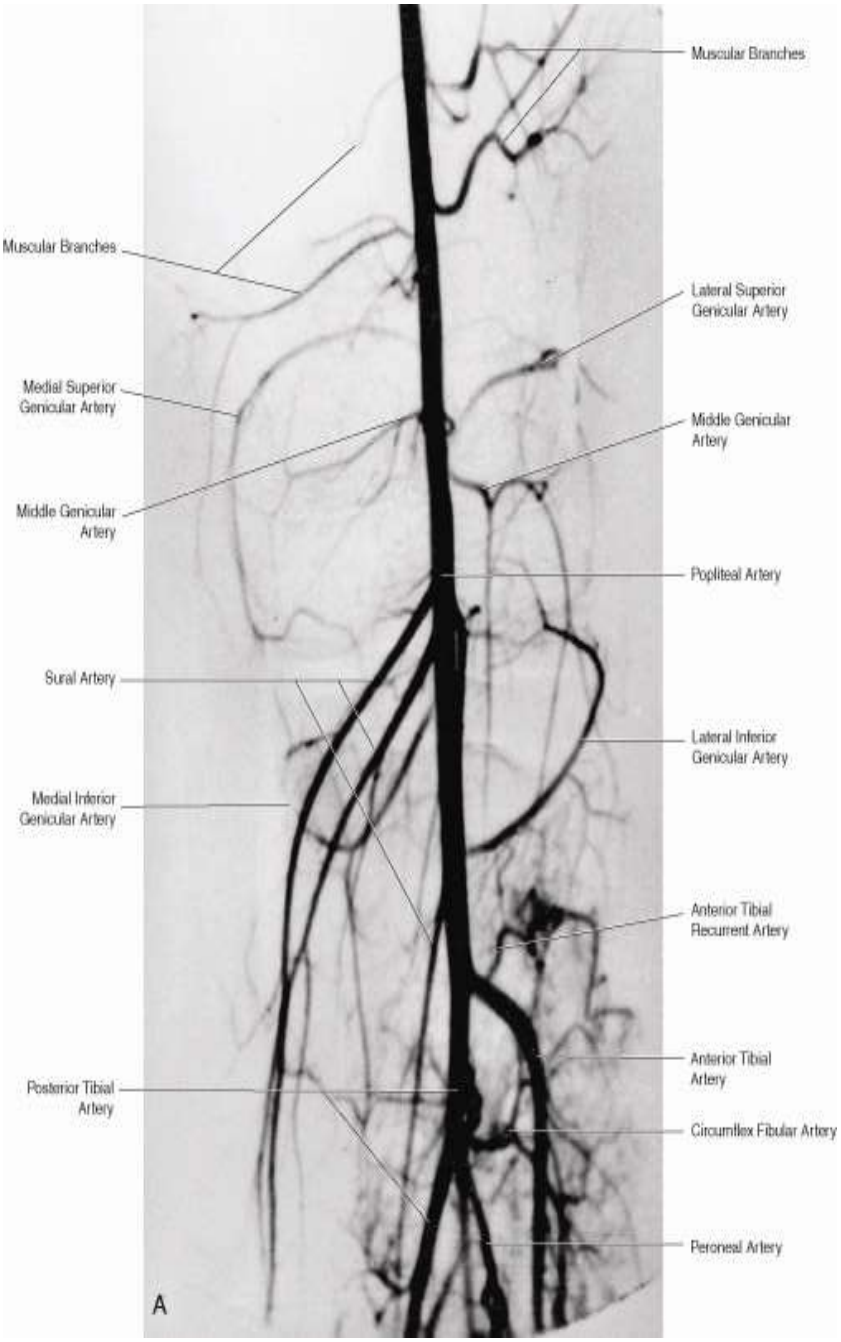

Fig. (3): Angiogram of popliteal artery and its main branches ***(Renan, 2007).***