RECENT TRENDS IN MANAGEMENT OF RECURRENT VARICOSE VEINS

Essay

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Introduction

The care of venous stasis in all of its manifestations is the responsibility of surgeons in general and of vascular surgeons in particular. With varicose veins, such care is directed toward ablation of diseased vessels. Ablation is achieved by removing them surgically or by obliterating them with sclerotherapy. Large varicose clusters, axial veins (greater and lesser saphenous veins) that show gross reflux and varicosities above the knee are best treated by removal. Other vessels, especially telangiectasias, may be subjected to sclerotherapy ***(Bergan JJ:1989).***

The World Health Organization (WHO) defines varicose veins as saccular dilation of the veins which are often tortuous. This definition specially excludes dilation of small intradermal subcutaneous veins called (venectasis) & any tortuous dilated veins that are secondary to previous thrombophlebitis or an arteriovenous fistula ***(DaSilva A, et al., 1994).***

Recurrent varicose veins are veins which have become varicose after the original treatment, having been normal at the time of that treatment ***(Lofgren EP., 1971).***

The national surveys in both Europe and America have shown a remarkably consistent prevalence of varicose veins of approximately 2 %. Local surveys have shown a greater prevalence varying between 4 and 15 % ***(Callam MJ ., 1994).***

Varicose veins have known complications in relation to their pathology such as: superficial thrombophlebitis, eczema, pigmentation, lipodermato-sclerosis, haemorrhage, ulceration, increased risk of deep venous thrombosis and recurrence ***(Darke SG., 1992)***

Recurrence in a proportion about 20% of patients undergoing even well planned and executed primary varicose vein surgery ***(Royle JP., 1989).***

Aim of the work

The aim of this work is to highlight on the causes, diagnosis and variety of approaches that has been described for prevention & treatment of recurrent varicose veins.

Anatomy of Venous Drainage of the Lower Limbs

Gross anatomy of the veins of the lower limbs

The veins of the lower limbs are divided into 3 main sets; superficial, deep and perforating veins ***(Dodd and Cockett 1993).*** About 10%-15% of the venous drainage of the lower limb is carried by the superficial veins while the deep veins carry out the rest ***(Alimi et al., 1994).***

A-The superficial venous system of the lower limb

These superficial veins lie in the fat between the skin and the deep fascia, being closer to the latter, falling in 3 strata ***(Dodd and Cockett, 1993).***

i- Subcuticular veins: Forming a plexus of veins that become visible in varicosities ***(Williams et al., 1989).***

They are further divided into microvenules (less than 0.01 mm in diameter) and venules (between 0.01 to 0.1 mm in diameter) ***(Negus 1985).***

ii- Subcutaneous veins: These are veins of moderate size forming most of the proximal superficial varicosities following incompetence of the main trunks ***(Dodd and Cockett, 1993).***

iii- The main trunks lying on the deep fascia: The principal named superficial veins are the long and short saphenous veins ***(Williams et al., 1989).***

Venous drainage of the foot

Each toe has four digital veins, two dorsal and two plantar. The dorsal digital veins join the toe clefts to form the metatarsal veins which unite to form the dorsal venous arch. The dorsal arch is linked with the medial and lateral marginal veins which run along the inner and the outer borders of the foot. Ultimately the medial part of the dorsal venous arch is continued upward as the long saphenous vein while the lateral marginal vein which is less defined communicates with the short saphenous vein by way of venous plexus behind and below the lateral malleolus ***(Fegan and Pegum, 1995).***

The plantar digital veins form the four deep metatarsal veins which unite to form the deep planter venous arch. This plexus is widely connected with the superficial venous plexus of the dorsum of the foot by the interdigital and the dorsal collateral veins of each toe. It fans out into 12 to 15 branches to the medial and lateral margins of the foot. They form broad connections with the lateral and medial marginal veins ***(May, 1979)***. The numerous perforating veins of the foot are valved in such a way that most venous drainage from the dorsum of the

foot passes to the long and short saphenous veins of the ankle and from the planter surface to the posterior tibial vena comitantes ***(Dodd and Cockett, 1993).***

The long (great) 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 foot and the medial marginal vein and runs upwards for 1 to 1.5 inches in front of the medial malleolus of the tibia lying in the groove between the anterior border of medial malleolus and the tendon of tibialis anterior muscle ***(Decker et al., 1986).***

It extends obliquely backwards over the subcutaneous 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, from here it climbs slightly forwards upon the anteromedial aspect of the thigh and Into the foramen ovale to join the common femoral vein at the groin. A thin prolongation of the femoral sheath passes down and ensheathes the first centimeter of the long saphenous vein and foramen ovale is inconspicuous (cribrifom fascia) ***(Dodd and Cockett,1993).***

The landmark of the saphenofemoral junction is variously described. A reliable marking is 1 to 1.25 inches below and lateral to the pubic tubercle, it is advisable to use the bony point as a surgical landmark as the skin fold of the groin is unreliable ***(Hobbs, 1994).***

• Relationships of surgical importance

In the leg:

The saphenous nerve lies close beside the long saphenous vein. The nerve approaches the vein below the knee after piercing the fibromuscular roof of the adductor canal. It is most closely to the vein in the lower third of the leg and bifurcates above the ankle over the vein. It thus readily appreciated that if the bulky stripper is pulled upwards, it may well get caught the fork of the nerve, avulsing the whole part of the nerve ***(Dodd and Cockett, 1993).***

At the knee:

The saphenous branch of the descending genicular artery accompanies the long saphenous vein. This artery may be an important collateral vessel following thrombotic obstruction of the femoral artery in the adductor canal ***(Williams et al., 1989).***

In the thigh:

Twigs of the medial femoral cutaneous nerve in the vicinity of the long saphenous vein, although they are not closely applied to it, throughout its length the long saphenous is accompanied by the lymphatic trunks draining the dorsum of the foot, the anterior and medial aspects of the leg and thigh, these ends in the superficial group of the inguinal lymph nodes ***(Dodd and Cockett, 1993).***

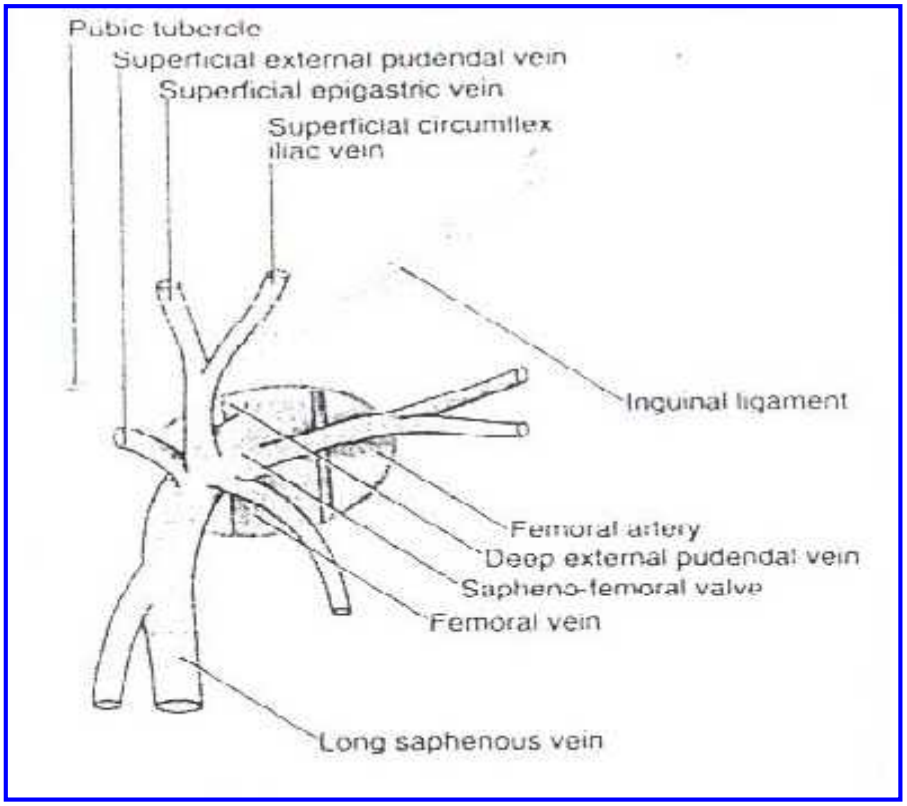

Fig.1 Terminal tributaries of long saphenous vein. (Burkitt and Quick, 2003).

- **Variations in the termination of the long saphenous vein**

Low termination of the vein, where the proximal portion of it, proximal to the last perforator, is obliterated and the perforator develops as the great saphenous trunk and Joins the femoral vein 3 to 5cm below the inguinal ligament. The external pudendal and the superficial epigastric veins drain directly into the femoral vein, while the superficial circumflex iliac terminates at the long saphenous vein ***(May, 1989).***

The long saphenous vein may not flow into the femoral vein in the hiatus saphenous as normal, but crosses this vessel in the proximal portion of the thigh, thus lateral to the femoral vein over the inguinal ligament and terminates in a subcutaneous abdominal vein ***(May, 1989).***

A rare but important anomaly is a high origin of the profunda artery which may run downward and medially across the femoral vein above or below the saphenofemoral junction. In this abnormal situation the artery may be mistaken for the femoral vein and is liable to surgical injury ***(Dodd and Cockett, 1993).***

- **Tributaries and communications of the long saphenous vein**

1-In the leg:

The long saphenous vein itself has few tributaries which include:

- A constant small connection between it and the upper of the three medial ankle perforating veins.

- One or two tributaries from the anterior aspect of the leg joining it in its lower third.

- Occasionally there is a small connection with the posterior arch vein that joins the medial ankle perforating veins.

- A free anastomosis between a tributary or tributaries of the short saphenous vein and the posterior arch vein which connects the medial ankle perforating veins by a vein running behind the tendo-achillis. By this means the long and short saphenous systems are connected in the lower of the leg.

These tributaries however, are small and subjected to variation in number and size in various pathological states ***(Decker et al., 1986).***

2-Around the knee:

The long saphenous vein receives three large vessels or groups at the ankle:

- A calf group draining an area of the calf posteriorly and connects it with (and occasionally replace) the short saphenous system behind the ankle joint.
- An anterior vein of the leg which winds up from the dorsum of the foot, ankle and anterior of the leg to join the long saphenous vein below the knee.
- The posterior arch vein (Leonardo's) which arises behind the medial malleolus and is formed of venous arches which connect the three ankle perforators. Above the upper one it passes up the medial surface of the leg to join the long saphenous at the inner aspect of the knee. Just below its junction it connects with the calf group of veins (which belongs to the deep system) and at the same level there is a perforating vein which joins the posterior tibial vena comitantes ***(Dodd and Cockett, 1993).***

3-ln the thigh:

The great saphenous vein receives many tributaries; some open independently, whilst others converge to form large named channels that frequently pass towards the basal half of the femoral triangle before joining the great saphenous vein

near its termination. These may be grouped thus: One or more large posteromedial tributaries and one or more large anteromedial tributaries ***(May, 1989).***

The posteromedial vein of the thigh, large and sometimes double, drain a large superficial tissue volume in the region indicated by its name; one of its lower radicals is often continues with the small saphenous vein. It is sometimes named the accessory saphenous vein with the greater emphasis on its variability of form and level of junction with the great saphenous vein. Occasionally, it unites at the saphenous femoral junction or more rarely directly into the femoral vein; just below this point. It represents important collateral for the return of blood from the lower leg in cases of deep femoral thrombosis ***(May, 1989).***

Another large vessel, the anterolateral vein of the thigh (anterior femoral cutaneous vein) drains the antero-external surface of the thigh. It courses diagonally from the outer side of the leg, knee and thigh to join the long saphenous vein in its terminal few centimeters. It is visible along the skin and is often erroneously regarded as the varicose long saphenous vein ***(Williams et al., 1989).***

In the middle or lower third of the thigh, the long saphenous vein, or more usually one of its smaller tributaries,

connects with the femoral vein in Hunter's canal by a rather long perforating vein (The Hunter 's perforator) ***(Browse, 1983).***

4-Terminal tributaries:

- **The superficial external pudendal** vein drains the prenium, upper inner thigh and external genitalia. It lies in the superficial fascia and may be divided or triplicated. The deep external pudendal vein is ' occasionally a tributary of the long saphenous vein itself. More occasionally it joins the medial aspect of either the common femoral or the superficial femoral vein within the fossa ovalis ***(Dodd and Cockett, 1993).***

- **The 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; it connects with its fellow on the opposite side across the midline of the lower abdomen. A thoraco-epigastric vein lies along the anterolateral aspect of the trunk and connects the superficial epigastric or common femoral vein to the lateral thoracic vein, thus connecting the femoral and axillary veins and hence the superior and inferior vena caval fields of drainage ***(Dodd and Cockett, 1993).***

- **The superficial circumflex iliac** vein drains the superficial tissues of the upper and outer aspects of the thigh