Incidence of duplication of great saphenous vein in the thigh and its clinical significance — a case report

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Abstract
Varicose vein surgery remains one of the most common general surgical operations performed in the United Kingdom. Varicose veins have been shown to affect up to 15% of men and 25% of women in Western society. The majority of varicose vein surgery involves ligation and stripping of the great saphenous vein and its tributaries. A missed duplication of a great saphenous vein can be a partial explanation for recurrent varicose veins after surgery. Therefore this case report would serve as ray of light for knowing the possible anatomical variations associated with the great saphenous vein. During routine dissection we observed an unusual duplication of great saphenous vein in the thigh on the left side of a 55-year-old male cadaver. However, such variation was not found on the opposite side and patients with such variations may be asymptomatic.


Key words [great saphenous vein] [vascular variation] [saphenous vein grafts]

Introduction
The great saphenous vein (GSV) commences at the medial end of the dorsal venous arch, and after receiving branches from the sole, which join it by turning over the medial border of the foot, it turns proximally, anterior to the medial malleolus. It ascends about a finger’s breadth posterior to the medial border of the tibia accompanied by the saphenous nerve, which becomes superficial just distal to the knee. It then passes posterior to the medial condyle of the knee, accompanying the saphenous branch of the descending genicular artery, and continues along the medial side of the thigh, to about 3.7 cm distal to the inguinal ligament, where it perforates the cribriform fascia and dips through the saphenous opening in the fascia lata to join the femoral vein. Throughout its length there are numerous communications with the deep veins, especially in the leg. These occur at the knee, mid-length of leg, ankle and foot. Communications in the thigh occur only below the mid-length. Valves within these communications are so oriented that blood from the superficial channels flows into deep. There are from 10-20 valves in the GSV. The vein is often duplicated especially distal to the knee. The GSV is often harvested for grafts used both in peripheral and coronary artery surgery [1, 2].

Case Report
During routine gross anatomy dissection of the lower limb for the purpose of teaching medical students, Manipal University, we observed a rare case of duplication of GSV in the middle one third of the thigh, on the left side. However, the formation and rest of the course of the GSV were as usual. Therefore an attempt has been made to highlight its clinical implications in relation to its duplication in the thigh. The medical history of this 55-year-old male cadaver was not available. Following the dissection, the duplicated GSV was photographed. However such variation was not found in the opposite side and patients with such variations may be asymptomatic.

Discussion
Varicose veins are common in the postero-medial parts of the lower limb and may cause considerable discomfort. Frequently the GSV and its tributaries become varicosed. Varicose veins are formed when the valves that prevent blood flow from the deep veins through the perforating veins to the superficial veins are incompetent and the result is that the superficial veins become tortuous and dilated. The GSV is commonly used for coronary arterial bypass because it is readily accessible, enough distance occurs between its tributaries and the perforating veins so that usable length can be harvested and
its wall contains a higher percentage of muscular and elastic fibers than any other superficial veins [3].

Varicose veins have multiple etiological factors like hereditary weakness of the vein walls, incompetent valves, elevated intra-abdominal pressure as a result of multiple pregnancies, abdominal tumors and chronic cough, thrombophlebitis of the deep veins, which result in superficial veins becoming the main venous pathway for the lower limb. The successful surgical management of varicose veins includes the ligation and division of all the important tributaries of the great or small saphenous veins, to prevent a collateral circulation from developing, and the ligation and division of all the perforating veins responsible for the leakage of high-pressure blood from the deep to the superficial veins. It is now common practice to remove or strip the superficial veins in addition to the ligation [4].

Varicose vein surgery remains one of the commonest general surgical operations performed in the United Kingdom. The routine stripping of the GSV in addition to disconnection of the sapheno-femoral junction and multiple stab avulsions has been advocated to reduce the incidence of recurrence of varicose veins. Varicose veins have been shown to affect up to 15% of men and 25% of women in Western society. The majority of varicose vein surgery involves the ligation and stripping of the GSV and its tributaries [5].

In the literature there is a range from 1% to 20% of duplication (up to 20%) of the GSV reported, because there is a lack of an accurate definition of the GSV and objective parameters for an anatomical identification. Phlebography studies have been the criterion standard for the identification of venous anatomy. Now, duplex ultrasonography is regarded as the criterion standard for accurate detection of the veins. True duplication of the GSV is less common than the previous literature has suggested, namely 1.6% to 2%. It is recommended that the duplicated GSV should be treated to avoid an important risk of recurrence of venous insufficiency [6].

Conclusion

The majority of varicose vein surgery involves the ligation and stripping of the GSV and its tributaries. Varicose vein surgery remains one of the commonest general surgical operations performed in the Western part of the world. A missed duplication of a GSV can be a partial explanation for recurrent varicose veins after surgery. Hence it is recommended that the duplicated GSV should be treated to avoid an important risk of recurrence of venous insufficiency.

References