# EARLY DIAGNOSIS AND TREATMENT OF DEEP VENOUS THROMBOSIS OF LOWER LIMB

AN ESSAY
SUBMITTED FOR PARTIAL FULFILMENT
OF M.S. DEGREE IN
GENERAL SURGERY.

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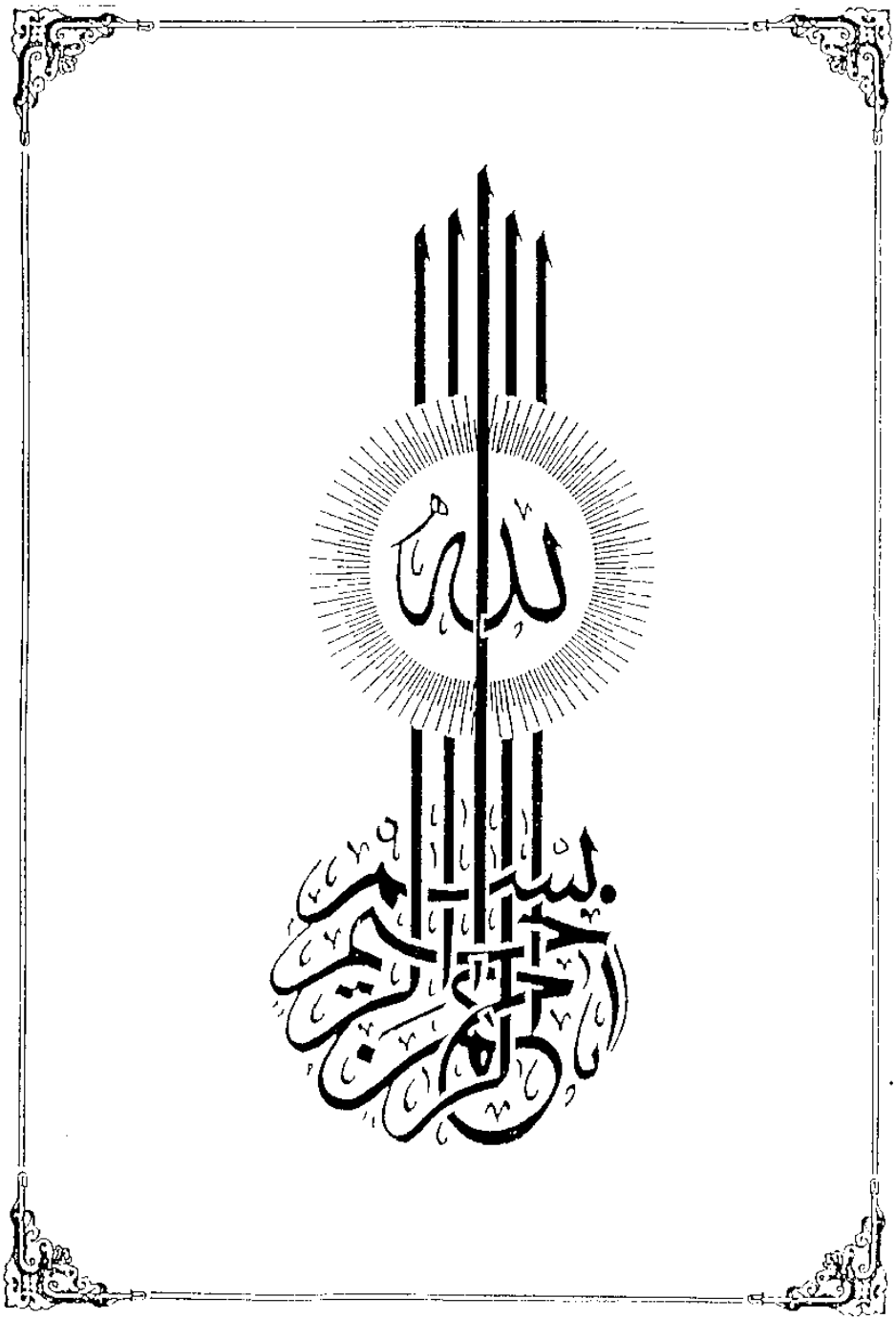
" بسم الله الرحمن الرحـــيم "

" وقل أعملوا فسيرى الله عملكم ورسوله والمؤمنـــــون "

" صدق الله العظـيم "



To MY FATHER AND MOTHER

Aknowledgement

It is a great pleasure to express my sincer thanks and gratitude to Prof. Dr. Ali Tashine Prof. of general surgery. Ain Shams University. He has chosen this subject and greatly influenced every detail by his enthusiastic guidance, innovation and construction criticism.

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# INTRODUCTION

Introduction

Venous thrombosis and its sequelae are among the most challenging , least understood , and neglected problems in medicine . The clinical diagnosis of these disorders is difficult, and their prevention and long - term treatment are unsatisfactory and subject of considerable controversy. There are two serious complications of venous thrombosis: Pulmonary embolism and post thrombotic syndrome, the former associated with significant mortality and the latter with protracted morbidity and consequent substantial economic loss. It is estimated that, in the United States, more than, 100,000 (Coon, 1979) patients die annually from pulmonary embolism. The autopsy incidence of venous thromboembolism as the major cause of death during the last decade has not changed significantly from that of the two previous decades, despite the advent of modern diagnostic aids and therapeutic modalities . ( Moore, 1984 )

Deep vein thrombosis (DVT) developing in the postoperative period is a common complication in patients over the age of 40 years who undergo elective major surgery . It is estimated that the incidence ranges between 25 and 50 percent in the various studies reported in the world literature. It is higher in older patients, particularly those over the age of 60 , who have malignant neoplasms and who undergo surgical procedures of several hours duration .

( Di Serio and Sasahara , 1985 )

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# ANATOMY OF VEINS OF LOWER LIMB.

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THE HEEL

Beneath the skin of the heel there is a considerable venous plexus which communicates by many small channels with the deep and superficial veins of the sole, and with the dorsal and planter cutaneous veins . Fig 1 ( Dodd and Cockett, 1976 )

THE LONG OR INTERNAL SAPHENOUS VEIN .

It is formed by the union of veins from the inner part of foot and the medial marginal vein and runs upward for 1 to 1.5 inches in front of the medial malleolus of the tibia. It ascends the anterointernal part of the leg and thigh to end in the common femoral vein, at the groin by going through the foramen ovale , an opening in the deep fascia .

At the ankle the position of the long saphenous vein is fairly constant lying between the anterior border of the medial malleolus and the tendon of tibialis anterior . It extends obliquely backward over the subcutaneous medial surface of the lower fourth of the tibia and along the medial border of the medial condyle of the femur and over the posteromedial aspect of the knee. From here it climbs slightly forwards upon the anterointernal aspect of the thigh and into the foramen ovale to join the common femoral vein. ( Dodd and Cockett 1976 )

TRIBUTARIES AND COMMUNICATIONS OF THE LONG SAPHENOUS VEIN .

Below the ankle this vein is fed by the medial marginal vein

In the leg there is a small constant connection between the long saphenous vein and the upper of the three internal ankle perforating veins, and there may be one or two small tributaries from the anterior aspect of the leg joining it in the lower third. Occasionally there is a small connection with the venous arch joining the internal ankle perforating veins. There is a free anastomosis between a tributary or tributaries

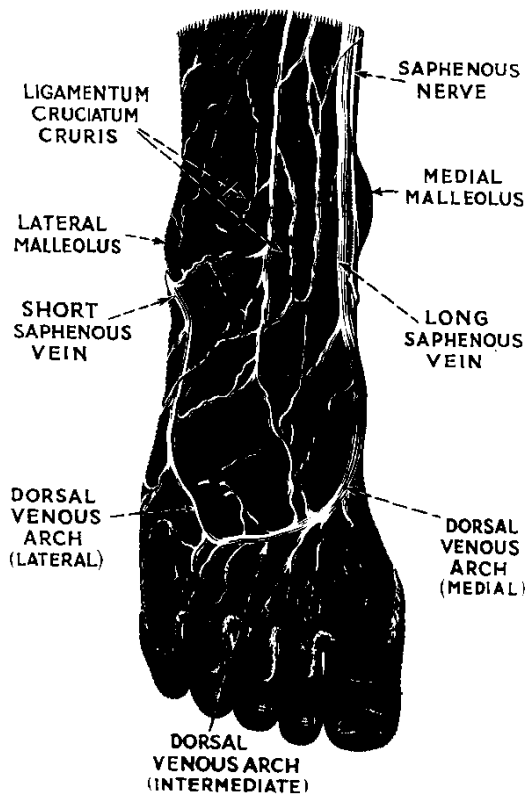


Fig 1 : Venous drainage of foot and ankle . Quoted from Dodd and Cockett , 1976

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of the short saphenous vein and the venous arch connecting the internal ankle perforating vein by a vein running behind the tendoachilles .

Around the knee, no constant major tributary below the knee but at the knee level the long saphenous vein receives three large groups of vessels. These are.

1- a calf group: drains the calf posteriorly and connects with the short saphenous system.

2- An anterior vein of the leg which joins the long saphenous vein below the knee.

3- The posterior arch vein : arises behind the medial malleolus and is formed by the union of the venous arches which connect the three ankle perforating veins. It joins the long spahenous vein at the inner aspect of the knee.

The posterior arch vein is of historical interest as it was depicted accurately by leonardo da Vinci in one of his anatomical drawing and is often called leonardo's vein .

In the thigh several small tributaries are received but the two largest are the posteromedial and anterolateral veins which join it close to its termination .

The posteromedial vein is formed by a small vein which arises from the short saphenous vein just before it enters the popliteal vein in the popliteal fossa. It joins the long saphenous vein between its upper third and its termination .

The anterolateral vein arises from small veins on the outer side of the leg and joins the long saphenous vein in its terminal few centimeters

In the middle or lower third of the thigh the long saphenous vein or one of its tributaries connects with the femoral vein in Hunter's canal by a rather long perforating vein .

The superficial and deep external pudendal veins drain the perineum,

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upper inner thigh and external genitalia, running horizontally outwards from these areas .

Superficial epigastric vein passes vertically down from the subcutaneous tissue of the lower and central abdominal wall to enter the termination of the long saphenous vein .

The superficial circumflex iliac vein drains the superficial tissue of the upper and outer aspects of the thigh and the lower and outer quadrant of the abdomen. It usually joins the termination of the long saphenous vein at the fossa ovalis but it may drain into the superficial epigastric or anterolateral vein of the thigh Fig 2 and 3. ( Dodd and Cockett; 1976 )

THE SHORT SAPHENOUS VEIN .

It arises at the outer border of the foot behind the lateral malleolus of the ankle . It is formed by the union of the lateral marginal vein with numerous small veins draining the outer side of the heel . It passes upwards between the tendo- achilles and the posterior edge of the lateral malleolus. Two inches above the tip of the malleolus , the short saphenous vein is just lateral to the tendo- achilles, and from there it ascends straight up the centre of the calf to the popliteal fossa . About an inch above the transverse skin crease behind the knee it turns deeply to join the popliteal vein, but this level varies considerably from 1 inch below the skin crease to 4 inches above it .

Just before it ends it gives off a vein which ascends subfascially to the inner side of the thigh to join the long saphenous vein either directly or by way of its calf group of tributaries. ( Dodd and Cockett 1976 )

TRIBUTARIES OF THE SHORT SAPHENOUS VEIN.

The short saphenous vein chiefly drains the lateral aspect of the heel and foot , but there are several communicating veins passing medially in the subcutaneous tissue over the tendo- achilles to join the

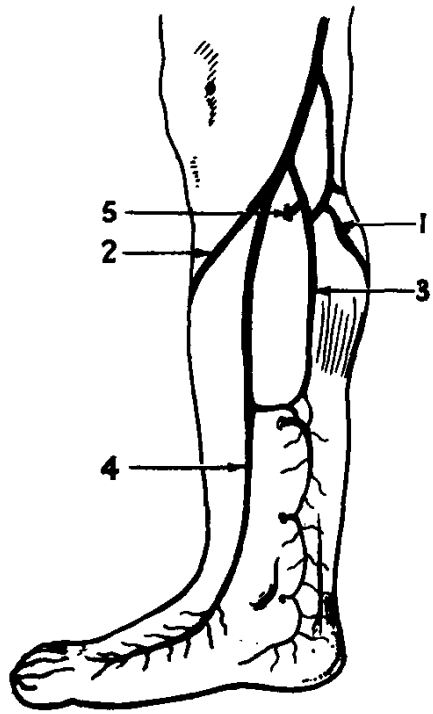


Fig 2 The tributaries at or about knee level.-1- the Connection with the ext . saph- vein. 2- A tributary from the anterior surface of the leg. 3- The posterior arch tributary which also links the three internal ankle perforating veins.4- The internal saph . vein 5- A constant direct communicating vein . Quoted from Dodd and cockett. 1976.

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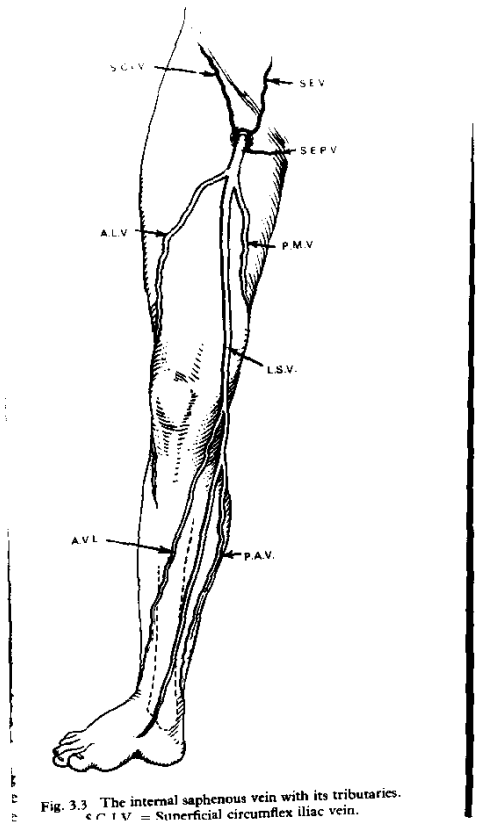


Fig. 3.3 The internal saphenous vein with its tributaries.
S.C.I.V. = Superficial circumflex iliac vein.

Fig 3 . The internal saph . vein with its tributaries

S.C.I.V= Superficial circumflex iliac vein

S.E.V. = Superficial epigastric vein

S.E.P.V= Superficial ext . pudendal vein.

P.M.V.= Postero- medial vein

L.S.V.= long saph . vein

P.A.V = Posterior arch vein

A.V.L.= Anterior vein of leg

A.L.V.= Antero lateral vein of thigh.

Quoted from Dodd and Cockett 1976

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