Vascular anomalies of the extremities: an update

A protocol submitted for fulfillment of master's degree in general surgery

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List of Abbreviations

AP	Antero-posterior
AT	Anterior tibial
AVFs	Arterio-venous fistulas
AVM	Arterio-venous malformation
bFGF	Basic fibroblast growth factor
CAVMs	Capillary arterio-venous malformation
CD	Cluster of differentiation
CFA	Commom femoral artery
CH	Congenital hemangioma
CIA	Common iliac artery
CLVM	Capillary-lymphatic-venous malformation
CMs	Capillary malformations
CT	Computed tomography
CTA	Computed tomography angiography
CVM	Congenital vascular malformation
DSA	Digital subtraction angiography
EIA	External iliac artery
GLUT1	Glucose transporter 1
IFN	Interferon
IH	Infantile hemangioma
IIA	Internal iliac artery
KHE	Kaposiform hemangioendothelioma
LIC	localized intravascular coagulopathy
LMs	Lymphatic malformations
LSV	Long saphenous vein
LVMs	Lymphatic venous malformations
MRA	Magnetic resonance angiography
MRI	Magnetic resonance image
NBCA	N-butyl cyanoacrylate
Nd:YAG	Neodymium-.yttrium aluminum garnet
PA	Popliteal artery
PeA	peroneal artery
PFA	Profunda femoral artery
PG	Pyogenic granuloma

PT	Posterior tibial
PTA	Posterior tibial artery
SA	Subclavian artery
SFA	Superficial femoral artery
SSV	Short saphenous vein
TLPS	Transarterial lung perfusion scintigraphy
VEGF	Vascular endothelial growth factor
VMs	Vascular malformations
VMs	Venous malformations
WBBPS	whole-body blood pool scintigraphy

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Aim of the work

This study is designed to understand the nature, the course, the pathology, how to diagnose, and how to treat the vascular malformations of the extremities.

Introduction

There have been few areas in medicine in which so much confusion and controversy have existed than in the field of vascular malformation ***(Rohrich & Spicer, 1986).***

Vascular malformations occur as a result of an arrest in the development of the vascular system ***(Gloviczki et al., 2009).***

Vascular malformations are congenital errors in vascular morphogenesis. They are categorized by the nature of their predominant vascular channels. Some are clinically apparent at birth, but other types appear later, usually by the fourth decade. Because of the late appearance, they are often called “acquired lesions,” but in fact, they most likely develop from a dormant analog, present since birth ***(Fishman & Mulliken, 1998).***

Vascular malformations and hemangiomas can cause significant morbidity and even mortality in both

children and adults. For a number of reasons, physicians often confuse these lesions. The nomenclature for classifying these lesions is often used interchangeably and inappropriately ***(Donnelly et al., 2000).***

Vascular anomalies are among the most common congenital abnormalities in infants and children. Historically, the treatment of these lesions has been impeded by confusing terminology and lack of a precise classification system. Lesions were named with descriptive terms such as strawberry hemangioma or port-wine stain or histopathologic terms such as capillary hemangioma, cavernous hemangioma, or lymphangioma *(**Mulliken et al., 2000).***

The management of vascular anomalies is a dynamic and rapidly developing subspecialty, which requires interdisciplinary care and collaboration ***(Al-Adnani et al., 2006).***

With greater understanding of classification and diagnosis, as well as with the numerous areas of research bringing further awareness on the complexity of these lesions, we are improving our ability to treat them ***(Buckmiller & Lisa , 2004).***

Many new developments in the basic science of these lesions are allowing better understanding of why these lesions occur while improving our management in these patients ***(Buckmiller & Lisa, 2004).***

So, we try in this work to uncover the hidden areas in vascular malformations of extremities and their management.

Aim of the work

This study is designed to understand the nature, the course, the pathology, how to diagnose, and how to treat the vascular malformations of the extremities.

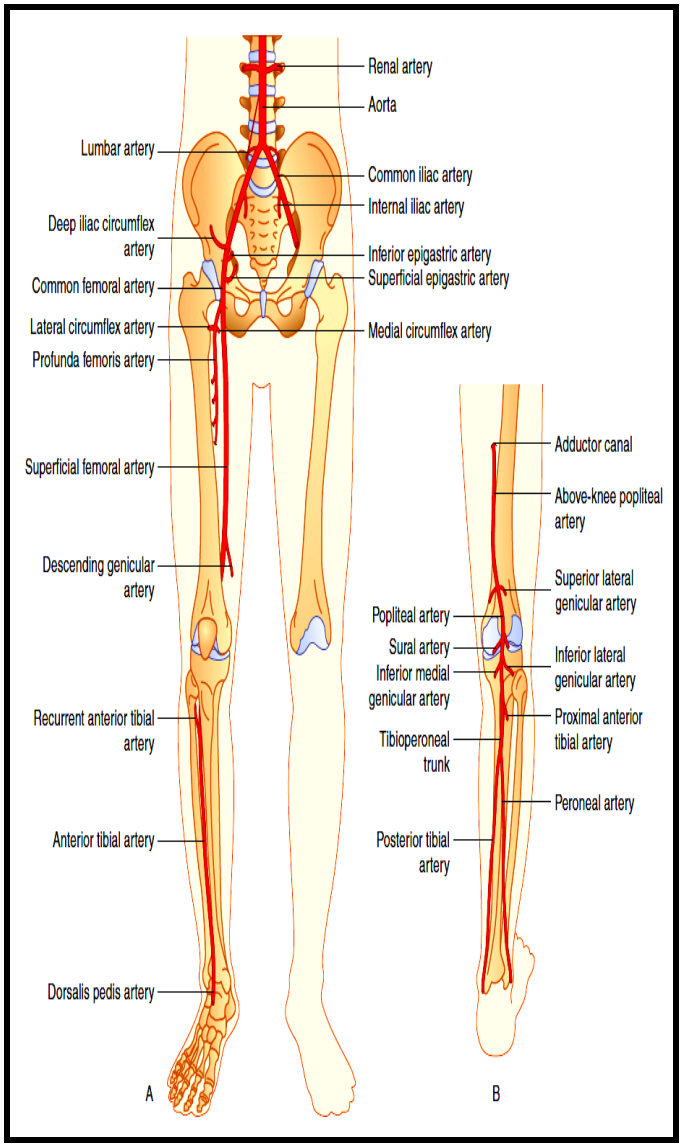
Gross anatomy

ANATOMY OF THE LOWER LIMB ARTERIAL SYSTEM

The aorta lies slightly to the left of the midline in the abdomen, and its bifurcation is located at the level of the fourth lumbar vertebra in the region of the umbilicus. The aorta divides into the left and right common iliac arteries (CIA) at the aortic bifurcation ***(Thrush & Hartshorne, 2005).***

The CIA divides into the external and internal iliac arteries at the iliac bifurcation, which lies deep in the pelvis ***(Thrush & Hartshorne, 2005).***

The external iliac artery varies in length (6–12 cm) and gives off the deep circumflex iliac artery and inferior epigastric artery, before becoming the common femoral artery (CFA) at the level of the inguinal ligament**.**The CFA divides into the deep femoral artery, also known as the profunda femoris artery, and the superficial femoral artery (SFA) at the level of the groin. The SFA follows a medial course down the thigh, becoming the popliteal artery at the level of the adductor canal above the knee ***(Thrush & Hartshorne, 2005).***



(Fig. 1)

(Arterial system of the lower limb)

(Quoted fromThrush & Hartshorne, 2005).