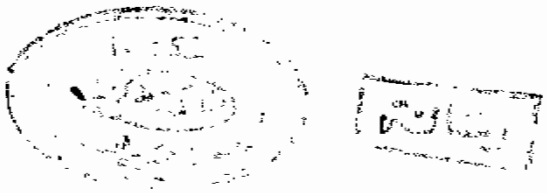
RECURRENT VARICOSE VEINS OF THE LOWER LIMBS

THESIS

Submitted in Partial Fulfilment of the Degree
of Master of Surgery



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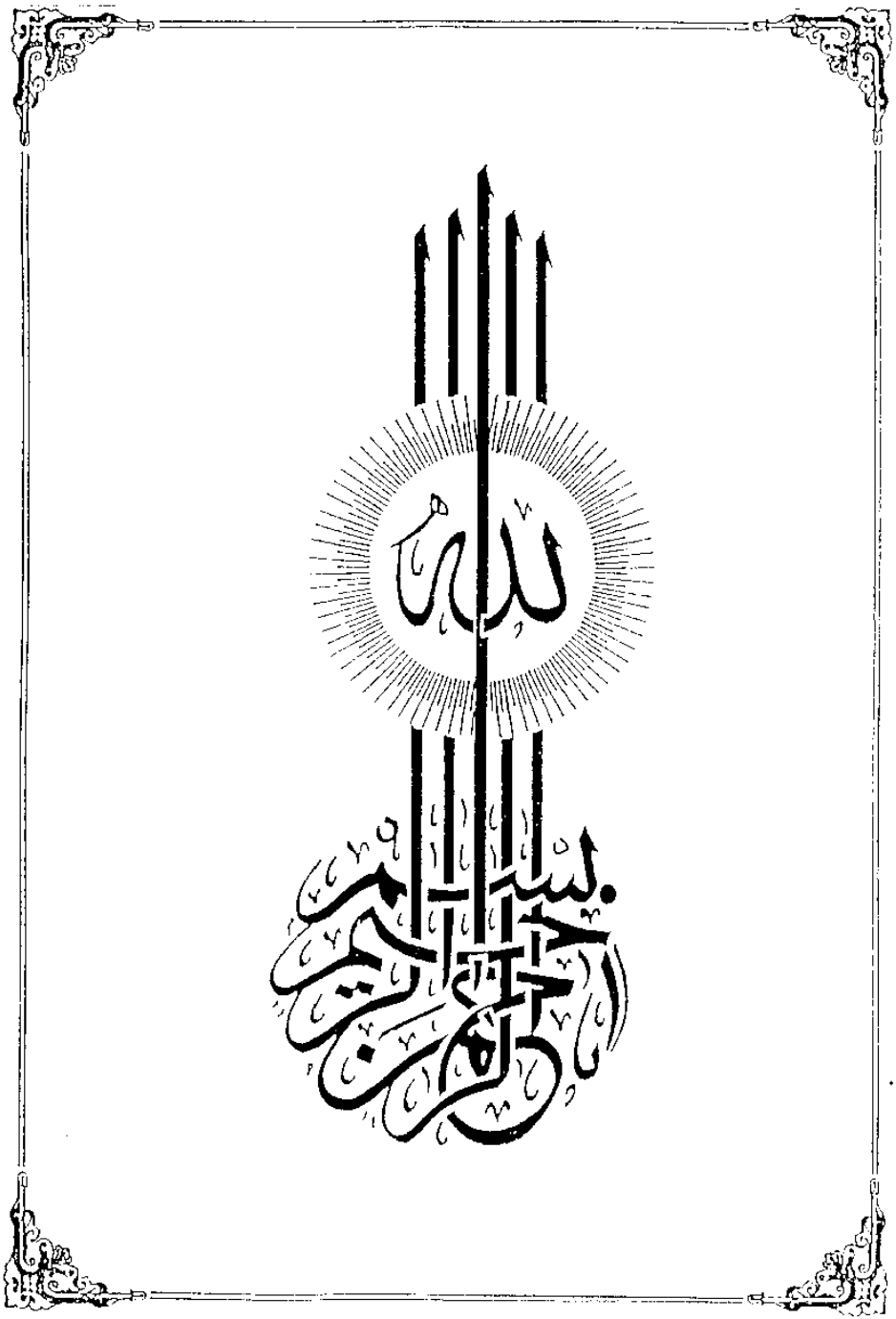

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INTRODUCTION

Veins are stated to be varicose when they are dilated, tortuous and elongated.

This condition occurs in many sites of the body but common in the lower limbs as the penalty we pay for the adoption of the erect posture.

The main problem met with in varicose veins is the relatively high incidence of recurrence. The recurrence of varicose veins of the lower limbs after surgical treatment continues to be a problem of great magnitude and concern to the surgeon and the patient alike (Lofgren, 1978).

Lofgren in 1971 pointed out that from 20 to 26% have major recurrence of varicose veins of the lower limbs after previous surgery which leads to the same and even more aggressive symptoms and signs.

Sometimes, the complications of varicose veins is not limited to the recurrence, but to further complications in the form of thrombophlebitis, venous ulcers, venous eczema, haemorrhage ect.

We are going to study in this thesis the main aetiological factors that may participate in the recurrence of varicose veins in the lower limbs in order to try to avoid them in the future.

To fulfil a proper treatment of such a condition one must have a full detailed knowledge of the anatomy and anatomical variations of such veins.

At the same time one must have a knowledge of the different modes of surgical treatment the different operations and their results.

Re-exploration operation for the recurrent varicose veins is one of the most testing operations of surgery and requires a good deal of experience and operative skill (Dodd & Cockett, 1976).

This work will try to discuss the problem of recurrent varicose veins, with its accepted lines of treatment.

The random sampling of 20 cases diagnosed as recurrent varicose veins will be the subject of this thesis.

The Surgical anatomy of the veins of the lower limb

The veins of the lower limb will be considered under the following headings:

I- The structure of the vein wall.

II- The peripheral veins.

I- Structure of the vein wall.

The wall of the veins are composed of three coats, the adventitia, the media and the intima.

1) The adventitia, consists mainly of collagen fibres largely longitudinal. In the larger veins it contains bundles of longitudinal smooth muscle, it contains the vasa vasorium and sympathetic nerve fibrils.

2) The media, in venules it is thin and composed almost of smooth muscle. In the small and medium sized veins it consists of connective tissue with smooth muscle fibres usually arranged circumferentially but sometimes longitudinal in the inner most part. Muscle fibres are well developed in the long and short saphenous, so they have considerable contractile power. The media is less well developed in the smaller tributaries of these veins, so they are more liable to dilate and varicose in response to sustained high intramuscular pressure.

3) The intima consists of endothelial cells which, in the medium sized and large veins, is supported on a subendothelial layer of connective tissue.

II- The peripheral veins.

They are considered under four headings:

A) The superficial veins.

B) The deep veins.

C) The perforating veins.

D) The valves.

A- <u>The superficial venous system</u>:

The superficial veins lie in the subcutaneous fat where they are observable in three strata.

First stratum contains the thin walled subcuticular veins which form a considerable plexus under the skin. In varicosis venules in the skin become visible. These venules join to make a network of larger subcutaneous veins of moderate size which form most of the prominent superficial varices following incompetence of the main trunks.

The third stratum consists of the saphenous veins which lie on the deep fascia.

<u>The superficial veins of the foot</u>:

Each toe has four digital veins, two dorsal and two plantar. The dorsal digital veins join in the toe

clefts to form the dorsal metatarsal veins which unite to form a dorsal venous arch. The dorsal arch is liked with medial and lateral marginal veins which run along the inner and outer borders of the foat.

Ultimately, the medial part of the dorsal venous arch is continued upwards as the long saphenous vein.

The lateral marginal vein communicates with the short saphenous vein by way of venous plexus behind and below the lateral malleolus.

The plantar digital veins form the four deep metatarsal veins which run between the metatarsal bones and unite to form the deep planter venous arch.

The dorsal and plantar digital and metatarsal vein communicate with each other freely at the roots of the toes between the metatarsal bones.

The plantar digital veins also communicate with the adjacent superficial veins in the sole of the foat to form a plantar subcutaneous venous arch which has numerous connections backwards to the veins of the heel and by twigs to the lateral and medial marginal veins.

Beneath the skin of the heel there is a considerable venous plexus which communicate by many small channels with the deep and superficial veins of sole and with the dorsal and planter cutaneous veins.

There are numerous perforating veins in the foat connecting the superficial veins with the deep veins. They drain the dorsum of the foat to the saphenous veins and the plantar surface to the posterior tibial veins (Fegan and Pegum 1968).

The long saphenous vein:

The long saphenous vein is the longest vein in the body. It is formed by the union of veins from the inner part of the foat and the medial marginal vein and runs upwards for 1 to 1.5 inches in front of the medial malleolus of the tibia. It ascends the antero-internal part of the leg and thigh to end in the common femoral vein at the groin by going through the foramen anale which is an opening in the deep fascia. At the ovale it is lying in the groove between the anterior border of the medial malleolus and the tendon of tibilis anterior. It extends obliquely backwards over the sub-cutaneous medial surface of the lower fourth of the tibia and along the medial border of this to the medial condyle of the femur and over the posteromedial aspect of the knee.

Then it climbs slightly forwards upon the antero-internal aspect of the thigh and into the foramen ovale to join the common femoral vein. It is occasionally

duplicated from the knee to the groin. In the lower two thirds of the leg and in the upper two thirds of the thigh the vein lies on and is closely applied to the deep fascia. As it crosses the knee joint it becomes more superficial and is often subcuticular. There are some structures that accompaning the long saphenous vein.

In the foat and leg the saphenous nerve gives off its infrapatellar branch to supply the subcutaneous periosteum of the upper end of the tibia and the overlying skin and then descends with the great saphenous vein, with which it passes in front of the medial malleolus. It ends on the medial side of the foat at the metatarsophalangeal joint. Halfway down the skin the nerve usually divides into equal halves which lie on either side of the saphenous vein for the rest of their course.

At the knee the saphenous branch of the descending genicular artery accompanies it. In the thigh twigs of the medial femoral cutaneous nerve run close to the vein.

The long saphenous vein accompanied by lymphatic trunks draining the dorsum of the foat and the anterior and medial aspects of the leg and thigh which end in the superficial group of inguinal lymph nodes.

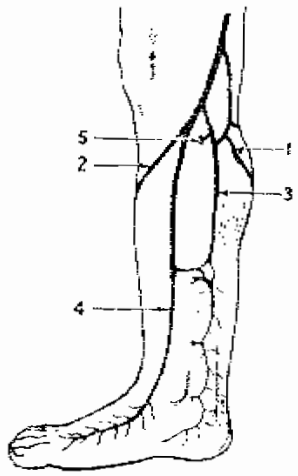

Fig 1 The tributaries at about knee level. 1. The communicating vein with the external saphenous vein. 2. A tributary from the anterior surface of the leg. 3. The posterior arch tributary which also links the three internal ankle perforating veins. 4. The internal saphenous vein. 5. A constant direct communicating vein.

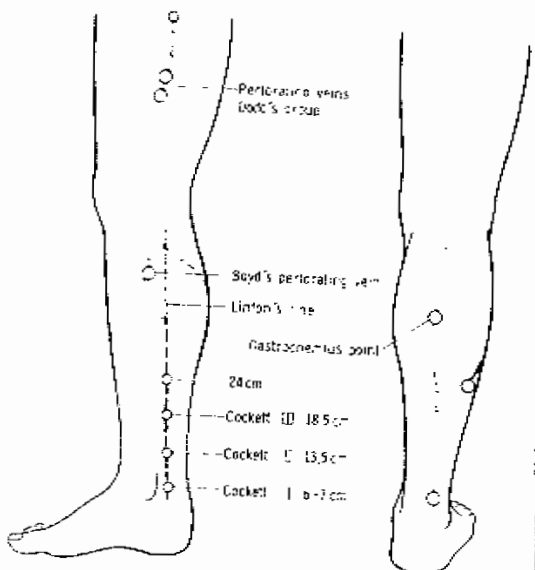

Fig 3 Diagram of the most important perforating veins

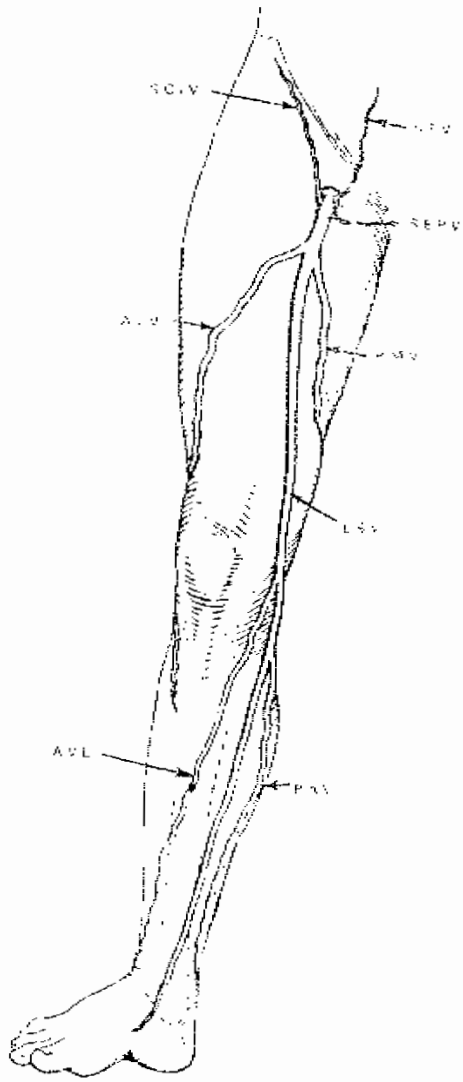

Fig 2 The internal saphenous vein with its tributaries
S.C.I.V. – Superficial circumflex iliac vein
S.E.P.V. – Superficial epigastric vein.
S.E.P.A.V. – Superficial external pudic vein.
P.A.V. – Postero-medial vein
L.S.V. – Long saphenous vein
P.A.S. – Posterior arch vein
A.V.L. – Antero-lateral vein of leg
A.L.V. – Antero-lateral vein of thigh.

Tributaries of the long saphenous vein:

a) Below the ankle it is fed by the medial marginal vein whose tributaries have already been described.

b) In the leg

The posterior arch vein is formed by the union of the venous arches which connect the three internal ankle perforating veins.

Above the upper internal ankle perforating veins, the posterior arch vein passes up the medial surface of the leg to join the long saphenous vein at the inner aspect of the knee. Just below this junction, the posterior arch vein connects with the calf group of veins and thereafter with the short saphenous vein. So the long and short saphenous veins are connected in the lower third of the leg.

c) Around the knee:

It usually receives three groups of vessels, these are:

1) A calf group which drain an area of the calf posteriorly. These veins connect with the short saphenous system behind the knee joint.

2) An anterior vein of the leg, which winds up diagonally from the dorsum of the foat, ankle and anterior surface of the leg to join below the knee.

3) The posterior arch vein, which arises behind the medial malleolus of the ankle. It is large and constant and formed by the union of the venous arches which connects the three ankle perforating veins. It joins the long saphenous vein at the inner aspect of the knee and it connects with the calf group of veins, so indirectly with the short saphenous system. At the same level there is a perforating vein that joins it to the posterior tibial vein.

d) In the thigh, many tributaries are received which are:

1) The posteromedial vein is of considerable size and runs up the posterior aspect of the thigh under the deep fascia. It pierces this at the medial aspect of the thigh and passess subcutaneously diagonally upwards on the deep fascia to join the long saphenous vein between, its upper third and its termination. It is formed in part by a small vein which arises from the short saphenous vein just before it enters the popliteal vein in the popliteal fossa. It receives numerous small tributaries from the skin and subcutaneous tissue of the popliteal fossa and upper half of the thigh.

2) The anterolateral vein. It drains the anterolateral surface of the thigh. It curves diagonally upwards