

Saphenous Ladder Formed by Almost Completely Duplicated Great Saphenous Vein

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ABSTRACT

Knowledge of normal as well as variant great saphenous vein is useful as it is the vein that can get varicosed; the vein that is used in bypass surgeries and the vein that is used for cannulation purpose. We observed almost complete duplication of the great saphenous vein in the left lower limb of an adult male cadaver. Both the great saphenous veins arose from the medial end of the dorsal venous arch and coursed parallel to each other throughout the limb. They united in the femoral triangle to form a short (1 inch long) common great saphenous vein. Common great saphenous vein terminated into the femoral vein. There were four communicating veins connecting the two great saphenous veins in the leg, giving the appearance of a venous ladder. Knowledge of this variation could be extremely useful in treatment of varicose veins of lower limb, in catheterizations and in various surgical procedures of the lower limb.

KEY WORDS

Dorsal venous arch, Femoral vein, Great saphenous vein, Lower limb, Variation

INTRODUCTION

Great saphenous vein or long saphenous vein is the longest vein of the body. It arises from the medial end of the dorsal venous arch and passes upwards in front of the medial malleolus. It ascends on the medial side of the leg and the knee joint and gradually inclines laterally upon reaching the thigh. In the femoral triangle, it receives the superficial external pudendal, superficial epigastric and superficial circumflex iliac veins. It terminates by opening into the femoral vein. It lies subcutaneous throughout its course and communicates with the deep veins through perforating veins. Variations of great saphenous vein do exist and some of them have been reported. Its variations might make the catheterization procedures difficult. Its variations might also cause problems in the treatment of varicose veins. We report a unique variation of the great saphenous vein in this case report and discuss about its clinical importance.

CASE REPORT

During our regular dissection classes for medical undergraduates, we found superficial venous variations in the left lower limb of an adult male cadaver aged approximately 65 years. The great saphenous was almost completely duplicated. Both the great saphenous veins arose from the medial end of the dorsal venous arch and had a normal course in the leg and thigh. The veins were almost parallel to each other throughout their course with a 2 inches gap between them. Both veins were of same caliber. In the femoral triangle, the two veins joined to form a common great saphenous vein, which was one inch long. The common great saphenous vein pierced the cribriform fascia and opened into the femoral vein. The superficial external pudendal and superficial epigastric veins opened into the first (medial) great saphenous vein and the superficial circumflex iliac vein drained into the second

(lateral) great saphenous vein. In the leg, there were four communicating veins between the two great saphenous veins, thus giving the appearance of a venous ladder. The perforator veins were connecting the first (medial) great saphenous vein with the deep veins.

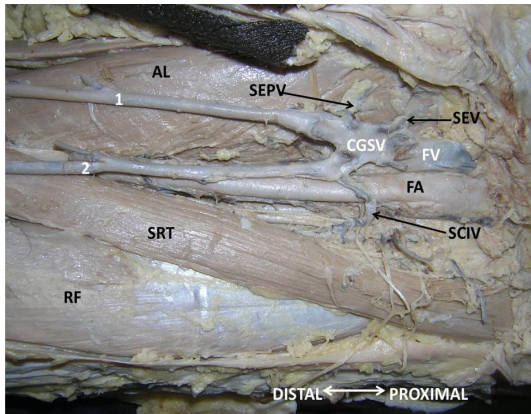


Figure 1. Dissection of the proximal part of the left thigh showing the duplicated great saphenous vein.

(1 – First (medial) saphenous vein; 2 – second (lateral) saphenous vein; CGSV – common great saphenous vein; FV – femoral vein; FA – femoral artery; SCIV – superficial circumflex iliac vein; SEPV – superficial external pudendal vein; SIEV – Superficial epigastric vein; SRT – sartorius; RF – rectus femoris; AL – adductor longus).

(MMV – medial marginal vein; DVA – dorsal venous arch; 1 and 2 – first and second great saphenous veins.)

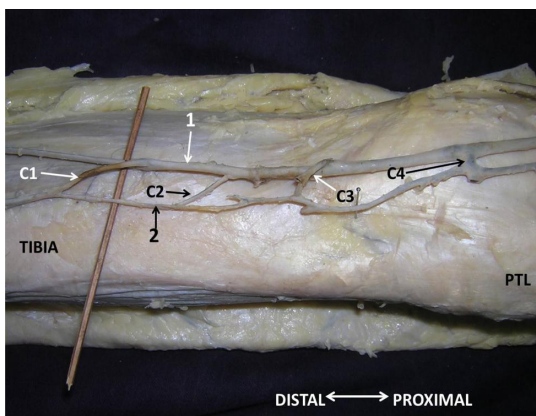


Figure 3. Dissection of the proximal part of the leg (medial view) showing the saphenous ladder formed by duplicated saphenous veins (1 and 2) and the four communicating veins (C1, C2, C3 and C4). Patella (PTL) can be seen.

DISCUSSION

Superficial veins vary considerably in their origin, course and termination. Great saphenous vein is not an exception for this. However, its complete duplication is very rare. In some cases, it shows partial duplication.¹ Ayannuga et al. have conducted a pilot study on the great saphenous

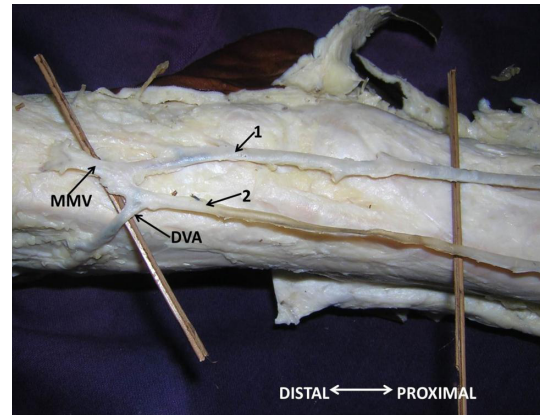


Figure 3. Dissection of the left ankle and dorsum of the foot.

veins of Nigerians.² They studied the diameters of the veins and the number of valves present in the veins. They could not find much difference between veins of right and left limbs. They have not mentioned any duplication of great saphenous vein in their study. Talalwah et al. have reported a duplication of great saphenous vein.³ In their observation, both the veins ran until middle of the thigh, where they became very narrow and joined with an accessory saphenous vein and the common trunk formed by three veins terminated into the femoral vein. The two saphenous veins in their case communicated with each other twice below the knee and once above the knee. Our case is considerably different than theirs in having no accessory saphenous vein. Both the saphenous veins in our case had equal diameter and they gained size as they advanced upwards. All four communications in our case were below the knee. Thus our case is unique in all these observations. Kockaert et al. in their review of literature have found that the incidence of true duplication of great saphenous vein happens only in 1.6 to 2% of cases and it is recommended that such veins have to be treated to prevent the recurrence of the venous insufficiency.⁴

Knowledge of partial or complete duplication of the great saphenous vein is extremely important since the vein is often harvested for peripheral or coronary artery surgery.^{5,6} Varicose vein surgery is one of the commonest surgeries. Most of the varicose veins surgeries involve stripping or ligation of the great saphenous vein.⁷ Hence knowledge of its possible variations is mandatory.

The current case of duplication of great saphenous vein and a ladder pattern below the knee can predispose it for varicosity. The knowledge of these variations might be useful for plastic surgeons in flap surgeries, for cardiothoracic surgeons in saphenous vein harvest and to the radiologists conducting various procedures on the superficial veins of the lower limbs.

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